SAMSUNG

REFRIGERATOR

FRENCH DOOR REFRIGERATOR

Basic Model code: RF32FMQDBSR/AA

**New Model code: RF34H9950S4/AA,
RF34H9950SR/AA,
RF34H9960S4/AA,
RF24J9960S4/AA**

SERVICE Manual

REFRIGERATOR

CONTENTS

WARNING

IMPORTANT SAFETY NOTICE

The service guide is for service technicians with sufficient background in electrical, electronic and mechanical engineering.
Any attempt to repair the appliance yourself may result in personal injury and property damage.
The manufacturer or dealer will not be held responsible for the interpretation of this information.

SAMSUNG ELECTRONICS AMERICA, INC.
Technical Service Guide

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1. PRECAUTIONS (SAFETY WARNINGS)

- Unplug the appliance before replacing or repairing electrical parts.
  ⇒ Be careful to avoid electric shock.

- Always use only the correct replacement parts.
  ⇒ Check the model name, rating voltage, rating current, running temperature symbols.

- When troubleshooting, verify that wiring harnesses are connected securely.
  ⇒ Make sure the connectors are not separated when power is supplied.

- Check for visible traces of water on electrical parts.
  ⇒ Replace or secure any part that may have come in contact with water.

- Check the status of parts after replacement or troubleshooting.
  ⇒ All parts must be reinstalled properly.

- Check the location where the refrigerator will be used.
  ⇒ If the refrigerator will be used in a damp or wet space, or if installation will be unstable, the unit should be relocated.

- The refrigerator must be grounded properly.
  ⇒ An earth ground should be used if there is a risk of high humidity or wetness.

- The refrigerator should be plugged into a dedicated outlet.
  ⇒ Make sure the power cord is not damaged, crushed, squeezed or burned. If the plug is damaged it should be replaced.
  ⇒ If the socket is damaged, it should not be used.

- Consumers must not try to repair the refrigerator.

- Nothing should be stored in the refrigerator except food.
  ⇒ Drugs requiring precise temperatures should not be stored in the refrigerator.
  ⇒ Flammable substances (alcohol, benzene, ether, LP gas, etc.) carry risk of explosion and should not be stored in the refrigerator.

PRECAUTIONS(SAFETY WARNINGS)

Read all instructions before repairing the product and follow the instructions in order to prevent danger or property damage.
Plug out and remove all the items in regrigerator prior to repair.

CAUTION/WARNING SYMBOLS DISPLAYED

Warning	Indicates that a danger of death or serious injury exists.
Caution	Indicates that a risk of personal injury or material damage exists.

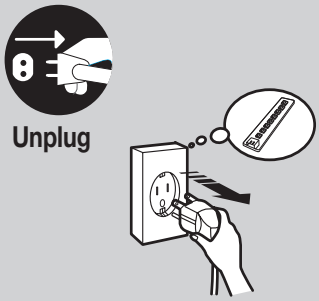
SYMBOLS

means "Prohibited".
means "Do not disassemble".
means "No contact".
means "Warning or Caution".
means "Unplug the unit before preforming service"
means "Earth or Ground".

Warning & Caution

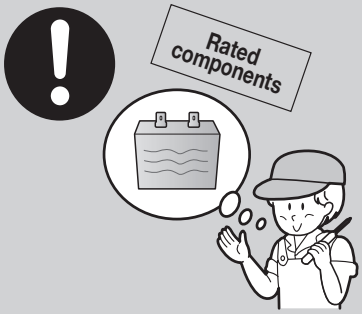
Unplug to exchange the interior lamp.

- ***It may cause electric shock.***



Use the rated components on the replacement.

- ***Check the correct model, rated voltage, rated current, operating temperature and so on.***



On repair, make sure that the all wiring harnesses are reconnected.

- ***Wiring harnesses should be connected tightly and kept dry.***
- ***Bundle tightly wires in order not to be detached by the external force and then not to be wetted.***

On repair, Make sure that all parts and wires are free of dust and debris.

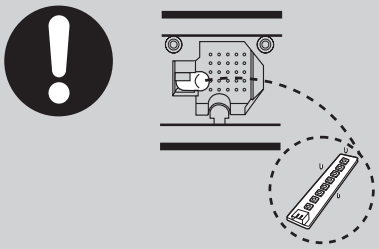
- ***Cleaning parts could help prevent fire or shorting.***

Check the status of parts after replacement or troubleshooting.

- ***All parts must be reinstalled properly.***

Check for visible traces of water on electrical parts.

- ***Replace or secure any part that may have come in contact with water.***

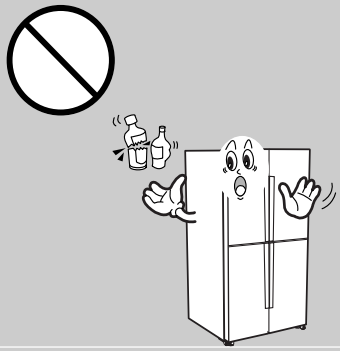


PRECAUTIONS(SAFETY WARNINGS)

❊ ***Please let users know following warnings & cautions in detail.***

Warning & Caution

Customers should not store glass bottles of liquid in the freezer section. Frozen bottles could explode and cause injury.



Customers should not store narrow or long bottles or food in a small door shelf.

- ***These items could fall when the door is opened, causing injury tot he customer.***

Drugs requiring precise temperatures should not be stored in the refrigerator.

The refrigerator should be plugged into a dedicated outlet.

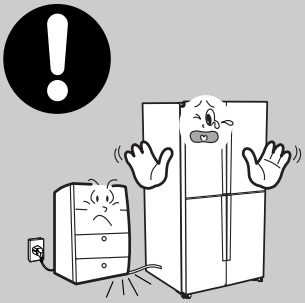
- ***Multiple plugs in the outlet could cause excessive heat or fire.***

Consumers must not try to repair the refrigerator.

- ***Electrical and mechanical parts could injure the consumer.***

Make sure the power cord is not damaged or crushed.

- ***A damaged cord could cause excessive heat or fire.***

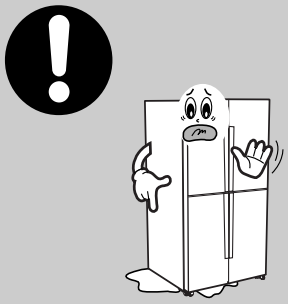


Articles on the product.

- ***Opening or closing the door may cause things to fall down, which may cause injury.***

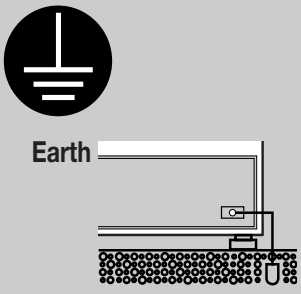
Check the location where the refrigerator will be used.

- ***If the refrigerator will be used in a damp or wet space, or if installation will be unstable, the unit should be relocated.***



The refrigerator must be grounded properly.

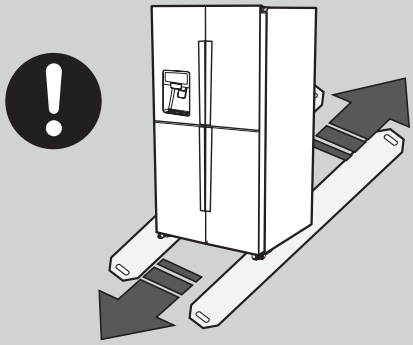
- ***An earth ground should be used if there is a risk of high humidity or wetness.***



PRECAUTIONS(SAFETY WARNINGS)

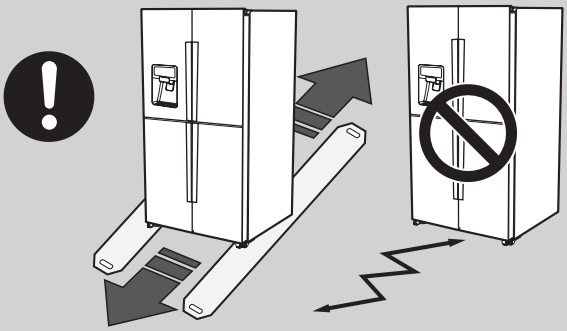
FLOORING

For proper installation, this refrigerator must be placed on a level surface of hard material that is the same height as the rest of the flooring. This surface should be strong enough to support a fully loaded refrigerator, or approximately 660 lb (299kg).



MOVING

Protect the finish of the flooring. Cut a large section of the cardboard carton and place under the refrigerator where you are working. When moving, be sure to pull the unit straight out and push back in straight.



2. PRODUCT FEATURES AND SPECIFICATIONS

Product Features

Cool Select Room

▶ You can store various foods by selecting a mode from among 'Freezer,' 'Soft Freezer,' 'Chill,' and 'Cool' modes. You can set it to be a fridge compartment if you have more foods for refrigeration and to be a freezer compartment if you have more foods to be frozen.

Chef Mode

▶ It controls the temperature minutely by letting the temperature sensor inside the refrigerator sense the temperature more frequently. It makes a fresh storage environment by minimizing the changes of foods by temperature changes.

Chef Pantry

▶ You can store meat or fish fresh, and can store foods of size up to a pizza box of 13" (48 cm).

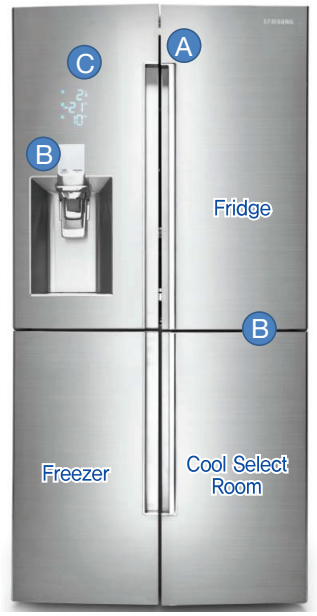
Moisture Care Technology and Triple Independent Cooling Method

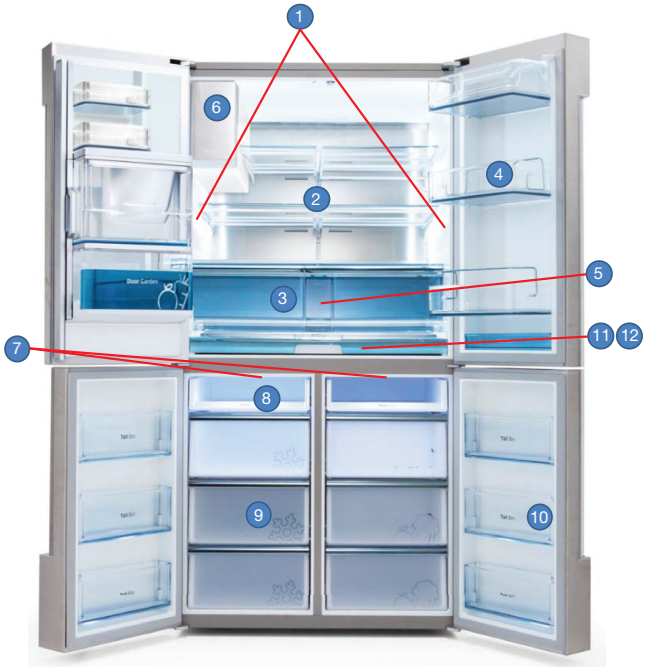
▶ It maintains the taste and flavor of foods' own by the triple independent cooling method, which is an upgraded version of the moisture care technology of Zipel's own, and keeps foods fresh for a long time by maintaining the humidity inside the fridge compartment at around 70%.

PRODUCT FEATURES AND SPECIFICATIONS

2-1. Compartment Features by Model

Water Dispenser model :
RF34H99*, RF24J99*





Appearance

A) Handle
B) Buttons
C) Indicators

Fridge Compartment

1) Refrigerator lamps
2) Refrigerator shelf
3) Refrigerator drawer
4) Refrigerator door bins
5) Water filter
6) Auto ice maker
11) Chef pan
12) Chef panty

Freezer Compartment / Cool Select Room

7) Freezer lamps
8) Freezer shelf
(only for RF34H99*)
9) Freezer drawer
10) Freezer door bins
* Egg trays

PRODUCT FEATURES AND SPECIFICATIONS

2-2. Basic Product Specifications (inch/mm)

Item	Specifications	
Model no.	RF34H99*	RF24J99*
External dimensions (width x depth x height)	35 3/4" X 35 3/4" X 72 7/8" (908 X 906 X 1850)	35 6/8" X 28 7/8" X 68 7/8" (908 X 733 X 1777 mm)
Packing dimensions (width x depth x height)	38 1/4" X 38 1/4" X 79 3/8" (972 X 972 X 2018)	38 1/4" X 31 1/4" X 76 1/8" (972 X 795 X 1934 mm)
Rated power frequency (HZ)	60	60
Rated power (V)	115	115
Rated power consumption of the electric motor (W)	145	145
Rated power consumption of the electric heater (W)	370	370
Refrigerator type	Indirect cooling type refrigerator	Indirect cooling type refrigerator
Refrigerant	Freezer / Cool Select Room / Ice Room : R-134a Fridge : R-134a	Freezer / Cool Select Room / Ice Room : R-134a Fridge : R-134a
Amount of sealed refrigerant	Freezer / Cool Select Room / Ice Room : 6.00 oz(170 g) Fridge : 3.53 oz(100 g)	Freezer / Cool Select Room / Ice Room : 6.00 oz(170 g) Fridge : 3.53 oz(100 g)
Weight (kg)	533.51 lb (242 kg)	438.72 lb (199kg)
Packing weight (kg)	559.97 lb (254 kg)	461.65 lb (209.4kg)

2-3. Comparison of Specifications (inch, mm)

No.	Module		RF34H99*	RF24J99*
1	Dimensions		35 3/4" X 35 3/4" X 72 7/8" (908 X 906 X 1850)	35 6/8" X 28 7/8" X 68 7/8" (908 X 733 X 1777 mm)
2	Door		SWING 4 Door/ STS	←
3	Lighting	Fridge	SIDE: 4 PILLAR LAMP	←
		Freezer/ Cool Select	TOP: 1 LED (1EA, High-luminance LED Lamp), FRIDGE DOOR BOTTOM: 1 LED(1EA, High-luminance LED Lamp)	←
4	Shelf	Fridge	Slide, FIX/ AL Foil-Trim	←
		Freezer/ Cool Select	Tray Shelf / AL Foil-Trim	-
5	Box	Fridge	3 Pieces / AL Foil-Trim	←
		Freezer/ Cool Select	3 Pieces / AL Foil-Trim	←
6	Cool Select Room modes		Freezer / Soft Freezing / Chill / Cool	←
7	Ice Maker		Direct cooling system Auto I/M	←
8	Guard	Fridge	Transparent 2 piece	←
		Freezer/ Cool Select	Transparent 2 piece	←
9	Egg tray		Transparent 1 piece	←
10	Handle		Hidden handle	←
11	Display		LED	←
12	VIP		VIP 9 sheets (cabi side/rear/up, liner bottom, door ref/fre)	←
13	Back cluster		Applied	←

PRODUCT FEATURES AND SPECIFICATIONS

Item	Item			RF34H99*, RF24J99*
Specifications	Cycle, Refrigerant			Dual Comp. F/CV/Ice Room: R134a (6.00 oz(170 g)) R Room: R134a (3.53 oz(100 g))
	Compressor			F/CV/Ice Room: MKV190CL2B/E01 R Room: NC1MV43AMP
Ice-making performance		Normal		0.056oz(1.6kg)/day ↑
		Worst		0.035oz(1.0kg)/day ↑
Notch (Freezer/Cool Select/Fridge) * Detailed information table appended.	C-C-C	Freezer 1/3H		-8±2.7°F(-23±1.5℃)
		Cool Select 1/3H	Freezer	-8±2.7°F(-23±1.5℃)
			Soft Freezing	23±3.6°F(-5±2.0℃)
			Chill	30±3.6°F(-1±2.0℃)
			Cool	41±3.6°F(5.0±2.0℃)
		Fridge 1/3H		34°F ±2 7°F(1±1 5℃)
	N-N-N	Freezer 1/3H		0±2.7°F(-18±1.5℃)
		Cool Select 1/3H	Freezer	0±2.7°F(-18±1.5℃)
			Soft Freezing	23±3.6°F(-5±2.0 ℃)
			Chill	30±3.6°F(-1±2.0 ℃)
			Cool	41±3.6°F(5.0±2.0 ℃)
		Fridge 1/3H		37±2.7°F(3±1.5℃)
		Freezer temperature distribution		36°F ↓(20℃)
		Cool Select temperature distribution		36°F ↓(2.0℃)
		Fridge temperature distribution		3.6°F ↓(2.0℃)
		Operating ratio		100% ↓
	W-W-W	Freezer 1/3H		5±2.7°F(-15±1.5℃)
		Cool Select 1/3H	Freezer	5±2.7°F(-15±1.5℃)
			Soft Freezing	23±3.6°F(-5±2.0 ℃)
			Chill	30±3.6°F(-1±2.0 ℃)
			Cool	41±3.6°F(5.0±2.0 ℃)
		Fridge 1/3H		44±2.7°F(7±1.5℃)

PRODUCT FEATURES AND SPECIFICATIONS

Item			RF34H99*, RF24J99*	
			Freezer, Cool select, Ice room cycle (parallel)	Fridge cycle
Cycle Specifications	Compressor	Model no.	MKV190CL2B/E01	NC1MV43AMP
		Amount of refrigerant	R134a (6.00oz(170g))	R134a (3.53oz(100g))
	Evaporator	Freezer/ Cool Select Room	3 rows 2 layer, Depth 70mm	
		Fridge Compartment	3 rows 2 layer, Depth 70mm	
	Condenser	Condenser	SFC (Serpentine Flow Condenser) 3 rows	SFC (Serpentine Flow Condenser) 2rows
		Cluster pipe	–	Side Cluster: Not applied Back Cluster: OD4.0(t 0.7), 4.94m
		Hot pipe	OD4.0(t 0.7), 11.4m	–
	Suction	Cool select – Freezer Pipe	OD7.94(t 0.5), 0.785m	–
		Freezer – Ice Maker connection Pipe	OD7.0(t 0.5), 2.5m	–
		Suction pipe	OD7.94(t 0.5), 2.5m	OD7.94(t 0.5), 3.0m
	Capillary Tube	Freezer capillary Tube	OD2.05, ID0.82, 3500mm	–
		Cool Select capillary Tube	OD1.9, ID0.82, 3300mm	–
		Fridge capillary tube	–	OD1.9, ID0.82, 3500mm
	Other	Dryer	Step valve	Single Dryer
		Valve	Step valve (3 way)	–

PRODUCT FEATURES AND SPECIFICATIONS

Classification			RF34H99*, RF24J99*	Remarks
Electrical parts	Motor & Fan	Freezer	BLDC(ARES2120RA), ø120 11Wing, DC12V, 2.5W, 1870rpm	AIO Q7
		Cool Select Room	BLDC(ARES2120RA), ø120 11Wing, DC12V, 2.5W, 1870rpm	AIO Q7
		Fridge	BLDC(ARES2120RA), ø120 11Wing, DC12V, 2.5W, 1870rpm	AIO Q7
		Machine compartment	BLDC(DRCP8020LA), ø160 3Wing, CCW 12VDC 1.7W, 1120rpm	AIO 160
		PANTRY	BLDC(U92C12MS1B3-52K09), 92*92*32, 3Wing, DC12V, 0.16A, 3350rpm	BOX FAN
		ICE ROOM	BLDC(2606JL-04W-S39), 66*66*15, 9Wing,DC12V, 1.2W, 3600rpm	BOX FAN
		AUGER	AC 120V/60Hz, LONG SHAFT, CCW, 18 RPM	GEARED
		DISPENSER	AC 120V/60Hz, Syncronous, CCW, 18 RPM	GEARED
	Heater	F-Evap.	AC120V 121(Sheath Heater)	
		CV-Evap.	AC120V 121(Sheath Heater)	Common to both the F and CV compartments
		R-Evap.	Not applied.	
		French	AC120V 10W(Cord Heater)	
		Door F	DC12V 2.5W(Cord Heater)	
		Door CV	DC12V 2.5W(Cord Heater)	
		Door R	Not applied.	
		Dispenser	AC120V 2.5W	
		Water pipe	DC12V 2.3W (Cord Heater)	
		ICE Room	DC12V 2W (Cord Heater)	
		ICE Maker	AC120V 120W	
		Damper	Not applied.	
	Comp electrical parts	OLP	4TM445PHBYY-82	
		PTC Relay	Not applied.	
		Capacitor	Not applied.	
	Over Heater Protector	Freezer	Bimetal [Off : 140˚F (60˚C) / On : 104˚F (40˚C)]	
			Thermal Fuse [Cut-off 230˚F (110˚C)]	
		Cool Select Room	Bimetal [Off : 140˚F (60˚C) / On : 104˚F (40˚C)]	
			Thermal Fuse [Cut-off 230˚F (110˚C)]	
		Fridge	Not applied.	
			Not applied.	
	Internal lamp	Freezer	TOP: 1 LED(1EA) / FRIDGE DOOR BOTTOM: 1 LED(1EA)	
		Cool Select Room	TOP: 1 LED(1EA) / FRIDGE DOOR BOTTOM: 1 LED(1EA)	
		Fridge	SIDE: 12 LEDs(4EA)	
	3 Way Valve		Stepping Motor (NSCEV01TA*)	

2-4. Specifications

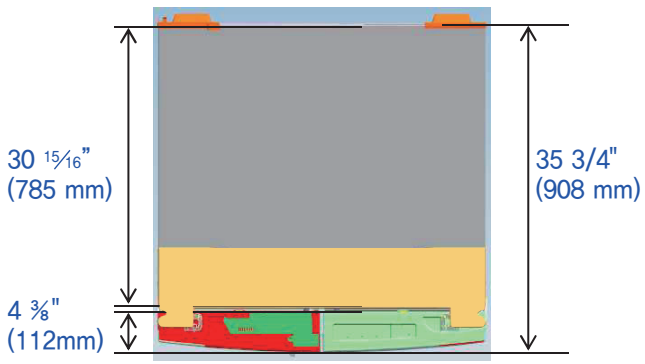
Item				Dimensions	
Temperature sensors inside Compartment	Freezer	Thermistor (F-Sensor)	Temp. Selection	Threshold that turns the sensor output on	Thresholds that turns the sensor output off
			-8°F	-5°F(-21℃)	-11°F(-24℃)
			0°F	3°F(-16℃)	-3°F(-19℃)
			5(°F)	8°F(-14℃)	2°F(-17℃)
	Cool Select Room	Thermistor (R-Sensor)	Freezer	Same as Freezer compartment	Same as Freezer compartment
			Soft Freezing	27°F(-3℃)	19°F(-7℃)
			Chill	33°F(1℃)	26°F(-3℃)
			Cool	45°F(7℃)	37°F(3℃)
	Fridge	Thermistor (R-Sensor)	34°F	37°F(3℃)	31°F(0℃)
			37°F	40°F(4℃)	34°F(1℃)
			44(°F)	47°F(8℃)	41°F(5℃)
Defrosting Parts	Defrosting sensor	F defrosting - sensor	Model no.	THERMISTOR (DTN-C502)	
			Specifications	5.0 kΩ at 77°F (25℃)	
		R defrosting - sensor	Model no.	THERMISTOR (DTN-C502)	
			Specifications	5.0 kΩ at 77°F (25℃)	
	Bimetal (Freezer)		Model no.	BIMETAL THERMOSTAT (BT-121-M)	
			Operating temperature	Off : 140°F (60°C) / On : 104°F (40°C)	
	Bimetal (Cool select)		Model no.	BIMETAL THERMOSTAT (BT-121-M)	
			Operating temperature	Off : 140°F (60°C) / On : 104°F (40°C)	

