Appliance Documentation

ICBN 3056 from Index 21 Premium
ICBN 3066 from Index 20 PremiumPlus
with IceMaker, LED light column,
BioFresh and freezer compartment lighting

Refrigerator for integrated use BioFresh NoFrost

ICBN 3056

ICBN 3066

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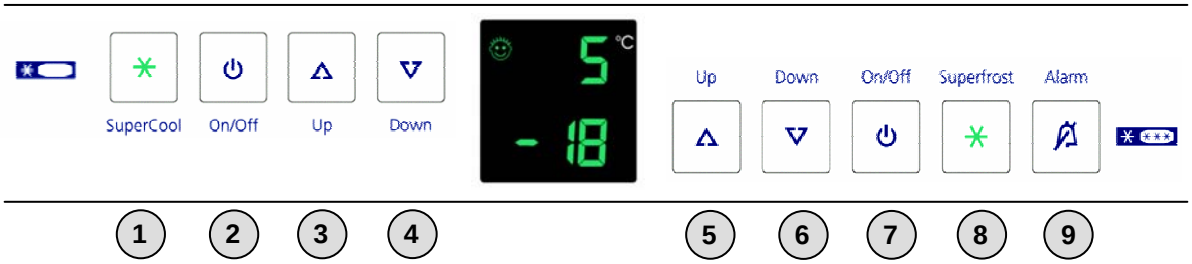
1.0 Operating and control elements



Refrigerator BioFresh compartment	Freezer compartment
1 : SuperCool function, button lit = function switched on.	**5 : Setting button** temperature **higher**
2 : On/Off button	**6 : Setting button** temperature **lower**
3 : Setting button temperature **higher**	**7 : On/Off button**
4 : Setting button temperature **lower**	**8 : SuperFrost function**, button lit = function switched on.
	9 : Alarm Off button for audible alarm

2.0 Functions at a glance

Control:	Electronic control system	
Temperature display:	Refrigerator compartment: Freezer compartment:	Actual value Actual value
Temperature range:	Refrigerator compartment: Freezer compartment:	+4°C to +9°C -16°C to -26°C
Temperature alarm:	Refrigerator compartment: BioFresh compartment: Freezer compartment:	Not fitted Not fitted Visual and audible
Door alarm:	Refrigerator compartment: Freezer compartment:	Audible Audible
Fan:	Refrigerator compartment: Freezer compartment:	Fitted Fitted
Defrosting:	Refrigerator compartment: Freezer compartment:	Automatic Automatic
Interior light:	Refrigerator compartment: BioFresh compartment: Freezer compartment:	Fitted Only ICBN 3066 Only ICBN 3066
Service menu:	Present	
Compressor:	VCC	
Solenoid valve-refrigeration circuit:	Present	

3.0 Description of the appliance

The **ICBN** is a refrigerator for integrated use with BioFresh and NoFrost freezer compartment.
The appliance has a compressor. The refrigeration control of the refrigerator-BioFresh evaporator and freezer evaporator is effected via a bi-stable solenoid valve. The two evaporators are connected in series (**see schematic diagram 4.2.4**). Therefore the refrigerator compartment can be operated only in conjunction with the freezer compartment. However, it is possible to operate the freezer compartment on its own.

Refrigerator and BioFresh compartment:

Refrigerator compartment and BioFresh compartment are cooled by way of a common evaporator. The foamed-in evaporator is situated behind the rear wall of the liner and is thermally partitioned by an insulated, vertical separating plate.

A d.c. fan is used for temperature adjustment between refrigerator compartment and BioFresh compartment. The fan is integrated in the vertical separating plate. If the refrigerator compartment requires refrigeration (detection by refrigerator compartment air sensor), the fan is switched on. The fan takes in warm air from the front and blows it past the evaporator in a downward direction. The air that is now cold is conducted past the BioFresh drawers upwards into the refrigerator compartment.

When it is sufficiently cold in the refrigerator compartment, the fan is switched off. The compressor continues running and the BioFresh drawers are statically cooled by the falling coldness. The compressor continues to run/the solenoid valve is at the A setting (cooling + freezing) until such time as the air in the BioFresh compartment is sufficiently cold (detection by BioFresh air sensor).

Freezer compartment:
The freezer compartment is equipped with a NoFrost rear wall evaporator module, fan module, air sensor and evaporator sensor. Both sensors can be replaced separately.
The temperature display and the cooling activation/deactivation are effected by the air sensor.
The evaporator sensor serves for the control of the freezer compartment fan and for the defrosting of the evaporator module.

For defrost water drainage of the refrigerator and freezer compartments, an evaporating tray heated by hot gas is installed next to the compressor.

