

Service Manual

Refrigerator-Freezer

Model No. **NR-B53V1**

Product Color X: Stainless

Destination E: Europe Continental, B: U.K.



⚠ WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by **⚠** in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

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1 Safety Precautions

The following are instructions that you must follow in order to prevent accidents during work, and to ensure the safety of the repaired product.

Hazard and damages that may result from ignoring instructions are classified and explained, below.

 Danger	This section warns of the urgent danger of death or serious injury.
 Warning	This section warns of the risk of death or serious injury.
 Caution	This section warns of the risk of injury or damage to property.

The following labels describe the types of rules that need to be followed.

	This label shows a “reminder” action to be paid attention to.
	This label shows a “prohibited” action.
	This label shows a “compulsory” action to be followed without fail.

 Danger	
	Be sure to discharge remaining refrigerant from the refrigeration unit.
	Discharge refrigerant outdoors where there is no fire source. Be sure to instruct the customer not to approach the place of discharge, and not to use fire.
	Always use a pipe cutter for removing pipes. If you use a welding machine, the refrigerant remaining in the pipe or compressor could catch fire and explode.
	Pipes must be blown out with nitrogen before welding, to discharge any remaining refrigerant.
	Always use the swage lock for sealing after filing with refrigerant. If you use a welding machine, the refrigerant could catch fire and explode.
	Ventilation close to the floor surface is required, as the refrigerant(R600) is heavier than air. In particular, the basement must be adequately ventilated.
	“Measurement/adjustment of refrigerant refill quantity” in a service must be performed outdoors where there is no fire source. Otherwise, you could run the risk of fire/explosion.
	Use always a gas alarm. If any refrigerant remains in work area, there will be a risk of fire/explosion.
 Prohibited	Never use a naked flame in a place where any refrigerant might remain.
 Prohibited	Do not leave the removed faulty compressor in doors.

⚠ Warning

 <p>Remove power plug</p>	<p>Before repair Make sure to cut off the power line before disassembly, parts replacement and assembly. Otherwise, electrical shock or injury may occur.</p>
 <p>Electric shock hazard</p>	<p>Be careful of electrical shocks Be careful of electric shock from live parts or electrical lead terminals when conducting voltage measurement and other electrical servicing. Voltage of the control board is approximately 280V when power is ON. Do not touch live parts. When replacing parts, do not touch live parts for at least 3 minutes after disconnecting the plug from the power supply. (A little time is required for electrical discharge of the condenser)</p>
	<p>Use only fuses specified When replacing fuses, use only specified in the circuit diagram. The use of non-specific fuses may cause fire or malfunction.</p>
	<p>Punch the pipes of the faulty compressor securely. Otherwise, the refrigerant remaining in the compressor oil might leak out during transporting and could catch fire and explode.</p>
	<p>Discharge refrigerant completely from the used service can for disposal in an outdoor place where there is no fire source. Otherwise, you could run the risk of fire/explosion.</p>
 <p>Prohibited</p>	<p>Do not damage the refrigeration circuit (piping) of the refrigerator. As the refrigerant is flammable, any damage could lead to fire/explosion.</p>
	<p>If the refrigeration circuit is damaged, do not touch the refrigerator or use a naked flame. Open windows for Ventilation. As the refrigerant is flammable, any damage could lead to fire/explosion.</p>
	<p>Disposal of a faulty compressor must be performed outdoors where there is no fire source.</p>
	<p>The quantity of refrigerant in a service can carried in the vehicle must be the least possible, and below the [regulation][regulated] limit. Keep the service can upright and below 40°C. (Quantity on board: 1.5kg or below)</p>
	<p>Use a designated part Make sure to use a designated part when the part is marked(⚠) in circuit diagrams and parts lists. Otherwise, smoke, fire or failure may occur.</p>
	<p>Always conduct a safety inspection after completing service And check the parts are reassembled correctly. Also confirm other fixings and wiring, for deterioration. Replace as required. Always use a megohmmeter to measure the insulating resistance between both terminals of the power plug and the earth terminal, and plug the power supply in after first confirming 1MΩ or above. When setting, check that the power cord or power plug is not jammed or pushed against the rear of the refrigerator. If the power cord or the power plug is damaged or loose, take appropriate measures such as replacing. If the pins of the plug or the area the pins attach to are dirty, make sure they are cleaned thoroughly.</p>

Caution

	Install and remove glass shelving securely to prevent risk of injury
	When moving, raise the adjustable legs Dragging the refrigerator will damage the floor. For flooring that may become easily damaged put a protective board in place.
	Do not scrape the metal rails
 <small>High temperature hazard</small>	Take care of very hot parts The compressor, pipes, etc. can be very hot during operation and directly after stopping. Also, the heater can be very hot during power supply and immediately after power supply is stopped. Be careful not to burn yourself by touching very hot parts.
 <small>High temperature hazard</small>	Take care of very hot parts after welding Pipes, etc., are very hot after welding. Be careful not to burn yourself by touching very hot parts.
	Take care when filling/discharging refrigerant Liquid refrigerant directly touching the skin may cause frostbite.
	Take care of burrs Be careful not to cut yourself on metal or plastic burrs.
	Take care of condenser/evaporator fins Be careful not to injure yourself on the fin edges.

2 Specifications

Model		NR-B53V1-XB	NR-B53V1-XU
Destination		UK	Europe except UK
Rating volume capacity	Total gross volume	615L	
	Total net volume	545L	
	Net refrigerator volume	339L	
	Net freezer volume	206L	
External dimensions	width/depth/height (mm)	W905 x D710 x H1850	
Internal dimensions	PC: width/depth/height (mm)	W421 x D505 x H1664	
	FC: width/depth/height (mm)	W315 x D401 x H1642	
Installation size		Side: 25mm or above	
		Back: 50mm or above	
		Top: 30mm or above	
Power supply plug & cord	Volt/Freq	230-240V/50HZ	220-230V/50HZ
Interior lamp (LED)	Rating	7W	
IEC protection against electric shock classes		Class 1	
Class		SN-T	
Sensor def.fc	DFC	B=3819K, R(10°C)=3.899KΩ	
Sensor def.pc	DPC	B=3819K, R(10°C)=3.899KΩ	
Sensor fc	FCC	B=3850K, R(-20°C)=18.9KΩ	
Sensor pc	PCC	B=3808K, R(0°C)=6.409KΩ	
Sensor sc	SCC	B=3808K±2%, R(3°C)=7.490KΩ	
Sensor ice	ICC	B=3754K, R(-20°C)=22.33KΩ	
sensor ATC	ATC	B=3435K, R(25°C)=10.0KΩ	
FC PIPE HEATER		389Ω/136.0-148.1W (230-240V)	355.9Ω/136.1-148.6W (220-230V)
FC DRAIN HEATER		334.5Ω/15.8W (230V)	
FC COIL BAC/FC ACCUME HEATER		3538Ω/15.0W (230V)	
PC DRAIN HEATER		3100Ω/17.1W (230V)	
PC BACK HEATER		6000Ω/8.8W (230V)	
PC PLATE HEATER		9680Ω/8.8W (230V)	
TANK HEATER		6000Ω/8.8W (230V)	
DISPENSER HEATER		13000Ω/4.1W (230V)	
WATER SUPPLY HEATER		15452Ω/3.4W (230V)	
LAMP HEATER		9160Ω/5.8W (230V)	
ICE MAKER A'SSY		EAU37119712 (230-240V)	EAU37119711 (220-230V)
ICE SHUTTER		STAA125A01 (DC12V)	
Compressor	Type	Full hermetic reciprocating system	
	Model	EF1120E13DGH-COEMS	
	Rotation speed	25/33/42/52/67/75 (r/s)	
3 Way valve	Model	SDF 0.8 3/2-4.3	
	Rating	240V/50HZ/0.3W	
Water valve	Model	RIV-23A-81/X-1871	
	Rating	240V/50HZ	
Overload relay	Model	MM3-71CCY	
	Operating temperature	100±5°C	
	Return temperature	61±8°C	
	Operating current (A)	7.1A±7.5%	
Fan motor(for Refrigerator compartment)	Model/Rating	FBA11J14VXJ/DC 14V below 3.36W	
Fan motor(for Freezer Compartment)	Model/Rating	FBA11J14VXJ/DC 14V below 3.36W	
Fan motor(for Compressor Room)	Model/Rating	4715JL09WS29G51/DC 11.5V below 2.19W	
SINGLE DAMPER	Model/Rating	NSBC000/DC12V, 300pps	
Defrost heater	Rating/Voltage	190W (220V)-208W (230V)	195W (230V)-212W (240V)
Thermal fuse	Rating	250V/7A/73°C	250V/7A/94°C
Oil charge		S10/215±5ml	
Ice making ability*1		0.7kg/24h	

Freezing ability*2		15.0kg/24h
Amp.	Rating	1.2A
Values of the energy consumption*3		346kWh/y
Energy efficiency grade		A++
Refrigerant charge		R600a,70g
Measurement of exterior noise emitted*4		38dB(A)
Form polyurethane		Cyclo pentane
Weight (Kg)		132kg

*1 : The amount of Ice Making Ability in 24 hours. Setting temperature, FC : 4°C, VC : 1°C, FC : -25°C

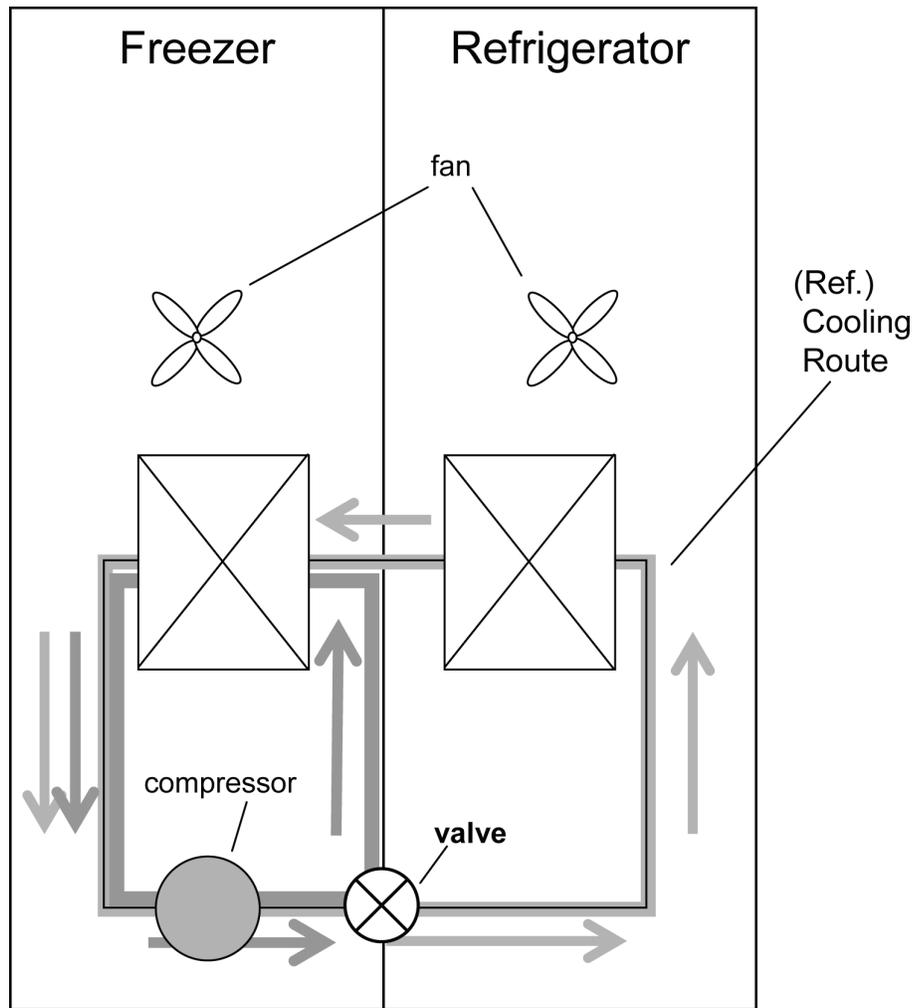
*2 : The Freezing Ability in 24 hours. VC temperature is set to 1°C, and in state of Super Freeze.

*3 : Values of the Energy Consumption in year.

*4 : This Measurement of Exterior Noise Emitted is measured by OFF condition of PC Fan Motor for Deodorizer.

3 General/Introduction

3.1. Flow of Refrigerant



4 Features

4.1. Features

4.1.1. Inverter Technology

2 Door BF Inverter 

Rotation speed can change depending on the load.
Refrigeration power (output) is also adjustable in 5 stages.

10cc Inverter comp.

Max ← 4,260 3,540 2,580 2,340 1,500 → Min

Features of SBS Inverter Compressor

- New larger capacity inverter compressor
- More rotation speed levels (5→ 6) for more precise operations

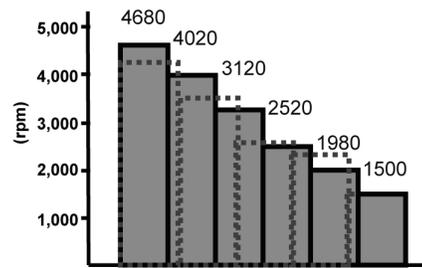
(Depending on the necessity, powerful high power operation and energy saving low power operation)

Side By Side New Inverter 

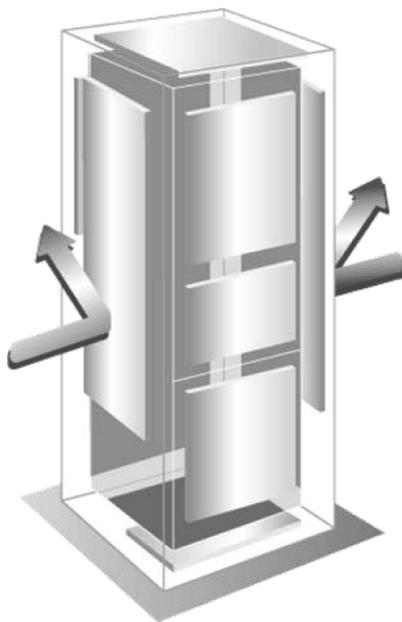
Rotation speed can change depending on the load.
Refrigeration power (output) is adjustable in 6 stages.

Larger Inverter comp.

Max ← 4,680 4,020 3,120 2,520 1,980 1,500 → Min



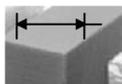
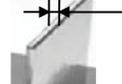
4.1.2. Vacuum Insulation Panel



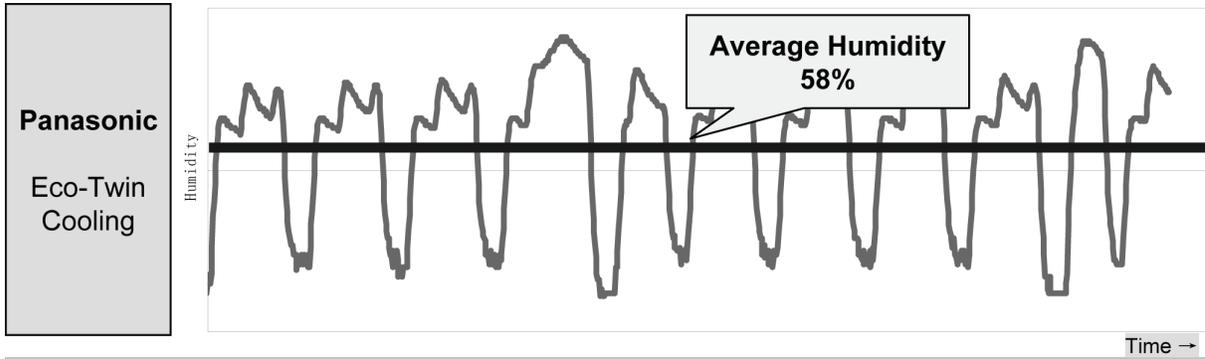
Patent No. : EP1275893
EP1275894



- Energy saving generally thicken the wall
- Panasonic thinner "Vacuum insulation panel"
 - insulating performance greatly improved.
- 20 times more efficient than commonly used Urethane.

	Formed Urethane (other brands)	Vacuum insulation panel Panasonic original
Thickness	100mm 	5.0mm 
Externals		

4.1.3. Optimum Humidity Control



Panasonic's humidity stays more at higher levels, so foods are kept fresh and tasty with a proper moisture content.

4.1.4. Powerful Cooling

■ Thanks to inverter technology and Eco-twin cooling system, food in the freezer compartment can be frozen faster than competitor models.

Brand	Panasonic
Model	NR-B53V1
	
Cooling system	Eco-twin cooling + Inverter (6-speed)
Freezing capacity	Target 15Kg <

INVERTER



4.1.5. LED Tower Lighting

Bright and Easy to See LED Lighting for Both PC and FC Compartments
(36 LED lights in total)



Light bulb type



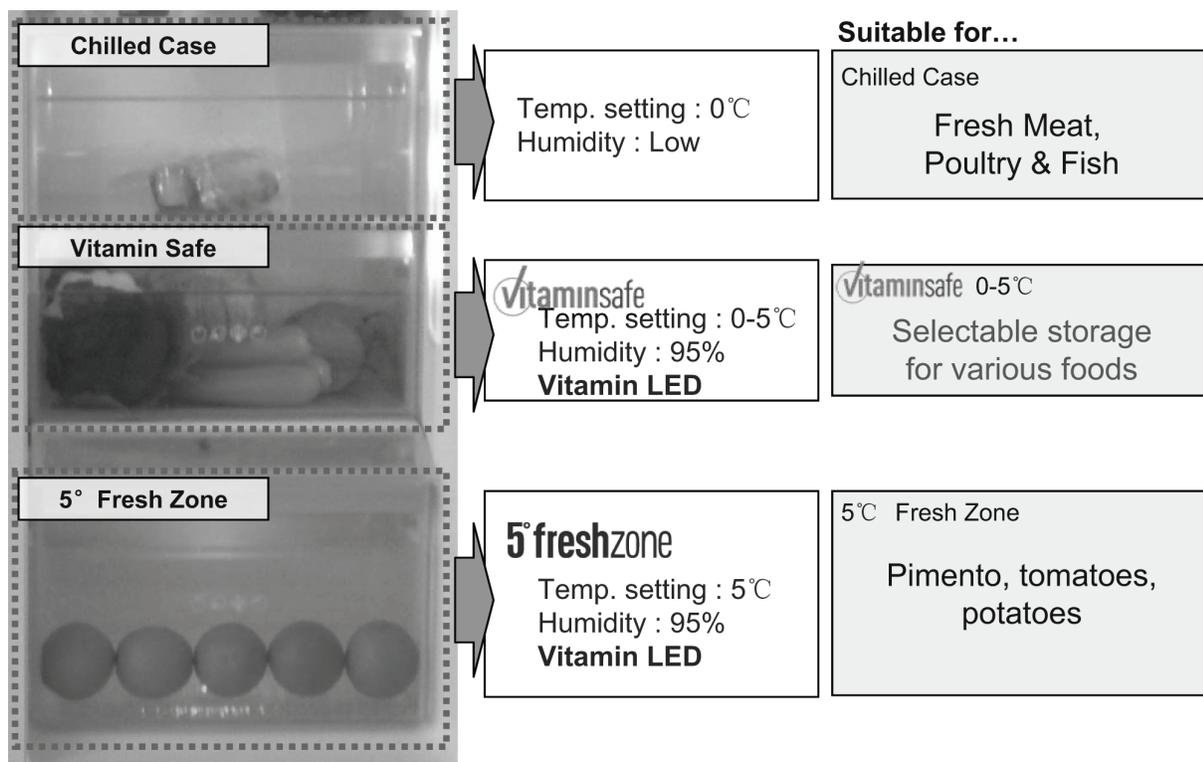
Front LED Type



1. Light Distribution from the front allows recognition of what is written on the package.
2. Low consumption of electricity
1/10 compared to a usual bulb
3. Maintenance-Free
the lifetime much longer than a usual bulb)

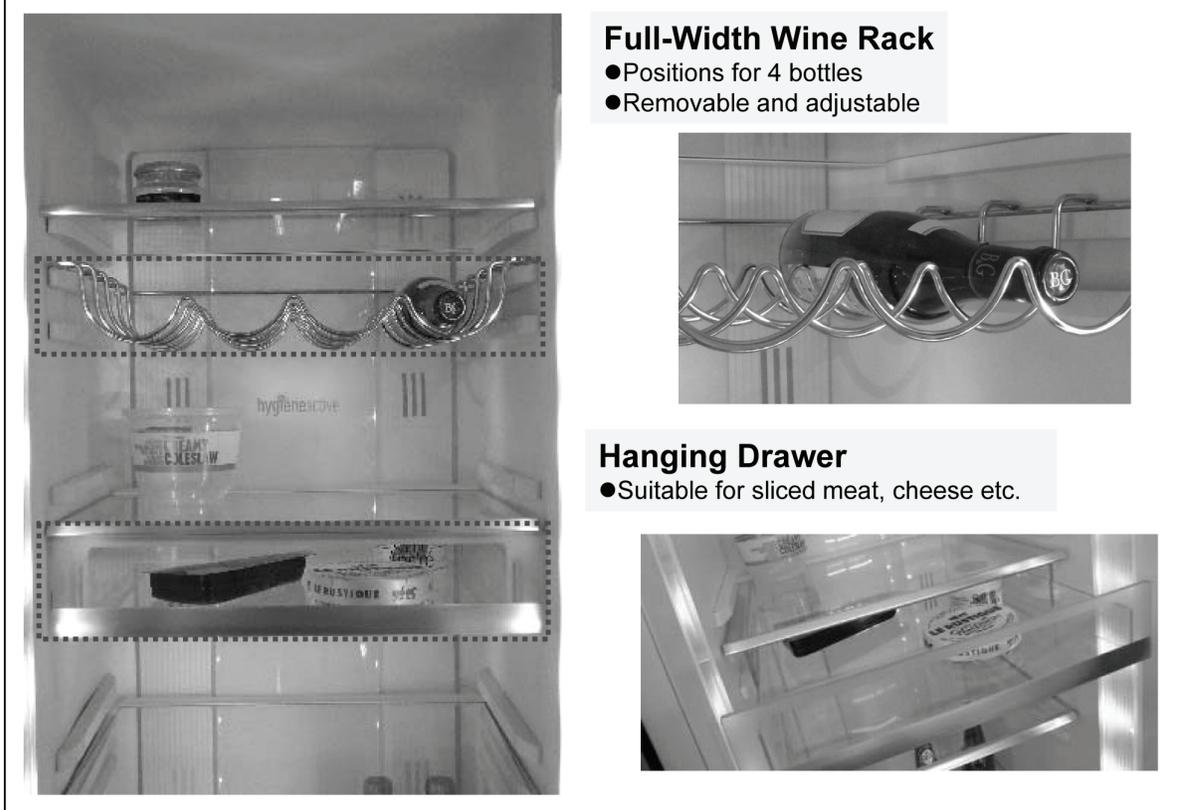
4.1.6. Refrigerator Cases with Different Setting

Different settings of refrigerator drawers provides the optimum storage conditions for meat, fish and varying kinds of vegetables

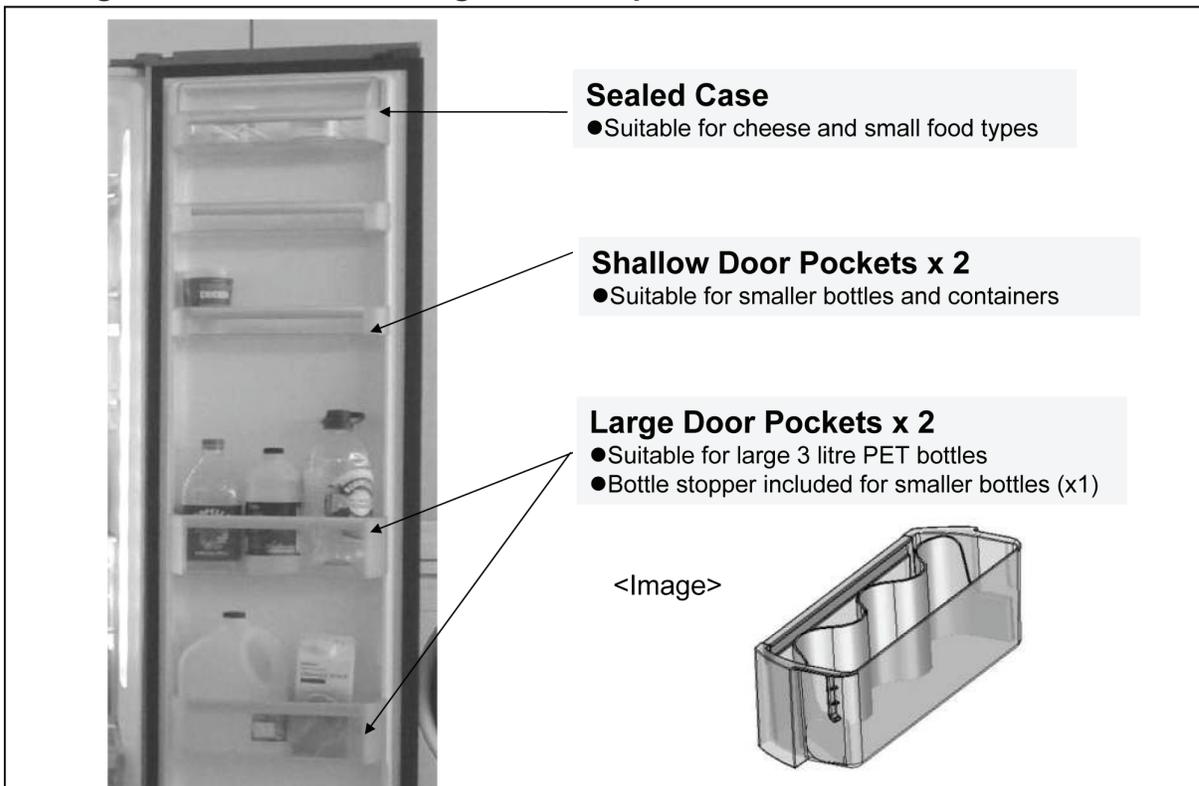


4.1.7. Other Storage Solutions

Refrigerator Compartment



Storage Solutions on the refrigerator compartment door



4.1.8. Wide and Spacious Freezer Compartment

Compact design of Ice/Water dispenser offers more storage space in the freezer compartment

<p>Dispenser Mechanism</p>  <p>No mechanism in FC</p> 	<p>In Case of Other Manufacturer...</p> 
<ul style="list-style-type: none">●Dispenser mechanism on door part only including ice making mechanism●Creates more storage space for food	<ul style="list-style-type: none">●Ice making mechanism is located in the freezer room area●Storage space is reduced drastically

Storage space for large and bulky foods (for example, frozen pizza)

<p>●Wide freezer</p>  <p>28cm</p> <p>Large size pizza (28cm) can be stored in sideways position.</p>	<p>●Large and deep FC Door Pocket</p>  <p>23cm</p> <p>23cm pizza can be stored Depth of pocket is 12cm.</p>
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4.1.9. Drawer Compartments of Freezer Compartment

More possibilities for storage and sorting of food in the freezer compartment

●3 Drawer Compartments



Offers more space for storing and sorting of food in the freezer.

4.1.10. Humidity Control

High humidity drawer cases for longer and fresher storage of vegetables

vitaminsafe
5° freshzone

Humidity control plate

Compartment is covered by humidity control plate to keep moderate humidity inside which is ideal for vegetable preservation.



4.1.11. Selectable Temperature Control

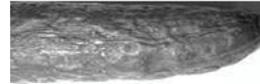
5°C Default setting

Standard temperature for most of the fruit & vegetables.



Attention!

■ 0°C is not suitable for some delicate vegetables



0-5°C Variable temperature setting

Available for different type of vegetables.



- 5°C suitable for pimento, tomato, potatoes.....
- 3°C suitable for asparagus, spinach
- 2°C suitable for leaf vegetables (lettuce, cabbage, celery)
- 0°C suitable for meat, fish, poultry

4.1.12. Vitamin LED

Preserves vitamins of fruit and vegetables



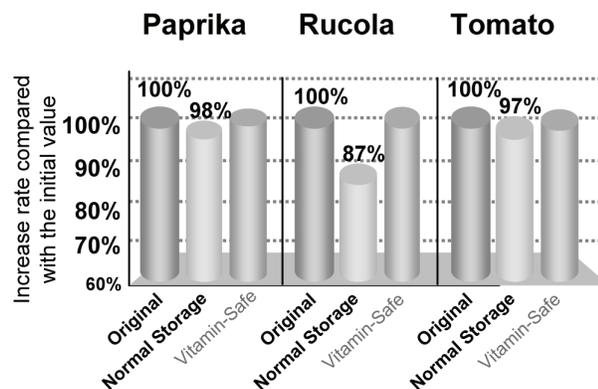
■ Flashing Green (520nm) and Blue (470nm) LEDs located at Vitamin-safe compartment promote biological defense mechanism of fruit and vegetables, helping retain the Vitamin C content.



Tested by , Germany,
Duration: 3days



Patent applied application
No. 2007-282707 (Oct.25, '07)



4.1.13. Hygiene Active

■Hydroxyl Radical (OH) is created by blue LED light which activates the silver surface of Silver-contained air filter (photo-catalytic effect).

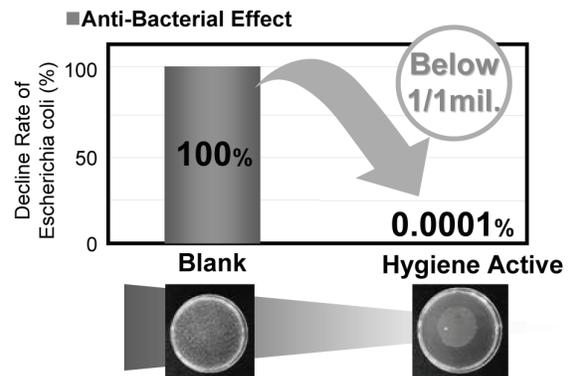
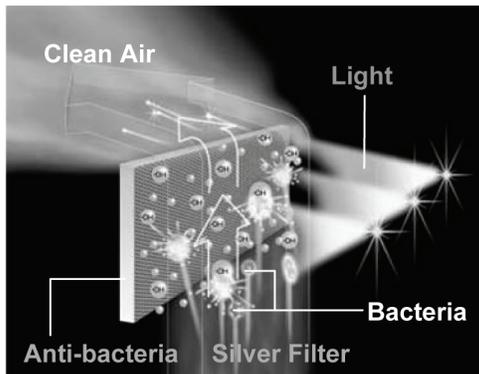
■Achieved 99.9999% disinfectant rate in fridge compartment.