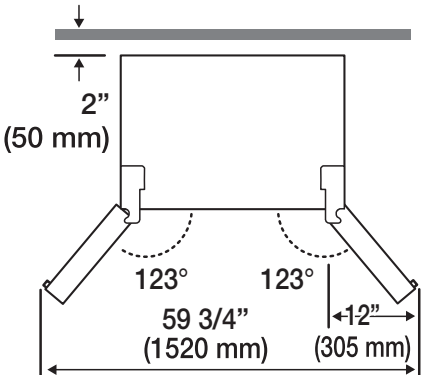
PRODUCT FEATURES AND SPECIFICATIONS

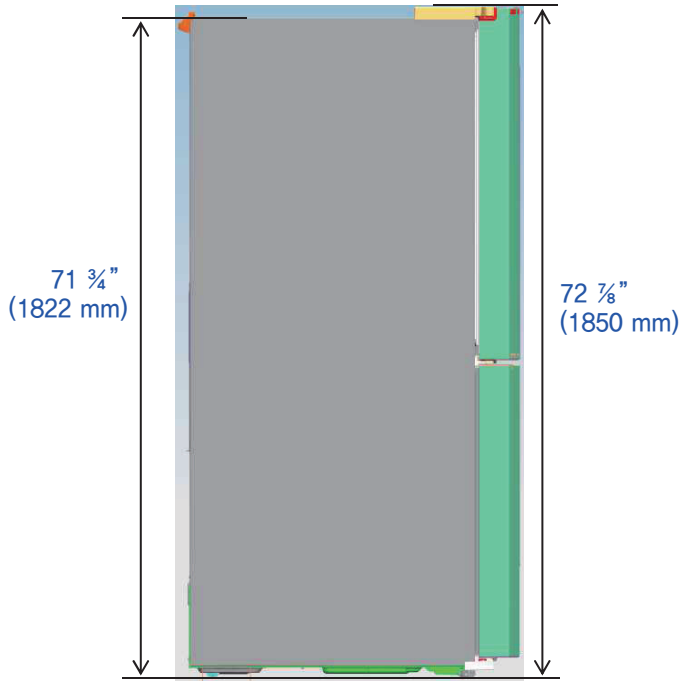
Item			Dimensions
Model			RF34H99*, RF24J99*
Electrical parts	Freezer compartment defrosting heater	Current flows when F defrosting is conducted.	AC120V 121W
	Cool Select compartment defrosting heater	Current flows when CV defrosting is conducted.	AC120V 121W
	Fridge compartment defrosting heater	Current flows when R defrosting is conducted.	–
	Cool Select compartment drain heater	Current flows when CV defrosting is conducted.	–
	French heater	According to external humidity , Heater is operated	AC120V 10W
	Water tank heater	–	–
	Dispenser heater	–	AC120V 2.5W
	Cap door heater (R compartment)	–	–
	Display heater (F compartment)	–	–
	Ice water supply pipe heater	–	–
	Ice water drain pipe heater	–	DC12V 2.3W
	ICE Room Heater	–	DC12V 2W
	Damper heater	–	–
	Freezer compartment door heater	The heater is operated by the external humidity sensor.	DC 12 V 2.3 W
	Cool Select compartment door heater	The heater is operated by the external humidity sensor.	DC 12 V 2.3 W
	Fridge compartment door heater	The heater is operated by the external humidity sensor.	–
	Freezer compartment defrosting heater overheating prevention bimetal		Off: 140°F(60°C) / On: 104°F(40°C)
	Freezer compartment defrosting heater overheating prevention fuse		230°F (110°C), 120V/15A
	Cool Select compartment defrosting heater overheating prevention bimetal		Off: 140°F(60°C) / On: 104°F(40°C)
	Cool Select compartment defrosting heater overheating prevention fuse		230°F (110°C), 120V/15A
	Noise filter		20 mH, 80*60*1.6 t
	OLP	Model no.	4TM445PHBYY-82
		Temperature at which it turns on	156.2°F (69°C)
		Temperature at which it turns off	257°F (125°C)
	Freezer compartment cooling fan motor		DC 12V BLDC(ARES2120RA)
	Cool Select compartment cooling fan motor		DC 12V BLDC(ARES2120RA)
	Fridge compartment cooling fan motor		DC 12V BLDC(ARES2120RA)
	Comp. cooling fan motor		DC12V BLDC(DRCP8020LA)
	PANTRY		DC 12V BLDC(U92C12MS1B3-52K09)
	ICE ROOM		DC 12V BLDC(2606JL-04W-S39)
	AUGER		AC 120V/60Hz, Shading pole(ISG-3240SSJ)
	DISPENSER		AC 120V/60Hz, Syncronous(MVCD18AR19)
	Motor step valve		DC 14 V / 0.7 A
	Freezer / Cool Select Room interior lamps		TOP: 1 LED(1EA), FRIDGE DOOR BOTTOM: 1 LED(1EA)
	Fridge interior lamps		SIDE: 12 LEDs(4EA)
	Door reed switch		DC 200 V / 0.5 A
	Power cord		125V/15A
	Grounding screw		BSBN (brass screw)

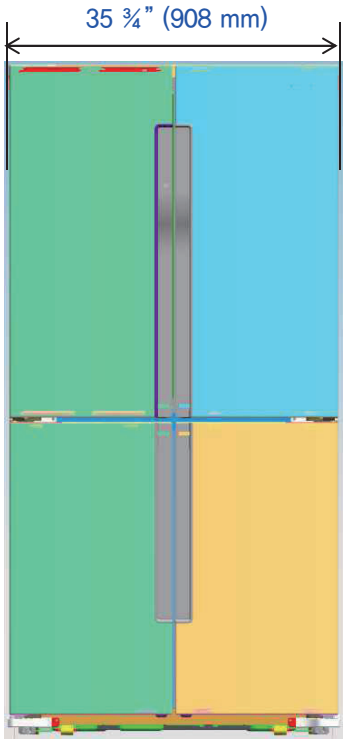
2-5. Dimensions

RF34H99*



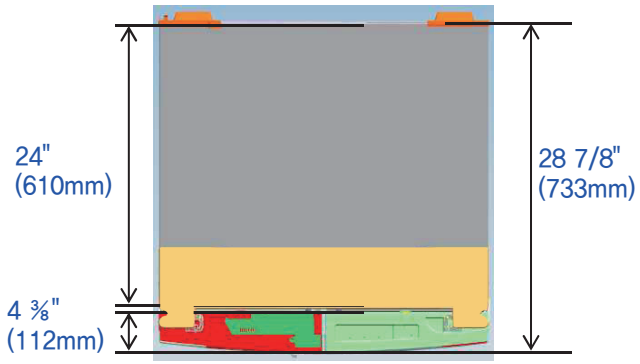


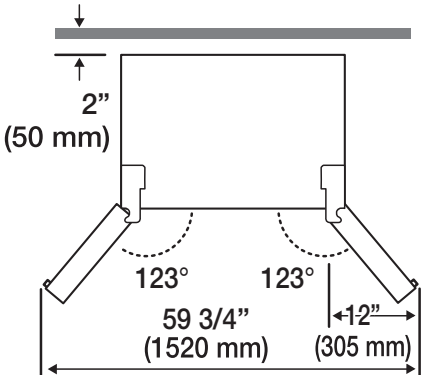


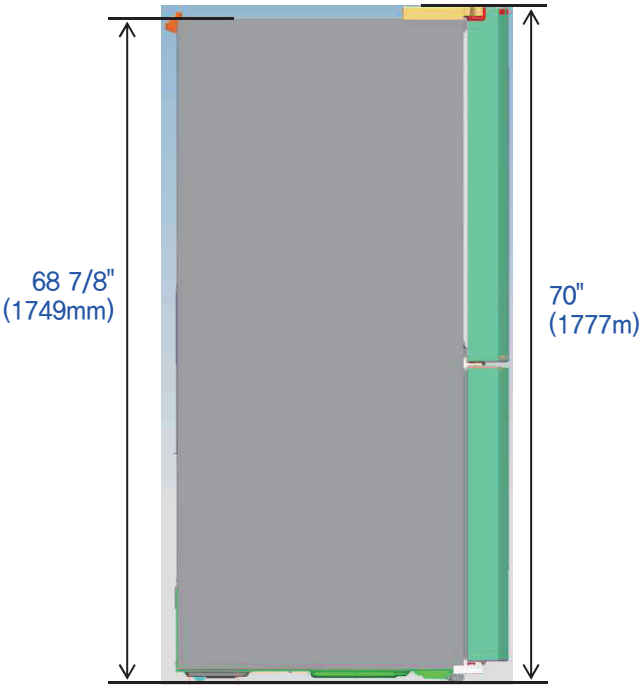


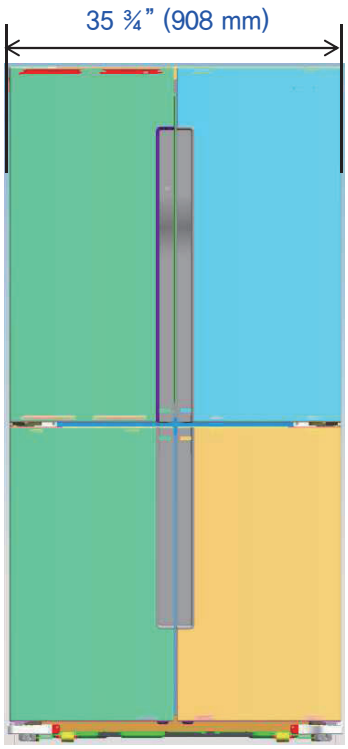
PRODUCT FEATURES AND SPECIFICATIONS

RF24J99*







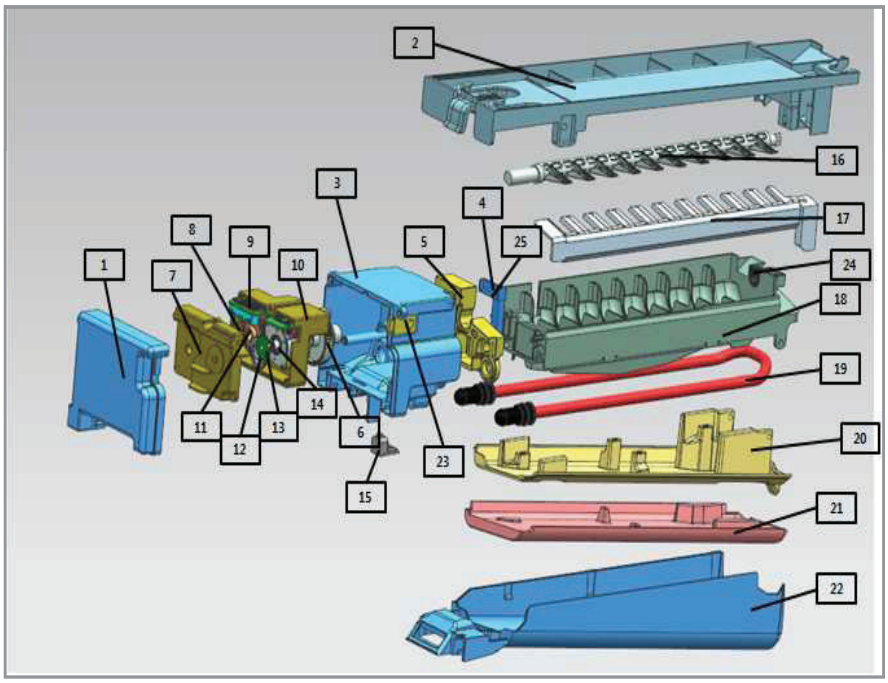


2-6. ICE-MAKER Function

- The ICE-MAKER function is an option and the following explains the function of these models.
- The ICE-MAKER is a kit that supplies water on its own, freezes water into ice and stores the ice cubes in the Ice Container with the capability of making ice automatically without manual controlling

1) ICE-MAKER Components

No	PART NAME
1	COVER-FRONT-INNER
2	SUPPORTER
3	COVER-FRONT-OUTER
4	CASE-SENSOR
5	GASKET TRAY ICE
6	GEAR-OUTER
7	CASE-CONTROL OUTER
8	GEAR-4W
9	PBA
10	CASE-CONTROL INNER
11	GEAR-C
12	GEAR-B
13	GEAR-1W
14	STEPPING MOTOR
15	CAP-DUCT TRAY ICE
16	BLADE-ICE SCOOP
17	BLADE-ICE GUIDE
18	TRAY-ICE
19	HEATER
20	TRAY-ICE PLATE
21	INS-DUCT-TRAY ICE
22	DUCT-TRAY ICE
23	CASE-SWITCH
24	FIXER-BLADE ICE SCOOP
25	TEMPERATURE SENSOR



2) Initial Operations

1. When the power is on, it checks the temperature of the Ice Maker Sensor. If the Ice Maker Sensor temperature is lower than 0℃, the Ice Maker Heater will be on for 4 minutes. After that, it will run the Initial Test Mode. If the Ice Maker Sensor temperature is higher than 0℃, it will run the Initial Test Mode right away.
2. During the Initial Test Mode, it carries out the operation of the Ice Maker Motor and its Heater turns on for 30 seconds.
3. If the Ice Maker Sensor temperature is over 0℃ upon the initial power on, the Water Valve will work for a second while its Heater is on.
4. The Ice Maker Motor rotates both clockwise and counter clockwise repeatedly. And, when it is sensed as being at the parallel position (Home) within 6 minutes after the Motor starts operating, its initial operation will stop and its normal ice making will begin.
5. When it does not sense the parallel position (Home) within 6 minutes after the Motor starts operating, it will be considered as the Ice Maker defect and its initial operation will stop.

※ Operation upon Ice Maker Defect during the Initialization.

1) Upon the termination of the Initialization due to the Ice Maker Defect, it runs the Initialization again. And, when the defect is detected during all the set number of times (ex. 3 times), it will stop the Initialization of the Ice Maker.

2) When it is sensed as defect 3 times in a row during the initialization, the Ice Maker does not operate for the set duration (ex. 3 hours) and it runs the initialization again after a set time period.

3) General Operation

• Water Supply 〉 Stand-by Time for Ice Making 〉 Temperature Checking for Ice Maker Sensor 〉 Ice Removing
Water Supply Ice Making Ice Removing

1. After supplying water, it stands by for 14 minutes before starting the ice making. After that, it checks the Ice Maker Temperature.
2. When the Ice Maker Sensor temperature is measured lower than –13℃ for more than 5 seconds, its ice making is completed.
3. When the ice making is completed, the Ice Maker Heater and Motor operates and the ice cubes are to be removed from the Ice Maker. At this time, its heater thaws out the outer surface of the ice cubes allowing them to be removed from the Ice Maker easily. And, its motor turns both clockwise and counter clockwise to remove the ice cubes from the Ice Maker.
4. The Ice Maker repeats the operation of the (1) ~ (3) until ice cubes build up in the Ice Bucket triggering the Full-Ice Detect Sensor on. At this time, the Ice Maker stops producing ice cubes.

4) Ice Off (Stopping Ice Making) Function

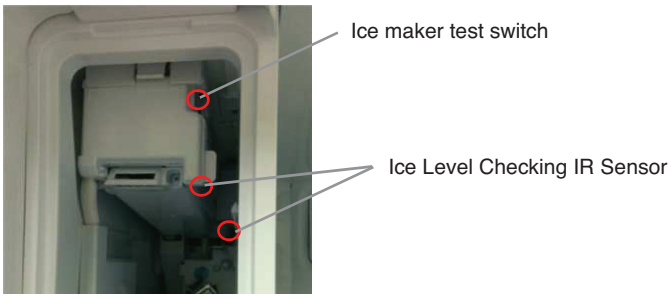
1. When turning on the Ice Off function at the preference setting, the Ice Maker function will be off.
2. When the Ice Maker is off, it does not supply water to the Ice Tray.
3. When turning off the Ice Off function, the Ice Off function will be cancelled. When the Ice Off is cancelled, it starts from ice making and the operation of the Ice Maker resumes.

5) TEST Function

– It is a function to be used when it needs the forced operation for the purpose of repairs or cleaning.

1. When pressing the Test Button for 1.5 seconds, the Test Function will start.
2. The Test Function works as follows.
   Start (Alarm Sound) → Motor On (Rotating Counter Clockwise) → Motor On (Rotating Clockwise) → Heater On → Motor On (Rotating Clockwise) → Home Location → Water Supply → Completed (Alarm Sound)
   ※ The Ice Maker Heater will be On / Off
   The Ice Maker Heater will be On and Off according to the temperature conditions of the Ice Maker Sensor when the Ice Maker Motor rotates clockwise.
3. When the entire operation is to be completed within 6 minutes after the motor starts operating upon pressing the Test button, it sends out alarm sound. And, after this, it does normal ice making.
4. When the entire operation does not complete normally (ex. Not reaching at the Home location) within 6 minutes after the motor starts operating upon pressing the Test button, it will be considered as the Ice Maker defect and the entire loads (Motor, Heater, etc) will be off. (No alarm sound)
   After this, it performs an operation checking whether the Ice Maker operates normally according to the set time cycle (ex. 3 hour).

Caution When the Ice Maker Heater is on, it may cause personal injury. So, take extra care



2-7. Material Specification

Photograph	Part Name	Part Code	AMOUNT
	FILTER WATER-ASSY	DA29-00019B	1

3. DISASSEMBLY AND REASSEMBLY

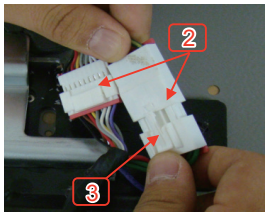
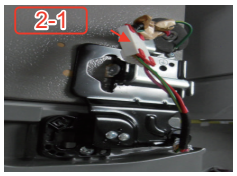
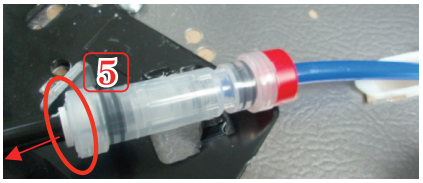
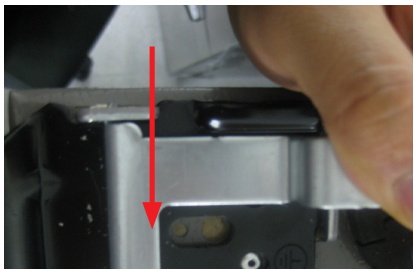
3-1. Precautions

- Before replacing or repairing an electrical part, be sure to unplug the product's power cord.
  - Failing to do so may result in electric shock.
- Be sure to replace any electrical parts with rated parts.
  - Be sure to check the model no, rated power voltage, operating temperature etc. printed on the product.
- When repairing a product, connect the harnesses firmly so that no water enters the product.
  - They should not become separated if a certain amount of force is applied.
- When repairing the product, completely remove all dust or foreign substances from the housing, connectors and terminals.
  - Prevents fire due to tracking or short-circuits.
- Check if there are any marks of moisture having entered the electric parts.
  - If it appears that moisture has penetrated the part, take countermeasures such as replacing the part or wrapping the part with insulation tape.
- After fixing a problem, check the assembly status of the parts.
  - The status must be the same as before repairing the product.
- Check the operating environment of the refrigerator.
  - If the refrigerator is exposed to moisture or is installed near water or on an unstable surface, relocate the refrigerator.
- Ground the refrigerator if necessary.
  - In particular, if there is a danger of electric leakage due to moisture or water, be sure to ground the refrigerator.
- Do not share a power strip with other appliances.
- Check if the power plug or electrical outlet is damaged, deformed or old.
  - If the power plug or outlet is damaged or out of order, repair it immediately.
  - Take care when you move the product so that the power cord is not damaged, cut or becomes trapped.
- Do not store food in an unstable manner in the refrigerator or store bottles in the freezer.
- Do not let customers repair the product by themselves.
- Do not let customers store items other than food in the refrigerator.
  - Medicine or chemicals: A precise temperature cannot be maintained by the refrigerator for home use.
  - Inflammable materials (alcohol, benzene, ether, LP gas, butane gas, etc.): There is a danger of explosion.

Required Tools

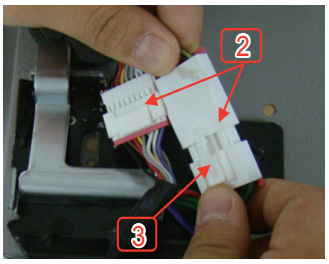
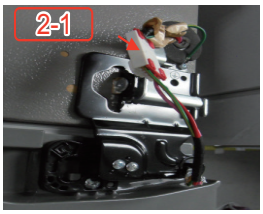
Image	Item
	(+) screw driver
	(–) screw driver
	Hexagon wrench (2 mm diameter)
	Long nose pliers
	Box wrench (12 mm) – To disassemble the compressor
	Box wrench (10 mm) – To disassemble the hinge Lower

3-2. Disassembling the Refrigerator Door

How To Do	Descriptive Picture
1. Remove the 6 screws fixing the Top Table and separate the Top Table (①).	
2. Separate the 2 housing connectors (②) from the hinge at the top left of the fridge compartment door and the 1 housing connector (②–1) from the hinge at the top right of the door. To separate the housing connectors more easily, pull the connector while holding down the fixing hook (③). Caution: Make sure to unplug the power cord before performing the procedures above. Note. The number of housing units may differ depending on the model.	 
3. As shown in the picture, Remove water tube from hinge (4) by holding at the both sides of the Tube Fitting and pulling it out. And, remove the Tube Fitting (5) by pulling the water hose after pushing in the locking ring tab at the end of the Tube Fitting.	 
4. After pulling the Hinge Lever, remove the Hinge.	

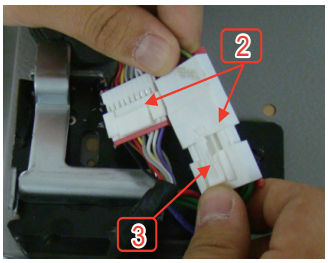
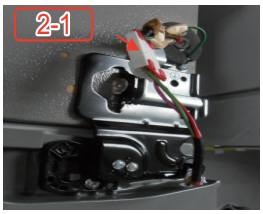
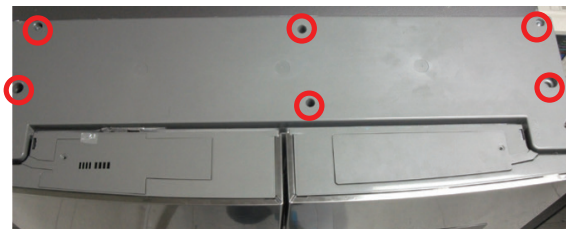
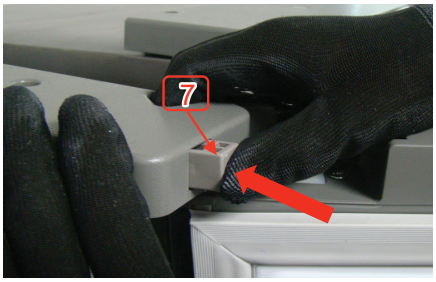
How To Do	Descriptive Picture
5. Lift the door straight up to remove while opening it more than 90˚. CAUTION Be careful not to drop the door.	
6. Assemble the door in the reverse order of disassembly; reconnect the fitting; connect the water supply; check if water comes out from the dispenser; and check if water leaks for one minute or longer. (You can check the water with bare eyes at the transparent fitting. If it is hard to observe with bare eyes, you can also check it against a piece of toilet paper)	

3–3. Disassembling the Fridge Doors (RF24J* only)

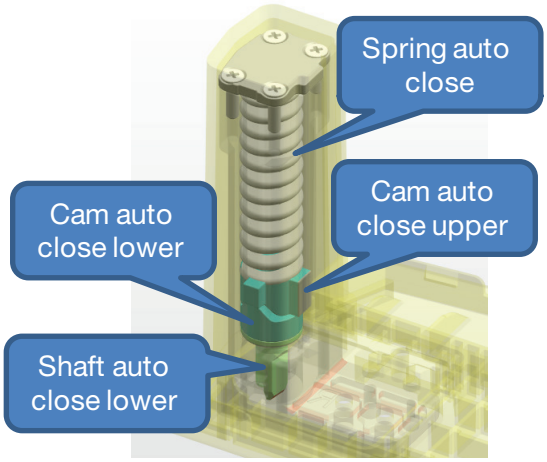
How To Do	Descriptive Picture
1. Remove the 6 screws fixing the Top Table.	
2. Open the right door of the fridge compartment so that it does not interfere with the Bracket (②) and the Top Table. Lift the back side of the Top Table and pull it to the front to disassemble.	
3. Separate the 2 housing connectors (②) from the hinge at the top left of the fridge compartment door and the 1 housing connector (②–1) from the hinge at the top right of the door. To separate the housing connectors more easily, pull the connector while holding down the fixing hook (③). Caution Make sure to unplug the power cord before performing the procedures above. [Note] The number of housing units may differ depending on the model.	 
4. As shown in the picture, Remove the water tube from hinge by holding at the both sides of the Tube Fitting (④) and pulling it out. After that, remove the Tube Fitting by pulling the water hose after pushing in the locking ring (⑤). [Note] For Dispenser model only	 
5. Push the Pusher (⑦) in the direction of the arrow at the right hinge to disassemble.	

How To Do	Descriptive Picture
6. Pull the fixer from the hinge in the direction of the arrow to separate, and then lift the hinge to separate. Caution: If the hinge is separated, the door may fall down and hurt you, so hold the door with both hands to disassemble.	
7. Lift the door straight up to remove while opening it by more than 90˚. Disassemble the left door in the order of 4 and 5. Caution: Be careful not to drop the door.	

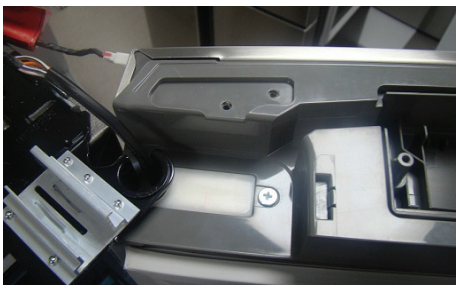
3-4. Assembing the Fridge Doors (RF24J* only)

How To Do	Descriptive Picture
1. Assemble the door to the middle hinge at the position of 90 degrees. (Fix the position for the shaft at the bottom of the door to go into the groove of the middle hinge by making the angle the same as the door's angle during disassembly.) Caution Be careful not to drop the door.	
2. After assembling the upper hinge, make sure to fix it firmly by pressing the fixer. Caution While assembling the hinge, hold the door with both hands to prevent the door from falling down.	
3. Completely insert the hose of the door part into the Tube Fitting, and fix the Tube Fitting at the hinge as in the picture.	
4. Connect the 2 housing connectors (②) from the hinge at the top left of the fridge compartment door and the 1 housing connector (②-1) from the hinge at the top right of the door. [Note] The number of housing units may differ depending on the model.	 
5. Assemble the Top Table (①), and lock the six screws for fixing the Top Table.	
6. Push the Pusher (⑦) in the direction of the arrow to combine. Caution Completely insert the Pusher (⑦) for its front side not to protrude.	

