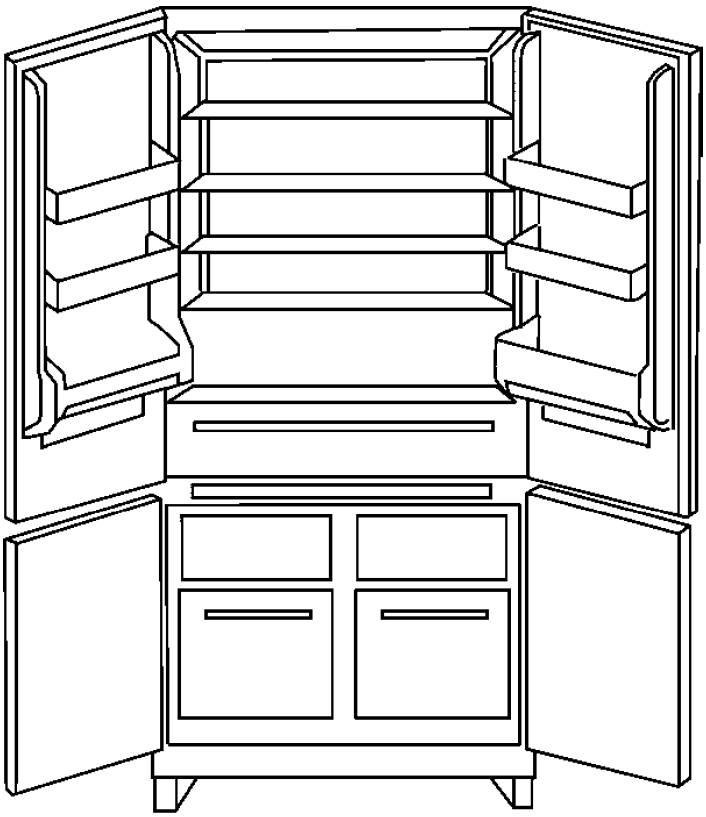

Technical Manual
IKEF 308-5 Z 3

Küppersbusch

THE HEART OF A GOOD KITCHEN

GB

Service Manual: H8-74-01

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Contents

1. Safety information

Danger!

Repairs may only be carried out by a qualified electrician! Inexpert repairs may lead to danger and injury to the user!

To prevent electric shocks, please observe the following instructions:

- In the event of a fault, housing and frame may be live!
- Touching live components inside the appliance may cause dangerous currents to flow through your body!
- Prior to repairs, disconnect the appliance from the mains!
- When inspecting live parts, a residual current operated device must be used at all times!
- The ground wire resistance must not exceed that specified in the standard! It is of vital importance for ensuring the safety of people and the functioning of the appliance.
- On completion of repairs, an inspection must be carried out in accordance with VDE 0701 [Association of German Electrical Engineers] or the corresponding regulations for your country!

Caution!

Make sure you observe the following instructions:

- The appliances must be disconnected from the mains prior to all repairs. If inspections need to be carried out on live appliances, make sure you use a residual current operated device.

Sharp edges: Use protective gloves.

Components may be electrostatic!
Observe handling precautions!

2. Introduction

2.1 General

This handbook describes model IKEF 308-5 Z 3.

It is a combination appliance with two compressors with PNCs of type 925703xxx (KBI0280 DOD).

The refrigeration zone/0° zone and freezer sections are independent of each other and can therefore be switched on and off as required.

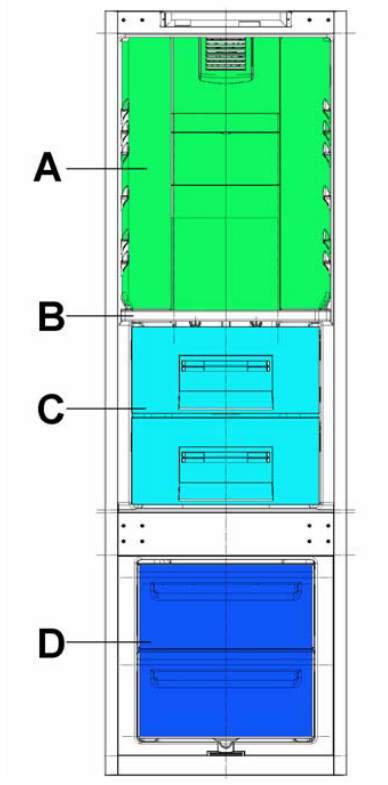
The appliance has the following refrigeration sections.

- Refrigeration section (cooler) and 0° zone
- Freezer section

The evaporator circuit consists of:

- Battery-operated evaporator (0° zone and the refrigerator section)
- Evaporator tower (freezer section)

The appliance's controls are of type ERF 2050 (power) and ERF 2000 (display).