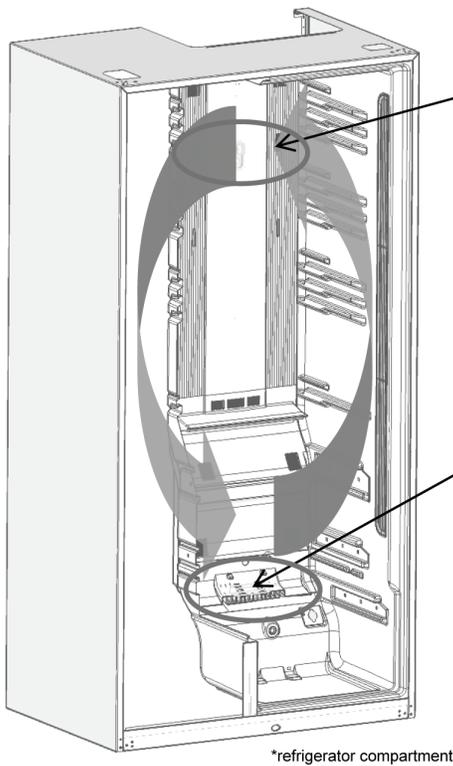
hygieneactive



Tested by Suedsachsen Wasser GmbH, Germany
Testing method: ISO 22196:2007



4.1.14. Multi-Hygienic System



“Hygiene Active”

Photo Catalytic anti-bacterial effect
99.9999% disinfectant rate.

hygieneactive

Bio Anti-bacterial & Deodorizing Filter

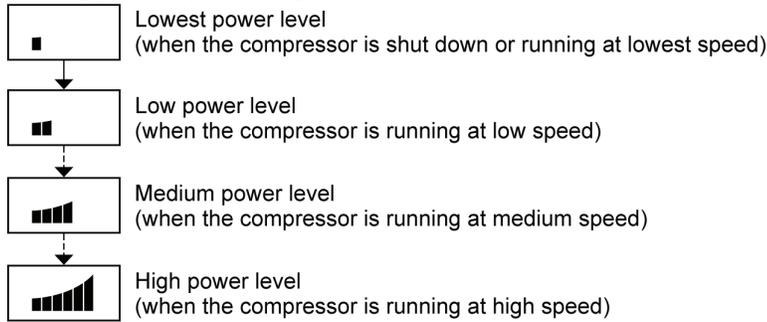
- Silver ion anti-bacterial effect.
- Deodorizing effect. / Removes various unpleasant smells.

Maintenance-free

4.2. Functions

Cooling power level

Cooling power by the refrigerator is indicated here.



Vitamin-Safe Mode

Setting the Vitamin-Safe Zone and 5° Fresh Zone to the Vitamin-Safe Mode helps to protect the vitamin C contained in vegetables and fruit. The blue and green LED lights.

Vitamin-Safe

5° Fresh Zone

Super Freeze Mode

In this mode, the freezer can be cooled rapidly, enabling the fresh foods, etc. which are placed there to be frozen.
The Super Freeze Mode is automatically released after about 50 hours.

Super Freeze

Notes:

- When the Super Freeze Mode is set, the temperature inside the freezer may drop below the set temperature.
- The compressor operates at high speed.
- When the Super Freeze Mode is set while the Eco Mode is established, the Eco Mode is temporarily released. When Super Freeze Mode ends, operation in the Eco Mode will be restored.
- The effect on the stored food can be reduced if setting the Super Freeze Mode several hours before storing the food in the freezer compartment.
- The following items are recommended in order to exert the maximum freezing capacity.
 - ① Set the Super Freeze Mode 24 hours before storing the food.
 - ② Place the food on the second drawer from the top or on the glass shelf.
(A bigger freezing capacity can be exerted if placing the food directly on the glass shelf.)
- The maximum freezing capacity within 24 hours is written in the rating label.

Hygiene Active Mode

The hygiene active LED comes on, and food is protected from bacteria and odours.

Hygiene

Note:

- When food with strong odours are to be stored, wrap it in plastic food wrap or place it inside a tightly sealed container. Otherwise, odours may be left in the fridge even if the Hygiene Active Mode has been set.

Holiday Mode

Set this mode when the fridge is not going to be used for a prolonged period such as during a long vacation or when only the freezer is to be used.

Holiday

When this mode is set, the fridge temperature is not displayed.

Notes:

- Before using the Holiday Mode, empty out the fridge, and close its door.
- For hygiene reason, the temperature inside the fridge is kept at about 15 °C while the Holiday Mode is set.
- The freezer is cooled in the usual way.

Eco Mode

Set this mode when the freezer is not going to be used much such as during the winter months or at night.

Eco

Note:

- The Eco Mode cannot be set while the Super Freeze Mode is set.

Child Lock

The buttons on the control panel and Ice/Water dispenser panel can be locked. When the Child Lock is set, "Lock" is displayed on the control panel and Ice/Water dispenser panel.

Lock

To release this mode, hold down  on the control panel for at least 3 seconds.

5 Technical Descriptions

5.1. Temperature control for each compartment

5.1.1. FC temperature control

The compressor is turned on and off and 3-Way Valve Controlled, detecting the FC temperature.

Operation: The setting temperature “-25°C” to “-17°C”, 9 levels change

Detection: FCC, ATC sensor

1. When power supply is turned on, FC temperature is displayed on the panel PCB by reading FC setting data of micro-computer memories. The data is written in memory area of microcomputer, 5 seconds after FC setting change. After that, FC temperature is controlled by setting FC temperature of the panel PCB.

The FC setting data is memorized, though the power supply of this product is turned off. The setting temperature is fixed, after the time to have set temperature change passed more than 5 seconds.

2. The setting temperature

The temperature, when it set on -21°C

The OFF/ON temperature value corresponding to each ATC temperature is as shown in the next table.

ATC correction temperature	Turning off temperature (OFF temperature)	Turning on temperature (ON temperature)
40°C or above	-23.4°C	-19.4°C
11°C to 39°C	-23.4°C	-19.4°C
10°C or below	-23.4°C	-19.4°C

3. OFF/ON temperature according to FC temperature setting

The OFF/ON temperature corresponding to each FC temperature setting is as shown in the following tables.

ATC correction temperature	Turning off temperature (OFF temperature)	Turning on temperature (ON temperature)
(-17°C) setting	TFOFF + 4°C	TFON + 4°C
(-18°C) setting	TFOFF + 4°C × (3 / 4)	TFON + 4°C × (3 / 4)
(-19°C) setting	TFOFF + 4°C × (2 / 4)	TFON + 4°C × (2 / 4)
(-20°C) setting	TFOFF + 4°C × (1 / 4)	TFON + 4°C × (1 / 4)
(-21°C) setting	TFOFF	TFON
(-22°C) setting	TFOFF - 4°C × (1 / 4)	TFON - 4°C × (1 / 4)
(-23°C) setting	TFOFF - 4°C × (2 / 4)	TFON - 4°C × (2 / 4)
(-24°C) setting	TFOFF - 4°C × (3 / 4)	TFON - 4°C × (3 / 4)
(-25°C) setting	TFOFF - 4°C	TFON - 4°C

*: TFOFF and TFON that exist in the following table are considered the temperature calculated by the OFF/ON temperature value at -21°C setting.

5.1.2. PC temperature control

The compressor is turned on and off and 3-Way Valve Controlled, detecting the PC temperature.

Operation: The setting temperature “1°C” to “7°C”, 7 levels change

Detection: PCC, ATC sensor

1. When power supply is turned on, PC temperature is displayed on the panel PCB by reading PC setting data of micro-computer memories.

The data is written in memory area of microcomputer, 5 seconds after PC setting change. After that, PC temperature is controlled by setting PC temperature of the panel PCB. The PC setting data is memorized though the power supply of this appliance is turned off.

2. The setting temperature

The temperature, when it set on 4°C.

The OFF/ON temperature value corresponding to each ATC temperature is as shown in the next table.

ATC correction temperature	Turning off temperature (OFF temperature)	Turning on temperature (ON temperature)
40°C or above	9.1°C	11.8°C
11°C to 3°C	$8.1 - (8.1 - 9.1) \times (ATC \text{ correction temperature} - 33) / (40 - 33)$	$11.1 - (11.1 - 11.8) \times (ATC \text{ correction temperature} - 33) / (40 - 33)$
33°C or above	8.1°C	11.1°C
11°C to 33°C	$7.0 - (7.0 - 8.1) \times (ATC \text{ correction temperature} - 21) / (33 - 21)$	$9.0 - (9.0 - 11.1) \times (ATC \text{ correction temperature} - 21) / (33 - 21)$
21°C or above	7.0°C	9.0°C
11°C to 21°C	$6.0 - (6.0 - 7.0) \times (ATC \text{ correction temperature} - 10) / (21 - 10)$	$7.5 - (7.5 - 9.0) \times (ATC \text{ correction temperature} - 10) / (21 - 10)$
10°C or above	6.0°C	7.5°C

3. OFF/ON temperature according to PC temperature setting

The OFF/ON temperature corresponding to each PC temperature setting is as shown in the following tables.

Moreover TPOFF and TPON that exist in the following table are considered the temperature calculated by the OFF/ON temperature value at 4°C setting.

ATC correction temperature	Turning off temperature (OFF temperature)	Turning on temperature (ON temperature)
(7°C) setting	$T_{\text{off}} + 2.0^\circ\text{C}$	$T_{\text{Fon}} + 2.0^\circ\text{C}$
(6°C) setting	$T_{\text{off}} + 2.0^\circ\text{C} \times (2 / 3)$	$T_{\text{Fon}} + 2.0^\circ\text{C} \times (2 / 3)$
(5°C) setting	$T_{\text{off}} + 2.0^\circ\text{C} \times (1 / 3)$	$T_{\text{Fon}} + 2.0^\circ\text{C} \times (1 / 3)$
(4°C) setting	T_{off}	T_{Fon}
(3°C) setting	$T_{\text{off}} - 3.0^\circ\text{C} \times (1 / 3)$	$T_{\text{Fon}} - 3.0^\circ\text{C} \times (1 / 3)$
(2°C) setting	$T_{\text{off}} - 3.0^\circ\text{C} \times (2 / 3)$	$T_{\text{Fon}} - 3.0^\circ\text{C} \times (2 / 3)$
(1°C) setting	$T_{\text{off}} - 3.0^\circ\text{C}$	$T_{\text{Fon}} - 3.0^\circ\text{C}$

*: TPOFF and TPON that exist in the following table are considered the temperature calculated by the OFF/ON temperature value at 4°C setting.

5.2. FC Defrost Control

FC defrost control is performed with the internals of a definite period of time.

1. When Power Supply Is Turned On.

When power supply is turned on and 4 hours passes, FC defrost control begins.

If when the power supply is turned on, FCC temperature 25°C or above and add the condition, ATC correction temperature 25°C or above, and 12 hours later FC defrost control begins.

2. Normal operation

- ATC correction temperature 19°C or above.
13 hours later when the FC defrost control had done, it begins again.
- ATC correction temperature 18°C or below.
28 hours later when the FC defrost control had done, it begins again.

3. End

- FC defrost control ends when the DEF temperature 10°C or above from the last time operation had done.

5.3. PC Defrost Control

1. FC and PC Defrost simultaneous control.

- PC defrost control begins the same time till FC defrost control begins.
- PC defrost heater never turns off till FC defrost control ends.

2. PC defrost control (not FC defrost control is performed)

- About 5.5 hours had passed after FC defrost control ends, PC defrost heater turns on the case, FC cooling mode or compressor off mode.
- The DFP reaches 2°C or above, PC defrost heater turns off. However PC defrost heater turns on at least 10 minutes.
- PC defrost single control is not perform, before FC defrost control begins.

5.4. 3-Way Valve Control

Cooling Mode Change is controlled by detected temperature of PEC, FCC, PCC, SCC.

5.4.1. When Power Is Turned On

After power supplied and about 5 seconds passed, PC side opens 1 second, and FC side opens 1 second, and change to the PC cooling mode for 10 minutes.

5.4.2. Basic Control

Basically 3-way valve operation of each mode as shown under the below.

		Present Cooling Mode		
		PC Cooling Mode	FC Cooling Mode	Compressor OFF
Next Term Cooling Mode	PC Cooling Mode	<ul style="list-style-type: none"> • PC cooling time \geq 30min and • PCC > OFF 	<ul style="list-style-type: none"> • FCC \leq OFF or (• FC cooling time \geq 25min) and • PCC \geq ON 	<ul style="list-style-type: none"> • Compressor OFF time \geq 10min and • PCC \geq ON
	FC Cooling Mode	<ul style="list-style-type: none"> • PCC \leq OFF or (• PC cooling time \geq 30min) and • FCC > OFF 	<ul style="list-style-type: none"> • FC cooling time \geq 25min or (• PCC < ON) and (• FCC > OFF) 	<ul style="list-style-type: none"> • Compressor OFF time \geq 10min and • PCC < ON and • FCC \geq ON
	Compressor OFF	<ul style="list-style-type: none"> • PCC \leq OFF and • FCC \leq OFF 	<ul style="list-style-type: none"> • PCC < ON and • FCC \leq OFF 	<ul style="list-style-type: none"> • Compressor OFF time < 10min or (• PCC < ON) and (• FCC < ON)

("ON/OFF" means FCC or PCC turns on/off temperature).

5.5. Compressor Rotational Speed Control

1. When power is turned on, rotational speed is fixed 42 (r/s) for 10 minutes.
2. The use rotational speed.

Compressor rotational speed decided by the ATC temperature.

ATC temperature	Compressor rotational speed					
	25 r/s	33 r/s	42 r/s	52 r/s	67 r/s	75 r/s
22°C below	○	○	○	○		
23 ~ 28°C	○	○	○	○	○	
29 ~ 32°C		○	○	○	○	○
33°C above			○	○	○	○

- Each ATC temperature condition, for the first step, it starts the lowest rotational speed of available range.
- If the temperature difference is big between PCC and FCC, the rotational speed changes one rank up.

5.6. Compressor Starting Control

The compressor is not start while waiting timer is operating.

And when power is turned on, compressor starting control is not available.

After power turning on	0 minute
After FC Defrost stopping (Improvement of start after defrost)	10 minutes
After compressor stopping (Prevention of trip when re-starting)	10 minutes
Inverter protection	10 minutes

5.7. Compressor Fan Control (for cool down the Compressor)

According to the compressor rotational speed, compressor rotation speed controlled under the below.

	Compressor rotational speed					
	25 r/s	33 r/s	42 r/s	52 r/s	67 r/s	75 r/s
ATC temperature \geq 13	Compressor running					
	Low		Mid		High	
	Compressor OFF					
	Stop		Stop		Stop	
12 \geq ATC temperature	Compressor running					
	Stop		Stop			
	Compressor OFF					
	5 (min) Low speed mode					

12 \geq ATC correction temperature, the case of compressor running for 1 hour, compressor fan rotates for 5 minutes with low speed.

Low speed: 7 (V)
 Mid speed: 8 (V)
 High speed: 9 (V)

The compressor fan rotates at 11.5 (V), in case of retridge inside temperature tends to high as also ATC temperature.

5.8. FC Fan Control

5.8.1. FC fan rotates under Compressor running (FC fan rotation speed)

ATC temperature	PC cooling mode	FC cooling mode	Cooling power high/FC cooling mode
≤ 21°C	Low	Mid	High
22 ~ 32°C	Low	Mid	High
33 ~ 40°C	Mid	High	High
41°C ≤	Mid	High	High

5.8.2. FC fan rotation time and rotational speed (Compressor off mode)

- ATC temperature 20°C or less: 6 minutes (low speed)
- ATC temperature 21°C or above: 10 minutes (low speed)

5.9. PC Fan Control

5.9.1. PC cooling mode

- PC fan keeps rotating.
- When the PC door opens, it stop

5.9.2. PC cooling mode off

- If the ATC temperature 21°C above, PC fan rotates for 10 minutes.

5.9.3. Compressor off mode

- If the ATC temperature 21°C above, PC fan rotates for 6 minutes.

5.9.4. ATC temperature 21°C or less

- PC fan rotates for 20 seconds after the door opened or closed.
(This operation aiming at retrade inside deodorization)

5.10. Holiday Control

To activate:

Press and hold the Set button for 3 seconds. The “Fridge” temperature is not displayed while “Holiday” indicator lights up. The front tower LED light will not light up during Holiday mode.

To deactivate:

Press and hold the Set button for 3 seconds. The “Fridge” temperature is displayed while “Holiday” indicator lights off.

For the OFF/ON temperature of PC “4” setting, corresponding to each ATC correction temperature. PC temperature is adjusted to add 10°C to each OFF or ON temperature.

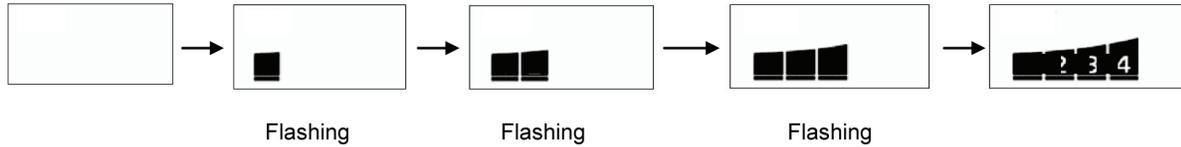
The acceptance of the refrigeration setting by to press “Set button” becomes to be invalid during Holiday Control. The front tower LED light is turned off when PC Door is opened, during Holiday Control.

5.11. Each Function Display (details)

5.11.1. Inverter rotation frequency display

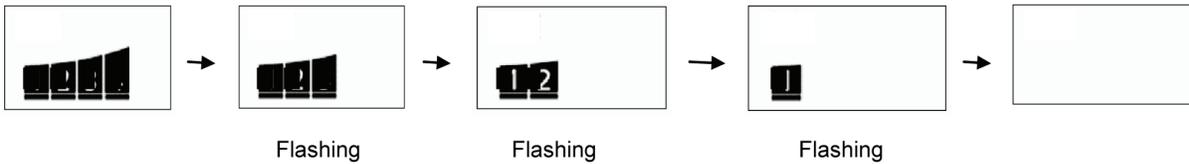
1. Display when switching from OFF → ON

From the conditions up to the intended rotation frequency, indicate one stage at a time but without display.
For example, in the case of OFF → ON (R4)



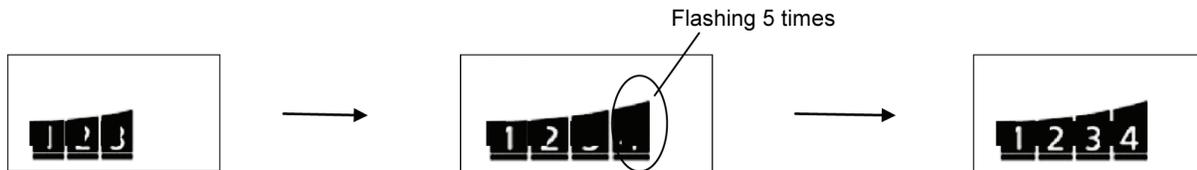
2. Display when switching from ON → OFF

Indicate one stage at a time from the current status of rotation frequency until there is no display.
For example, in the case of ON (R4) → OFF



3. An upwards shift in display when ON

For a rotation frequency shifting upwards, after flashing 5 times on the 6th occasion the display lights up.
For example, in the case of a upwards shift from R3 → R4



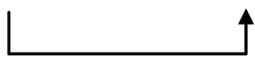
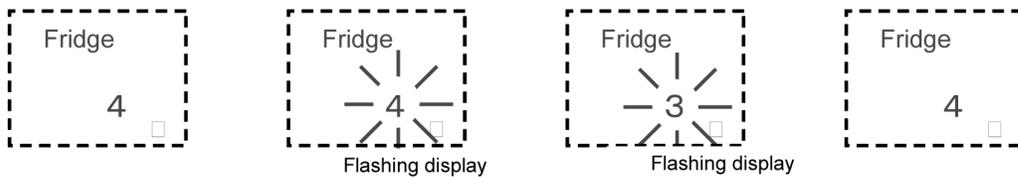
5.11.2. Temperature setting

- From the displayed standby status, by pushing the setting switch-over button (▲), the target display can be switched-over from the interior temperature of the refrigerator display to the temperature setting display.

When in the temperature setting display, the displayed temperature flashes. (0.5sON/0.5sOFF)

- Refrigerator settings

Display for interior temperature of refrigerator Setting display for interior temperature of refrigerator Setting display for interior temperature of refrigerator Display for interior temperature of refrigerator

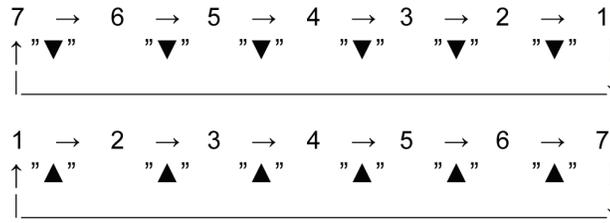


Hold down the □ button

Hold down the “▼” or the “▲” button

Hold down the □ button, or instruct no motion for 5 seconds

- Set temperature ranges (Set on shipment, 4°C)



5.12. Antibacterial deodorant control (Deodorizing fan control, Antibacterial PC-LED control)

5.12.1. ON/OFF control of Deodorizing fan

Press and hold the Hygiene Plus button for 0.5 second. “Hygiene Plus” indicator lights up and Antibacterial deodorant control starts.

Press and hold the Hygiene Plus button for 0.5 second “Hygiene Plus” indicator lights off and Antibacterial deodorant control stops.

ON/OFF of Deodorizing fan is controlled by ATC sensor, FCC sensor, PCC sensor and PC door open or close.

5.12.2. Operation control of Deodorizing fan

1. Press and hold the Hygiene Plus button for 0.5 second.

First of all, it enters A mode that is rapid deodorization driving, the deodorizing fan drives for 120 minutes continuously.

After starting B mode that is normal deodorization driving, the deodorizing fan control starts.

	AT	10°C or below	11°C to 21°C	22°C to 28°C	29°C or above
When compressor ON	When PC is cooled	ON	ON	ON	ON
	When FC is cooled	ON	ON	ON	ON
When Compressor OFF		The fan drive for 30 minutes after compressor OFF	The fan drive for 10 minutes after compressor OFF	The fan OFF	The fan OFF

2. Press and hold the Hygiene Plus button for 0.5 second when antibacterial deodorant control starts.

When the antibacterial deodorant control stops (C mode), the deodorizing fan stops.

3. When power supply is turned on.

The deodorizing fan stops, even if A, B or C mode, when ATC is 34°C or above and while FCC is 27°C or above.

4. When PC door open.

The deodorizing fan stop forcibly even if A, B or C mode, While PC door opens. (To be dewy prevention, frost prevention)

5.12.3. Antibacterial PC-LED control

1. Basic operation

In A or B mode of the deodorizing fan control, antibacterial PC-LED turn on while the deodorizing fan drives. (If the fan stops, the LED is turned off.)

2. Exceptional control

In A or B mode of the deodorizing fan control, antibacterial PC-LED is turned on forcibly while PC door opens.

5.13. Photosynthesis-freshness-improving effect control

Input: To press and hold the Vitamin-Safe button for 0.5 second.

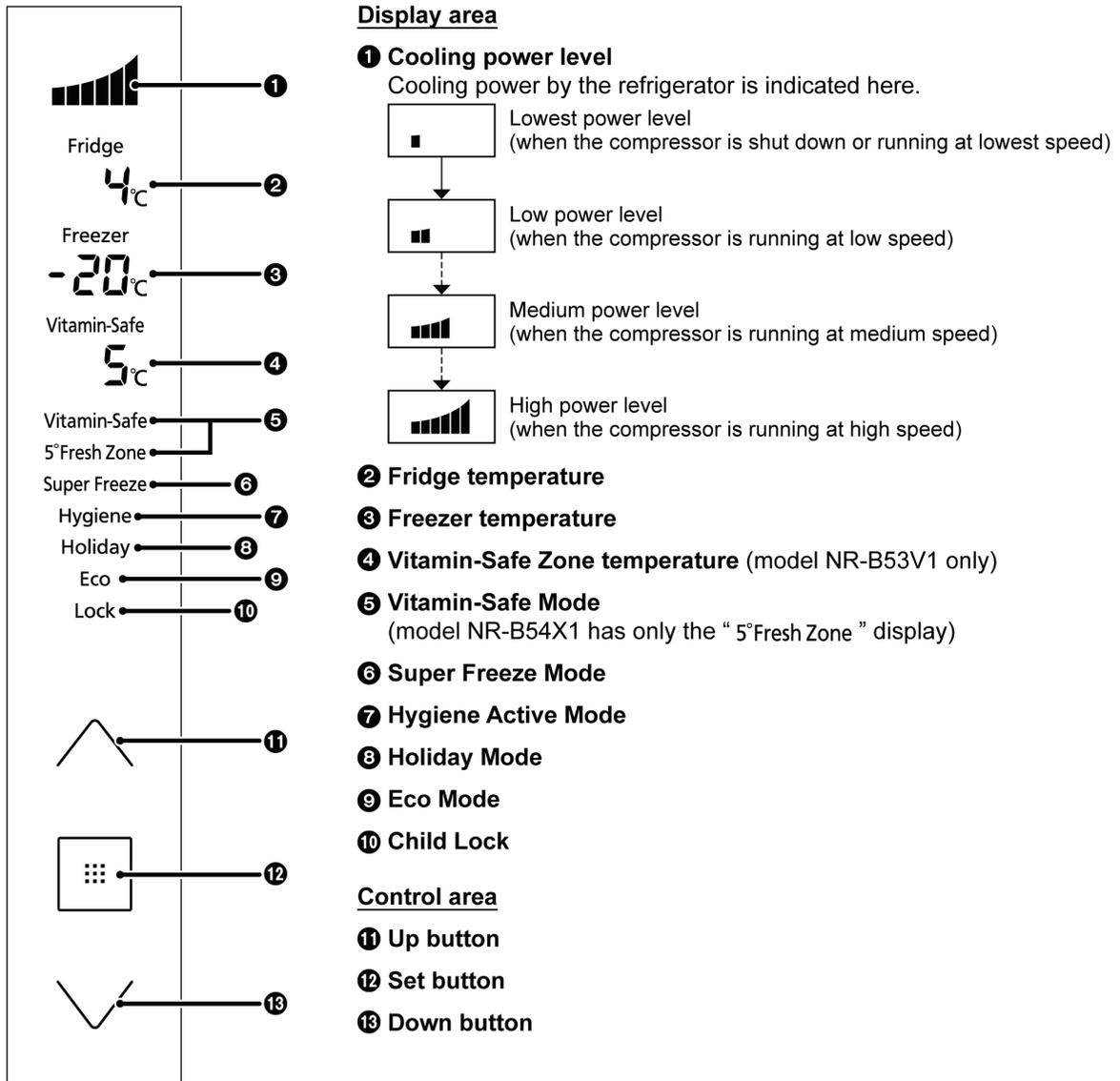
Output: LED of VC (Green LED, Blue LED)

Content of processing: Press and hold the Vitamin-Safe button for 0.5 second, Vitamin-Safe indicator lights up and both the blue LED and the green LED blink at the same time. It is operating a photosynthesis-freshness-improving effect control. While operating the control, press and hold the Vitamin-Safe button for 0.5 second, the control stops and “Vitamin-Safe” indicator lights and LED of VC are turned off.

Photosynthesis-freshness-improving effect control	While operating the control	While stop
Blue LED	40Hz flashing (ON/OFF: at each of 9.1msec)	OFF
Green LED		OFF

6 Location of Controls and Components

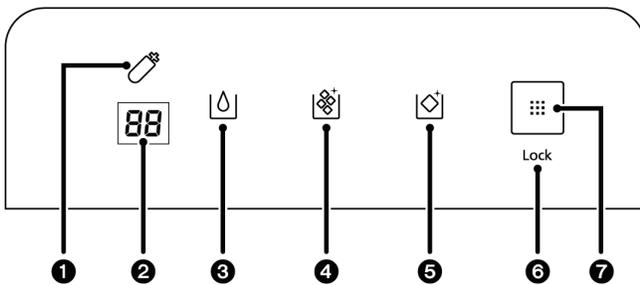
6.1. Display and Control Panel



Notes:

- Normally the panel displays are off. Displays appear when the buttons are operated, or the doors are opened.
- The displayed temperature may differ from the actual temperature.
- The buttons on the NR-B53V1 are operated by touching them, and the buttons on the NR-B54X1 are operated by pressing them.
- This refrigerator uses a microprocessor to control the temperature.
The temperature inside the refrigerator varies depending on such factors as changes in the room temperature, the speed at which the compressor is operating, how frequently the doors are opened and closed, and how much food is stored inside and how it is stored.

6.2. Ice Water Dispenser Part



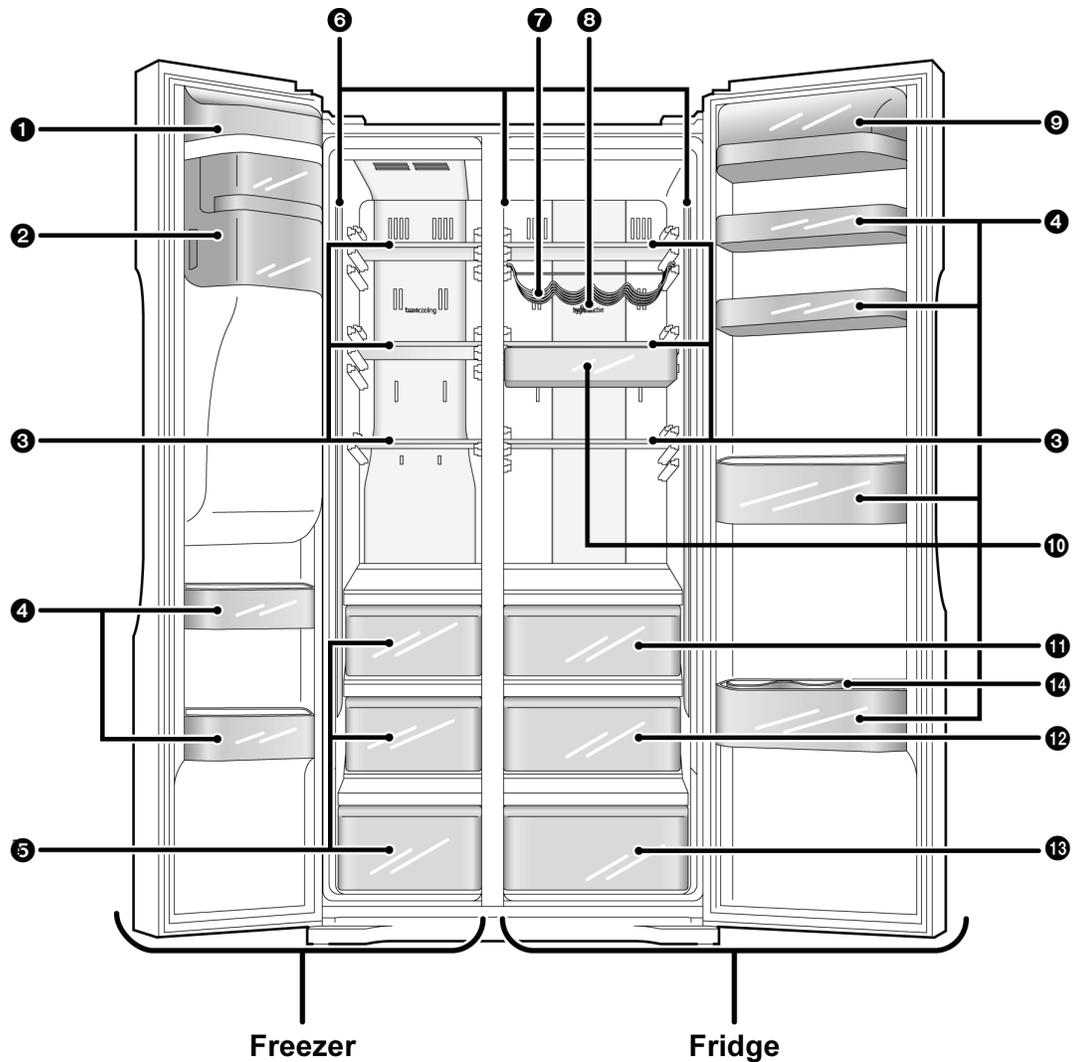
Display area

- ① Water filter change icon**
This indicates that it is time to change the water filter.
- ② Service engineer display**
This does not appear during normal operation.
- ③ Filtered water dispense icon**
- ④ Crushed ice dispense icon**
- ⑤ Ice cube dispense icon**
- ⑥ Child Lock icon**

Control area

- ⑦ Ice/Water dispenser button**

6.3. Components



1 Automatic ice maker

2 Icebox

3 Glass shelves

The positions of these shelves (except for the third shelf from the top in the freezer) can be adjusted.