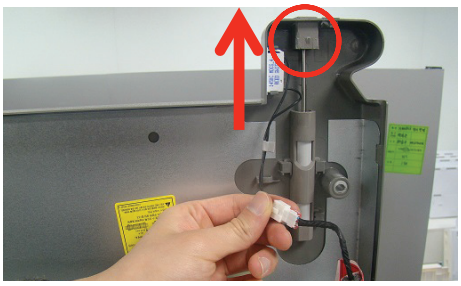
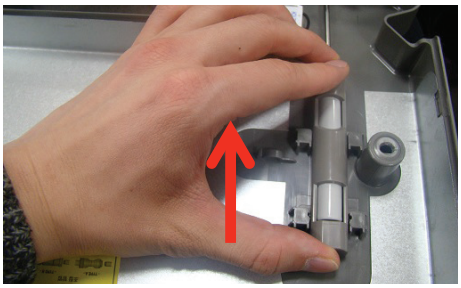
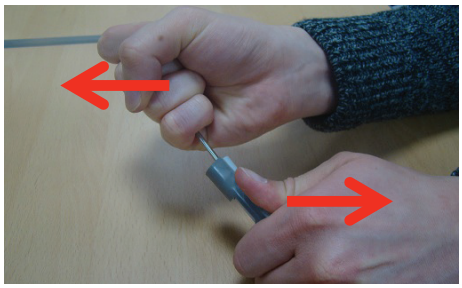
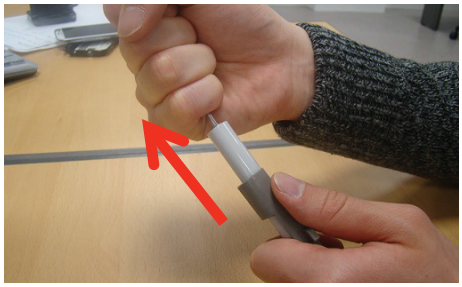
3-5. Assy Auto Hinge

How To Do	Descriptive Picture
1. Remove the SCREW at 5 point under the Refrigerator Door.	
2. Lift up the stopper and auto hinge.	
※ The working principle of the hinge. Auto hinge make to work the door by torsion of the spring.	

3-6. Braket (RF24J* only)

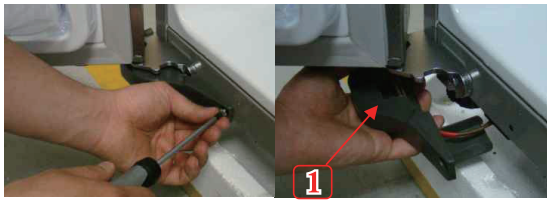
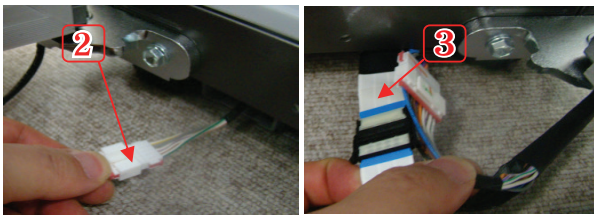
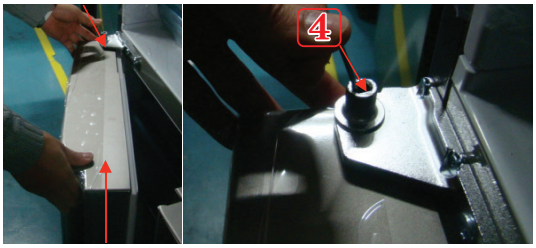
How To Do	Descriptive Picture
1. Remove the Screw.	
2. Remove the Bracket.	

3-7. Door Soft Damper (RF24J* only)

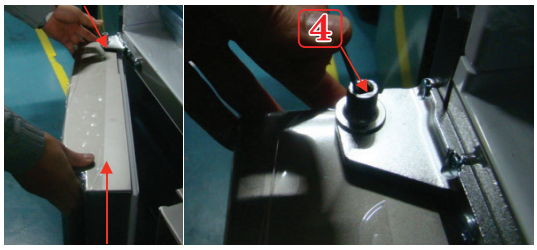
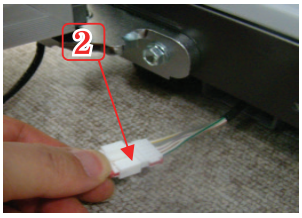
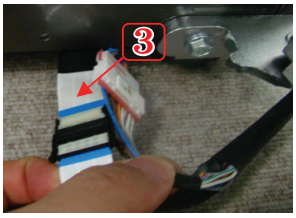
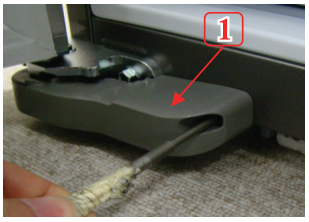
How To Do	Descriptive Picture
1. After pulling the Pusher and then remove it.	
2. After pulling the Housing and then remove it.	
3. Remove the Damper and Housing after bending over in opposite direction.	
4. After pulling the Damper and then remove it.	 

3-8. Disassembling the Freezer Doors

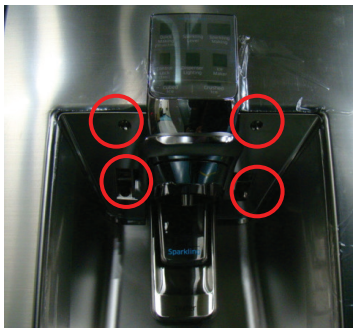
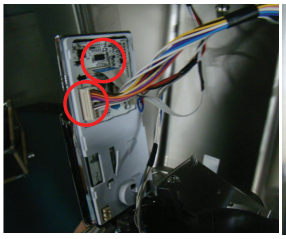
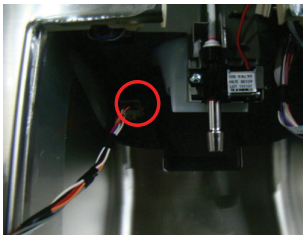
Caution There is a heater wire at the bottom of the freezer compartment. Before disassembling the door, be sure to disassemble the heater housing!

How To Do	Descriptive Picture
1. Open the freezer compartment door and remove the screw fixing the hinge cover (①) at the bottom with the (+) screw driver. Caution Disassemble the freezer door only after disassembling the fridge door.	
2. Separate the 1 housing connector (②) on the left and the 2 housing connectors (③) on the right at the bottom. (It may differ depending on the model.)	
3. Slightly push the freezer compartment door in the direction of the arrow, check the position of the freezer compartment door hinge shaft through the hinge hole (④), put in a hexagonal wrench in the opposite angle direction, and press the freezer compartment hinge shaft to separate.	
4. Tilt the freezer compartment door forward so that it does not interfere with the middle hinge and then lift the door up to separate it completely. Caution Take care not to drop the door.	
5. Assemble in the reverse order of disassembly.	

3-9. Assembling the Freezer Doors

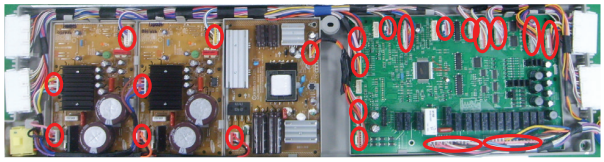
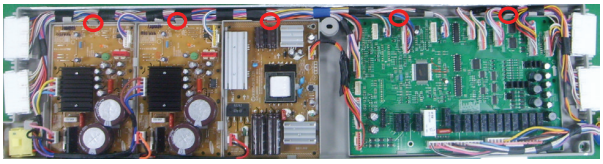
How To Do	Descriptive Picture
1. Tilt the freezer compartment door forward so that it does not interfere with the middlehinge and then start assembling the door by inserting the lower hinge while pushing the shaft.	
2. Assemble the door so that the shaft will be inserted into the middle hinge making a clicking sound.	
3. Assemble the 1 housing connector (②) on the left and the 2 housing connectors (③) on the right at the bottom. (It may differ depending on the model.)	 
4. Open the door, fix the hinge cover (①), and assemble one screw with a phillips screwdriver.	 

3-10. Disassembling the Display

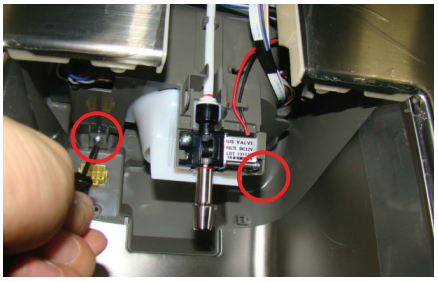
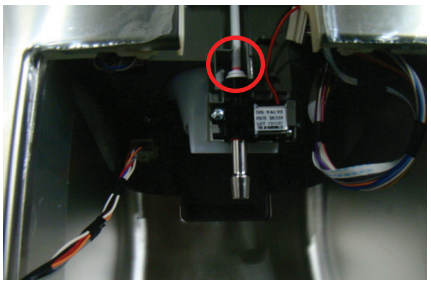
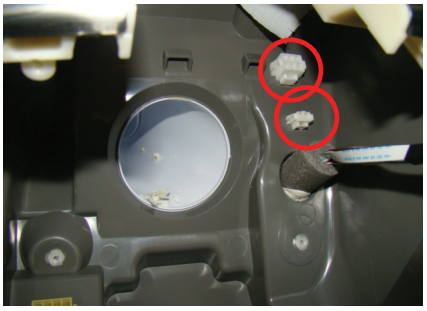
How To Do	Descriptive Picture
1. Remove the screw (4ea) on the bottom of the Dispenser.	
2. Hold the bottom of the Dispenser and pull it down to take it off from its locking tabs And remove the assembly.	 
3. Separate the Dispenser Wire Connector (3 point).	 

Caution When reassembling the Display Assy, shut off the power supply to prevent errors.

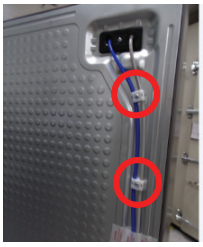
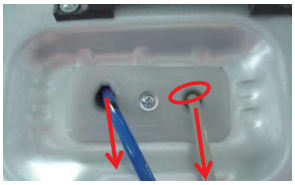
3-11. Disassembling the Main PCB and Inverter PCB

How To Do	Descriptive Picture
1. Pull the refrigerator forward to secure sufficient work space behind the refrigerator.	
2-1. Remove the 6 screws.	
2-2. Remove 2 Screws and separate the housing connectors.	
3. Separate the housing connectors. (The numver of housing connectors may differ depending on the model and functions.)	
4. Separate the Main PBA and the Inverter PBA by pulling them forward holding the upper hooks upward at the locations shown by the figure.	

3-12 Dispenser

How To Do	Descriptive Picture
1. Remove the two screws from the Case Ice Route Assy.	
2. Separate the water hose from the assy case ice route.	
3. Separate the Wire Connector and pull out the Case Ice Route Assy.	

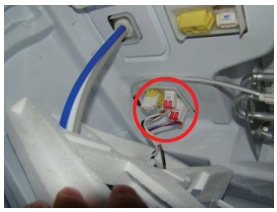
3-13. Case Water Filter

How To Do	Descriptive Picture
To disassemble the Case Water Filter, remove the water filter and all drawers and shelves. 1. Remove two screws and locking tab.	 
2. Disconnect the 2 housing connectors.	
3. Pull out the water hose(blue) from the tube fitting by pushing in on the locking ring.	 
4. Remove two screws securing the water tubes.	
5. a. Pull the Water blue hose out. b. Pull the grey hose pushing the Tube Fitting.	
6. Lift and pull the Case Water Filter out.	

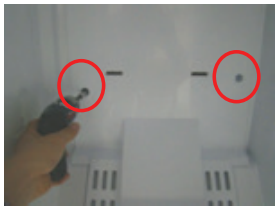
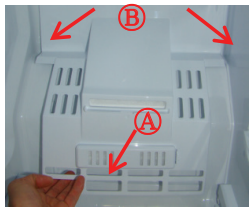
3-14. Water Filter (Assembly & Disassembly)

How To Do	Descriptive Picture
1. Turn the water filter counter-clockwise. (Refer to the picture)	
2. Remove the water filter by pulling it. (Refer to the picture)	
3. Push the water filter directly.	
4. Turn the water filter clockwise until it locked.	

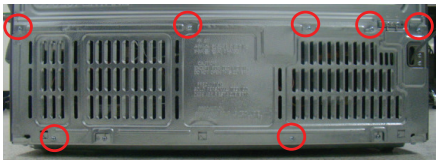
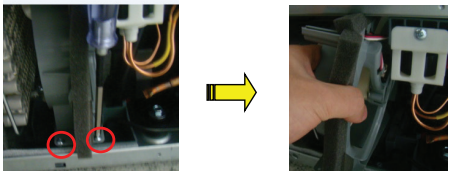
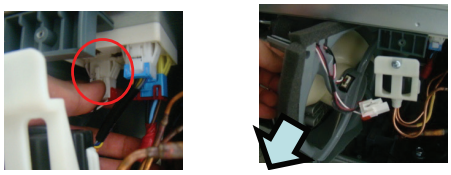
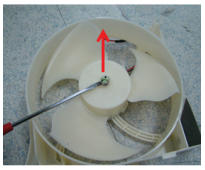
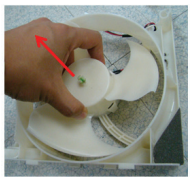
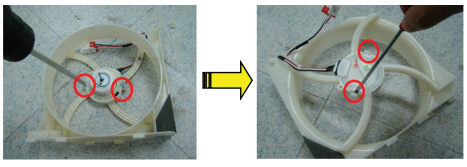
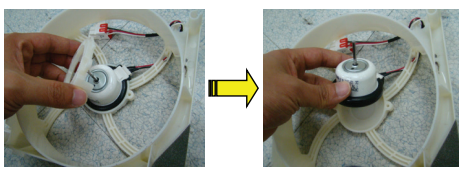
3-15. Disassembling the REF EVAP Cover

How To Do	Descriptive Picture
1. Remove all the shelves and box.	 
2. Remove the 2 screws. Separate the Housing Connection from the water tank and put it on the other side. Caution Take care not to scratch the cabinet or damage the screw cover.	 
3. Pull the Cover Evap upper rib to outside and separate it. Caution Be careful not to pull out the Water Hose.	 
4. Separate the 3 housing connectors.	 

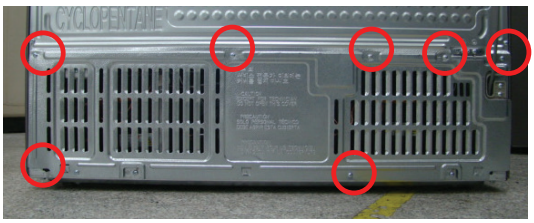
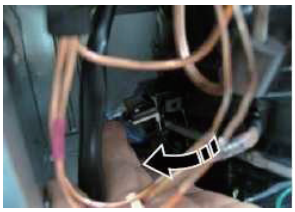
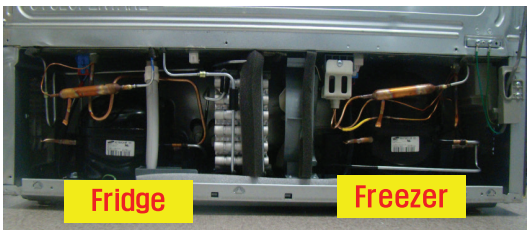
3-16. Disassembling the FRE EVAP Cover

How To Do	Descriptive Picture
1. Remove the box and rail.	 
2. Remove the two screws of right and left side of the COVER EVAP.	
3. Pull the bottom of the COVER EVAP (a) and remove the Hook which is connected with liner, hold the disassembled bottom (b) and pull it. Caution When remove the component after hold the (a) part, it is able to damage on the EPS component.	 
4. Separate the 2 housing connectors.	

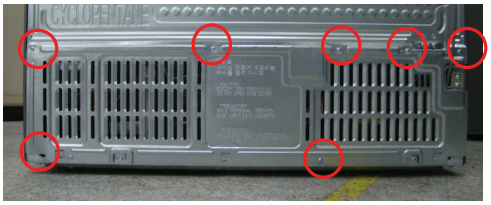
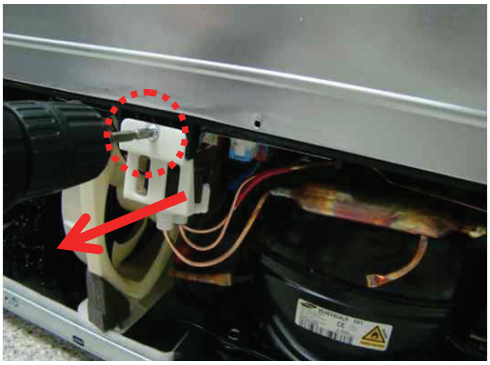
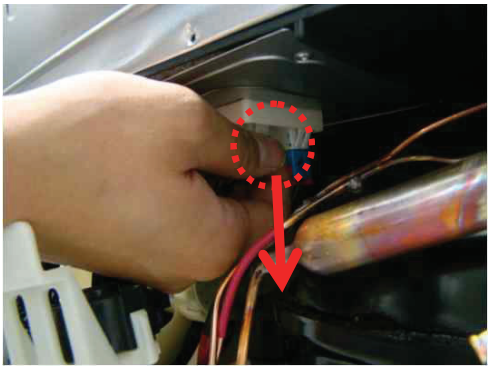
3-17. Disassembling the Machine Compartment Motor Fan

How To Do	Descriptive Picture
1. Remove the 7 screws from the COMP Cover.	
2. Remove the two screw of bottom of the ASSY-SUPPORT CIRCUIT MOTOR and pull it slightly to separate the hook.	
3. Remove the one screw of the ASSY MOTOR STEP VALVE.	
4. Remove the ASSY-SUPPORT CIRCUIT MOTOR HOUSING and pull it to separate.	
5. Remove the FAN spring by the (-)driver.	
6. Pull the FAN to direction of an arrow to separate.	
7. Remove the two screw from the MOTOR and separate the BRACKET MOTOR.	
8. Remove the inner Motor from the SUPPORT CIRSUIT MOTOR.	

3-18. Disassembling the Relay Protector O/L

How To Do	Descriptive Picture
1. Remove the 7 screws from the COMP Cover.	
2. Separate the Relay Cover with the (–) screw driver. Caution When separating the cover, the pipe may fold and if excessive force is applied, a hand may become chopped.	
3. Separate the Relay Protector O/L with the (–) screw driver. Pull the connector to separate the relay as shown by the figure.	 
Caution Perform the repair referring to the layout of the machine compartment. Check the location of the COMP and then start the disassembly.	

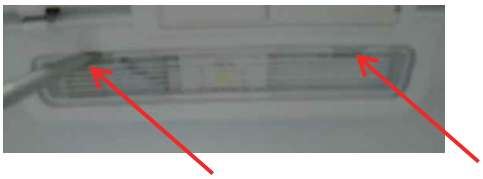
3-19. Disassembling the Step Valve

How To Do	Descriptive Picture
1. Remove the 7 screws from the COMP Cover.	
2. Remove the screw and pull the Step Valve forward to separate it.	
3. Separate the housing connector from the Step Valve.	
4. Remove the refrigerant and then separate the Step Valve from the connection pipe. Caution If you apply excessive force to form the pipe, the pipe may fold or break.	

3-20. Disassembling the Fridge Internal Lamp

How To Do	Descriptive Picture
1. Insert the (–) screw driver into the hook at the back and pull the internal lamp cover forward to separate it. Caution Take care not to scratch the cabinet or damage the screw cover. Caution Be sure to unplug the power cord before performing the operation above.	 

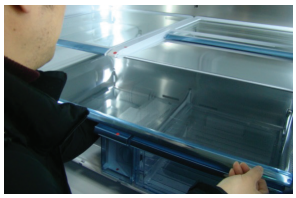
3-21. Disassembling the Freezer Internal Lamp

How To Do	Descriptive Picture
1. Insert the (–) screw driver into the hook at the back and pull the internal lamp cover forward to separate it. Caution Take care not to scratch the cabinet or damage the screw cover. Caution Be sure to unplug the power cord before performing the operation above.	
2. Separate the LED by tilting it and then separating the housing connector.	

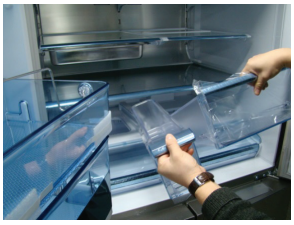
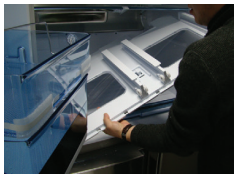
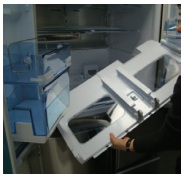
3-22. Disassembling the Tempered Glass Shelf

How To Do	Descriptive Picture
1. Lift the shelf up slightly and pull it forward to separate it.	

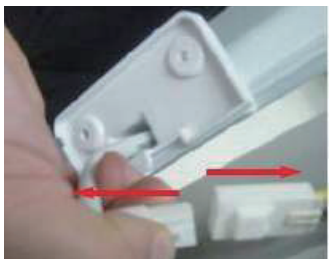
3-23. Vegetable shelf

How To Do	Descriptive Picture
1. Slide out the left vegetable drawer.	
2. Slide in the right foldable shelf.	
3. While supporting the vegetable storage shelf with one hand, lift it up with the other hand.	
4. Through the empty space revealed after removing the foldable shelf, take out the vegetable storage shelf.	
5. After removing the vegetable storage shelf. (reinsertion is in the reverse order of the removal steps.)	

3-24. CHEF PANTRY

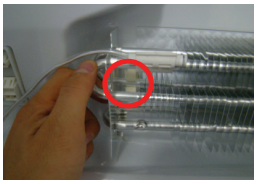
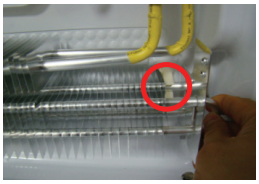
How To Do	Descriptive Picture
1. Slide out the left vegetable drawer.	
2. Remove the vegetable storage shelf.	
3. Remove the pantry cover with the left side first.	
4. After removing the Chef pantry. (reinsertion is in the reverse order of the removal steps)	  

3-25. Disassembling the French

How To Do	Descriptive Picture
1. Remove the 2 screws.	
2. Lift the French upward perpendicularly to separate it. (Refer to the figure)	
3. Separate the housing connector inside the French.	

Note
The French here refers to the part that looks like a long stick between the left and right fridge doors.
(It prevents cold air from escaping through the gap between the left and right doors.)

3-26. REF Evaporator

How To Do	Descriptive Picture
1. Separate the internal components and COVER EVAP REF.(Refer the decomposition of each components)	
2. Remove the Sensor Housing Connect.	
3. Remove the two fixture from Evaporator and pull it to separate.	 

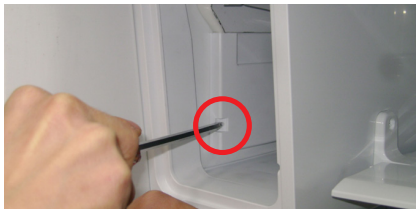
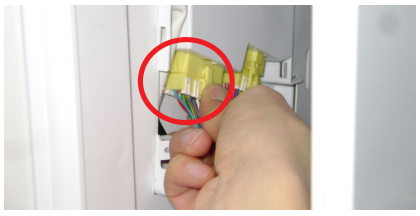
3-27. FRE/Cool Select Room Evaporator

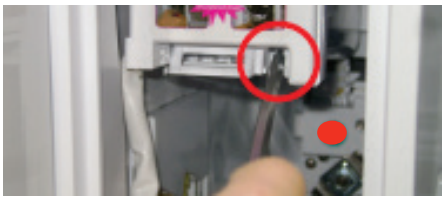
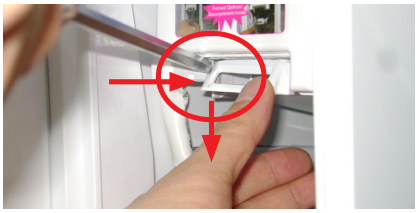
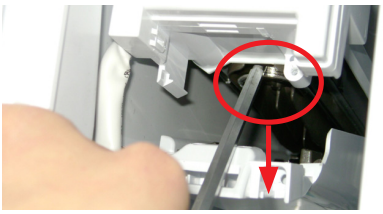
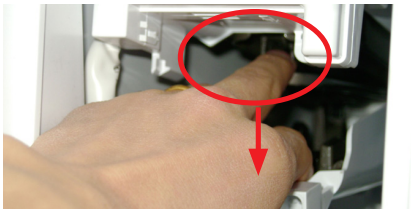
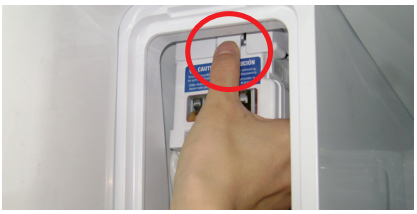
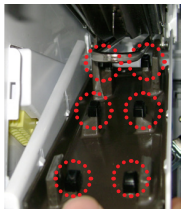
How To Do	Descriptive Picture
1. Separate the internal components and COVER EVAP REF.(Refer the decomposition of each components)	 
2. Remove the Housing Connect from the evaporator.	
3. (1) lift up the evaporate and (2), pull it to separate.	

