LIEBHERR

# Service Manual

## KB (ef, es) 4310 from 20A

**Comfort, A+++**

**Refrigerator with BioFresh Compartment**

**Edition 01**

**Date: 16.08.2016**

**Translation of Original**

LIEBHERR

# Document info and key to changes

### Document information

| | |
|---|---|
| **Type** | Translation of original instructions |
| **Author** | Liebherr GmbH |
| **Current version** | Edition 1, 16.08.2016 |
| **Document ID** | 17201600SM_gb |

### Key to changes

| Version | Date | Name | Description |
|---|---|---|---|
| 1 | 08/2016 | Bernd Neff | Initial Version |
| 2 | | | |

# Legal Notice



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# 1 User Guidance

The service manual and the product are labelled with various symbols. The symbols and their function facilitate the safe and efficient use of the product.

## 1.1 Warning information

### 1.1.1 Structure of the warning information

**DANGER**
Type and source of danger.
Consequences of the danger.
- Countermeasures in order to prevent the danger.

Warns against imminent danger that will lead to death or severe injuries if not avoided.

### 1.1.2 Classification of warning information

**DANGER**
Indicates an imminent dangerous situation that will lead to death or severe physical injuries if not avoided.

**WARNING**
Indicates an imminent dangerous situation that could lead to death or severe physical injuries if not avoided.

**CAUTION**
Indicates an imminent dangerous situation that could lead to slight or moderate physical injuries if not avoided.

### 1.1.3 Notes

**ATTENTION**
Indicates an imminent dangerous situation that could lead to damage to property if not avoided.

**NOTE**
Indicates useful notes and tips.

## 1.2 Symbols contained in the service instructions

### 1.2.1 Action guidelines

Structure of the action guidelines

- ▸ Instructions regarding an action.
- ☐ Information on results where necessary.

### 1.2.2 Lists

**Structure of unnumbered lists:**

- ■ List point
- ■ List point
- ☐ List result

**Structure of numbered lists:**

1. List point
2. List point

(1) List point

(2) List point

# 2 Safety notes

## 2.1 Electric shock

### Improper servicing and repair

- Only disconnect the appliance from the mains by pulling out the mains plug.
- In cases of fault, disconnect the appliance from the mains.
  - By pulling out the mains plug
  - By switching OFF the fuse
- Ensure that that appliance is free of voltage when performing servicing or repair work.
- Only service and repair the appliance according to the information provided in the service documentation and repair documentation.
- Only operate the appliance with an intact and appropriate mains power cable.

## 2.2 Fire

### Incorrectly connected appliance

- Do not use any extension cables.
- Do not use any distributor blocks.
- Ensure that the appliance does not touch any connectors or mains cables.

### Flammable refrigerant

- Ensure that the pipelines belonging to the refrigeration circuit are undamaged.
- Avoid open flames or ignition sources inside the appliance.
- Do not use any electric appliances inside the appliance.
- Avoid open flames or ignition sources when carrying out repairs on the refrigeration circuit.
- Do not store any explosive materials or spray cans containing flammable propellants (e.g. butane, propane, pentane) in the appliance.
  - Please refer to the contents or flame symbol printed on the spray can.

### Blocked air ventilation openings

- Keep air ventilation openings clear.
- Ensure sufficient air ventilation.

## 2.3 Injuries

### Coldness

- Avoid skin contact with cold surfaces or chilled/frozen food.
- Wear gloves if touching cold surfaces or chilled/frozen food for an extended period of time.

### Improper transport

- Do not transport or carry the appliance alone.

### Improper opening or closing

- Do not reach into the hinge when opening and closing the door.

## 2.4 Mechanical damage

### Poor access to the appliance

- Disassemble built-in appliances properly and carefully.
- Place built-in appliances on a suitable base.
- Ensure that freestanding appliances are only moved on transport castors.

## 2.5 Damage to the electronics

### Improper connection

- Do not use any stand-alone inverters.
- Do not use any energy-saving connectors.

# 3 Target group

## 3.1 Servicing/maintenance personnel

### 3.1.1 Areas of responsibility

**The servicing/maintenance personnel**

- services the machine in order to ensure a safe and reliable function.
- has read and understood the operating instructions.
- wears protective clothing.
- implements all stipulated servicing activities.
- does not perform any conversions to the machine without consulting the manufacturer.
- only uses original LIEBHERR spare parts.

### 3.1.2 Personnel requirements

**The servicing/maintenance personnel**

- is older than the minimum age as prescribed by law.
- is physically suitable (sufficient visual and hearing capability, fast reaction times).
- is familiar with the machine and the dangers.
- is familiar with all procedures and provisions regarding servicing.
- has been briefing and trained to perform the servicing/maintenance, including on how to deal with special equipment.
- is not affected by any physical or mental impairment that reduces the ability to comply with any of the stipulated requirements.
- is not under the influence of alcohol and/or drugs.

# 4 Description of Appliance

## 4.1 Appliance as a whole

The **KB** is a freestanding refrigerator/BioFresh appliance.

The appliance cools via a compressor and a lamellar evaporator.

The refrigerator compartment and the BioFresh compartment are cooled by a common evaporator. The lamellar evaporator is located in a module under the insulation panel between the refrigerator compartment and the BioFresh compartment.

The control of the refrigerator BioFresh compartment is carried out via a fan with a air flap and 3 sensors, the refrigerator compartment evaporator sensor, the refrigerator compartment air sensor and the BioFresh air sensor. The fan is inserted in front of the inner liner rear wall into the module, and runs permanently. When the compressor is off, the fan runs at low speed, and when the fan is switched on, the speed increases. If the refrigerator compartment requires cooling (detection via the refrigerator compartment air sensor), the fan is switched on and the air flap to the refrigerator compartment is opened. The fan takes in warm air from the refrigerator compartment and sucks it upwards past the lamellar evaporator. The air, which is now cold, is fed past the air duct panel upwards into the refrigerator compartment.

Once it is sufficiently cold in the refrigerator compartment, the respective air flap is closed. The compressor and the fan continue to run, and the BioFresh compartment is cooled. The compressor continues to operate until the air in the BioFresh compartment is cold enough (detection by BioFresh air sensor). The refrigerator compartment evaporator sensor and the refrigerator compartment air sensor cause the compressor to switch on again.

## 4.2 Operating and control elements

### 4.2.1 Home screen

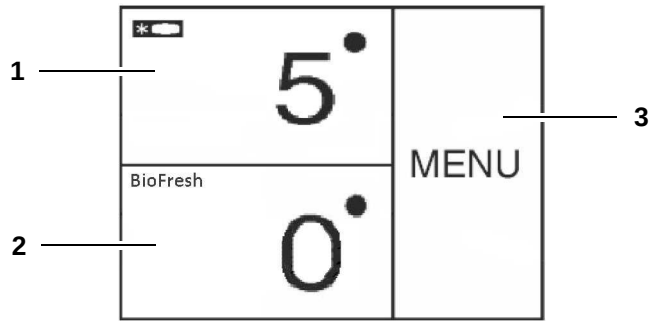



Abb. 1 Home screen overview

(1) Refrigerator compartment field
(2) BioFresh field
(3) Menu field

### 4.2.2 Navigation

| Symbol | Function | Description |
|---|---|---|
|  | **Standby** | Switch on appliance or temperature zone<br>. |
| MENU | **Menu** | Call-up the options. |
|  | **Minus / Plus** | Change temperature setting (e.g. regulate temperature<br>time setting for SuperCool). |
|  | **Left/right navigation arrow** | Select options and navigate<br>within the menu. You can scroll through the individual options with the navigation arrow.<br>After the last option, the first option is displayed once more. |
|  | **Back** | Cancel selection<br>The display switches to the next highest level or to the home screen. |
| OK | **OK** | Confirm selection.<br>The display switches to the home screen after confirmation. |

| Symbol | Function | Description |
|---|---|---|
|  | **ON / OFF, START / STOP** | Activate / deactivate option<br>The display switches to the home screen after an option has been activated or deactivated. |
|  | **RESET** | Reset the timer. |
|  | **Customer Service access** | |

### 4.2.3 Display symbols

| Symbol | Function | Description |
|---|---|---|
|  | **Up arrows** | Temperature is increased. |
|  | **Down arrows** | Temperature is reduced. |
|  | **Standby** | The appliance or temperature zone is switched OFF. |
|  | **Messages** | Active error messages and reminders are present. |