Key:

A = Refrigerator section

B = Separation floor

C = 0° zone

D = Freezer section

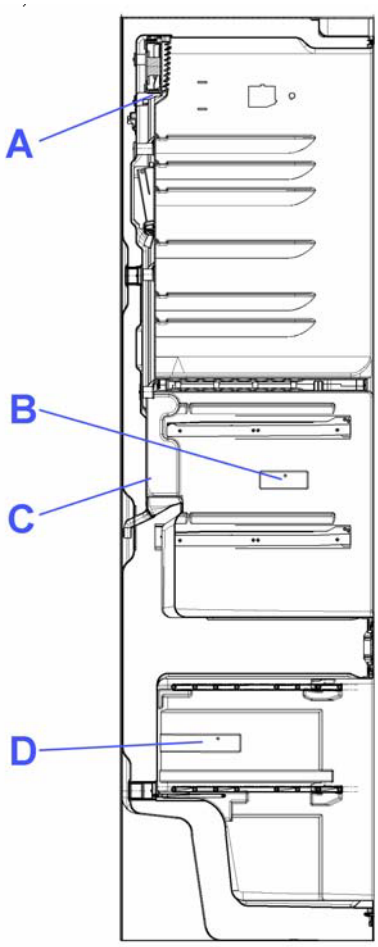
Between the refrigerator section and the 0° zone in the front area (near the door) there is a corresponding separation floor which allows air circulation between both these sections.

In contrast to the NO FROST refrigerator, the 0° appliance has a battery-operated evaporator without defrost resistor and without the corresponding thermo switches, because the battery is defrosted by operating the ventilator while the compressor is switched off.

2.2 Temperature measurement

The temperatures are measured by means of 5 probes:

- Refrigerator probe (near to the ventilator)
- 0° probe (on the 0° zone cell on the right-hand side of the upper container)
- Battery-operated evaporator probe (on the battery itself)
- Freezer probe (on the freezer cell on the right-hand side of the upper container)
- Room temperature probe (on the electronic display board)



Key:

A = Refrigerator section probe

B = 0° probe

C = Probe for the battery-operated evaporator

D = Freezer probe

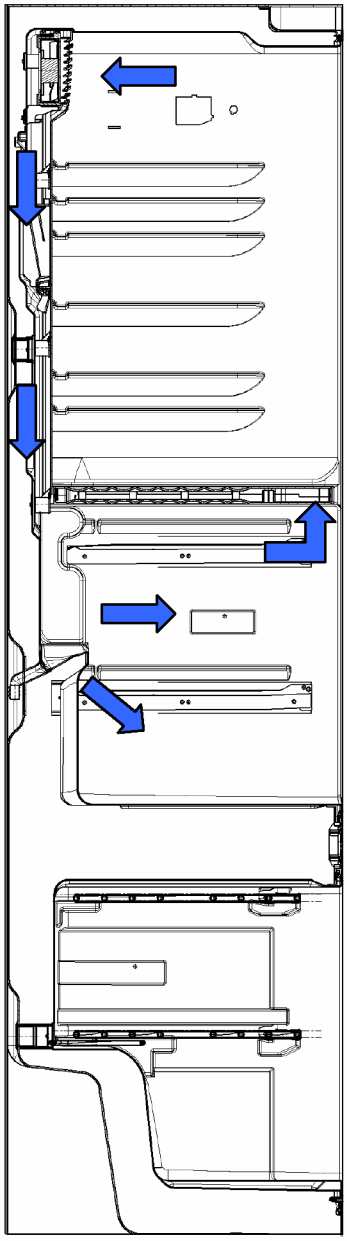
The cables for probes A, B and C have been foam-mounted and therefore cannot be replaced.

The room temperature probe is part of the electronic display electronics.

2.3 Air flow

The cold air produced by the battery-operated evaporator (in the 0° zone behind the evaporator cover) is distributed by the ventilator behind the ventilator housing, first in the 0° zone and then in the refrigerator section.

The air is sucked in by the ventilator located in the upper part of the refrigeration section. It flows through the channels and then downwards to the battery-operated evaporator. The cold air flows out of the lower part of the battery-operated evaporator, comes into contact with the two containers in the 0° zone and then rises into the refrigerator section through the gap between the separation floor and the door.



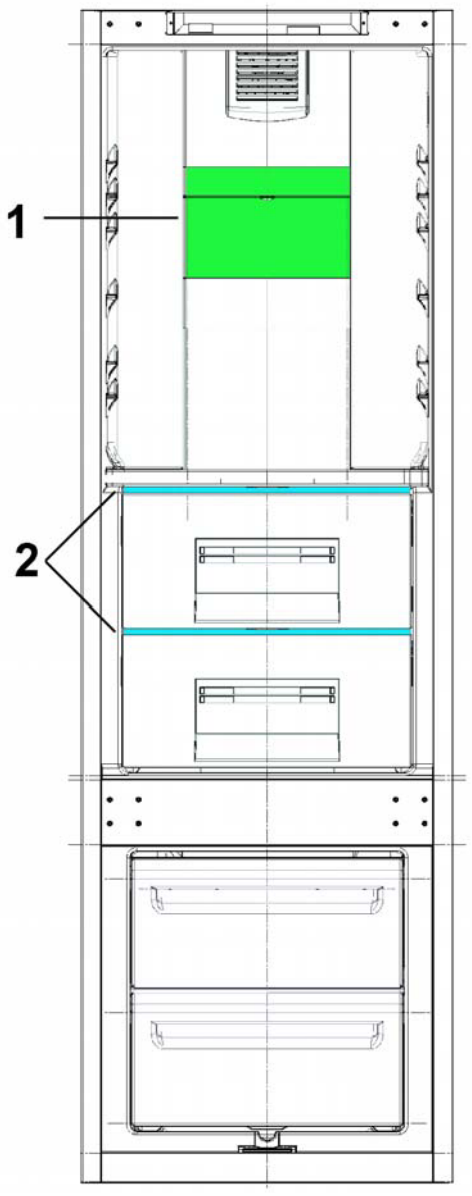
2.4 Note

a) Depending on the trade variant, the air filter may be replaced by a channel containing an insulating panel made from polystyrene.

b) The containers in the 0° zone are equipped with control flaps for ”humidity control“.