3-28. ASSY RAIL

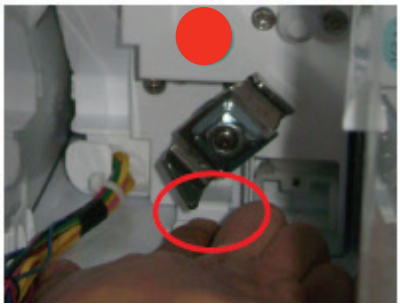
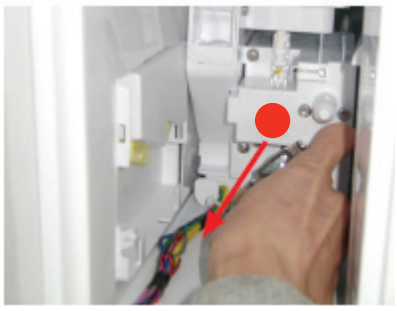
How To Do	Descriptive Picture
1. Pull the BASKET. Remove it with (–)driver. (It is to separate the hook of side.)	  (-) screw driver
2. Press the end of the RAIL hook by (–) driver and pull the RAIL.	 
3. Take off the RAIL to front.	

3-29. Ice-Maker

How To Do	Descriptive Picture
1. Wait for 5 minutes after manual defrost of freezer and fridge. (Reference of Forced Defrost method in troubleshooting)	
2. Lift up the bottom of ice bucket and pull it out.	 
3. Remove the screw from the Wire Housing Cover.	
4. Remove the Wire Housing Cover.	
5. Disconnect the Ice Maker Housing Connector.	

How To Do	Descriptive Picture
6. Remove the screw from the Duct Tray–ice.	
7. With a flat blade screwdriver, push the duct to the right and remove it from the locking tab. (Refer to the image.)	
8. With a flat blade screwdriver, pry down on the refrigerant tube to separate it from the bottom of the ice maker. (Refer to the image.)	
9. Push down the refrigerant pipe slightly and separate the refrigerant pipe and the Ice Maker Assembly completely.	
10. While pressing the Hook, pull out the Ice Maker.	
11. While pushing down the Duct–Tray–Ice, pull out the Ice Maker carefully and remove it. ※ When removing the ice maker, be careful not to damage the grommets on the tray or the refrigerant tube. (Refer to the dotted parts on the right side photo.)	 

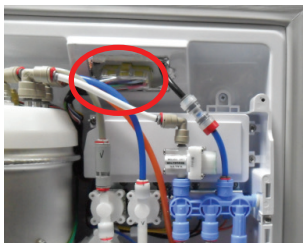
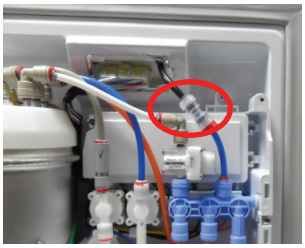
3-30. Auger Motor Fan

How To Do	Descriptive Picture
1. Disconnect the FAN-AUGER-ASSY Connector.	
2. Hold the Hook on the bottom of the FAN-AUGER-ASSY and lift it up to make it free from the Locking Tab.	
3. While lifting it up, take the FAN-AUGER-ASSY out of the Ice Maker Compartment.	

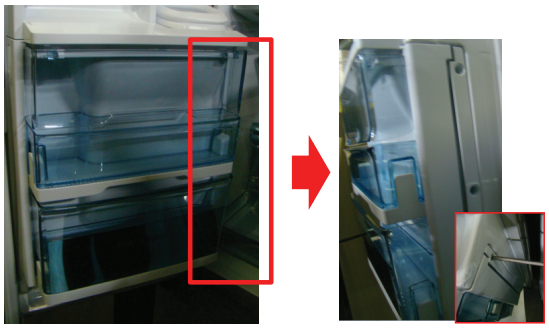
3-31. ASSY GUARD DISPENSER

How To Do	Descriptive Picture
1. Lift up the two guard from the Sparkling water Cover to remove.	
2. Put the (–) SCREW DRIVER on the middle of CAP and press and then pull out the CAP.	 
3. Remove the SCREW of both side by driver.	
4. Push up the Sparkling water Cover to remove.	

3-32. Assy Sparking Kit

How To Do	Descriptive Picture
1. After remove the "3-12. Dispenser"(36 page) and "3-31. ASSY GUARD DISPENSER"(53 page).	
2. Remove the SCREW at 3 point.	   
3. Disconnect the Ice Maker Housing Connector.	
4. Pull out the water hose(black) from the tube fitting by pushing in on the locking ring.	
5. Push up the Sparkling water Cover to remove.	

3-33. ASSY GUARD UTILITY

How To Do	Descriptive Picture
1. Remove the three SCREW of right side Hole of Rotation guard. – The rotation guard should lock when remove the screw.	
2. Hold the rotation guard to prevent fall down after remove the SCREW and operate the LEVER as shown by the figure.	
3. Hold the rotation guard with both hands and lift up to separate.	

3-34. Descriptions of CO_2 Cylinder Installation and Sparkling Water Functions (only for RF33H9960S4)

Installing a CO_2 Cylinder (For Sparkling Water Refrigerators Only - Optional)

To use the Sparkling Water feature on your refrigerator, you need to install a Sodastream CO_2 cylinder.

Purchasing CO_2 Cylinders(60L)

- Purchase cylinders(60L) at the nearest Sodastream retailer or on line at www.sodastream.com.
- USE ONLY SODASTREAM carbonators (or CO_2 cylinders, 60L). SAMSUNG and SODASTREAM are not legally responsible for any damage, including, but not limited to, property damage caused by gas leakage from the use of generic carbonators (or CO_2 cylinders, 60L). The sparkling water system in your SAMSUNG refrigerator is designed to work ONLY WITH SODASTREAM carbonators (or CO_2 cylinders, 60L)
- We suggest buying extra cylinders(60L) for later use. Store extra cylinders in a cool, open space, well out of the reach of children. Do not store cylinders in the refrigerator.

Water Line Hookup

- Make sure that you have connected the refrigerator to a water line before installing the cylinder.

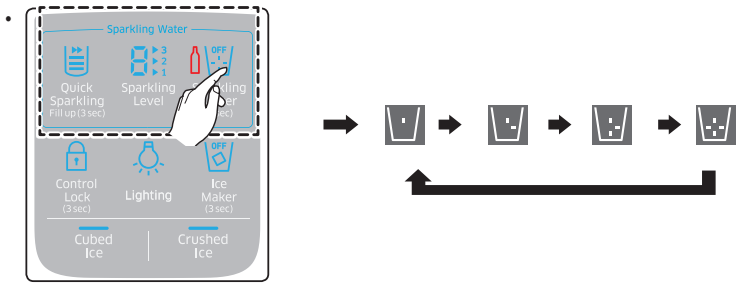
Installing a Cylinder into the Refrigerator

To install a cylinder in the refrigerator, follow these steps:

1. Open the Cylinder Cover. • The refrigerator comes from the factory with the Sparkling Water function set to Off. If the Sparkling Water function is Off, the OFF icon is displayed on the Display Panel. : Refer to Page 60 ; Turning Off the Sparkling Water Function.	
2. Attach the Cylinder to the Regulator, and then rotate it clockwise. 	
3. Push the Cylinder into the Support.	

4. Lock the Cylinder into place by pressing the Lever.
- The inner pressure of the Cylinder may make it difficult to press the lever down. Hold the lever as shown in the illustration on the right, and then push down.
- If you don't lock the cylinder into place, the refrigerator won't produce sparkling water.
- If the cylinder is not tightly connected to the Regulator, it will leak CO_2 gas, producing a hiss. If this occurs, repeat Steps 2, 3, and 4, making sure that the cylinder is firmly attached and locked into place.

5. Press the Sparkling Maker button 3 seconds for Cylinder Reset function. Wait about 20 minutes. (the amount of time needed for a medium level of carbonation) while the refrigerator makes sparkling water.
- To make sparkling water, the refrigerator injects CO2 from the CO2 cylinder into water stored in the Sparkling Water tank. The water enters the tank through the refrigerator's water supply line.



6. To remove any residual substances that may be in the water, dispense 2 or 3 large glass fulls of Sparkling Water and empty them into a sink.

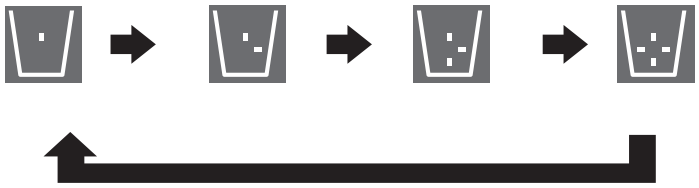
For more information about using the Sparkling Water function, see Using the Sparkling Water Function on page 58.

Using the Sparkling Water Function (For Sparkling Water Refrigerators Only - Optional)

With a Sodastream CO_2 cylinder, your refrigerator can make and dispense sparkling (carbonated) water.

Making Sparkling Water

To produce sparkling water, press and hold the Sparkling Maker button for 3 seconds. The carbonation process starts with the short lines inside the cup icon turning on one by one clockwise. When the process is complete, all short lines turn solid.



If you leave the Sparkling Water Production function on, and the amount of Sparkling Water becomes low, the refrigerator automatically enters the Sparkling Water production mode and makes more. However, if you turn off the Sparkling Water Production function, the refrigerator will not make additional sparkling water, even if there is little sparkling water left in the Sparkling Water tank.

Sparkling Water Production Time

Depending on the Carbonation Level you set (See Setting the Carbonation Level), the amount of time it takes the refrigerator to complete the sparkling water production process changes. The table below lists the production times by Carbonation Level. The refrigerator is pre–set at the factory to Level 2. Quick Sparkling enables you to produce sparkling water within 10 minutes. (It consumes more CO2 gas than in level 3)

Carbonation Level	Level 3 – High	Level 2 –Mid	Level 1 – Low
Production Time	About 30 minutes	About 20 minutes	About 10 minutes
Available Capacity	1.16 quarts (1.1 ℓ)	1.16 quarts (1.1 ℓ)	1.16 quarts (1.1 ℓ)

Dispensing Sparkling Water

To dispense sparkling water, press down the Sparkling–Selection lever. Then, push the Ice/ Sparkling Water lever gently with a glass. As time passes, the sparkling water dispensing speed can change. When the water tastes strongly carbonated, the dispensing speed can be faster. When the carbonation is weaker, the dispensing speed can slow.
The dissolved CO_2 in the sparkling water can also cause the water to pop out when you dispense it. In addition, due to the pressure fluctuations in the Sparkling Water Tank, the water stream may shake or become intermittent.
If you keep dispensing sparkling water, the water stream may become unstable or break up. This is caused by changes in pressure in the Sparkling Water Tank. It is not a defect.

Water Dripping

Some time after you have dispensed sparkling water, a few drops of sparkling water can escape from the dispenser. The water dripping is not a product defect, but a natural result of mixing CO_2 and water.

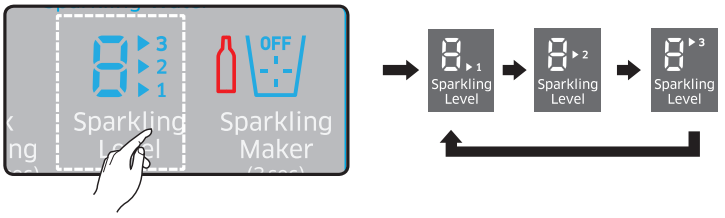
Controlling the Carbonation Level

You will change the sparkling water's carbonation level by pressing the Sparkling Level button. The carbonation level will change as follows; Medium (Level-2) → Strong (Level-3) → Weak (Level-1) → Medium (Level-2). The change in carbonation level is applied the next time the refrigerator makes sparkling water.

- If there is previously produced sparkling water inside the Sparkling Water tank, the refrigerator dispenses sparkling water with the previous carbonation level. (Again, changes in the carbonation level do not take affect until the next time the refrigerator makes sparkling water. The change does not affect sparkling water that is already made.)

- While the refrigerator is producing sparkling water, the Carbonation Level icons light up in rotation (Level–1 → Level–2 → Level–3 → Level–1, etc.). If you press the Sparkling Water button again while the carbonation level is being displayed, the carbonation level changes. The change in the carbonation level will take affect the next time the refrigerator makes sparkling water.

- The main number on the left side indicates the sparkling level of the current sparkling water, while the small number on the right side is used to specify the sparkling level for the next process. Even if you change the sparkling level while the refrigerator is producing sparkling water, the change is not applied to the current process but is applied to the next process.



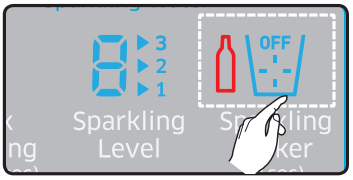
The Carbonation Level is set to Level 2 at the factory. If the sparkling water tastes too strong or too weak, change the carbonation level. Level 1 provides a milder carbonation, Level 3 a stronger carbonation.

- If you change the Carbonation Level while the refrigerator is making sparkling water, the Level change is not applied to the water being currently carbonated. Instead, the Level change is applied to the next batch of sparkling water the refrigerator produces, after the previous batch is consumed.
- If there is a power interruption when the refrigerator is making sparkling water, the refrigerator may re–start the carbonation process when power returns and put too much carbonation into the water. If this occurs, we recommend throwing out the overly carbonated water and starting the process again.
- The lifetime of the CO_2 cylinder can vary, depending on the Carbonation Levels you choose.

DISASSEMBLY AND REASSEMBLY

Turning Off the Sparkling Water Function

To turn off the Sparkling Water function, press the Sparkling Maker button for 3 seconds.



Press for 3 seconds

Any sparkling water remaining in the Sparkling Water tank after you have turned off the Sparkling Water function can still be dispensed.

Replacing a Cylinder

If the cylinder icon ( ) turns on, replace the current cylinder with a new one.
To replace a cylinder, follow these steps:

1. Lift up the Lever holding the cylinder in place.	
2. Pull the Cylinder out of the Support.	
3. Rotate the Cylinder counterclockwise to remove it from the Regulator.	
4. To install a new cylinder, follow the directions for installing a cylinder starting at Step 2 in Installing a Cylinder into the Refrigerator.	

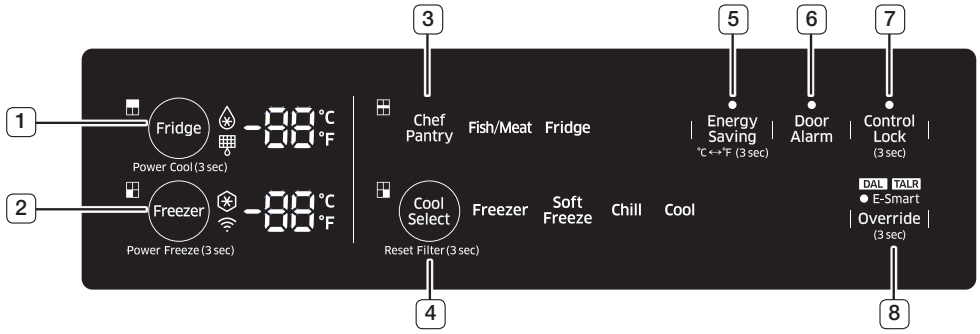
Notes

- If you open the refrigerator door while the refrigerator is making sparkling water, it will stop. When you close the door, it will resume making sparkling water in about a minute.
- If you keep dispensing sparking water, the water stream may become unstable or break up. This is caused by changes in pressure in the Sparkling Water Production Tank. It is not a defect.
- If the water hose is kinked or water is not supplied properly, the Carbonation Level of the Sparkling Water will be high. This occurs because the same amount of carbon dioxide (CO_2) is dispensed by the Cylinder regardless of the amount of water in the Production Tank.
- If the Sparkling Water function is on and you dispense about 1.16 quarts (1.1 L) of sparkling water, the refrigerator automatically begins making more sparkling water.
- If you are not going to be home for a long period of time, do not want to use the Sparkling Water function any more, or you are moving:
  1. Press the Sparkling Making button for three seconds to turn off the Sparkling Water function.
  2. Empty the Sparkling Water tank by dispensing all the water in the tank.
  3. Remove the CO_2 Cylinder.
- Dispensed sparkling water contains some of the CO2 gas in the sparkling water tank, causing the water to disperse. To prevent this, place the cup a little up to the dispenser.
- If you remove the cylinder that has gas remaining, the cylinder icon on the display may not turn on for a certain time.

Function to Check the Remaining Quantity of CO2 in the Cylinder for Service Technicians :

To check how much CO_2 is left in the Cylinder, press the Energy Saver button for 5 seconds with the Fridge Door being open. Then, CO_2 will be injected for a second. This function can be used in all conditions; whether it is producing the Sparkling Water or not.

3–35. USING THE MAIN CONTROL PANEL



(1) Fridge (Hold 3sec for Power Cool)

The Fridge button serves two purposes:

- To set the Fridge to your desired temperature.
- To turn the Power Cool function on and off.

1. To set the Fridge temperature, touch the Fridge button to set the refrigerator to the temperature you want. You can set the temperature between 44 °F (7 °C) and 34 °F (1 °C) .
2. Power Cool function

Touch and hold this button for 3 seconds to decrease the time needed to cool products in the Refrigerator. It can be helpful if you need to quickly cool easily spoiled items or if the temperature in the fridge has warmed dramatically (For example, if the door was left open).

(2) Freezer (Hold 3 sec for Power Freeze)

The Freezer button serves two purposes:

- To set the Freezer to your desired temperature.
- To turn the power freezer function on and off.

1. To set the Freezer temperature, touch the Freezer button to set the Freezer to your desired temperature. You can set the temperature between 5 °F (-15 °C) and -8 °F (-23 °C).
2. Power Freezer function

Touch and hold this button for 3 seconds to decrease the time needed to freeze products in the Freezer.
It can be helpful if you need to quickly freeze easily spoiled items or if the temperature in the freezer has warmed dramatically (For example, if the door was left open).
When you use this function the energy consumption of the refrigerator will increase. Remember to turn it off when you don't need it and return the freezer to your original temperature setting. If you need to freeze a large amount of food, activate Power Freeze function at least 24 hours before.

(3)	Chef Pantry
Chef Pantry	Chef pantry will change to Fish/Meat or Fridge Mode automatically depending on the set fridge temperature. The Fish/Meat Mode lets you store fish and meat at its freshest for a short period of time. To store fish or meat for longer, put it into the Cool Select Room and select the “Freezer” or “Soft Freeze” functions. • If you set the fridge temperature to 34~36 °F, the Chef Pantry changes to Fish/ Meat Mode and the Fish/Meat icon lights. The Chef Pantry is set to 30 °F (-1 °C) in the Fish/Meat mode. • If you set the fridge temperature to 37~44 °F, the Chef Pantry changes to Fridge Mode and the Fridge Icon turns on.

(4)	CoolSelect (Hold 3 sec for Reset Filter)
	• The CoolSelect button lets you set the Cool Select Room on the bottom right of your refrigerator to one of four settings: Freezer, Soft Freezing, Chill, or Cool. • To reset the water filter life indicator.After you replace the water filter, touch and hold this button for 3 seconds to reset the water filter life indicator.
Freezer	Touch Freezer to set the Cool Select Room to the same temperature as the freezer. • Use this setting to keep frozen food fresh.
Soft Freeze	• Touch Soft Freeze to set the temperature in the Cool Select Room to 23 °F (-5 °C) .This feature helps keep meat and fish fresh longer.
Chill	• Touch Chill to set the temperature of the Cool Select Room to 30 °F (-1 °C).
Cool	• Touch Cool to set the temperature of the Cool Select Room to 41 °F (5 °C). You can keep water, juice, soft drinks, beer, etc. cold.

	Filter
	**Water filter usage** This icon lights when you need to change the filter, usually after the refrigerator has dispensed about 300 gallons of water (after about 6 months). The icon will blink red for several seconds when you open or close the door. After you install the new water filter, reset the filter indicator by touching and holding the "CoolSelect(Hold 3 sec for Reset Filter)" button for 3 seconds. • If water is not dispensing or dispensing slowly, you need to replace the water filter because the water filter is clogged. • Some areas have large amounts of lime in their water, which causes the water filter to clog more quickly.

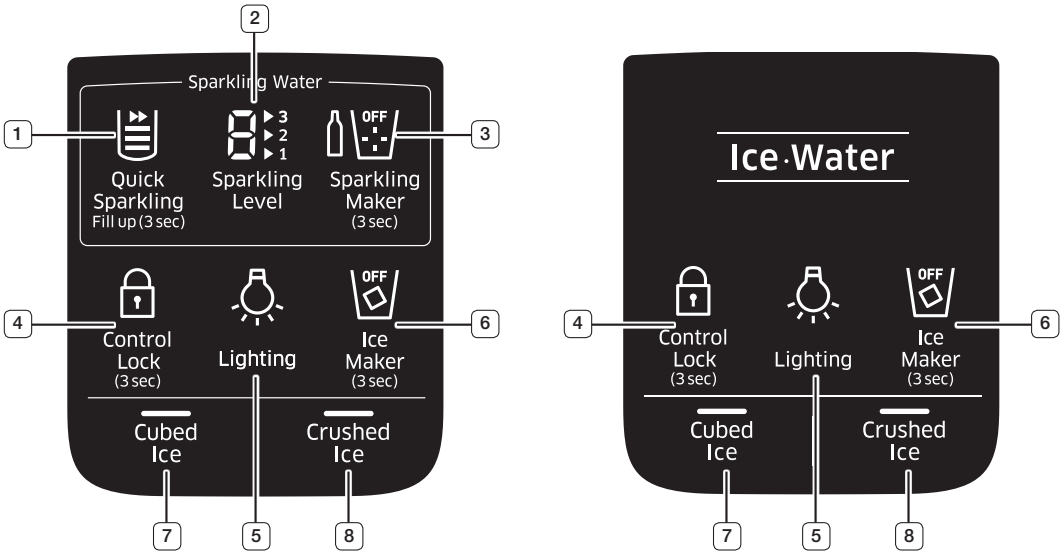
(5)	Energy Saving (Hold 3 sec for °C↔°F)
Energy Saving	Touching this button turns Energy Saving mode on and off. When you turn Energy Saving on, the Energy Saving icon lights. Turn Energy Saving off and the icon goes off. The Energy Saving function is set to “ON” in the factory. If condensation or water drops appear on the doors, turn the Energy Saving mode off. Touch and hold this button for 3 seconds to switch the temperature units between °C and °F.

(6)	Door Alarm
Door Alarm	To turn the door open alarm on and off If the door alarm is set to On, an alarm beeps if any refrigerator door is left open for more than two minutes.The beeping stops when you close the door. The door alarm function is pre-set to On in the factory. You can turn it off by touching and then releasing this button. You can turn it back on in the same fashion. The icon lights up when the function is on. When the Door Alarm function is on and the alarm sound is triggered, the Door Alarm Icon will blink while the alarm sounds.

(7)	Main Control Panel Lock(3 sec)
Control Lock	Touch and hold the Control Lock button for 3 seconds to lock the Main Control Panel. If Main Control Lock is on, none of the buttons on the Main Control Panel work. (However, the dispenser control panel and the dispenser level will continue to work, because the dispenser control panel has its own, independent Control Lock button.) To unlock the Main Control Panel, touch and hold the main Control Lock button for 3 seconds again. • The Main Control Panel locks automatically one minute after the last button input, after you have set Main Lock Control on. • If you Lock the Dispenser Control Panel, the Lock Icon ( ) on the STAR DISPLAY is displayed. The Dispenser Control Lock doesn't affect the Main Control Panel. The Main Control Panel control panel has its own lock button. If you lock the Main Control Panel, the dot on the Main Control Lock (Control Lock (3 sec)) lights.

Cooling Off Mode
- North American (US, Canada) Models Only ; Cooling Off mode (also called Shop mode), is designed for use by retailers when they are displaying refrigerators on the shop floor. In Cooling Off mode, the refrigerator's fan motor and lights work normally, but the compressors do not run, and the refrigerator and freezer do not get cold. To start Cooling Off mode, touch and hold the Fridge, Freezer, and Door Alarm buttons for 5 seconds during normal operation. The refrigerator chime sounds and the temperature display flashes "OFF". The Star Display blinks slowly on and off when the refrigerator is in Cooling Off mode (17 seconds on, 3 seconds off). To cancel Cooling Off mode, touch and hold the Fridge, Freezer, and Door Alarm buttons again for 5 seconds.

(8)	Override (3 sec)
	The Override function activates/deactivates Smart Grid. Touch and hold the Override button for 3 seconds to set/clear the Override function.