### 4.2.4 Appliance options

| Symbol/button | Explanation |
|---|---|
|  | **SuperCool** |
|  | **Sabbath mode** |
|  | **Child lock** |

| Symbol/button | Explanation |
|---|---|
|  | **Switch off the appliance of temperature zone.** |
|  | **Clean the ventilation grille** |
|  | **FreshAir filter** |
|   | **Temperature unit** |
|  | **BioFresh setting** |

## 4.3 Sensor positions, schematic diagrams

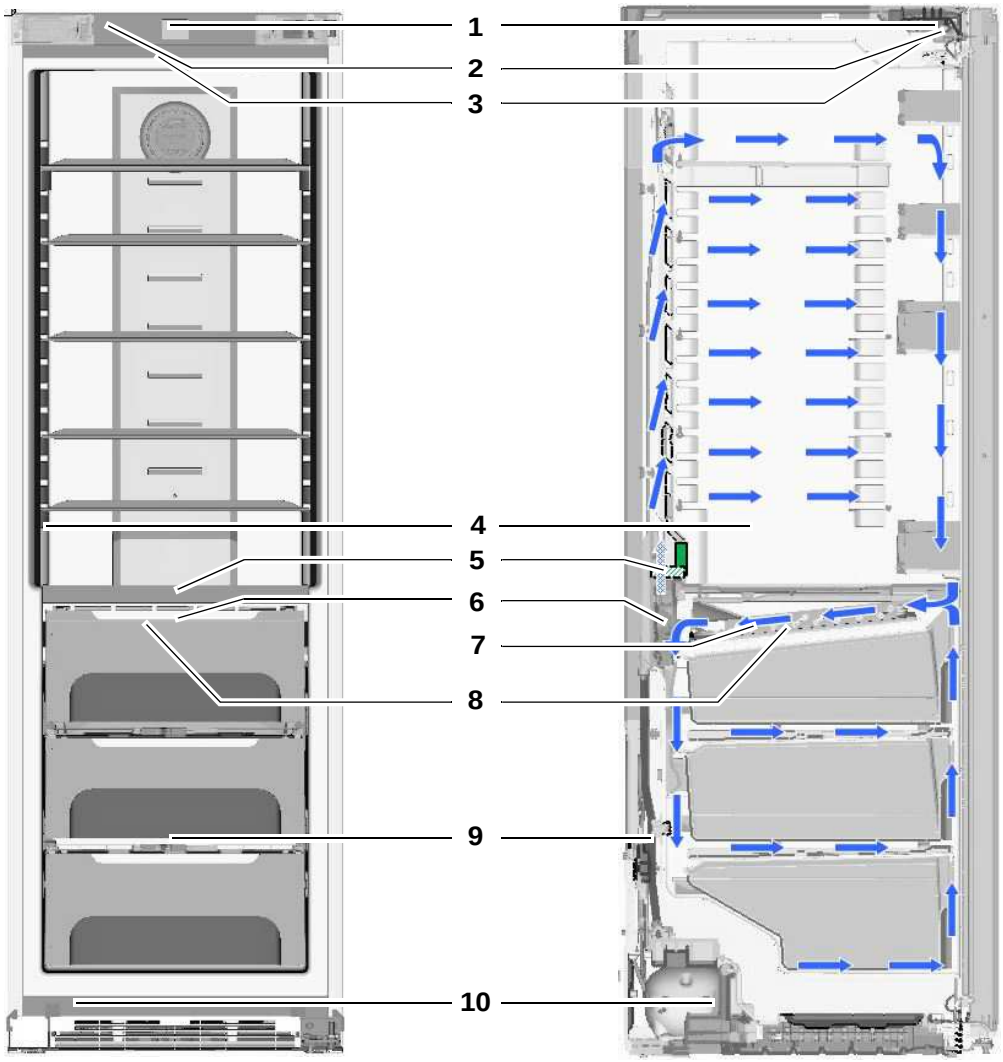



Abb. 2 Schematic diagram

(1) Electronics

(2) Refrigerator compartment door switch

(3) Refrigerator compartment ceiling lighting

(4) Refrigerator compartment air sensor

(5) Air flap

(6) Refrigerator BioFresh compartment fan

(7) Refrigerator BioFresh compartment evaporator

(8) Refrigerator BioFresh compartment evaporator sensor

(9) BioFresh air sensor

(10) Base fan

# 5 Functional description

## 5.1 Overview

| | |
|---|---|
| **Control** | |
| Electronic control system | Front panel with control panel + power unit |
| **Temperature display** | |
| Refrigerator compartment | Actual value |
| BioFresh compartment | 1 to 9 (1=coldest setting, approx. 0 °C to +2 °C) |
| **Temperature range** | |
| Refrigerator compartment | +2 °C to +9 °C |
| BioFresh compartment | 1 to 9 (1=coldest setting, approx. 0 °C to +2 °C) |
| **Temperature alarm** | |
| Refrigerator compartment: | Not featured |
| BioFresh compartment | Not featured |
| **Door alarm** | |
| Refrigerator BioFresh compartment | Visual and audible |
| **Fan** | |
| Refrigerator BioFresh compartment | Featured |
| **Defrosting** | |
| Refrigerator BioFresh compartment | Automatic |
| **Interior light** | |
| Refrigerator compartment | Featured |
| BioFresh compartment | Not featured |
| **Service menu** | Featured |
| **Compressor** | VCC, standard |

## 5.2 Function principle

The function principle illustrates an example refrigeration system design of the appliance.

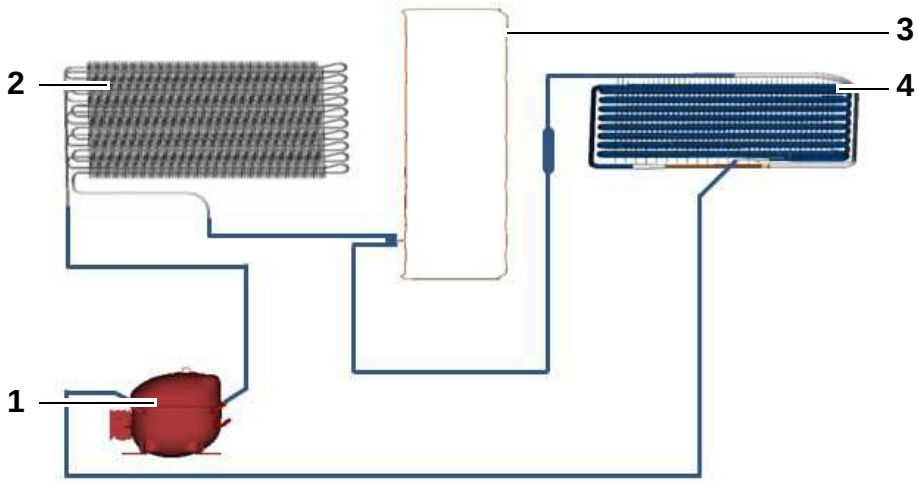



Abb. 3 Function principle of the appliance

(1) Compressor
(2) Condenser
(3) Frame heater
(4) Evaporator

# 5.3 Main components

## 5.3.1 Electro-technical components

### 5.3.1.1 General

| Electronics | |
|---|---|
| **Type** | Electronics |
| **Components** | Front panel with control panel and power unit<br>This is an assembly unit; no individual parts are available |

| Compressor | | |
|---|---|---|
| **Type** | VCC, standard | |
| **Function** | **On** | ■ Evaporator sensor and BioFresh air sensor have reached their switch-on value |
| | **OFF** | ■ BioFresh air sensor switch-off value |
| |  | ■ The switch-on delay time is 8 minutes |

**VCC compressor, standard**

- Compressor with various speed settings
- The compressor is triggered via an inverter, the inverter electronics are mounted directly on the compressor
- An appropriate data signal controls the compressor speeds and switch-off.