4 Door shelves

The positions of these shelves (only the second shelf from the bottom in the fridge) can be adjusted.
Egg tray, bottle tray provided (one each).

5 Drawers

6 Front tower LED light

7 Wine rack

8 Hygiene active LED

Antibacterial/deodorizing filter and LED.

9 Sealed case door shelf

10 Suspend shelf (model NR-B53V1 only)

Blue and green LED lights provided.

11 0° Zone

12 Vitamin-Safe Zone (model NR-B53V1)

Select temperature 0 °C to 5 °C and blue and green LED lights provided.

2° Zone (model NR-B54X1)

13 5° Fresh Zone

Blue and green LED lights provided.

14 Bottle stopper

7 Installation Instructions

7.1. Installation Instructions

7.1.1. Choosing the right location

Install the refrigerator in a location which satisfies the following criteria:

- Where there is a main water supply line nearby
- Where the refrigerator will not be exposed to direct sunlight
- Where the refrigerator will be at a distance from heating appliances, cooking appliances and other sources of heat
- A location which is well-ventilated and dry
- Where the floor is sturdy and level

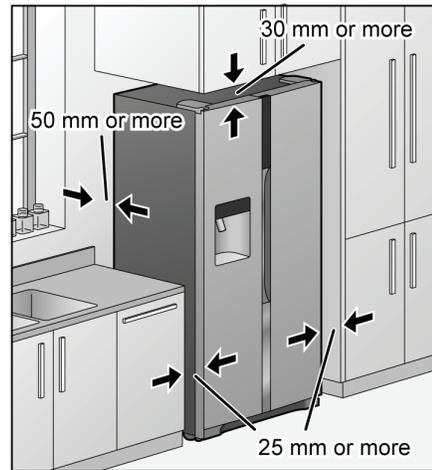
Place a solid board underneath if the refrigerator is to be installed on top of a carpet or vinyl floor. The board will protect the floor from becoming deformed and discoloured.

Provide clearance to allow heat to dissipate

Residual heat is always being emitted from the refrigerator while it is operating.

Provide sufficient clearance around the refrigerator to allow this heat to dissipate so that its cooling ability is not impaired.

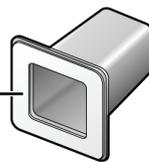
Dimensions (mm): W905 × D710 × H1850



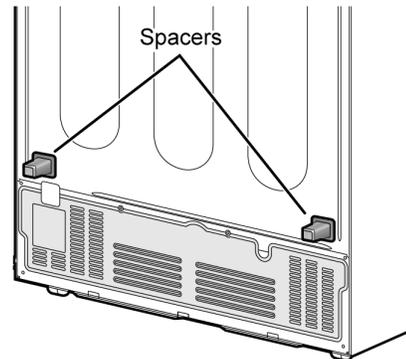
Installing the spacers

Install the spacers on the back panel of the refrigerator to ensure the minimum amount of space required to allow the heat generated by the refrigerator.

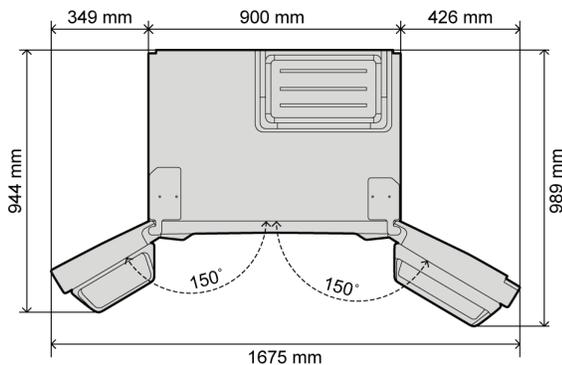
Attach to the back panel of the refrigerator after removing the double-sided tape's release liner.



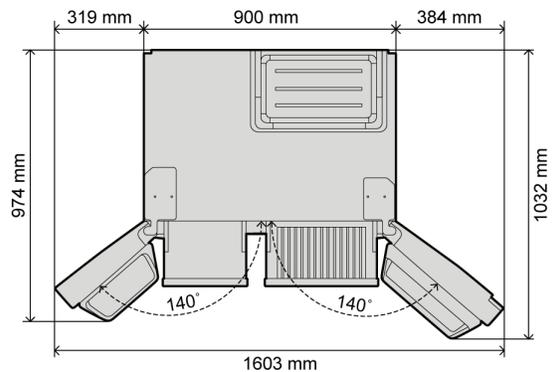
Spacer (accessory)



When the doors are completely open



When the inside drawers have been taken out



7.1.2. Removing the doors

If the refrigerator will not pass through a doorway or entrance, its doors can be removed.



Before removing the doors, be absolutely sure to check that the power of the refrigerator has been turned off.

When you want to remove the doors, please contact your dealer, an authorized service centre or access to our Web site (<http://panasonic.net>).

Panasonic or its Authorised agent cannot be held responsible if you remove the doors by yourself.

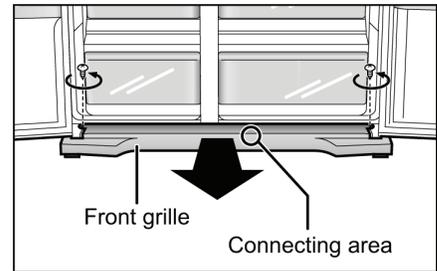
Dimensions (mm): W900 × D610 × H1845 (Without Door)

Removing the front grille

When the two doors are opened and the front grille is viewed from above, two screws – one on the left and the other on the right – will be seen.

Turn these screws counterclockwise, and remove them.

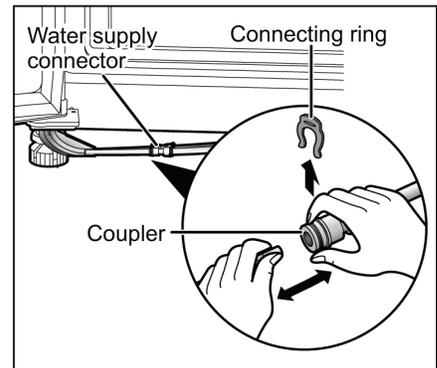
There is a connecting area slightly to the right of the centre of the front grille on its bottom. Take hold of this area, and pull the grille toward you to remove it.



Disconnecting the water supply hoses

Remove the connecting ring (black) of the water supply connector, pressing the coupler and pull the water supply hose free.

- There are two water supply hoses, one for the Ice dispenser and one for the Water dispenser. Disconnect both of them.

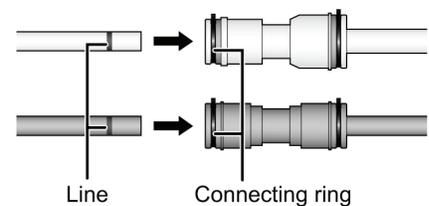


Reconnecting the water supply hoses

First insert the connecting ring (black) into the water supply connector, and then insert the water supply hose.

Insert the water supply hose into the water supply connector until the printed line on the hose is no longer visible.

- Two water supply hoses connect the same colour.



Removing the freezer door

When removing the door

- Ensure the door is in the closed position.
- Take care not to bend the hinges or damage the water supply hoses.
- Handle the removed door carefully to keep it safe from damage and impact.

1 Remove the top hinge cover.

Turn the hinge cover screw counterclockwise, and remove it.

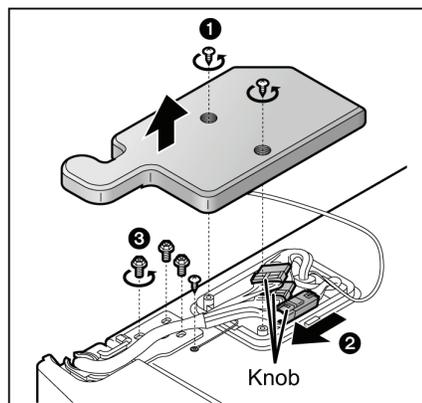
2 Disconnect the connecting cable.

While pressing on the knob, pull out the cable in the direction shown by the arrow.

3 Remove the top hinge.

Turn the hinge screws and the grounding screw counterclockwise, and remove them.

- When removing the top hinge, take care to support the door so that it will not topple forward.

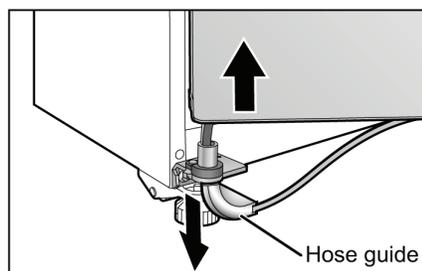


4 Remove the hose guide, and remove the door.

Remove the hose guide from the bottom hinge in the direction shown by the arrow.

And then lift the door straight up from the bottom hinge, and remove it.

- Pull out the water supply hoses so that it is completely disconnected.



Removing the fridge door

When removing the door

- Ensure the door is in the closed position.
- Handle the removed door carefully to keep it safe from damage and impact.

1 Remove the top hinge cover.

Turn the hinge cover screw counterclockwise, and remove it.

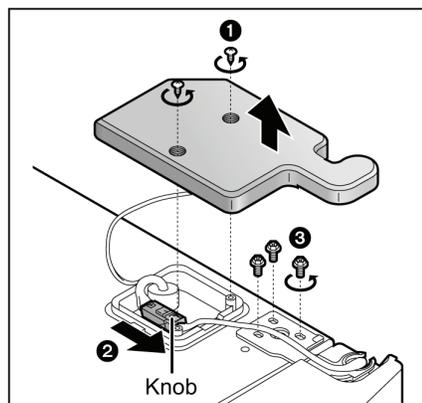
2 Disconnect the connecting cable.

While pressing on the knob, pull out the cable in the direction shown by the arrow.

3 Remove the top hinge.

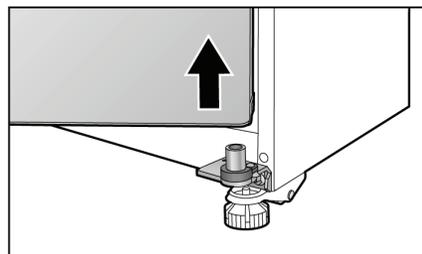
Turn the hinge screws counterclockwise, and remove them.

- When removing the top hinge, take care to support the door so that it will not topple forward.



4 Remove the door.

Lift the door straight up from the bottom hinge, and remove it.



Attaching the doors and front grille

- 1 Follow the steps for removing the doors and grille in their reverse order.
- 2 Tighten up fixing screws after checking that the door is parallel to the body and cold air does not leak from around the gasket.
- 3 Tighten up screws to fix hinges using both the screwdriver (Phillips head) and hex wrench.
- 4 When installing the front grille and top hinge cover, be sure not to get the hoses and cord caught in.

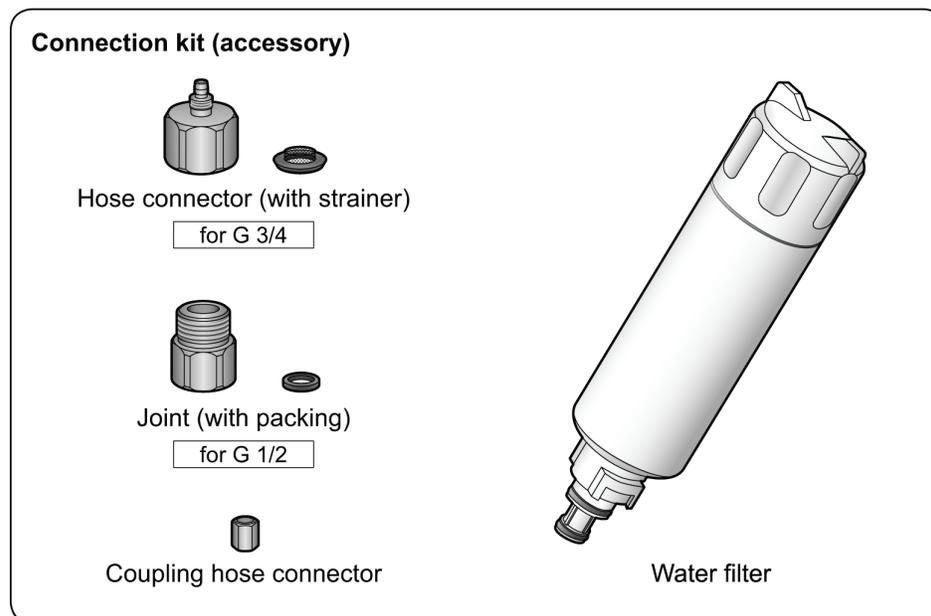
When attaching the front grille, insert the hoses into the guides inside the front grille.

7.1.3. Connecting the refrigerator to the water supply

Before connecting the refrigerator

A water pressure in the range of approx. 150 kPa to 700 kPa (22 psi to 102 psi) is must be to use the Ice/ Water dispenser. If the refrigerator is to be installed in a location where the water pressure is below approx. 150 kPa (22 psi), install a pressure pump to boost the natural water pressure. Connect potable water supply only.

Parts required for the connection



Connecting the refrigerator

Before proceeding any further, be absolutely sure to check that the power plug has been disconnected from the power outlet. And check the main water supply line has been shut off.

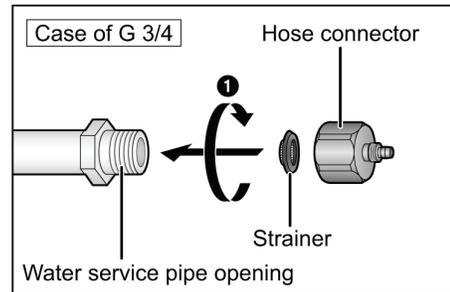
When you want to connecting the refrigerator to the water supply, please contact your dealer, an authorized service centre or access to our Web site (<http://panasonic.net>).

We could not be held responsible if you connect the refrigerator by yourself.

1 Attach the hose connector to the water service pipe opening.

Turn the hose connector clockwise to attach it.

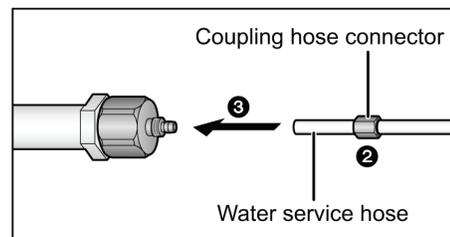
- After tightening up the hose connector as far as it will go by hand, use a tool to further tighten the hose connector through another half-turn or so.
- Check that the strainer is fitted inside the hose connector.



2 Insert the coupling hose connector into the water service hose.

3 Insert the water service hose into the end of the hose connector.

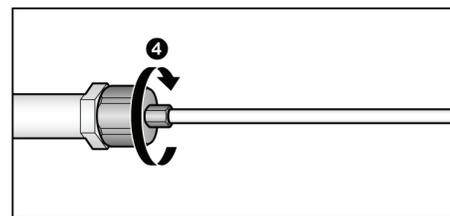
- The water service hose is firmly inserted into the end of the hose connector.



4 Tighten the coupling hose connector to the hose connector.

Turn the coupling hose connector clockwise to attach it.

- Tighten the coupling hose connector until space is lost between coupling hose connector and hose connector.

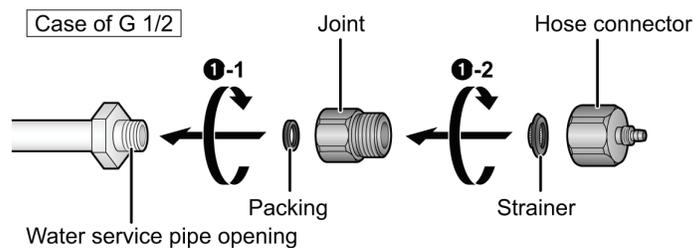


After the connection ends, turn on the main water supply line, and check that no water is leaking.

Notes:

- Failure to follow the steps as given above may cause water to leak.
- Coil the excess length of the water service hose at the back of the refrigerator.

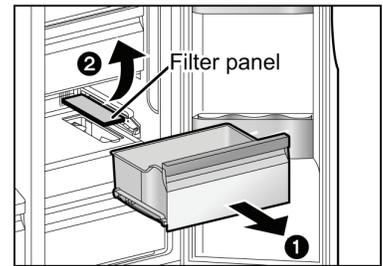
Attach the hose connector to the G 1/2 type water service pipe opening.



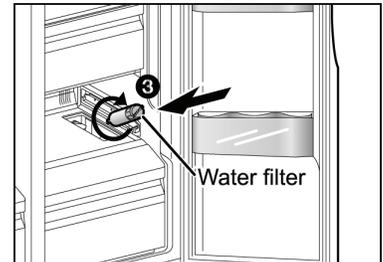
7.1.4. Installing the water filter

The water filter is not installed at the time the refrigerator is purchased. Install the water filter provided with the refrigerator.

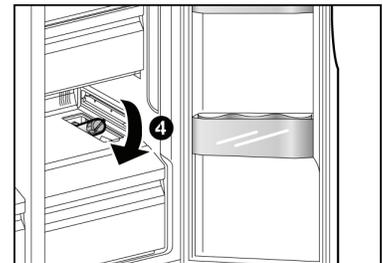
- ❶ **Remove the drawer of the Vitamin-Safe Zone.**
(The 2° Zone drawer in the case of model NR-B54X1.)
- ❷ **Remove the filter panel.**
Place your fingers in the cutout at the front of the filter panel, and remove the filter panel.



- ❸ **Install the water filter and rotate it 90 degrees clockwise.**



- ❹ **Push the water filter down, and put the filter panel back in place.**



Note:

- Run water through the Water dispenser until the water runs clear (15 glass (approx. 3 litre)). This will clean the water supply system and remove air from the water supply hose.

7.1.5. Installing the refrigerator

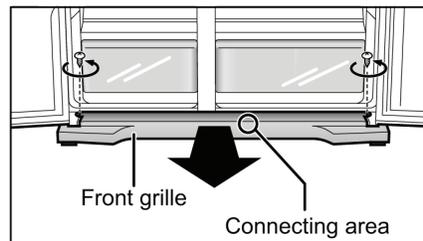
The refrigerator comes on four casters to enable it to be moved easily. Carefully read through the section "Choosing the right location", and install the refrigerator in the best location. Once the installation location has been decided upon, secure the refrigerator, and adjust it so that it is level.

Removing the front grille

When the two doors are opened and the front grille is viewed from above, two screws – one on the left and the other on the right – will be seen.

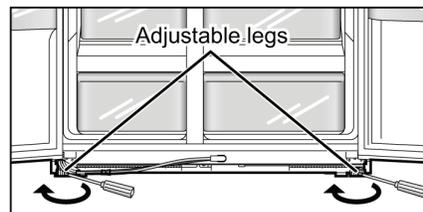
Turn these screws counterclockwise, and remove them.

There is a connecting area slightly to the right of the centre of the front grille at the bottom. Take hold of this area, and pull the grille toward you to remove it.



Securing the refrigerator

Insert a flat screwdriver into a slot on the adjustable legs at the left and right, turn them in the direction shown by the arrows to lower the legs to the floor level, and then secure the legs firmly.



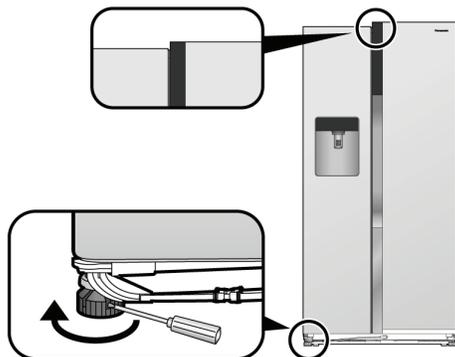
Levelling the refrigerator

Turn the adjustable legs so that the refrigerator is installed flush with the floor.

If the left and right doors are not flush with each other, turn one of the adjustable legs, and bring the doors into alignment.

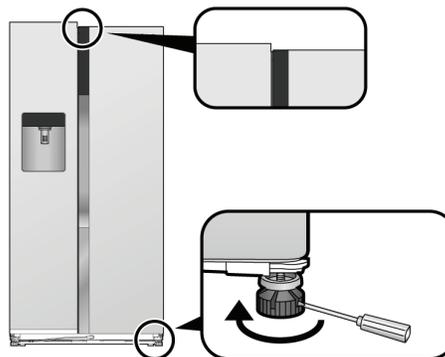
If the left door is lower than the right door

Insert a flat screwdriver into a slot on the adjustable leg on the left, turn it in the direction shown by the arrow, and adjust.



If the right door is lower than the left door

Insert a flat screwdriver into a slot on the adjustable leg on the right, turn it in the direction shown by the arrow, and adjust.



Attaching the front grille

Follow the steps for removing the grille in their reverse order.

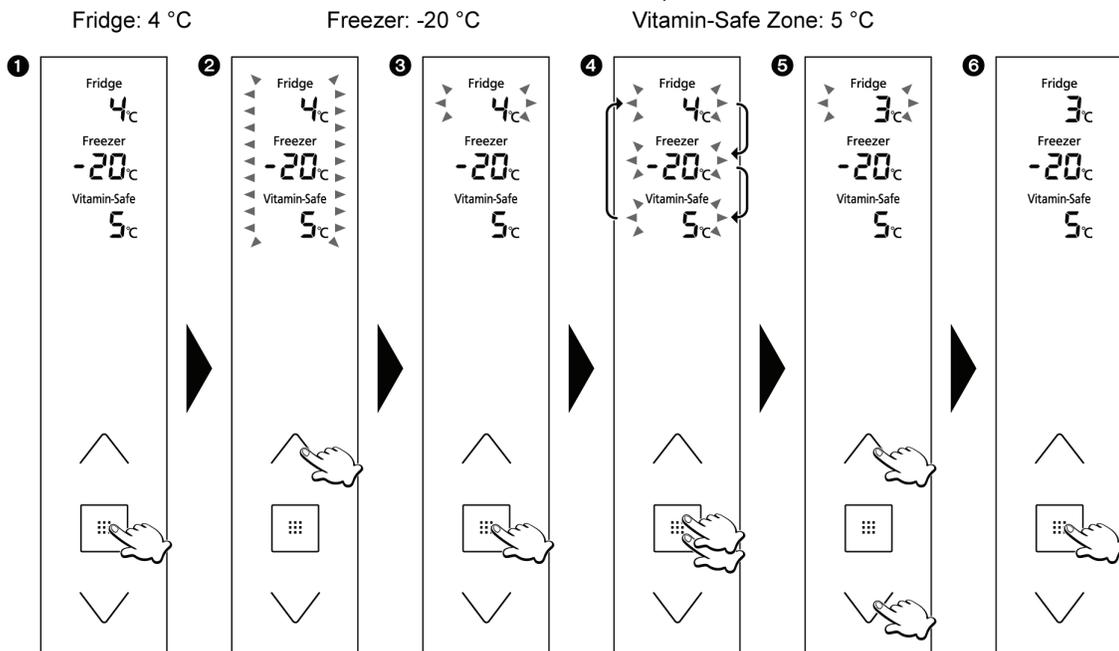
- Take care not to pinch or damage the water supply hose.

7.2. Getting started

7.2.1. Setting the temperature

The temperatures of the fridge, freezer and Vitamin-Safe Zone can be changed. (The Vitamin-Safe Zone is provided with the model NR-B53V1 only.)

At the time of purchase, the temperatures are set as shown below

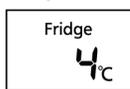


- 1 The control panel lights up, the temperature inside the refrigerator is displayed.
- 2 The temperature display start flashing, indicating that the temperatures can be set.
- 3 The temperature set for the fridge starts flashing.
- 4 Each time the button is pressed, the flashing display changes by one step in the sequence of fridge, freezer and Vitamin-Safe Zone.
- 5 Adjust the temperature.
 - Press to raise the temperature and to lower it.
- 6 The display stops flashing and lights up, indicating that the temperatures are now set.
 - Approximately 30 seconds later, the control panel goes off.

Note:

- The display in 1 is restored if no operations are performed for 5 or so seconds during the setting process.

Fridge



Set the temperature for the inside of the fridge.

Any temperature within the range from 1 °C to 7 °C can be set.

Notes:

- When the temperature is set at 1 °C for a prolonged period, some food may freeze.
- In the Holiday Mode, the temperature is not displayed, and the temperature cannot be set.
- In the Eco Mode, the temperature cannot be set either.

Freezer



Set the temperature for the inside of the freezer.

Any temperature within the range from -17 °C to -25 °C can be set.

Note:

- In the Eco Mode, the temperature cannot be set.

Vitamin-Safe Zone



Set the temperature of the Vitamin-Safe Zone (model NR-B53V1 only).

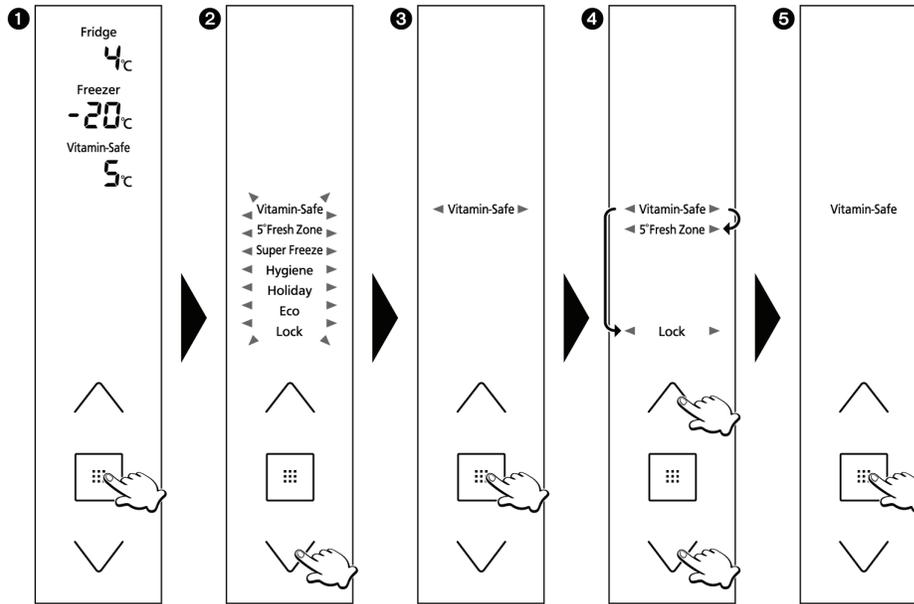
Any temperature within the range from 0 °C to 5 °C can be set.

Note:

- When the temperature is set between 0 °C and 1 °C for a prolonged period, some food may freeze.

7.2.2. Using the handy functions

This refrigerator comes with a number of useful functions for specific applications.



- 1 The control panel lights up.
- 2 The function display start flashing, indicating that the functions can be set.
- 3 “Vitamin-Safe” starts flashing. (With the model NR-B54X1, “5° Fresh Zone” starts flashing instead.)
- 4 Select the function to be used.
- 5 The display corresponding to the selected function stops flashing and lights up, indicating that the function is set. Each time the button is pressed, the display switches from “on” to “off”.
 - On: The function is set.
 - Off: The function is released.
 - Approximately 30 seconds later, the control panel goes off.

Notes:

- The display in 1 is restored if no operations are performed for 5 or so seconds during the setting process.
- If the temperature display is flashing, wait about 5 seconds for the display to light up before proceeding with the operations above.

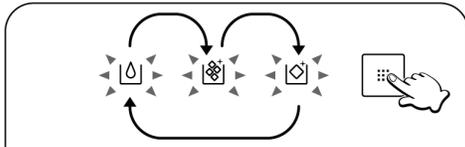
7.2.3. How to use the Ice/Water dispenser

The Ice/Water dispenser can dispense water, crushed ice or ice cubes.



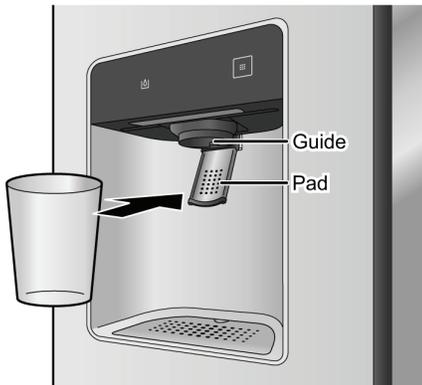
The Ice/Water dispenser panel lights up.

The icon corresponding to what was dispensed last appears.



Each time the button is pressed, the icon changes.

Keep pressing the button until what you want to be dispensed is lit up.



Place a cup against the pad and push it gently in.

Water or ice is now dispensed from the Ice/Water dispenser.

- During the dispensing, keep the cup or other container raised near the guide to ensure that the water or ice is not sprayed or spilt.

The water that comes out of the Water dispenser is chilled to the appropriate temperature, but if water with a lower temperature is required, first place ice in a cup or other container before dispensing water.

To prevent water or ice from splattering, pull the cup slowly away from the pad after all water or ice has been dispensed.

- More ice may be dispensed for a few moments even after the cup has been pulled away from the pad. This is normal and not indicative of any malfunction.
- Some ice or water that has remained into the guide may drop or run down for a few moments after it has been dispensed. This is normal and not indicative of any malfunction.

Notes:

- About 10 seconds after the button is operated, the Ice/Water dispenser panel goes off. When this panel is off, pressing the pad in has no effect.
- In the Child Lock, "Lock" is displayed under the button.
- The water that comes out of the Water dispenser at the beginning may have a slightly higher temperature.
- Place only the ice made by this refrigerator – and no other type of ice – in the icebox.
Trouble may occur if you fail to heed this warning.

8 Test Mode

Each test mode needs to perform the following procedures in common.

1. Plug off or power supply off.
2. Power supply on after short-circuiting the appointed positions.
3. Test mode ends, plug off or power supply off and remove the short-circuiting points.

8.1. Compulsion FC Defrost Mode

Compulsion FC defrost: To be making short-circuit of No.75 pin (TEST 1) and GRD in IC1.

- Normal control the same, without pre-cooling action, FC defrost mode begins.
- When FC defrost mode ends, changes the normal control mode.

8.2. Compulsion PC Defrost Mode

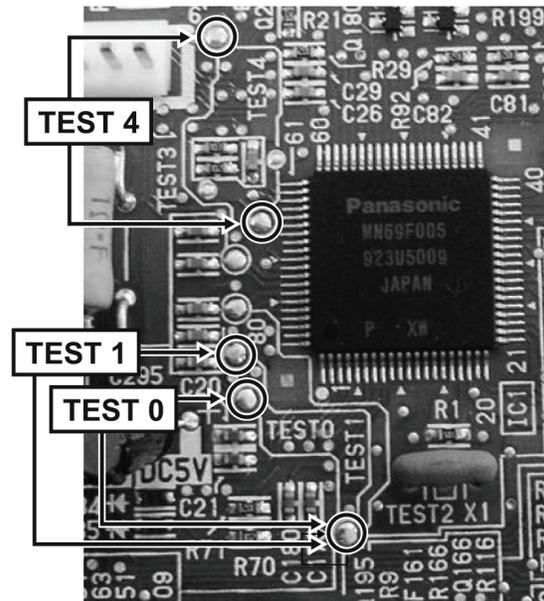
Compulsion PC defrost: To be making short-circuit of No.70 pin (TEST 4) and GRD in IC1.

- Normal control mode the same, without pre-cooling action, PC defrost mode begins.
- When PC defrost mode ends, changes the normal control mode.

8.3. Change the Rotation Speed of Compressor

To fix the rotation speed of compressor: To be making short-circuit of No.76 pin (TEST 0) and GRD in IC1. Then press " ^ " button one by one.

Rotation speed of compressor can select definite level from R1 to R6.



9 Service Mode

9.1. Self-Diagnosis Control

9.1.1. Self-Diagnosis Mode

Self diagnosis function is available on the model and self diagnosis mode is displayed on the display of control panel at the front center of PC Door, when trouble and/or failure happens.

In normal operation

	ex: U10	ex: H01	ex: No Failure
Fridge 4°C	U	H	-
Freezer -20°C	10	01	--

The signal is displayed as shown in above.



