AG-BG 2014 60 CM BOTTOM FREEZER NO-FROST REFRIGERATOR
SERVICE MANUAL

8700000649	BFBF2414WH	K60340NU	United States of America, Canada
8700000650	BFBF2414SL	K60340NU	United States of America, Canada
8700000651	BFBF2414SS	K60340NU	United States of America, Canada
8700000667	BRFB1045SS	K60340NU	United States of America, Canada
8700000672	BRFB1045WH	K60340NU	United States of America, Canada

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REVISION HISTORY

NO	REVISION	DATE
0	New create	09.03.20
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Contents

1. Operating the Cooling System

- Children should not play with the device. Cleaning and user maintenance procedures shall not be performed by children, unless they are supervised by adults.
- If the product has a malfunction, it should not be operated before it is repaired by the authorized service personnel. Risk of electric shock!
- Connect the product to a grounded outlet protected with a fuse that complies with the values in the nametag. Ensure that the grounding is made by a qualified electrician. Our company shall not be held liable of the damages due to use of the product without grounding in accordance with local regulation.
- Unplug the product when not in use.
- Do not spray the product with water or wash the product with water! Risk of electric shock!
- Do not touch the plug with wet hands! Do not pull the plug from its cord, always hold the plug itself when unplugging the product.
- If the outlet is loose, do not plug in the refrigerator.
- Do not plug the refrigerator in electronic systems for electricity saving. These systems damage the device.
- The product should not be plugged in during installation, maintenance, cleaning and repair procedures.
- Installation and repair procedures shall always be performed by the Authorized Service Personnel. The manufacturing company shall not be held responsible for any damages due to the procedures performed by unauthorized individuals.
- Do not consume foods such as cone ice creams, ice cubes, etc. right after you take it out of the freezer section! This may cause cold burns!
- Do not touch frozen foods with wet hands! They may stick to your hand!
- Do not place liquids in cans and boxes in the freezer section. They may explode!
- Do not use steams or steam cleaning materials for cleaning and defrosting procedures of the refrigerator. Steam may contact live regions of the refrigerator and cause short circuits or electric shocks!
- Do not use mechanical tools or methods to accelerate the defrosting process, apart from the ones suggested by the manufacturer.
- Do not use parts of the refrigerator such as doors or drawers for support or as steps. This will cause the refrigerator to collapse or the components to get damaged.
- Do not use sharp tools in sections of the refrigerator where the cooling gas is circulated and do not damage the cooling circuit. The cooling gas that will spray out when the gas channel of the evaporator, pipe extensions and the surface layer coatings are perforated can cause skin irritations and injuries of the eye.
- Do not cover the ventilation holes of the refrigerator with any object.
- Place the spirits with high alcohol content upright, with their caps tightly closed.
- Do not spray flammable gases near the product due to risk of fire or explosion.
- Do not store combustible products or products that contain combustible gases (sprays, etc.) in the refrigerator.
- Do not place liquid-filled containers on the product. There is risk of electric shock and fire when liquid is splashed on an electrical part.
- Do not store products that require precise temperature control (vaccinations, temperature sensitive medicine, scientific materials, etc.) in the refrigerator.
- If the product will not be used for a long period of time, unplug the product from the outlet and remove the food inside.
- If the product emits blue light , do not look at the light with optic devices.
- It is dangerous to expose the product to rain, snow, sun and wind as these may affect the electrical components of the product.
- In mechanically controlled (thermostatic) products, before re-plugging, wait for 5 minutes after unplugging the product.
- Do not place food in the refrigerator that is above the capacity of the product. These may fall out of the product when the door is opened and cause you harm or damage the product. Similar problems can be experienced if items are placed on the product.
- If there is a handle on the door of the product, do not pull the handle when moving the product. The handle may be displaced.

- Try to avoid jamming your hand or any other body part in the moving parts of the product.

1.1. HCA warning

- If the product is equipped with a cooling system that contains R600a gas, pay attention during use and transportation to avoid damaging the cooling system and the pipes. This gas is combustible. If the cooling system is damaged, keep the product away from potential flame sources and immediately ventilate the room where the product is placed.

	Disregard this warning if the product has a cooling system that contains R134a gas.
	You can learn about the gas used in the product from the label that is located on the left hand side, inside the product.
	**WARNING:** Never throw the product in fire.

1.2. For products with Automatic Water Dispensers

- The minimum pressure of the water supply shall be 1 bar. The maximum pressure of the water supply shall be 8 bar.
- Only use potable water.

1.3. Intended use

- This product is designed for domestic use. This product is not intended for commercial use and shall not be used for any purpose other than its intended use.
- Product shall only be used to store foods.
- The manufacturer shall not be held liable for any damages due to misuse or inappropriate transportation.
- The expected life of the product you have purchased is 10? years. This is the period for maintaining the required spare parts for the product to be work as defined.

1.4. Safety of the children

- The packaging materials are dangerous for the children. Keep the packaging materials out of the reach of children.
- Electrical goods are dangerous for the children. Keep children away from the product when the product is in working state and do not let them play with the product.
- If there is a lock on the door of the product, keep the key out of the reach of children.

1.5. Compliance with the WEEE Directive and Disposal of the waste product

- This product does not contain the harmful and restricted materials listed in the "Directive on Waste Electrical and Electronic Equipment" issued by T.R. Ministry of Environment and Urbanization. It complies with the WEEE Directive. This product is manufactured using high quality parts and materials that can be recycled and reused. Therefore, do not dispose the product after its lifetime with domestic or other wastes. Take the electrical and electronic devices to a collection facility for recycling. Consult to the local authorities in your region to obtain information about these collection facilities. Contribute to the preservation of the environment and natural sources by recycling used products. To ensure the safety of the children, before disposing the product, cut the electricity plug of the device and make the lock on the door non-functional, if any. ?

1.6. Packaging information

- The packaging of the material is produced using recyclable materials. Do not dispose the packaging waste with domestic or other wastes, only dispose the packaging waste to the packaging collection sites specified by the local authorities.

1.7. Disposal of the waste product

- This product is manufactured using high quality parts and materials that can be recycled and reused. Therefore, do not dispose the product after its lifetime with domestic or other wastes.

Take the electrical and electronic devices to a collection facility for recycling. Consult to the local authorities in your region to obtain information about these collection facilities. Contribute to the preservation of the environment and natural sources by recycling used products.

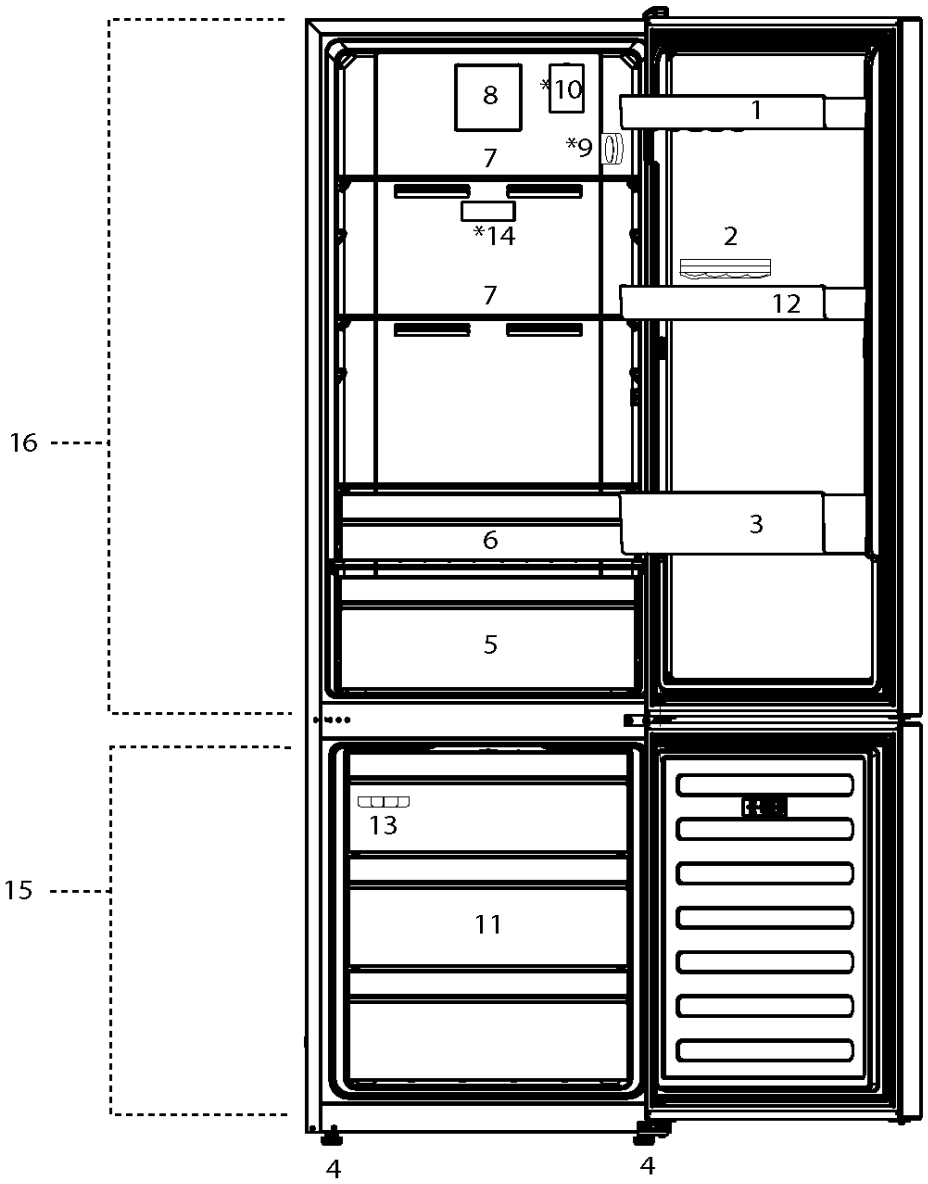
Important!

Connecting a Different Plug

As the colors of the wires in the electricity cable of the device may not correspond to the color codes defining the terminals in your plug, please follow the steps outlined below.

1. Connect the green-yellow or green colored (Grounding) wire to the green and yellow or green colored terminal or the terminal marked with the letter 'E' on the plug. ⏚
2. Connect the blue (Neutral) wire to the black colored terminal or the terminal marked with the letter 'N' on the plug.
3. Connect the brown (Phase) wire to the red colored terminal or the terminal marked with the letter 'L' on the plug. In alternative plugs, a 13 A fuse shall be connected to the plug or the adapter on the main fuse box.

2. Product Overview



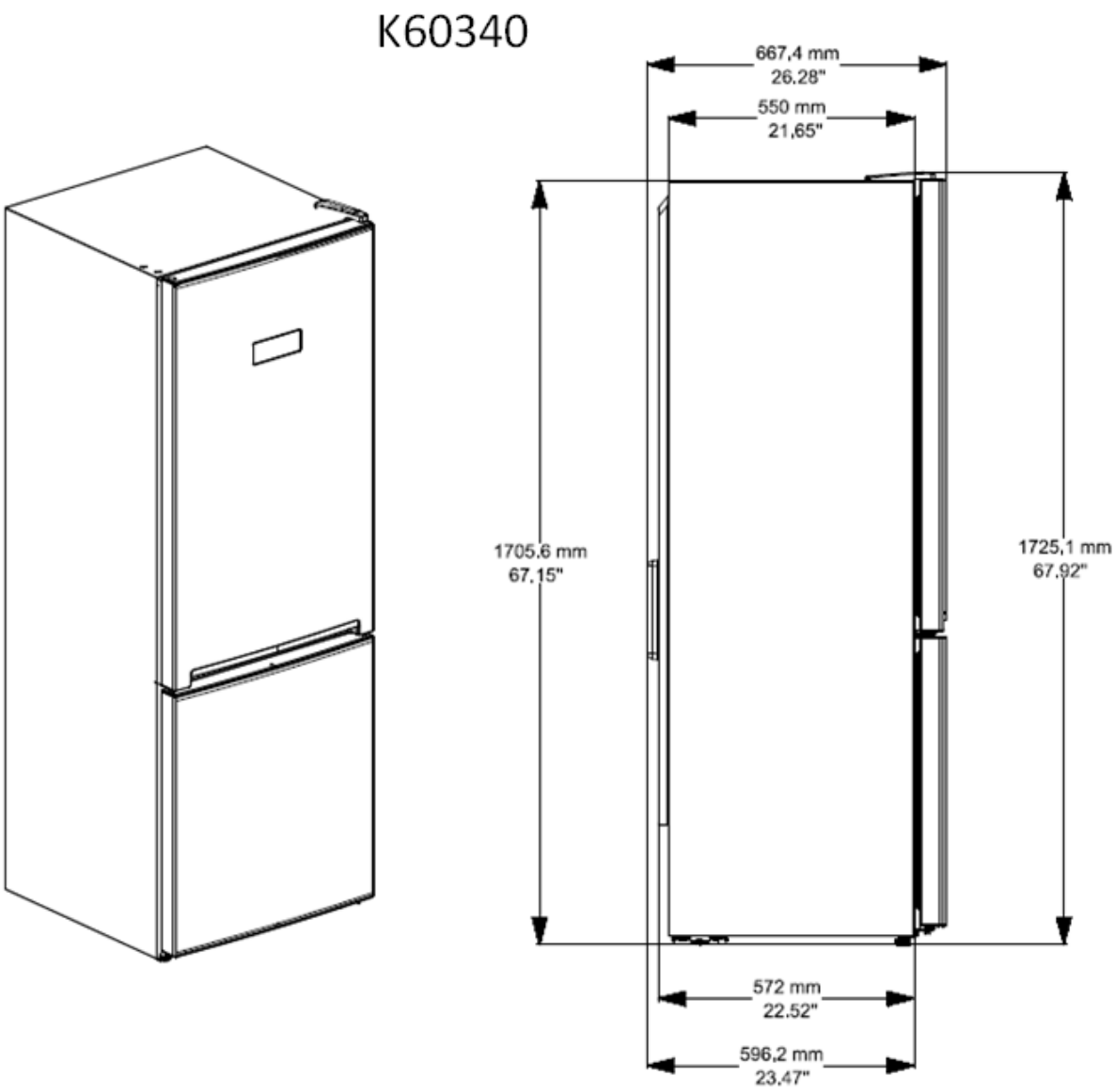
1- Fridge compartment door shelf
2- Egg section
3- Bottle shelf
4- Adjustable feet
5- Fridge crisper
6- Chiller compartment
7- Fridge_ compartment glass shelf
8- Fridge_Fan
9- Temperature setting button
10- Ion Guard
11- Freezer Drawer
12- Fridge compartment door shelf
13- Ice box / Ice-making (Option)
14- Air Filter
15- Freezer compartment
16- Fridge compartment

*optional

Figures that take place in this instruction manual are schematic and may not correspond exactly with your product. If the subject parts are not included in the product you have purchased, then it is valid for other models.