**NOTE**
In the event of the data signal being interrupted, the compressor continues to run at a pre-specified speed!

### 5.3.1.2 Refrigerator BioFresh compartment

| Electronics | | |
|---|---|---|
| **Setting range** | **Refrigerator compartment** | +2°C to +9°C |
| | **BioFresh compartment** | ■ 1 to 9<br>■ 1 = coldest setting<br>■ 0 °C to +2 °C |
| **Display range** | 2 °C to +50 °C (actual value display)<br>The up or down arrows indicate the temperature change towards the new target value. | |

| Functions | | |
|---|---|---|
| **SuperCool** | **On** | ■ Can be set to 12, 9, 6 or 3 hours<br>■ The refrigerator compartment adjusts itself to the coldest target value<br>■ The compressor switches to the maximum speed<br>■ The fan switches to the maximum speed<br>■ BioFresh temperature remains unchanged |
| | **OFF** | ■ Automatically following expiry of the set SuperCool period<br>■ The refrigerator compartment adjusts itself to the set target value<br>**Prematurely end the SuperCool function:**<br>■ Select SuperCool via the menu<br>■ Press remaining time<br>■ Press STOP<br>The refrigerator compartment once more adjusts itself to the set target value |
| **Defrosting** | ■ Automatic during compressor standstill phase | |
| **Door alarm** | **When** | If door is open after 60 seconds |
| | **Visual** | Door alarm symbol in the display  |
| | **Audible** | Beep |
| |  | 4 x alarm signal with a pause of 60 seconds, followed by<br>4 x alarm signal with a pause of 30 seconds, followed by<br>alarm signal with a pause of 5 seconds. |

| Sensors | | |
|---|---|---|
| **Air sensor** | **Position** | See 4.3 Sensor positions, schematic diagrams |
| | **Function** | ■ Open/close the refrigerator compartment air sensor and evaporator sensor<br>■ Generates the display value |
| **Evaporator sensor** | **Position** | See 4.3 Sensor positions, schematic diagrams |
| | **Function** | ■ Evaporator sensor and BioFresh air sensor switch the compressor on<br>■ Evaporator sensor and refrigerator compartment air sensor open/close the air flap<br>■ Issues the release for fan ON (from +10 °C)<br>■ Ends the defrost phase |
| **BioFresh Air sensor** | **Position** | See 4.3 Sensor positions, schematic diagrams |
| | **Function** | ■ BioFresh air sensor and evaporator sensor switch the compressor ON<br>■ BioFresh air sensor switches the compressor OFF |
| **Ambient air sensor** | **Position** | On the electronic power unit |
| | **Function** | ■ Affects the switch-off value of the BioFresh air sensor<br>■ Minimises temperature fluctuations in the BioFresh compartment |
| |  | ■ Display of ambient air sensor errors in service menu only<br>■ In cases of fault, the switch-off value of the BioFresh air sensor is not affected<br>■ Replace the power PCB in the event of a fault. |

| Switches | | | |
|---|---|---|---|
| **Door switch** | **Position** | In front panel | |
| | **Type** | Magnetic field sensor | |
| | **Contact type** | Make contact | |
| | **Function** | **Activation** | ■ Magnet (foamed-in within the door)<br>■ Magnet is not replaceable |
| | | **Door closed switching signal** | ■ Fan ON<br>■ Interior light OFF |
| | | **Door open switching signal** | ■ Fan OFF<br>■ Interior light ON<br>■ Door alarm ON after 60 seconds |

| Consumers/Loads | | | |
|---|---|---|---|
| **Ceiling lighting** | **Position** | See 4.3 Sensor positions, schematic diagrams | |
| | **Function** | ■ Lights up after door has been opened<br>■ Switches OFF after the door has been open for 15 minutes | |
| **Fan** | **Position** | See 4.3 Sensor positions, schematic diagrams | |
| | **Function** | **Fan ON** (continuous operation) | ■ Refrigerator compartment air sensor<br>Switch-on value (refrigerator compartment warm)<br>■ The fan speed runs in parallel with the compressor.<br>■ Lowest speed when compressor off |
| | | **Fan OFF** | ■ Refrigeration compartment door - OPEN |
| | |  | During commissioning, the fan only switches ON from +10°C on the evaporator sensor. |

| Consumers/Loads | | | |
|---|---|---|---|
| **Air flap** | **Position** | See 4.3 Sensor positions, schematic diagrams | |
| | **Function** | **Air flap OPEN** | ■ The refrigerator compartment is warmer than the switch value OPEN<br>and<br>■ The refrigerator compartment air sensor + x is warmer than the evaporator sensor |
| | | **Air flap CLOSED** | ■ The refrigerator compartment air sensor is colder than the switch value CLOSED<br>or<br>■ The refrigerator compartment air sensor is colder than the evaporator sensor |
| |  | Switch values Open/Closed and x are calculated values! | |

### 5.3.2 Refrigeration components

#### 5.3.2.1 General

| Compressor | |
|---|---|
| Compressor | VCC, standard |

#### 5.3.2.2 Refrigerator compartment

| Evaporator | |
|---|---|
| Type of appliance | Lamellar evaporator |
| Type of installation | In the module under the insulation panel (centre of appliance) |
| Injection point | Front, centre |
| Flow sequence | see 5.2 "Function principle" |

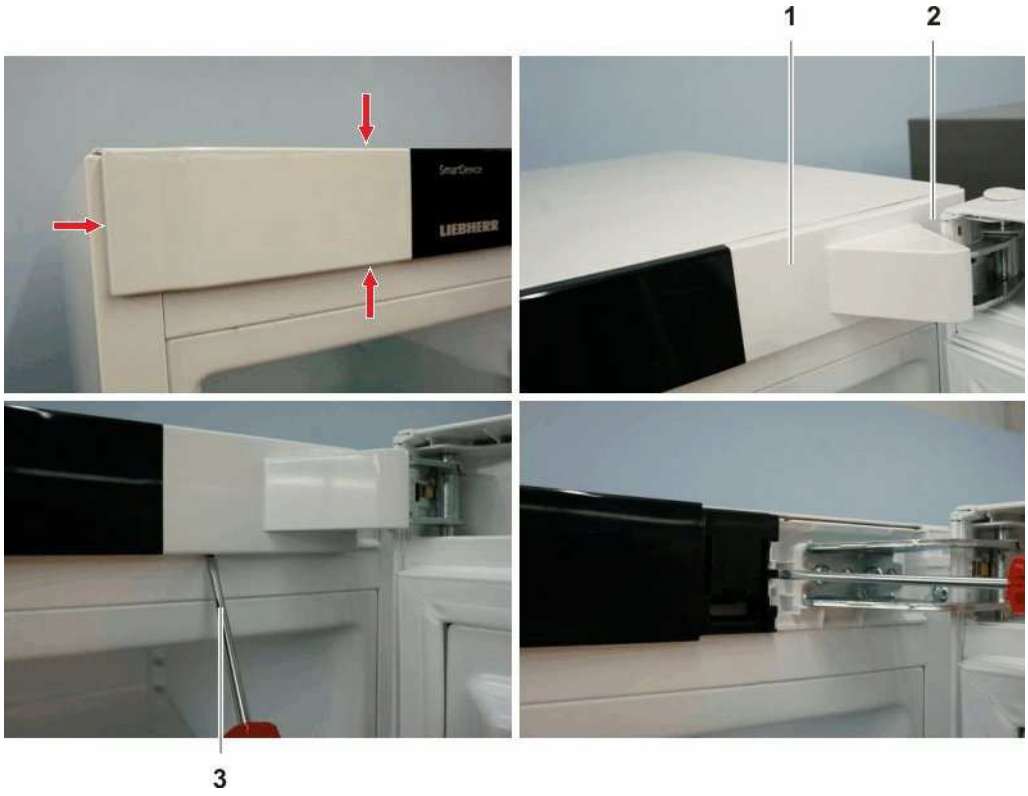
# 6 Service and repair

## 6.1 Assembly

### 6.1.1 Appliance

#### 6.1.1.1 Electronics

**Covers**



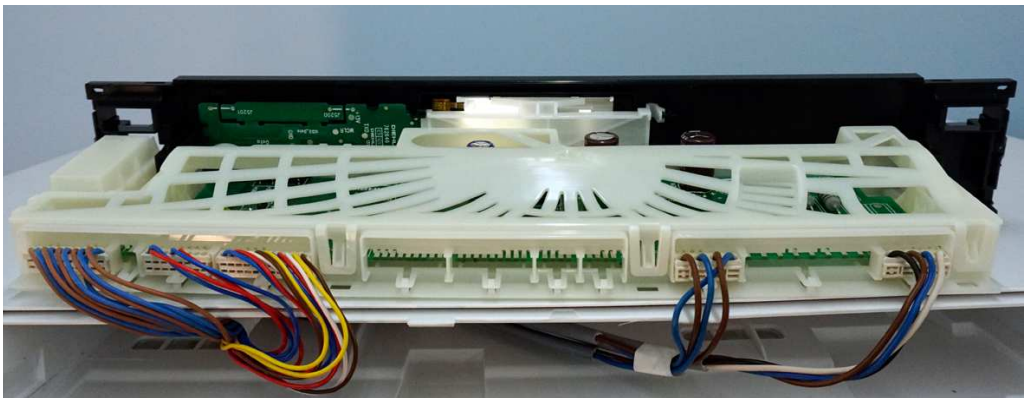

**NOTE**
The appliance can be designed with or without a soft stop mechanism.
Covers are different, procedure is identical.