How to start

When the select button  on control panel is pressed more than 10 seconds and Self diagnosis display mode appeared.

How to end

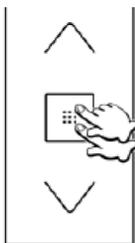
It ends when the select button  is pressed less than one second, during Self diagnosis display mode. or 7 minutes after starting self diagnosis mode, it ends automatically.

ex: H01	ex: No Failure
H	-
01	--

9.2. Failure History Display Mode

How to start

When the select button  on control panel is pressed more than 10 seconds and Self diagnosis display mode appeared. Then press the select button  for more than 1 second.



	<u>In normal operation</u>	<u>Ex: H01 in the past</u>	<u>Ex: No failure in the past</u>
Fridge	4°C	H	-
Freezer	-20°C	01	- - -

How to end

It ends when the select button  is pressed, during failure history mode. or 7 minutes after starting self diagnosis mode, both self diagnosis mode and failure history display mode ends automatically.

9.3. On-and-off Buzzer Sound Mode

- During the self-diagnosis display mode, if the “UP” button is pressed down, then the on-and-off buzzer mode is displayed, and the buzzer sound's current settings are indicated. If the “UP” button is pressed down again, then the ON/OFF has changed and by pressing down the “DOWN” button the buzzer sound settings is fixed.

9.4. Display Mode U10

U10

Contents: Warning of door open.

Condition of display of U10:

When PC door or FC door is kept open more 1 minute and above, U10 is displayed. And the temperature of the door (PC or FC) is displayed.

Door open time	Buzzer
After one minute	Beep beep
After three minutes	Beep beep, beep beep
After five minutes	Beep continuously
Temperature is too high	Beep continuously

9.5. Instruction of Self Diagnosis Display Code.

Signal	Symptom	Check point	Condition	Display release
U10	Warning that door is kept open *1	1. Close compartment door completely 2. Door SW PCB 3. Door alignment 4. Control PCB	The sign is displayed when PC/FC door is kept open for more than 1 minute.	Close the door, Adjust the door, Replace the door SW PCB, Replace Control PCB
H01	FC temperature sensor circuit has trouble	1. Sensor FC 2. Sensor FC circuit 3. Control PCB	Open or short	Replace parts
H02	PC temperature sensor circuit has trouble	1. Sensor PC 2. Sensor PC circuit 3. Control PCB	Open or short	Replace parts
H05	Sensor DEFROST circuit has trouble	1. Sensor DEFROST 2. Sensor DEFROST circuit 3. Control PCB 4. Thermal fuse	Open or short (Note) when DFC is opened, thermal fuse is blown because of too long defrosting time.	Replace parts
H07	Sensor ATC circuit has trouble	1. Operation PCB	Short or open with ATC sensor.	Replace Operation PCB (ATC sensor is chip parts on Operation PCB, not changeable)
H10	SSC, Vegetable compartment sensor circuit has trouble	1. Sensor SC circuit 2. Control PCB	Open or short	Replace parts
H12	DFP sensor circuit has trouble	1. Sensor DFP 2. Sensor DFP circuit 3. Control PCB	Open or short	Replace parts
H27	Lock/Disconnection of PC fan motor circuit *2	1. PC Fan motor 2. Control PCB 3. Something blocks the motion	Open or Lock	Replace parts
H28	Fan motor (for compr.) has trouble *3	1. Fan motor (for compressor) 2. Control PCB 3. Something blocks the motion	Open or Lock	Replace parts
H29	Lock of FC fan motor circuit *4	1. FC fan motor. 2. Control PCB 3. Locked by Ice	Open or Lock	Replace parts
H31	FC defrost heater circuit has trouble *5	1. FC defrost heater 2. Thermal fuse 3. Control PCB	Temperature of FC defrost sensor does not reach Cut-off Temp.	Replace parts
H32	PC defrost heater circuit has trouble *6	1. PC defrost heater 2. Thermal fuse 3. Control PCB	Temperature of PC defrost sensor does not reach Cut-off Temp.	Replace parts
H34	Refrigerating unit has trouble (3-Way Valve has trouble) *7	1. Control PCB 2. 3-Way valve	Even if compressor runs, temperature of defrost Sensor would not be below the regulation.	Replace parts
H35	HC refrigerant detection (High pressure leak) *11	1. 3-Way valve 2. Gas leakage at high pressure side 3. Poor compression	Even with compressor runs, FC temperature and DEF temperature would not be below 0°C continuously.	Replace parts
H36	HC refrigerant detection (Low pressure leak) *12	1. Gas leakage at low pressure side	"H40" and "H36" display repeatedly.	Replace parts
H38	Disconnection of FC fan motor *13	1. FC fan motor	Open	Replace parts
H40	Compressor has trouble (Inverter Protection Control) *8	1. Compressor 2. Control PCB	Compressor locked with some trouble or inverter protection control worked.	Replace parts
H41	Insufficient power voltage protection *8	1. Power supply voltage 2. Control PCB	Control PCB detects low (voltage) power supply.	Check power supply or replace Control PCB
H50	Communication error *9	1. Control PCB 2. Operation PCB 3. Wire circuit between Control PCB and Operation PCB	Microcomputer on Control PCB cannot read the data from Operation PCB.	Replace parts
H51	Control PCB has trouble (EEPROM) *10	1. Control PCB	Inverter voltage is too high. Inverter voltage is too low.	Replace parts
H52	Control PCB has trouble. (Voltage to compressor) *8	1. Control PCB	Inverter voltage is too high. Inverter voltage is too low.	Replace parts

Signal	Symptom	Check point	Condition	Display release
H53	Substrate fault (Electrical current sensing circuit)	1. Control PCB	Inverter circuit protection system operation.	Replace parts

- *1. If the door is left open for more than 1 minute, this display occurs. (Applicable for FC Door, PC Door.)
- *2. Regarding the motion time of the ice-separator motor, if the motion continues for 1 minute it will stop for 1 second, after which it will revolve to the opposite way (normal motor action) for 5 seconds. After the protective cessation of the ice-separator motor, it will start once again from the initial control. If the protective cessation occurs 4 times consecutively, then this indicator will be displayed. (Refer to ice dispenser item.)
- *3. If there is a fan motor malfunction code "Hi" after the 1 second period detection with the fan motor ON, it will turn OFF for 2 minutes. If it repeats 10 times, a display will appear. As for the cancellation with the fan motor ON, the fan motor's abnormal code of "L" is detected at a 5-second intervals.
- *4. With the fan motor ON, after 0.6 seconds the fan motor resolution frequency codes "Hi" or "Lo" is detected within 1.5 seconds. This will cause the fan motor to be switched OFF 2 minutes from the time of detection and once it has detected this for more than 60 times the display will be lit. (However, from the input of electrical power until the first defrost it will continue for more than 10 times.)
- *5. This indication display appears during defrost DEF < 0 °C with time-save repeated 3 times to complete.
- *6. This indication display appears during defrost DEF < 0 °C with time-save repeated 3 times to complete.
- *7. The completed DFP temperature from the PC defrost until prior to the commencement of the next PC defrost (excluding during FC defrost) is detected. If it exceeds 10°C even once and this is detected 5 times consecutively, then it will be indicated on the display.
- *8. Inverter Protection Control

	Protection control	Subsequent Condition
DIP - IPM protection (H40)	If from the U200 in the IC1, a DIP-IPM protection input code occurs, then the compressor's output power is stopped, and for a period of 10 minutes (±2.0%) there is a forced outage from the compressor.	DIP-IPM protection input code
Insufficient power voltage protection (H41)	If from the U200 in the IC1 an insufficient electrical voltage protection input code occurs, then the compressor's output power is stopped, and for a period of 10 minutes (±2.0%) there is a forced outage from the compressor.	Normal insufficient power voltage protection code
Lock protection (H40)	If from the U200 in the IC1 a lock protection input code occurs, then the compressor's output power is stopped, and for a period of 10 minutes (±2.0%) there is a forced outage from the compressor.	Normal lock protection code
Over voltage protection (H52)	If from the U200 in the IC1 an over voltage protection input code occurs, then the compressor's output power is stopped, and for a period of 10 minutes (±2.0%) there is a forced outage from the compressor.	Normal over voltage protection code
Boot sequence protection (H40)	Due to DIP-IMP and lock protection, within 2 minutes (±2.0%) after the protection release and start-up, the protection continues again with 10 times system protection control. Furthermore, through DIP-IPM demagnetizing and lock protection if the protection is not cancelled for more than 1 hour, then as a system protection control there will be a forced outage from the compressor for 1 hour (±2.0%).	Protection code cancellation

- *9. Pertaining to the transmission between IC1 (main micro computer) and IC201 (inverter micro computer), if IC1's incoming transmission does not activate for more than 1 hour, then this display is shown. For the transmission between IC1 (main micro computer) and IC701 (operation micro computer) and at the time of power input, if IC701's incoming transmission is not activated for more than 5 minutes then the indicator for this is displayed. (See below for reference).
- *10. Display at time of IC1 (main micro computer) abnormality occurrence with its internal storage (memory) area initialization.
- *11. H35 code is displayed that under the condition DEF temperature $\geq 0^{\circ}\text{C}$ and FCC temperature $\geq 0^{\circ}\text{C}$, detected 10 times with cooling mode working time limit.
- *12. At the time of self-diagnosis code (H40) detection, it indicates that since the compressor commenced normal activity within a period of 48 hours, the detection occurred twice.
- *13. At the start of the fan motor's power output, the FC fan's electrical power output is ON for 1 second: with the rotation frequency command electric voltage being 0 volts using the rotation frequency code, the disconnection detection of the rotation frequency command electric voltage code line is created. And by using the rotation frequency code with the rotation detection per second and is assessed as being disconnected, it will appear only in the track record display.

9.6. Instruction of Self Diagnosis Display Code (dispenser).

Signal	Symptom	Check point	Condition	Display release
H50	Communication error	1. Control PCB 2. Operation PCB 3. Wire circuit between control PCB and operation PCB	Micro-computer cannot read or write the data	Replace parts
H04	ICE sensor error	1. Sensor ICE 2. Sensor ICE circuit 3. Dispenser PCB	Open or short	Replace parts
H21	Auto Ice-making circuit has trouble	1. Rotation parts 2. Ice-maker 3. Dispenser PCB	Under Ice-maker protection control	Replace parts
H45 (1)	Over current protection for shooter motor	1. Shooter motor 2. Dispenser Control PCB	Under Ice-maker protection control	Replace parts
H45 (2)	Select button has trouble	1. Dispenser panel PCB 2. Dispenser operation panel	Mechanical malfunction (select button) or PCB malfunction	Replace parts
H45 (3)	Push lever has trouble	1. Push lever	Mechanical malfunction	Replace parts (Holder control DIS AS)

How to start the dispenser service mode

Step 1 = Keep both FC door and PC door open. While pushing the dispenser lever, press the select button  in dispenser panel for 10 seconds.

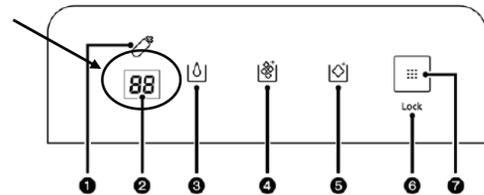
Step 2 = 01 will be displayed. You can change figure by pressing the select button .

[01 → 02 → 03 → 05 → 00 → 01 → - -]

When the dispenser lever is pushed, display figure is fixed.

Output Information (only Dispenser panel)

- 00 Water supply level change
- 01 Error (now): H04, H21, H45, H50
- 02 Error (within 24 hours)
- 03 Remaining time for Filter replacement:
- 05 Status of Dispenser & Ice-maker



Change size of the ice

If the ice-maker produces ice that is a little small, can change size.

1. Select "00"
2. Show the following indication (every about 2 seconds indicates)
[P → 02 → 01 → P → 02 → - -]
3. While appear "01" you push the select button , "01" indicates keeping. And the number changes every time the select button  is pressed.
[01 → 02 → 03 → 01 → - -]

The ice size information

- 01: standard
- 02: medium
- 03: large

When the dispenser lever is pushed, display figure is fixed.

If select "03", show the following indication

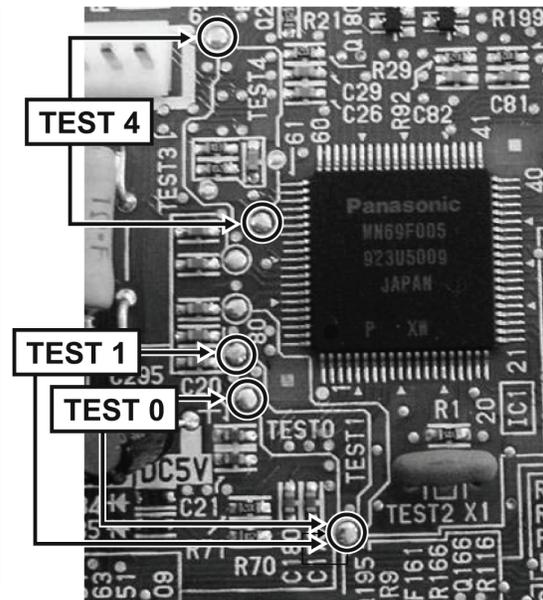
[P → 02 → 03 → P → 03 → - -]

How to end

It ends when the select button  is pressed more than one second, while pushing the dispenser lever or 7 minutes after starting simple self diagnosis mode.

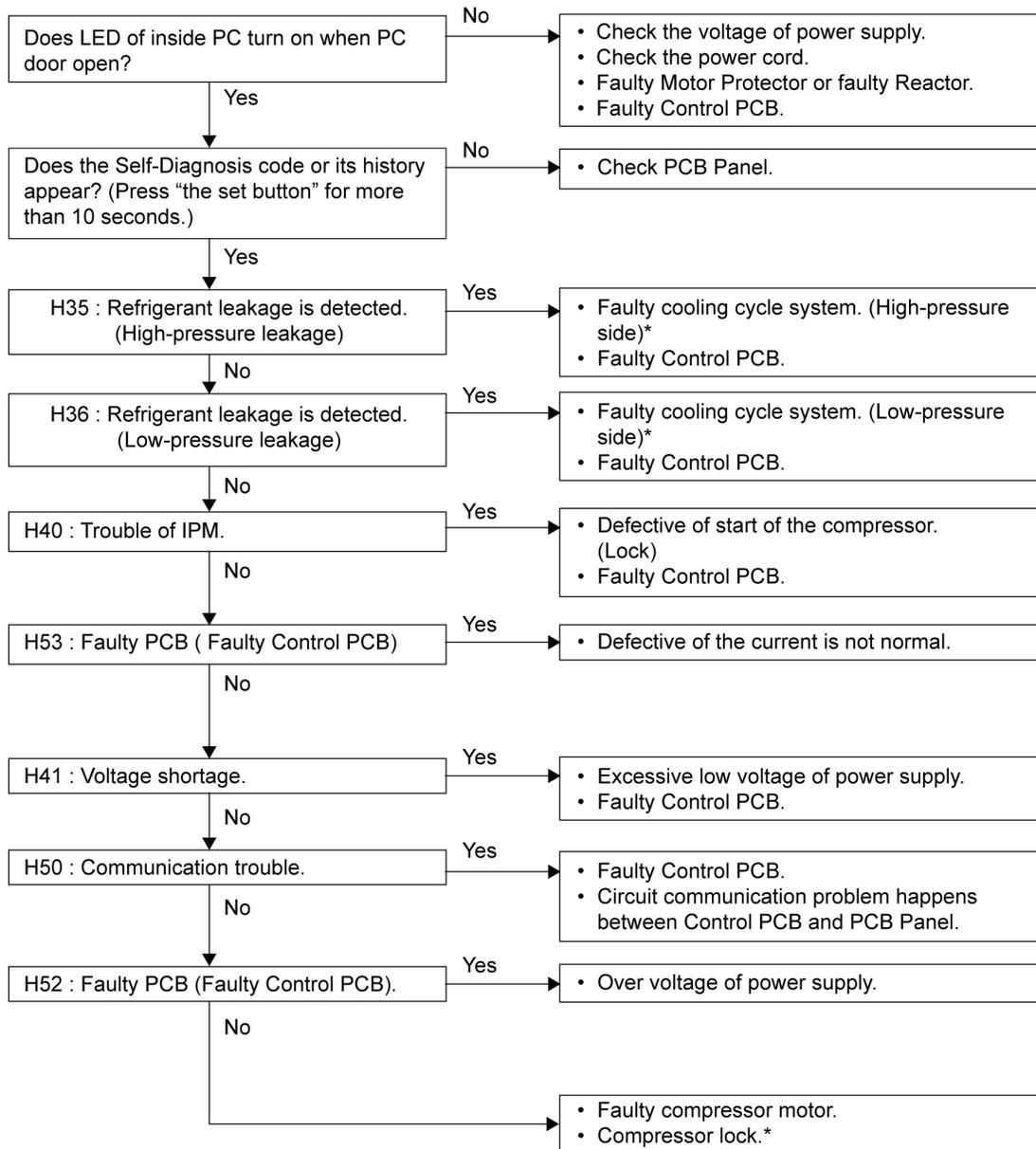
9.7. Special Function Setting

Special function list	
①	To fix the rotation speed of compressor: To be making short-circuit of No.76 pin (TEST 0) and GRD in IC1. Then press “^” button one by one.
②	Compulsion FC defrost: To be making short-circuit of No.75 pin (TEST 1) and GRD in IC1.
③	Compulsion PC defrost: To be making short-circuit of No.70 pin (TEST 4) and GRD in IC1.
Self Diagnosis mode (Service mode):	
④	When select button “#” on the control panel is pressed more than 10 seconds.
Demo mode: While both FC door and PC door are kept open, Press “^” and “v” button for more than 10 sec. at same time.	



10 Troubleshooting Guide

10.1. FC and PC not cooling at all. [Compressor does not run.]



* : The repair of the cooling system should make a special repair engineer who attended HC service seminar do because it uses refrigerant (R600a) that could catch fire and explode in this refrigerator.

Method of checking compressor

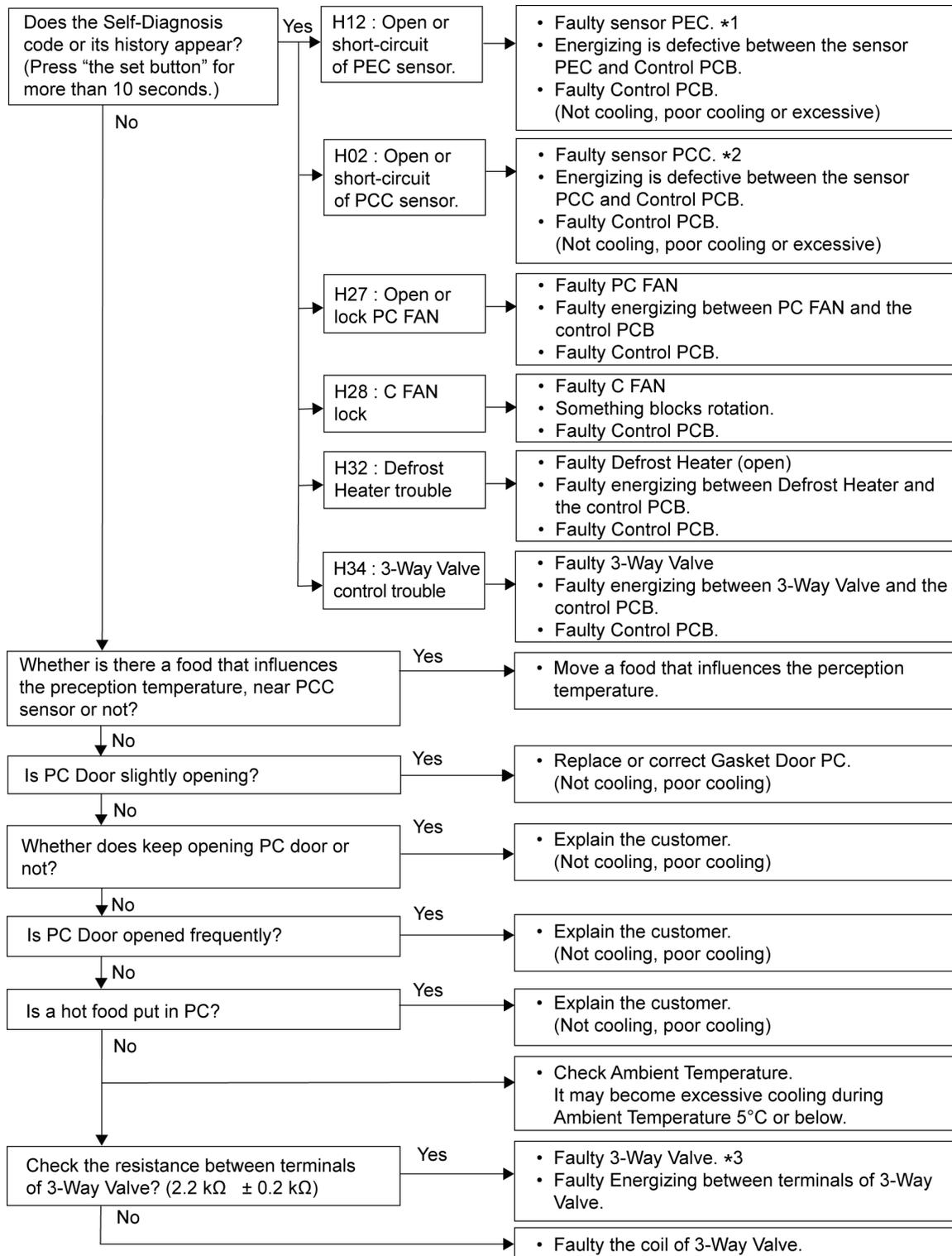
U - V : $8.44 \Omega \pm 5\%$

U - W : $8.44 \Omega \pm 5\%$

V - W : $8.44 \Omega \pm 5\%$

(Ambient Temperature : 20°C)

10.2. PC is not cooling or poor cooling [FC cooling condition is normal]



*1 When PEC (sensor PE) short, the back side of PC inner liner does not defrost.

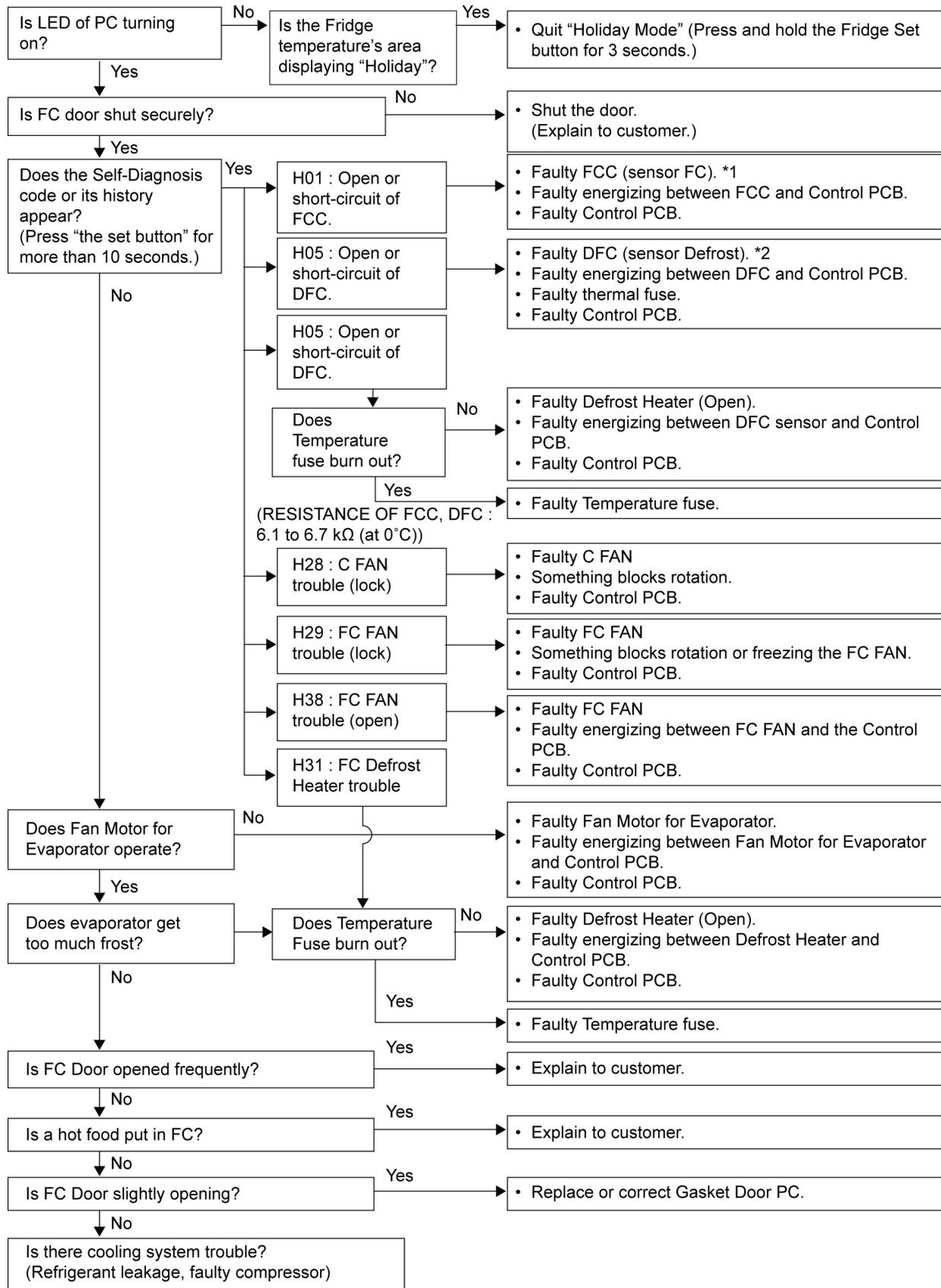
When PEC (sensor PE) open, PC is not cooled.

*2 When PCC (sensor PC) short, PC not cooled though PC temperature is high excessively.

When PCC (sensor PC) open, PC is cooled though PC temperature is low excessively.

*3 The repair of the cooling system should make a special repair engineer who attended HC service seminar do because it uses refrigerant (R600a) that could catch fire and explode in this refrigerator.

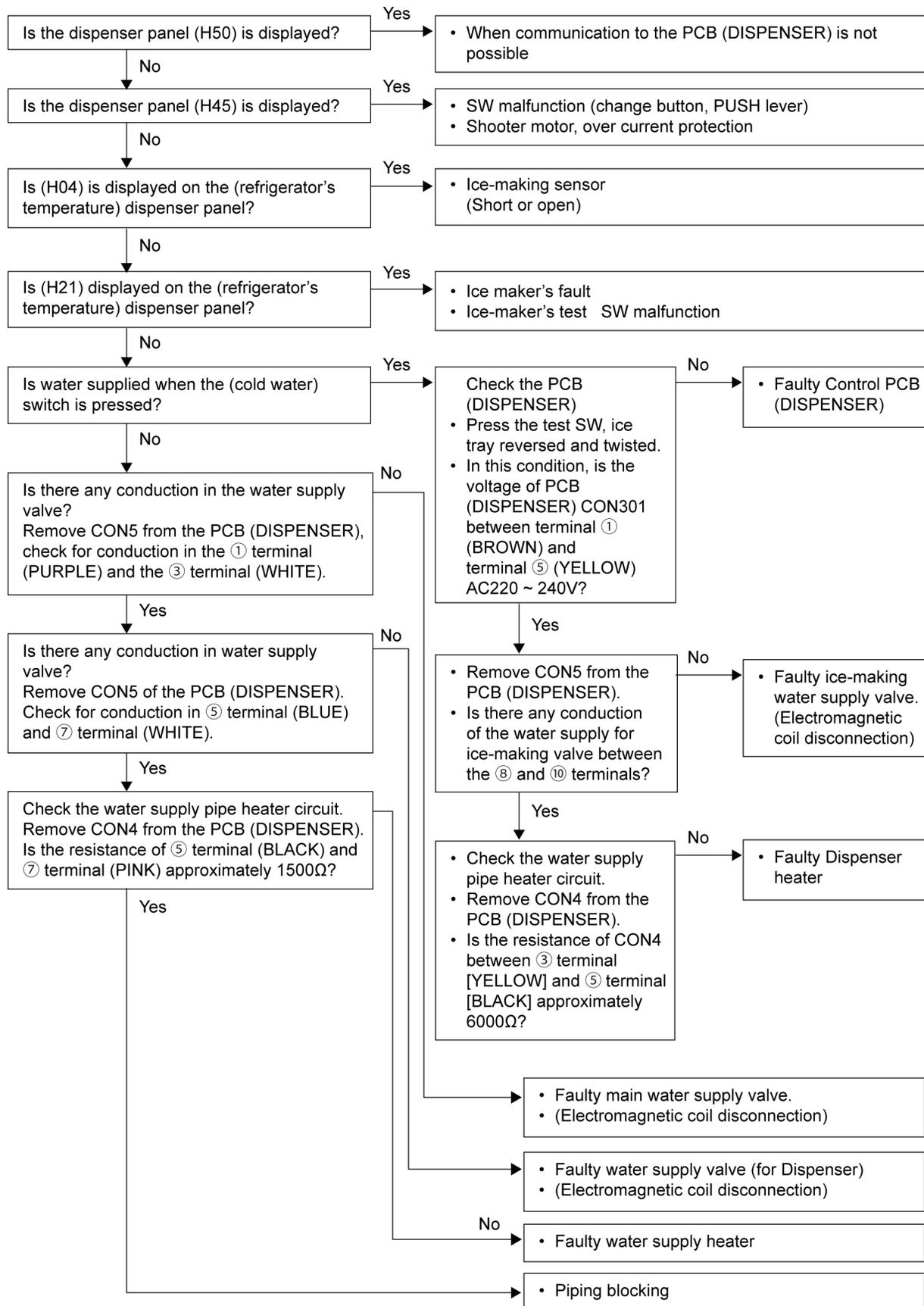
10.3. FC is poor cooling. [Compressor run.]



*1 When FCC (sensor FC) open, FC is not cooled though FC temperature is high excessively.

*2 When DFC (sensor Defrost) short, defrosting does not operate.

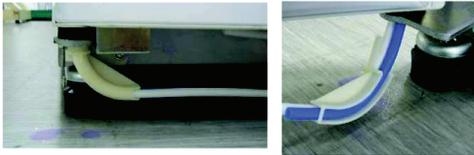
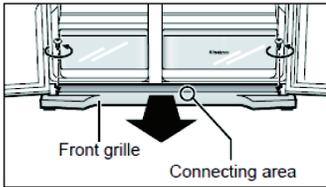
10.4. No ice comes out. [No ice in the ice box.]



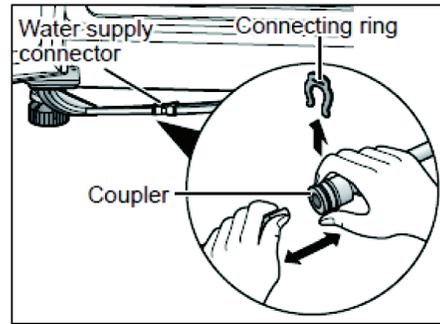
10.5.3. Water Supply Hoses (Note the connection)

How to disconnect

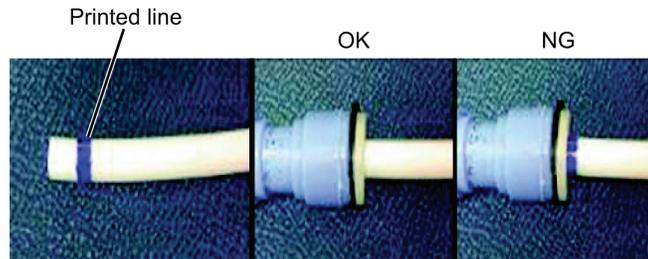
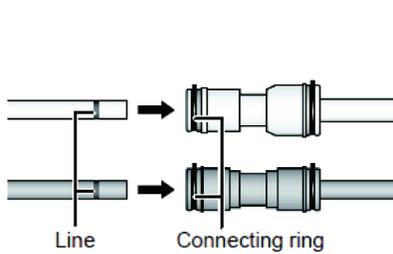
① Remove the front grille.