3.1 ICBN 3056: Sensor positions, schematic diagrams

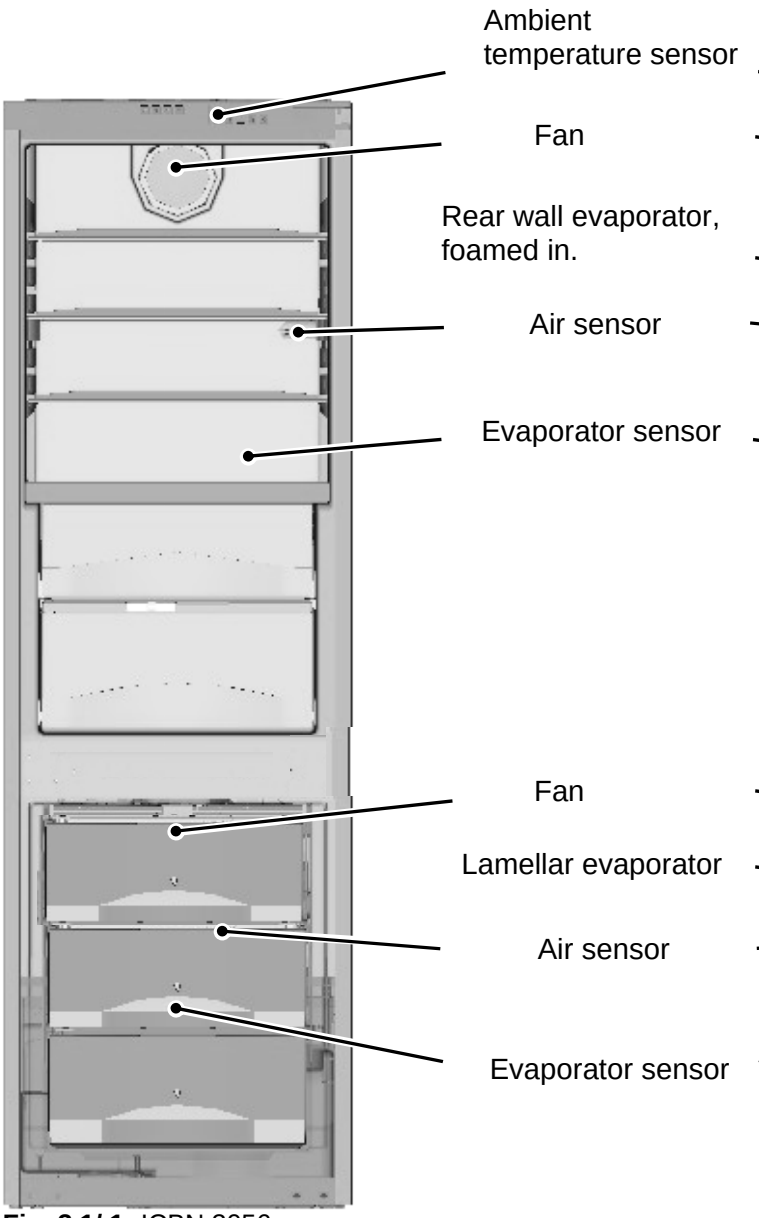


Fig. 3.1/ 1: ICBN 3056

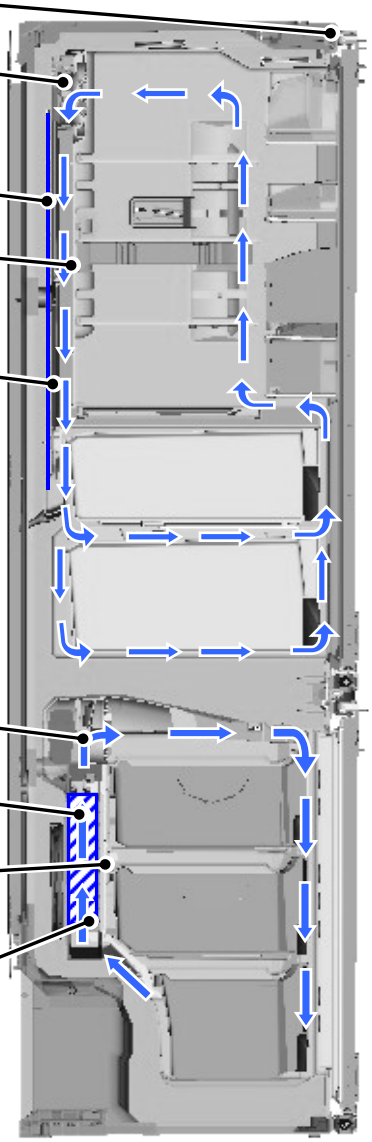


Fig. 3.1 / 2: ICBN 3056

3.2 ICBN 3066: Sensor positions, schematic diagrams

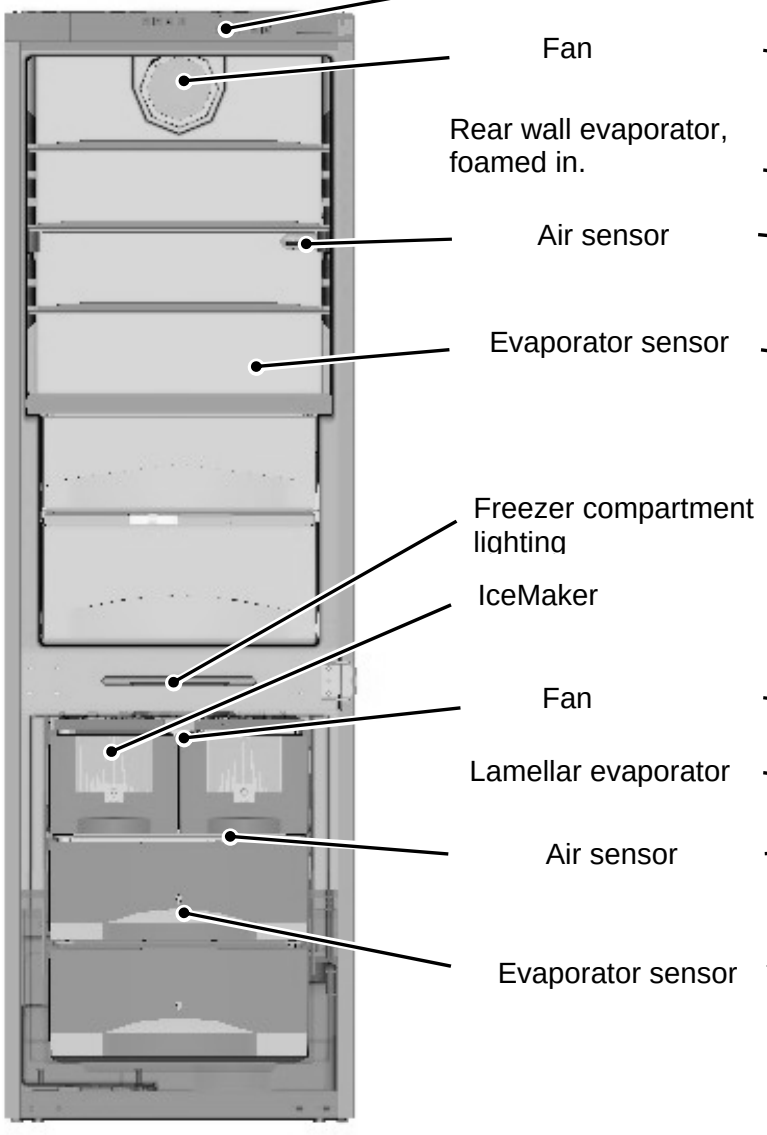


Fig. 3.2 / 1: ICBN 3066

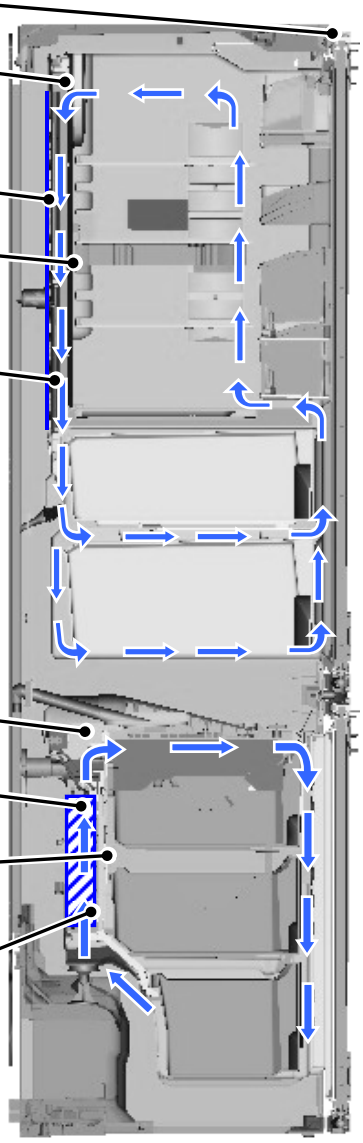


Fig. 3.2 / 2: ICBN 3066

4.0 Main components and their functions

4.1 Electrical components and functions

4.1.1 General

Electronic control system

Type:	Series 6 electronic control system
Components:	Control panel and power PCB

Compressor

Type:	VCC compressor, frequency-controlled.
Function:	**On:** Refrigerator compartment evaporator sensor switch-on value or freezer compartment air sensor switch-on value Note: On-delay time (8 mins.) must have elapsed. **Off:** BioFresh air sensor switch-off value and freezer compartment air sensor switch-off value

VCC compressor, frequency-controlled.

- Compressor with 4 different speeds (
  1600 / 1900 / 3000 / 3600 rpm).
- The inverter electronic control is fitted directly on the compressor. The inverter electronic control controls the compressor with a pulse-width modulated square-wave voltage.
- For speed value input, the inverter electronic module receives a square wave frequency signal from the power PCB.
  This frequency signal is output with 56, 71, 87,100 or 117 Hz, depending on the speed at which the compressor is to run.

Frequency in Hz	Speed in rpm	Operation
56	Compressor On	Compressor Off
71	1600	Ideal case
87	1900	Regular operation
100, 0 (signal interruption), other values than the defined frequencies	3000	Start-up, signal interruption, signal fault
117	3600	SuperFrost

- **Runtime longer than 70 minutes:**
  Speed increase by one step during compressor operation.
- **Runtime shorter than 50 minutes:**
  Speed reduction on next start-up.

Troubleshooting see section 8.2 Toubleshooting VCC compressor / inverter

Solenoid valve refrigeration circuit

Type:	Bistable
Function:	Switchover between REFRIGERATOR BIOFRESH COMPARTMENT + FREEZER COMPARTMENT to only FREEZER COMPARTMENT

4.1.2 Refrigerator BioFresh compartment

Electronic control system		
Setting range:	Refrigerator compartment:	+4°C to +9°C
	BioFresh compartment:	b1 to b9 (b1: Coldest setting; 0.8K per step)
Display range:	4°C to 49°C (actual value display) Temperatures equal to and colder than +4°C are displayed with 4°C.	
Functions		
SuperCool:	**SuperCool On:** Refrigerator compartment sets itself for 6 hours to +4°C. The BioFresh temperature remains unchanged. **SuperCool Off:** The refrigerator compartment sets itself to the set value.	
Defrosting:	- Automatic if solenoid valve in position B (freezer compartment only). - Automatic during standstill phase of the compressor.	
Door alarm:	When:	After the door has been open for 60 seconds.
	Audible:	3 beeps.
Sensor		
Refrigerator compartment air sensor:	Position:	Behind vertical separating plate.
	Function:	- Switches the fan on/off. - Generates the display value
Evaporator sensor:	Position:	In sensor holder on compartment liner rear wall.
	Function:	- Refrigerator compartment evaporator sensor or freezer compartment air sensor, switches the compressor on. - The solenoid valve is switched to position A (cooling + freezing). - Ends defrosting phase.
BioFresh air sensor:	Position:	Under horizontal separating plate, clipped into vertical separating plate.
	Function:	- BioFresh air sensor and freezer compartment air sensor switch the compressor off. - Switches solenoid valve to position B (freezer only).
Ambient air sensor:	Position:	On the power PCB.
	Function:	Controls the switch-off value of the BioFresh air sensor. That way temperature fluctuations in the BioFresh compartment are minimized. An ambient air sensor error is displayed only in the service menu. In case of fault, the switch-off value of the BioFresh air sensor is not affected.
	Info:	In case of a defect the power PCB has to be replaced.

Switch

Door switch:

Position: In front panel.

Type: Reed PCB

Contact type: Make contact

Function: **Activation via:**
magnet on the door, magnet is replaceable.

Switching signal when:

door closed:	fan	on
	interior light	off
door open:	fan	off
	interior light	on
	door alarm	on after 60 sec.

Loads

Fan:

Position: Centre of liner ceiling, behind vertical separating plate.

Function:

Refrigerator compartment air sensor	Compressor	Door	Fan
Switch-on value (refrigerator compartment warm)	OFF	CLOSED	**ON low speed**
Switch-on value (refrigerator compartment warm)	ON	CLOSED	**ON high speed**
Switch-on value (refrigerator compartment warm)	ON/OFF	OPEN	**OFF**
Switch-off value (refrigerator compartment cold)	ON/OFF	CLOSED /OPEN	**OFF**

e.g. if the refrigerator compartment air sensor is warm, i.e. fan switch-on value is reached, **and** the compressor is ON **and** the door is closed, **then** the fan is **ON high speed**.

Control:

Low speed	7V/DC
High speed	9V/DC

Refrigerator compartment interior light

Position: ICBN 3056: Inside right.
ICBN 3066: Inside right and left.

Function:
- Lights up as soon as door is opened.
- Is switched off after door has been open for 15 minutes.

BioFresh compartment interior light: (Only ICBN 3066)

Position: Inside left.

Function:
- Lights up as soon as door is opened.
- Is switched off after door has been open for 15 minutes.

4.1.3 Freezer compartment

Electronic control system	
Setting range:	-16°C to -26°C
Display range:	0°C to -50°C (actual value display) Values outside the range are indicated by a crossbar.

Functions		
Temperature alarm:	Alarm value:	4K warmer than set value.
	SuperFrost alarm value:	-12°C.
	Delay:	20 min.
	Visual:	Flashing temperature display.
	Audible:	4 beeps.
	During start-up:	During start-up the temperature display flashes until switch-off value has been reached, the audible alarm is deactivated.
	(for example with a set value of -18°C, there must be a temperature of -14°C for at least 20 mins., then a temperature alarm is issued.)	
	When the defrosting phase begins, the temperature alarm is suppressed for 1.5 hrs.	
Defrosting:	The defrosting phase is started: - During start-up after 10 hours cumulative compressor running time. - After a cumulative compressor running time of 10 to 60 hours maximum, depending on the number/duration of the door openings. When the defrosting phase begins, the compressor and the fan are switched off and the defrost heater is switched on. The defrost heater remains switched on until - the freezer compartment evaporator sensor has reached +8°C or - a max. defrosting time of 40 minutes has been reached. After the end of the heating phase, the compressor is switched on with a 5 minute delay. If the SuperFrost function is activated during the defrosting phase, this will not interrupt defrosting.	
Door alarm:	When:	After the door has been open for 60 seconds.
	Audible:	3 beeps.
SuperFrost:	**<u>SuperFrost On:</u>** Freezer compartment sets itself to -39°C (quantity-controlled, min. 30 hrs., max. 65 hrs.) The appliance sets itself for at least 30 hours to -39°C. In the following 35 hours, after -39°C has been reached or a total time of 65 hours has elapsed, SuperFrost ends automatically. **<u>SuperFrost Off:</u>** The freezer compartment sets itself to the set value. **Attention:** If SuperFrost is actuated during a defrosting phase, the SuperFrost function is not performed before the defrosting phase has run.	