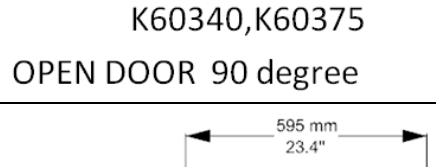
2.1. Dimensions of the Product

2.1.1. K60340N

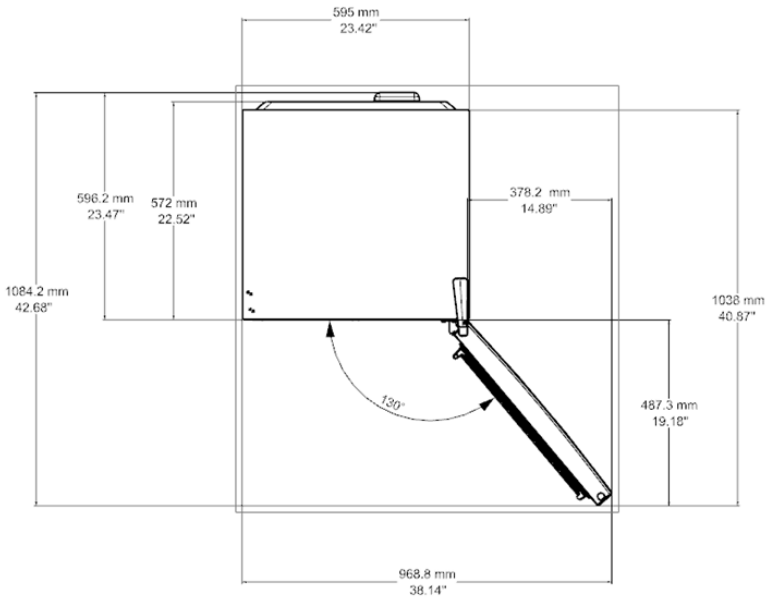


2.2. The Product at 90° and as Stretched to the Maximum

2.2.1.K60340NU



K60340,K60375
OPEN DOOR 130 degree



1. INSTALLATION

1.1. Transportation Instructions

1. This device shall only be transported in upright position. The packaging delivered shall not be damaged during transportation.
2. If the device is to be transported horizontally, it shall only rest on its right side (when standing in front of the device). After the product is elevated, it shall not be operated for at least 4 hours for the system to settle down.
3. Failure to follow the instructions above may cause the device to get damaged. The manufacturer shall not be held liable for any damages due to failure to follow these instructions.
4. The device shall be protected against rain, humidity and other atmospheric factors.
5. When placing your device, pay attention to prevent damaging the floor, pipes, wall panels, etc. The device shall not be moved by pulling from the door or the door handle.
6. Empty the water in the discharge tray before moving the device. For detailed information, see the section "Cleaning and Maintenance" in the user's guide.
7. Do not sit or stand on the device as the device is not designed for this purpose. You may injure yourself or damage the device.

IMPORTANT! In order to prevent the electricity cable from breaking off or getting damaged, pay attention to keep the cable from getting crushed under the device.

1.2. Installation Instructions

1. The volume of the room the device is to be installed shall not be smaller than 10 cubic meters.
2. Do not place your device in a cold room where the temperature may drop below 10 °C at night and/or in winter.

This refrigerator/freezer is designed for operation in ambient temperatures between 10°C and +43°C. If the device is installed in a cold location without heating (e.g. the garage outside the house), it shall not work properly and the freezer compartment will get causing a decrease in the preservation period of frozen foods.

3. Do not place the device next to ovens, radiators or under direct sunlight as these will obstruct the operation of the device. If the device is placed next to a heat source or freezer, ensure that the following minimum distance values are kept.

From ovens: 50 mm (2")
From radiators: 400 mm (12")
From freezers: 25 mm (1")
From the wall: 50 mm (2")

1.3. Right place for installation

	**WARNING:** If the door of the room where the product is to be placed is not wide enough for the product to be passed through, the door should be removed and the product shall be tilted on its side.

- Place the product on a place where you can use it conveniently.
- Place the product at least 30 cm away from heat sources such as stoves, ovens and heaters, and 5 cm away from electric ovens. The product shall not be exposed to humidity and direct sunlight.
- For the product to work effectively, air circulation around the product shall be ensured. If the product is to be placed inside an indent on the wall, leave at least 5 cm between the product and the ceiling and side wall.
- Do not place the product on materials such as carpets or rugs.
- To prevent the product from shaking, place the refrigerator on an even surface.
- Do not install the product in locations where the temperature drops below 10°C.

	If two coolers are to be placed side by side, at least a distance of 4 cm shall be left between units.

1.4. Electrical connection

Connect the product to a grounded outlet protected with a fuse that complies with the values in the nametag. Our company shall not be held liable of the damages due to use of the product without grounding in accordance with local regulation.

- The connection shall comply with national directives.
- The plug of the electricity cable shall be easily reachable after installation.
- The voltage and the allowed fuse protection is stated on the nameplate inside the product. If the current value of the fuse in your house is not compatible with the values stated in the nameplate, call a qualified electrician to connect a compatible fuse.
- The voltage specified should be equal to the voltage of the mains.
- Do not use extension cords or multi-plugs for connection.

	**WARNING:** The damaged electricity cable shall be replaced by the Authorized Service.
	**WARNING:** If the product has a malfunction, it should not be operated before it is repaired. Risk of electric shock!

1.5. Floor balance adjustment

If the refrigerator is not balanced;
The legs of the refrigerator on the front may be rotated as illustrated for balance. The corner where the leg is located will descend when the leg is rotated towards the direction of the black arrow and ascend when rotated towards the opposite direction. It would be helpful if another person lifts the refrigerator slightly when this procedure is being performed.

	**WARNING:** Firstly, unplug the product from the electrical connection. The product shall not be plugged when the legs are being adjusted. Risk of electric shock!

2. PRODUCT USE

- There shall be enough openings on the bottom, top, right and left of the refrigerator to allow for air circulation in the location where the refrigerator is placed.
- In products with water dispensers, the water input to the refrigerator is made from the back of the product, and attention should be paid to prevent the hose attached from being broken or crushed.
- If there is an icematic that is fed by the mains, enough distance shall be maintained for the mains water system.
- Always plug your refrigerator in a grounded outlet. Pay attention not to damage the electricity cable during transportation.
- Do not keep devices such as radiators, heaters, etc. near the refrigerator.
- The place where the refrigerator is located shall be at an appropriate distance to the point where the connection to the mains is to be made.
- The refrigerator shall not be exposed to direct sunlight.
- Surface adjustments shall be made on the location where the refrigerator is placed.
- Enough room shall be maintained to allow for the doors of the refrigerator to be opened freely.
- The position of the refrigerator shall be appropriate for service and maintenance tasks.
- Do not use the refrigerator on place where the floor is wet. There is risk of electric shock.

3. General Working Principle

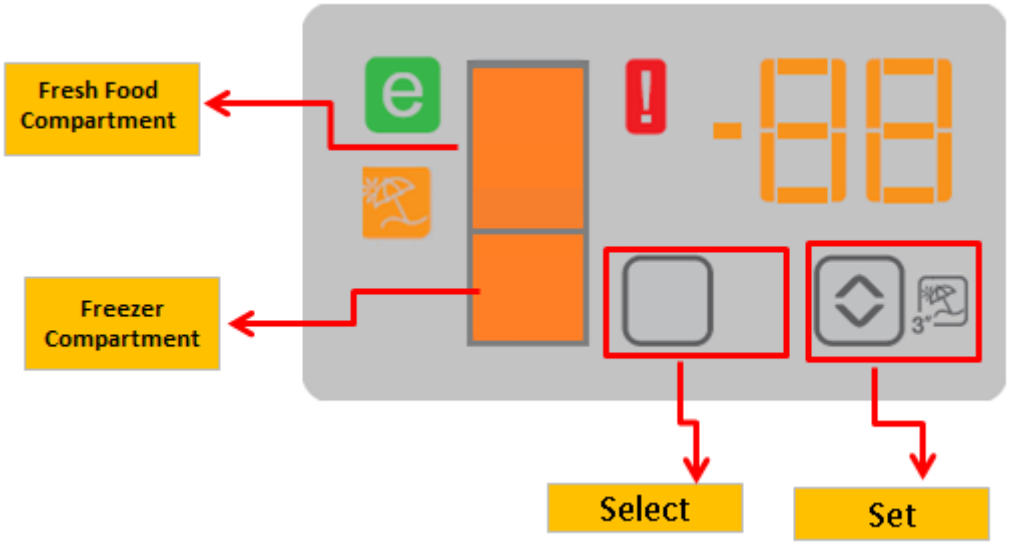
K60340N/K60375N/K70415N electronic no-frost refrigerator consists of cooler and freezer compartments. This is a no-frost refrigerator controlled with a microprocessor. With the microprocessor, all function and temperature parameters of the refrigerator are controlled in accordance with the

requests of the user. The cooling elements (compressor, fan, heater) of the refrigerator are controlled with the software in the microprocessor. The refrigerator is cooled with the circulation of the air inside through the evaporators, separately for the Freezer and FF. As the product is equipped with a no-frost cooling system, the ice is defrosted automatically.

4. PRODUCT OPERATION

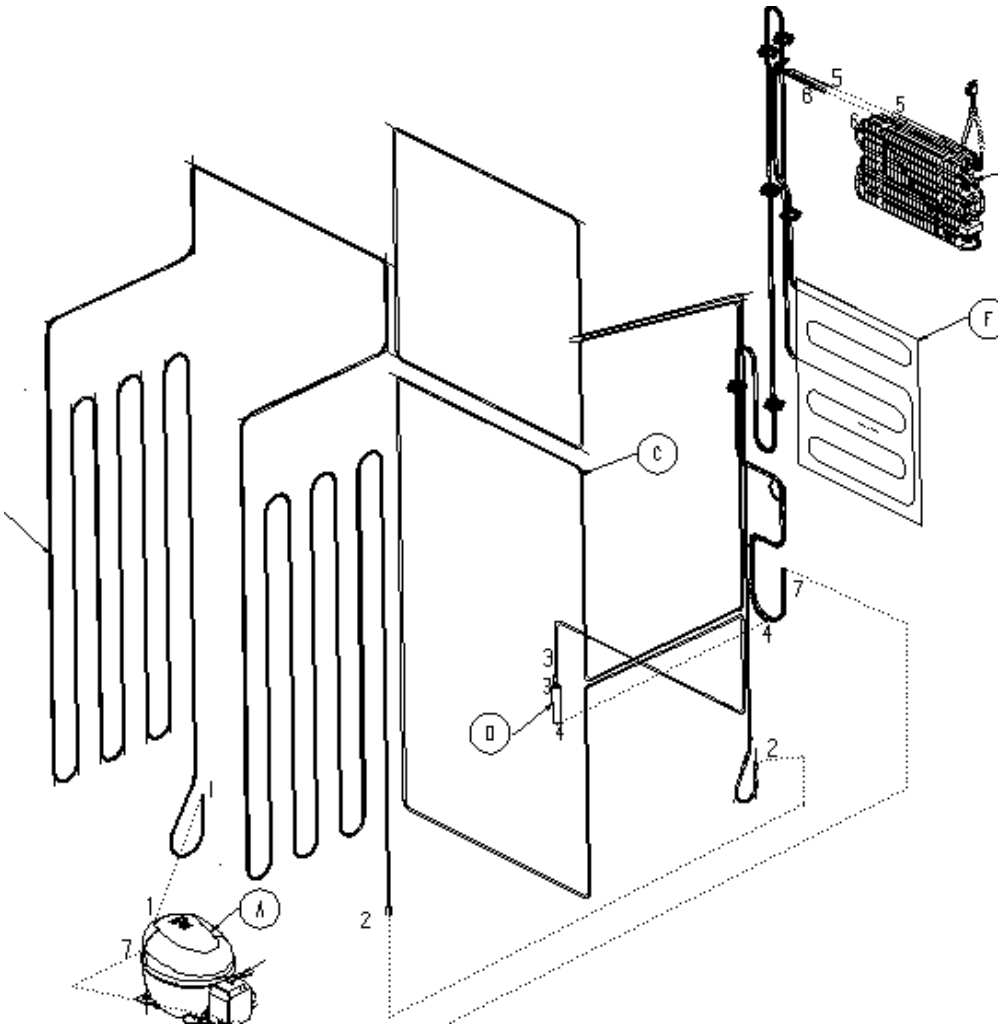
4.1. Internal indicator panel (In selected models)

Touch indicator panel allows the user to adjust the temperature and control other functions of the unit without opening the door of the refrigerator. Press the related buttons to adjust the function settings. Indicator panels may vary depending on the version of the product. The display board used in refrigerators has two keys. When the Select key is pressed, FreshFood and Freezer set values are displayed.



⚠	The shape displayed is only an illustration and may not reflect the product exactly. If the related parts are not included in the product, it means that this function is available in other models.

5. GAS FLOW DIAGRAM AND PARTS



Cooling System Components	
1	Compressor
2	Heating Pipe
3	Condenser
4	Dryer
5	Capillary Tube
6	Freezer Evaporator
7	Freshfood Evaporator
8	Return Pipe

Welding Points	
A	Compressor – Heating Pipe
B	Heating Pipe - Condenser
C	Condenser – Dryer
D	Dryer – Capillary Tube
E	Capillary Tube - Freezer Evaporator
F	Freezer Evaporator - FF Evaporator
L	FF Evaporator – Return Pipe
M	Return Pipe - Compressor
H	Compressor - Service Pipe

5.1. Operating the Cooling System

5.1.1.FF Defrost

FF Defrost		
Decision:	Normal State	Door Closed Detc.
Depending on the compressor cycle count Depending on the defined maximum operation duration of the compressor If the compressor is operated continuously for at least 240 minutes, FF Defrost process shall be initiated when the FF Eva sensor temperature is lower than -30°C.	Every 4 cycles 240 min	10 1000 min
Algorithmic Behavior:	Normal State	Door Closed Detc.
FF Fan Compressor	Active Not active	Not active Not active
Function Stopped: FF defrost process is stopped when FF Eva sensor reaches +4°C. Maximum FF defrost duration is 150 minutes.		