② Disconnect the hoses.

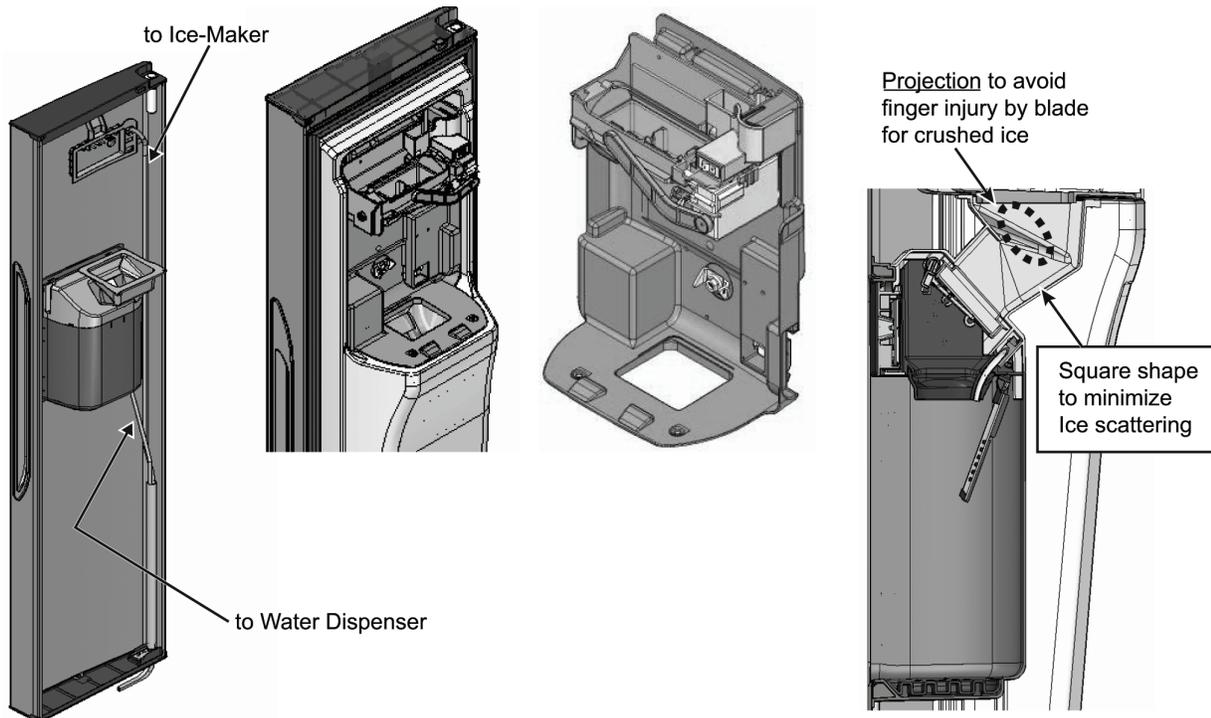


How to reconnect

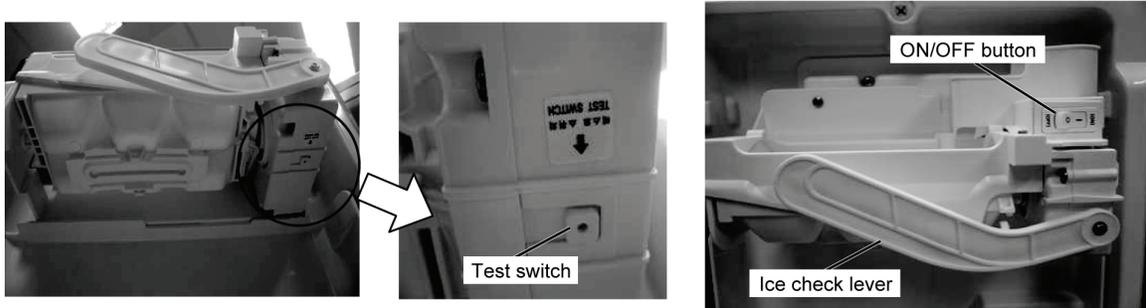


Insert the hose into the connector until the printed line on the hose cannot be seen.

10.5.4. Structure of FC Door (Supply route of water)



10.6. Test of Ice-Making Operation



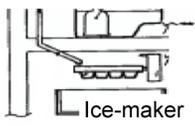
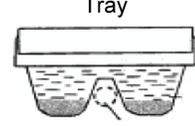
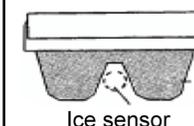
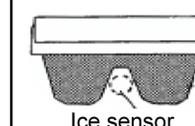
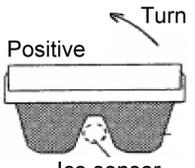
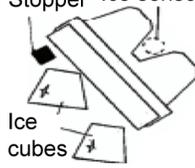
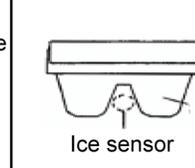
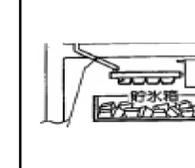
How to start

When test switch is pressed for more than 3 seconds, test of ice-making operation will start.

Test Operation

Confirmation operation of amount of collected ice
 (Ice check lever go down and go up to the original position)
 → Motor rotates positively (Ice tray turns counterclockwise and twist to drop ice cube)
 → Motor rotates reversely (Ice tray turns clockwise)
 → Horizontal confirmation operation (Ice tray)

10.7. Operation of Automatic Ice-Making Mechanism

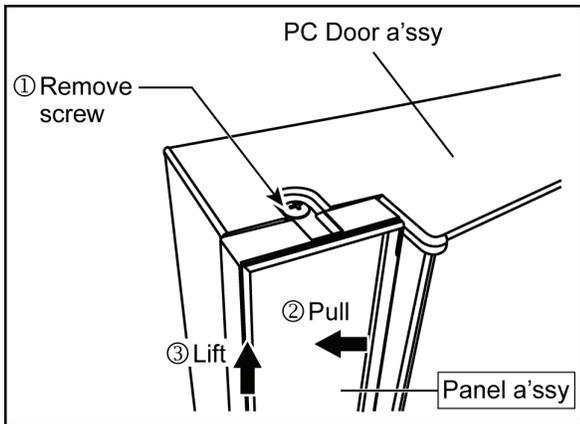
	① Water supply to ice tray	② Start of Ice-making	③ 1 st check of ice-making process	④ Ice-making completion	⑤ Check the amount of collected ice
Operation	Valve opens for certain period and it supply water to the tray.	Ice tray is cooled.	Go on if temperature of Ice sensor is lower than spec.	Completed if temp. of Ice sensor is lower than spec., certain time after ③.	Ice check lever goes Down. If the amount of ice collected is Short, go to ⑥.
	 Ice-maker	 Tray Ice sensor	 Ice sensor	 Ice sensor	 Up/down Ice check lever
	⑥ Start of Ice releasing	⑦ Ice releasing	⑧ Ice release completion	⑨ Horizontal confirmation	⑩ Water supply
	Ice tray rotates. (Motor rotates)	Twist ice tray to release ice cube	Ice tray rotates in reverse	Ice tray stops. (Motor stops)	Back to ①.
	 Turn Positive Ice sensor	 Stopper Ice sensor Ice cubes Motor rotate positive	 Reverse Motor rotate reverse	 Ice sensor	 Water supply hose

11 Disassembly and Assembly Instructions

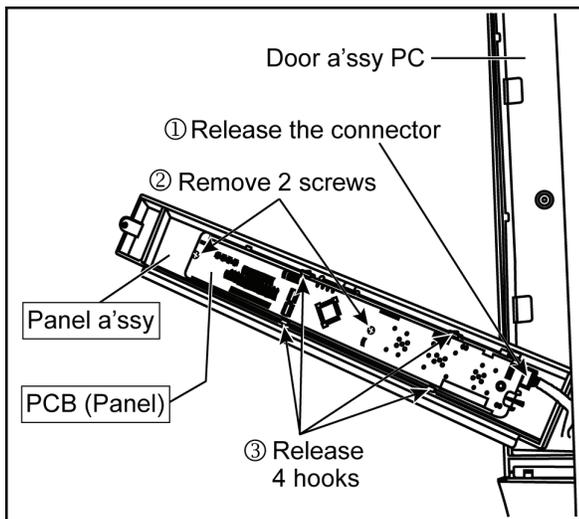
11.1. Disassembly of Door Panel PCB

11.1.1. PCB (Panel)

1. Remove the screw at the top of the panel a'ssy. Then pull the panel a'ssy to the left and lift to detach.



2. Release the connector of the PCB (Panel) to remove the panel a'ssy from the door a'ssy PC.
3. Remove 2 fixation screws on the PCB (Panel), then release 4 hooks to remove the PCB (Panel).



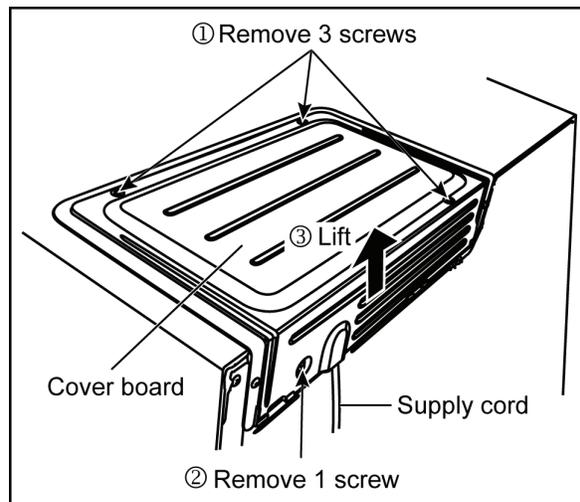
NOTICE

- Be careful not to break PCB (Panel) when it is removed and installed. It might become cause of defective operation.

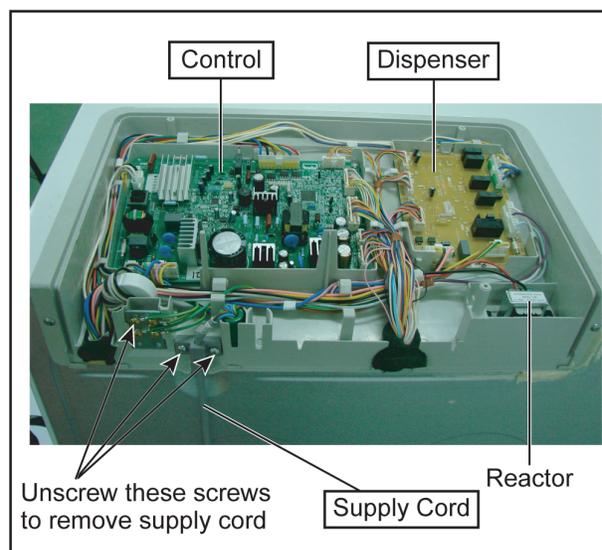
11.2. Disassembly of Control PCB, Inverter PCB and Supply Cord

11.2.1. Control PCB, Inverter PCB and Supply Cord

1. Remove 4 screws and lift the cover board to remove.



2. Disconnect all connectors, and unscrew the screw of each PCB (at right top corner of each PCB). Remove each PCB, while disengaging the hooks.
3. Unscrew the 3 screws of the supply cord to remove the supply cord.

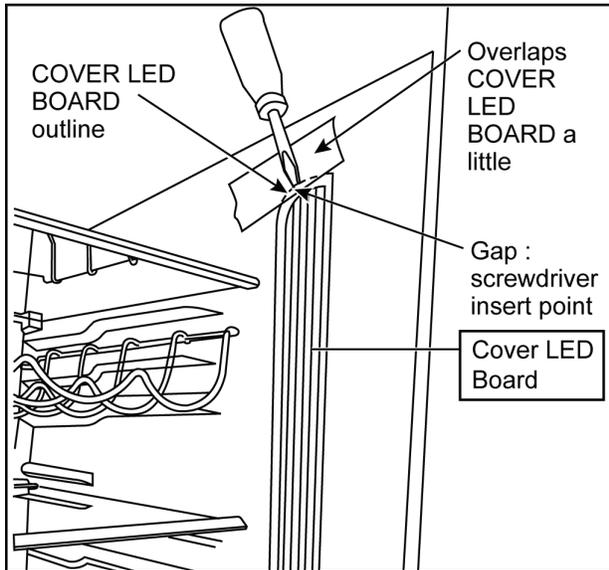


CAUTION

- Be careful not to touch directly electric parts on the PCB when you remove and install each PCB.

11.3. Disassembly of PAS-B541X (LED)

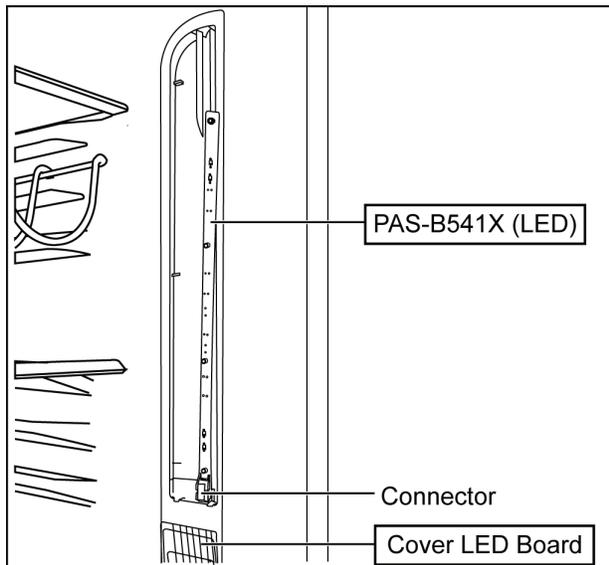
1. Insert screwdriver(-) which is a little smaller one better, into the gap between body inside and COVER LED BOARD. Then pry strongly off because that parts fitting is very tight adjusting. Many cases will happen COVER LED BOARD broken, when pry it off. But this is the reason that parts to prevent invasion of the moisture.



NOTICE

- Please put a tape on the part where a screwdriver(-) touch, to protect inner body damaged.
- The tape location overlaps a little is better.

2. Disconnect the connector to remove the PAS-B541X (LED).



There 6 PCBs (LED) in PC and 3 PCBs (LED) in FC. All can be removed using the above procedures.

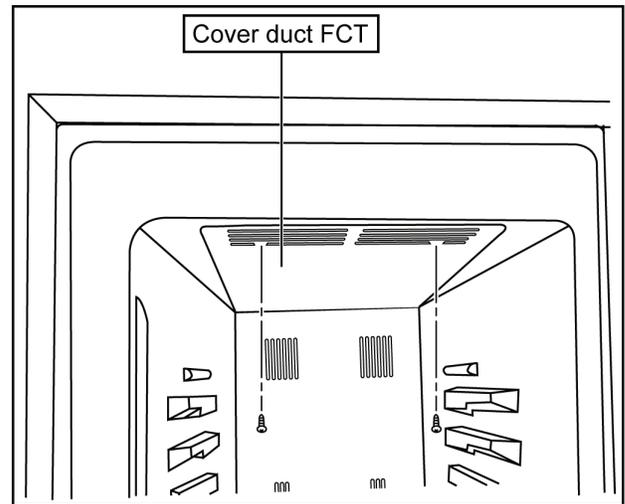
NOTES

- The PCB (LED) cover can be damaged easily.
- Be careful not to break the PCB (LED) when removing and installing them.

11.4. Disassembly of FC (Freezer Compartment)

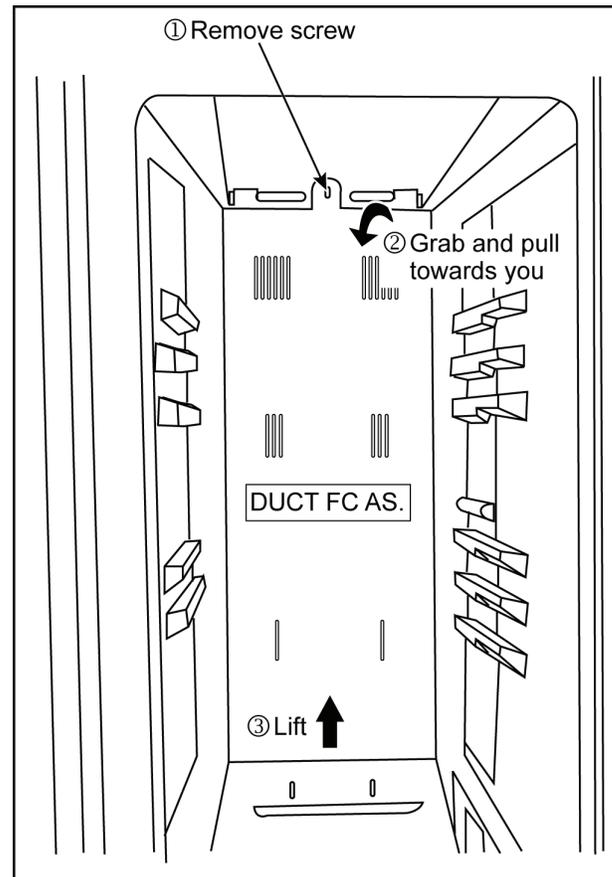
11.4.1. Fan Motor FC A'ssy, Sensor FC

1. Unscrew 2 screws on the upper cover duct FCT to remove this cover.



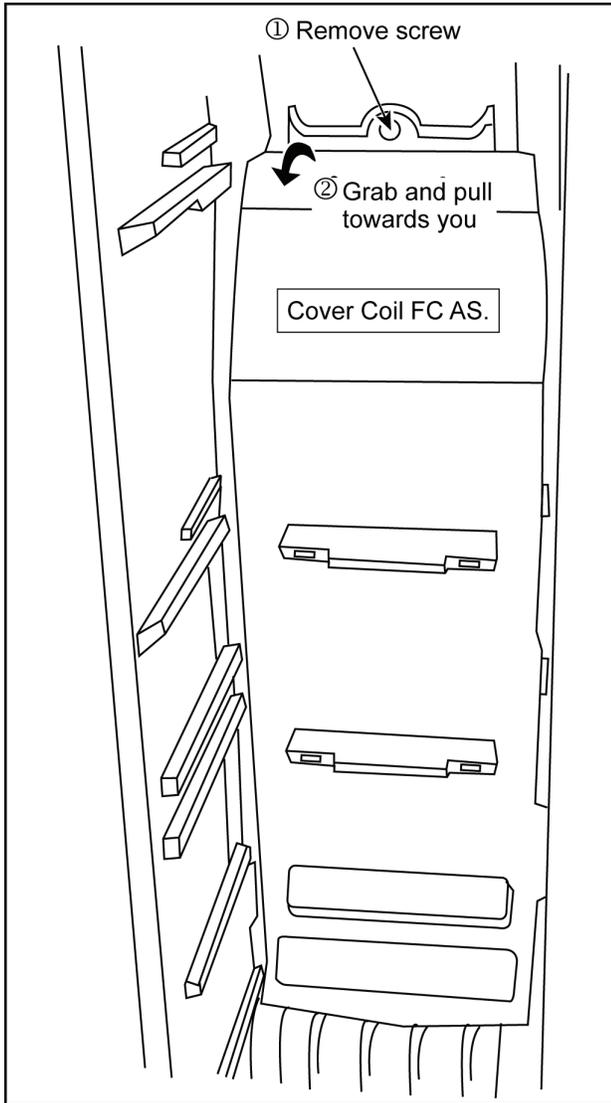
2. Remove the DUCT FC AS.

- a. Remove a screw.
- b. Grab and pull the upper edge of the DUCT FC AS. towards you, then lift to remove the DUCT FC AS.



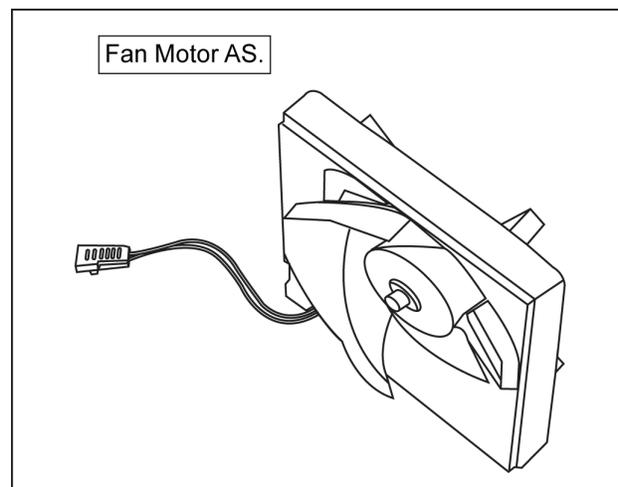
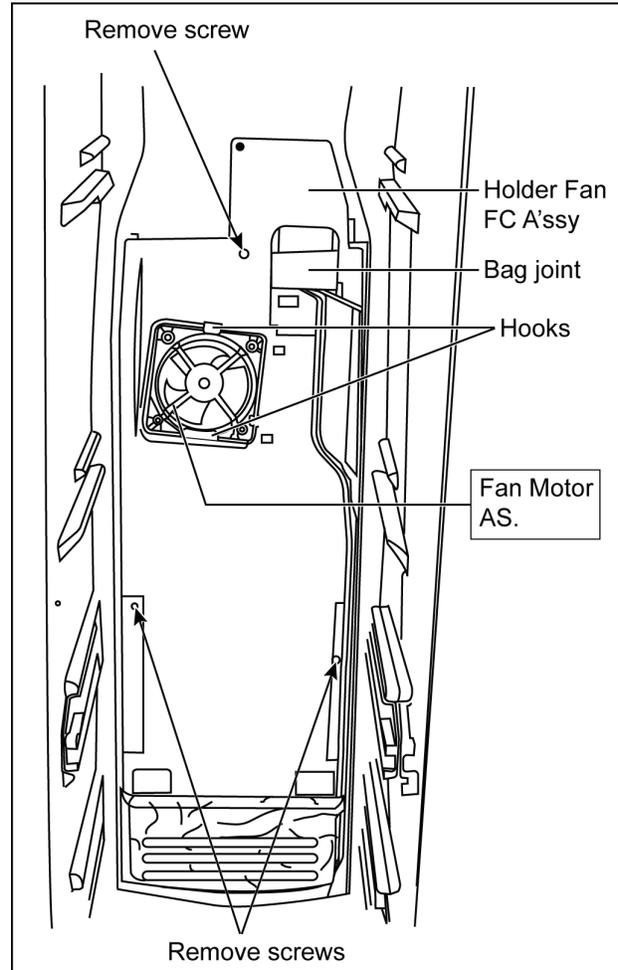
3. Remove the cover coil FC AS.

- a. Remove a screw.
- b. Grab the upper edge of the cover coil FC AS. and pull it towards you to remove.



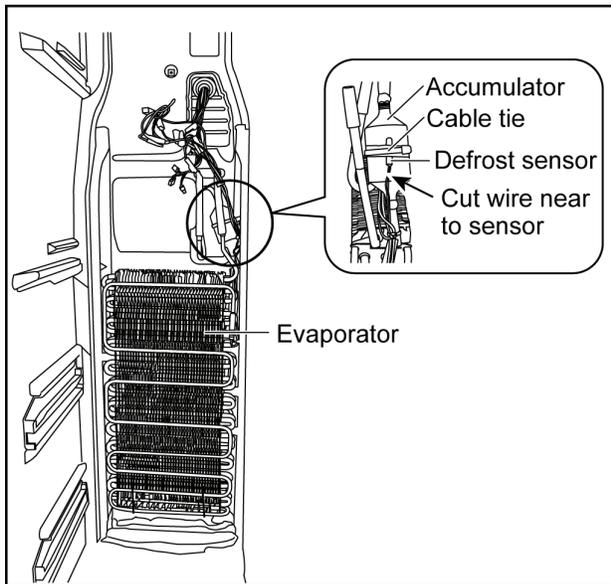
4. Remove the fan motor FAN MOTOR AS. in FC compartment.

- a. Remove 3 screws on the HOLDER FAN FC A'SSY.
- b. Pull out the bag joint from its storage compartment, cut the cable tie on the bag joint and take out all the connectors.
- c. Disconnect all the connectors.
- d. Grab the upper edge of the HOLDER FAN FC A'SSY and pull it towards you to remove.
- e. Push the FAN MOTOR AS. to release it from the hooks from the reverse side.

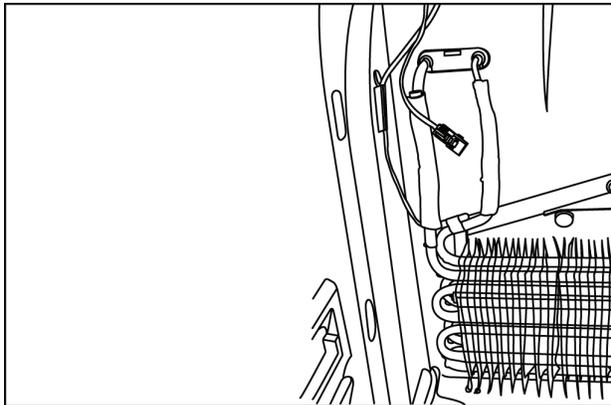


11.4.2. DEFROST SENSOR

1. Cut the cable tie that is fastening the Defrost Sensor.
2. Cut the wire near to the Defrost Sensor.



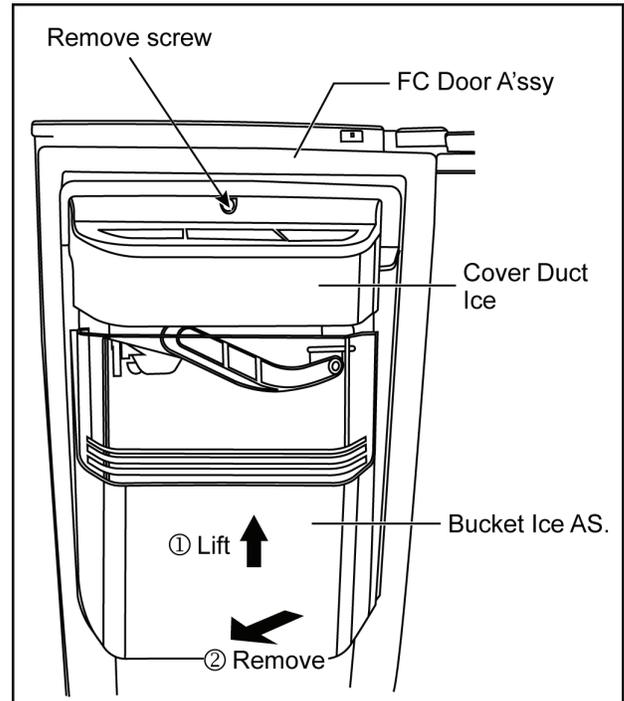
11.4.3. DEFROST SENSOR



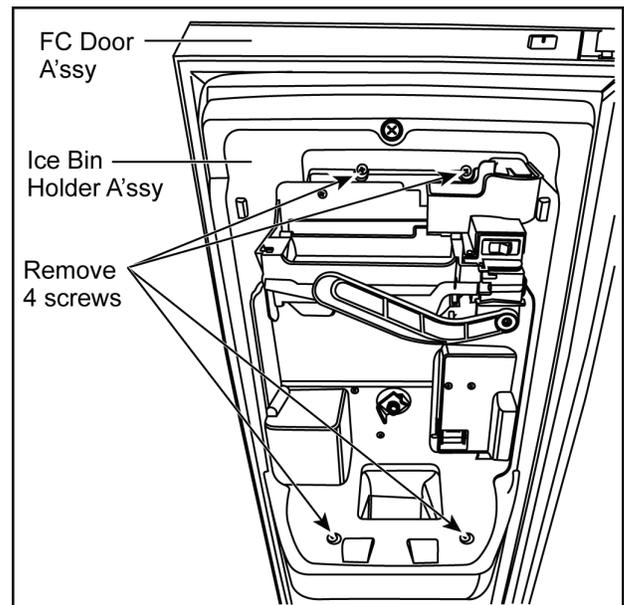
11.5. Disassembly of BUCKET ICE AS. & HOLDER CONTROL DIS'AS.

11.5.1. BUCKET ICE AS. & ICE MAKER A'SSY

1. Remove BUCKET ICE AS.
 - a. Remove a screw to remove the cover duct ice.
 - b. Lift the ice bin, tilt the bottom of the BUCKET ICE AS. towards you and remove it.

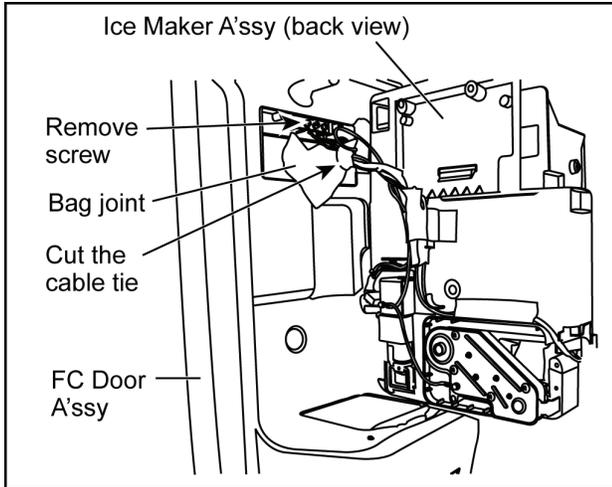


2. Remove 4 screws on the ice maker a'ssy and detach it from its place (but you cannot remove it now).
Figure of after COVER DUCT ICE and bucket ice AS. removed.



3. Remove the ice maker a'ssy.

- a. Turn the ice maker a'ssy to a side so that your hand can reach the back of it.
- b. Remove the first screw from your left to detach the wire.
- c. Cut the cable tie on the bag joint to take out all connectors and disconnect them. You can now remove the ice maker a'ssy.



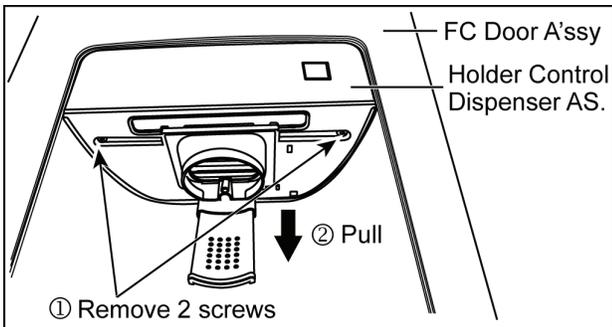
NOTES ON INSTALLATION

- After connecting back all the connectors, put all connectors back into the bag joint and tighten it with cable tie as before.

11.5.2. HOLDER CONTROL DISPENSER AS., PAS-DIS PANEL (BUTTON)

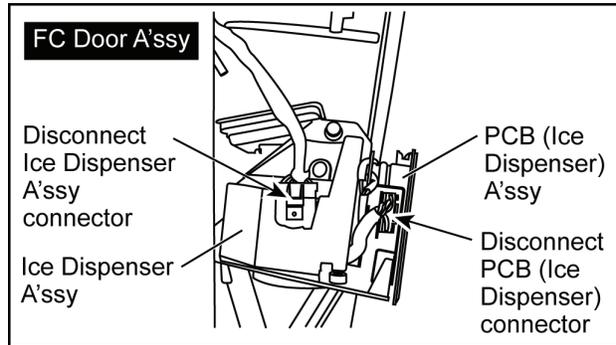
1. Remove Holder Control Dispenser AS.