- Undo the cover on the left at the marked point and remove it.
- Push the external part cover **2** to the right and remove.
- Undo turn hinge cover **1** with screwdriver **3** and remove.

**Front panel**


- Undo the right locating lug **5** belonging to the front housing.
- Undo the left locating lug **6** belonging to the front housing.

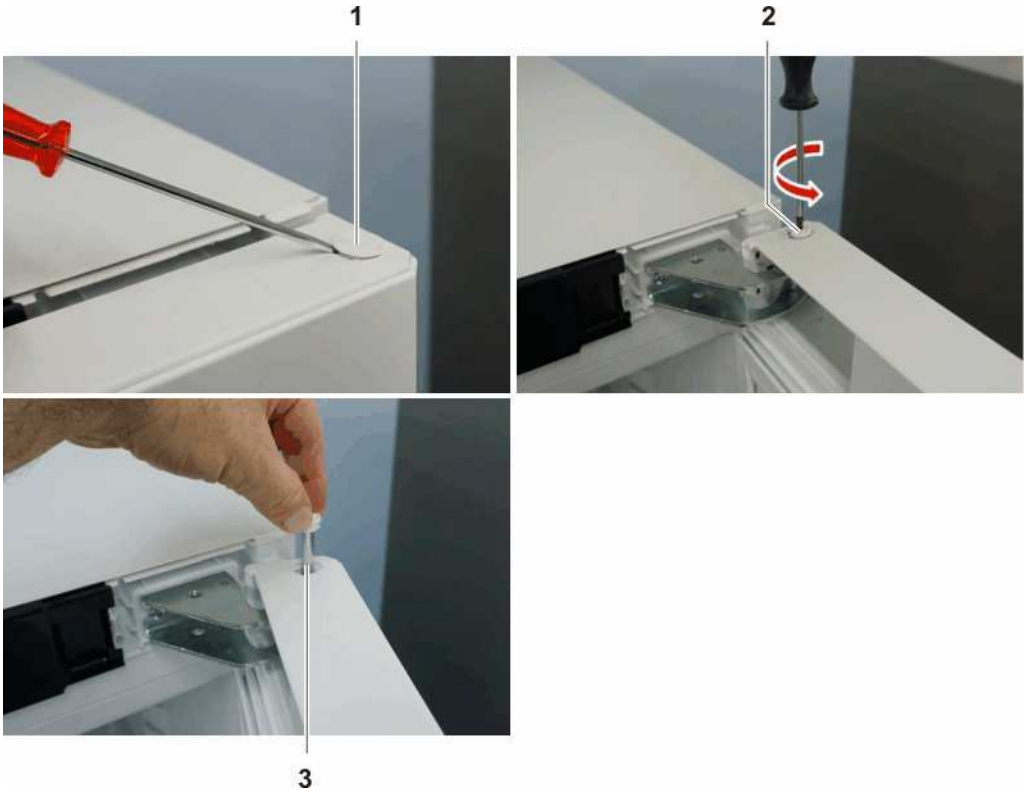
**PCB carrier**



- Draw the front panel forwards for removal.
- Detach the cable.
- Disengage the connector.
- Remove connector.

### 6.1.2 Door

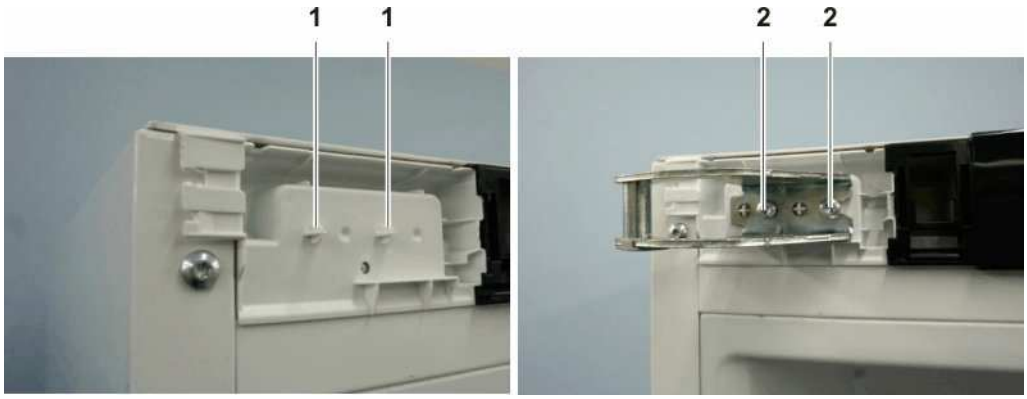
**Remove door**




- Remove the covers to the right and left of the front panel (see electronic control system).
- Remove safety cover **1**.
- Undo bearing pin **2**.
- Hold door.
- Lift out bearing pin **3**.
- Raise the door and lift it out.

### 6.1.2.1 Changing over the door hinges

**Top turn hinge**




- Remove the cover on the opposite side.
- Rotate the turn hinge by 180°.
- Insert the turn hinge on connector **1**.
- Screw on fastening screws **2**.
- Turn the bearing bush

**Bottom turn hinge**


- Remove cover **1**.
- Insert cover **1** on the opposite side.
- Undo the fastening screw belonging to the door closing aid **4**.
- Lift door closing aid **4** and turn by 90°.
- Insert door closing aid **4** in to the drill hole.
- Tighten the fastening screw belonging to the door closing aid **4**.
- Screw on the turn hinge with the fastening screw.
- Insert bearing pin **3**.
- Observe notch **2**.

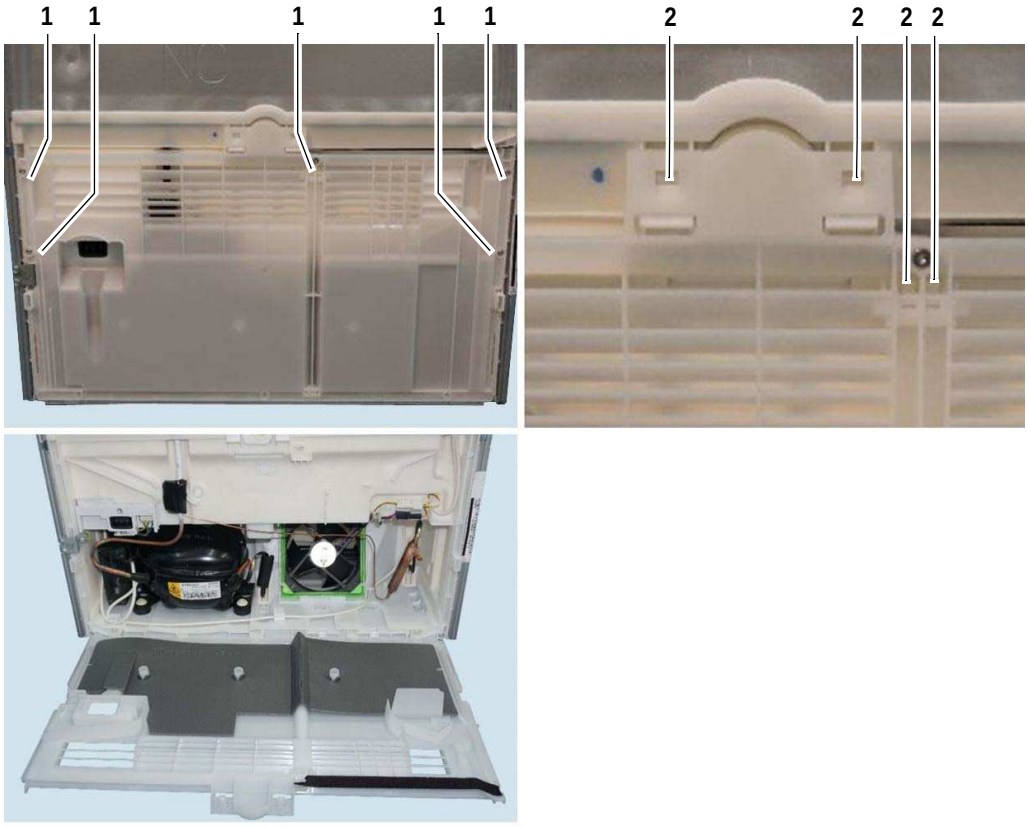
### 6.1.2.2 Door seal

The door seal is inserted in the groove.