The ice is defrosted by operating the FRZ evaporator heater and discharge heater once in every 26 hours for FRZ defrost.
The compressor shall not initiate FRZ defrost process based on the total operation duration apart from 26 hours of actual operation.
If the closed door algorithm is activated, the ice is defrosted by operating the FRZ evaporator heater and discharge heater once in every 50 hours for FRZ defrost.

5.1.2.Compressor

Operating Conditions

Condition for the Compressor to be ON:

- FF Air >= cut-in or Frz Air >=cut-in

Condition for the Compressor to be OFF:

- FF mandatory defrost condition
- FF Air <= cut-out and - Frz Air <= cut-out

Notes:

Compressor pause duration = 6 minutes.

For the Compressor:

- Min. operation duration: 5 min
- Max. operation duration: 1000 min
- Min. Pause duration: 5 min
- Max. Pause duration: 360 min

	DOOR OPEN		DOOR CLOSED		DOOR OPEN		DOOR CLOSED	
	FF Air Cut in	FF Air Cut out	FF Air Cut in	FF Air Cut out	FF Heater Cut in	FF Heater Cut out	FF Heater Cut in	FF Heater Cut out
Set Value	Temperature Value (C)	Temperature Value (C)	Temperature Value (C)	Temperature Value (C)	Temperature Value (C)	Temperature Value (C)	Temperature Value (C)	Temperature Value (C)
Quick Fridge	3.0	1.7	3.0	1.7	1.2	2.5	0.0	1.0
1	3.2	2.6	3.2	2.6	3.5	4.5	3.0	4.0
2	4.4	3.8	4.4	3.8	3.5	4.5	2.0	3.0
3	5.8	5.2	5.8	5.2	3.0	4.0	2.0	3.0
4	6.4	5.8	6.4	5.8	3.0	4.0	2.0	3.0
5	7.4	6.8	7.4	6.8	3.0	4.0	2.0	3.0
6	8.0	7.4	8.0	7.4	3.0	4.0	2.0	3.0
7	9.0	8.4	9.0	8.4	3.0	4.0	2.0	3.0
8	10.3	9.7	10.3	9.7	3.0	4.0	2.0	3.0
Vacation	13.8	11.5	13.8	11.5	2.5	3.5	2.5	3.5

5.1.3.Quick Freezing

- Quick Freezing function is activated when the control knob is rotated to indicate the snowflake symbol. Both compartments initiate the quick cooling process.
- The function is stopped when the cooling compartment set value is changed.
- If the vacation status is activated when the function is active, the function will be canceled.
- When the function is active, the cooling components are operated in accordance with the following cut-in cut-out values.
-
-

	Freezer Cut-Out (Air)	Freezer Cut-In (Air)
Quick freezing	-30°C	-27°C

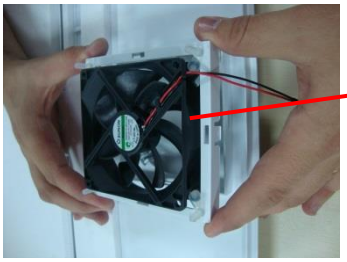
6. ELECTRONIC AND CONTROL SYSTEMS

6.1. Component List and Working Principles

Compressor:
The cooling gas circulation is made with the compressor. In models with standard compressor, power supply is provided on a protective thermal unit and in models with VCC compressors, power supply is provided from the inverter group. In models with VCC (VETZ110), frequency is controlled during operation and in models with standard compressors, the frequency value is constant.

Manufacturing company	EMBRACO-VEMC9C
C.O.P (w/w)	1.89-1.96
Power (W)	33-114
Operating voltage/frequency	230 V, 40-150 Hz.

Cooling Compartment Fan Engine:
Cooling compartment is grouped with the evaporator cover. Continuous circulation within the compartment is ensured by passing the air through the evaporator.



Type	DJF92T7AS5
Voltage range	12V, DC
Power (W)	0.78
Direction of Rotation	Clockwise (CW)
Rotation per minute (RPM)	2100 +/- 10 %

Freezing Compartment Fan Engine:
Freezing compartment is grouped with the internal frame. Continuous circulation within the compartment is ensured by passing the air through the evaporator.

Type	FDQC18AL4C
Voltage range	115 V, 60 Hz,
Power (W)	2.5 W
Direction of Rotation	Counterclockwise
Rotation per minute (RPM)	1700 +/- 200

Sensors: Its resistance decreases as temperature increases. The function of the sensors on the refrigerator is to detect the temperature of the region they are located in and transmit these data to the electronic control board. The temperature-resistance table of the sensors is provided below.

Temperature (°C)	RT/R25	R deviation	Resistance (kΩ)
-40	33.25	2.64	332.50
-35	24.01	2.40	240.10
-30	17.53	2.16	175.30
-25	12.93	1.93	129.30
-20	9,636	1.71	96.36
-15	7,249	1.49	72.49
-10	5,503	1.29	55.03
-5	4,214	1.08	42.14
0	3,251	0.89	32.51
5	2,532	0.70	25.32
10	1,986	0.52	19.86
15	1,568	0.34	15.68
20	1,248	0.17	12.48
25	1,000	0.00	10.00
30	0.8051	0.16	8,051
35	0.6528	0.32	6,528
40	0.5325	0.47	5,325
45	0.4368	0.62	4,368
50	0.3602	0.77	3,602
55	0.2986	0.91	2,986
60	0.2488	1.05	2,488
65	0.2083	1.18	2,083
70	0.1752	1.31	1,752
75	0.1480	1.44	1,480
80	0.1256	1.57	1,256
85	0.1070	1.69	1,070
90	0.09154	1.81	0.9154
95	0.07861	1.93	0.7861
100	0.06775	2.04	0.6775
105	0.05860	2.15	0,586
110	0.05086	2.26	0.5086
115	0.04430	2.37	0,443

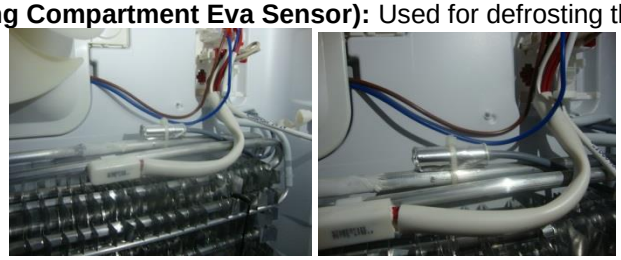
120	0.03870	2.47	0,387
125	0.03391	2.57	0.3391
130	0.02931	2.67	0.2931
135	0.02628	2.77	0.2628
140	0.02323	2.86	0.2323
145	0.02059	2.95	0.2059
150	0.01831	3.05	0.1831
155	0.01631	3.15	0.1631

FF Air sensor (Cooling Compartment Sensor): Detects the temperature inside the cooling compartment and transmits these data to the microprocessor. The values detected with this sensor are compared with the cut-in and cut-out values of the set temperature for the freezing compartment, and the compressor, cooling compartment fan engine and the cooling compartment rear wall heater are enabled or disabled accordingly.

FF Eva sensor (Cooling Compartment Eva Sensor): Used for defrosting the cooling compartment. It is covered with polyurethane and cannot be serviced. Sensor is covered in PU.

Frz Air sensor (Freezing Compartment Sensor): Detects the temperature inside the freezing compartment and transmits these data to the microprocessor. The values detected with this sensor are compared with the cut-in and cut-out values of the set temperature for the freezing compartment, and the compressor is enabled or disabled accordingly.

Frz Eva sensor (Freezing Compartment Eva Sensor): Used for defrosting the freezing compartment.



Flange Heater: It is used to prevent exudation on the surface of the door seals of the freezer.
The hot gas from the condenser is circulated in the pipe to prevent exudation.

PTC relay: Its resistance increases in line with the temperature value. The first motion is achieved by enabling the auxiliary winding of the compressor and afterwards it is heated with the current on itself and disables the auxiliary winding.
Thermal unit: This is a component that short circuits when heated. It disables the current to the compressor with an open circuit at a certain temperature to protect the compressor windings from overheating. When the compressor temperature decreases below a certain value, it initiates the compressor with a complete circuit.

Reed Sensor: The reed sensor that sends the door closed or open signal for the FF door is on the flange of the frame. Sends the door open/closed signal to the control board. When the door is open it is an open circuit and when the door is closed it is a short circuit.

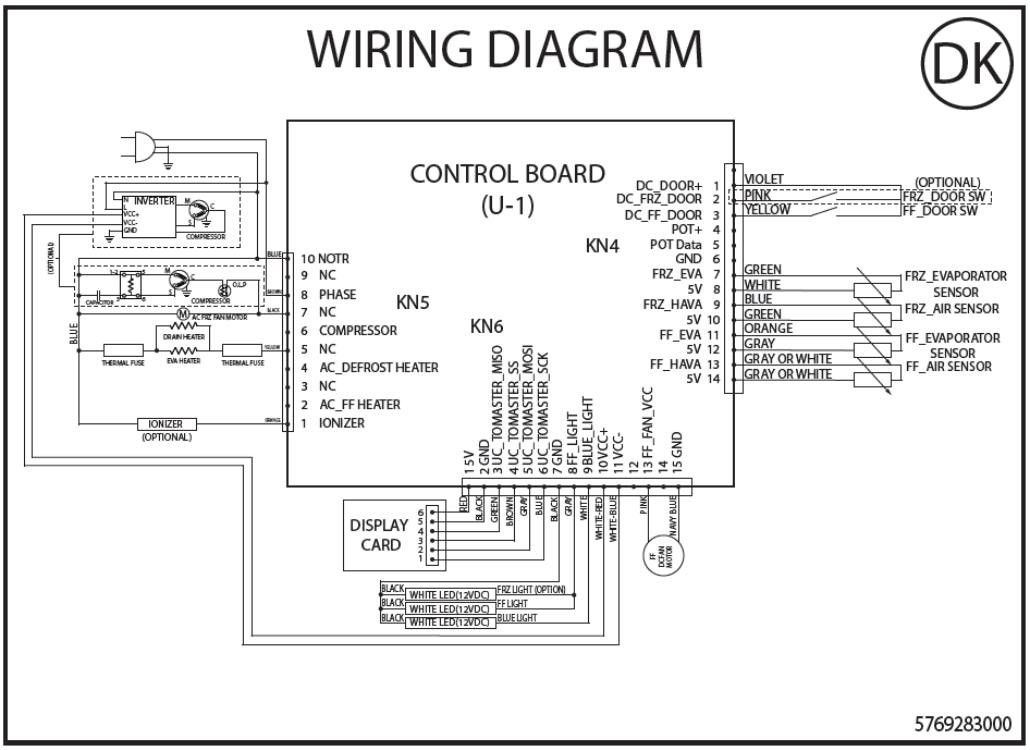
FF Lighting: LEDs are used to illuminate the cooling compartment. LED lights are activated by the control board when the door of the cooling compartment is opened.
Voltage:12V DC
Power: 1.5 W

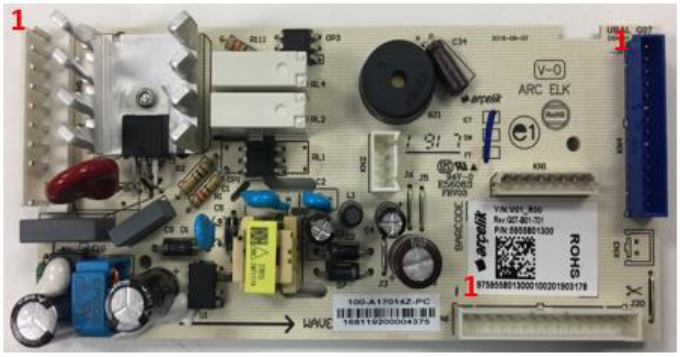
Electronic Control Board The control board is located inside the plastic box closed with a plastic board cover, on the upper plate of the refrigerator.

7. ELECTRONIC CONTROL SYSTEM

7.1. U-1 Boards

U-1 control board is located inside the plastic box closed with a plastic board box and metal cover, on the upper plate of the refrigerator.





KN5

IONIZER	1
FF HEATER	2
NO CN	3
FRZ HEATER	4
NO CN	5
COMPRESSOR+FRZ FAN	6
NO CN	7
PHASE	8
NO CN	9
NOTR	10

KN4

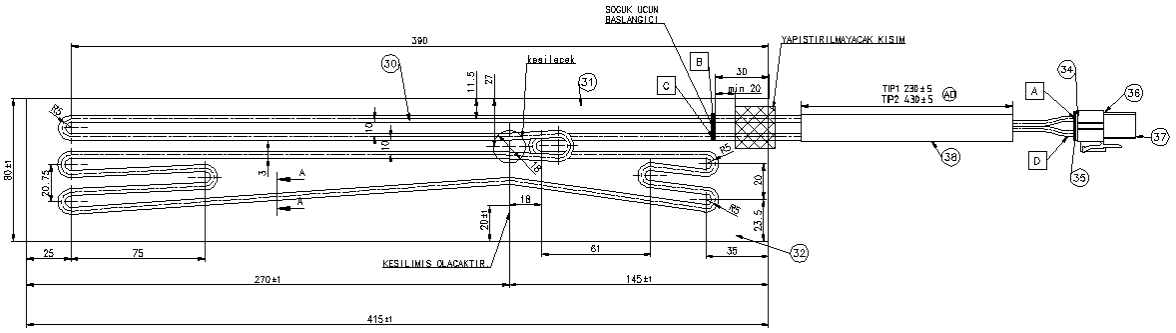
14	5V
13	NO CN
12	CABIN_1 DOOR SW
11	NO CN
10	NO CN
9	NO CN
8	FRZ_EVA_SENSE
7	5V
6	FRZ_AIR_SENS
5	5V
4	FF_EVA_SENS
3	5V
2	FF_AIR_SENS
1	5V

KN6

1	GND
2	NO CN
3	FAN POWER
4	NO CN
5	VCC-
6	VCC+
7	BLUE DC LED (OPTIONAL)
8	CABIN_1_LED + CABIN_2_LED(OPTION)
9	GND
10	SCK
11	MOSI
12	SS
13	MOISO
14	GND
15	5V

7.2. Freezing Discharge Heater

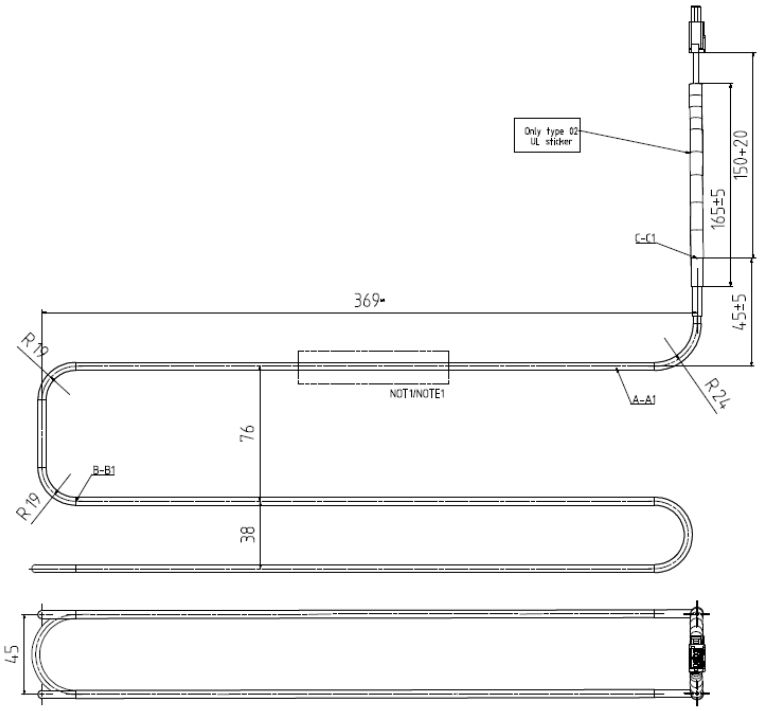
The freezing compartment defrosts the ice in the discharge section. It is activated during FRZ defrost.