(1)	**Fridge (Hold 3sec for Power Cool)**
	When you touch the Quick Sparkling button, the (▶▶) icon lights and the refrigerator makes sparkling water rapidly at the level indicated by the Sparkling Level icon. If there is no sparkling water in the Sparkling Water tank, the refrigerator will begin making sparkling water immediately. If there is sparkling water in the tank, the refrigerator applies the Quick Sparkling function the next time it makes sparkling water.
	When you replace the SodaStream carbonator, press the 'Quick Sparkling/Fill up (3 sec)' button for 3 seconds to activate the Fill up function.
	The refrigerator will fill the sparkling water tank with water and inject CO_2 gas into the water to make sparkling water. The sparkling level of the water may differ from the set level, depending on the amount and CO_2 concentration of the sparkling water remaining in the tank. If the tank is empty or the concentration is very low, the refrigerator will make sparkling water at the level Indicated by the Sparkling Level icon.
	The Quick Sparkling icon (▶▶) also indicates the amount of sparkling water in the sparkling water tank. When the tank is full, three bars light. The number of bars lit decreases as the amount of sparkling water decreases.

(2)	Sparkling Level
	The refrigerator can make sparkling water in three sparkling levels: low (1), medium (2), and high (3). To set the sparkling level, tap the Sparkling Level button. Each time you tap the button, the small numbers on the right side (▸1, ▸2, ▸3) change. Stop when you have selected the sparkling level you want. The next time the refrigerator makes sparkling water, it will make it at the sparkling level you have selected. The large number on the left (8) indicates the current sparkling level. If there is previously produced sparkling water inside the Sparkling Water tank, the refrigerator dispenses sparkling water at this level. (Changes to the sparkling level do not take effect until the next time the refrigerator makes sparkling water.

(3)	Sparkling Maker (3 sec)
	Touch and hold for 3 seconds to turn on the sparkling water maker. Touch and hold for 3 seconds again to turn it off. If the SodaStream carbonator runs out of CO_2, the icon turns on (▯) and you must replace the carbonator with a new one. The Cylinder icon may turn on and off briefly several times when the cylinder has a little CO_2 remaining.

(4)	Dispenser Control Panel Lock (3 sec)
	Touch this button for 3 seconds to turn on Dispenser Control Lock which locks the dispenser and dispenser panel buttons so the buttons can not be used. The Control Lock icon lights up to indicate you've activated the Control Lock function. Touch and hold this button for 3 seconds to unlock.

(5)	Lighting
	Touching this button sets the Dispenser LED lamp (under the display) to continuous mode so that it stays on continuously. The button also lights up. If you want the Dispenser lamp to come on only when some one uses the dispenser, touch this button to turn the continuous mode off.

(6)	Ice Maker (3 sec)
	To turn off or on the ice maker, touch and hold the Ice Maker button for 3 seconds. The 'Off' LED lights and the Ice-Maker stops making ice. To turn the ice maker on, touch and hold the Ice Maker button again for 3 seconds. The 'Off' LED turns off. We recommend you stop ice making if the following occur: - There is enough ice in the ice bucket. - You want to save water and energy. - Water is not being supplied to the refrigerator. If the ice maker function is ON, and the water line is not connected, there will be a water valve noise from the back of the unit. If this occurs, touch and hold the Ice Maker button for 3 seconds to turn the ice maker off.

(7) (8)	Cubed Ice Crushed Ice
	Touch the Cubed Ice or Crushed ice button to select the type of ice you want to dispense. Each time you touch the button, the cubed and crushed ice modes alternate and the Cubed or Crushed ice icon lights up, indicating your selection.

4. TROUBLESHOOTING

4-1. Functions for failure diagnosis

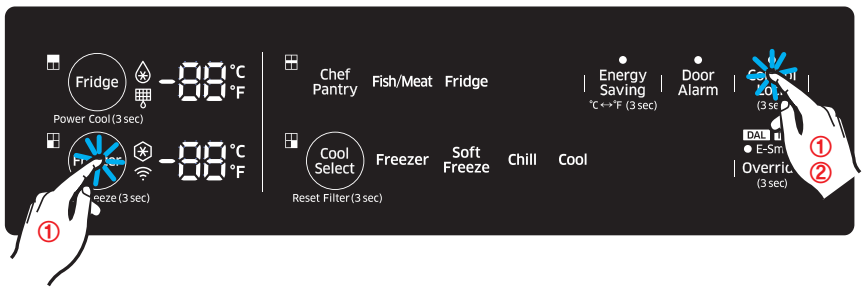
4-1-1. Test mode (manual operating / manual defrosting function)

- ① If Freezer Key + Control Test Key are pressed simultaneously for 6 seconds, ALL ON/OFF will blink with 0.5interval for 4 seconds.
- ② If take the finger off from above keys and press Control Lock, it will be change to the test mode and all displays on the front of panel will be off.

- If test key on the front of panel is pressed within 15 seconds after the test mode, it will be operated as below sequence :
  Forced Operation (FF) → CoolSelect Room OFF Forced Operation (OF c) → 2 Comp Simultaneous Forced Operations (Fr) → Forced F/CV/R (Fan) Defrosting (Fd)
  ※ Test Key : Fridge, Freezer, Cool Select , Control Lock

- If test key on the front of panel is not pressed within 15 seconds after the test mode, the test mode will be canceled and it will be returned to previous mode.

1) Manual operation function



2) Forced Operating function

2–1) If you press the test Key once in Test Mode, the Display shows "FF" indicating a Forced Operation. At this time, the buzzer sounds a beep to indicate a Forced Operation.

2–2) In the Forced Operation (FF), if you press the test Key again, "OF c" is displayed. At this time, if you press the test Key again, "Fr" is displayed.

2–3) If Forced Operation is selected, the compressor immediately runs without the 10 minute delay in any operating mode.
At this time, if defrosting was in progress, defrosting is immediately stopped and the Forced Operation is executed. (Take care at this time not to overload the compressor because if you run the Forced Operation when the compressor is about to stop, it may overload the compressor.)

2–4) If Forced Operation is selected, the F COMP and the Freezer Fan run for 24 hours continuously. The Fridge will run as follows depending on the Forced Operation settings and the model.

Display		Operating Time	Operation		
Freezer	Fridge		F Comp. (Freezer)	R Comp. (Fridge)	Cool Select Room
FF		24hr	Continuous operation	The temperature is controlled.	Freezer: Continuous operation
					A mode other than Freezer mode: The temperature is controlled.
OF	c	24hr	Continuous operation	The temperature is controlled.	Off
Fr		24hr	Continuous operation	Continuous operation	Freezer: Continuous operation
					A mode other than Freezer mode: The temperature is controlled.

2–5) If Forced Operation is selected, the freezer temperature is automatically set to –8℉(–23℃) and the fridge temperature is set to 34℉(1℃) and they are displayed on the Display Panel.

2–6) When the Forced Operation is running, the Power Freezing function does not work.
Even if you select the Power Freezing function, the Power Freezing icon will light up and then turn off automatically in approximately 10 seconds.

2–7) To abort the Forced Operation, turn the power off and then on again or select Release Test Mode in Step 3) below.

2–8) The Forced Operation beeping alarm continues (0.5 seconds ON / 0.5 seconds OFF) until the Forced Operation is finished and this cannot be muted.

※ The Forced Operation (OF c) function is to check the values of the TDM model.

3) Forced defrosting function

3–1) If you press the test Key again while the Forced Operation (Fr) is running, Fd is displayed on the Display, the Forced Operation (Fr) is cancelled immediately and the Forced defrosting (Fd) operation runs.

3–2) If Forced Freezing, Cool Select defrosting or Fridge Compartment defrosting (Fan Defrost) (Fd) begins, a beeping sound will be heard for 2 seconds and then the sound will be turned on for 0.5 seconds and then off for 0.5 seconds repeatedly while the Forced defrosting function runs.

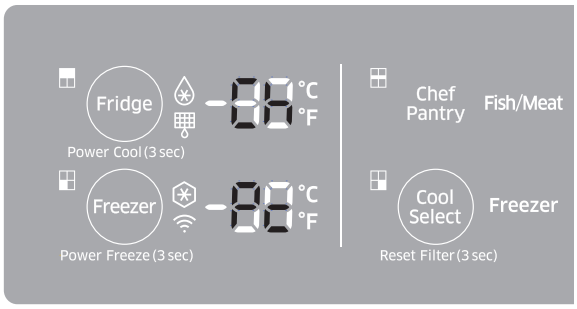
4) Releasing Test Mode

4–1) When the refrigerator is performing the defrosting operation of both the freezer and the fridge compartments through the Forced Operation, if you switch the Display Panel to Test Mode and press the test Key again, the defrosting operation of the freezer and the fridge compartments is released and the refrigerator returns to normal operations. Alternatively, if you turn the main power switch off and then on, Test Mode is released.

4–1–2. Display function of Communication error

1) Display function when Panel → MAIN MICOM communication has error

1–1) If there is no answer for 10 seconds after the panel micom received the requirement of communication, "Pc – Ch" display on the panel PCB will be ON/OFF alternately until the communication error is canceled. (0.5 sec ALL ON, 0.5 sec ALL OFF alternately)



2) Display function when Panel → MAIN MICOM OPTION has error

2–1) "OP – Ch" code is repeatedly ON/OFF until Option error settles down.

3) Display function when Dispenser Panel → MAIN MICOM communication has error

3–1) If there is no answer for 10 seconds after the dispenser panel micom received the requirement of communication, dispenser display on the panel PCB will be ON/OFF alternately until the communication error is canceled. (0.5 sec ALL ON, 0.5 sec ALL OFF alternately)

4) Display function when Dispenser Panel ↔ MAIN MICOM OPTION has error

4–1) Dispenser display on the panel PCB will be ON/OFF alternately.

(0.5 sec ALL ON, 1.5 sec ALL OFF alternately)

4–1–3. Self–diagnostic function

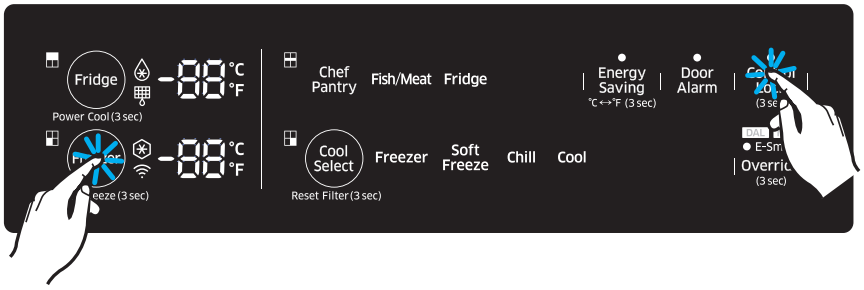
1) Self–diagnostic function in the Initial power ON

1–1) Micom operates self–diagnostic function to check the temperature sensor condition within 1 second when the refrigerator turned On initially.

1–2) If bad sensor is detected by the self–diagnostic function, the applicable display LED will blink for 0.5 sec. At this moment, there is no beep sound.(Refer to self–diagnostic CHECK LIST)

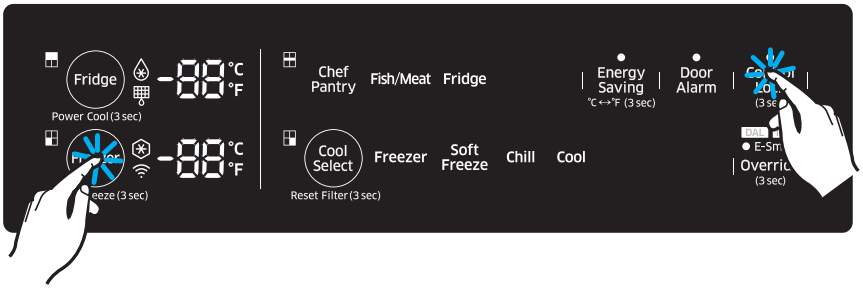
1–3) Self–diagnostic button is recognized only when the error is displayed by the bad sensor. Display does not operate normally but temperature control will be controlled by the emergency operation.

1–4) When the error is detected by self–diagnosis, the error can be canceled automatically if all troubled sensors are corrected or Self–diagnostic function key (Freezer + Control Lock) are pressed simultaneously for 10 seconds.
(Return to normal display mode)



① If Freezer + Control Lock are pressed simultaneously for 10 seconds, the error mode by self–diagnosis will be canceled.

2) Self–diagnostic function during normal operation



② If Freezer + Control Lock are pressed simultaneously for 10 seconds, the error mode by self–diagnosis will be canceled.

2–1) If Freezer + Control Lock are pressed simultaneously for 6 seconds during normal operation, the temperature setting display will operate for 4 seconds (ON/OFF 0.5sec each).
If Freezer + Control Lock are pressed simultaneously for 10 seconds (including above 4 seconds), self–diagnostic function will be selected.

2–2) At this moment, self–diagnostic function will be returned with buzzer sound 'ding–dong'.
If there is an error, display of error will be operated for 60 seconds and then return to normal condition whether problem is corrected or not. (Refer to self–diagnosis CHECK LIST)

2–3) Input by button is not accepted during self–diagnostic function.

TROUBLESHOOTING

* Detailed information about self-diagnostic error codes

※ For sensors (no. 1~7), refer to the sensor check points of the Main PCB

Error Code		Part	Display Criteria	To check if the part is normal
1		Freezer Sensor	The sensor housing separating, incomplete contact, open-circuited wire, short-circuit and abnormal temperature errors are displayed when the temperature measured by the sensor is +50 ℃ or higher or −50 ℃ or lower.	The voltage between the Main PCB CN30 pins1 and 8 should be within the 4.5V~1.0V range.
2		Fridge Sensor		The voltage between the Main PCB CN30 pins3 and 8 should be within the 4.5V~1.0V range.
4		Freezer compartment defrosting sensor		The voltage between the Main PCB CN30 pins2 and 8 should be within the 4.5V~1.0V range.
5		Fridge compartment defrosting sensor		The voltage between the Main PCB CN30 pins4 and 8 should be within the 4.5V~1.0V range.
6		External air sensor		The voltage between the Main PCB CN41 pins1 and 2 should be within the 4.5V~1.0V range.
7		Pantry Room Sensor		The voltage between the Main PCB CN30 pins8 and 10 should be within the 4.5V~1.0V range.
9		Cool Select Room sensor		The voltage between the Main PCB CN30 pins5 and 8 should be within the 4.5V~1.0V range.
11		Cool Select Room defrosting sensor		The voltage between the Main PCB CN30 pins6 and 8 should be within the 4.5V~1.0V range.
13	E or C	Humidity sensor	This error is displayed while the corresponding fan motor is operating and a feedback signal line contact error, motor wire separation or motor error occurs.	The voltage between the Main PCB CN41 pins3 and 4 should be within the 4.5V~1.0V range.
14		Ice Maker (Fridge) Sensor Error	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp : higher than 149°F(+65℃) or lower than −58°F(−50℃)	The voltage between the Main PCB CN90 pins3 and 9 should be within the 4.5V~1.0V range.
15		Ice Room Sensor Error		The voltage between the Main PCB CN30 pins8 and 9 should be within the 4.5V~1.0V range.
16		Fridge humidity sensor	This error is displayed while the corresponding fan motor is operating and a feedback signal line contact error, motor wire separation or motor error occurs.	The voltage between the Main PCB CN30 pins7 and 8 should be within the 4.5V~1.0V range.
17		Sparkling-Sensor	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Abnormal Sensing Temp : higher than 149°F(+65℃) or lower than −58°F(−50℃)	The Voltage of ASSY KIT PCB CN32 – "1" CN32–"3": shall be between 4.5v~1.0V
21		Freezer Fan Error	The error is displayed while the corresponding fan motor is operating and a feedback signal line contact error, motor wire separation or motor error occurs.	The voltage of the MAIN PCB CN76 1↔4 : should be between 7V~12V.
22		Fridge Fan Error		The voltage of the MAIN PCB CN76 1↔3 : should be between 7V~12V.
23		C-Fan Error		The voltage of the MAIN PCB CN76 1↔2 : should be between 7V~12V.

TROUBLESHOOTING

Error Code		Part	Display Criteria	To check if the part is normal
24	E or C	Freezer Defrosting Error	The separation of the freezer compartment defrosting heater housing part, contact error, disconnection, short circuit or temperature fuse error. One of these error codes is displayed if the defrosting operation of the freezer or Cool Select Room does not finish even after the continuous heating operation has been performed for 120 minutes.	After separating the MAIN PCB CN70 wire from the PCB, check the resistance between CN70 7 and 1. (For the resistance value, refer to the electric wiring diagram). For 0 Ohm, check if the heater is short-circuited. For ∞ Ohm, check if the wire or temperature fuse is open-circuited.
29		Cool Select Room defrosting Error		After separating the MAIN PCB CN70 wire from the PCB, check the resistance between CN70 3 and 1. (For the resistance value, refer to the electric wiring diagram). For 0 Ohm, check if the heater is short-circuited. For ∞ Ohm, check if the wire or temperature fuse is open-circuited.
31		Cool Select Room Fan Error	One of these error codes is displayed in case of the feedback signal line contact error, the motor wire separation or the motor error when the fan motor starts to run.	The voltage of the MAIN PCB CN76 1↔5 : should be between 7V~12V.
39		Ice Maker (Fridge) Function Error	It occurs when there is a defect in removing ice cubes or in making it paralleled [When there is an error while doing self-diagnosis of the Initial Motor Rotation.]	After replacing the Ice Maker (Fridge), plug in the Fridge and check if the Ice Maker operates normally
40		Ice Maker Fan Error	When the related Fan Motor operates, it occurs if the contact of the Feed Back Signal Wire is defective, the Motor Wire is slipped out or the Motor is defective.	The voltage of the MAIN PCB CN76 1↔6 : should be between 7V~12V.
41		Main↔Panel Error	A communications error between the Main and the Panel PCBs	Since an oscilloscope is required for the examination, it is recommended replacing the Main PCB and then checking the problem again.
44		Main - F Comp. Inverter Communication Error	Display 44E in the panel : F Comp. Inverter MICOM ↔ Main MICOM communication error.	Actually, If there is not a problem, it is desirable to replace Main and Inverter PCB With the oscilloscope after a cable problem confirming.
45		Main - R Comp. Inverter Communication Error	Display 45E in the panel : R Comp. Inverter MICOM ↔ Main MICOM communication error.	
46		I/O Expander Communication Error	Display 46E in the panel : I/O Expander ↔ Main MICOM communication error.	It is desirable to replace Main PCB.
47		Main↔Dispenser Panel Error	A communications error between the Main and the Dispenser Panel PCBs	Since an oscilloscope is required for the examination, it is recommended replacing the Main PCB and then checking the problem again.

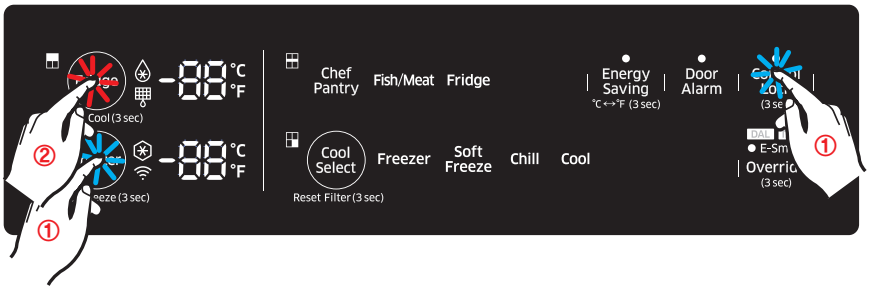
TROUBLESHOOTING

Error Code		Part	Display Criteria	To check if the part is normal
61		Fridge Ice Duct Heater Error	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Defective Thermistor	Remove the MAIN PCB CN51 connector form the MAIN PCB and read the continuity between CN51 #6 ↔ contact point R737 and R776.(Refer to the Block Diagram for the Resistance Value. When it reads 0 Ohm, check the Heater short and when it reads ∞ Ohm, check if the Wire is open or slipped out.
62		Pantry Fan Error	The error is displayed while the corresponding fan motor is operating and a feedback signal line contact error, motor wire separation or motor error occurs.	The voltage of the MAIN PCB CN76 1↔4 : should be between 7V~12V.
65		Fridge Ice Bucket Heater Error	Connector Slipped-Out or Open-Contact, Wire Cut or Short-Circuited, Defective Thermistor	Remove the MAIN PCB CN51 connector form the MAIN PCB and read the continuity between CN51 #7 ↔ contact point R737 and R776.(Refer to the Block Diagram for the Resistance Value. When it reads 0 Ohm, check the Heater short and when it reads ∞ Ohm, check if the Wire is open or slipped out.
66	E or C	Door Handle Heater Error	Door Handle Heater Open Error	Remove the MAIN PCB CN51 connector form the MAIN PCB and read the continuity between CN51 #2 ↔ CN51 #3(Refer to the Block Diagram for the Resistance Value. For ∞ Ohm, check if the wire is open-circuited or not connected.
71		The F compartment abnormal high-temperature indicator blinks	When the freezer temperature is abnormally high or the freezer door is open for a certain period of time and the freezer temperature increases, the freezer display blinks.	The temperature has been abnormally increased. Check if the door has been open for a long time or if hot food has been stored in the compartment. If the reason for the error is removed, the error code disappears after a pre-determined period of time.
72		The R compartment abnormal high-temperature indicator blinks	When the freezer temperature is abnormally high or the fridge door is open for a certain period of time and the fridge temperature increases, the fridge display blinks.	Check if the door has been open for a long time or if hot food has been stored in the compartment. If the reason for the error is removed, the error code disappears after a pre-determined period of time.
81		F Comp start failure error	The error code is displayed when the compressor has failed to start.	Check the soldering status of the inverter PCB. (Check if any parts have short-circuited). Check if the DC 15V output is less than 13.5V. Check the Comp and Cycle.
82		F Comp IPM Fault Error	The error code is displayed when the compressor IPM fault error has occurred.	
83		F Comp location detection error	The error code is displayed when the compressor location detection failed.	Check the compressor wire connections. Check the soldering status of the inverter PCB. (Check if any parts have short-circuited). Check the Comp and Cycle.
84		F Comp motor constraint error	The error code is displayed when the compressor motor is constrained.	Check if the compressor and the Cycle is normal. Check the input voltage. Check the soldering of the inverter PCB. (Check if any parts have short-circuited.)
85		F Comp low voltage error	The error code is displayed when the AC Input Voltage is too low.	Check the input voltage. (This error occurs when the input voltage is AC 106 V or lower.)

TROUBLESHOOTING

Error Code		Part	Display Criteria	To check if the part is normal
86		F Comp over voltage error	The error code is displayed when the AC Input Voltage is too high.	Check the input voltage. (This error occurs when the input voltage is AC 310V or higher.)
87		R Comp start failure error	The error code is displayed when the compressor has failed to start.	Check the soldering status of the inverter PCB. (Check if any parts have short-circuited). Check if the DC 15V output is less than 13.5V. Check the Comp and Cycle.
88		R Comp IPM fault error	The error code is displayed when the compressor IPM fault error has occurred.	
89		R Comp location detection error	This error code is displayed when an abnormal current is detected in the compressor.	Check the compressor wire connections. Check the soldering status of the inverter PCB. (Check if any parts have short-circuited). Check the Comp and Cycle.
90	E or C	R Comp motor constraint error	The error code is displayed when the compressor motor is constrained.	Check if the compressor and the Cycle is normal. Check the input voltage. Check the soldering of the inverter PCB. (Check if any parts have short-circuited.)
91		R Comp low voltage error	The error code is displayed when the AC Input Voltage is too low.	Check the input voltage. (This error occurs when the input voltage is AC 106 V or lower.)
92		R Comp over voltage error	The error code is displayed when the AC Input Voltage is too high.	Check the input voltage. (This error occurs when the input voltage is AC 310V or higher.)
93		Sparkling Tank Overflow	Display error when open error is detected by sparkling tank overflow : separation of Sparkling Tank Overflow Sensor housing part, contact error, disconnection, short circuit.	The voltage of ASSY PCB KIT CN30- "1" CN30-"2": shall be over 4.5V
94		Water Supply to Sparkling Tank Error	Display error when open error is detected by water supply to sparkling tank error : seperation of Sparkling Tank Water Level Sensor housing part, contact error, disconnection, short circuit.	The voltage of ASSY PCB KIT CN31- "1" CN31-"2": shall be over 4.5V

4-1-4. Display function of Load condition



① Freezer + Control Test Key are pressed simultaneously for 6 seconds, ALL ON/OFF will blink with 0.5interval for 4 seconds.

② If take the finger off from above keys and press Fridge, load condition mode will be started.

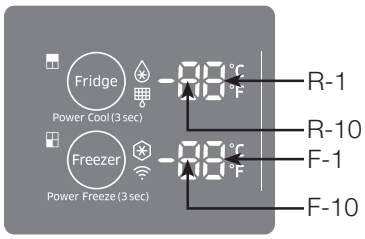
1) If Freezer + Control Test Key are pressed simultaneously for 6 seconds during normal operation, the temperature setting display of fresh food and freezer compartments will blink ALL ON/OFF with 0.5 for 4 seconds.

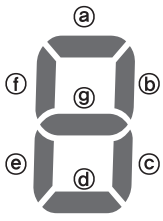
2) At this moment, If Fridge Key after Freezer + Control Test Key is pressed, load condition display mode will be returned with alarm. At LED all on state, only load condition display will blink ON/OFF with 0.5 seconds interval.