- The control flap is closed in order to maintain the humidity.
- The control flap is opened in order to reduce humidity.

For the correct functioning of the ”humidity control“, the container covers are important.



3. Cooling circuit

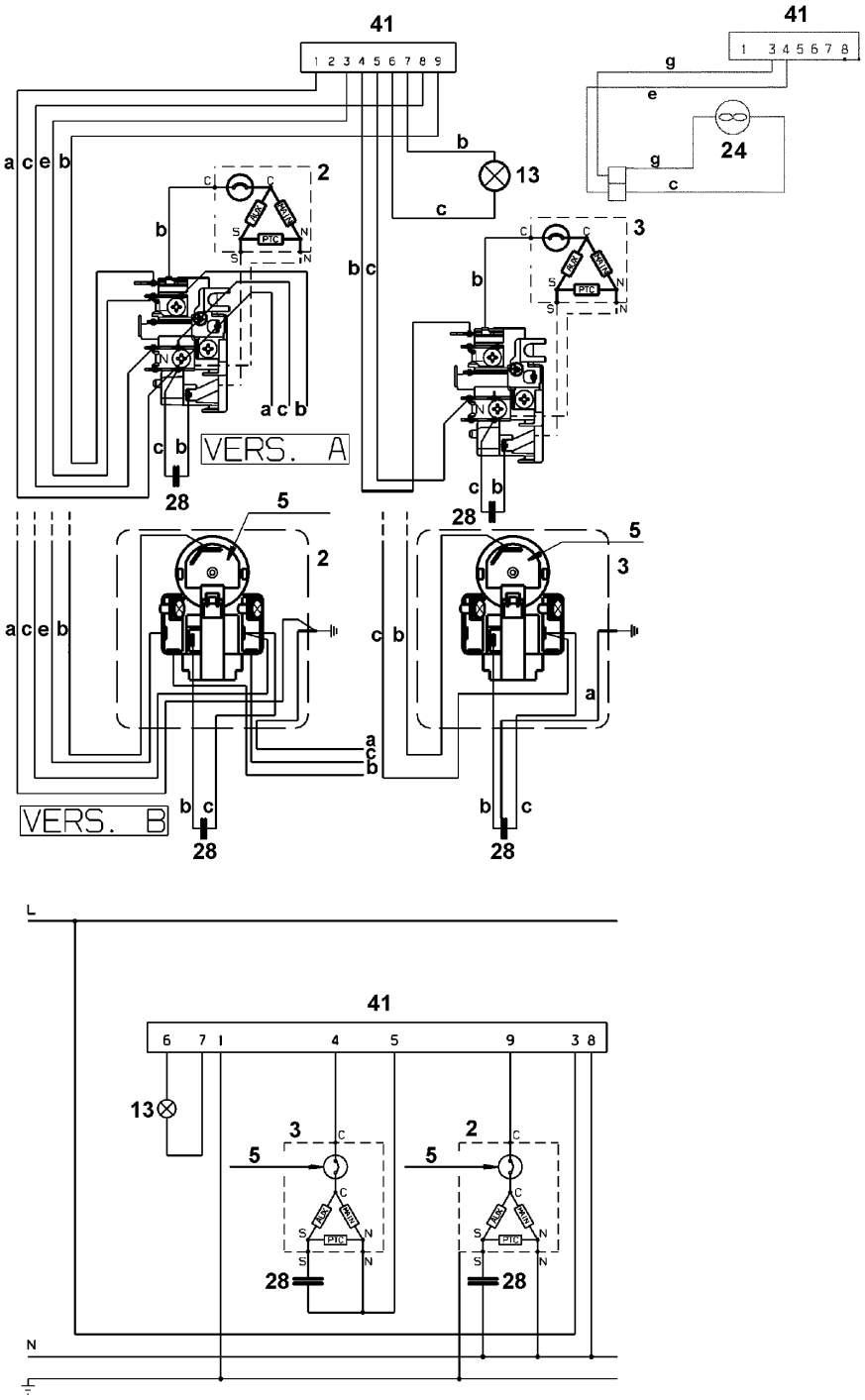
The battery-operated evaporator is located in the 0° zone and is available as a replacement part.
The battery-operated evaporator is not equipped with defrost resistors nor with an automatic off switch (thermal protection switch).

The tower evaporator for the freezer section is available as a replacement part.

A condensation protection tube (frame heater) is installed along the edges of the housing frame.

4. Electrical installation

Please observe the wiring diagram corresponding to the model.



2	Compressor	a	yellow-green
5	Motor protection switch	b	brown
13	Lamp	c	blue
24	Ventilator	d	white
28	Operating capacitor	e	black
	(only with models where it is provided)	f	grey
41	Electronic ERF2050	g	red

More detailed information can be found under ”7.1 Power electronics” on page 23.

5. Functioning

Because it is equipped with two compressors, the IKEF 308-53Z refrigerator will function in different ways depending on the refrigeration requirement of the 0° zone, the refrigerator section and the freezer section.

Refrigerator section and 0° zone are only equipped with a single compressor. For normal operation there are therefore three possible combinations available:

a. A refrigeration requirement from the 0° zone only:

b. A refrigeration requirement from the refrigeration section and from the 0° zone

c. A refrigeration requirement from the refrigeration section only

In addition the following status is possible:

d. Activation of the defrost function of the battery-operated evaporator.