Voltage : 120 V
Power:21w
Resistance:685Ω

7.3. Defrost heater

The freezing compartment defrosts the ice in the evaporator section. It is operated during the defrosting process. It is activated once in every 26 hours to defrost the ice on the evaporator.
It is disabled once the FRZ evaporator sensor temperature reaches the cut-out value. FRZ EVA (Defrost) Sensor temperature should reach +10 C for the defrosting process to end.



Voltage : 120V
Power:89 w
Resistance:162Ω

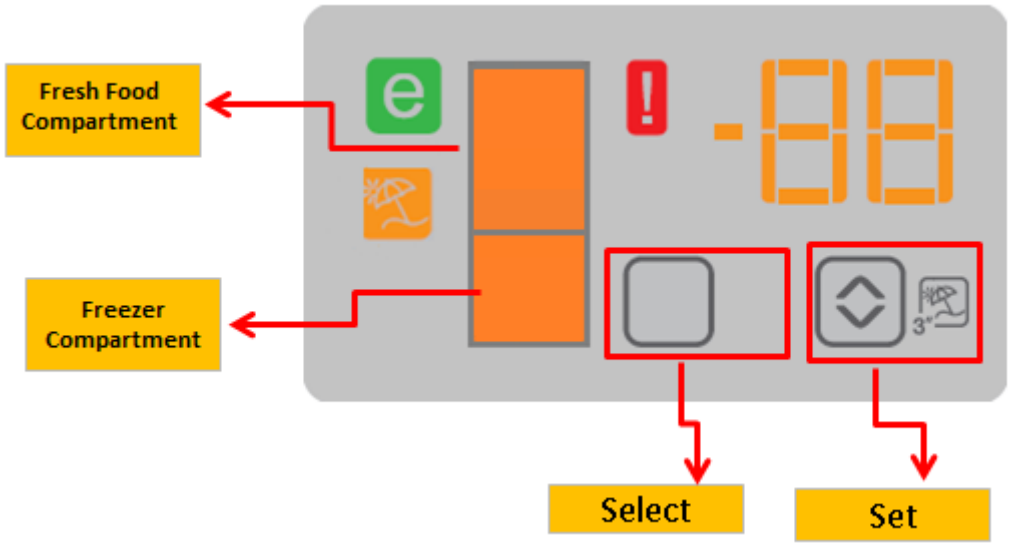
8. Production Test

Time Measurement with Oscilloscope		Component to be Controlled
0.2	2.0	Defrost heater
0.2	4.0	FF fan DC
4.2	6.0	Lighting (FF + Frz)
6.2	7.8	FF heater
6.2	13.0	Ionizer
9.2	14.0	Compressor + Frz fan

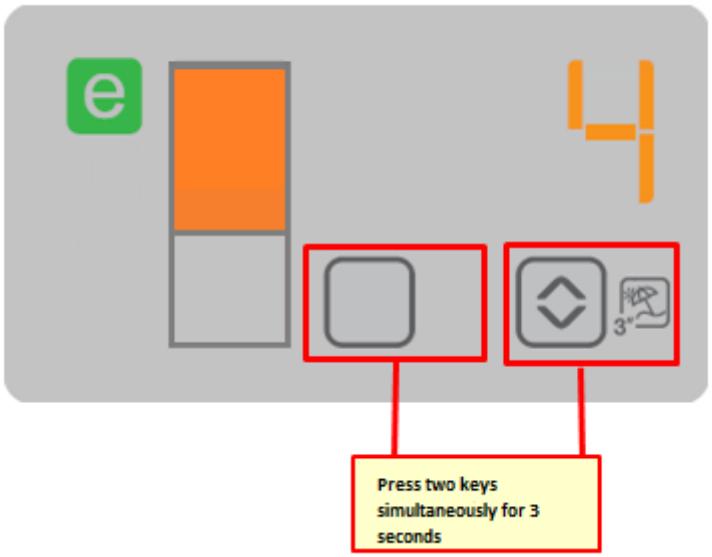
Service Test

The display board used in refrigerators has two keys.

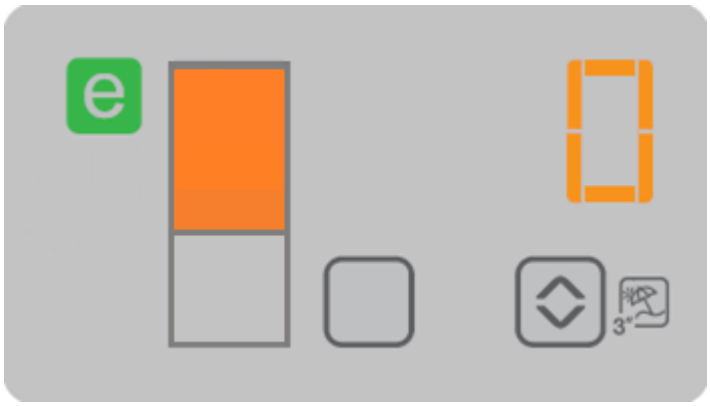
When the Select key is pressed, FreshFood and Freezer set values are displayed.



The following steps are taken respectively in service mode.
Within the first 30 seconds after the refrigerator is energized
if the keys Select and Set are pressed and held at the same time for 3 seconds,
the system shall switch to service mode.

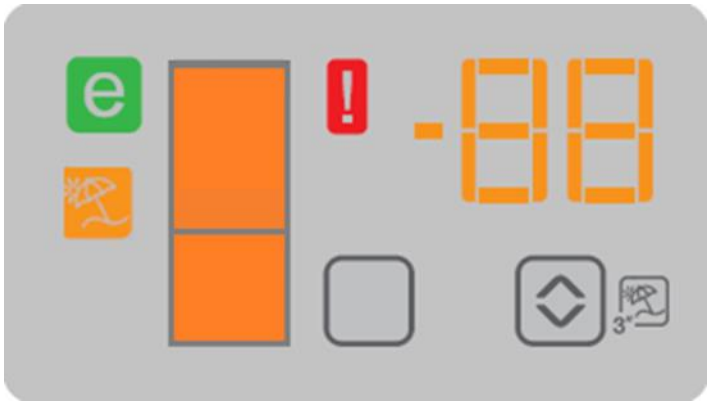


PS and 0 are flashed on the display.



The buzzer will be activated for a short period, the number "0" will flash on the display and the warning symbol will be on. The number "0" will be entered if the key Select is pressed once and service test will be initiated.

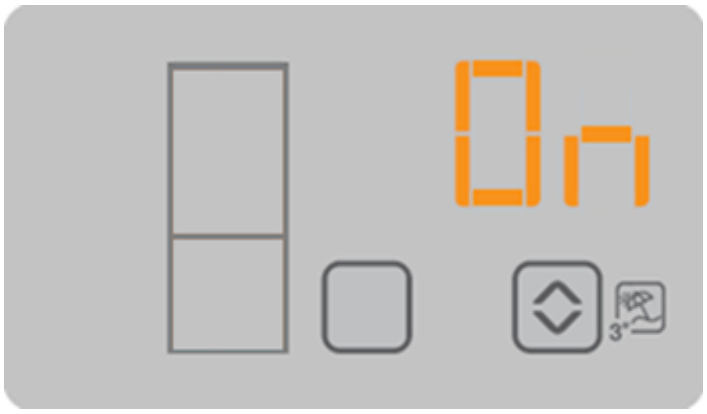
All segments will start flashing in 1 second intervals.



If the user presses any key, the SC step will be initiated.
The letters SC (Selected Component) will appear on the display.

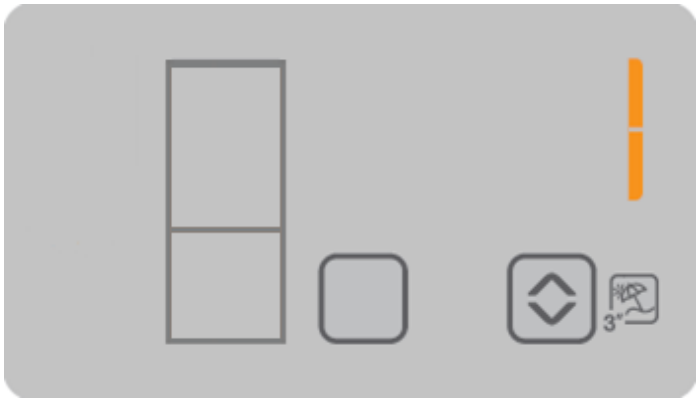
On this step, the Fans, Blue light and the LEDs will turn on.
The selected components are turned "On" and "Off" by pressing the Select key.

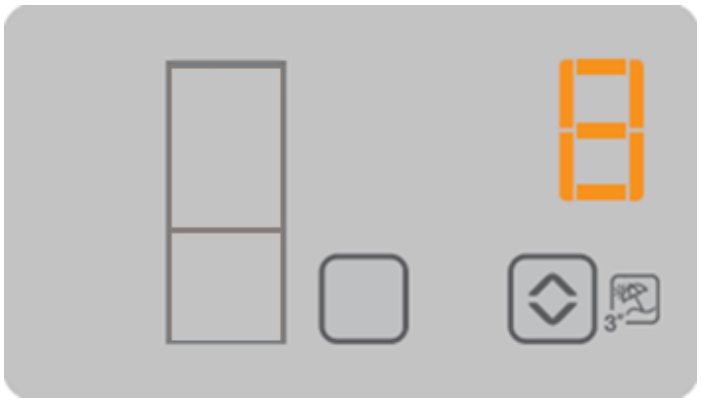
Freezer Lighting
FF Lighting
Blue Light
FF Fan
Freezer Fan
Condenser Fan



If the Select and Set keys are pressed at the same time, the Version-Revision display screen will appear.

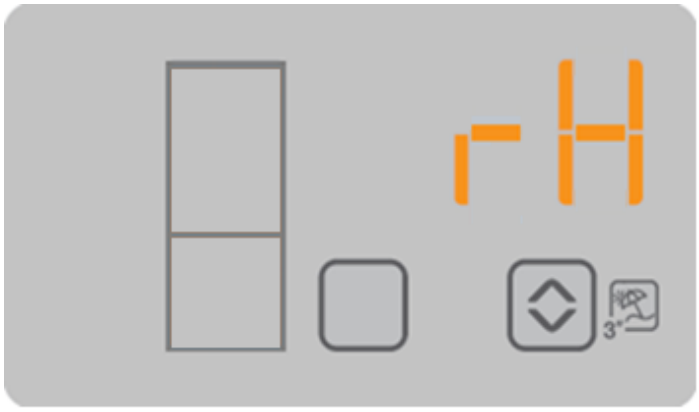
On the display first the Version data then the Revision data will be shown.

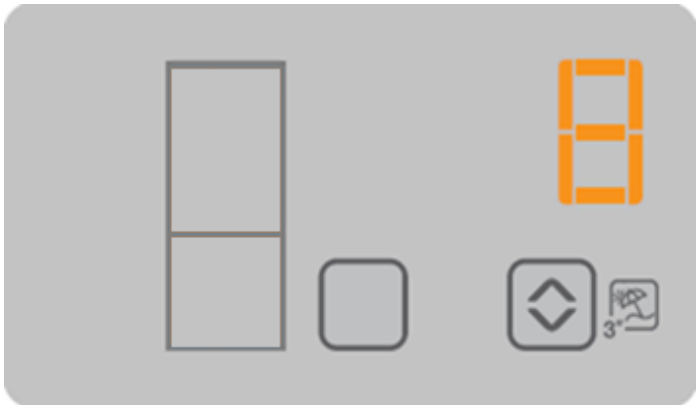




When the user clicks any key, the sensors will be display. First the sensor abbreviation, then the sensor value will be shown on the display.
Pressing the Select key will display the next sensor and pressing the Set key will display the previous sensor.

rH	Freezer Hava	Cabin1
rE	Freezer Eva	Cabin1
FH	FF Hava	Cabin0
FE	FF Eva ntc	Cabin0



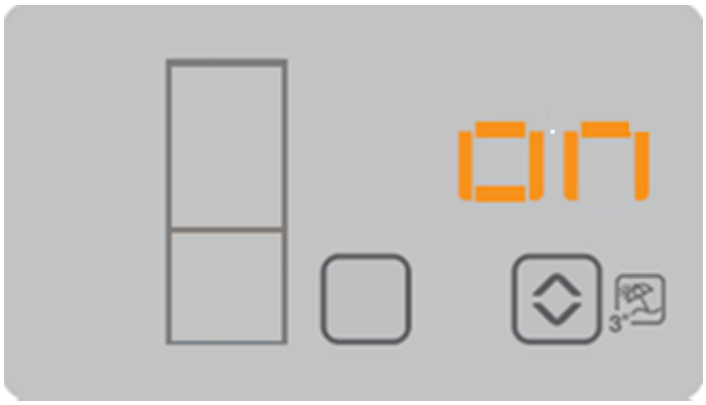


If Select and Set keys are pressed at the same time, components will be displayed.
The user may switch between components by pressing the Set key.

Freshfood Fan	FF
Freshfood Eva Heater	FO
Ionizer	Io
Blue Light	bA
Freshfood Lighting	FL
Freezer Fan	rF
Freezer Eva Heater	rE
Freezer Lighting	rL
Condenser Fan	CF
Compressor	Co

The selected component will be activated when the Select key is pressed, and will be disabled once the key is pressed again.