3) Load condition display mode shows the load that micom signal is outputting.
However, It means that micom signal is outputting, it does not mean whether load is operating or not. That is to say that though load operation is displayed, load could not be operated by actual load error or PCB relay error etc. (This function would be applied at A/S.)

4) Load condition display function will maintain for 30 seconds and then normal condition will be returned automatically.

5) Load condition display is as below.

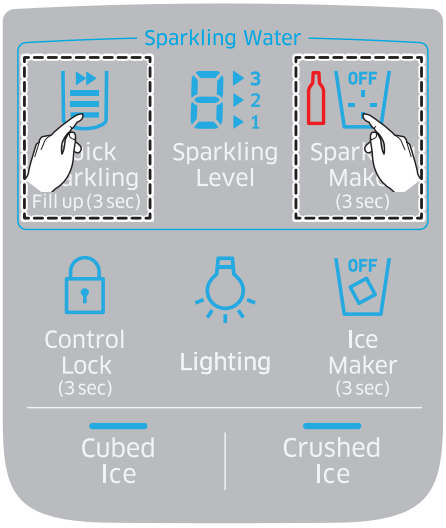




* Load mode checklist

No.	Part	Display (LED)	Description
1	R-FAN HIGHEST	R-1-ⓐ,ⓑ	In the case of the R-FAN HIGHEST operation, the corresponding LED is turned on.
2	R-FAN HIGH	R-1-ⓐ	In the case of the R-FAN HIGH operation, the corresponding LED is turned on.
3	R-FAN LOW	R-1-ⓑ	In the case of the R-FAN LOW operation, the corresponding LED is turned on.
4	R Comp.	R-1-ⓓ	In the case of the R COMP operation, the corresponding LED is turned on.
5	Overload	R-1-ⓔ	If the external air temperature is 34℃ or higher, the corresponding LED is turned on.
6	Low Temperature	R-1-ⓕ	If the external air temperature is 21℃ or less, the corresponding LED is turned on.
7	Normal	R-1-ⓔ,ⓕ (ALL LED Off)	When the external temperature is within the range of 22℃ ~ 33℃.
8	Demo Mode	R-1-ⓖ	The LED is turned on in Demo Mode.
9	PANTRY-FAN	R-10-ⓐ	In the case of the PANTRY-FAN operation, the corresponding LED is turned on.
10	Ice maker full	R-10-ⓓ	When the Ice Maker's Bucket is full, applicable LED ON
11	F COMP	F-1-ⓐ	In the case of the F COMP operation, the corresponding LED is turned on.
12	F-FAN HIGHEST	F-1-ⓑ,ⓒ	In the case of the F-FAN HIGHEST operation, the corresponding LED is turned on.
13	F-FAN HIGH	F-1-ⓑ	In the case of the F-FAN HIGH operation, the corresponding LED is turned on.
14	F-FAN LOW	F-1-ⓒ	In the case of the F-FAN LOW operation, the corresponding LED is turned on.
15	F compartment defrost heater	F-1-ⓓ	The LED is turned on when the freezer defrosting heater operates.
16	C-FAN HIGHEST	F-1-ⓔ,ⓕ	In the case of the C-FAN HIGHEST operation, the corresponding LED is turned on.
17	C-FAN HIGH	F-1-ⓔ	In the case of the C-FAN HIGH operation, the corresponding LED is turned on.
18	C-FAN LOW	F-1-ⓕ	In the case of the C-FAN LOW operation, the corresponding LED is turned on.
19	Dispenser Heater	F-1-ⓖ	In the case of the Dispenser Heater operation, the corresponding LED is turned on.
20	F Valve	F-10-ⓑ	In the case of the F valve open, the LED is turned on.
21	CV Valve	F-10-ⓒ	If the CV valve opens, the LED is turned on.
22	Ice Room-FAN HIGHEST	F-10-ⓓ,ⓔ	When Ice Room-FAN HIGHEST operates, applicable LED ON.
23	Ice Room-FAN HIGH	F-10-ⓓ	When Ice Room-FAN HIGH operates, applicable LED ON.
24	Ice Room-FAN LOW	F-10-ⓔ	When Ice Room-FAN LOW operates, applicable LED ON.
25	French Heater	F-10-ⓖ	In the case of the French Heater operation, the corresponding LED is turned on.
26	CV-FAN HIGHEST	"Freezer" and "Soft Freeze" for the CV compartment	In the case of the CV-FAN HIGHEST operation, the corresponding LED is turned on.
27	CV-FAN HIGH	Freezer" for the CV compartment	In the case of the CV-FAN HIGH operation, the corresponding LED is turned on.
28	CV-FAN LOW	"Soft Freeze" for the CV compartment	In the case of the CV-FAN LOW operation, the corresponding LED is turned on.
29	CV compartment defrosting heater	"Fridge" for the CV compartment	When the CV compartment defrosting heater operates, the LED is turned on.
30	R Valve	F-10-ⓕ	If the R valve opens, the LED is turned on.

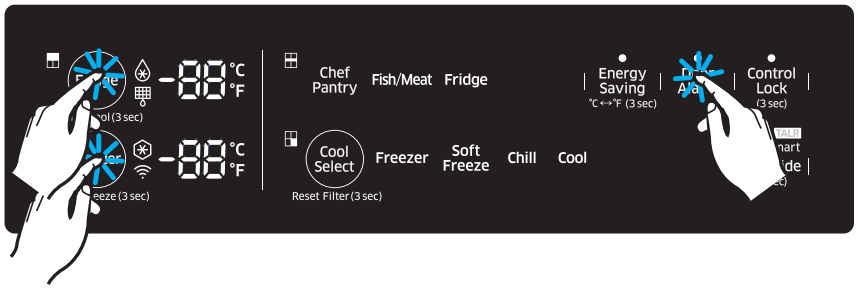
4-1-5. Display function of Load condition (Sparkling water model)



1) Quick Making + Sparkling Making key are pressed simultaneously for 8 seconds
2) Sparkling Load condition display mode shows the load that micom signal is outputting. However, It means that micom signal is outputting, it does not mean whether load is operating or not. That is to say that though load operation is displayed, load could not be operated by actual load error or PCB relay error etc. (This function would be applied at A/S.)
3) Sparkling Load condition display function will maintain for 30 seconds and then normal condition will be returned automatically.

DISPLAY LED	Part	Description
8	Vent Valve	When the Vent Valve operates LED Blink
8	Sparkling Water To Dispenser Valve	When the Sparkling Water To Dispenser Valve operates LED Blink
8	Sparkling Water To Tank Valve	When the Sparkling Water To Tank Valve operates LED Blink
8	Sparkling Water To Dispenser Valve	When the Sparkling Water To To Dispenser Valve operates LED Blink
8	DC Valve	When the DC valve operates LED Blink
8	CO2 Valve	When CO2 Valve operates LED Blink
▶1	Sparkling Water Tank Low Detection	When water is detected by the Water Low Sensor in the Sparkling Water Tank (Water is low), the LED blinks.
▶2	Sparkling Water Tank Fill-Up Detection	When water is detected by the Water Fill-Up Sensor in the Sparkling Water Tank (Water is full), the LED blinks.
▶1, ▶2 (ALL LED Off)	Sparkling Water Tank Water Level Detection : EMPTY	It is the case in which water is not detected by either the Water Fill-Up Sensor or the Water Low Sensor in the Sparkling Water Tank. It is the condition that it enters the Sparkling Water Production while the Sparkling Water Production function is turned on.

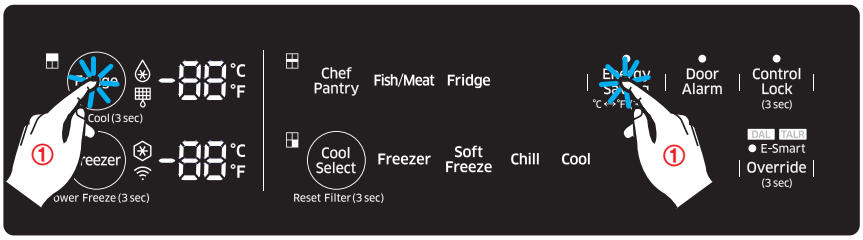
4–1–6. Cooling Off Mode setting function



① If Fridge + Freezer + Door alarm Key are pressed for 5 seconds, Cooling Off Mode will be started.

1) If Fridge + Freezer + Door alarm Key are pressed simultaneously for 5 seconds during normal operation, Cooling Off Mode will be started with buzzer sound(ding–dong).
2) If above Fridge + Freezer + Door alarm Key are pressed one more time, Cooling Off Mode will be canceled.
3) If Cooling Off mode is selected, blinks "O–FF" on the temperature setting display of the panel and it indicates the refrigerator has entered the Cooling Off mode.
4) During Cooling Off mode, if fresh food and freezer compartments sensors are higher than 149°F (65°C) Cooling Off mode will be canceled automatically and freezing operation will be returned. (There is no buzzer sound when the Cooling Off mode is canceled by the temperature)
5) Operation contents of Cooling Off mode
– Display, Fan motor and etc operate normally, not to operate compressor only.
– Defrost is not operated. (including french heater)
– Display function of the initial real temperature is finished.
– Under the condition of Cooling Off mode, Cooling Off mode will be operated when Power On after Power OFF.

4–1–7. AP Mode Function and E–Smart Icon



1) AP Mode Function makes refrigerator's status to can be connected to the Network.
2) If you Press for 3 seconds Fridge Key and Energy Saver Key together, AP Mode function is turned on or off.
3) When AP Mode is turned on, the user can connect the refrigerator to the network.
4) E-Smart Icon shows connection status of the refrigerator and network.
5) When turned off the E-Smart Icon, it indicates that any network device is not connected.
And when turned on the E-Smart Icon, , it indicates that only AP device is connected to the refrigerator.
When turned on the E-Smart Icon, it indicates that the refrigerator is perfectly connected to the network.

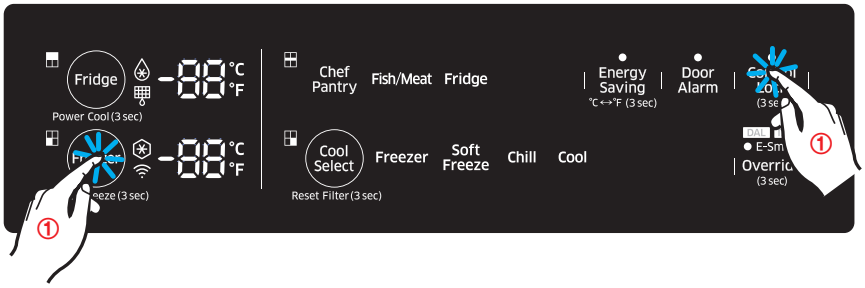
TROUBLESHOOTING

4-1-8. Option setting function

1) Pressing and holding both the Lock and Freezer keys at the same time for approximately 6 seconds, will make the entire display panel blink every 0.5 seconds for approximately 4 seconds.

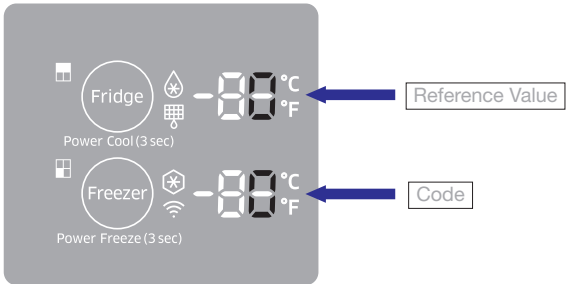
2) During the 4 seconds when the entire display panel blinks, if you release the Lock and Freezer keys and press the Freezer key, the refrigerator enters Options Mode.

※ Manipulating the Option Mode switching key depending on the model



* Key functions in Option Mode

Lock Key.	Select the value of the option to be configured.
Fridge key.	Increases the item of the option
Freezer key.	Decreases the item of the option



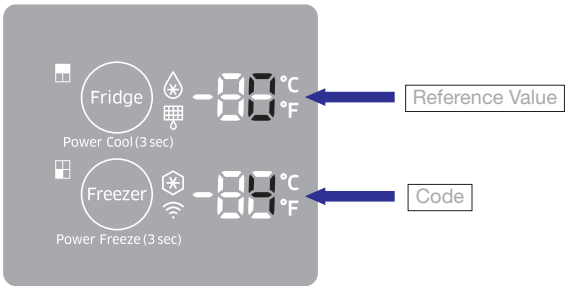
1) For example, if you want to change freezer compartment standard temperature to −2℃(−4℉) by operating option, do as below. This function is for changing the standard temperature.
In −19℃(−2℉) of current temperature of freezer compartment, if you make the temperature lower to −2℃ (−4℉) by the option, the standard temperature would be controlled −21℃(−6℉)
Therefore, if you change the setting of temperature option to −19℃(−2℉) on the panel, the appliance will be operated with −21℃(−6℉). It means that standard temperature is controlled −2℃(−4℉) less than setting temperature in the display.

NOTE

Basically, all the data in option has cleared from the factory.
Therefore, almost all setting value are "0".
But, some setting values could be changed for the purpose of improving performmance.
You need to check the product manual and/or specification.

2) After changing to the option mode, fresh food compartment "0" , freezer compartment "0" will be displayed.
(Basically fresh food compartment "0", freezer "0" would be set at shipping process, but setting value could be changed for the purpose of improving product at mass producing process.)
– If fresh food compartment "0" shows only, temperature reference value of freezer compartment will be set and current freezer compartment temperature code will be displayed on the freezer temperature display.

3) If freezer compartment "4" is set as below freezer compartment code after fresh food compartment "0 is set, standard temperature of freezer compartment will be lower than −2℃(−4℉).
(Refer to the picture "changing the freezer compartment temperature")



: If you wait for 20 seconds after completing the setting, MICOM will save the setting value to the EEPROM and normal display will be returned and the option setting mode will be canceled.

4) By the same method as above, it is possible to control the fresh food compartment temperature, water supply, ice−maker harvest temperature/time, defrost return time, hysteresis by temperature, notch gap by temperature etc.

5) Option function is set in the EEPROM at shipping process in the factory.
You would better not to change the option of your own.
Completing the setting is that option function return to normal display after 20 seconds.
Do not turn off the appliance before returning to the normal display mode.

NOTE

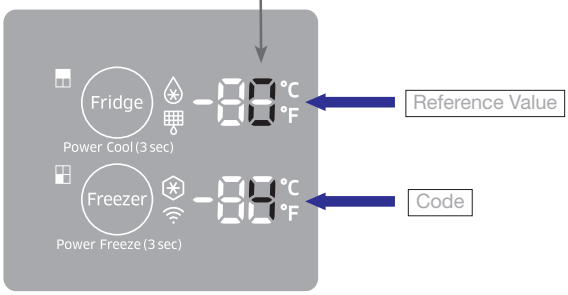
Option setting function exists in the other items.
We will skip the explanation of the other functions by the option because it is associated with refrigerator control function and is not needed at SERVICE.
(Please do not set the other options except above SERVICE Manual.)

4-1-9. Option TABLE

1) Temperature changing table of freezer compartment

Set item	Freezer Temp Shift
Reference	Fridge Room 7-SEG
Value	0

Setting value	
FZ compartment Code	Temp. compensation
0	0.0℃(0℉)
1	-0.5℃(-1℉)
2	-1.0℃(-2℉)
3	-1.5℃(-3℉)
4	-2.0℃(-4℉)
5	-2.5℃(-5℉)
6	-3.0℃(-6℉)
7	-3.5℃(-7℉)
8	+0.5℃(+1℉)
9	+1.0℃(+2℉)
10	+1.5℃(+3℉)
11	+2.0℃(+4℉)
12	+2.5℃(+5℉)
13	+3.0℃(+6℉)
14	+3.5℃(+7℉)
15	+4.0℃(+8℉)



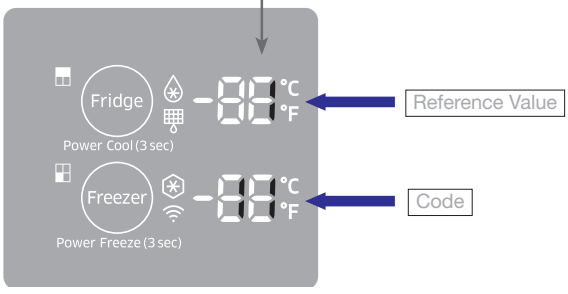
ex) If you want to change the freezer standard temperature to -2°C(-4℉)

2) Temperature changing table of Fridge compartment

Set item	Fridge Temp Shift
Reference	Fridge Room 7-SEG
Value	1

Setting value	
FZ compartment Code	Temp. compensation
0	0.0℃(0℉)
1	-0.5℃(-1℉)
2	-1.0℃(-2℉)
3	-1.5℃(-3℉)
4	-2.0℃(-4℉)
5	-2.5℃(-5℉)
6	-3.0℃(-6℉)
7	-3.5℃(-7℉)
8	+0.5℃(+1℉)
9	+1.0℃(+2℉)
10	+1.5℃(+3℉)
11	+2.0℃(+4℉)
12	+2.5℃(+5℉)
13	+3.0℃(+6℉)
14	+3.5℃(+7℉)
15	+4.0℃(+8℉)

ex) If you want to change the Fridge compartment standard temperature to 2°C(4℉)



3) Cool Select Room Temperature Change Table

Setting Item	CV Compartment Temperature Offset
Model	Common for all models
Option	Location: R compartment temperature display
	3

F compartment temperature display setting	Temp. compensation
0	0.0 ℃ (0 ℉)
1	−0.5 ℃ (−1 ℉)
2	−1.0 ℃ (−2 ℉)
3	−1.5 ℃ (−3 ℉)
4	−2.0 ℃ (−4 ℉)
5	−2.5 ℃ (−5 ℉)
6	−3.0 ℃ (−6 ℉)
7	−3.5 ℃ (−7 ℉)
8	+0.5 ℃ (+1 ℉)
9	+1.0 ℃ (+2 ℉)
10	+1.5 ℃ (+3 ℉)
11	+2.0 ℃ (+4 ℉)
12	+2.5 ℃ (+5 ℉)
13	+3.0 ℃ (+6 ℉)
14	+3.5 ℃ (+7 ℉)
15	+4.0 ℃ (+8 ℉)

4) Sub Heater (French Heater, Dispenser Heater, Door Handle Heater) Control Function

Setting Item	French Heater Control
Model	Common for all models
Option	Location: R compartment temperature display
	19

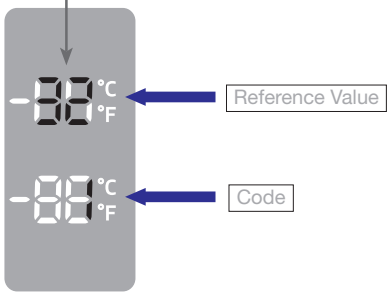
F compartment temperature display Configured Value	Operation
0	Operating according to the control specifications
1	Heater operation ratio increasing (Default Ratio + Operating 20%(MAX 100%)

5) Amount of water supply to ice tray

RF34H99**

Set item	Amount of Water Supply
Reference	Fridge Room 7-SEG
Value	32

Setting value	
FZ compartment Code	Amount of water supply
0	110CC
1	120CC
2	–
3	–
4	–
5	–
6	–
7	–

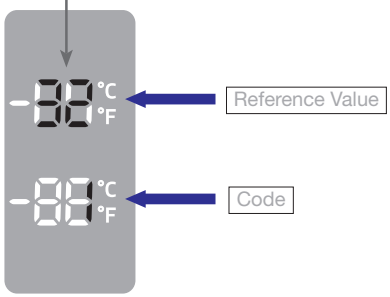


ex) If you want to change the amount of water supply to ice tray to 120CC

RF24J99**

Set item	Amount of Water Supply
Reference	Fridge Room 7-SEG
Value	32

Setting value	
FZ compartment Code	Amount of water supply
0	65CC
1	75CC
2	–
3	–
4	–
5	–
6	–
7	–

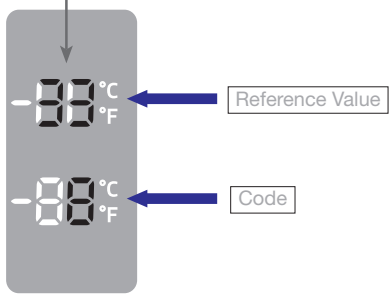


ex) If you want to change the amount of water supply to ice tray to 75CC

6) Time changing table of ice maker dropping standby time

Set item	Ice Maker Standby Time
Reference	Fridge Room 7-SEG
Value	33

Setting value	
FZ compartment Code	Ice maker dropping standby time
0	14min.
1	13min.
2	12min.
3	11min.
4	10min.
5	15min.
6	16min.
7	17min.
8	18min.
9	19min.
10	20min.
11	21min.
12	22min.
13	23min.
14	24min.
15	25min.

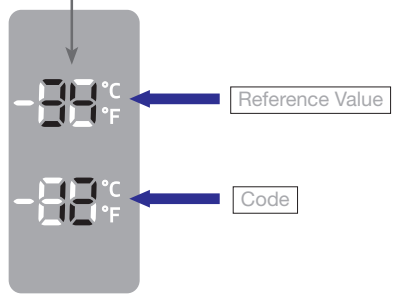


ex) If you want to change the ice maker dropping standby time to 18minutes.

7) Temperature changing table of ice room

Set item	Ice Room Temp Shift
Reference	Fridge Room 7-SEG
Value	34

Setting value	
FZ compartment Code	Temp. compensation
0	0 ℉(0.0 ℃)
1	-1 ℉(-0.5 ℃)
2	-2 ℉(-1.0 ℃)
3	-3 ℉(-1.5 ℃)
4	-4 ℉(-2.0 ℃)
5	-5 ℉(-2.5 ℃)
6	-6 ℉(-3.0 ℃)
7	-7 ℉(-3.5 ℃)
8	+1 ℉(+0.5 ℃)
9	+2 ℉(+1.0 ℃)
10	+3 ℉(+1.5 ℃)
11	+4 ℉(+2.0 ℃)
12	+5 ℉(+2.5 ℃)
13	+6 ℉(+3.0 ℃)
14	+7 ℉(+3.5 ℃)
15	+8 ℉(+4.0 ℃)

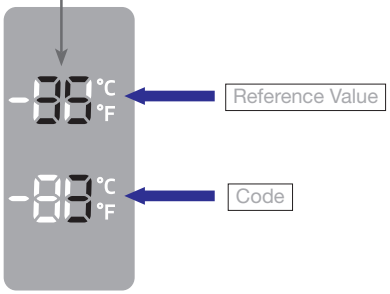


ex) If you want to change the ice room standard temperature to +5 ℉(+2.5 ℃)

8) Temperature changing table of Ice Maker Dropping Temperature

Set item	Ice Maker Dropping Temperature
Reference	Fridge Room 7-SEG
Value	35

Setting value FZ compartment Code	Ice Maker Dropping Temperature
0	-13 ℃ (8.6 ℉)
1	-12 ℃ (10.4℉)
2	-11 ℃ (12.2 ℉)
3	-10 ℃ (14 ℉)
4	-14 ℃ (6.8 ℉)
5	-15 ℃ (5 ℉)
6	-16 ℃ (3.2 ℉)
7	-17 ℃ (1.4 ℉)



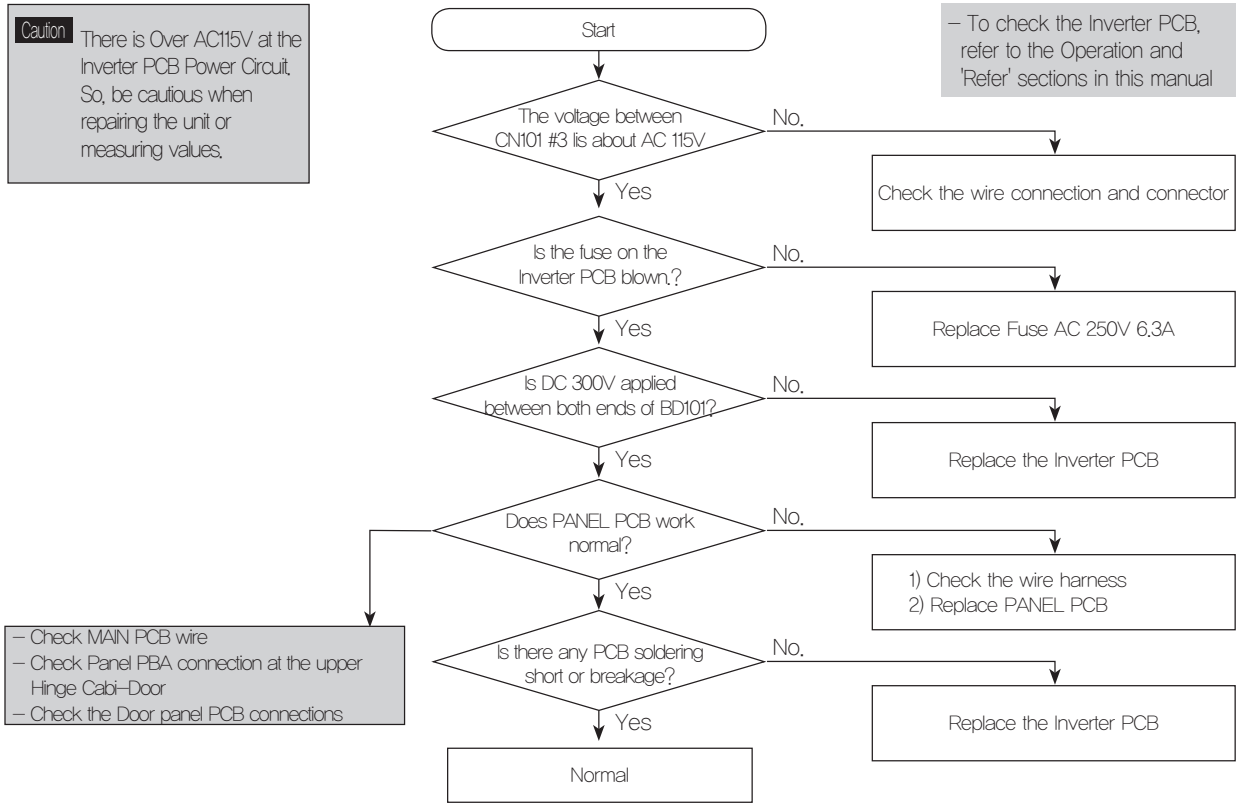
ex) If you want to change the Ice Maker Dropping Temperature to 14 ℉ (-10 ℃)