5.1 A refrigeration requirement from the 0° zone only

If there is a refrigeration requirement from the 0° zoneonly :

- the compressor runs;
- the ventilator runs at **low** speed (approx. 1,500 rpm) during continuous operation.

5.2 Refrigeration requirement from the refrigeration section and from the 0° zone

If there is a refrigeration requirement from the 0° zone and from the refrigeration section:

- the compressor runs;
- the ventilator runs at **high** speed (approx. 1,900 rpm) during continuous operation.

5.3 Refrigeration requirement from the refrigeration section only

If there is a refrigeration requirement only from the refrigeration section:

- the compressor does not run;
- the ventilator runs at **high** speed (approx. 1,900 rpm) during continuous operation.

5.4 Activation of the defrost function of the battery-operated evaporator

The ice which builds up on the battery-operated evaporator needs to be defrosted at regular intervals. The battery-operated evaporator is defrosted every 4 hours during compressor operation. The defrosting phase is started after the compressor is switched off.

During the defrost period:

- the compressor does not run;
- the ventilator runs at **high** speed during continuous operation
- the temperature in the refrigerator section drops
- the battery-operated evaporator heats up.

The defrost phase ends when the evaporator probe measures a temperature of +4 °C .

Warning!

If the door remains open the ventilator stops.
In order to simulate the door being closed, a magnet must be used and attached at the level of the reed element.

5.5 SUPERFROST function

The **SUPERFROST** function is activated by pressing the corresponding button:

- the control lamp of the function **SUPERFROST** glows;
- the letters **SP** appear in the display;
- the compressor runs for approx. 48 hours without interruption and will then automatically be switched off.

For deactivating the **SUPERFROST** function, press the corresponding button.

5.6 SUPERCOOL function

The **SUPERCOOL** function (rapid cooling) is activated by pressing the corresponding button:

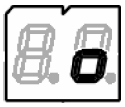
- the control lamp of the **SUPERCOOL** function glows;
- the compressor will run for approx. 6 hours in the thermostatic operating mode and not in the continuous operation mode (as if the temperature button had been turned to the max. position) in order to reach +2 °C and then it will switch off automatically.

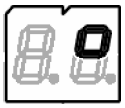
For deactivating the **SUPERCOOL** function early, press the corresponding button.

5.7 Malfunction of the refrigerator section temperature probe and the 0° zone

Should the NTC temperature malfunction during normal operation (i.e. the signal from the probe falls outside the limiting values), then:

- The appliance will follow a predetermined programme sequence during which the refrigerator compressor is alternately supplied for 30 minutes and then switched off for 40 minutes;
- The refrigerator display will show one of the following symbols:


Refrigerator section air temperature probe defective


Temperature probe of the battery-operated evaporator defective

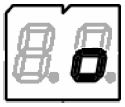

Temperature probe of the zero degree zone defective

Once the probe functions again properly, the operating modes described above will be terminated.

5.8 Malfunction of the freezer section temperature probe

Should the NTC temperature probe malfunction during normal operation (i.e. the signal from the probe falls outside the limiting values), then:

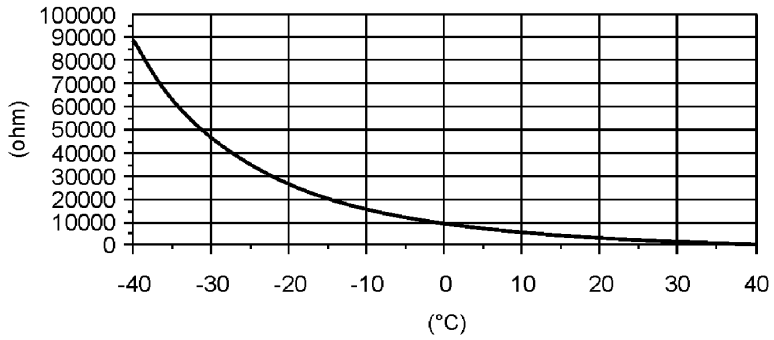
- The appliance will follow a predetermined programme sequence during which the freezer compressor is alternately supplied for 40 minutes and then switched off for 40 minutes;
- The freezer display will show one of the following symbols:


Air temperature probe of the freezer defective

Once the probe functions again properly, the operating modes described above will be terminated.

5.9 Characteristics of the NTC probe

Conversion table:



T(°C)	ΔT(±°C)	Rn (Ω)
10	±0.6	5337
9	±0.6	5600
8	±0.5	5877
7	±0.5	6171
6	±0.5	6481
5	±0.5	6809
4	±0.5	7156
3	±0.5	7523
2	±0.4	7911
1	±0.4	8322
0	±0.4	8758
-1	±0.4	9218
-2	±0.4	9705
-3	±0.4	10222
-4	±0.5	10770
-5	±0.5	11352
-6	±0.5	11969
-7	±0.5	12624
-8	±0.5	13320
-9	±0.5	14059
-10	±0.5	14845
-11	±0.5	15678
-12	±0.6	16564
-13	±0.6	17506
-14	±0.6	18509
-15	±0.6	19577
-16	±0.6	20715
-17	±0.6	21928
-18	±0.6	23221
-19	±0.6	24600
-20	±0.6	26072
-21	±0.7	27637
-22	±0.7	29307
-23	±0.7	31092
-24	±0.7	32999
-25	±0.7	35039
-26	±0.7	37221
-27	±0.7	39556
-28	±0.7	42056
-29	±0.8	44735
-30	±0.8	47606
-31	±0.8	50668
-32	±0.8	53952
-33	±0.8	57475
-34	±0.8	61258
-35	±0.8	65320
-36	±0.8	69686
-37	±0.8	74381
-38	±0.8	79431
-39	±0.9	84867
-40	±0.9	90721

5.10 Acoustic alarm

The alarm tone will be activated if the cold storage door is opened for more than 3 minutes.