**CAUTION**
Risk of damage!
If the door seal is damaged, the door may not close correctly and the cooling is inadequate or the appliance ices.
- Ensure that the door seal does not become damaged.

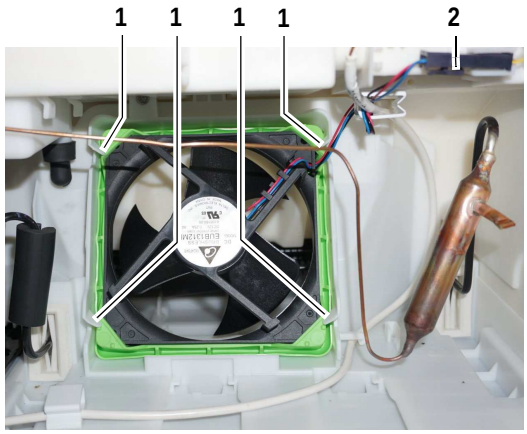
- Remove the door seal from the groove and the top and bottom corners.
- Circumferentially pull out the the door seal.
- Insert the new door seal into the top and bottom corners.
- Circumferentially insert the door seal.

### 6.1.2.3 Rear base compartment cover



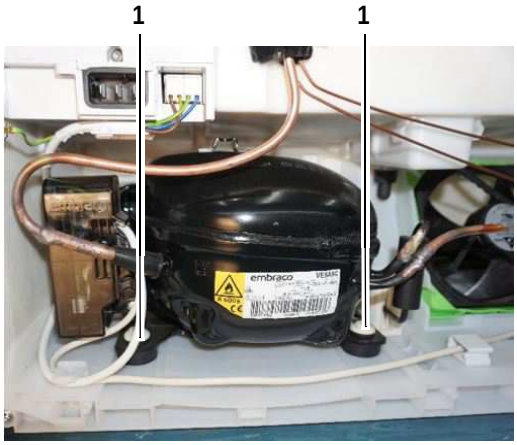

- Remove the mains plug from the appliance.
- Undo screws **1**.
- Disengage retaining clips **2**.
- Remove the cover.

### 6.1.2.4 Base compartment fan



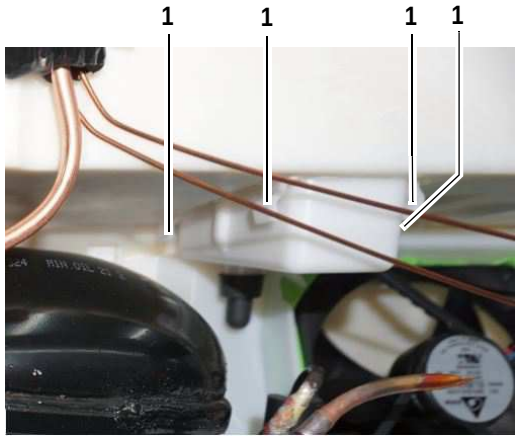

- Undo the locking devices **1**.
- Disconnect fan connector **2**.

### 6.1.2.5 Compressor




- Lift out the plastic rivets **1**.
- Lift the compressor out of the base compartment by bending the pipelines.

### 6.1.2.6 Siphon

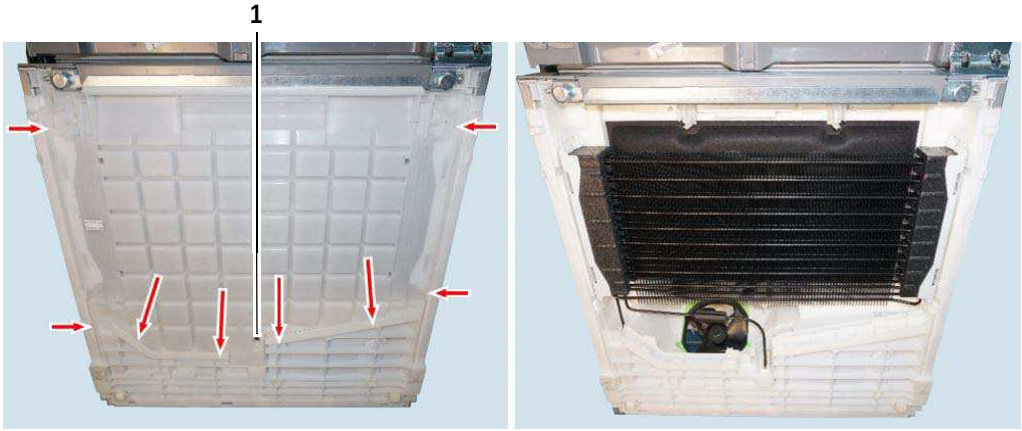



- Press the clips simultaneously **1**.
- Pull the siphon downwards.

### 6.1.2.7 Evaporation tray

**DANGER**
Heavy!
Risk of crushing.
- Ensure that no limbs become jammed.

**CAUTION**
Risk of damage!
Impressions may form in the floor if the appliance is tilted.
- Ensure that the floor does not become damaged.



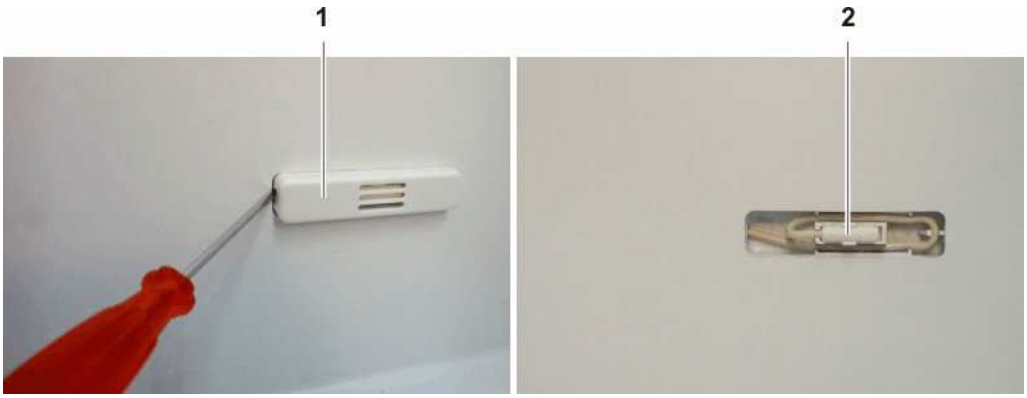

- Empty the appliance.
- Place the appliance on its back.
- Undo screw **1**.
- Undo marked retaining clips.
- Remove the evaporation tray.

### 6.1.3 Refrigerator BioFresh compartment

#### 6.1.3.1 Refrigerator compartment air sensor


- Remove cover **1** belonging to the refrigerator compartment air sensor **2**.
- Repair the sensor in accordance with the repair instructions enclosed with the repair kit.

#### 6.1.3.2 BioFresh air sensor



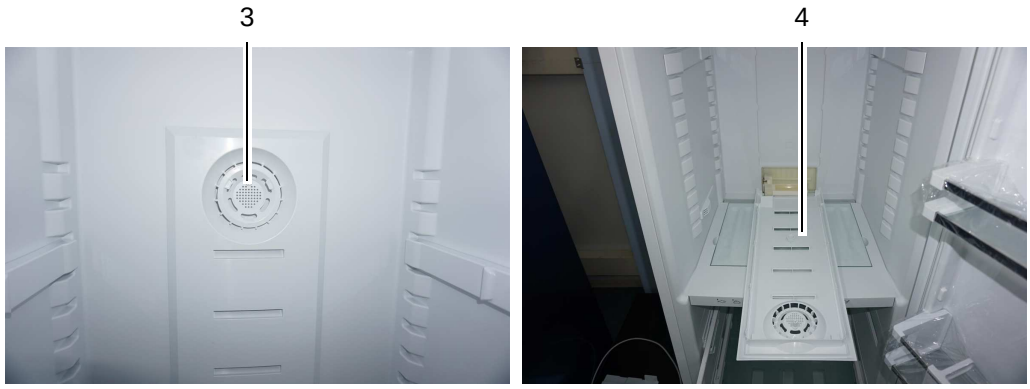

- Remove BioFresh drawers.
- Remove holder **1** of the BioFresh air sensor **2**.
- Repair the sensor in accordance with the repair instructions enclosed with the repair kit.