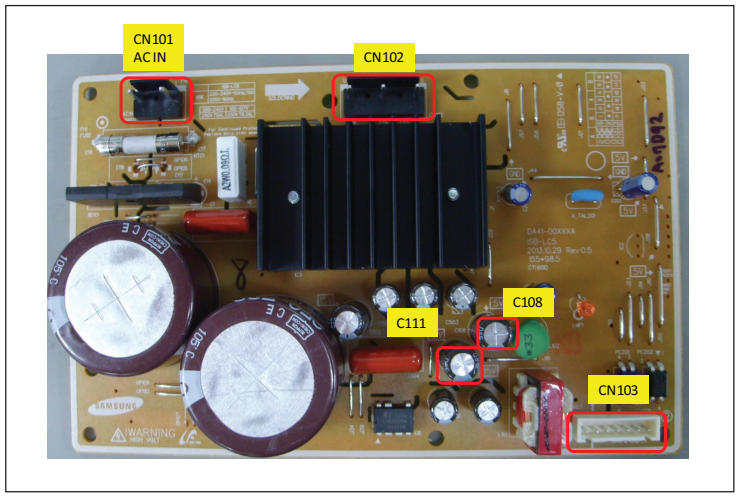
4-2. Troubleshooting by symptom

4-2-1. When there is no power at Inverter PCB (F/R Room Inverter)

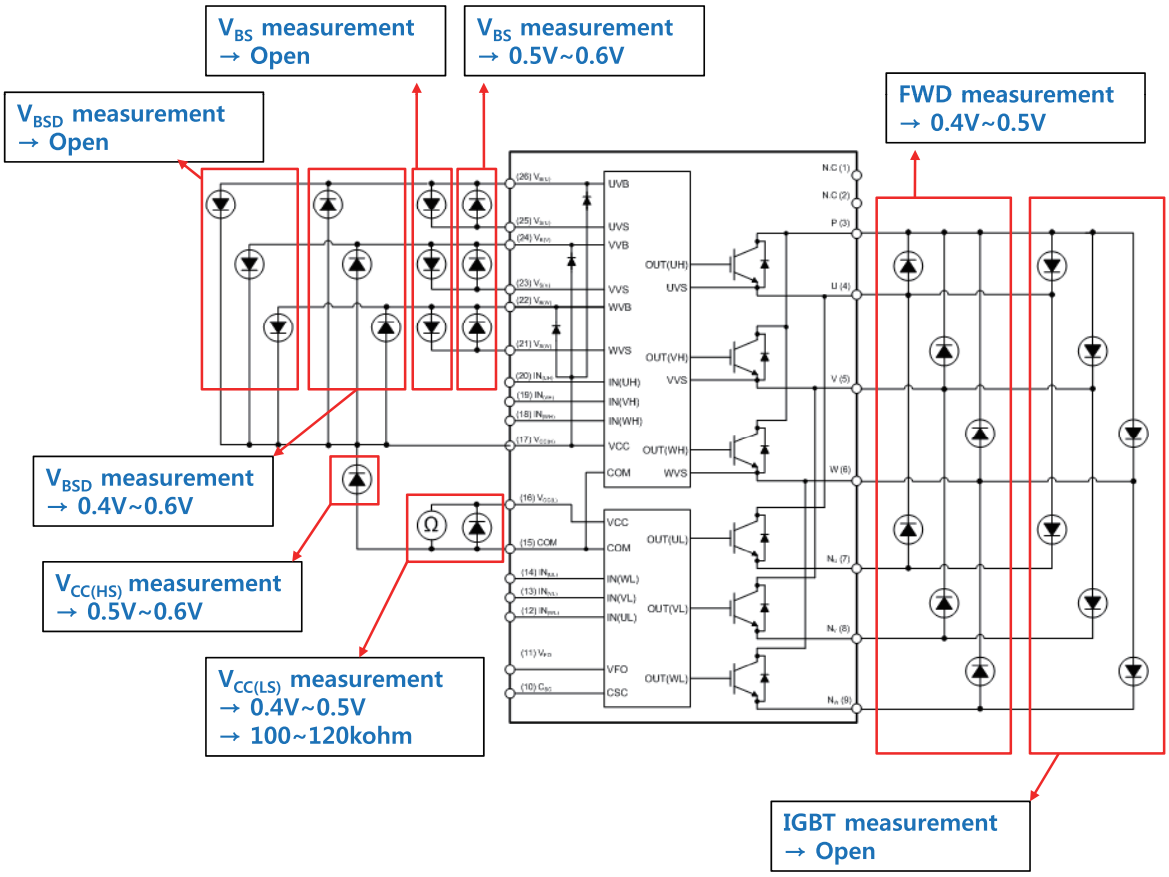
Caution There is Over AC115V at the Inverter PCB Power Circuit. So, be cautious when repairing the unit or measuring values.

- To check the Inverter PCB, refer to the Operation and 'Refer' sections in this manual





SPM FREEWHEELING DIODE VOLTAGE VALUE (F/R Room Inverter)



V_{BS} : High-side Control Bias Voltage
V_{BSD}: Bootstrap Diode Voltage
$V_{CC(HS)}$: High-side Supply Voltage
$V_{CC(LS)}$: Low-side Supply Voltage
FWD: Free Wheeling Diode
IGBT: Insulated Gate Bipolar mode Transistor

4-2-2. The LED blinking frequency depending on the protection functions (F/R Room Inverter PCB)

If the Failure Condition is detected while the compressor is operating, stop the Compressor operating immediately and wait for 5 minutes. During these 5 minutes, the RPM command signal is not available. Even if the RPM command that orders the compressor to run is sent, the compressor does not work and keep standing by.

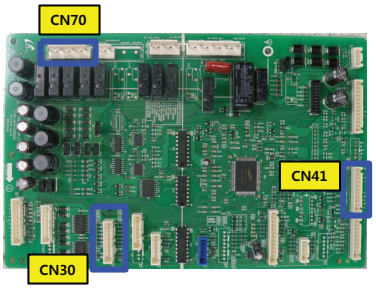
The LED is tuned on for 1 second and then off for 2 seconds.

LED Blinking Frequency	Protecting Functions	Remarks
	Normal Operation	N/A
	Starting Failure	1. Check the COMP terminals short(U,V,W) 2. Check IPM Pins short of Inverter PBA 3. Check IPM operating Voltage(under DC 13.5V) 4. Other cases, check the COMP, cycle, etc.
	SPM Fault	
	Abnormal Current Detection	1. Check COMP wire connections(U,V,W) 2. Check PCB Bottom side soldering state 3. Other cases, check the COMP, cycle, etc.
	Motor Locked / Over RPM	1. Check PCB Bottom side soldering state. 2. Check Input voltage oscillation 3. Other cases, check the COMP, cycle, etc.
	Under Voltage	1. Check input voltage under AC 53V(Input Power AC110~127V) or AC 106V(Input Power AC 220 ~ 240V) 2. Check PCB Bottom side soldering state.
	Over Voltage	1. Check input voltage over AC 155V(Input Power AC110~127V) or AC 310V(Input Power AC 220 ~ 240V) 2. Check PCB Bottom side soldering state.

The LED blinking frequency depending on the protection functions

If the blinking continues, after 5 minutes, please refer to the remarks in the table above.

4-2-3. When a "1E","2E", "4E", "5E", "6E", "7E", "9E, "11E", "13E", "24E", "29E" error occures(defrosting failure)



F-Defrost : Measure the resistance between the Main PBA CN70 pin #1 and the SMPS PBA CN1 pin #3
CV-Defrost : Measure the resistance between the Main PBA CN70 pin #3 and the SMPS PBA CN1 pin #3

Is the measured voltage of the defrosting sensor 3.1 V or higher?

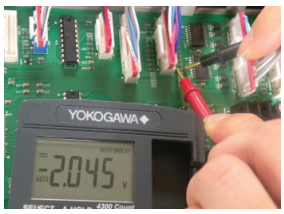
F-DEF-Sensor: Measure the resistance between CN30 pin 1 and 8
R-DEF-Sensor: Measure the resistance between CN30 pin 4 and 8
CV-DEF-Sensor: Measure the resistance between CN30 pin 6 and 8

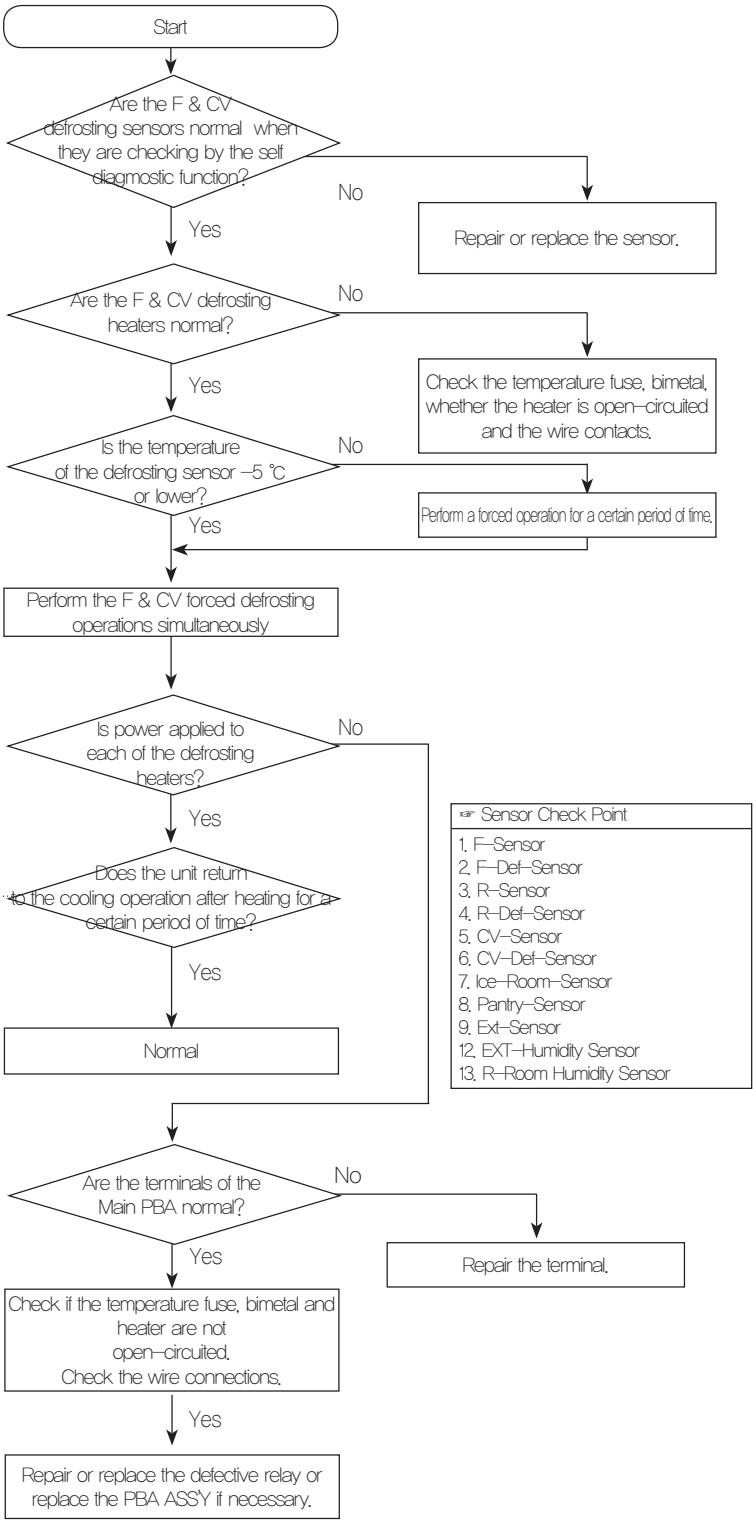
Press the F Compartment Key + Test Key simultaneously for 6 seconds, No. 4 Test Mode (Forced Defrosting)

Double-check if the sensors that do not return to the cooling operation are normal.

Note. If the temperatures of the F and R defrosting sensors are 8 ℃ and 12 ℃ respectively due to the heater, the heating is stopped and the refrigerator starts cooling after some idle time.

☞ To check the voltage of the defrosting sensor of the freezer compartment
- Measure the voltage of the PCB Sensor Check Point #2
- After the measurement, compare the voltage to the temperature table.(Measure the voltage of the other sensors in the same way)

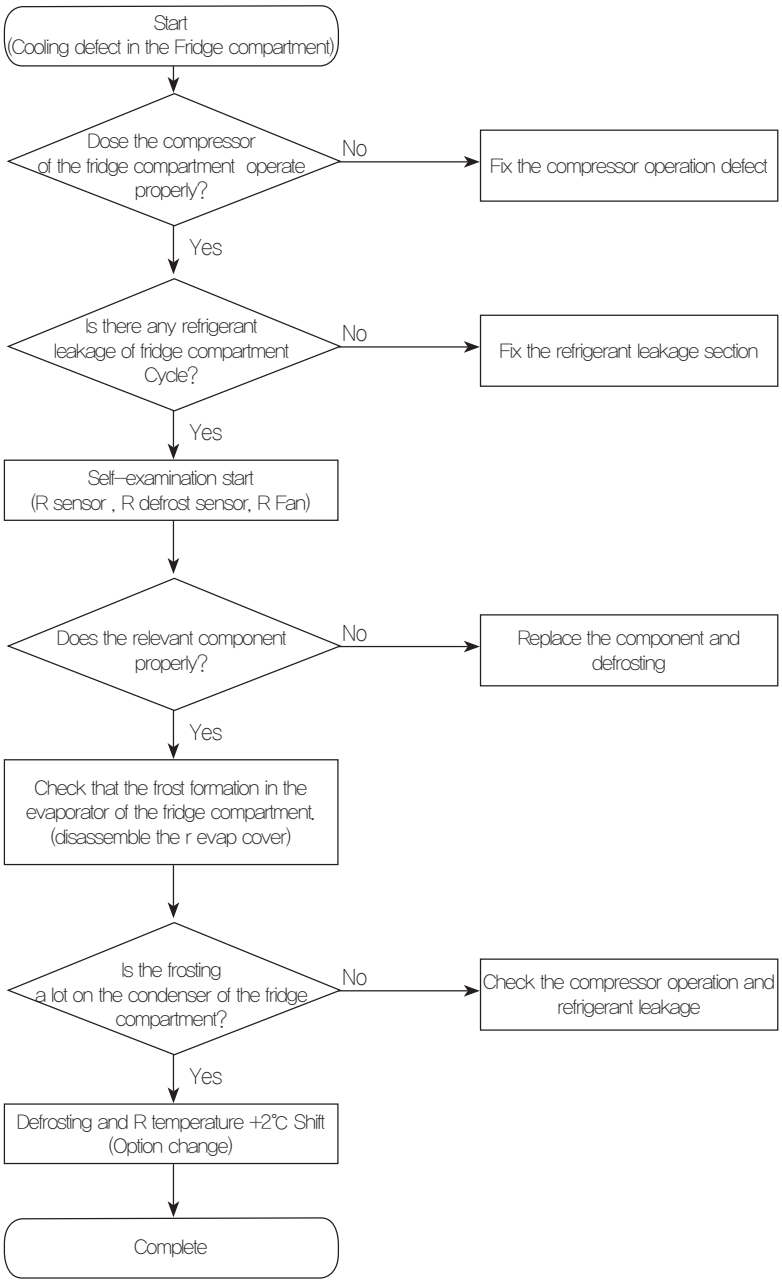




☞ Sensor Check Point

1. F-Sensor
2. F-Def-Sensor
3. R-Sensor
4. R-Def-Sensor
5. CV-Sensor
6. CV-Def-Sensor
7. Ice-Room-Sensor
8. Pantry-Sensor
9. Ext-Sensor
12. EXT-Humidity Sensor
13. R-Room Humidity Sensor

4-2-4. When occur the cooling defect by a lot of frosting on the Fridge compartment

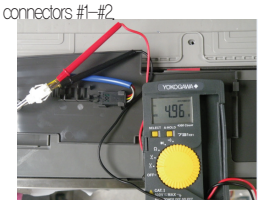


4-2-5. When an error occurs in self diagnostic mode (in case of a sensor error)

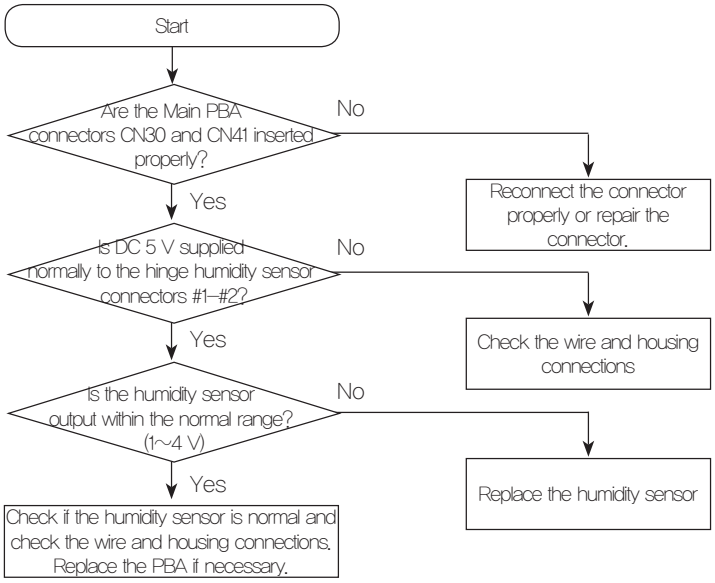
– A sensor error is displayed on the Main display(Which loacted in CV Room Cap Door Upside) panel of the refrigerator.
If a sensor error is detected when the power is supplied to the refrigerator for the first time, the sensor error message is displayed on the display panel.

① When the "13E" (humidity sensor) or "16E" (internal humidity sensor) error occurs

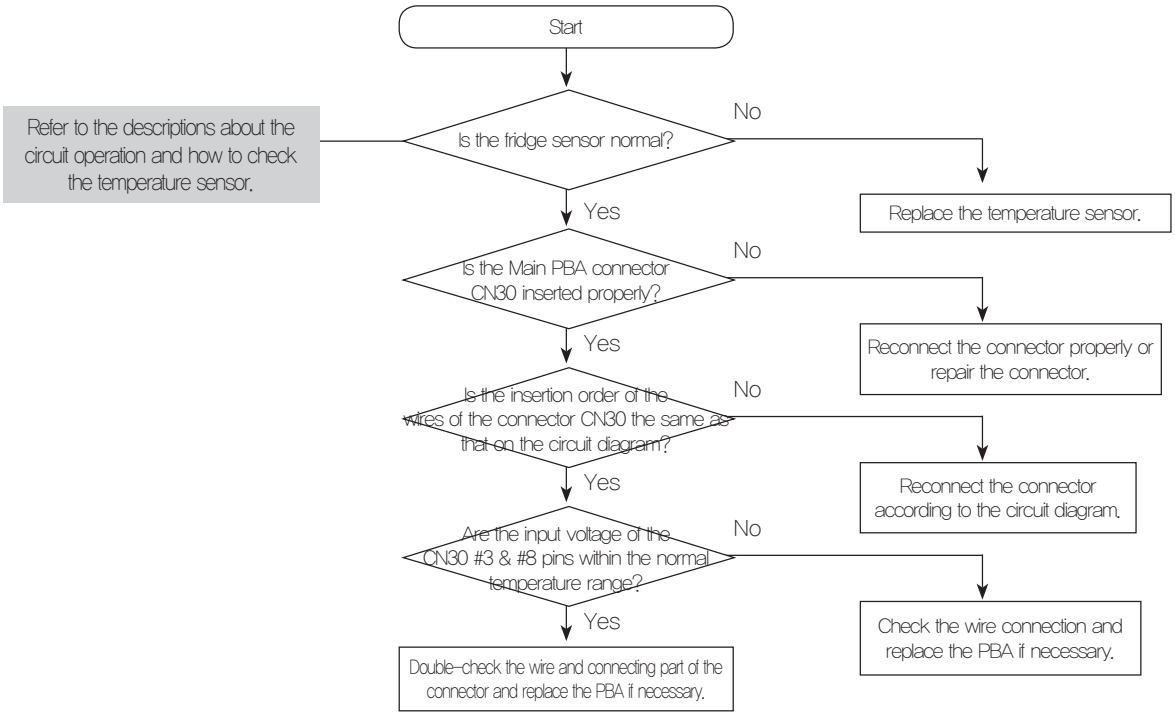
☞ Check the input voltage to the humidity sensor
Humidity sensor operating voltage: 5 V
Check if 5 V is measured at the humidity sensor connectors #1–#2.



☞ Check the output voltage from the humidity sensor
Check the voltages of the humidity sensor connectors #1–#3 refering to the humidity sensor voltage table

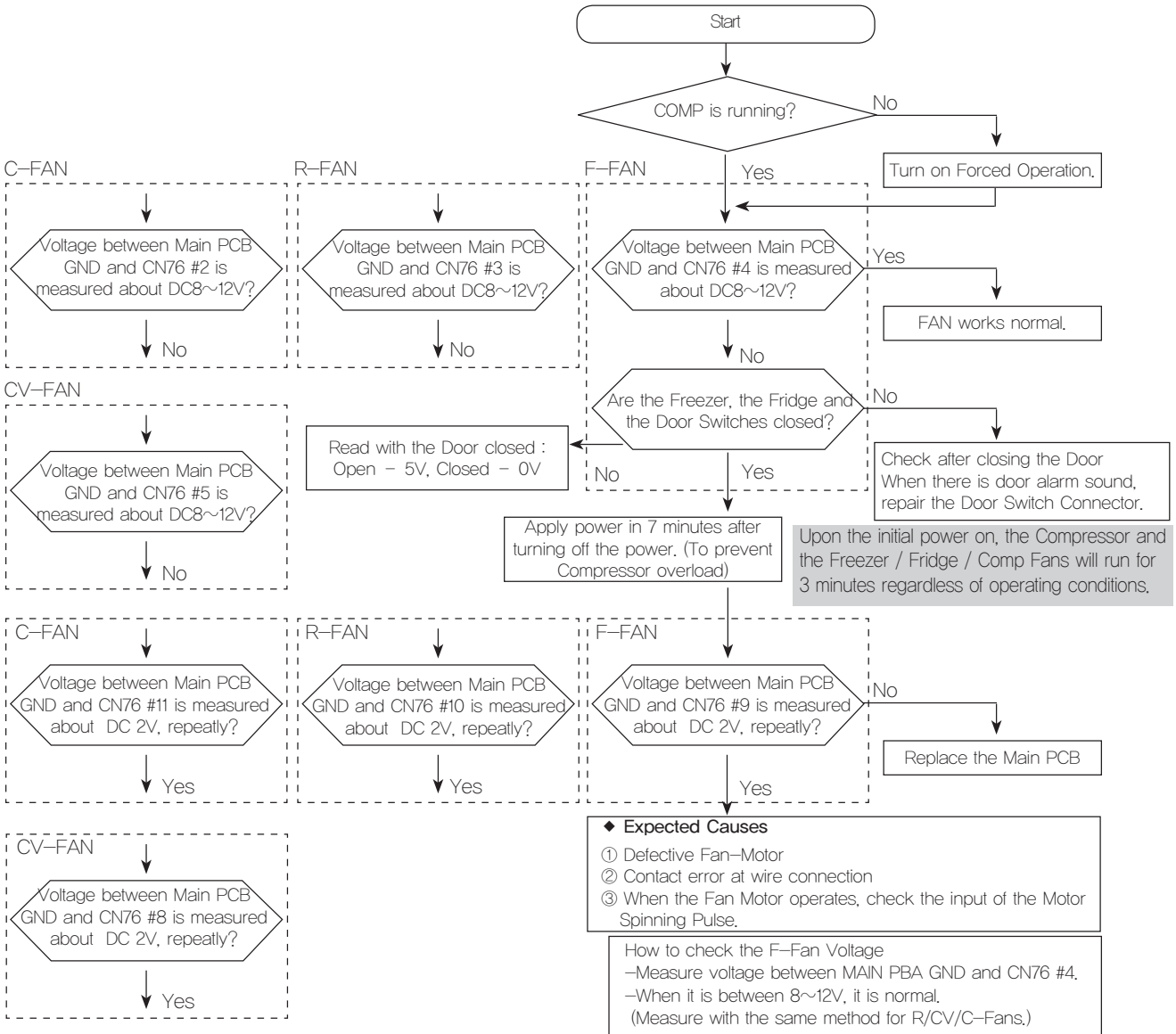


② When the "2E" (fridge temperature sensor) error occurs. (Please also check the other sensors by applying these troubleshooting procedures.)