Sensor

Air sensor:

Position: Engaged in sensor holder in liner ceiling.

Function:
- Freezer compartment air sensor or refrigerator compartment evaporator sensor, switches the compressor on.
- BioFresh air sensor and freezer compartment air sensor switch the compressor off.
- Generates the display value

Evaporator sensor:

Position: Inserted into lamellar evaporator.

Function:
- Freezer compartment evaporator sensor and freezer compartment air sensor, switch the freezer compartment fan on.
- Ends defrosting phase

Switch

Door switch:

Position: In fan casing.

Type: Reed PCB

Contact type: Make contact

Function: **Activation via:**
magnet on the inside of the door is replaceable.

Switching signal when:

door closed:	fan	on
	interior light	off (ICBN 3066)
door open:	fan	off
	interior light	on (ICBN 3066)
	door alarm	on after 60 sec.

Loads

Fan:

Position: At top in middle of freezer compartment.

Function:

On:
- compressor on **and**
- freezer compartment door closed **and**
- evaporator sensor switch-on value reached.

Switch-on value evaporator sensor:
a) during start-up / after defrosting phase: -25°C.
b) in normal operation 2K colder than freezer compartment air sensor.

Off:
- compressor off **or**
- *Special case:* The refrigerator compartment air sensor is too warm and the freezer compartment sensor is at least 2K colder than the switch-off value. There is therefore more power available for the refrigerator compartment!

Defrost heater:

Position: Clipped into lamellar evaporator.

Function: Keeps the lamellar evaporator free of ice.
Control, see: Functions **Defrosting**

Interior light:
(Only ICBN 3066)

Position: On crosspiece.

Function:
- Lights up as soon as door is opened.
- Is switched off after door has been open for 15 minutes.

4.2 Refrigeration components and functions

4.2.1 General

Compressor	
Compressor:	VCC compressor, frequency-controlled.
Solenoid valve	
Solenoid valve:	Bistable

4.2.2 Refrigerator compartment

Evaporator	
Design:	Rear wall evaporator
Type of installation:	Foamed-in
Injection point:	Top centre
Flow sequence:	See **4.2.4 Operating principle of refrigerating system**

4.2.3 Freezer compartment

Evaporator	
Design:	Lamellar evaporator
Type of installation:	Free-standing between air duct cover and compartment liner.
Injection point:	Top right on lamellar evaporator.
Flow sequence:	See **4.2.4 Principle of operation of the refrigerating system**

4.2.4 Principle of operation of the refrigerating system

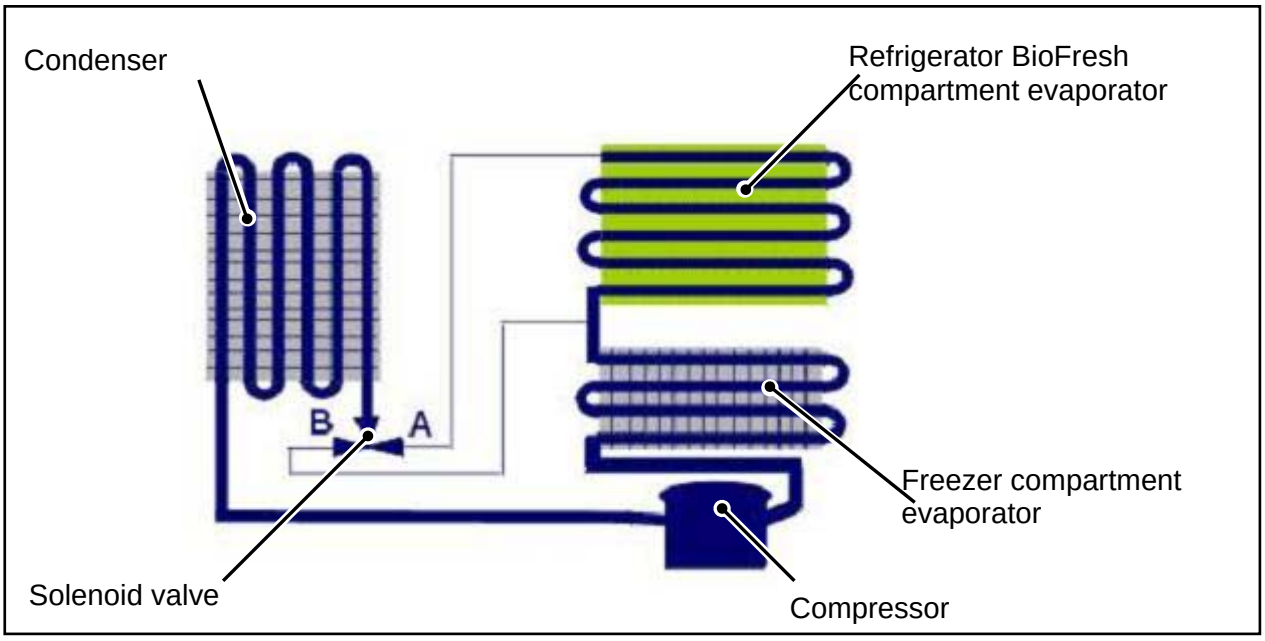


Fig. 4.2.4

5.0 Assembly instructions / replacement of parts

5.1 General

5.1.1 Electronic control system

Covers: Disengage covers at the marked points.

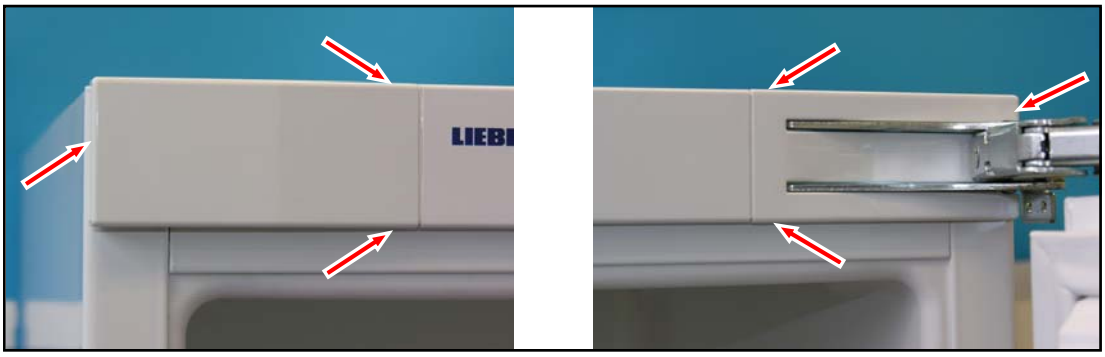


Fig. 5.1.1 / 1

PCB carrier: Draw out front casing in a forward direction and uncover the cables.

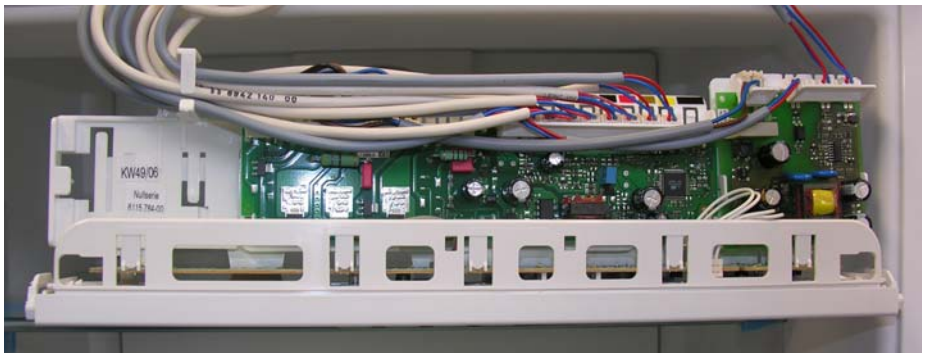


Fig. 5.1.1 / 2

Front panel: Release marked locks and remove front panel.

PCB mount: Release marked locks and remove PCB mount.

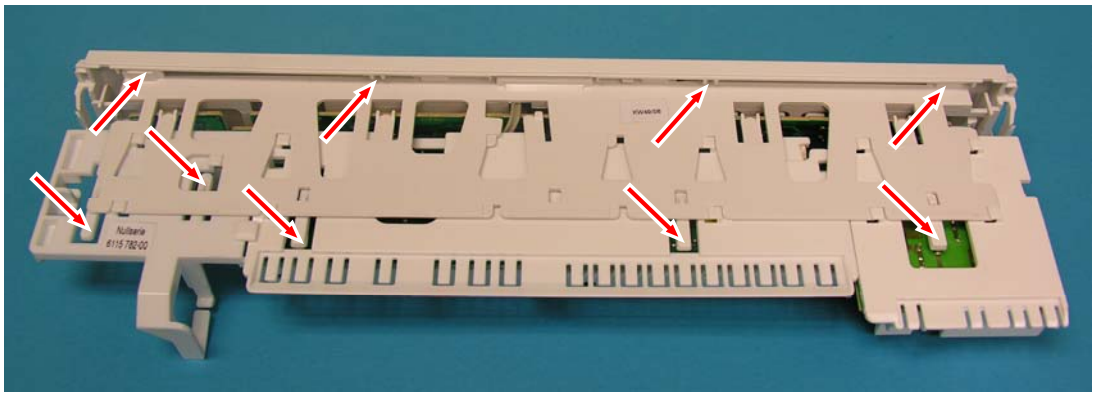


Fig. 5.1.1 / 3

PCB: Release marked locks with screwdriver and draw PCB out of the PCB carrier.