### 6.1.3.3 Evaporator module with air flap, fan and evaporator sensor

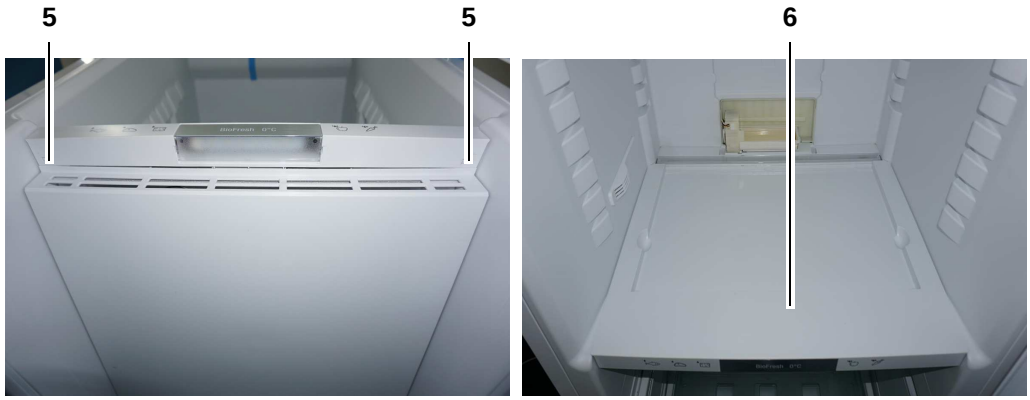
**NOTE**
KB appliances are available with and without refrigerator compartment floor lighting and BioFresh light. The disassembly steps are identical.

**Evaporator module**


- Remove glass shelves and VarioSafe.
- Remove the top BioFresh drawer.
- Turn the round cover plate **2** to unlock and remove.

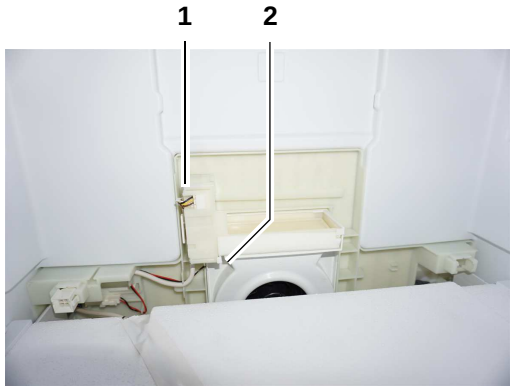



- Undo the fastening screw **3** on the air duct panel.
- Remove air duct panel **4**.



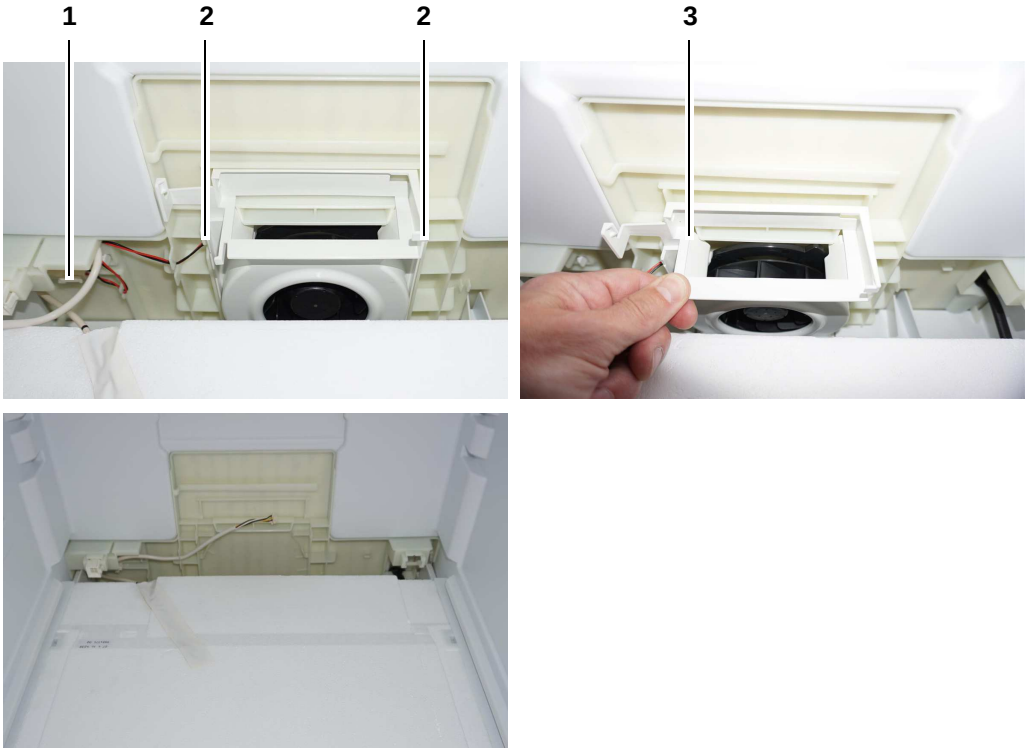

- Unlock insulation panel upper section **5**.
- Remove insulation panel upper section **6** by drawing it out to the front.

**Air flap**



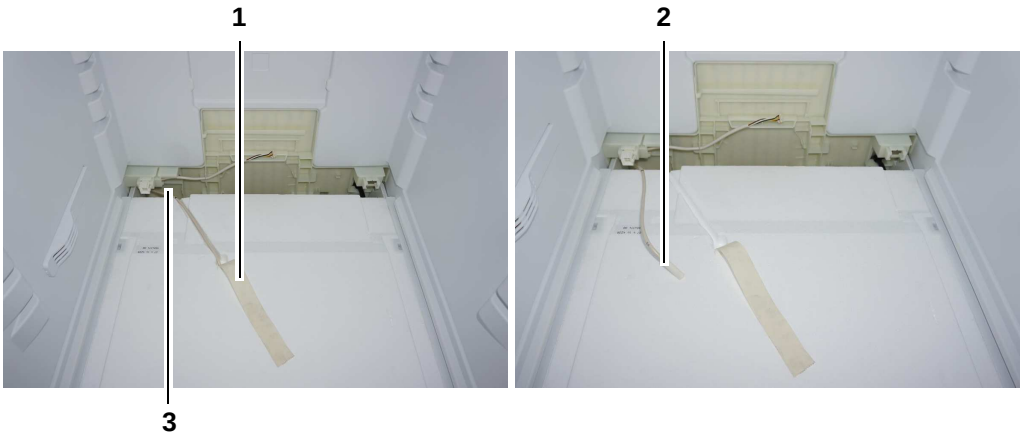

- Unlock and remove the air flap plug **1** by pressing in the centre lug.
- Unlock the air flap by pressing the holding lug **2** to the right and swinging it out to the front.

## Fan



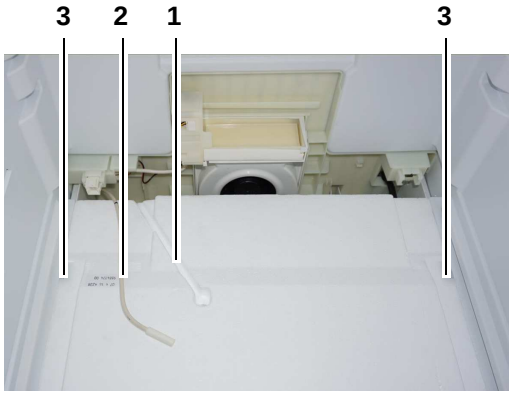

- Unlock fan plug **1** to reveal connection wires.
- Unlock the fan housing on the engagement lugs **2** and draw it forwards.
- Draw fan housing carefully upwards to stop.
- Press the underside of the fan housing off the rear wall and draw it upwards.

## Evaporator sensor




- Remove the adhesive strips **1** (mount again on installation).
- Pull the evaporator sensor **2** upwards.
- Position sensor repair box **3**.

## Evaporator

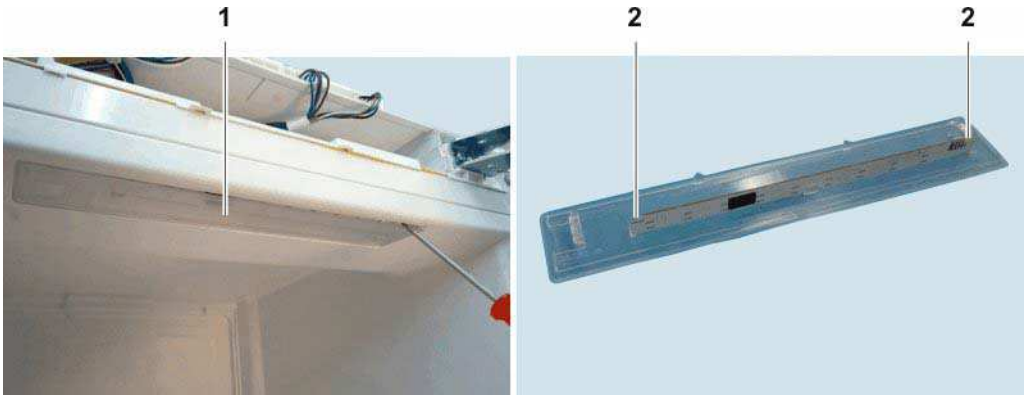



- Remove the adhesive strips **1** (mount again on installation).
- Pull the evaporator sensor **2** upwards.
- Unlock the fastening clip **3** and draw it out and upwards.
- Push the insulation panel slightly to the rear and remove it by drawing it upwards.