By closing the door, the alarm tone is terminated.

If, after a further 3 minutes, the door still stands open, the alarm tone will be activated again.

6. Access to the components

6.1 0° zone

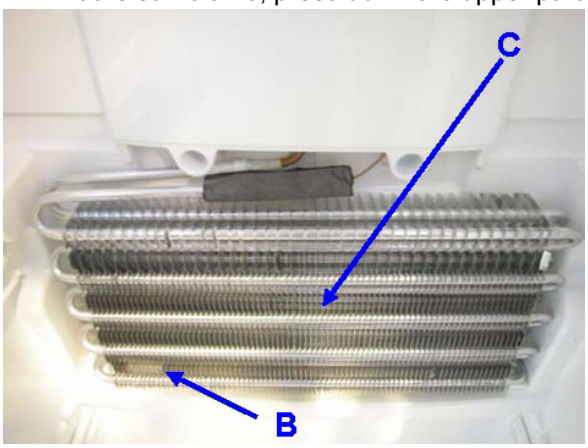
Battery-operated evaporator and ventilator probe

In order to gain access to the battery-operated evaporator and to the temperature probe, proceed as follows:

1. Remove the upper cover of the 0° container.
2. Remove the 0° container.
3. Remove the separation floor.

4. Loosen the two attachment screws for the evaporator cover.

5. Pull the evaporator cover out towards you. At the same time, press down the upper part.



6. Remove the polystyrene insulation panel A.

7. B - Probe of the battery-operated evaporator
   C - Battery-operated evaporator.

6.2 Refrigerator section

To gain access to the ventilator and the refrigerator section probe proceed as follows:

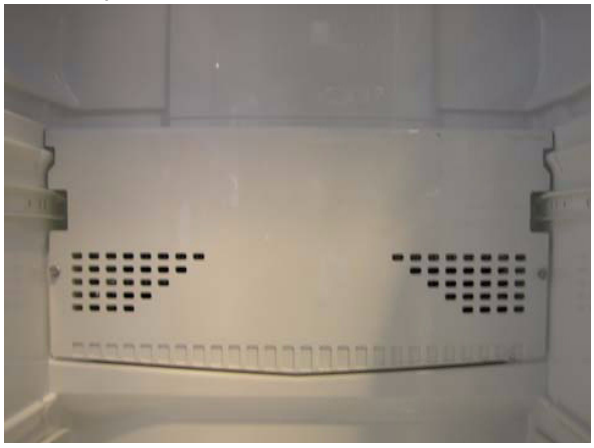
Evaporator cover
↓
Channel
↓
Channel or filter channel (if applicable)
↓
Ventilator housing
↓
Ventilator and refrigerator section probe

6.2.1 Evaporator cover

1. Remove the upper cover of the 0° container.
2. Remove the 0° container.
3. Remove the separation floor.

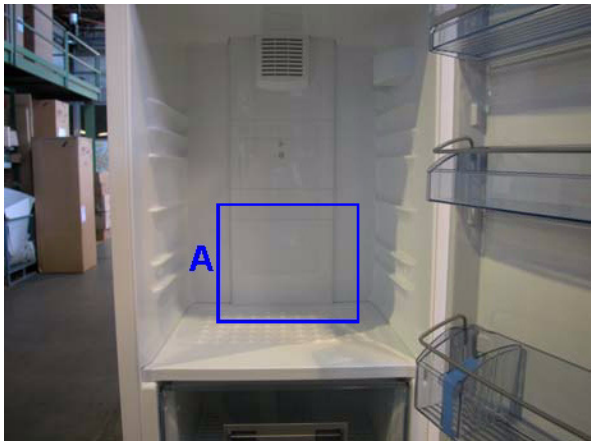
4. Loosen the two attachment screws for the evaporator cover.