When any component is activated the warning symbol will turn on and the symbol will turn off once the component is disabled.

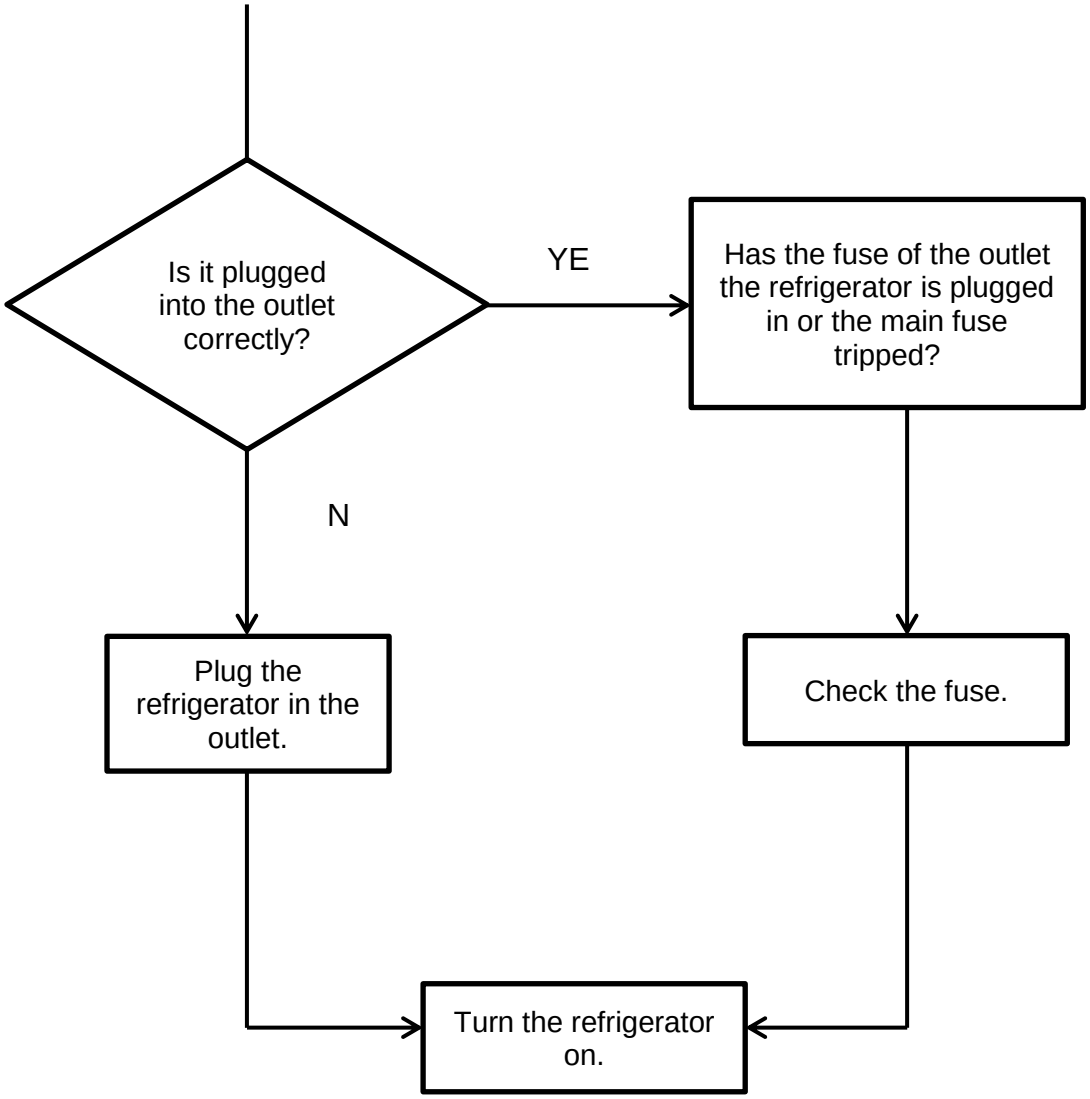


9. TROUBLESHOOTING

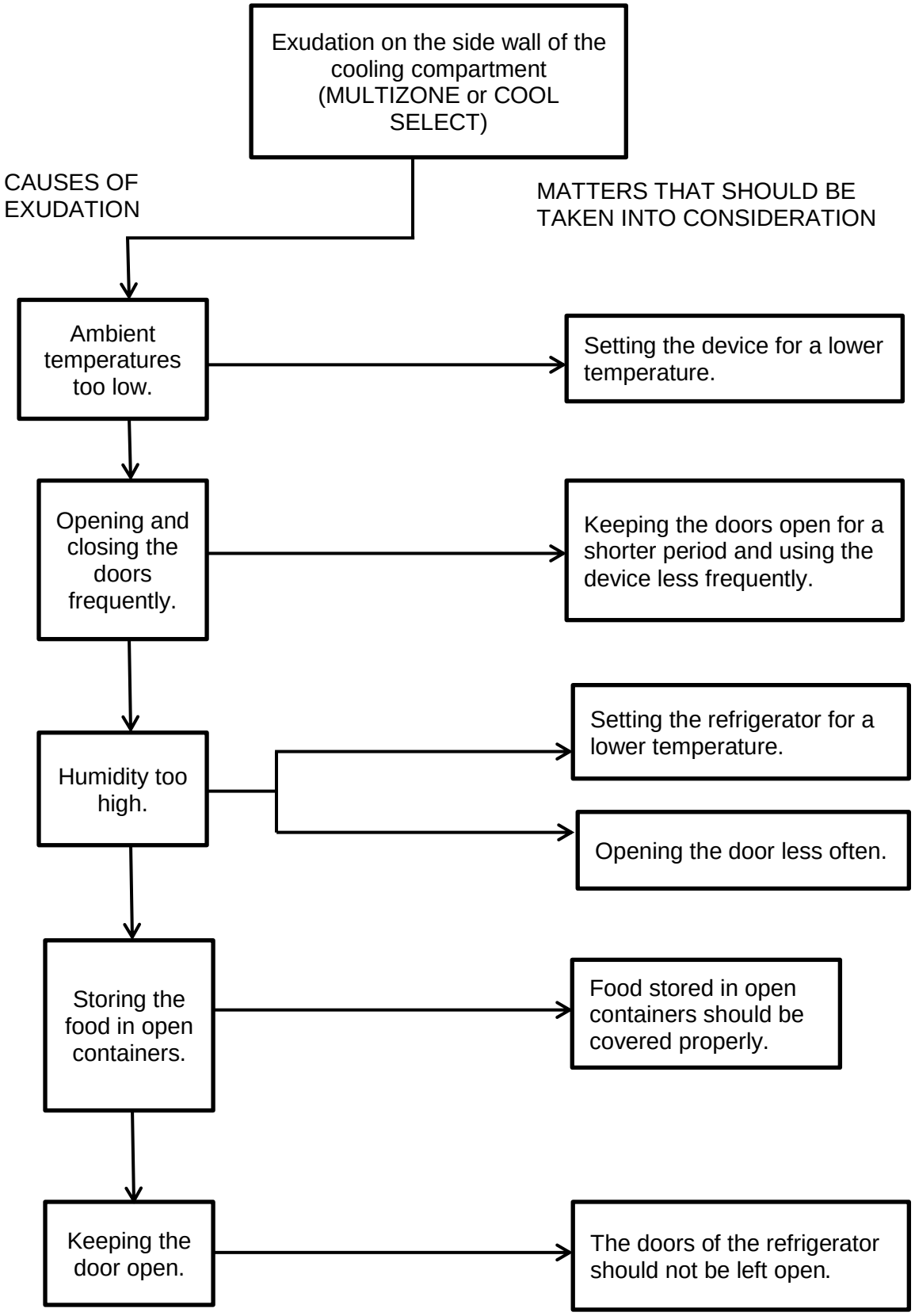
ERROR CODE	ERROR DEFINITION
E0	Freezing Compartment Air Sensor Error
E1	Freezing Compartment Evaporator Sensor Error
E2	Cooling Compartment Evaporator Sensor Error
E3	Cooling Compartment Air Sensor Error
E4	Freezing Compartment Defrost Heater Error
E8	Icematic Air Sensor Error
E9	Icematic Fault
E13	Cyclic Frz Fan Error
E15	Cyclic Condenser Fan Error
Warning symbol	High Temperature Error
-	Electrical cooling error
-	Electrical freezing error