### 6.1.3.4 Refrigerator compartment ceiling light

**DANGER**
Dangerous voltage!
Danger to life.
- Ensure that the appliance is de-energised.

**LED light cover**




- Using a screwdriver, undo the latching by applying a pendulum motion.
- Pull the LED lighting unit **1** downwards (latched twice).
- Remove the LED lighting unit by moving it to the bottom right.

**LED PCB**

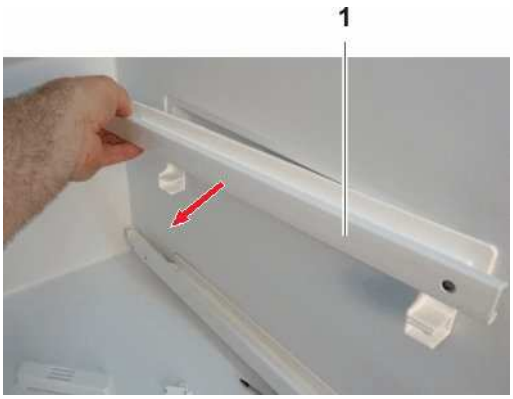
- Unlock the LED PCB from the locking points **2**.
- Lift out the LED PCB upwards.

### 6.1.3.5 BioFresh pull-out rails

**Drawers**

- Lift the BioFresh drawers up at the rear.
- Draw out towards the front.

**Pull-out rail**




- Take a firm grip on the back of pull-out rail **1**.
- Draw out pull-out rail **1**.

### 6.1.3.6 Door magnet

- The door magnet is foamed into the upper part of the door, above the door seal.
- The door magnet is not replaceable.

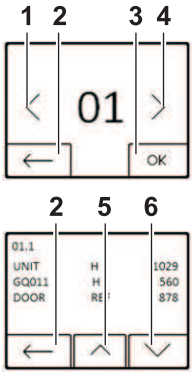
### 6.1.3.7 Door switch

- The door switch is located on the electronic control system.
- The electronic control system must be replaced if defective.

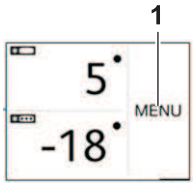
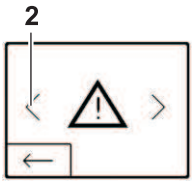
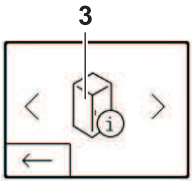
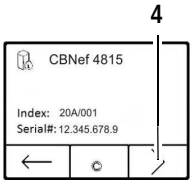
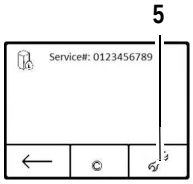
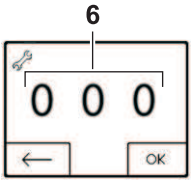
## 6.2 Service menu

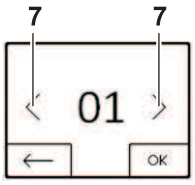
The service menu may only be used by service engineers. Only data concerning consumers, sensors and functions that are present in the appliance are displayed in the service menu.

This service menu describes more functions than are available in the respective appliance.

| Display | Control unit |
| --- | --- |
|  | ▸ Assume the selected function with OK **3**.<br>▸ Select values using arrow buttons **1**/**4**/**5**/**6**.<br>▸ Jump one stage back by pressing the back arrow **2**. |

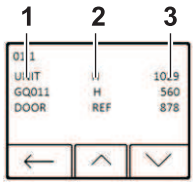
### 6.2.1 Call up the service menu

| Display | Control unit |
|---|---|
|  | ▶ Press the MENU button **1**. |
|  | ▶ Press arrow **2**. |
|  | ▶ Press symbol **3**. |
|  | ▶ Press arrow **4**.<br>Appliance information. |
|  | ▶ Press symbol **5**.<br>Appliance information. |
|  | ▶ Set menus with codes **6**.<br>■ Customer menu: 151<br>■ Dealer menu: 254<br>■ Service menu: 341 |

| Display | Control unit |
|---|---|
|  | ▸ Call up functions with arrow buttons **7**.<br>▸ Confirm with "OK".<br>The following functions are available:<br>■ 01: Retrieve saved files<br>■ 02: Display customer-set values and the associated factory settings<br>■ 03: Display values / status information (e.g. sensor values)<br>■ 04: Individually actuate consumers (e.g. compressor)<br>■ 05: Check touch function and display<br>■ 06: Set water intake values<br>■ 07: RESET to factory settings<br>■ 08: Manual defrosting |

### 6.2.2 Call up saved data

Counters for operating hours, door openings, power failures, defrost cycles, etc. can be queried in **Service Menu 01**.

| Display | Control unit |
|---|---|
|  | ▸ Call up menu **01**.<br>■ Column **1** = Action<br>■ Column **2** = Unit<br>■ Column **3** = Values |

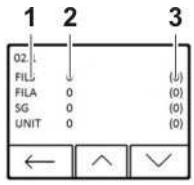
| | |
|---|---|
| | Values are only saved each week. |

| Action (1) | | Unit (2) | | Values (3) |
|---|---|---|---|---|
| Abbreviation | Designation | Abbreviation | Designation | |
| DEFR | Defrost cycles | BIO | BioFresh | Numerical values |
| DOOR | Door openings | CNT | Quantity | |
| GQ011 | Operating hours of Compressor 1 | H | Hours | |
| GQ012 | Operating hours of Compressor 2 | FRZ | Freezer compartment (Freezer) | |
| IM | Operating hours of the IceMaker | MAX | Maximum numbers | |
| PWCUT | Power failure | REF | Refrigerator compartment (Refrigerator) | |
| UNIT | Operating hours of the appliance | W1 (2, 3) | Wine 1 (2, 3) | |
| UNITX | Operating hours of the appliance prior to conversion | | | |

### 6.2.3 Call up set values

Values that can be altered by the customer can be viewed and compared with the factory settings in **Service Menu 02**.

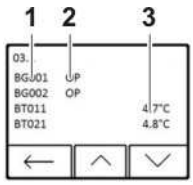
Status query of the filter (e.g. dust, water) or certain functions.

| Display | Control unit |
|---|---|
|  | ▸ Call up menu **02**.<br>■ Column **1** = Query<br>■ Column **2** = Appliance setting/status<br>■ Column **3** = Values/factory settings |

| Query (1) | | Appliance setting/status (2) | Values (3) |
|---|---|---|---|
| **Abbreviation** | **Designation** | | |
| BIO | b-value<br>BioFresh setting | Numerical values | Numerical values |
| BIO+ | b-value<br>BioFreshPlus setting | | |
| FILA | Status of the activated charcoal filter | | |
| FILS | Status of the dust filter | | |
| FILW | Status of the water filter | | |
| H | Display brightness stage | | |
| SG | Status of SmartGrid | | |
| UNIT | Temperature unit display | | |
| WATER | Water intake time stage | | |

### 6.2.4 Call up status information

The current values and status information regarding the consumers and sensors are displayed in **Service Menu 03**.