- a. Remove 2 screws and pull the ice dispenser a'ssy down to detach it from the FC door a'ssy (but you cannot remove it now).

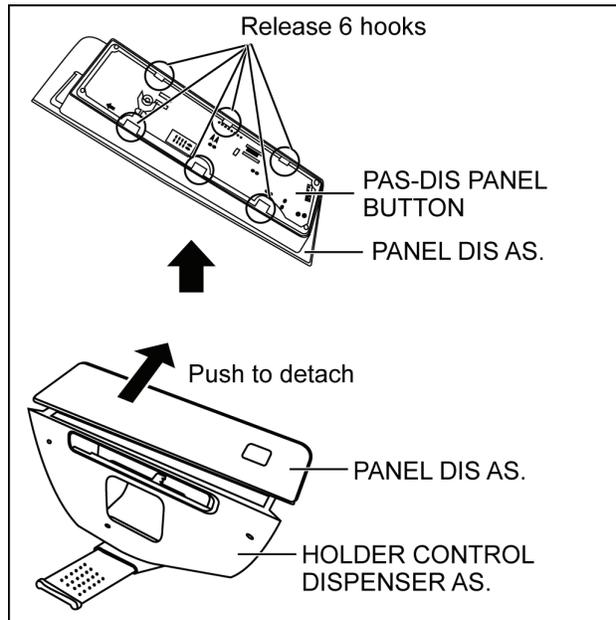


2. Remove PAS-DIS PANEL (BUTTON)

- a. Disconnect the connector that connect the HOLDER CONTROL DISPENSER AS. to the FC door a'ssy. Now you can remove the HOLDER CONTROL DISPENSER AS. from FC door a'ssy.
- b. Disconnect PAS-DIS PANEL (BUTTON) connector from ice dispenser a'ssy.



- c. Push the PCB (Ice Dispenser) Cover to detach it from the Ice Dispenser A'ssy. Then release 6 hooks at the PCB (Ice Dispenser) Cover to remove the PCB (Ice Dispenser).

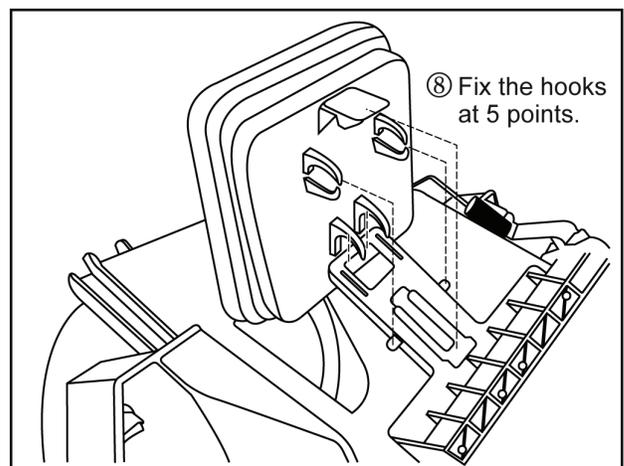
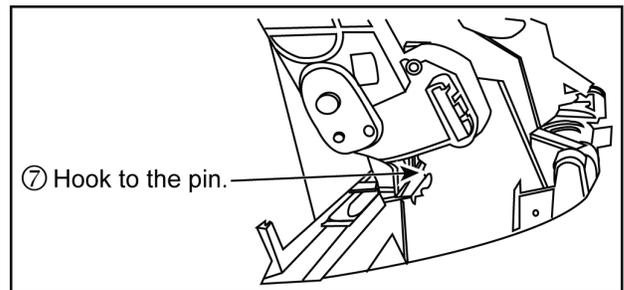
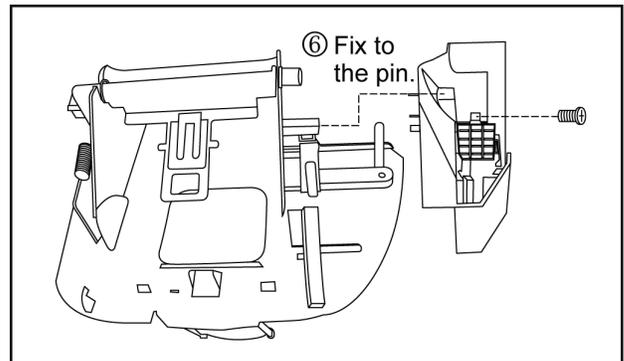
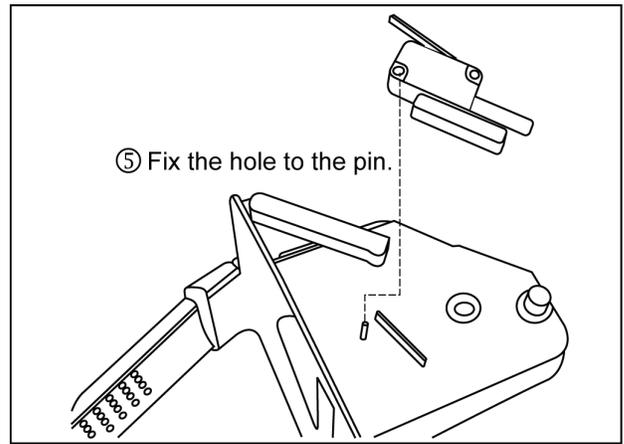
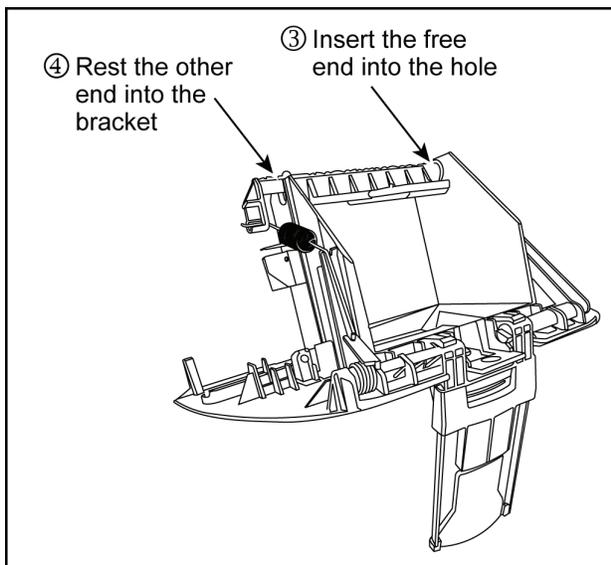
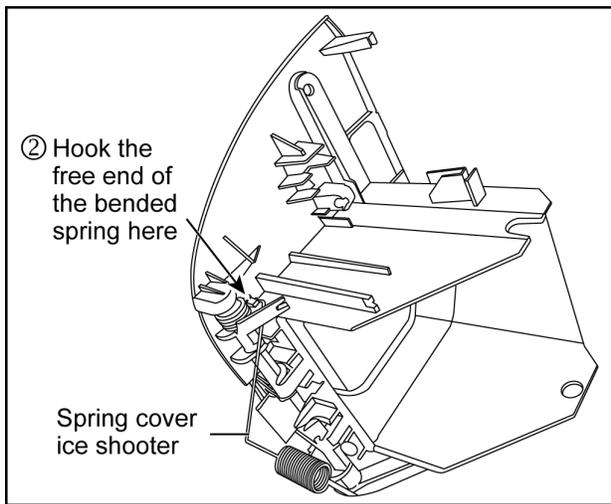
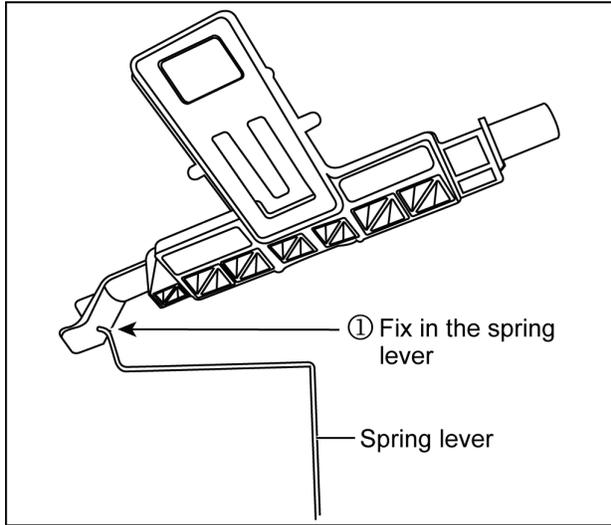


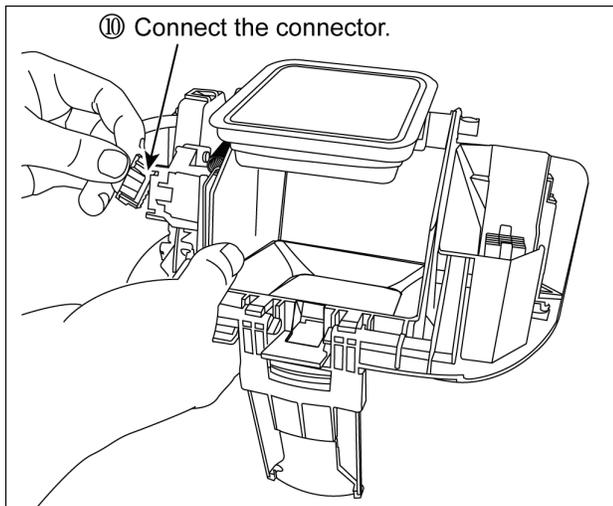
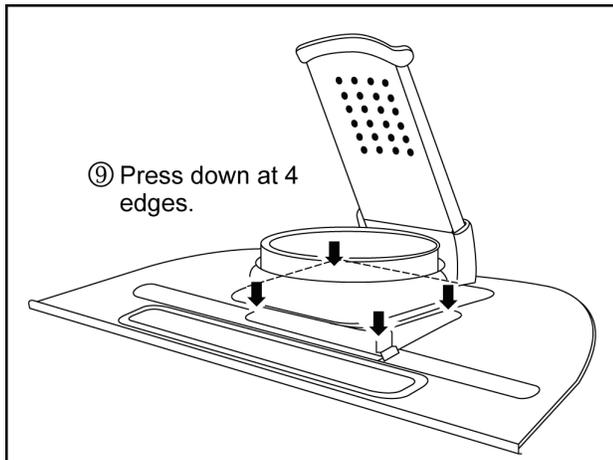
NOTES

- Be careful not to break PAS-DIS PANEL (BUTTON) when removing and installing.

NOTES ON INSTALLATION OF HOLDER CONTROL DISPENSER AS.

During removal or installation of HOLDER CONTROL DISPENSER AS., parts are easily dismantled by accident. Follow below steps should you need to assemble back dismantled parts.



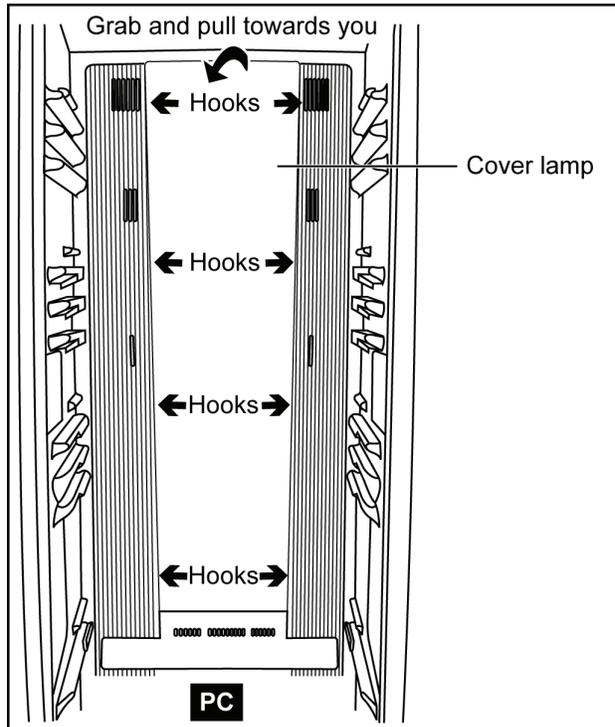


11.6. Disassembly of PC (Refrigerator Compartment)

11.6.1. PAS-C28VD2 (DEO)

1. Remove the cover lamp.

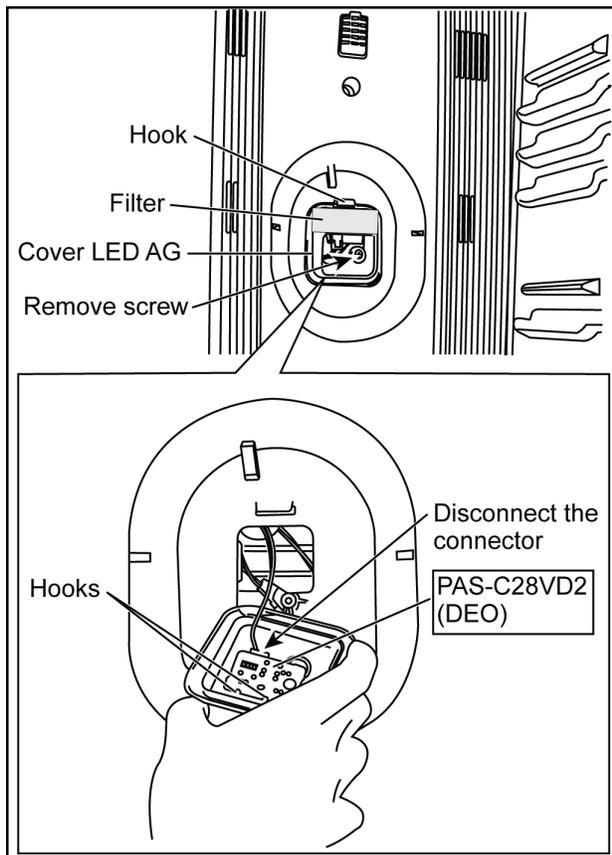
- Grab the upper edge of the cover and pull towards you to unlock 8 hooks (on the reverse side), then lift to remove the cover lamp.



2. Remove AS. filter on the COVER LED AG.

3. Remove the PAS-C28VD2 (DEO).

- Remove the fixation screw on the COVER LED AG to remove the COVER LED AG.
- Disconnect the PAS-C28VD2 (DEO) connector and release the PAS-C28VD2 (DEO) from the 2 hooks inside the COVER LED AG.



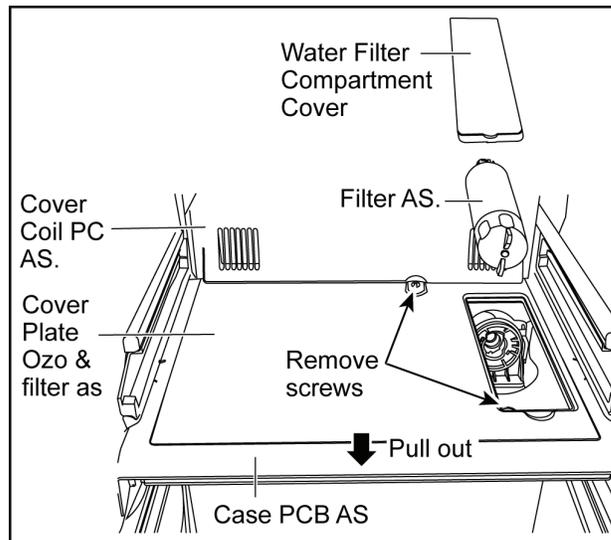
NOTES

- Be careful not to break PAS-C28VD2 (DEO) when removing and installing.

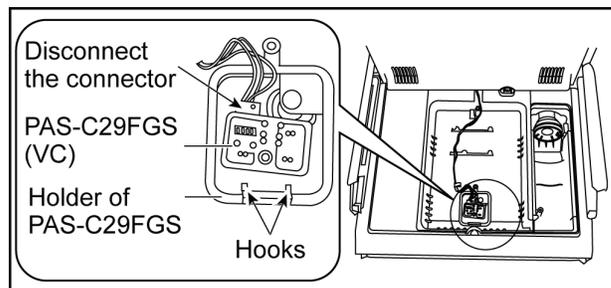
11.7. Disassembly of VC (Vegetable Compartment)

11.7.1. Filter AS., PAS-C29FGS (VC)

1. Lift to remove the water cover filter as.
2. Twist the filter as to the left to unlock and remove it.
3. Unscrew 2 screws on the Crisper Cover A'ssy.
4. Pull the Crisper Cover A'ssy slightly out.
5. Lift the Crisper Cover A'ssy Lid to remove.



6. Release PAS-C29FGS (VC) from 2 hooks.
7. Disconnect the PAS-C29FGS (VC) from its connector.



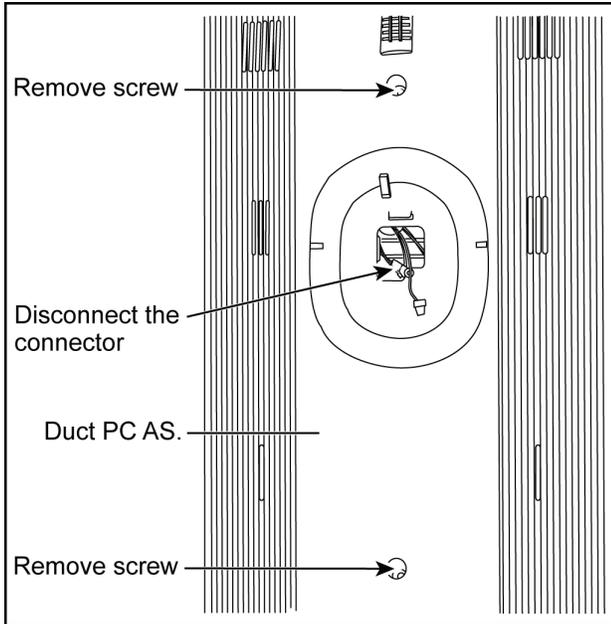
NOTES

- Be careful not to break PAS-C29FGS (VC) when removing and installing.

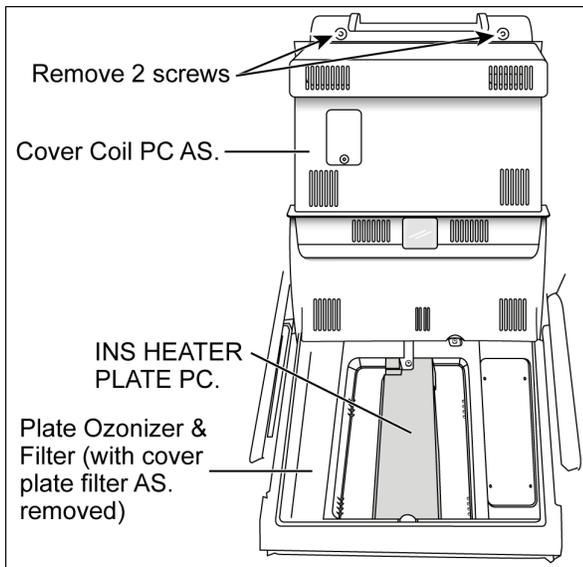
11.7.2. Fan Motor AS' in PC

1. Remove the Duct PC AS'.
 - a. Remove 2 screws on the Duct PC AS'.
 - b. Take out the connector which hides behind the Duct PC AS' and disconnect it.

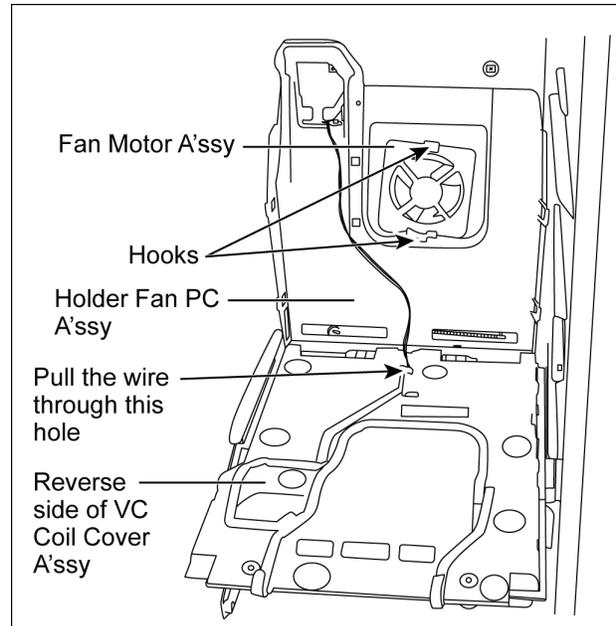
Figure of after cover lamp, cover LED AG and PAS-C28VD2 (DEO) are removed.



2. Remove the Cover Coil PC AS. by removing 2 screws and pull the upper edge of the Cover Coil PC AS. to remove. Be careful not to break the wire, let the wire go through the hole on the Cover Coil PC AS. (refer diagram in step 3 below).
- Note:** At this stage, the PAS-C29FGS (VC) must have already been removed.



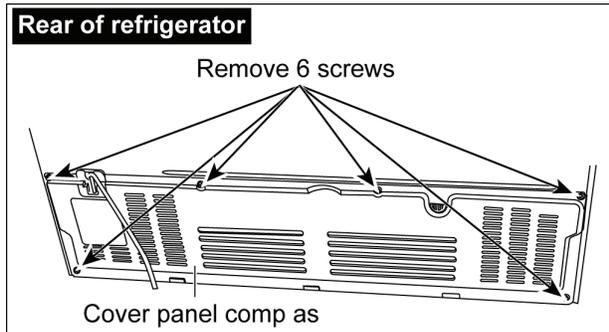
3. Remove the Fan Motor A'ssy in PC compartment.
 - a. Grab and pull out the HOLDER FAN PC A'SSY. Be careful not to break the wire, let the wire go through the top left hole of the HOLDER FAN PC A'SSY.
 - b. Push the Fan Motor A'ssy towards the reverse side of the HOLDER FAN PC A'SSY to release it from the 2 hooks.



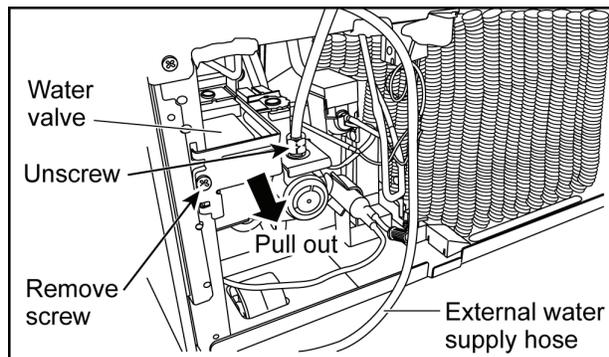
11.7.3. Water Valve & HARNESS AS.

11.7.3.1. Water Valve & HARNESS AS.

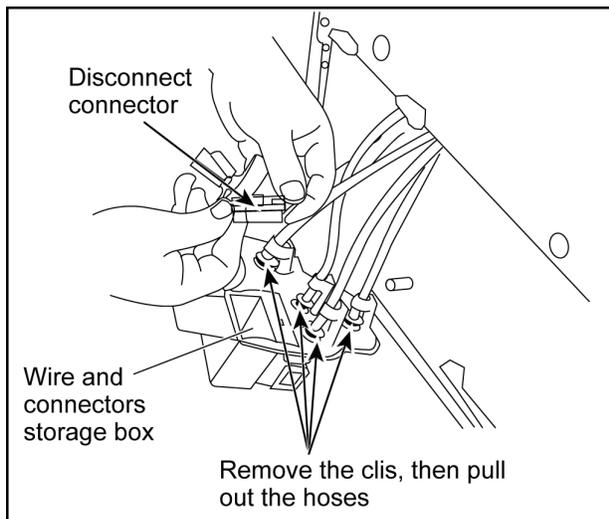
1. Remove Compressor Compartment cover.
 - Unscrew 6 screws and lift to remove.



2. Remove the water valve & HARNESS AS.
 - a. Remove 1 fixation screw.
 - b. Unscrew the Compression Nut to disconnect the external water supply hose.
 - c. Pull the water valve & HARNESS AS. out.

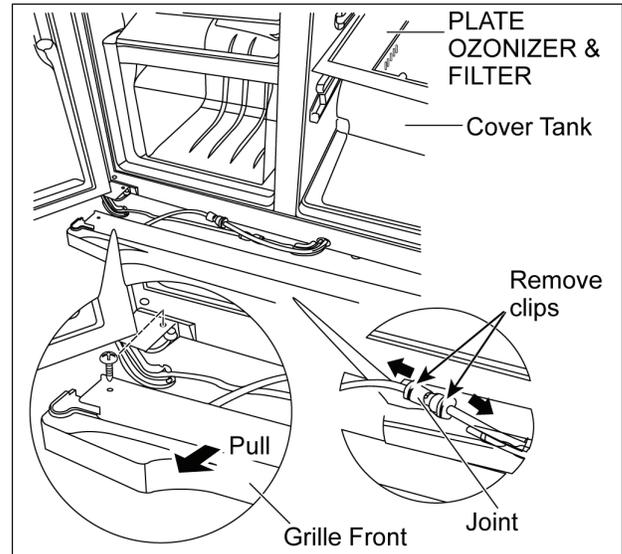


3. Disconnect 4 internal water hoses (2 white, 2 blue).
 - a. Use a needle nose pliers to remove the clips, then pull the hoses out.
 - b. Take out all wires and connector from the storage box and disconnect the white connector.

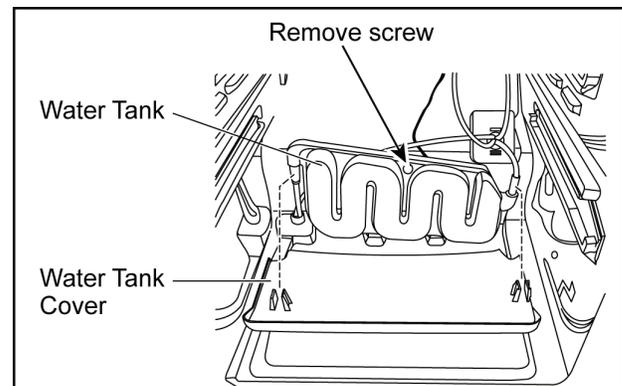


11.7.3.2. Water Tank A'ssy

1. Remove the base grille and disconnect the white hose.
 - a. Remove 2 screws (1 at left end, 1 at right end) on the grille front (diagram below only shows the left end screw).
 - b. Pull off the grille front to reveal the water hoses.
 - c. Remove the clips on the white joint.
 - d. Hold the hose near to the hose sleeve, then pull the hose out of the joint.



2. Pull out the entire PLATE OZONIZER & FILTER (together with the hoses that attached to filter AS. holder) to reveal the water tank beneath it.
3. Remove the cover Tank.
4. Remove the Tank.
 - a. Remove a fixation screw on the water tank.
 - b. Remove the tank by pulling it out together with the hoses attached to it.



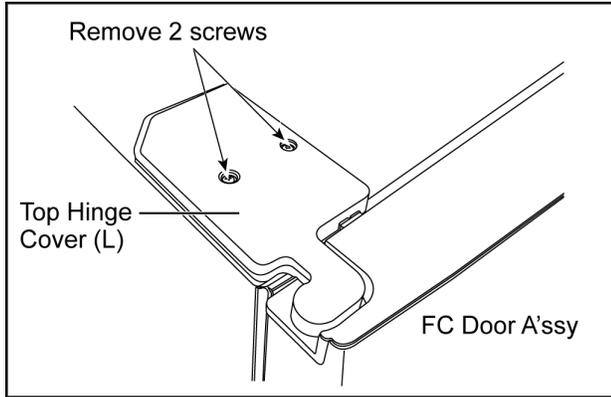
11.8. Disassembly of Doors

11.8.1. Door FC A'ssy, PAS-DOOR SW. BOARD (Door FC)

1. Remove the Grille front and disconnect the blue and white joints.

For the point of work, please refer to 11.7.3.2.

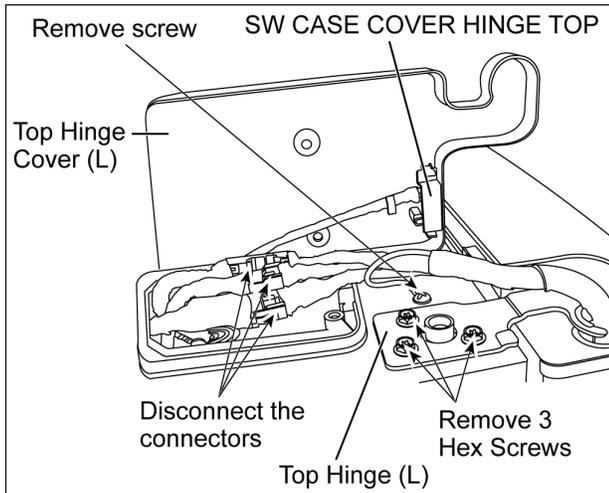
2. Open the Top Hinge Cover (L) by removing 2 screws and pulling it upwards.



3. Remove PAS-DOOR SW. BOARD (FC Door).

a. Slide the PAS-DOOR SW. BOARD (FC Door) Holder out of the Top Hinge Cover (L).

b. Slide out the PAS-DOOR SW. BOARD (Door FC) from its holder and disconnect its connector to remove.



4. Remove Door FC A'ssy.

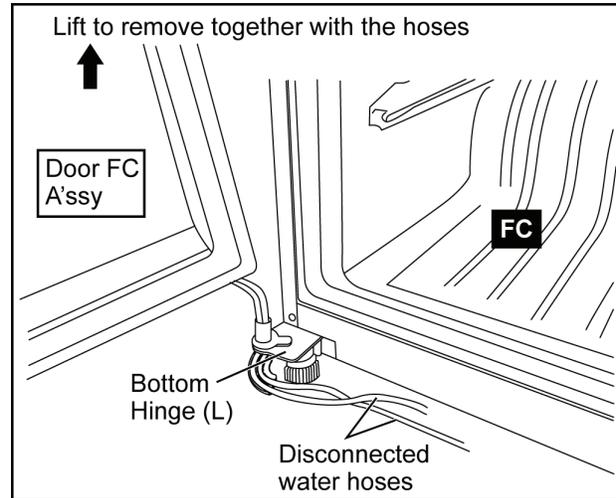
a. Remove the grounding screw.

b. Remove 3 Hex Screws.

c. Disconnect all wires connectors.

d. Lift the Top Hinge (L) to remove.

e. Lift the Door FC A'ssy off the Bottom Hinge (L) and remove together with the hoses attached.

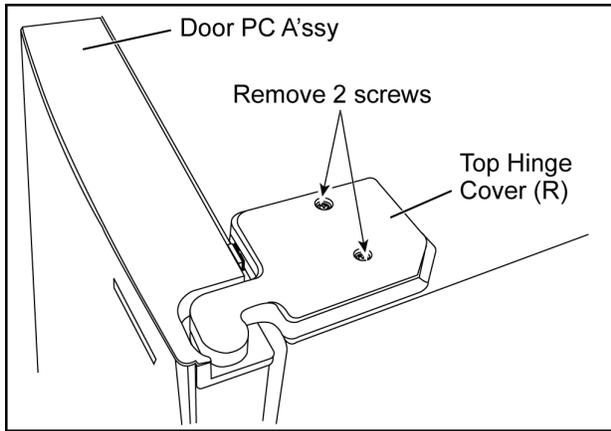


NOTE

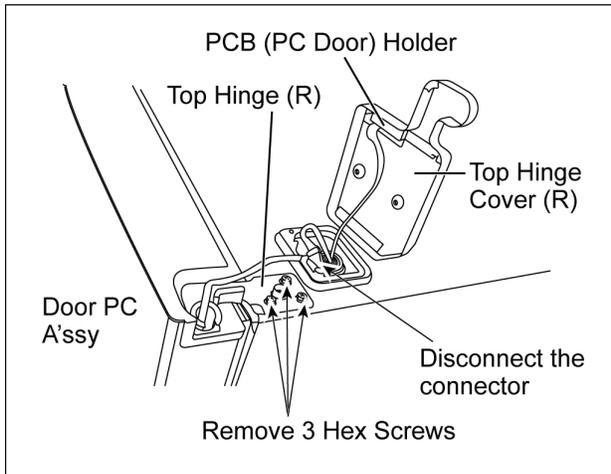
When removing the Top Hinge, be careful that the door does not fall forward.