9.1. Refrigerator is Not Working

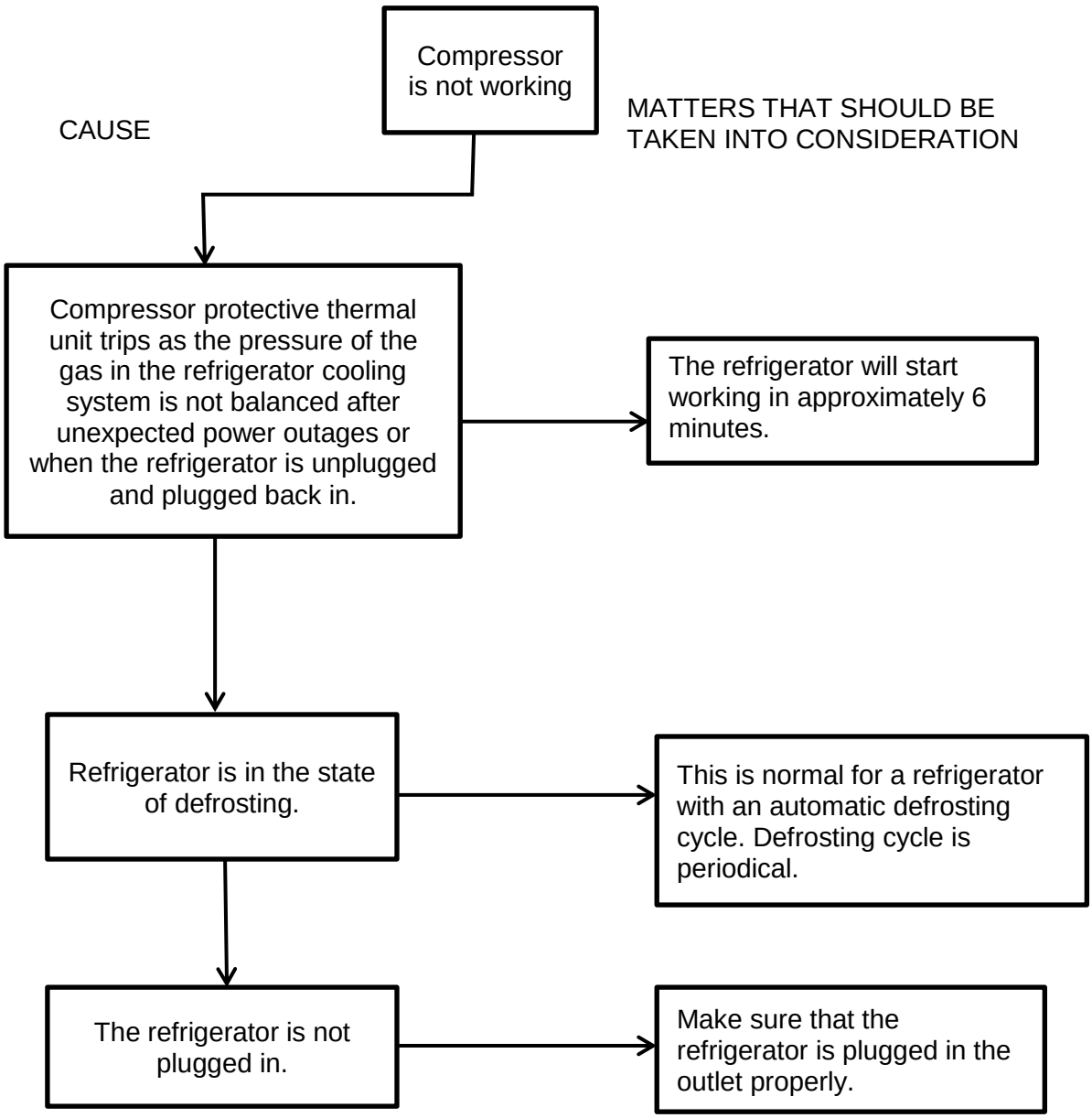
Refrigerator is not working



9.2. Exudation in the Cooling Compartment

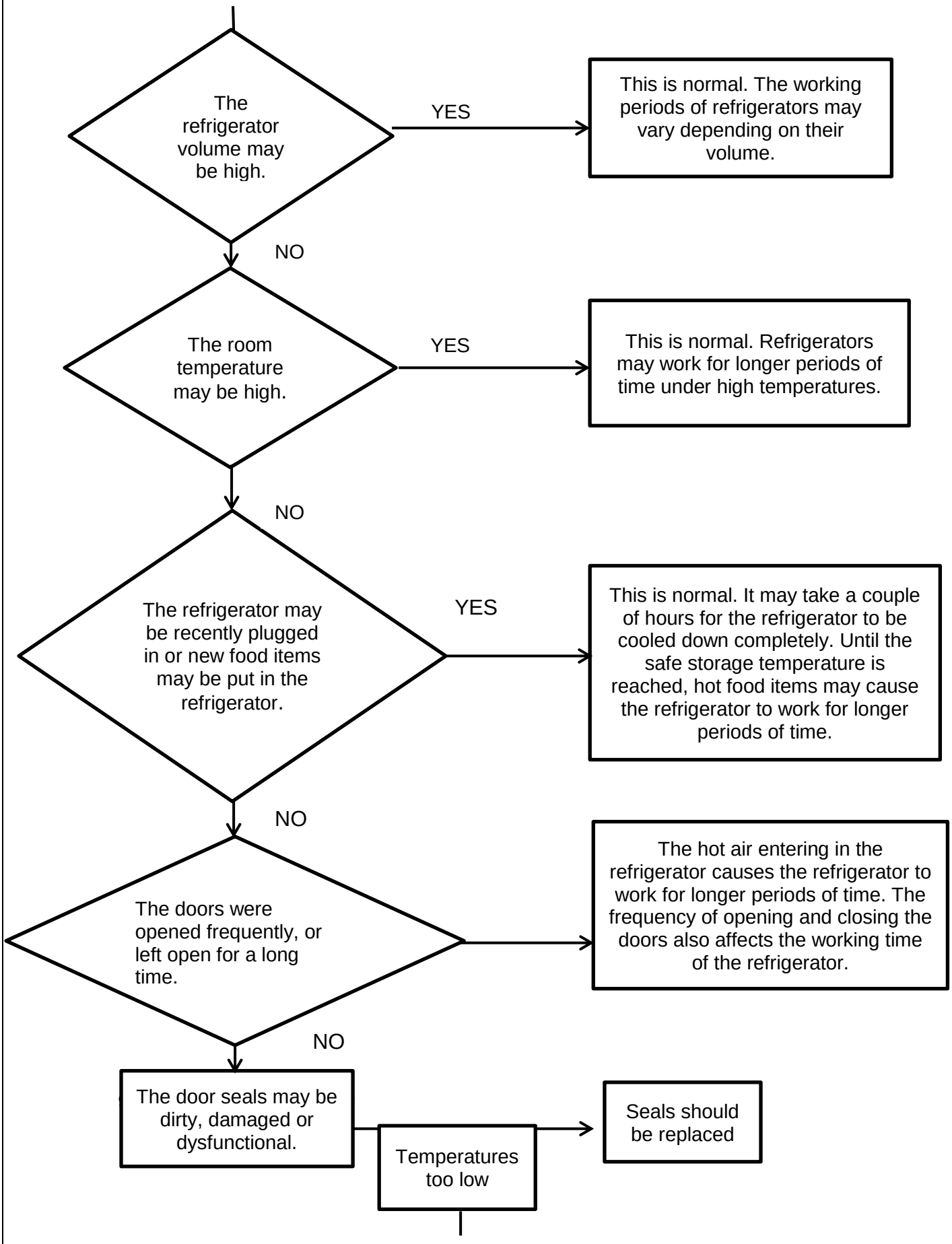


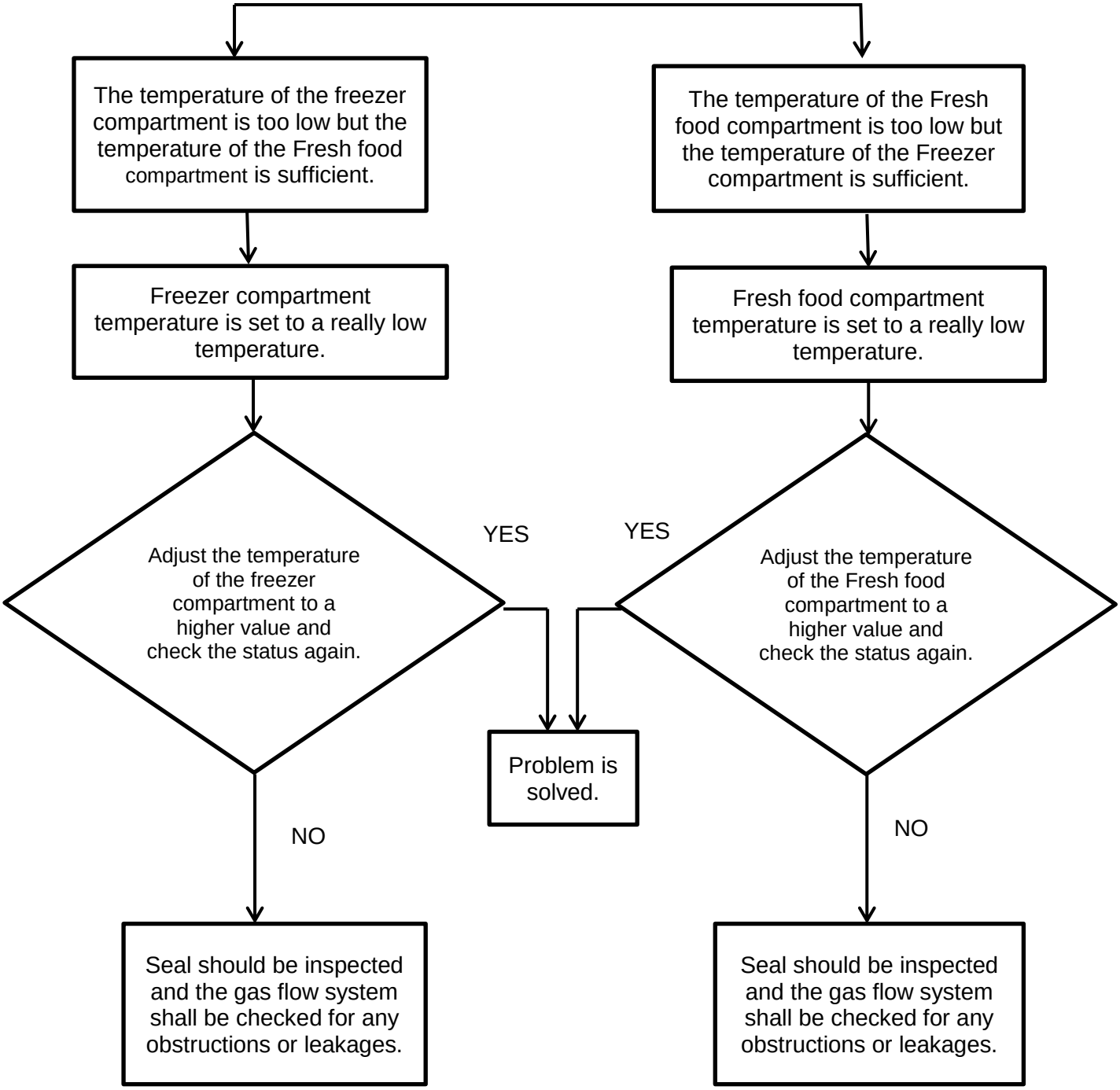
9.3. Compressor is not Working



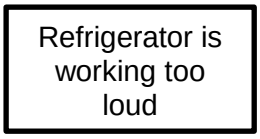
9.4. Refrigerator is Working Frequently and for Long Periods of Time

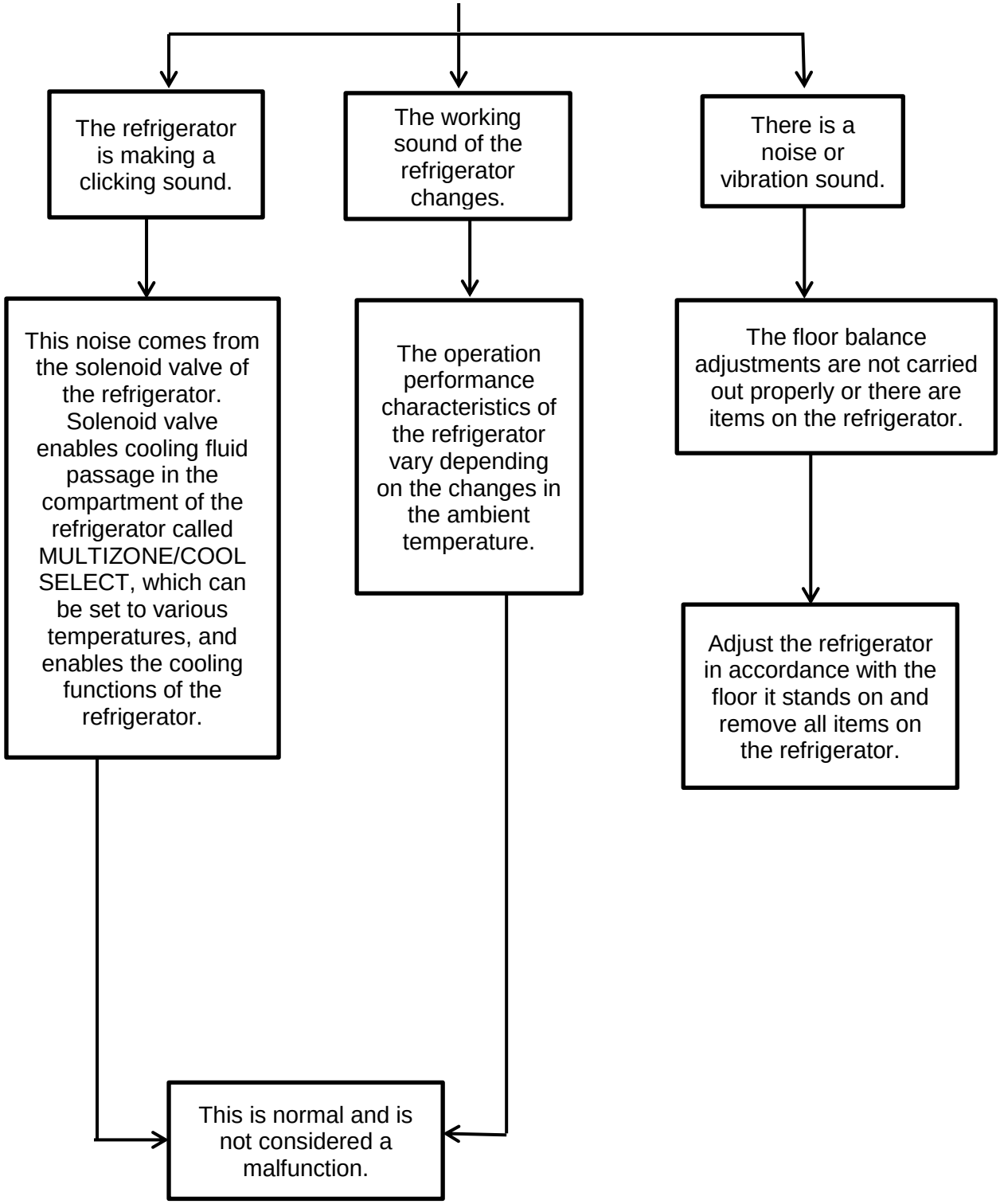
Refrigerator is working frequently and for long periods of time.