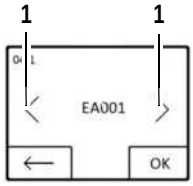
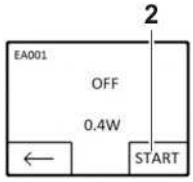
| Display | Control unit |
|---|---|
|  | ▶ Call up menu **03**.<br>■ Column **1** = Action<br>■ Column **2** = Switching status<br>■ Column **3** = Values |
| | It is always the value of the normal temperature control which is displayed, not the value of an activated function.<br>(e.g. SuperFrost is activated, speed goes to Step4 = high speed. Step1 is displayed as only Step1 = low speed is requested according to the temperature control. |

| Action (1) | | Switching status (2) | | Values (3) |
|---|---|---|---|---|
| Abbreviation | Designation | Abbreviation | Designation | |
| BG001 | Refrigerator compartment door switch | OP | Open | Numerical values |
| BG002 | Freezer door switch | CLO | Closed | |
| BT001 | BioFresh air sensor | ON | On | |
| BT011 | Refrigerator compartment air sensor | OFF | OFF | |
| BT021 | Refrigerator compartment evaporator sensor | A | Direction A | |
| BT031 | Freezer compartment air sensor | B | Direction B | |
| BT041 | Freezer compartment evaporator sensor | OPEN | Open | |
| BT071 | Ambient air sensor | | | |
| EA001 | Refrigerator compartment lighting | | | |
| EA002 | Freezer compartment lighting | | | |

| Action (1) | | Switching status (2) | | Values (3) |
|---|---|---|---|---|
| Abbreviation | Designation | Abbreviation | Designation | |
| EA021 | Dispenser lighting | | | |
| EA022 | Left paddle lighting | | | |
| EA023 | Right paddle lighting | | | |
| EB011 | Freezer compartment defrost heater | | | |
| EB030 | Water intake heater | | | |
| GP011 | Water tank pump | | | |
| GQ011 | Compressor 1 | | | |
| GQ012 | Compressor 2 | | | |
| GQ021 | Refrigerator compartment fan, DC | | | |
| GQ022 | BioFresh fan, DC | | | |
| GQ025 | Freezer compartment fan, DC | | | |
| GQ033 | Fan condenser, DC (speed-monitored) | | | |
| GQ040 | Refrigerator compartment fan, AC | | | |
| GQ041 | Freezer compartment fan, AC | | | |
| KH011 | 3-way refrigerant solenoid valve | | | |
| KH013 | Wine 1, 2 refrigerant solenoid valve | | | |
| KH014 | Refrigerant solenoid valve stop | | | |
| KH018 | Stepper motor valve | | | |
| KH021 | Water intake solenoid valve | | | |
| MA001 | IceMaker motor | | | |
| MA020 | Feed screw motor | | | |
| QN012 | BioFresh air flap | | | |

### 6.2.5 Actuate consumers individually

The consumers can be individually actuated in **Service Menu 04**. In some cases, the current power input is displayed.

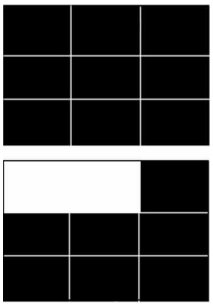
| Display | Control unit |
|---|---|
|  | ▸ Call up menu **04**.<br>▸ Call up components with arrow buttons **1** (see Table below).<br>▸ Confirm with "OK". |
|  | ▸ Activate components with "START" **2**.<br>☐ The current value **3** is shown. |
| | Measurement tolerances max. +/- 15% |

| Action (1) | | Unit (2) | | Values (3) |
|---|---|---|---|---|
| Abbreviation | Designation | Abbreviation | Designation | |
| EA001 | Refrigerator compartment lighting | H | Hours | Numerical values |
| EA002 | Freezer compartment lighting | REF | Refrigerator compartment (Refrigerator) | |
| EA021 | Dispenser lighting | BIO | BioFresh | |
| EA022 | Left paddle lighting | W1 | Wine 1 | |
| EA023 | Right paddle lighting | W2 | Wine 2 | |
| EB011 | Freezer compartment defrost heater | W3 | Wine 3 | |
| EB030 | Water intake heater | FRZ | Freezer compartment (Freezer) | |
| GP011 | Water tank pump | CNT | Quantity | |
| GQ011 | Compressor 1 | MAX | Quantity | |
| GQ012 | Compressor 2 | OPEN | Open | |
| GQ021 | Refrigerator compartment fan, DC | CLOSE | Closed | |
| GQ022 | BioFresh fan, DC | MOVING | Moving | |
| GQ025 | Freezer compartment fan, DC | | | |
| GQ033 | Fan condenser, DC (speed-monitored) | | | |
| GQ040 | Refrigerator compartment fan, AC | | | |
| GQ041 | Freezer compartment fan, AC | | | |
| KH011 | 3-way refrigerant solenoid valve | | | |

| Action (1) | | Unit (2) | | Values (3) |
|---|---|---|---|---|
| Abbreviation | Designation | Abbreviation | Designation | |
| KH013 | Wine 1, 2 refrigerant solenoid valve | | | |
| KH014 | Refrigerant solenoid valve stop | | | |
| KH018 | Stepper motor valve | | | |
| KH021 | Water intake solenoid valve | | | |
| MA001 | IceMaker motor | | | |
| MA020 | Feed screw motor | | | |
| QN012 | BioFresh air flap | | | |

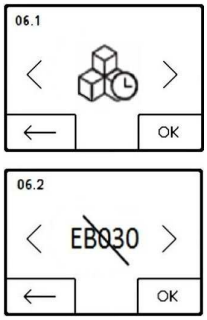
### 6.2.6 Check touch function, display and buzzer

The function of the touch buttons is examined, a visual inspection of the display in terms of pixel errors is performed and the buzzer function is tested in **Service Menu 05**.

| Display | Control unit |
|---|---|
|  | ▸ Call up menu **05**.<br>▸ Press the 9 black touch fields one after the other.<br>▸ Press the fully white button once.<br>▸ The unit beeps (buzzer). |

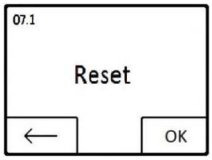
### 6.2.7 Set water intake options (optional)

The ice cube size can be set and the water intake heater can be triggered in **Service Menu 06**.

| Display | Control unit |
|---|---|
|  | ▸ Call up menu **06**.<br>■ Set the ice cube size<br>■ Trigger the water intake heater |

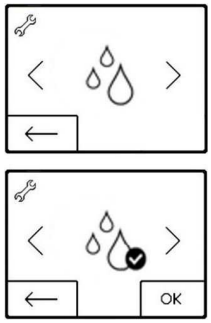
### 6.2.8 Reset to factory settings

The appliance can be set to the factory settings in **service menu 07.**

| Display | Control unit |
|---|---|
|  | ▸ Call up menu **07**.<br>▸ Confirm with OK<br>(The appliance is reset to the factory settings) |

### 6.2.9 Manual defrosting (optional)

The freezer compartment defrost heater can be manually started in **Service Menu 08**. The defrosting ends automatically once the switch-off value has been reached.

| Display | Control unit |
|---|---|
|    | ▸ Call up menu **08**.<br>▸ An animation of the water drop symbol appears and indicates an active manual defrosting.<br>▸ A tick appears next to the water drop symbol once the defrosting has been completed.<br>▸ Confirm with OK. |

## 6.3 Error code

### 6.3.1 Table of error codes

| | Error code | Defective component | Emergency mode |
|---|---|---|---|
|  | BT011 | Refrigerator compartment air sensor | ■ Refrigeration ON - 70 minutes<br>■ Refrigeration OFF - 70 minutes |
| | BT021 | Refrigerator compartment evaporator sensor | |
| | BT071 | Ambient air sensor | ■ Ambient temperature is specified. |
| | GQ033 | Base compartment fan | -- |
| | PH00X | Communication error | -- |
| | PZ001 | UI hardware | -- |
| | PZ002 | UI memory | -- |

**NOTE***
Ambient sensor error is only tested and displayed in the operating panel test of the Customer Service mode.

# 7 Technical data

## 7.1 Appliance as a whole

**Sensor values**

**Sensor in refrigerator BioFresh compartment:**

- Air sensor
- Evaporator sensor
- BioFresh air sensor

| Temperature [°C] | Resistance value [kOhm] |
|---|---|
| +35 | 3.1 |
| +30 | 3.8 |
| +25 | 4.7 |
| +20 | 5.9 |
| +15 | 7.3 |
| +10 | 9.3 |
| +5 | 11.9 |
| 0 | 15.3 |
| -5 | 19.8 |
| -10 | 25.9 |
| -15 | 34.1 |
| -20 | 45.3 |
| -25 | 60.8 |
| -30 | 82.3 |
| -35 | 112.8 |

**Consumers**

| | | |
|---|---|---|
| Base fan | Output | 1 Watt |
| | Voltage | 9 volts/DC (6V to 12V) |

## 7.2 Refrigerator BioFresh compartment

**Consumers**

| | | |
|---|---|---|
| Ceiling light | Output | 2.5 Watt |
| | Voltage | 13 Volt/DC |
| Fan | Output | 0.9 Watt |
| | Voltage | 9 volts/DC (6V–15V) |
| Air flap | Voltage | 13 Volt/DC |
| | Current | 60 mA |

# 8 Index

## INDEX