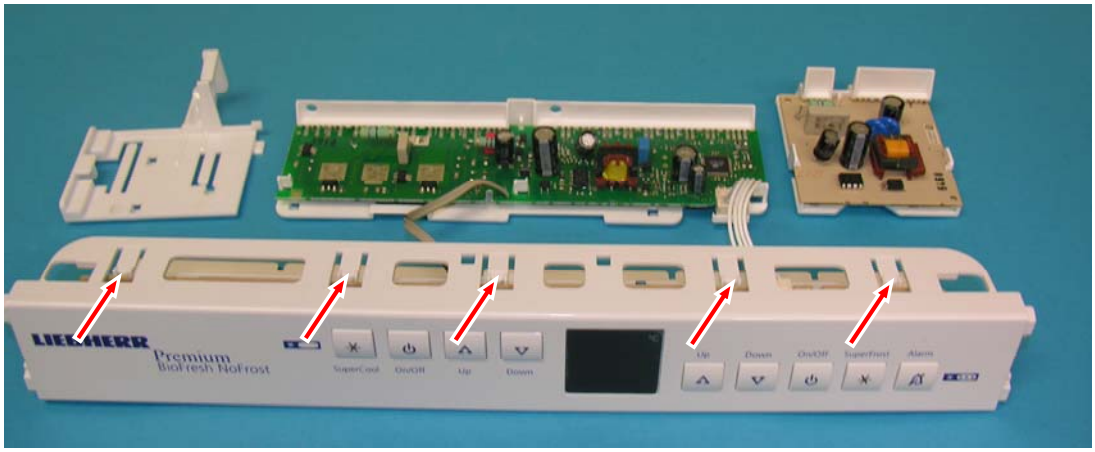


Fig. 5.1.1 / 4

Disengage the other PCBs and remove them from the PCB mounts.

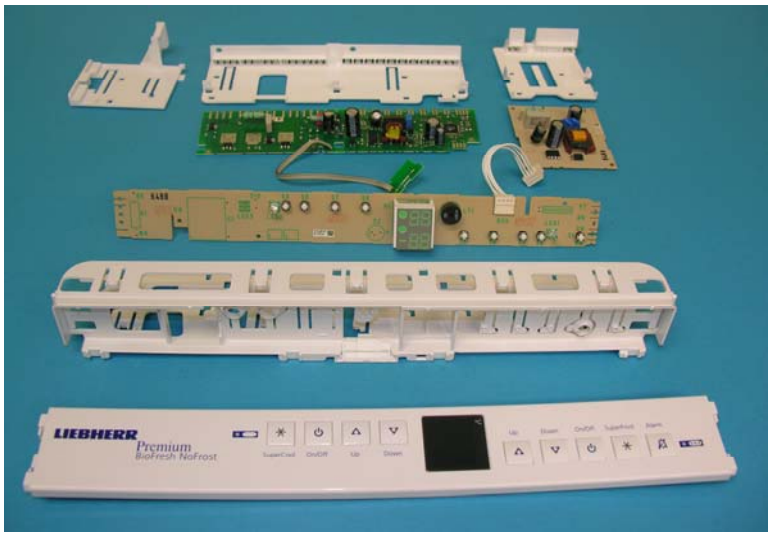


Fig. 5.1.1 / 5

5.1.2 Soft stop

Integrated on the doors, the SoftSystem cushions movement when the doors are closed. The door is closed automatically from an opening angle of approx. 30°.

Soft stop mechanism:
- Undo marked screw on hinge side and detach holder for soft stop mechanism.
- Lever off retaining clip with screwdriver and detach soft stop mechanism from spherical head.

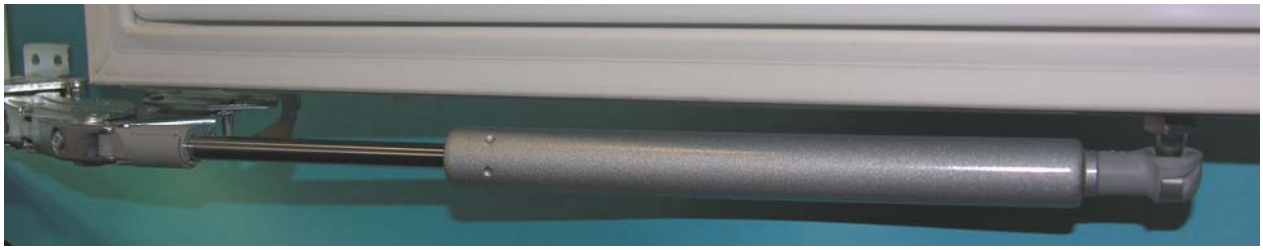


Fig. 5.1.2/ 1 Soft stop mechanism

Fig. 5.1.2/ 2 Screw hinge side

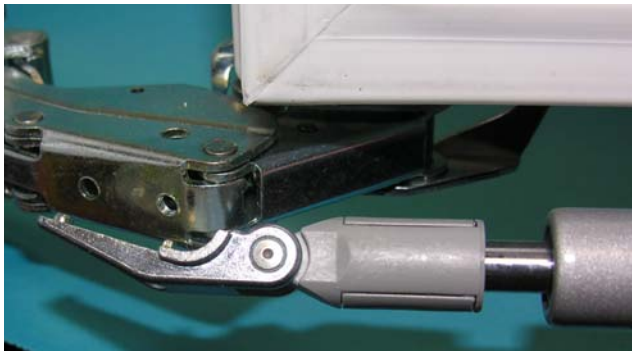


Fig. 5.1.2/ 3 Holder for soft stop mechanism

Fig. 5.1.2/ 4 Detaching soft stop mechanism from spherical head

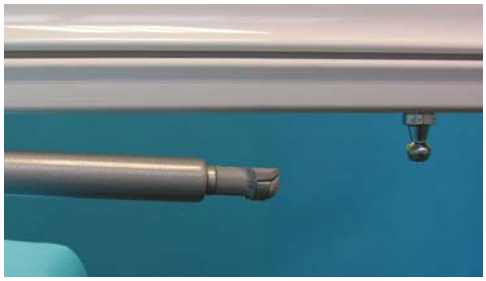


Fig. 5.1.2/ 5 Soft stop mechanism detached

5.1.3 Solenoid valve refrigeration circuit

Solenoid valve

When detaching the capillaries, pay attention that they are properly re-connected.

Marking on solenoid valve cover:

KS : Capillary refrigerator compartment
GS : Freezer compartment capillary

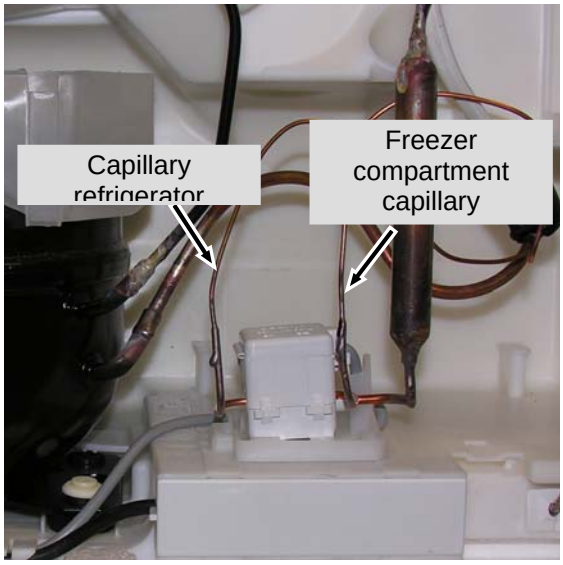


Fig. 5.1.3

5.2 Refrigerator compartment

5.2.1 Disassembling the horizontal separating plate

- Remove upper BioFresh drawer.
- Draw out separating plate in marked direction (no lock).

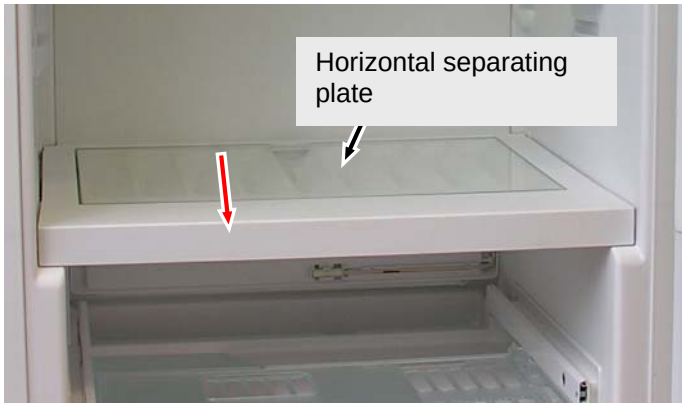


Fig. 5.2.1 / 1

5.2.2 Disassembling the vertical separating plate, accessing evaporator

- Disassemble the horizontal separating plate.
- Remove glass shelves.
- Disengage BioFresh air sensor.
- Release fastening screws (see **Fig. 5.2.2/ 1**) of the separating plate.
- Pull out refrigerator compartment air sensor and disconnect fan cable (see **Fig. 5.2.2/ 2**).