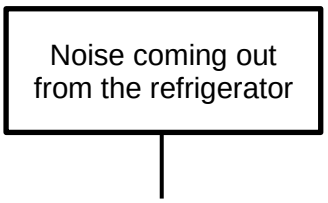


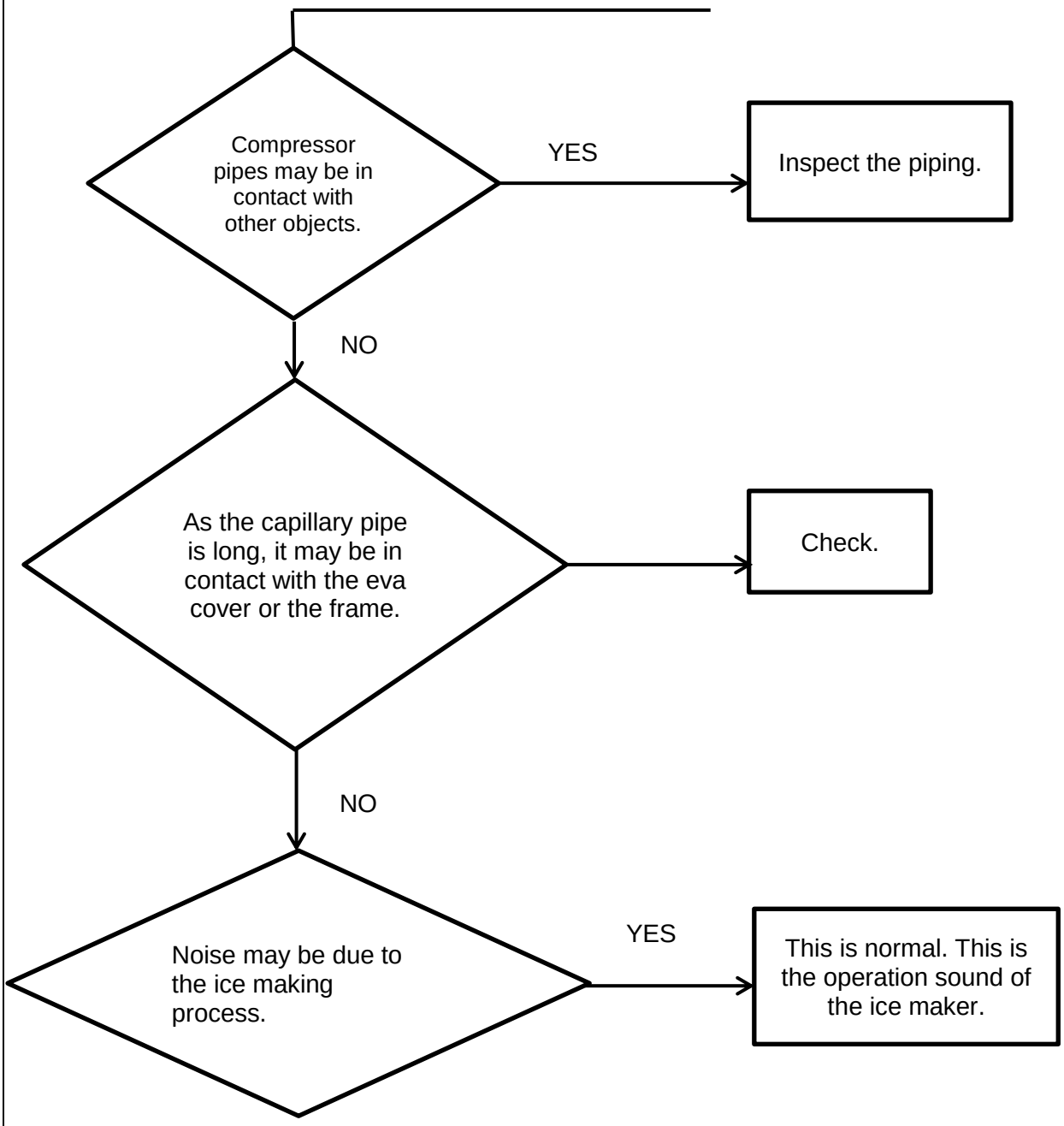
9.6. Refrigerator is Working Too Loud



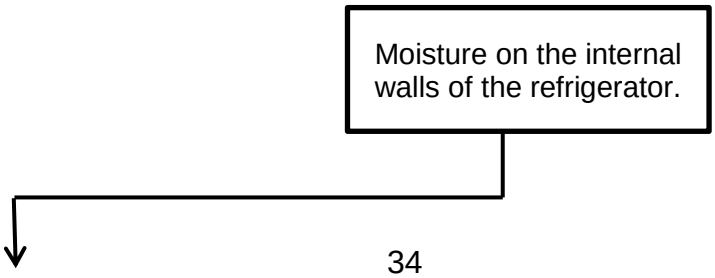


9.7. Noise Coming Out From the Refrigerator

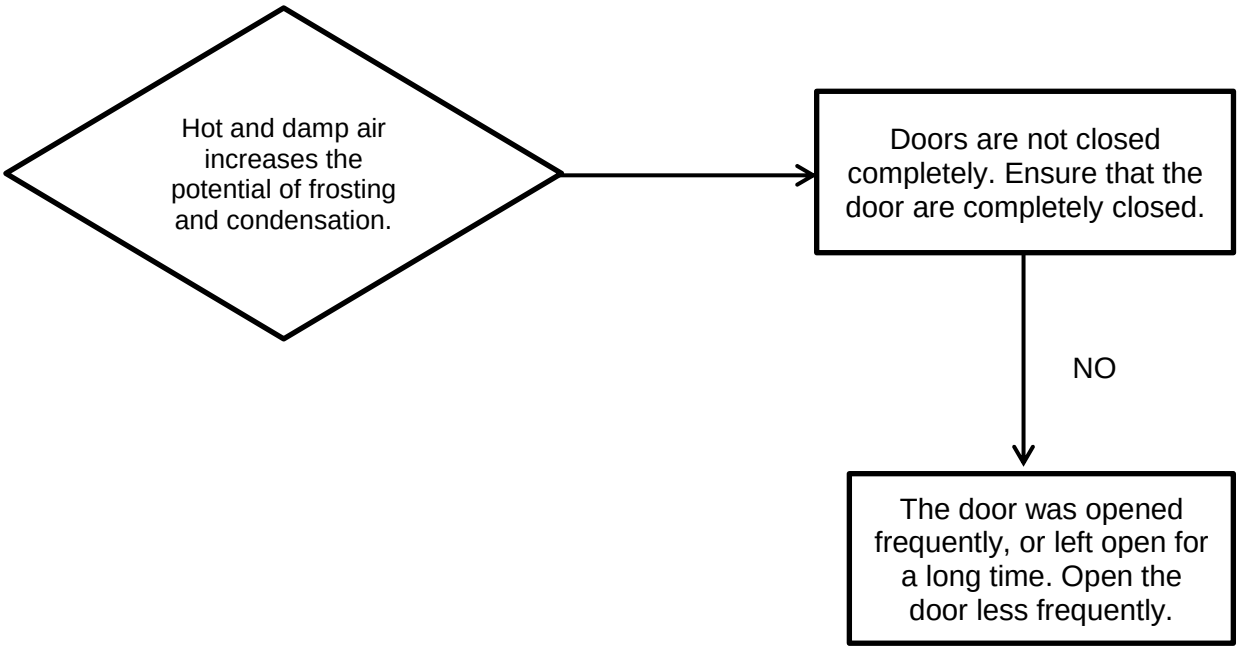




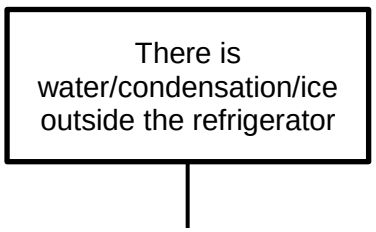
9.8. Humidity on the Internal Walls of the Refrigerator

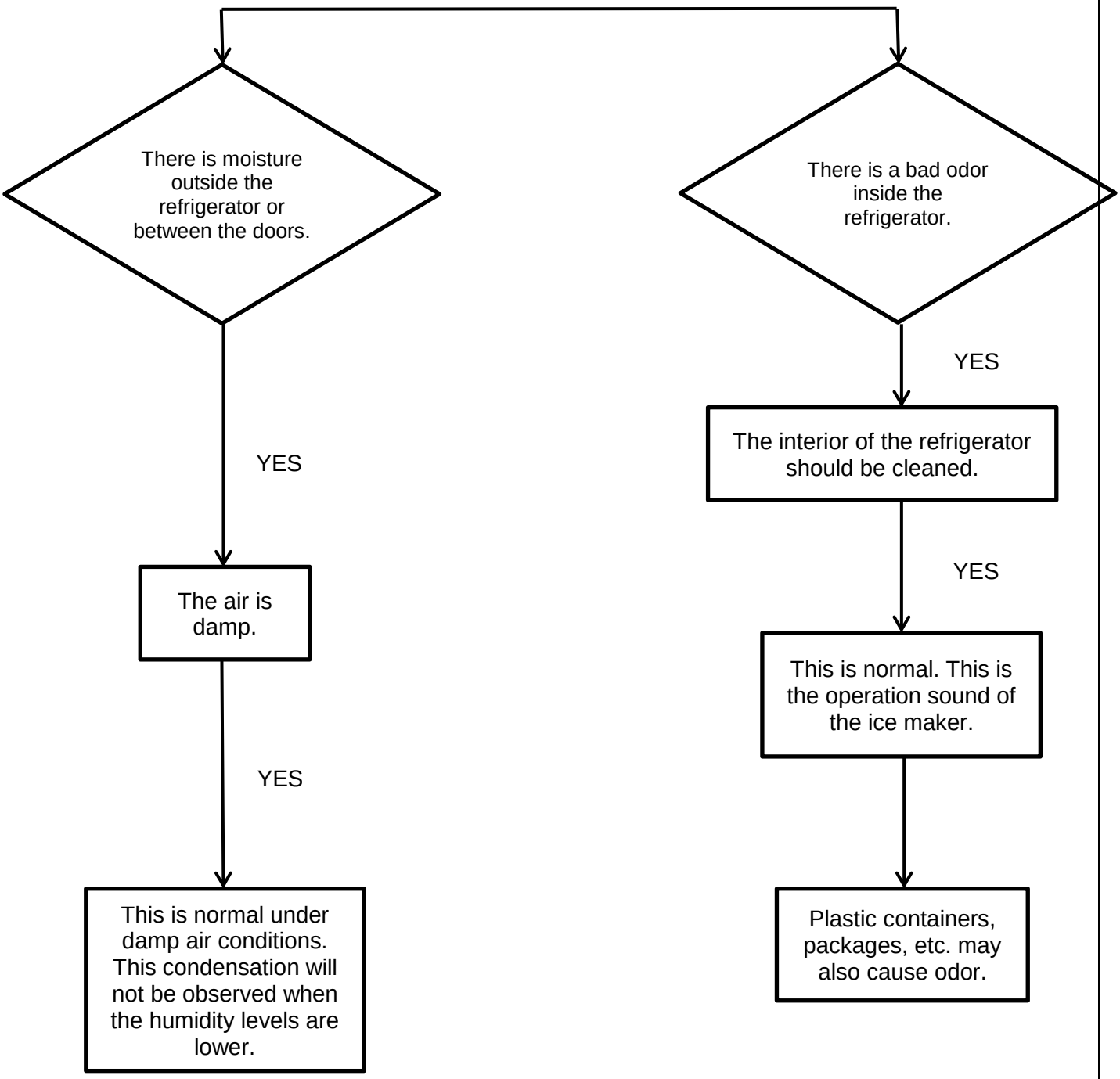


NO

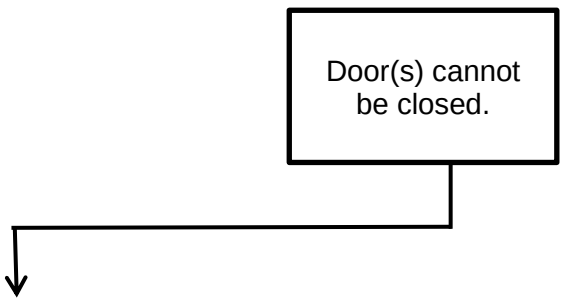


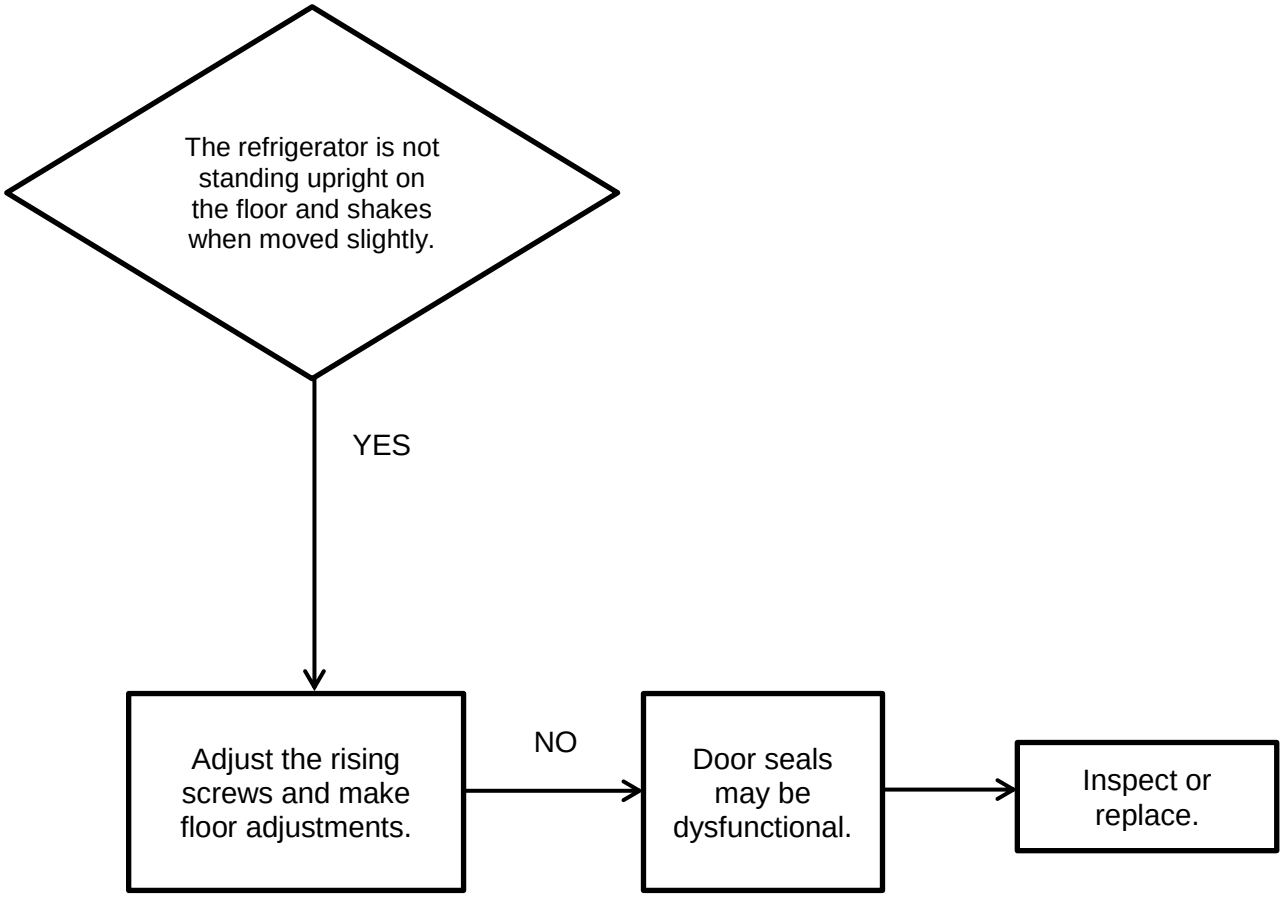
9.9. Condensation Outside the Refrigerator





9.10.Doors Do Not Close





9.11. Sensor Error

In case of a sensor error, when the Power is "ON", no component shall be driven for 15 minutes.

FRZ Air Sensor Error/FRZ Fan	
Activated and stopped with the compressor.	
It is operated at DC Fan x 1400 rpm.	

FRZ Air Sensor Error/Compressor

When another compartment cannot make a decision for Cut-in/Cut-out (Caution) 30 minutes on, 40 minutes off	

FRZ Eva Sensor Error/Frz Fan	
Activated and stopped with the compressor.	
It is operated at DC Fan x 1400 rpm.	

FRZ Eva Sensor Error/Compressor	
NORMAL COOLING	
When another compartment cannot make a decision for Cut-in/Cut-out (Caution), 30 minutes on, 40 minutes off	
If FF Air Sensor or FRZ Air Sensor is not faulty, it is operated in accordance with these sensors.	

FRZ Air Sensor Error/Defrost/Frz Fan	
Fan is stopped unconditionally.(Frz defrost is not initiated when there is Frz Air sensor error.)	

FRZ Eva Sensor Error/Defrost/Frz Fan	
Fan is stopped unconditionally.	

FRZ Eva Sensor Error/Frz Defrost Heater	
It is activated during the whole FRZ defrost process.	

FRZ Eva Sensor Error/Defrost/Compressor	
NORMAL DEFROST	
Defrost input algorithm is the same.	
Defrosting is stopped after 20 minutes.	

9.12. Commissioning/Power Outage

When the refrigerator is energized, if the FF Eva sensor temperature is equal to or above 5°C, this is called "commissioning". If this temperature is below 5°C, this is called "power outage".

10. ASSEMBLY/DISASSEMBLY OF PARTS

10.1. Upper Hinge Cover

Hinge cover is mounted on the hinge body with tabs, without using screws. To remove the cover, simply pull it.



10.2. Removing the Doors

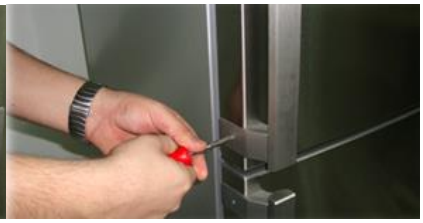
On the bottom section of the upper door, the hinge screws on the partition are removed with a torx head tip. The door, whose screw is taken out, is removed by tilting, using the pediment opening. Then, the lower door is taken out by pulling upwards from the pin of the hinge, and the doors will be removed.






10.3. Removing the Door Handles (*For Models with Handles)

The door handles are connected to the door with two screws, the door handles may be removed by taking the screws out with a torx head screwdriver.

10.4. Changing the Direction of the Door

To change the direction of the door, first the hinge cover shall be removed with a flat head screwdriver as explained in step 4.1. The middle hinge is removed and the lower and upper doors are taken out (See 4.2). The screws holding the upper hinge are removed with a torx head screwdriver.


The stopper on the opening side in line with the upper hinge is removed with a flat head screwdriver or a box cutter.

Then, the upper hinge removed shall be installed on the other side using 2 screws.


The stopper that will cover the 2 holes on the side the upper hinge is removed shall be mounted on the holes where the upper hinge is removed by hand.

The steps for removing the upper hinge cover shall be followed in the reverse order and the cover shall be remounted on the hinge.

The screws of the lower hinge shall be removed with the same method. Firstly, the stopper on the adjustable leg is removed with a screwdriver and the adjustable leg is removed. Then, the screws of the lower hinge are removed.


After the lower hinge is removed, the lower hinge pin is also removed with a wrench and it is re-tightened on the hole on the other side. This way, the same hinge can be used on the other side.

After the direction of the pin of the lower hinge is changed, the rear leg on the side where the hinge is to be tightened shall be removed and the lower hinge shall be re-tightened on the frame using 3 screws. Then the adjustable leg is tightened and the stopper is installed by hand. The adjustable leg removed shall be placed on the opposite side. The adjustable leg removed from the hinge is re-tightened on the hole of the hinge and a stopper is placed on the leg.