5. Pull the evaporator cover out towards you. At the same time, press down the upper part.



6. WARNING! The holes in the evaporator cover must be as shown in the photograph.

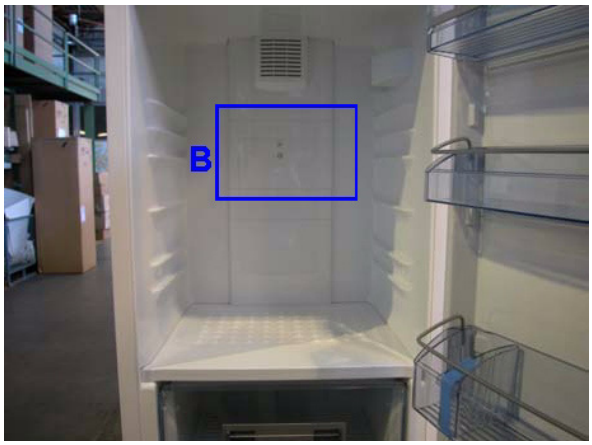
6.2.2 Channel



1. Loosen the two attachment screws for the channel.

2. Below the channel a locking device for the tubes connected to the drainage filter is located.

6.2.3 Channel or filter channel (if applicable)

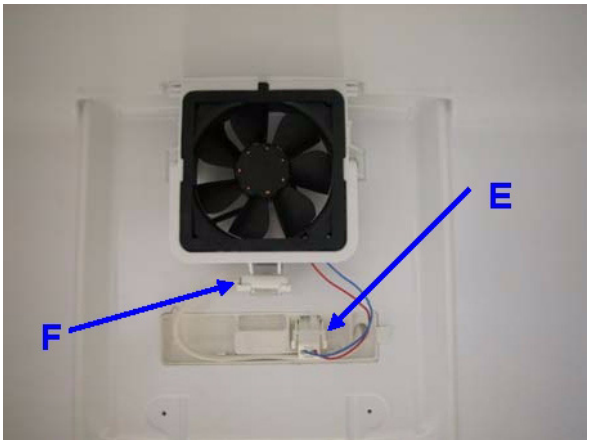


1. Loosen the two attachment screws for the channel (or filter channel B, if applicable); for removal pull the channel downwards.

2. Remove the polystyrene insulation panel C (not applicable for devices with air filter).

6.2.4 Ventilator housing

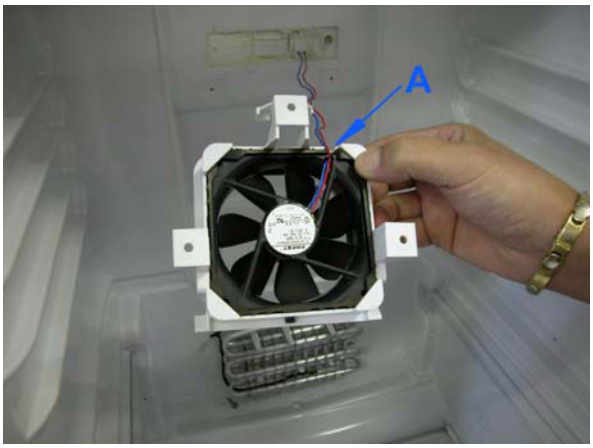
1. Loosen the two attachment screws for the ventilator housing and pull it downwards.



2. E – Ventilator connection
   F – Refrigerator section probe.

6.2.5 Ventilator and refrigerator section probe

1. Remove the refrigerator section from its holder and loosen the 3 ventilator attachment screws.



2. The ventilator cables must be led through the slot (A) in the ventilator holder.

Warning!

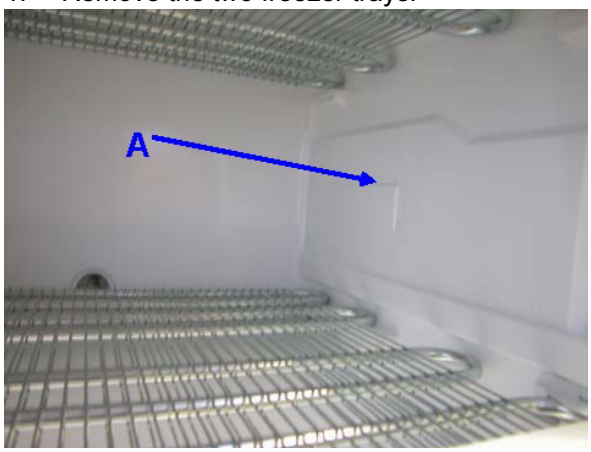
Should it become necessary to replace the ventilator, ensure that it sucks.

In order to simulate a closed door, use a magnet and attach it at the level of the reed element.