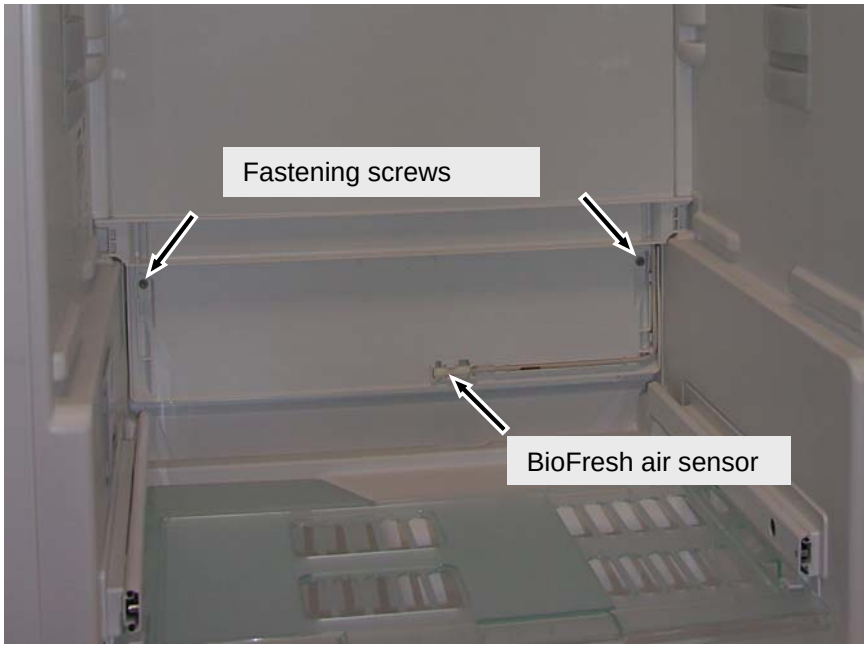


Fig. 5.2.2 / 1

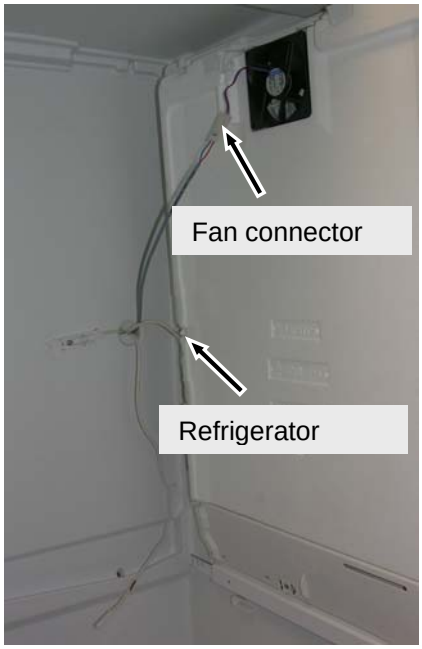


Fig. 5.2.2 / 2

During assembly pay attention that the retaining lugs of the vertical separating plate are slipped into the grooves of the compartment liner for fixing the separating plate at the top.

Fig. 5.2.2 / 3

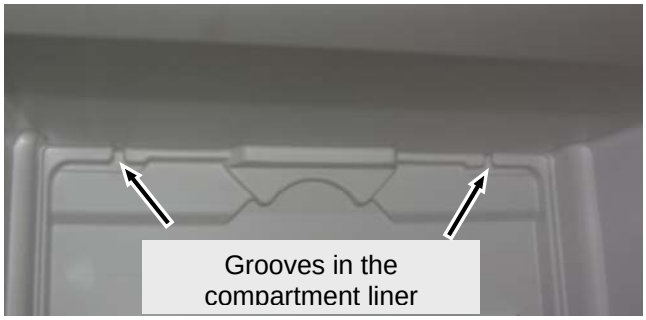


Fig. 5.2.2 / 4

5.2.3 BioFresh air sensor

BioFresh air sensor: Proceed as described under **5.2.1 Disassembling the horizontal separating plate** and **5.2.2 Disassembling the vertical separating plate, accessing evaporator**.

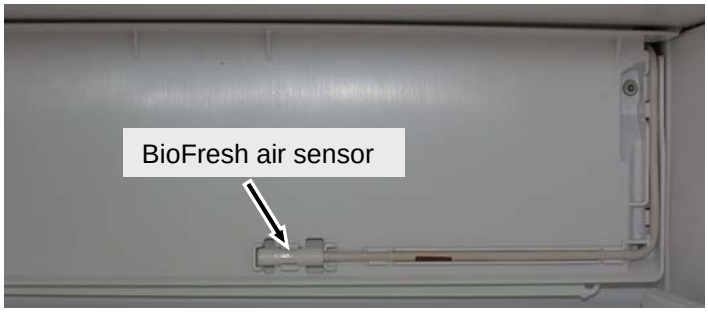


Fig. 5.2.3

5.2.4 Refrigerator compartment air sensor

Refrigerator compartment air sensor: - Proceed as described under **5.2.1 Disassembling the horizontal separating plate** and **5.2.2 Disassembling the vertical separating plate, accessing evaporator**.

- Draw refrigerator compartment air sensor (**Fig. 5.2.4/ 2**) from separating plate.

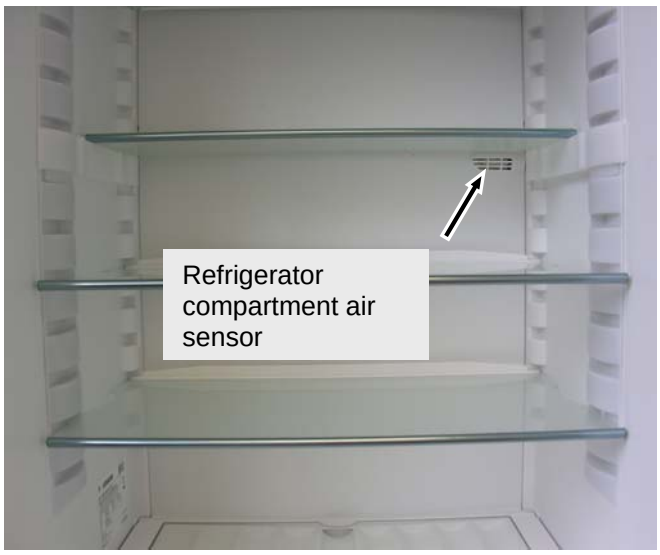


Fig. 5.2.4 / 1

Fig. 5.2.4 / 2

5.2.5 Evaporator sensor

Evaporator sensor:

- Proceed as described under **5.2.1 Disassembling the horizontal separating plate** and **5.2.2 Disassembling the vertical separating plate, accessing evaporator**.
- Unscrew sensor holder (**Fig. 5.2.5**) and unclip evaporator sensor.

Fig. 5.2.5 Evaporator sensor

5.2.6 Fan

Fan:

- Proceed as described under **5.2.1 Disassembling the horizontal separating plate** and **5.2.2 Disassembling the vertical separating plate, accessing evaporator**.
- Disconnect fan, release retaining clamps (**Fig. 5.2.6/ 1**) and use a screwdriver to press the fan from the rubber support at the marked locations (**Fig. 5.2.6/ 2**).

Note:
The direction of installation (direction of air current) is indicated by an arrow.
The arrow (see **Fig. 5.2.6/ 2**) has to point in the direction of the compartment liner (rear wall of appliance).

Fig. 5.2.6 / 1

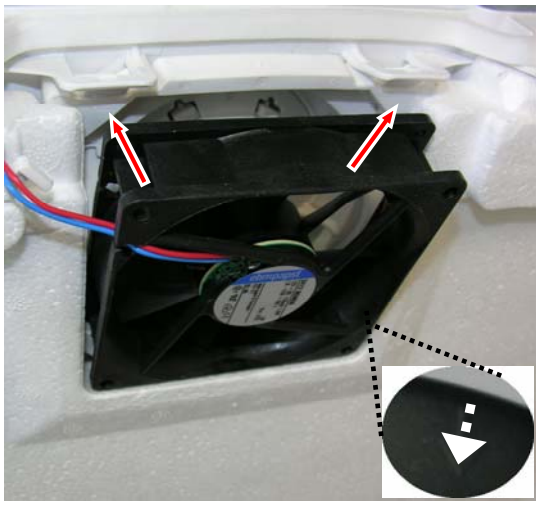


Fig. 5.2.6 / 2

5.2.7 Refrigerator compartment lighting in Premium appliances

Refrigerator compartment LED lighting:

- Unlock light cover using short screwdriver (**Fig. 5.2.7/ 1**).
- Undo fastening screws of light housing (**Fig. 5.2.7/ 2**).
- Unlock and remove connector (**Fig. 5.2.7/ 3**).
- Unlock LED lighting unit at the connector and cooling plate (**Fig. 5.2.7/ 4**).

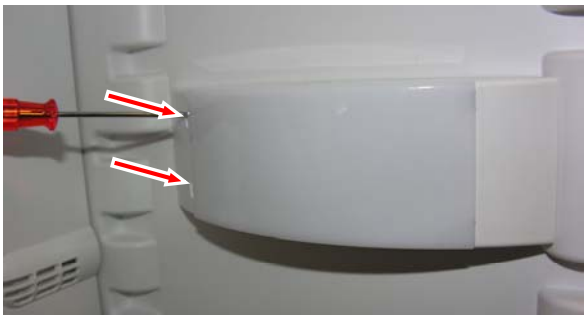


Fig. 5.2.7 / 1

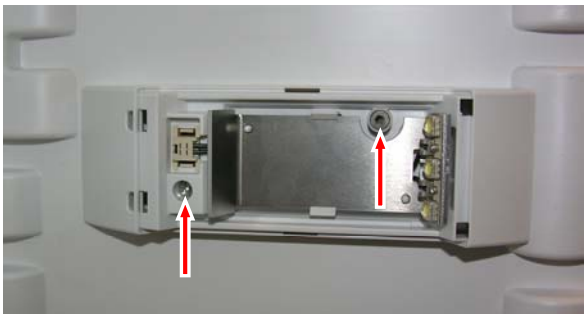


Fig. 5.2.7 / 2

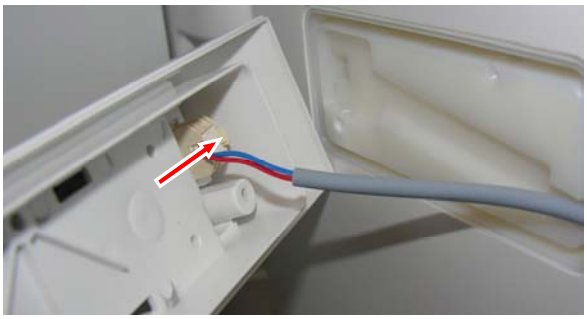


Fig. 5.2.7 / 3

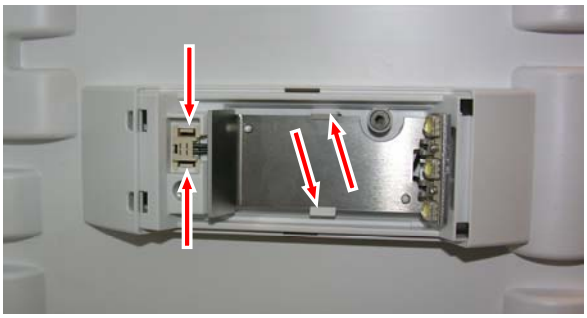


Fig. 5.2.7 / 4

5.2.8 Refrigerator compartment light column in PremiumPlus-appliances

LED light column:

- Using small screwdriver, turn cover cap with slot downwards.
- Insert screwdriver in slot and remove cover cap.
- Undo screws of light column.