The adjustable leg removed from the opposite side is tightened on the new opening side. The adjustable leg removed from the hinge is re-tightened on the hole of the hinge and a stopper is placed on the leg.

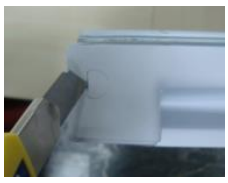
The stoppers on the middle hinge of the opening side shall be removed and the stoppers shall be placed on the holes on the opposite side.




The hinge strap and the stopper are removed by taking out 1 screw connection . 1 **4852560200 Left Hinge Strap** for assembly on the other side shall be obtained. Another metal stopper shall be placed inside this stopper and this assembly shall me mounted on the opposite side with 1 screw.




To change the strap of the upper hinge of the lower door, first the stopper of the opening side shall be removed with a box cutter. The hinge strap is removed with a flat head screwdriver and these two parts are placed into each other's slots.





The hinge strap and stopper below the lower door shall be removed and re-installed on the opposite side with 2 screws.

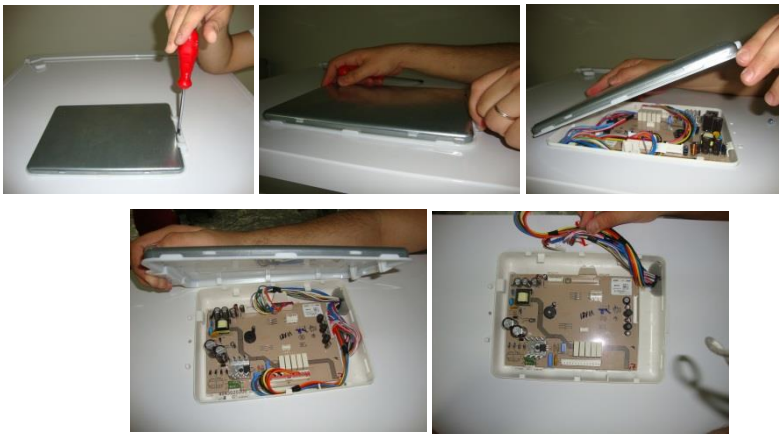




After these procedures, the lower door is lifted by connecting it to the hinge from below and the pin of the upper hinge is placed inside the slot on the upper door. The procedures listed in step 4.2 shall be repeated in the reverse order for the assembly of the doors.

10.5. Board Cover and Electronic Boards

In products with U2 boards, the board slot is on the upper plate of the refrigerator. For the board cover group to be removed, the fixing screw and the board box cover should be taken out. The main board is locked in place with tabs. The boards may be demounted by releasing them off these tabs and by disconnecting the sockets.



In products with U-1 boards, the board socket is on the rear wall of the refrigerator. For the board cover group to be removed, the fixing screw and the board box cover should be taken out. The main board is locked in place with tabs. The boards may be demounted by releasing them off these tabs and by disconnecting the sockets.

10.6. Cooling Compartment Lighting Group and LED Board

The lighting glass shown is fixed to the plastic of the internal frame with tabs. The connection is established without screws. For the lighting glass to be removed, the lighting glass shall be separated with a sharp tool either from the corner above or below, and then pulled by hand and released from the internal frame. When the lighting glass is removed, the LED board inside can be accessed. To remove the LED board, demount the socket connection.




The same procedures shall be repeated in the reverse order for this group to be mounted.

NOTE: ESD measures shall be taken during these processes.

10.7. Sensor Cover

The sensor cover shall be fixed with a tabbed connection. For this part to be removed, the tab on the side shall be pressed and the cover shall be pulled.



10.8. Sliding Rails of the Vegetable Bowl

The vegetable compartment slides on 2 rails, one on the left and one on the right. Rails are locked to the frame with tabs, there are no screw connections. The vegetable bowls shall be taken out for these rails to be removed. Then the rail may be removed by pushing it up from the bottom surface.



For the rails to be remounted, the rail is fixed on the internal frame from the top and it is locked to the internal frame by pushing from the bottom surface.


10.9. Sliding Rails of the Vegetable Bowl on the Second Level

The second level vegetable compartment slides on 2 rails, one on the left and one on the right. Rails are locked to the frame with tabs, there are no screw connections. The vegetable bowls shall be taken out for these rails to be removed. Then the rail may be removed by pushing it up from the bottom surface.

For the rails to be remounted, the rail is fixed on the internal frame from the top and it is locked to the internal frame by pushing from the bottom surface.

10.10. Vegetable Bowl Cover

The vegetable bowl groups used in the cooling compartment have two different sections; the cover and the drawer section. To remove the drawer cover from the drawer body, the following steps should be followed respectively:
The tabbed structures on the drawer cover are fixed on the bottom of the drawer body. The tabs are separated from the point where tabs are locked with two sharp and flat devices.

After the bottom section is separated, the user shall start working on the sides. There are two tabs on the sides; one on the right and one on the left. For the tabs to be disconnected, the tabs shall be separated with a sharp and flat tool from the openings they are mounted on.

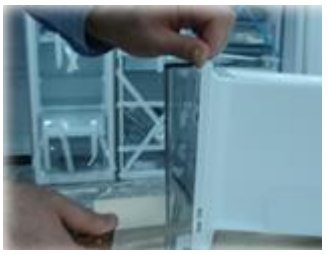
When the tabs are being connected, first the tabs above, than the ones on the side are installed, than the tabs on the bottom are placed.

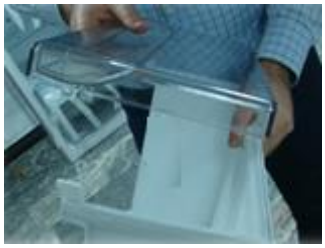
10.11. Cover for the Second Level Vegetable Bowl

The second level vegetable bowl groups used in the cooling compartment have two different sections; the cover and the drawer section. To remove the drawer cover from the drawer body, the following steps should be followed respectively:
The tabbed structures on the drawer cover are fixed on the bottom of the drawer body. The tabs are separated from the point where tabs are locked with two sharp and flat devices.



After the bottom section is separated, the user shall start working on the sides. There are two tabs on the sides; one on the right and one on the left. For the tabs to be disconnected, the tabs shall be separated with a sharp and flat tool from the openings they are mounted on.





When the tabs are being connected, first the tabs above, than the ones on the side are installed, than the tabs on the bottom are placed.

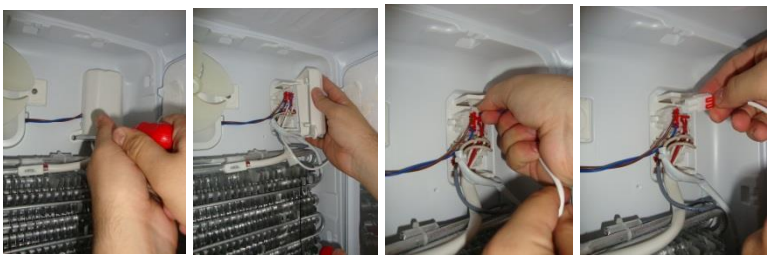
10.12. Cooling Compartment Evaporator Cover Group

For demounting the cooling compartment evaporator group, first the square screw stoppers on the right and the left are removed with a flat head screwdriver. Then, 2 fixing screws are removed with a Phillips screwdriver. After the screws are taken out, the cover is pulled out. For the cover to be removed from the body, the cooling evaporator cover group fan socket is removed from the socket seat of the frame.

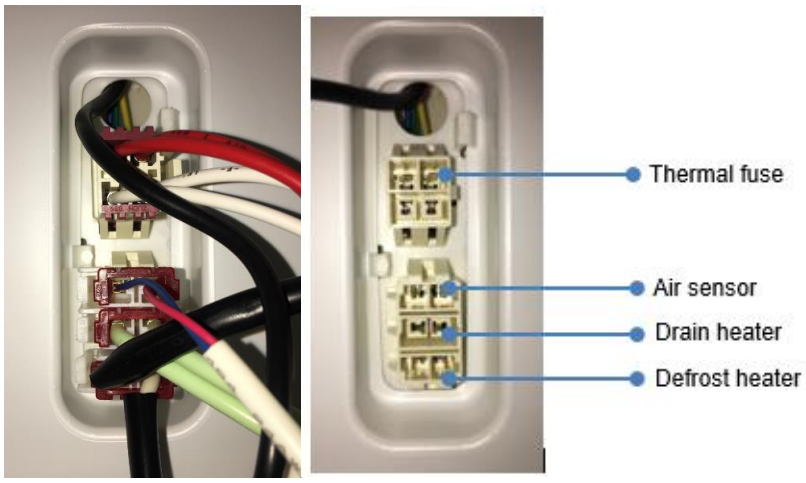
All procedures shall be repeated in the reverse order for assembly.

10.13. Freezing Compartment Evaporator Cover Group

When the cover on the evaporator cover group of the freezing compartment is pulled tightly by holding the sides, the tabs are released from the sockets on the frame. To remove the group completely from the frame, 10-set socket box cover is removed with a Phillips screwdriver and the FRZ fan socket is taken out.



All procedures shall be repeated in the reverse order for assembly.



10.14. Freezing Compartment Air Return Channel Cover

When the air return channel cover of the freezing compartment is removed by pulling it from the grids in the front, the tabs are released. For assembly, the tabs are clapped in their slots using force.

All procedures shall be repeated in the reverse order for assembly.

10.15. POT Board Box

Pot board group on the side wall of the body is connected to the body with snap-fit.
Use a screwdriver to loosen snap fit and disconnect the sockets of the cable group to completely remove the Inner display.

10.16. Reed Sensor Board

Reed sensor board is grouped with the main cable under the reed sensor cover. For disassembling this group a sharp screwdriver or a box cuter shall be used to loosen the connections of the cover.

For reassembly, the new group shall be mounted in accordance with the direction of the tabs.

10.17. Upper Hinge

The cover of the upper hinge shall be removed in accordance with step 16.1. 2 connection screws shall be removed and the upper hinge will be taken out.


10.18. Lower Hinge and Adjustable Leg

For the disassembly of the lower hinge, first, the stopper connected to the hinge is removed from the adjustable leg with a thin screw and the adjustable leg shall be removed from the hinge. 3 screws connecting the lower hinge to the frame is removed to demount the lower hinge.





10.19. Evaporation Container

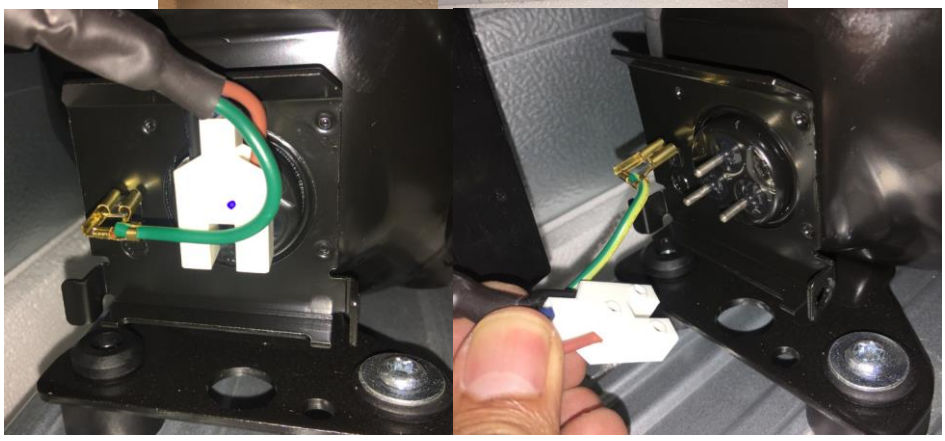
The evaporation container is fixed on the compressor with a snap-fit connection. For removal, the evaporation container should be pulled out with force.

10.20. Compressor back cover

The compressor back cover is fixed by screw and snap-fit at bottom. For removal, the compressor back ceover should be remove the screw and pull the compressor back cover up.

10.21. Inverter Box

The terminal box is fix by a screw.(Before remove inverter box must be remove evaporation container before) After taken screw out,The inverter box can take out from compressor and you can remover connector.



11. SERVICE EQUIPMENT

1. Knife
2. Tip set
3. Phillips tip
4. Torx tip
5. Cordless screwdriver
6. Flat screwdriver
7. Phillips screwdriver
8. Side cutting pliers
9. Needle nose pliers
10. Socket set

12. MAINTENANCE AND CLEANING

The lifetime of the product shall increase and the frequently encountered problems are reduced if the product is cleaned regularly.

⚠	**WARNING:** Unplug the refrigerator before cleaning.

- Do not use gas, gasoline and similar materials for cleaning.
- Do not use sharp and abrasive tools, and materials such as soap, home cleaning detergents, gases, gasoline, lacquer, etc. for cleaning.

- Melt one teaspoon of baking soda in half a liter of water. Soak a cloth in this liquid and squeeze tightly. Wipe the interior of the refrigerator with this cloth and dry it thoroughly.
- Pay attention not to allow the ingress of water in the lamb enclosure and other electrical parts.
- If the refrigerator will not be used for a long period, unplug the device, remove all foods and beverages inside, clean the refrigerator and leave the door open.
- Regularly check if the door seals are clean. Clean them if necessary.
- To remove everything from the door racks to clean them and remove the racks by pushing them upwards. After cleaning and drying, replace them by sliding the parts downwards.

Elimination of odor

No materials that can cause odor is used during the manufacturing process of our refrigerators. However inappropriate food storage conditions and failure to clean the interior of the refrigerator as required, odors may be experienced. Pay attention to the following to eliminate this problem:

- It is important that the refrigerator is kept clean Food residue, stains, etc. may cause odor. For this reason clean the refrigerator with baking soda and water solution once in every 15 days. Never use detergent or soap.
- Keep the food in closed containers. Microorganisms released from food kept open may cause odors.
- Never store rotten food or food that has expired in the refrigerator.

	Tea is one of the best odor eliminating materials. The material, Catechin in tea has open hydroxy (OH) connections in its molecule that bind volatile organics, eliminating bad odors. Place the tea brewed in an open container in the refrigerator and remove the tea after 12 hours the latest. If you keep the tea brewed inside the refrigerator for more than 12 hours, it may become the source of bad odor as it will collect the organisms causing the odor.

Protecting plastic surfaces

Do not store oil or cooked oily food in the refrigerator in an open container, as they may damage the plastic surfaces of the refrigerator. If oils poured or smeared on plastic surfaces, clean the area with warm water and dry.