6.3 Freezer section

1. Remove the two freezer trays.

2. Remove the holder of the evaporator tower.



3. Position of the freezer probe A.

6.4 Control panel

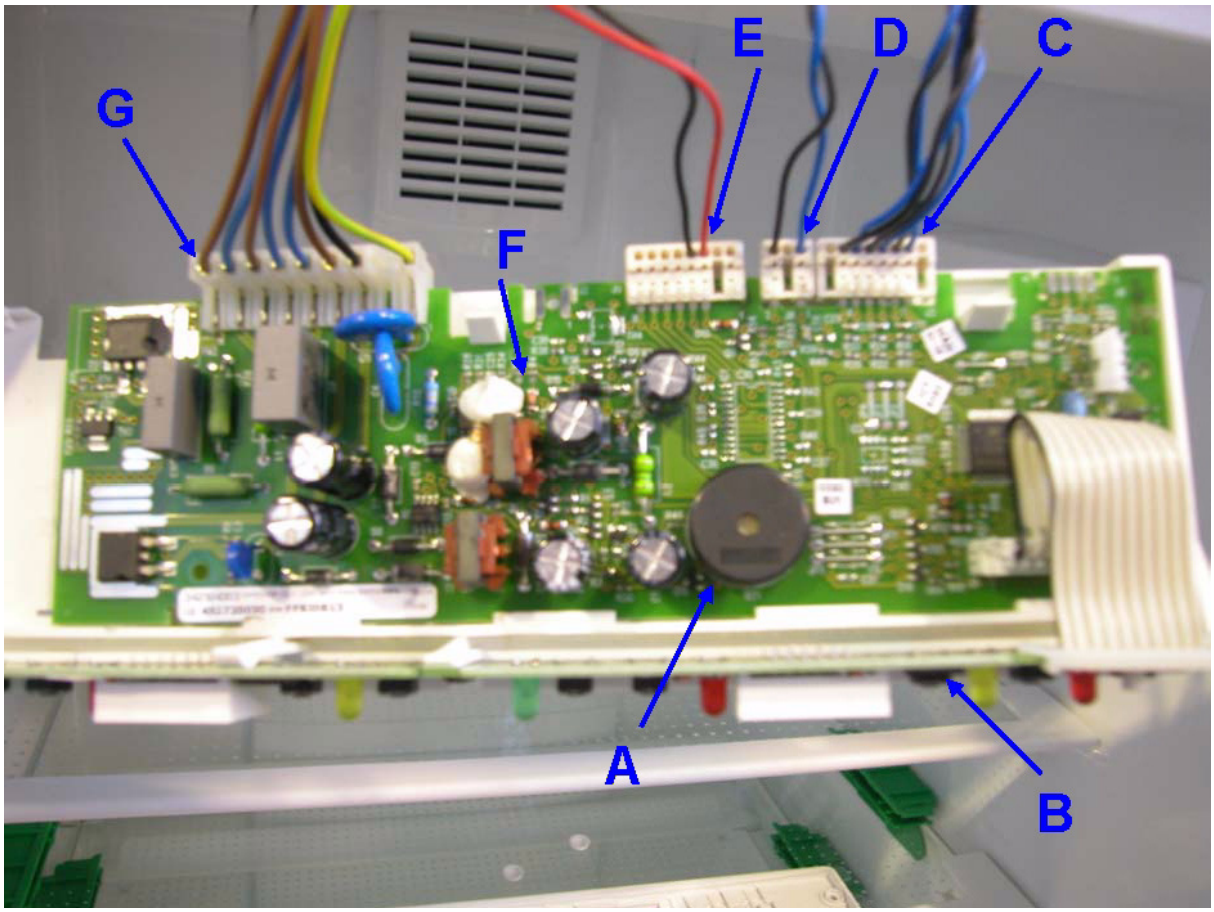
Note!

The electronics are supplied with a 220-240V / 50 Hz voltage, even when the appliance is switched off (OFF). Before the electronics are handled, therefore, the mains plug must be disconnected.

In order to gain access to the operating panel and its components (power electronics, display electronics and electric connectors) proceed as follows:

1. Remove the two screw covers and loosen the two attachment screws for the operating panel holder;

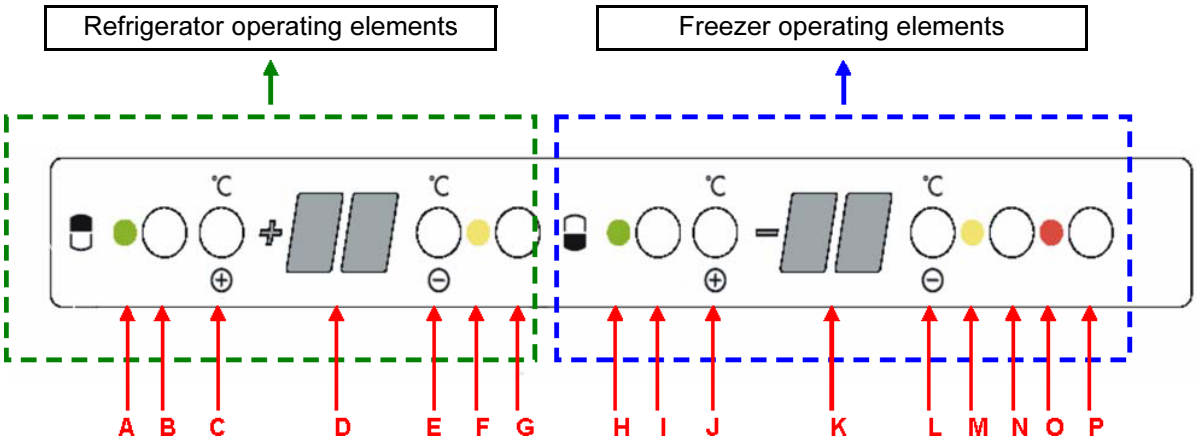
2. Pull the operating panel holder towards you.



A Buzzer
B Display electronics
C Probe terminal
- Refrigerator section probe = (white cable)
- Probe for the battery-operated evaporator = black cable
- Freezer section probe = brown cable

D Terminal for 0° probe,
E Ventilator supply
F Power electronics
G Terminal for the electric installation
- Electronics
- Refrigerator section compressor
- Lamp
- Refrigerator section compressor

7. Control panel



Refrigerator section key:

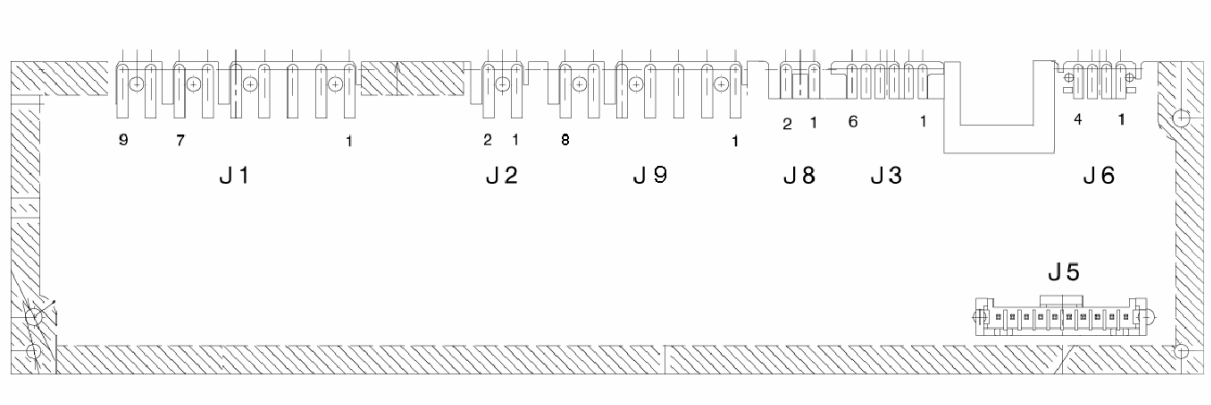
Control lamp ON/OFF
ON/OFF button for the refrigerator
Button to raise the temperature (+)
Refrigerator section temperature display
Button to decrease the temperature (-)
SUPERCOOL control lamp (rapid cooling)
Button for the SUPERCOOL function (rapid cooling)

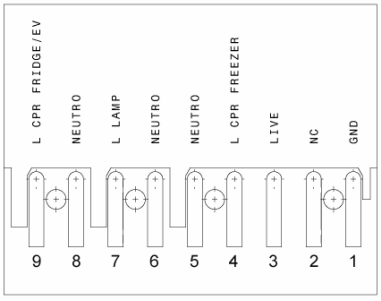
Freezer section key:

Control lamp ON/OFF
ON/OFF button for the freezer
Button to raise the temperature (+)
Freezer section temperature display
Button to decrease the temperature (-)
SUPERFROST control lamp (rapid freezing)
Button for the SUPERFROST function (rapid freezing)
Alarm control lamp
Button for switching off the alarm

7.1 Power electronics

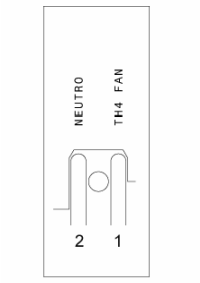
View of the electronics (components side):





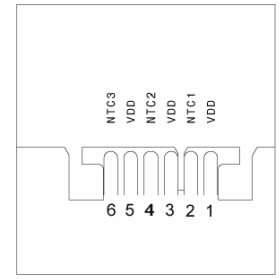
J1

1. Earth contact
2. Not used
3. Cable
4. Freezer section compressor
5. Neutral wire
6. Neutral wire
7. Lamp
8. Neutral wire
9. Refrigerator section compressor



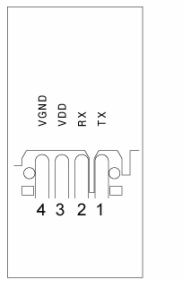
J2

1. Not used
2. Not used



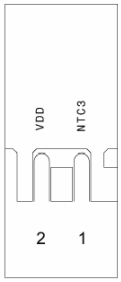
J3

1. Refrigerator section air temperature probe
2. Refrigerator section air temperature probe
3. Probe for the battery-operated evaporator
4. Probe for the battery-operated evaporator
5. Freezer section air temperature probe
6. Freezer section air temperature probe



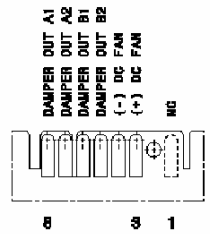
J6

1. Not used
2. Not used
3. Not used
4. Not used



J8

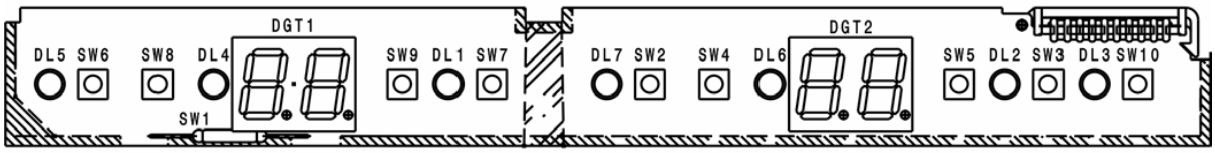
1. 0° probe
2. 0° probe



J9

1. Not used
2. Not used
3. Ventilator (+)
4. Ventilator (-)
5. Not used
6. Not used
7. Not used
8. Not used

7.2 Display electronics



Key:

SW1 = Reed element
SW2 = Freezer ON/OFF button
SW3 = Button for the SUPERFROST function (rapid freezing)
SW4 = Button to raise the temperature in the freezer section
SW4 = Button to decrease the temperature in the freezer section
SW6 = Refrigerator ON/OFF button
SW7 = Button for the SUPERCOOL function (rapid cooling)
SW8 = Button to raise the temperature in the refrigerator section
SW4 = Button to decrease the temperature in the refrigerator section
SW10 = Button to switch off the alarm
DGT1 = Refrigerator display
DGT2 = Freezer display
DL1 = SUPERCOOL control lamp (rapid cooling)
DL2 = SUPERFROST control lamp (superfrost function)
DL3 = Alarm control lamp
DL4 = Control lamp sign +
DL5 = Control lamp ON/OFF of the refrigerator
DL6 = Control lamp sign -
DL7 = ON/OFF control lamp of the freezer

8. Variant for models with air filter

Depending on the trade variant, the filter channel replaces the central channel.

1. Central channel

2. Filter channel

3. Open the flap and replace the carbon filter at least annually.

For models with air filter, the use of carbon filters is recommended.