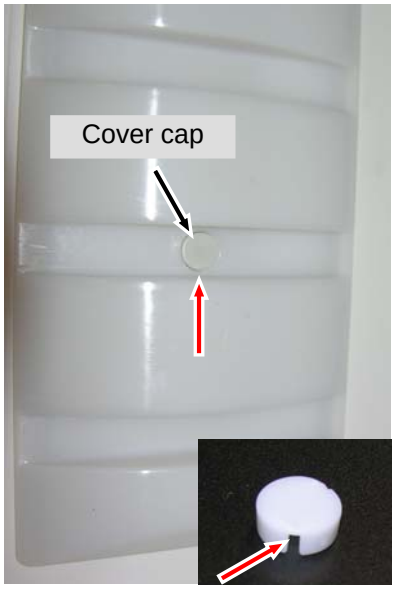


Fig. 5.2.8 / 1

Fig. 5.2.8 / 2

LED PCB:

- Unlock and pull off connector (Fig. **5.2.8/ 3**).
- Unlock PCB and connector socket at the marked locations **(Fig. 5.2.8/ 4)**.
- Lift PCB at an angle from the light cover.

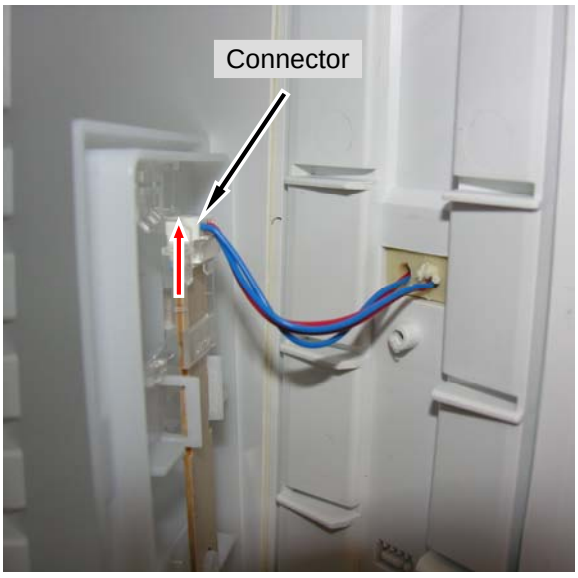
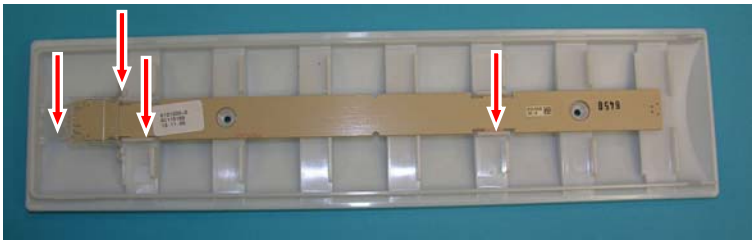


Fig. 5.2.8 / 3



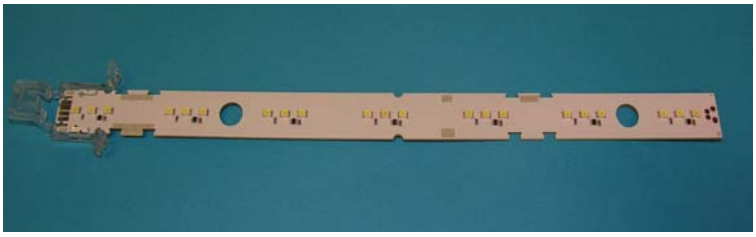


Fig. 5.2.8 / 4

INFO

One LED group comprising 3 LEDs is used for each illuminated support rib.
If a single LED of an LED group is defective, the entire LED group is inoperative.
All the other LEDs continue to shine.

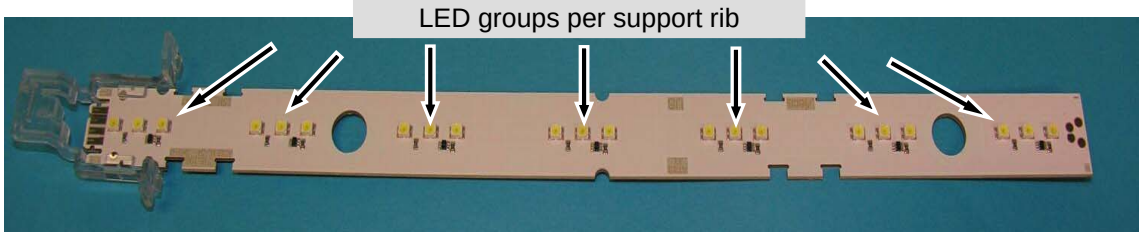


Fig. 5.2.8 / 5

5.2.9 BioFresh lighting in PremiumPlus-Geräten

BioFresh LED lighting:

- Unlock lighting unit (**Fig. 5.2.9/ 2**).
- Unlock and pull off connector (**Fig. 5.2.9/ 3**).
- Unlock LED PCB and remove PCB (**Fig. 5.2.9/ 4**).

Fig. 5.2.9 / 1

Fig. 5.2.9 / 2

Fig. 5.2.9 / 3

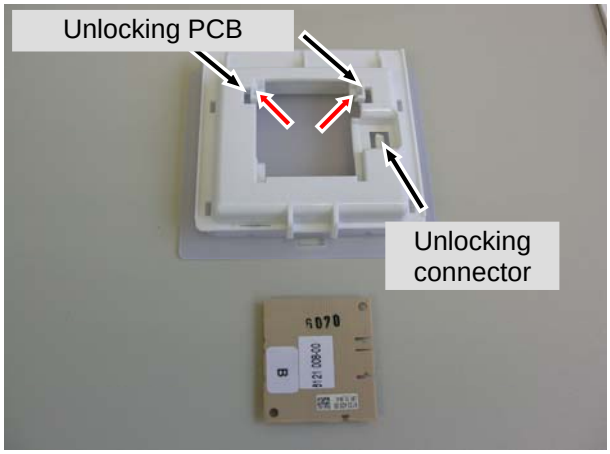


Fig. 5.2.9 / 4

5.2.10 BioFresh pull-out rails

Pull-out rail:

- Press in lock and press rail to the rear (**Fig. 5.2.10 / 1**).
- Support is replaceable (**Fig. 5.2.10/ 3**).

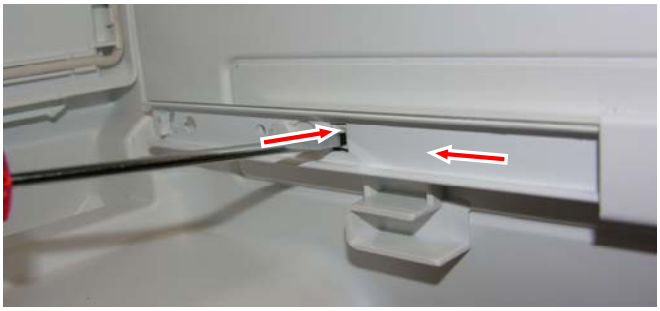


Fig. 5.2.10 / 1

Fig. 5.2.10 / 2

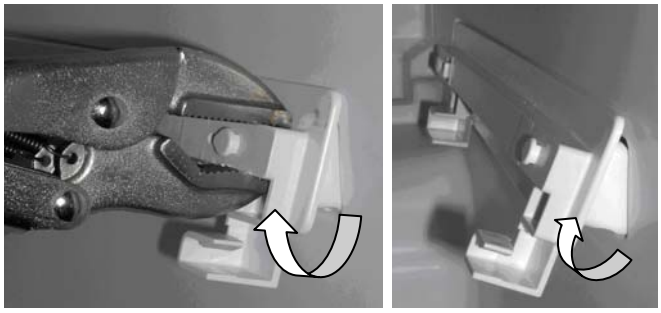


Fig. 5.2.10 / 3

5.2.11 Door magnet

Magnet holder: Press marked locating lugs together and detach magnet holder upwardly.

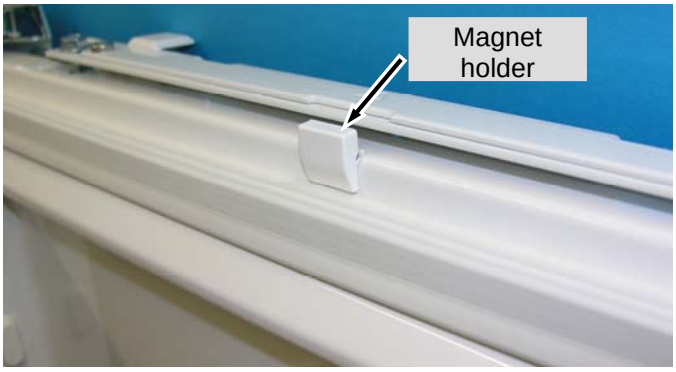


Fig. 5.2.11 / 1

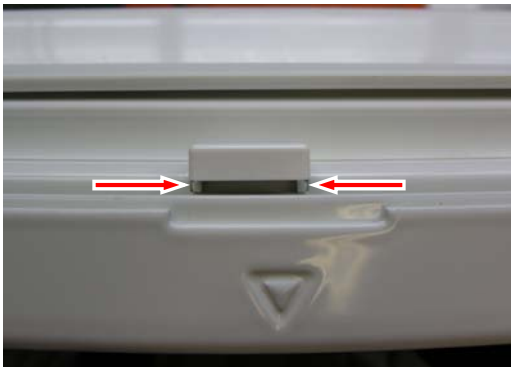


Fig. 5.2.11 / 2

5.2.12 Support rails for sectioned glass shelves

Rails: These plastic rails support the sectioned glass shelves. The marking **R** for right and **L** for left is impressed inside. The toothed profile has to rest against the underside of the supporting ribs of the compartment liner.