11.8.2. Door PC A'ssy, PCB (Door PC)

1. Open the Top Hinge Cover (R) by removing 2 screws and pulling it upwards.



2. Remove the PCB (Door PC).
 - a. Slide the PCB (Door PC) Holder out of the Top Hinge Cover (R).
 - b. Slide out the PCB (Door PC) from its holder and disconnect its connector to remove.



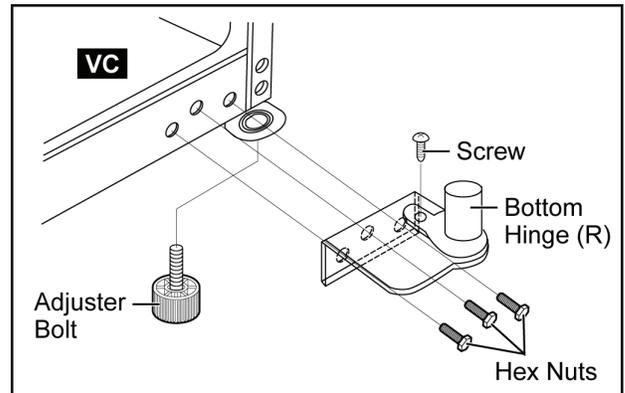
3. Remove Door PC A'ssy.
 - a. Disconnect the wire connector.
 - b. Remove 3 Hex Screws.
 - c. Lift the Top Hinge (R) to remove.
 - d. Lift the Door PC A'ssy off the Bottom Hinge (R) to remove.

NOTE

When removing the Top Hinge, be careful that the door does not fall forward.

11.8.3. Bottom Hinge, Adjuster Bolt

1. Remove the right Bottom Hinge and Adjuster Bolt.
 - a. Remove 1 screw on the Bottom Hinge (R).
 - b. Remove 3 Hex Screws to remove the Bottom Hinge (R).
 - c. Unscrew the Adjuster Bolt to remove.

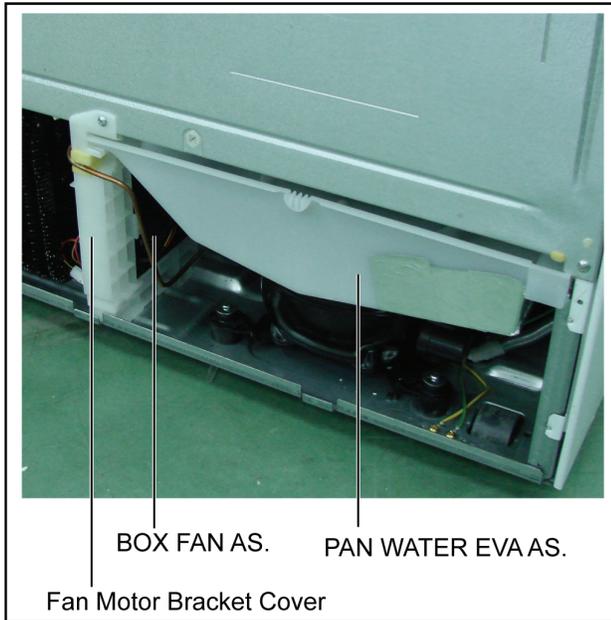


2. Remove the left Bottom Hinge and Adjuster Bolt the same way as for right side.

11.9. Disassembly of Compressor Compartment

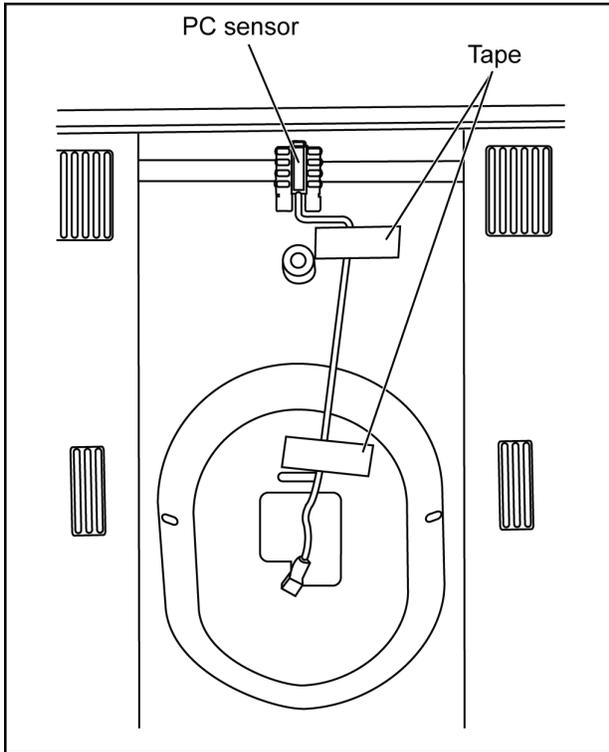
11.9.1. PAN WATER EVA AS., BOX FAN AS.

1. PAN WATER EVA AS.
 - a. Cover panel comp. as. For the point of work, please refer to 11.7.3.1.
 - b. Pull PAN WATER EVE AS. towards you to remove.
2. BOX FAN AS.
 - a. Pull the BOX FAN AS. towards you to remove.
 - b. Slide out the BOX FAN AS. to remove.

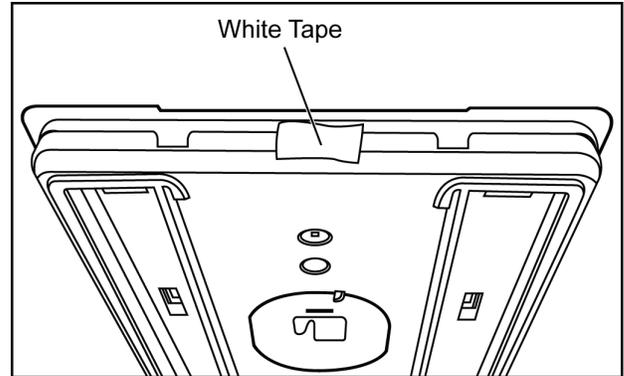


11.10. Assembly of PC Sensor

1. Attach the PC sensor to the PC sensor holder.
2. Stick tapes to hold the PC sensor wire in place.



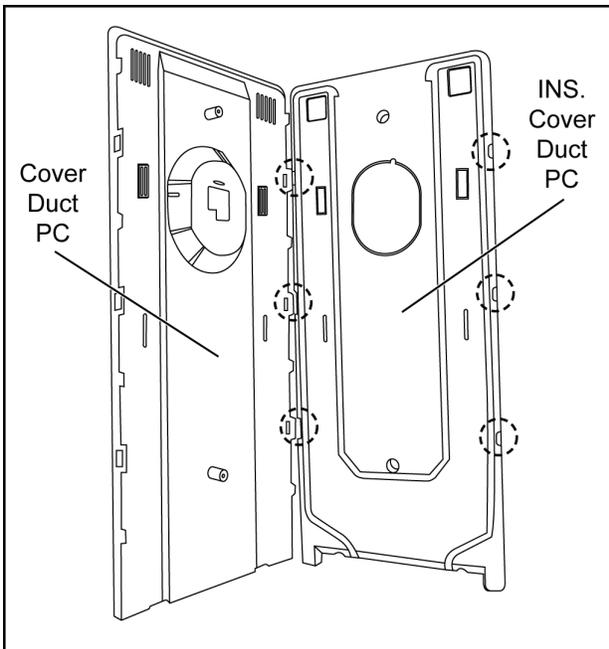
2. After closing the cover duct PC, fixed it with white taping.



3. Tapes have to be replaced when replacing sensor parts.

11.11. Assembly of Cover Duct PC

1. Cover duct PC and INS. cover duct PC is fixed by 6 parts of catch and also white taping.



12 Maintenance

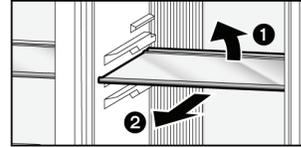
12.1. Automatic Defrosting

1. Both Refrigerator and Freezer compartments have automatic defrosting function.
2. Defrosting is actuated automatically and the frost water will run down the evaporation pan.

12.2. Removing and re-installing

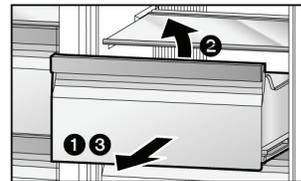
Glass shelves

Raise the back part of the shelf slightly, and pull out the shelf.
To re-install the shelf, align it with the left and right guides, and push it into place.



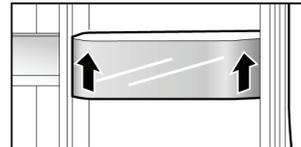
Drawers

Pull the drawer out all the way, and while raising the back part of the drawer slightly, and pull out the drawer.
To re-install the drawer, align it with the left and right guides, and push it into place.



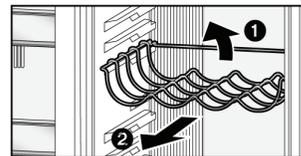
Door shelves and sealed case door shelf

Push the shelf up from below, and remove it.
To re-install the shelf, align the left and right protrusions, and insert the shelf firmly down until it will go no further.



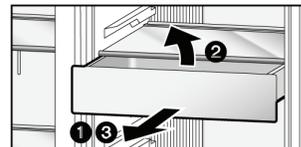
Wine rack

Raise the back part of the wine rack slightly, and pull out the rack.
To re-install the rack, align it with the left and right guides, and push it into place.



Suspend shelf (model NR-B53V1 only)

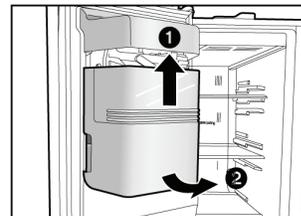
Pull the suspend shelf out all the way, and while raising the back part of the suspend shelf slightly, and pull out the suspend shelf.
To re-install the suspend shelf, align it with the left and right guides, and push it into place.



Icebox

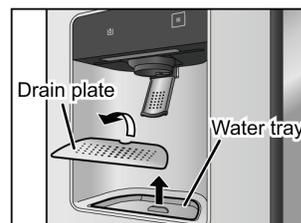
Raise the icebox slightly, and pull the bottom part out toward you.
To re-install the icebox, first align its top part with the automatic ice maker, then push down its bottom part and insert it firmly into place below as far as it will go.

- When removing the icebox, take care not to spill the ice inside.
- Before re-installing the icebox, take out the ice inside.



Ice/Water dispenser drain plate and water tray

Place your fingers in the cutout at the back of the drain plate, and remove the tray.
Take hold of the protrusion in the water tray, and remove the tray.
When re-installing the trays, install the water tray first, and then install the drain plate.



12.3. Cleaning and Maintenance

Conduct periodic cleaning and maintenance to ensure that the refrigerator will be kept clean and that it will continue to operate for a long time to come.



Before cleaning or conducting maintenance, be absolutely sure to disconnect the power plug from the power outlet. Do not connect or disconnect the power plug with wet hands. Doing so may result in an electric shock or injury.



Do not use the following items for cleaning:

- Alkaline cleaning agents (these may dissolve the plastic parts)
- Abrasive cleaners, soap powders, very hot or boiling water, brushes, acids, benzene, paint thinners, alcohol, etc. (these may mar the surfaces, paint and plastic parts)

Cleaning

Wipe off easily removable dirt using a cloth dipped in lukewarm water.

Wipe off stubborn dirt using a cloth dipped in some diluted neutral detergent used in the kitchen.

Then take up the remaining detergent using a cloth dipped in lukewarm water.

To complete the cleaning, be absolutely sure to wipe the surfaces dry to take up the remaining moisture.

Interior, drawers, glass shelves and door shelves

Be absolutely sure to wipe off edible oils, butter and other types of fats and oils on the plastic parts.

Otherwise, the plastic parts may be damaged. The drawers, glass shelves and door shelves can be removed.

If they are very dirty or smelly, remove and wash them.

Door opening seal

A dirty or damaged seal will allow the cold air inside to escape.

As soon as the seal becomes dirty, wipe off the dirt immediately.

Icebox

If the icebox contains old ice or ice cubes clumped together, remove it, and throw out the ice.



Ice/Water dispenser

The drain plate and water tray can be removed. At periodic intervals, throw out the water which has collected in the water tray.

Exterior of refrigerator

If the exterior becomes dirty, wipe off the dirt. Also, allowing dust to accumulate on the power plug can cause a fire. At periodic intervals, remove the dust using a dry cloth, etc.

Control panel and Ice/Water dispenser panel

Wipe these panels using a soft cloth which has been dipped in lukewarm water and then wrung out.

The control panel and Ice/Water dispenser panel are made from delicate materials.

As such, take care not to damage their surfaces.

Note:

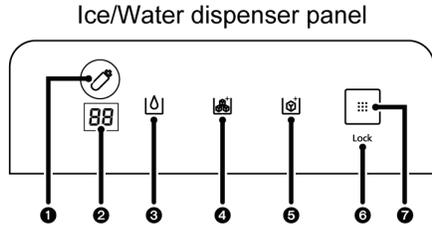
- Do not wash the drawers, glass shelves, door shelves, or other parts in a dishwasher. Doing so will cause the gilt on the parts or their plating to peel off or the parts to be damaged.

12.3.1. Changing the water purifying filter

Change the water purifying filter periodically. As a rule of thumb, it should be changed once every six months. When it is time to change the filter, the “” icon appears on the Ice/Water dispenser panel. This time differs depending on the quantity of water used as well as the quality and pressure of the water, or may be much shorter than six months.

Also change the water purifying filter under the following circumstances:

- When the ice or water have odours or an unpleasant taste (this means that the filter capacity is reduced)
- When the amount of water entering the refrigerator has diminished (this means that the filter is clogged)



Display area

❶ Water purifying filter change icon

This indicates that it is time to change the purifying filter.

❷ Error code

This indicates that an error has occurred.

❸ Filtered water dispense icon

❹ Crushed ice dispense icon

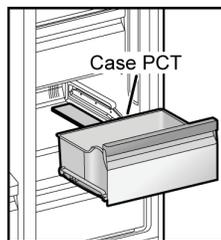
❺ Ice cube dispense icon

Notes:

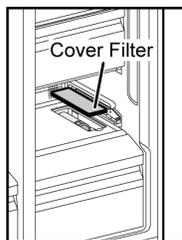
- When the water filter has been removed, the water inside it may spill. If water has spilled, remove the 5° Fresh Zone drawer and wipe up the water at the bottom of the refrigerator.
- When a new water filter is to be purchased, ask your dealer or an authorized service centre to supply you one.

Water filter type: CNRAH-25776

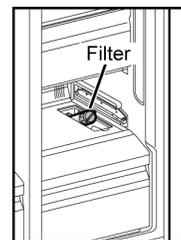
How to change the filter



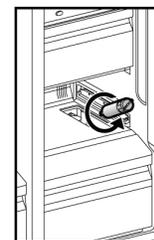
- ❶ Remove Case PCT (2nd case).



- ❷ Remove Cover Filter.



- ❸ Tilt Filter slightly upwards.



- ❹ Turn Filter counterclockwise by 90° and pull it toward the dispenser.

- ❺ Install the new water purifying filter.

Follow the steps for removing the filter in reverse.

- ❻ With “” displayed on the Ice/Water dispenser panel, hold down  on the Ice/Water dispenser for at least 3 seconds.

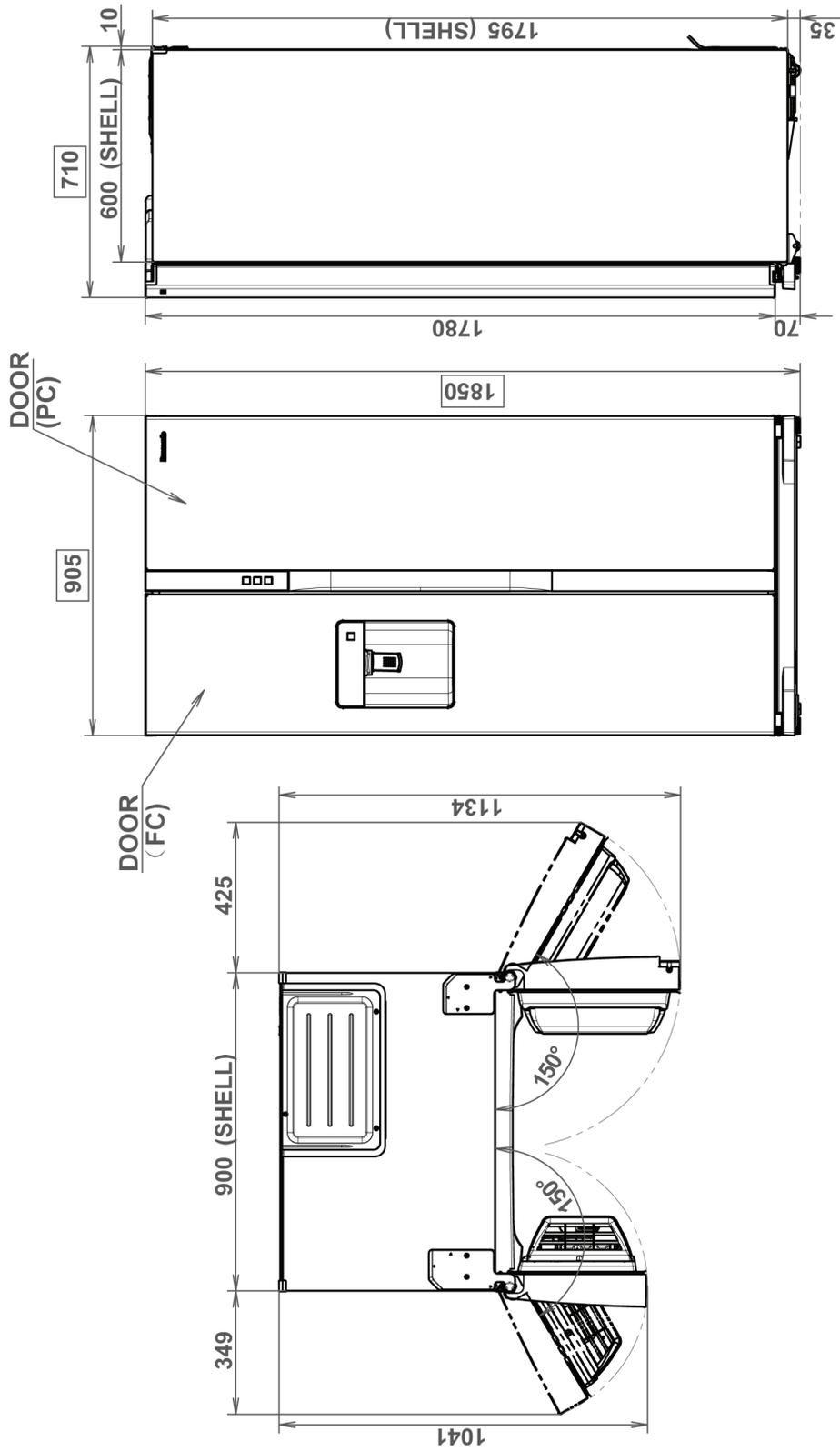
The “” icon on the Ice/Water dispenser panel goes off.

Note:

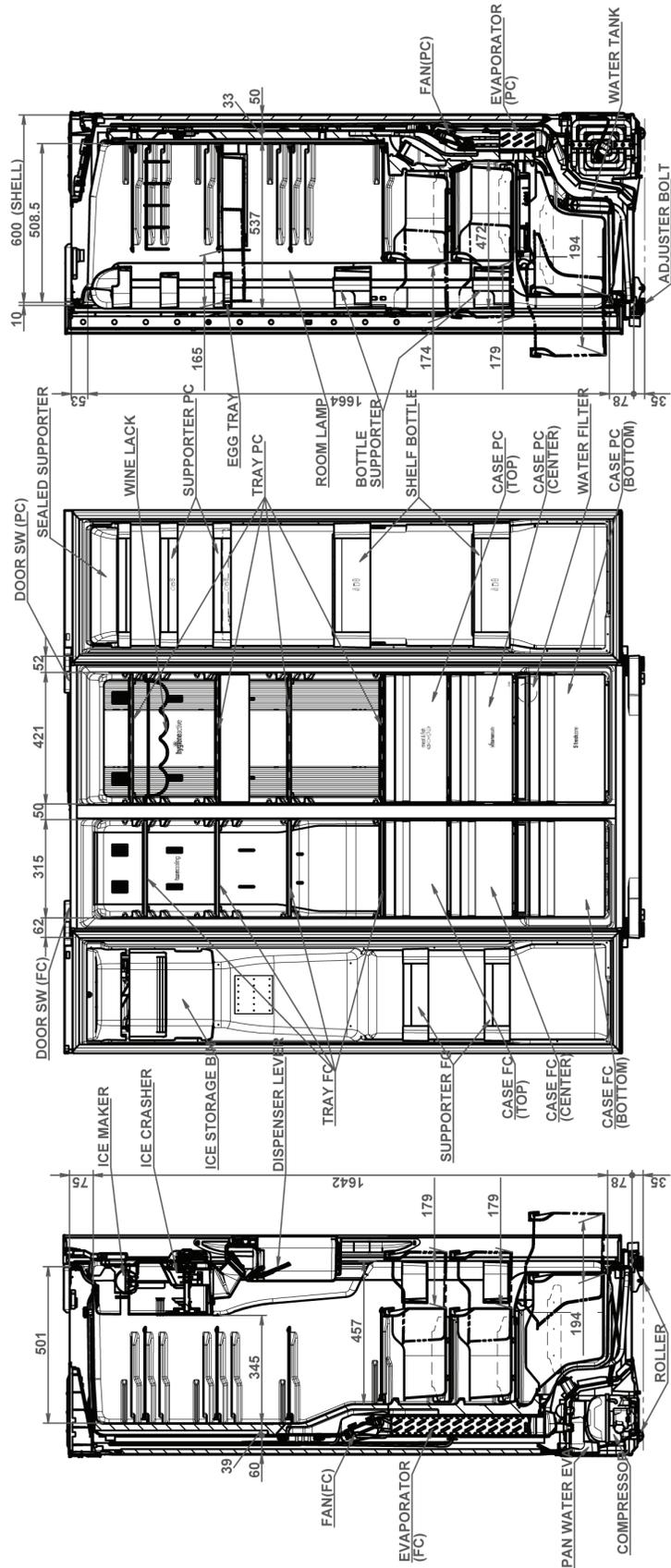
Run water through the dispenser until the water runs clear (15 glass [approx. 3 liter]). This will clean the water supply system and remove air from the water supply hose.