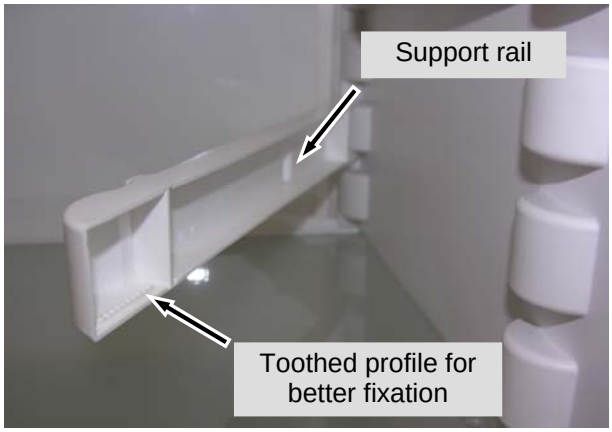


Fig. 5.2.12 / 1

Fig. 5.2.12 / 2

5.3 Freezer compartment

5.3.1 Air sensor, evaporator module and fan module

Air sensor: Engaged in sensor holder on air duct cover.

Evaporator module:
- Remove drawers and glass shelves in freezer compartment.
- Disengage air sensor.
- Undo the screws marked in **Fig. 5.3.1/ 1**and remove the rear wall.
- Lift the evaporator module to swing it out in a forward direction.

Fan module: Unscrew the marked screws and uncover cable (Fig. **5.3.1/ 3**).

Fig. 5.3.1/ 1 Freezer compartment with air duct

Fig. 5.3.1/ 2 Unlocking IceMaker (only ICN 3066)

Fig. 5.3.1 / 3 Fan module

5.3.2 Temperature fuse, evaporator sensor and defrost heater

Temperature fuse: The temperature fuse can be replaced separately with a conversion kit.
The conversion kit comprises:
- 1 temperature fuse
- 2 compression connectors
- 2 shrinkdown tubings

Please note:
Always attach the compression connector to the red and blue lines of the temperature fuse. As soon as the white line of the defrost heater is cut, the defrost heater is destroyed.

Evaporator sensor:
- Remove cover plate by cutting the adhesive tapes at the right and left.
- Draw the evaporator sensor to the right, out of the lamellar evaporator.

Defrost heater: Is clipped into the evaporator fins. Can be replaced if defective.

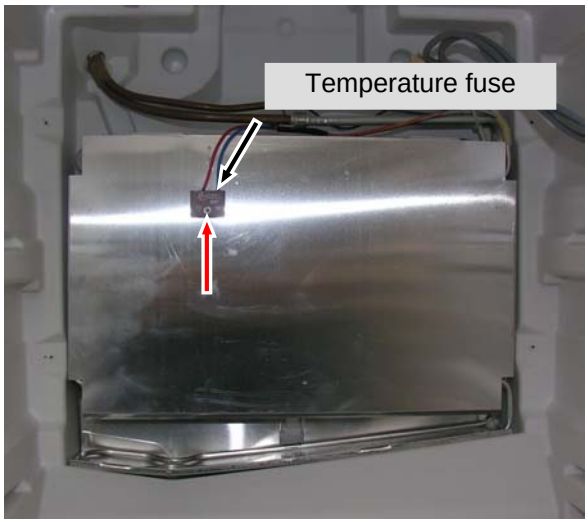


Fig. 5.3.2/ 1 Evaporator module

Fig. 5.3.2/ 2 Cutting adhesive tape

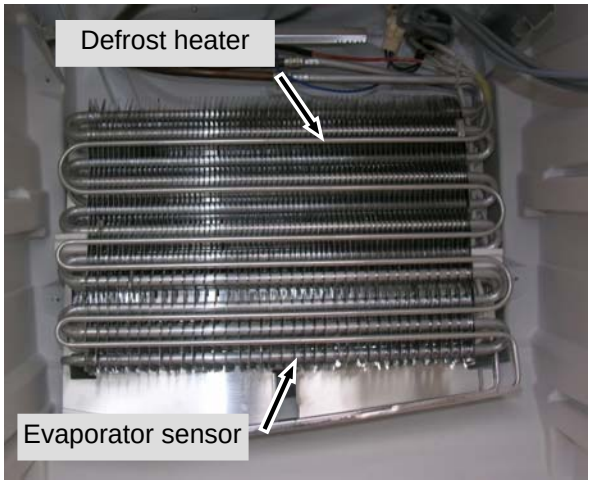


Fig.. 5.3.2/ 3 Evaporator sensor, defrost heater

5.3.3 Fan and reed PCB

Reed PCB:

- Disengage cover of reed PCB (see **Fig. 5.3.3/ 2**).
- Disconnect Reed PCB.

→ Note mounting direction of reed PCB. Reed relay points forwards.

Fan:

- Disconnect Reed PCB.
- Extricate cable from fan module.
- Open retaining clip for cable.
- Disconnect fan cable.
- Remove fan module
- Remove fan vanes.
- Remove fan from holder.

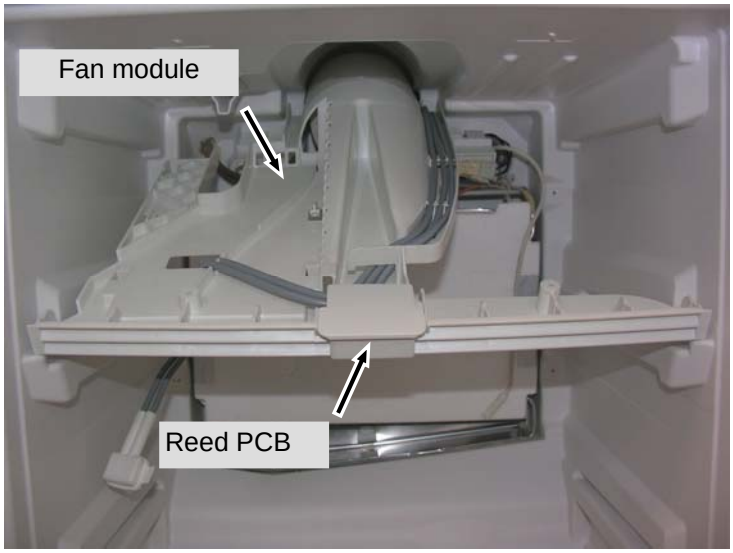
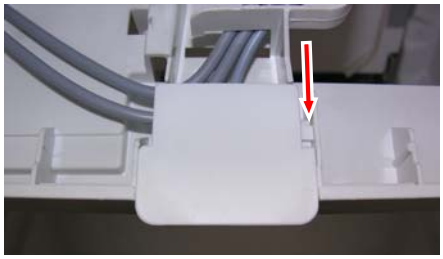


Fig. 5.3.3/ 1 Fan module with reed PCB



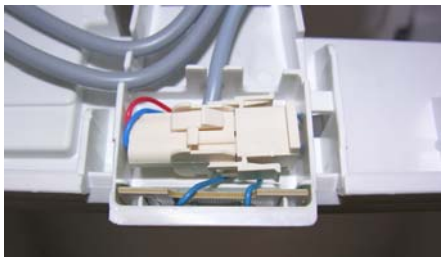


Fig. 5.3.3/ 2 Reed PCB

Fig. 5.3.3 / 3

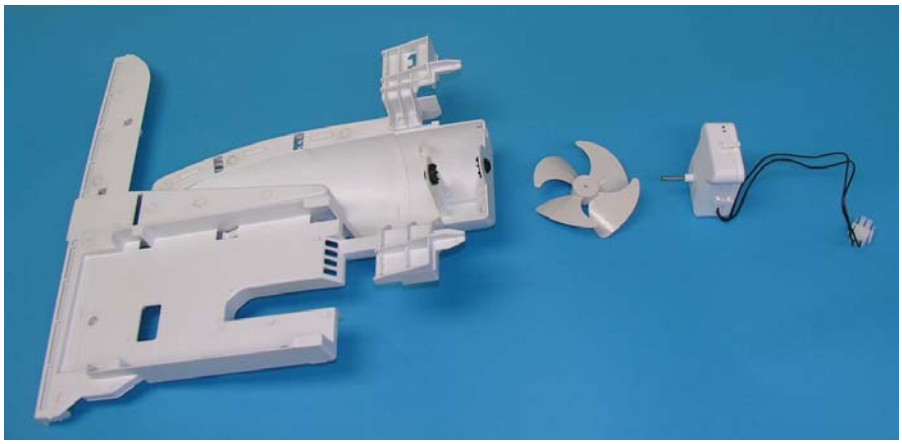


Fig. 5.3.3 / 4 Fan

5.3.4 Only ICBN 3066, double solenoid valve IceMaker

Solenoid valve

- Undo marked screw (see **Fig. 5.3.4/ 1**).
- Remove cover.

Fig. 5.3.4 / 1

Fig. 5.3.4 / 2

6.0 Technical data

6.1 General

Sensor values:

Refrigerator compartment: Air and evaporator sensor
Freezer compartment: Air sensor and evaporator 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

6.2 Refrigerator BioFresh compartment

Interior light PremiumPlus:

Refrigerator compartment:
Wattage: approx. 3 watts
Voltage: approx. 13 volts/DC, with LED lighting connected.
approx. 13 volts/DC, with LED lighting disconnected.

BioFresh compartment:
Wattage: approx. 1 watt
Voltage: approx. 13 volts/DC, with LED lighting connected.
approx. 13 volts/DC, with LED lighting disconnected.

Interior light Premium:

Wattage: 3 watts
Voltage: approx. 10 volts/DC, with LED lighting connected.
approx. 16 volts/DC, with LED lighting disconnected.

Fan:

Wattage: 1.6 watts
Voltage: 12 volts/DC (6V to 15V)

6.3 Freezer compartment

Interior light PremiumPlus:

Wattage: approx. 4 watts
Voltage: approx. 6.5 volts/DC, with LED lighting connected.
approx. 13 volts/DC, with LED lighting disconnected.

Fan:

Wattage: 1.9 watts
Voltage: 230 volts/AC

Defrost heater:

Wattage: 136 watts
Voltage: 230 volts/AC

Temperature fuse:

Trip temperature: +93°C (Is faulty after tripping and has to be replaced)

7.0 Service menu

The service menu may be used only by customer service technicians.

7.1 Manual defrosting "H"

Step	Display	Operation	Display following operation	Testing option / Info
Service menu start				
1	Actual value	Press “On/Off” and "SuperFrost" simultaneously for 3 seconds.	„H“ flashes at the same time as the SuperFrost and SuperCool LED	Service menu active.
2	"H" flashes at the same time as the SuperFrost and SuperCool LED	Press "SuperFrost"	Refrigerator compartment: +5°C Freezer compartment: "A" flashes	**Manual defrost activated**
Manual defrost automatically stopped. **Manual defrost can be ended prematurely by switching the freezer compartment off and back on again.**				

7.2 Demo mode ”d0/d1“

Step	Display	Operation	Display following operation	Testing option / Info
Service menu start				
1	Actual value	Press “On/Off” and "SuperFrost" simultaneously for 3 seconds.	„H“ flashs at the same time as the SuperFrost and SuperCool LED	Service menu active.
2	"H" flashs at the same time as the SuperFrost and SuperCool LED	Press "Up" once	"d1" or "d0" flash at the same time as SuperFrost and SuperCool LED	Service menu active. Stepwise demo mode
2a	**d1**	Press "SuperFrost"	Set value	**Demo mode On**
2b	**d0**	Press "SuperFrost"	Set value	**Demo mode Off**
Demo mode (Demo mode can be deactivated only via service menu, not by “Off/On”.) **Operation switches to the mode wanted, demo mode or normal mode, as soon as "SuperFrost" has been actuated.**				

7.3 Service mode "L"

Step	Display	Operation	Display following operation	Testing option / Info
Service menu start				
1	Actual value	Press “On/Off” and "SuperFrost" simultaneously for 3 seconds.	"H" flashes at the same time as the SuperFrost and SuperCool LED	Service menu active.
Service mode -- test display LED, door contact, potentiometer --				
1	"H" flashes at the same time as the SuperFrost and SuperCool LED	Press "Up" twice	„L“ flashes at the same time as SuperFrost and SuperCool LED	Service mode selected
2	„L“ flashes at the same time as SuperFrost and SuperCool LED	Press "SuperFrost"	"rd" flashes	Service mode activated
3	"rd" flashes	Doors closed and open	All button LEDs and display segments shine	Door contact, LEDs, display
4	All button LEDs and display segments shine	Press all the buttons one after the other.	"L0" shines	Button actuation is confirmed by beep
After step 4, actuation of the last button, a beep sounds.				
Service mode -- testing electric loads--				
5	"L0" shines	No operation	"**L0**" shines	**All OFF**
6	"L0" shines	Press "Up"	"**L1"** shines	**- Compressor low speed - solenoid valve** at setting **B**
7	"L1" shines	Press "Up"	"**L2"** shines	**- Compressor high speed - solenoid valve** at setting **A**
8	"L2" shines	Press "Up"	„**L3**“ shines	**Freezer compartment fan On**
9	"L3" shines	Press "Up"	"**L4**" shines	**Freezer compartment defrost heater On**
10	"L4" shines	Press "Up"	"**L5"** shines	**Light On**
11	"L5" shines	Press "Up"	"**L7"** shines	**Refrigerator BioFresh compartment fan, low speed**
12	"L7" shines	Press "Up"	"**L8"** shines	**Refrigerator BioFresh compartment fan, high speed**
End	Press "On/Off"			

7.4 Sensor test (temperature display) and door contact test "E"

Step	Display	Operation	Display following operation	Testing option / Info
Service menu start				
1	Actual value	Press “On/Off” and "SuperFrost" simultaneously for 3 seconds.	"H" flashes at the same time as the SuperFrost and SuperCool LED	Service menu active.
Sensor test and door contact test (sensor values without offset, appliance in service mode)				
1	"H" flashes at the same time as the SuperFrost and SuperCool LED	Press "Up" three times	„E“ flashes at the same time as SuperFrost and SuperCool LED	Sensor test mode selected
2	„E“ flashes at the same time as SuperFrost and SuperCool LED	Press "SuperFrost"	"**E0**" flashes alternately with sensor temperature	**BioFresh air sensor**
3	"E0" flashes alternately with sensor temperature	Press "Up"	"**E1"** flashes alternately with sensor temperature	**Refrigerator compartment air sensor**
4	"E1" flashes alternately with sensor temperature	Press "Up"	"**E2**" flashes alternately with sensor temperature	**Evaporator sensor for refrigerator compartment**
5	"E2" flashes alternately with sensor temperature	Press "Up"	"**E3"** flashes alternately with sensor temperature	**Freezer compartment air sensor**
6	"E3" flashes alternately with sensor temperature	Press "Up"	„**E4**“ flashes alternately with sensor temperature	**Freezer compartment evaporator sensor**
7	"E4" flashes alternately with sensor temperature	Press "Up"	"**E7**" flashes alternately with sensor temperature	**Ambient air sensor:**
8	"E7" flashes alternately with sensor temperature	Press "Up"	„**E8**“ flashes alternately with "0" or "1"	**Door contact freezer compartment** (0 = door closed, 1 = door open)
9	„E8“ flashes alternately with "0" or "1"	Press "Up"	"**E9"** flashes alternately with "0" or "1"	**Door contact refrigerator BioFresh compartment** (0 = door closed, 1 = door open).
End	Press On/Off twice			

8.0 Error code, troubleshooting

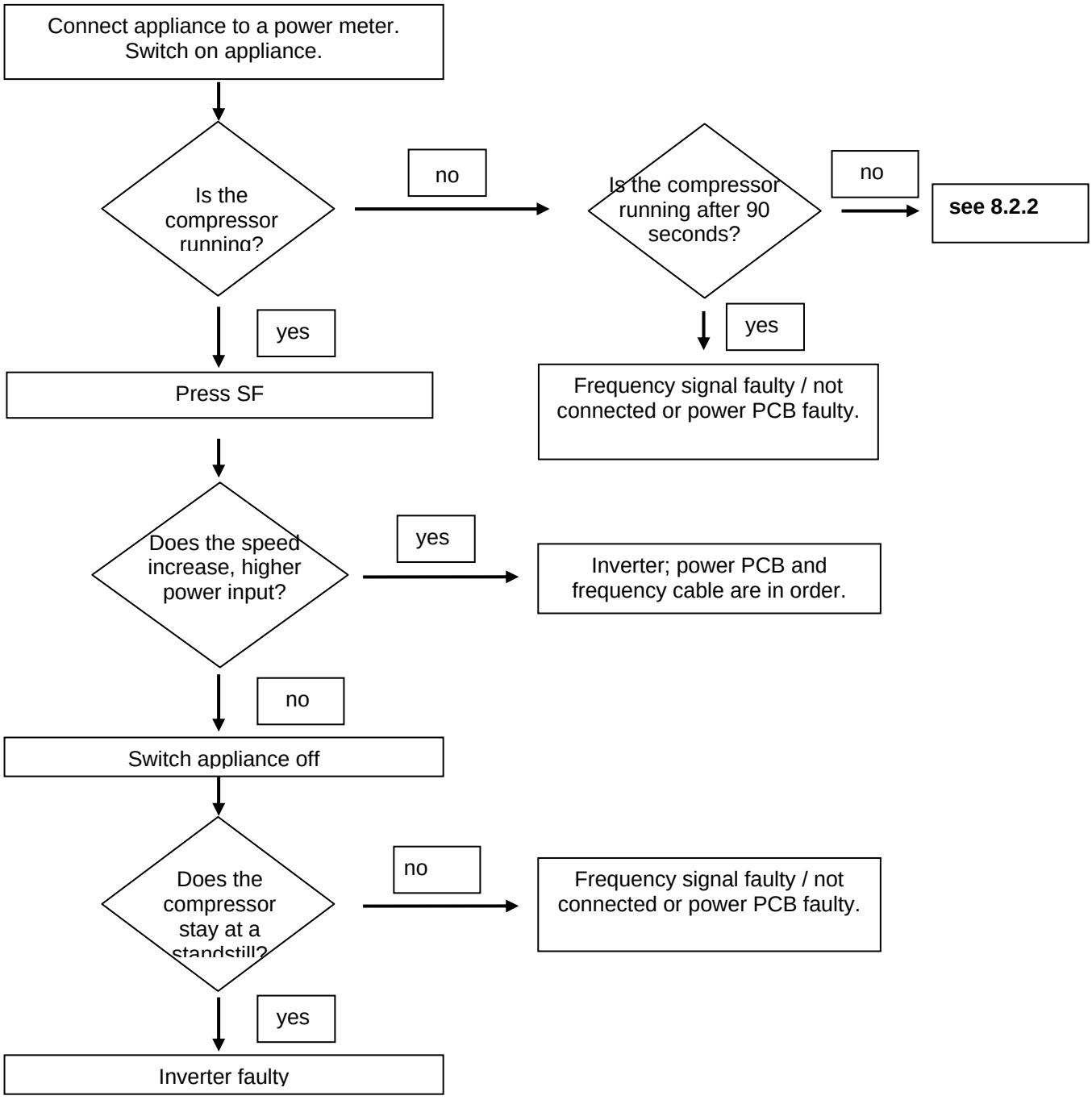
8.1 Error code table

Error code	Defective component	Emergency operation
F0	BioFresh air sensor	Compressor 10 minutes ON and 40 minutes OFF.
F1	Refrigerator compartment air sensor	Compressor 10 minutes ON and 40 minutes OFF
F2	Refrigerator compartment evaporator sensor	Compressor 10 minutes ON and 40 minutes OFF.
F3	Freezer compartment air sensor	Compressor endurance run
F4	Evaporator sensor, freezer compartment	Compressor endurance run
FU *	Ambient air sensor:	Ambient temperature of +25°C is predetermined

* Error of ambient temperature sensor is checked and displayed only in the control panel test of the service mode.

8.2 Troubleshooting VCC compressor / inverter

8.2.1 Checking the inverter and the frequency signal



Attention: In case of interruption of the frequency signal, the compressor starts only after 90 seconds!!

8.2.2 Checking the compressor

Fault profile: Compressor does not run (not even after a waiting time of 90 secs)