13 Dimensions

13.1. Outside

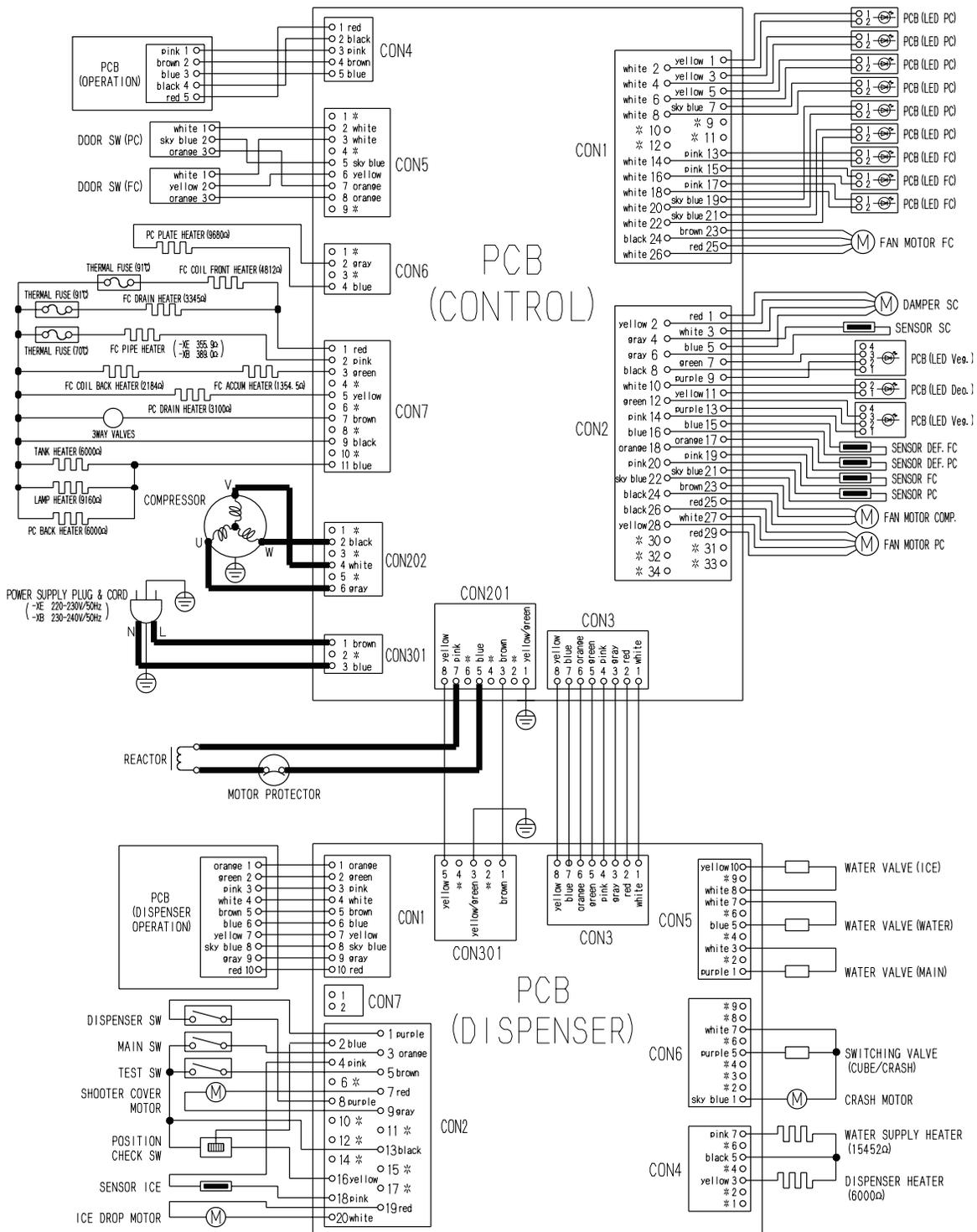


13.2. Inside



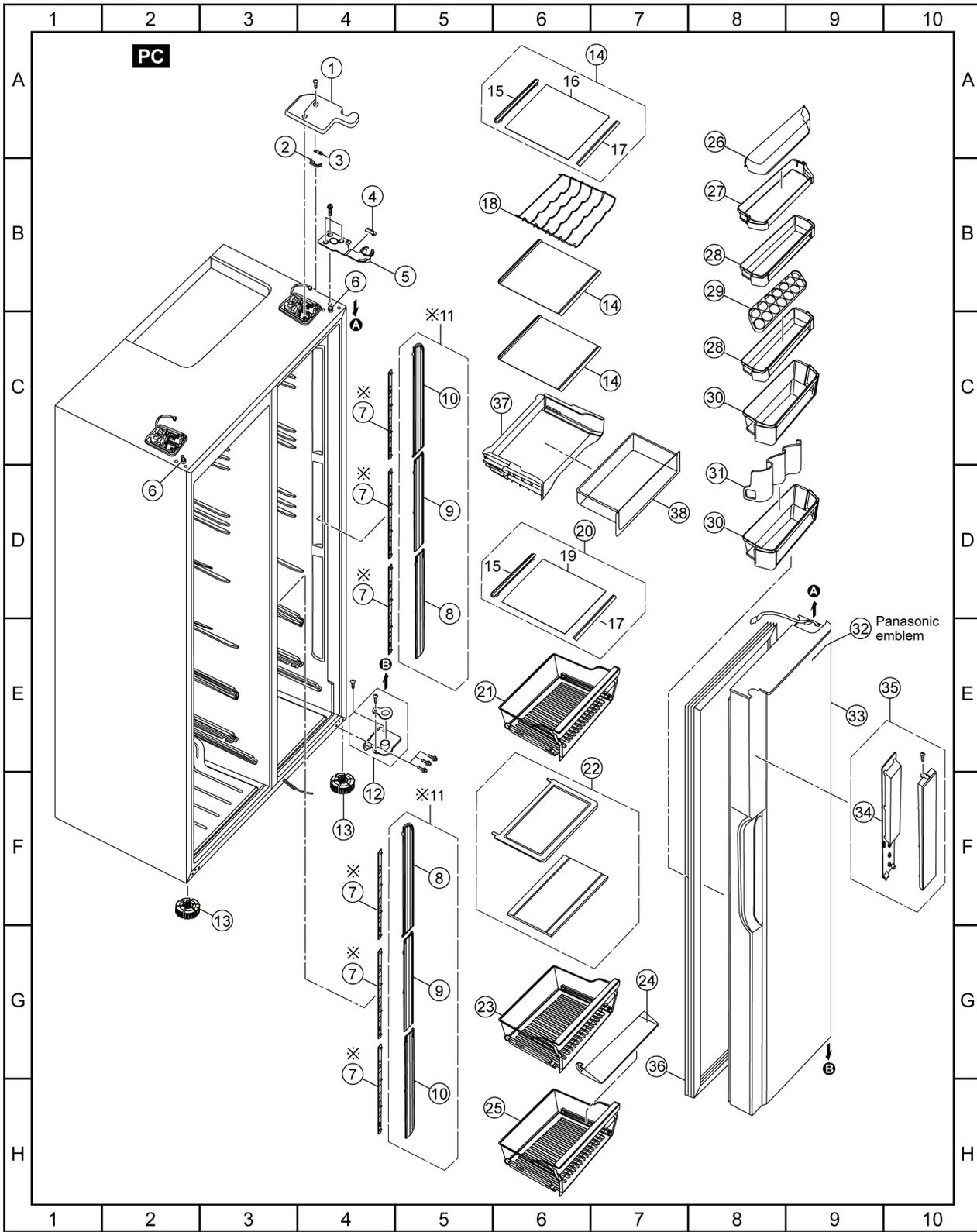
14 Schematic Diagram

14.1. Schematic Diagram



15 Exploded View and Replacement Parts List

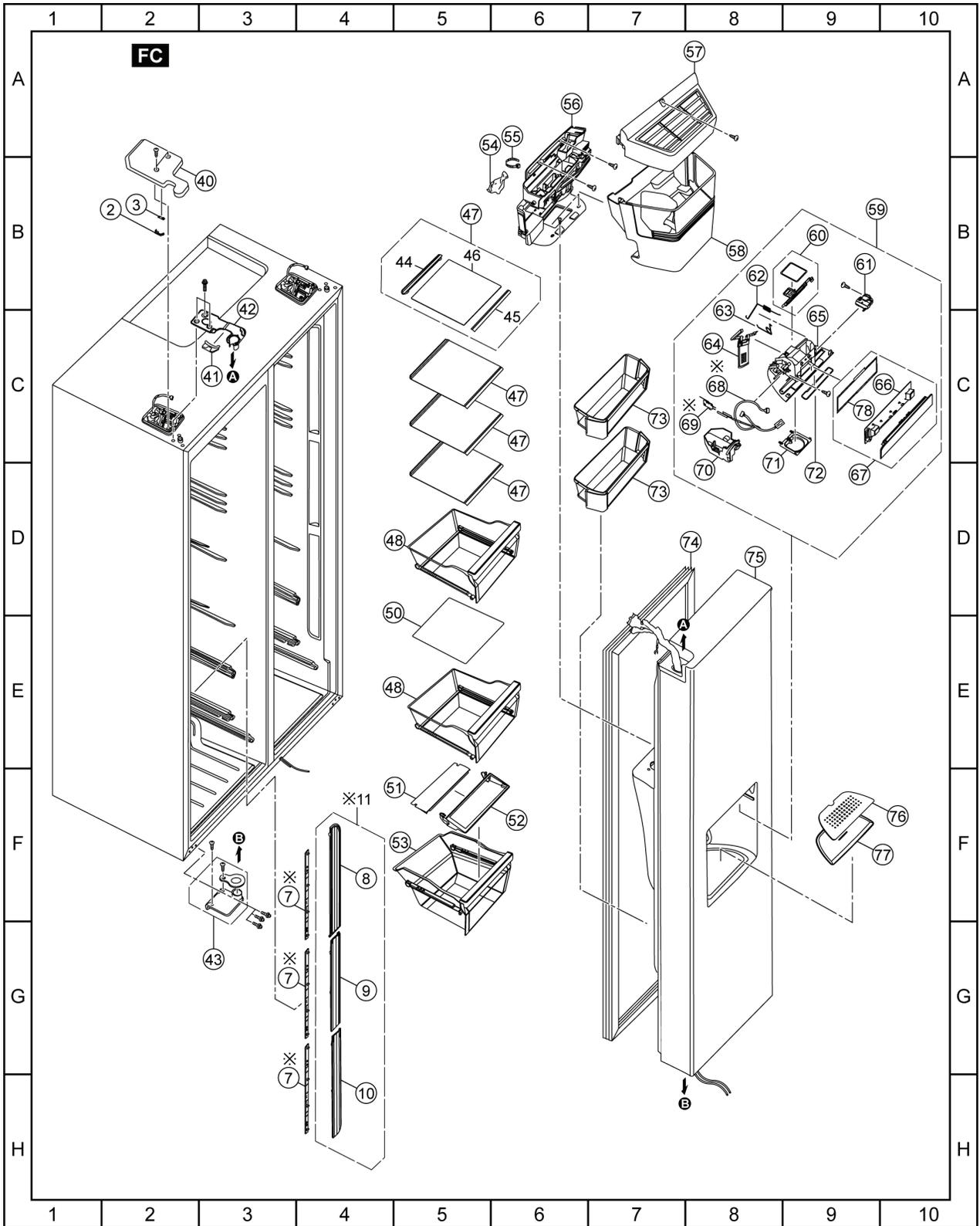
15.1. Exploded View 1



15.2. Replacement Parts List 1

Safety	Ref. No.	Part No.	Part Name & Description	Pcs. / Model		Remark	U
				-XE	-XB		
	1	CNRAE-138900	COVER HINGE TOP R	1	1		
	2	CNRAE-138960	SW CASE COVER HINGE TOP	1	1		
	3	ARBPD2A00040	PAS-DOOR SW PCB	1	1		
	4	CNRAE-138880	PIECE HINGE TOP R	1	1		
	5	CNRAE-138850	HINGE TOP R	1	1		
	6	CNRAE-127840	STOPPER HINGE TOP	1	1		
	7	ARBPLLA00060	PAS-LED PCB(LIGHT)	9	9		
	8	CNRAH-257460	COVER LED BOARD T	3	3		
	9	CNRAH-257470	COVER LED BOARD C	3	3		
	10	CNRAH-257480	COVER LED BOARD B	3	3		
	12	CNRBE-108340	HINGE BOTTOM R A'SSY	1	1		
	13	CNRAJ-155780	ADJUSTER BOLT	2	2		
	14	CNRBH-125530	TRAY PCT A'SSY	3	3		
	15	—————	SASH TRAY PCB	4	4		
	16	—————	GLASS TRAY PCT	3	3		
	17	—————	SASH TRAY PCF	4	4		
	18	CNRAH-257810	WINE RACK	1	1		
	19	—————	GLASS TRAY PC	1	1		
	20	CNRBH-138230	TRAY PC AS.	1	1		
	21	CNRBH-138290	CASE PCT AS.	1	1		
	22	CNRBH-138240	PLATE BARRIER PC. AS	1	1		
	23	CNRBH-138530	CASE PCM AS.	1	1		
	24	CNRAH-257750	SWING COVER PC	1	1		
	25	CNRBH-138660	CASE PCB AS.	1	1		
	26	ARADCC200020	COVER SEALED CASE	1	1		
	27	CNRBD-332880	SEALED CASE SUB AS	1	1		
	28	ARADSB200010	SUPPORTER PCM	2	2		
	29	CNRAH-257890	EGG TRAY 14	1	1		
	30	ARADSB100030	SUPPORTER PC	2	2		
	31	CNRAD-329310	BOTTLE SUPPORTER	1	1		
	32	CNRBD-328360	EMBLEM AS.	1	1		
	33	CNRBD-327900	DOOR AS.PC(FOAM)	1	1	Approximate range: XE: Y0XE0141~Y2XE9311 XB: Y0XB0061~Y2XB3913	
	33	CNRBD-390100	DOOR AS.PC(FOAM)	1	1	Approximate range: XE: Y2XE9312~ XB: Y2XB3914~	
	34	ARBP0DA00430	PAS-OPERATION PCB(DOOR)	1	1		
	35	CNRBD-331390	OPERATION PANEL AS.	1	1		
	36	ARADGC100250	GASKET DOOR PC	1	1		
	37	CNRBH-139100	FRAME SUSPEND SHELF AS	1	1		
	38	CNRAH-257830	SUSPEND CASE	1	1		

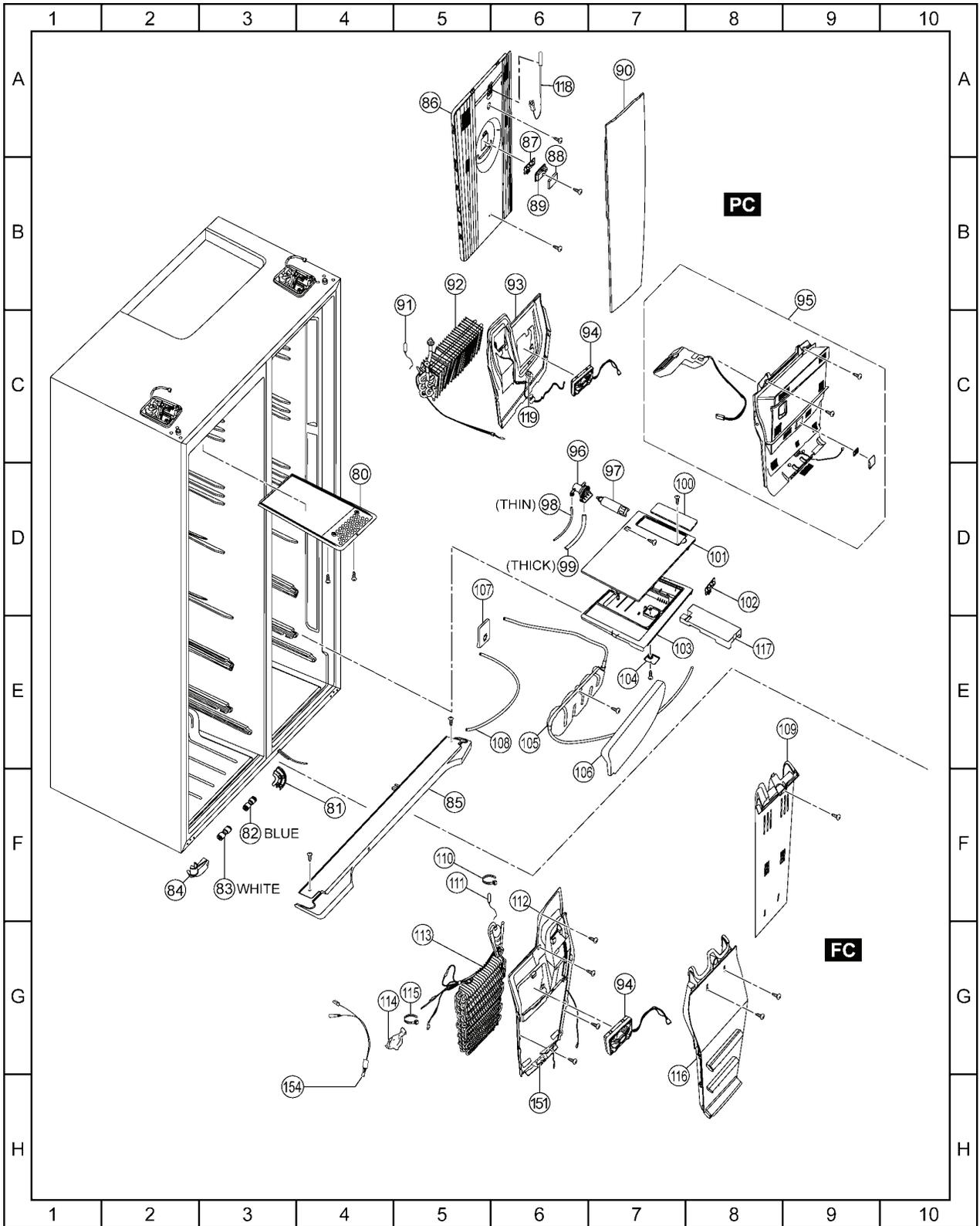
15.3. Exploded View 2



15.4. Replacement Parts List 2

Safety	Ref. No.	Part No.	Part Name & Description	Pcs. / Model		Remark	U
				-XE	-XB		
	40	CNRAE-138930	COVER HINGE TOP L	1	1		
	41	CNRAE-138890	PIECE HINGE TOP L	1	1		
	42	CNRAE-138870	HINGE TOP L	1	1		
	43	CNRBE-108350	HINGE BOTTOM L A'SSY	1	1		
	47	CNRBH-138320	TRAY FC AS.	4	4		
	48	CNRBH-138350	CASE FCT AS.	2	2		
	50	CNRAH-257940	GLASS PLATE FC	1	1		
	51	CNRAH-257950	PLATE FCB	1	1		
	52	CNRAH-257960	SWING COVER FC	1	1		
	53	CNRBH-138370	CASE FCB AS.	1	1		
	54	CNRAG-162110	BAG JOINT	1	1		
	55	CNR39-220120	TUBE BINDING 150	1	1		
	56	CNRBH-125880	ICE MAKER LINE AS.(220V)	1	—		
	56	CNRBH-125890	ICE MAKER LINE AS.(240V)	—	1		
	57	CNRBD-342280	COVER DUCT ICE AS	1	1		
	58	CNRBH-138220	BUCKET ICE AS.	1	1		
	59	ARBHHA100010	HOLDER CONTROL DIS AS.	1	1		
	60	CNRBH-138180	COVER ICE SHOOTER AS.	1	1		
	61	CNRAG-163220	ICE SHUTTER	1	1		
	62	CNRAH-268790	SPRING COVER ICE SHOOTER	1	1		
	63	CNRAH-257610	SPRING LEVER	1	1		
	64	CNRBH-138960	LEVER DISPENSER SUB AS	1	1		
	65	CNRAH-257510	HOLDER CONTROL DISPENSER	1	1		
	66	ARBPODA00550	PAS-OPERATION PCB(DOOR)	1	1		
	67	ARBD0B300010	OPERATION PANEL DIS AS.	1	1		
	68	CNRBG-175040	HARNES AS DISPENSER	1	1		
	69	CNRAG-163210	MICRO SW	1	1		
	70	CNRAH-262570	BOX CONNECTOR DISPENSER	1	1		
	71	CNRAH-257520	GUIDE ICE	1	1		
	72	CNRAD-329230	COVER LED DISPENSER	1	1		
	73	CNRBD-328350	SUPPORTER FC AS.	2	2		
	74	ARADGC600150	GASKET DOOR FC	1	1		
	75	CNRBD-328100	DOOR AS.FC(FOAM)	1	—	Approximate range: Y0XE0141~Y2XE9311	
	75	CNRBD-331360	DOOR AS.FC(FOAM)	—	1	Approximate range: Y0XB0061~Y2XB3913	
	75	CNRBD-390170	DOOR AS.FC(FOAM)	1	—	Approximate range: Y2XE9312~	
	75	CNRBD-390180	DOOR AS.FC(FOAM)	—	1	Approximate range: Y2XB3914~	
	76	CNRAD-329260	PLATE DISPENSER	1	1		
	77	CNRAD-329240	PAN WATER DISPENSER	1	1		
	78	CNRAD-336210	PLATE CONTROL DIS	1	1		

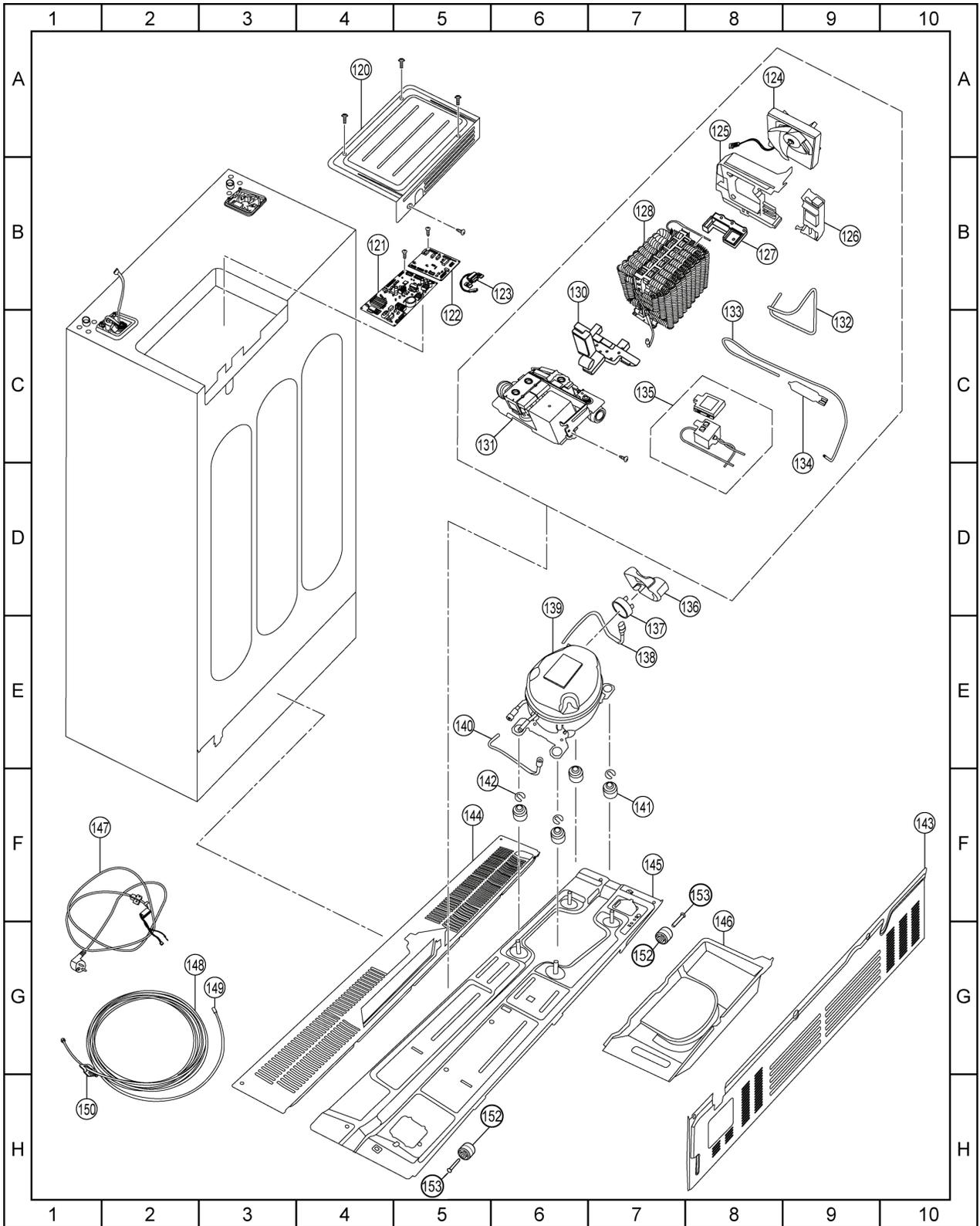
15.5. Exploded View 3



15.6. Replacement Parts List 3

Safety	Ref. No.	Part No.	Part Name & Description	Pcs. / Model		Remark	U
				-XE	-XB		
	80	CNRBH-138160	DUCT FCT AS	1	1		
	81	CNRAH-257500	GUIDE HOSE	1	1		
	82	CNRAJ-155930	JOINT S-S	1	1	BLUE	
	83	CNRAJ-155940	JOINT L-S	1	1	WHITE	
	84	CNRAH-269720	GUIDE HOSE FCB	1	1		
	85	CNRAC-215630	GRILL FRONT	1	1		
	86	CNRBH-138120	DUCT PC AS.	1	1		
	87	CNRBG-159960	PAS-C28VD2(DEO)	1	1		
	88	CNRAJ-152840	AG FILTER	1	1		
	89	CNRAH-257370	COVER LED AG	1	1		
	90	ARAHCD100030	COVER ROOM LAMP	1	1		
	91	CNRAG-162610	SENSOR DEFROST	1	1		
	92	CNRAF-176970	COIL PC AS. (PAINT)	1	1		
	93	CNRBF-152840	HOLDER FAN PC A'SSY	1	1		
	94	CNRAG-168860	FAN MOTOR AS.	2	2		
	95	CNRBF-150270	COVER COIL PC AS.	1	1		
	96	CNRBH-138730	BRACKET FILTER AS	1	1		
	97	————	FILTER	1	1		
	98	CNRAJ-155870	HOSE FILTER OUT	1	1		
	99	CNRAJ-155860	HOSE FILTER IN	1	1		
	100	CNRBH-138650	COVER FILTER AS	1	1		
	101	CNRBH-140960	COVER PLATE FILTER AS	1	1		
	102	CNRBG-164990	PAS-C29FGS(VC)	1	1		
	103	CNRAH-257730	PLATE OZONIZER & FILTER	1	1		
	104	CNRAG-159010	COVER LED SC	1	1		
	105	CNRAH-270770	TANK	1	1		
	106	CNRAH-268050	COVER TANK	1	1		
	107	CNRAH-269260	GUIDE HOSE PC	1	1		
	108	CNRAJ-155920	HOSE SWV OUT	1	1		
	109	CNRBH-138150	DUCT FC AS.	1	1		
	110	CNR39-220230	TUBE BINDING 202	1	1		
	111	CNRAG-163110	SENSOR DEF. FC	1	1		
	112	CNRBF-150250	HOLDER FAN FC A'SSY	1	1		
	113	CNRBF-150230	COIL FC AS.	1	—	XE	
	113	CNRBF-151850	COIL FC AS.	—	1	XB	
	114	CNRAG-148930	BAG JOINT	1	1		
	115	CNR39-220010	TUBE BINDING	1	1		
	116	CNRBF-150280	COVER COIL FC AS.	1	1		
	117	CNRAH-271210	INS HEATER PLATE PC	1	1		
	118	CNRAG-163120	SENSOR PC	1	1		
	119	CNRAG-163190	SENSOR SC	1	1		
	151	CNRAG-163130	SENSOR FC	1	1		
	154	CNRBG-155740	TEMP. FUSE AS.	1	1		

15.7. Exploded View 4

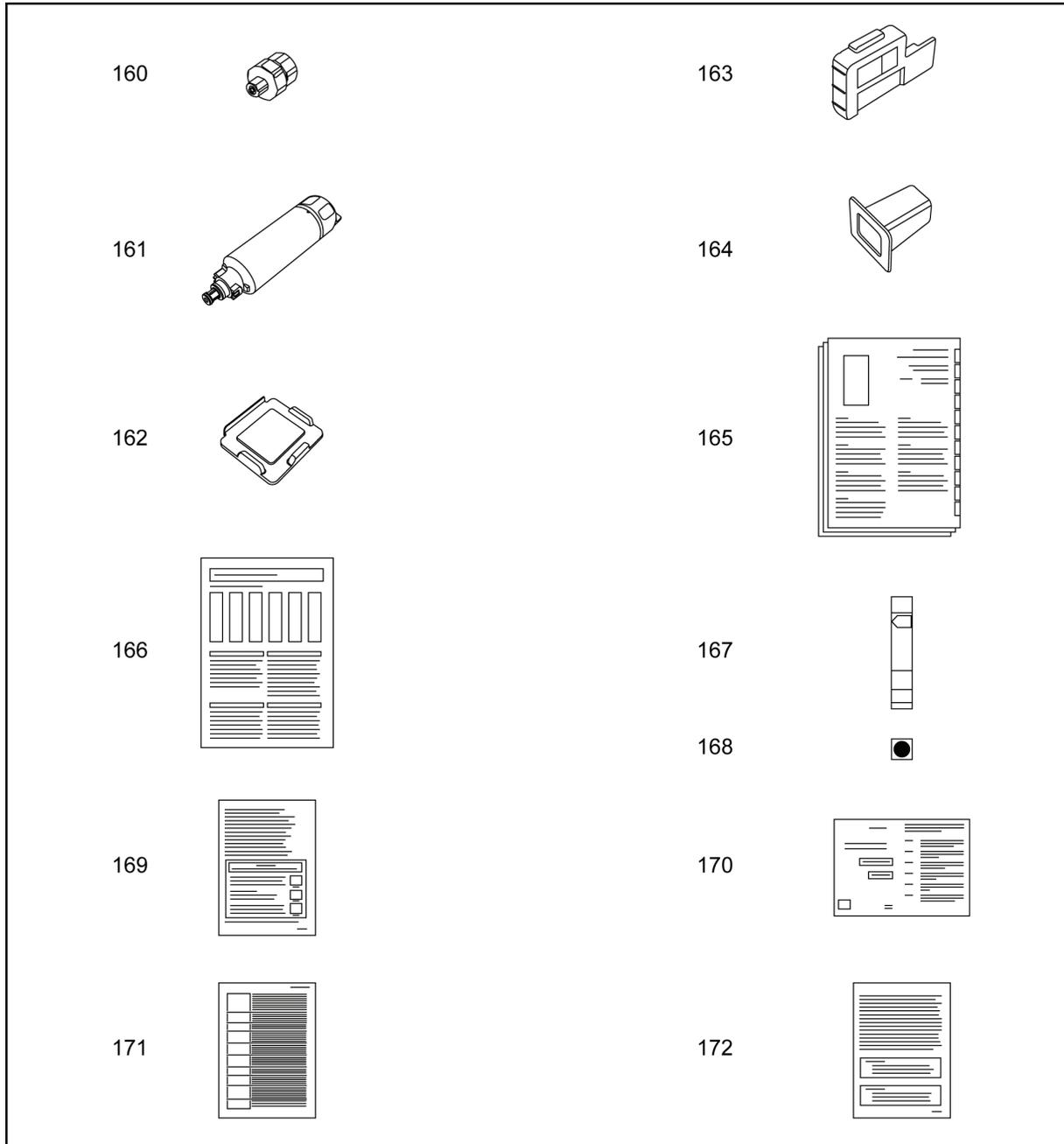


15.8. Replacement Parts List 4

Safety	Ref. No.	Part No.	Part Name & Description	Pcs. / Model		Remark	U
				-XE	-XB		
	120	CNRBC-329620	COVER BOARD A'SSY	1	1		
	121	ARBPC1A00700	PAS-CONTROL PCB(INV)	1	1		
	122	ARBPD3A00010	PAS-DISPENSER PCB	1	1		
	123	CNRBG-176260	REACTOR	1	1		
	124	CNRBG-172700	BOX FAN AS.	1	1		
	125	CNRBF-145410	HOLDER FAN MOTOR AS	1	1		
	126	CNRBF-145420	BRACKET FAN MOTOR AS	1	1		
	127	CNRAF-176920	HOLDER CONDENSER A	1	1		
	128	CNRBF-145440	JOINT PIPE&FIN TUBE CONDENSER AS	1	1		
	130	CNRAF-176930	HOLDER CONDENSER B	1	1		
	131	CNRBH-138720	WATER VALVE & HARNESS AS	1	1		
	132	CNRAF-176960	OUTLET TUBE COMP.	1	1		
	133	CNRAF-177120	JOINT DRYER	1	1		
	134	CNR39-340890	5 DRYER W	1	1		
	135	ARAGVE900010	VALVE 3 WAY	1	1		
	136	ARAGPB100030	PROTECT COVER	1	1		
	137	CNRAG-163060	MOTOR PROTECTOR	1	1		
	138	CNRAF-176950	INLET TUBE COMP.	1	1		
	139	CNRAB-116620	COMPRESSOR EFI120	1	1	XE:Y0XE0209~Y3XE2621 XB:Y0XB0061~Y3XB4570	
	139	CNRAB-117270	COMPRESSOR EFI120	1	1	XE:Y3XE2622~ XB:Y3XB4571~	
	140	CNRAF-178290	GASCHARGE PORT PIPE	1	1		
	141	CNR39-941280	RUBBER GROMMET	4	4		
	142	CNRAJ-145430	U RING 7	3	3		
	143	ARBFCA200090	COVER PANEL COMP AS.	1	1		
	144	CNRAF-176870	COVER CROSSRAIL REAR	1	1		
	145	CNRBF-145430	CROSSRAIL REAR&STUD COMP AS	1	1		
	146	CNRBF-151880	PAN WATER EVA AS.	1	1		
	147	CNRAG-163230	SUPPLY CORD	1	—	XE	
	147	CNRAG-163250	SUPPLY CORD	—	1	XB	
	148	CNRAJ-155910	HOSE RF IN	1	1		
	149	CNRAJ-127840	CAP TUBE	1	1		
	150	CNRAJ-156230	HOLDER WATER HOSE	1	1		
	152	CNRAC-104830	ROLLER 40	2	2		
	153	CNRAC-186730	PIN CASTER	2	2		

15.9. Exploded View 5 (NR-B54X1)

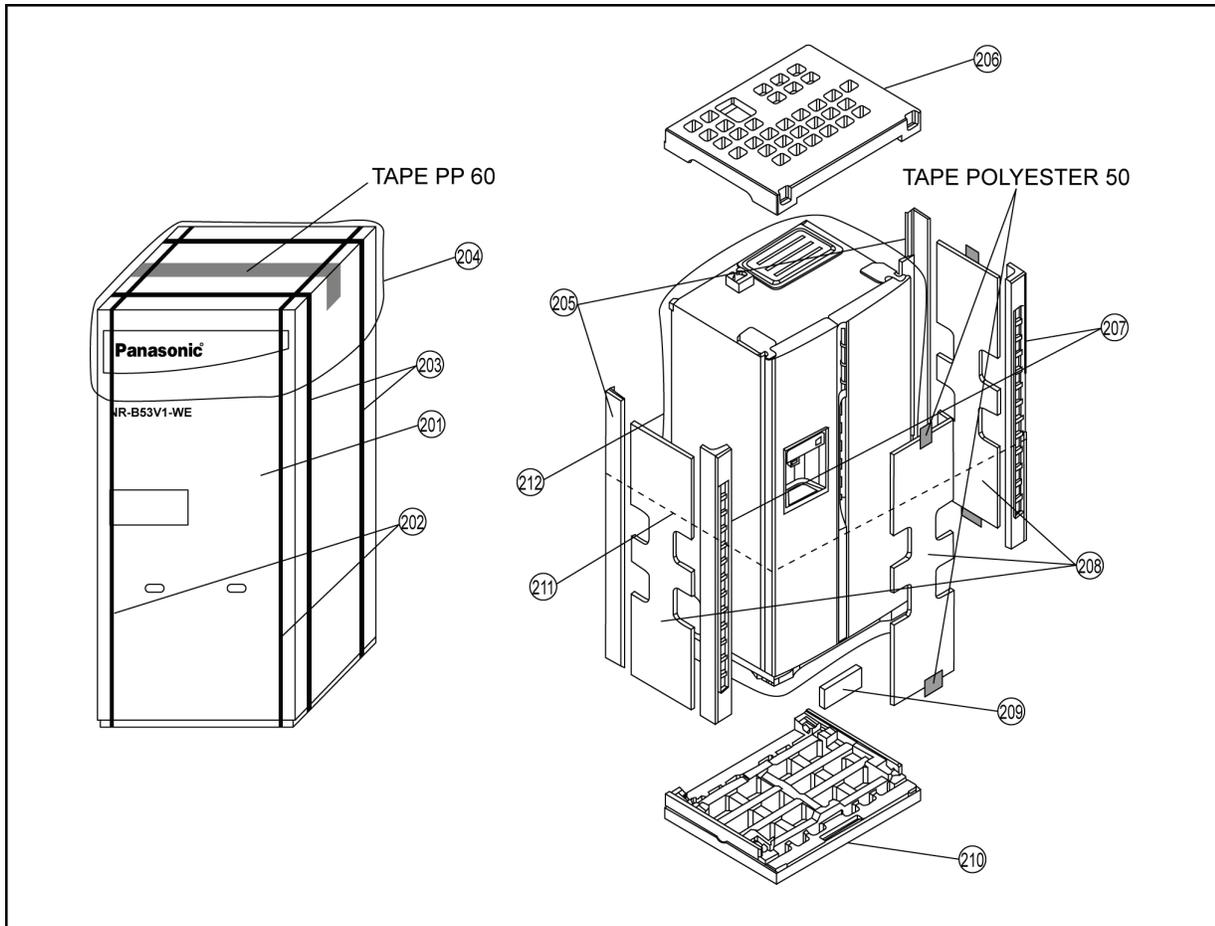
Bundled parts



15.10. Replacement Parts List 5

Safety	Ref. No.	Part No.	Part Name & Description	Pcs. / Model		Remark	U
				-XE	-XB		
	160	CNRBJ-106070	HOSE CONNECTOR A'SSY	1	1		
	161	CNRBH-125950	PACKING FILTER A'SSY	1	1		
	162	CNRBH-125620	ICE MAKER COVER AS	1	1		
	163	CNRBH-125610	ICE MAKER HOOK COVER AS	1	1		
	164	CNRBH-140160	SPACER REF AS	1	1		
	165	CNRAK-KW8400	OPERATION INSTRUCTION	1	1		
	166	CNRAH-272290	EASY OPERATION GUIDE	1	1		
	167	CNRAH-287700	ENERGY LABEL	1	1		
	168	CNRAH-242750	LABEL THERMOMETER	1	1		
	169	CNRAH-242790	LABEL MANUAL THERMO	1	1		
	170	CNRAK-163650	SERVICE & WARRANTY CARD	1	—		
	170	CNRAK-KW6430	SERVICE & WARRANTY CARD	—	1		
	171	CNRAH-243000	LABEL POSE	1	1		
	172	CNRAH-271130	FILTER CAUTION(DEN/PL)	1	1		

15.11. Packing Exploded View



15.12. Packing Material Parts List

Safety	Ref. No.	Part No.	Part Name & Description	Pcs. / Model		Remark	U
				-XE	-XB		
	201	CNRAK-142050	PACKING CASE B53V1-XB	—	1		
	201	CNRAK-142040	PACKING CASE B53V1-XE	1	—		
	202	—————	PP BAND L=5620	2	2		
	203	—————	PP BAND L=6030	2	2		
	204	CNRAK-PW4050	PACKING BAG	1	1		
	205	CNRAK-142150	PROTECTOR CORNER BACK	2	2		
	206	CNRAK-142180	PAD TOP	1	1		
	207	CNRAK-142140	PROTECTOR CORNER FRONT	2	2		
	208	CNRAK-PW2890	PROTECTOR SIDE	3	3		
	209	CNRAK-142120	INS SPACER BOTTOM	1	1		
	210	CNRAK-117330	TRAY BOTTOM AS	1	1		
	211	CNRAK-120020	GUM BAND	1	1		
	212	CNRAK-142130	BAG CABINET	1	1		