4-2-6. When the Fan does now operate(F, R, CV, C-FAN)

- This refrigerator uses the BLDC Fan Motor. The BLDC Motor operates with DC 7~12V.
- Under Comp On conditions, the R-Fan operates generally. But, when the ambient temperature is high or when you open and close the Door once, it operates after one-minute delay. So, don't get misled by it. It is normal.
- When there is defect, turn on the Self-Diagnosis function and confirm the defect before turning off the unit.

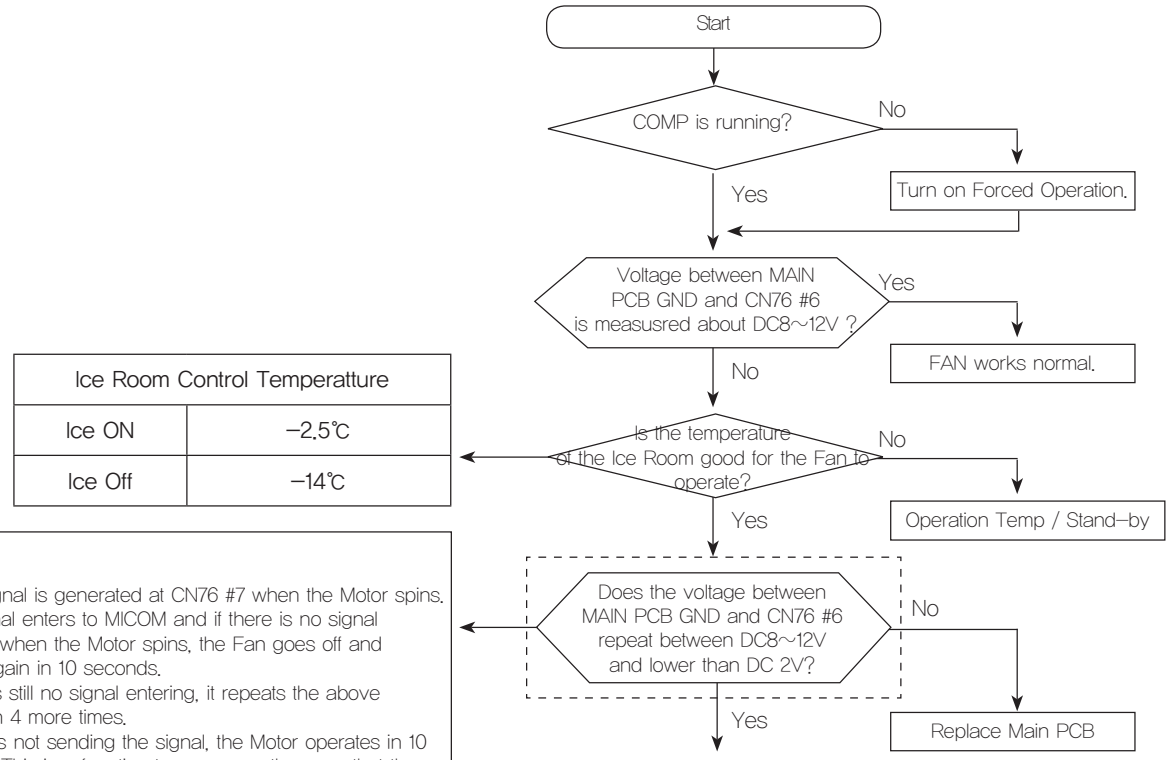


Note

Pulse signal is generated at CN76 #8(CV), #9(F), #10(R) and #11(C) when the Motor spins. This signal enters to MICOM and if there is no signal entering when the motor spins, the Fan goes off and works again in 10 seconds.
If there is still no signal entering, it repeats the above operation 4 more times. If it keeps not sending the signal, the Motor operates in 10 minutes. This is a function to overcaome the case that there is a restriction in the Motor due to foreign substances arount the Motor.

4-2-7. When the Fan does now operate (ICE ROOM - FAN)

-This refrigerator uses the BLDC Fan Motor. The BLDC Motor operates with DC 7~12V
-When there is defect, turn on the self-Diagnosis function and confirm the defect before turning off the unit.



Ice Room Control Temperatture	
Ice ON	-2.5℃
Ice Off	-14℃

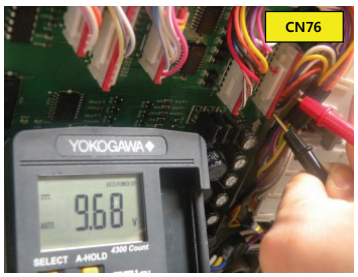
Note

Pulse signal is generated at CN76 #7 when the Motor spins. This signal enters to MICOM and if there is no signal entering when the Motor spins, the Fan goes off and works again in 10 seconds.
If there is still no signal entering, it repeats the above operation 4 more times.
If it keeps not sending the signal, the Motor operates in 10 minutes. This is a function to overcome the case that there is a restriction in the Motor due to foreign substances around the Motor.

◆ **Expected Causes**

① Defective Fan-Motor
② Contact error at wire connection
③ When the Fan Motor operates, check the input of the Motor Spinning Pulse.

☞ How to check the Ice Room-Fan Voltage
- Ice Roon FAN : Voltage between CN76 #6 and GND shall be DC8~12V.
- After measuring it, check it again if the measurements is different each other.



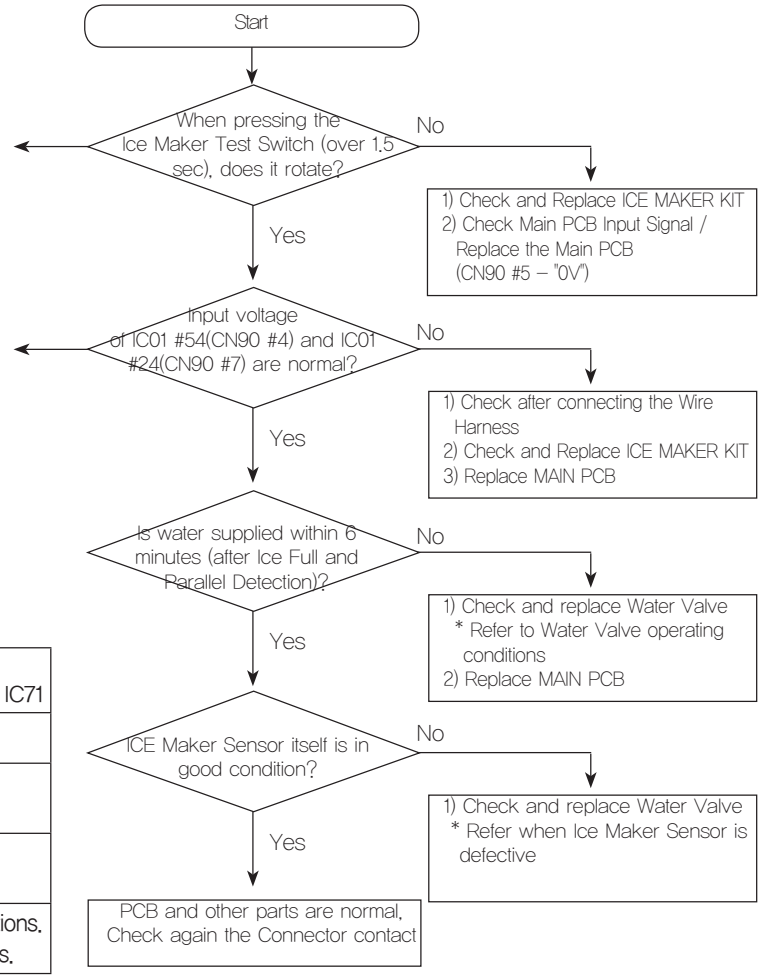
4-2-8. When the ICE MAKER does not operate

1. Water will be automatically supplied to the Ice Maker depending on temprature & time conditions, and Ice will be produced to dispense.
2. Power is applied to one end of the wires. So, Make sure to refer to its Exploded View whenever doing the disassembly
3. The operation of the Ice Maker shall be done after pressing the Ice Maker Test Button. It is not possible to check when the power is off.
4. Since both of the PCB and the Ice Maker are located at the front and the top each other, make sure to have two people check them.
5. It may cause burn when the Ice Maker Heater heats up. So please take an extra caution.
6. The Ice Maker has a counter-clockwise rotation function. So, Its counter-clockwise rotation is normal.

Operation Status (CN90 #5)		
Test Switch	Stand-by	On
	5V	0V

Micom (IC01) Operation Status				
	Stand-by	Rotation	Before completing	Home
CN90 #7 (Blade Ice Scoop)	0V	4.9V	4.9V	0V
CN90 #4(Guide Ice Full)	0V	0V	4.9V	0V

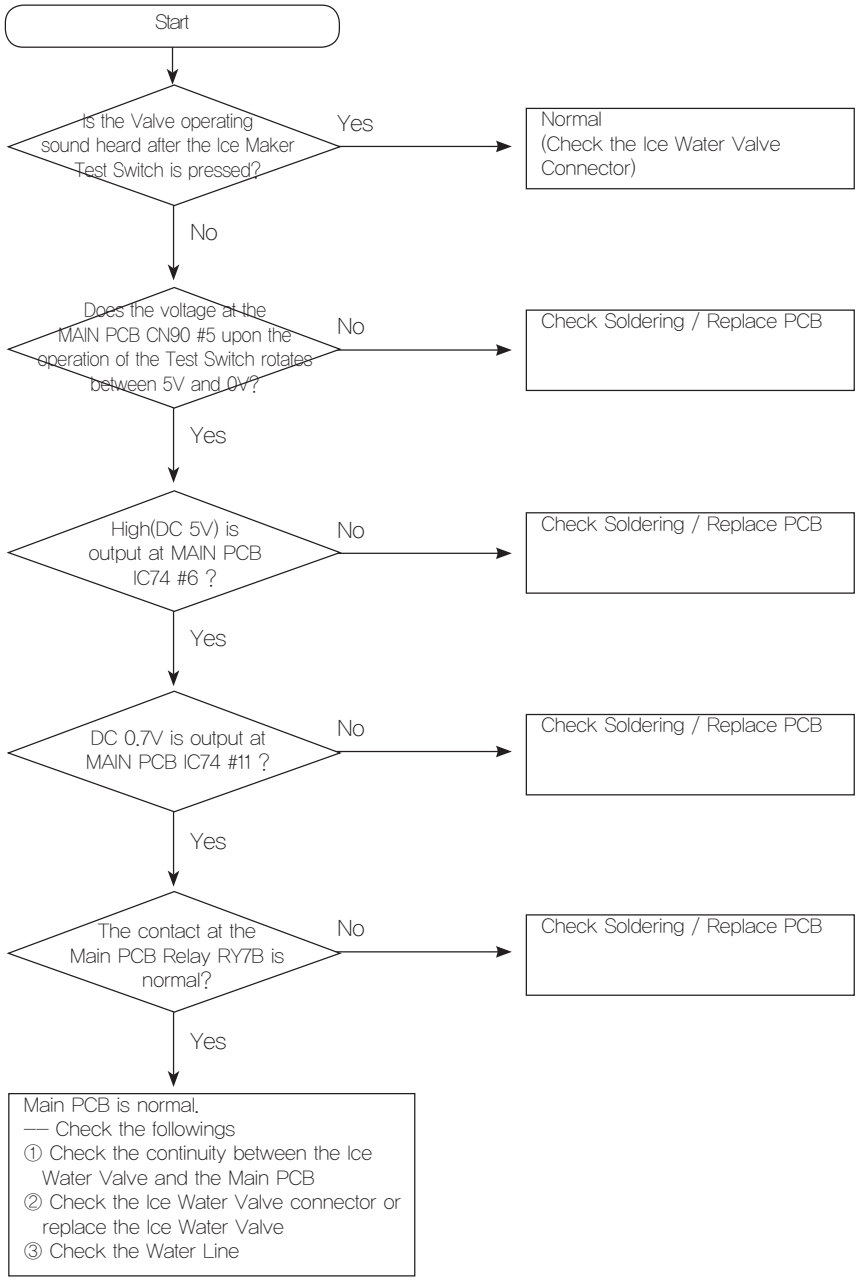
Operation condition upop Motor rotation, Operation Status of Micom(IC01)& (Expander) IC71		
	Stand-by	On
Motor Load (#80, #81) of MICOM(IC01)	0V	5V
Heater Load (#6) of Expander(IC71)	0V	5V
Heater operates differently according to its conditions. During the Test Mode, it will be on 30 seconds.		



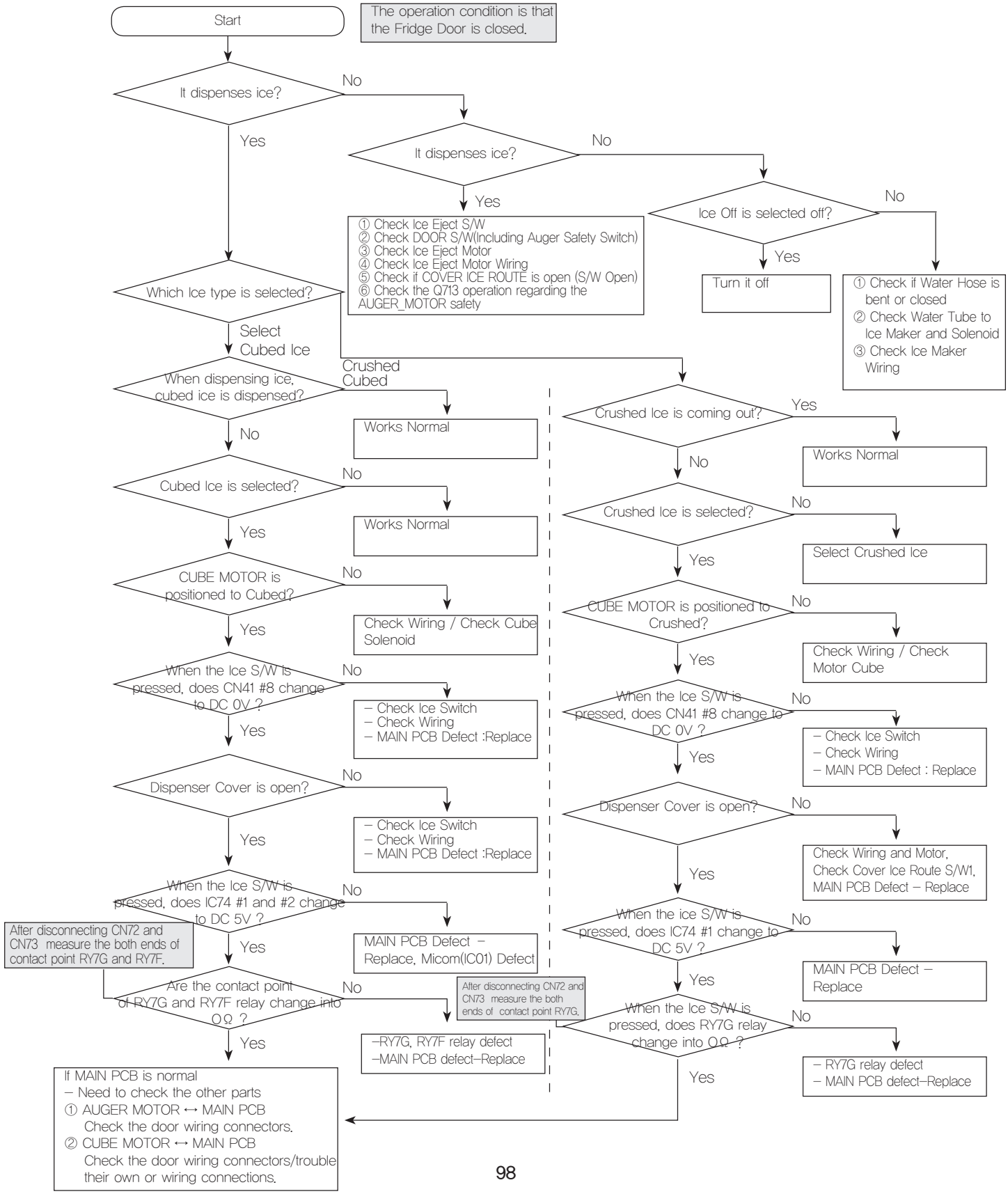
4-2-9. When water does not supply at Ice Maker

Advance Checking

1. Water is directly supplied to the Water Valve. So, make sure to cut off the water before doing repairs.
2. There is electricity flowing in the wire. So, take extra care not to get electric shock.



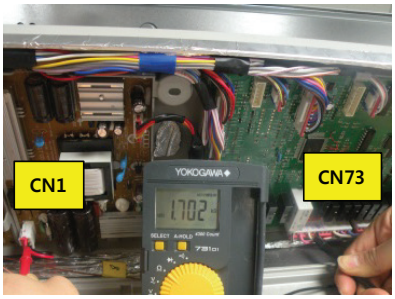
4-2-10. When Cubed or Crushed ice does not dispense properly



4-2-11. When COVER ICE ROUTE MOTOR (GEARED MOTOR) does not work properly

Caution
1. When replacing the Cover Ice Motor, pull out the plug to avoid an electric shock.
2. Be careful! When disassemble the Cover Ice Motor, spring can jumped out and may cause personal injury.
3. Motor will rotate continuously when the Motor Switch is not sensed.

☞ Checking method of cover ice route motor resistance.
(Make sure to work after power off) Measure the resistance between the Main PBA CN73 pin #5 and the SMPS PBA CN1 pin #3



Dispenser Open/Close conditions
CN41 #9, #10-Switch 1, 2 Operation.

	Close	..ing	Open
Ice Route Switch 1 CN41-#9	0V	5V	0V
Ice Route Switch 1 CN41-#10	0V	5V	5V

4-2-12. When the alarm is heard continuously (buzzer sound)

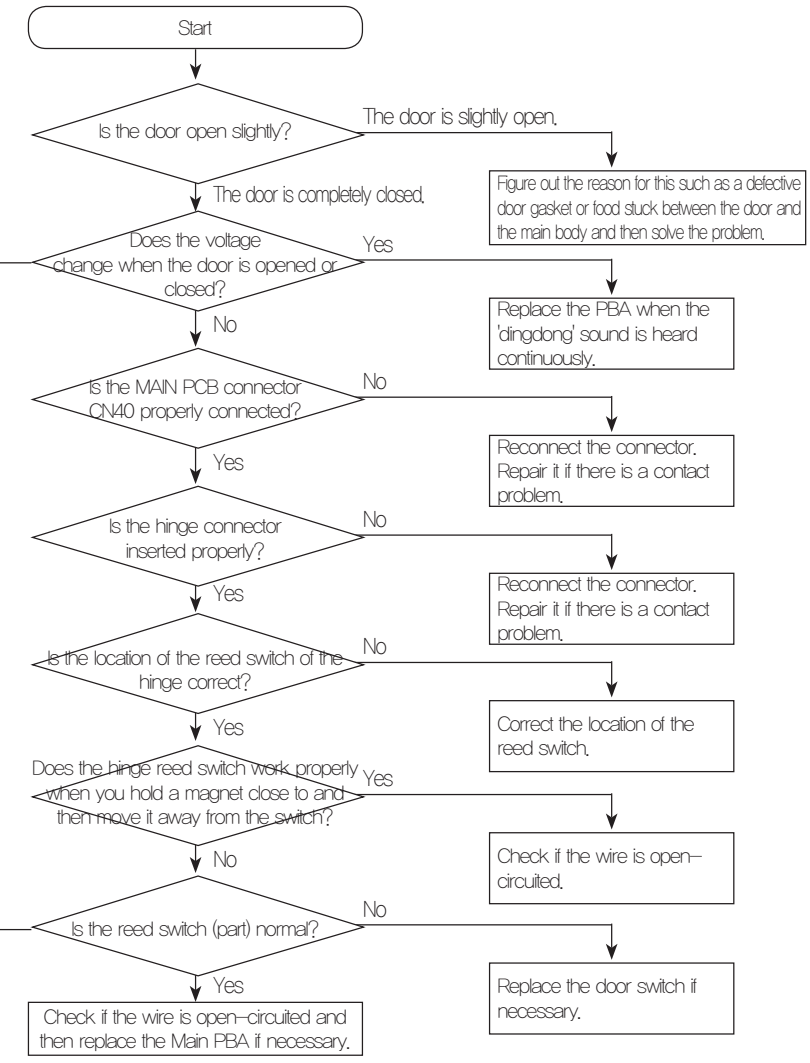
① If a 'dingdong' sound is heard continuously or the 'Refrigerator door is opened' message is displayed.

F-Door detection : CN40 #2-#5
R-Door detection : CN40 #1-#5
CV-Door detection : CN40 #3-#5
- The normal voltage are as follows :
  When the door is open : DC 5V
  When the door is closed : DC 0V

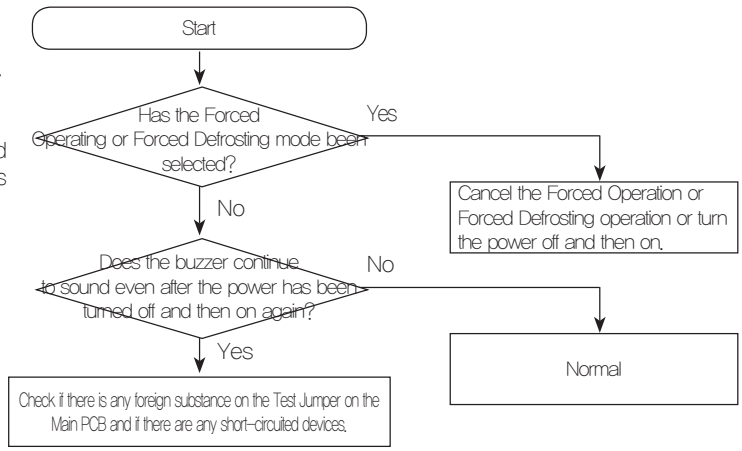
- Check if the resistance of the reed switch changes to 0Ω and ∞Ω when you separate the switch and change the switch status to on and off.

※ Tips when checking the reed switch
The reed switch is turned on or off by the magnetic force of the magnet attached to the door.
- When the reed switch is magnetised → 0Ω (when the door is closed.)
- When the reed switch is not magnetised → ∞Ω (when the door is open.)

If the magnetic force of the magnet on the door is weak or the location of the reed switch is not correct, consider replacing the part.



② If a 'beep-beep' sound is heard continuously, perform a Forced Operation. If a 'ddiriririring' sound is heard continuously, perform a Forced Defrosting operation. If the 'dding dding dding' sound is heard continuously, the buzzer sound is heard.



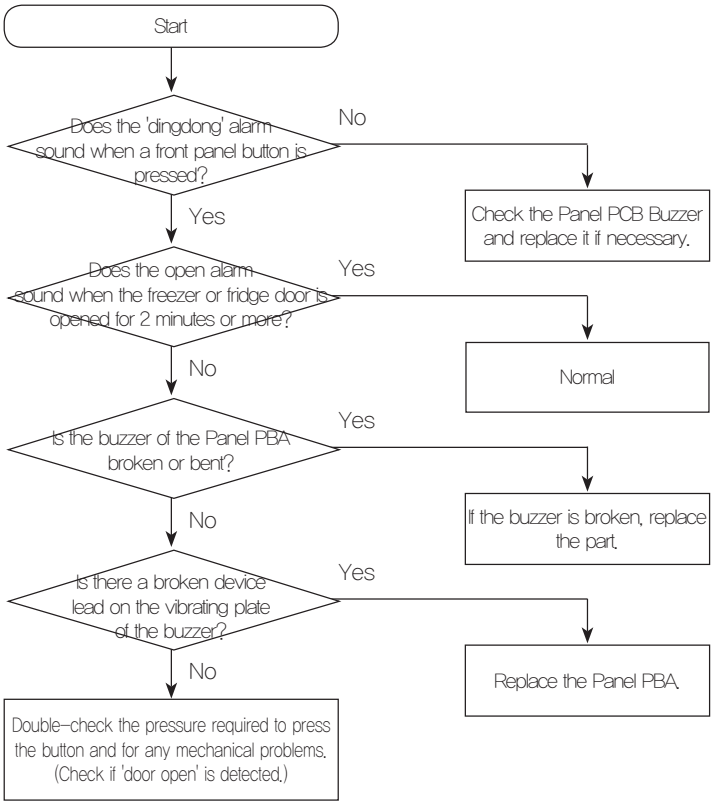
③ When there is no buzzer sound.

The buzzer is attached to the Panel PBA in this model.

If the buzzer does not sound when you press a key, run the Forced Operating operation or open the door, separate the Panel PBA and check if the buzzer is broken or improperly soldered.

(If the problem is not an improperly soldered part but a defective part, it is recommended replacing the Panel PBA because repairing the part is difficult.)

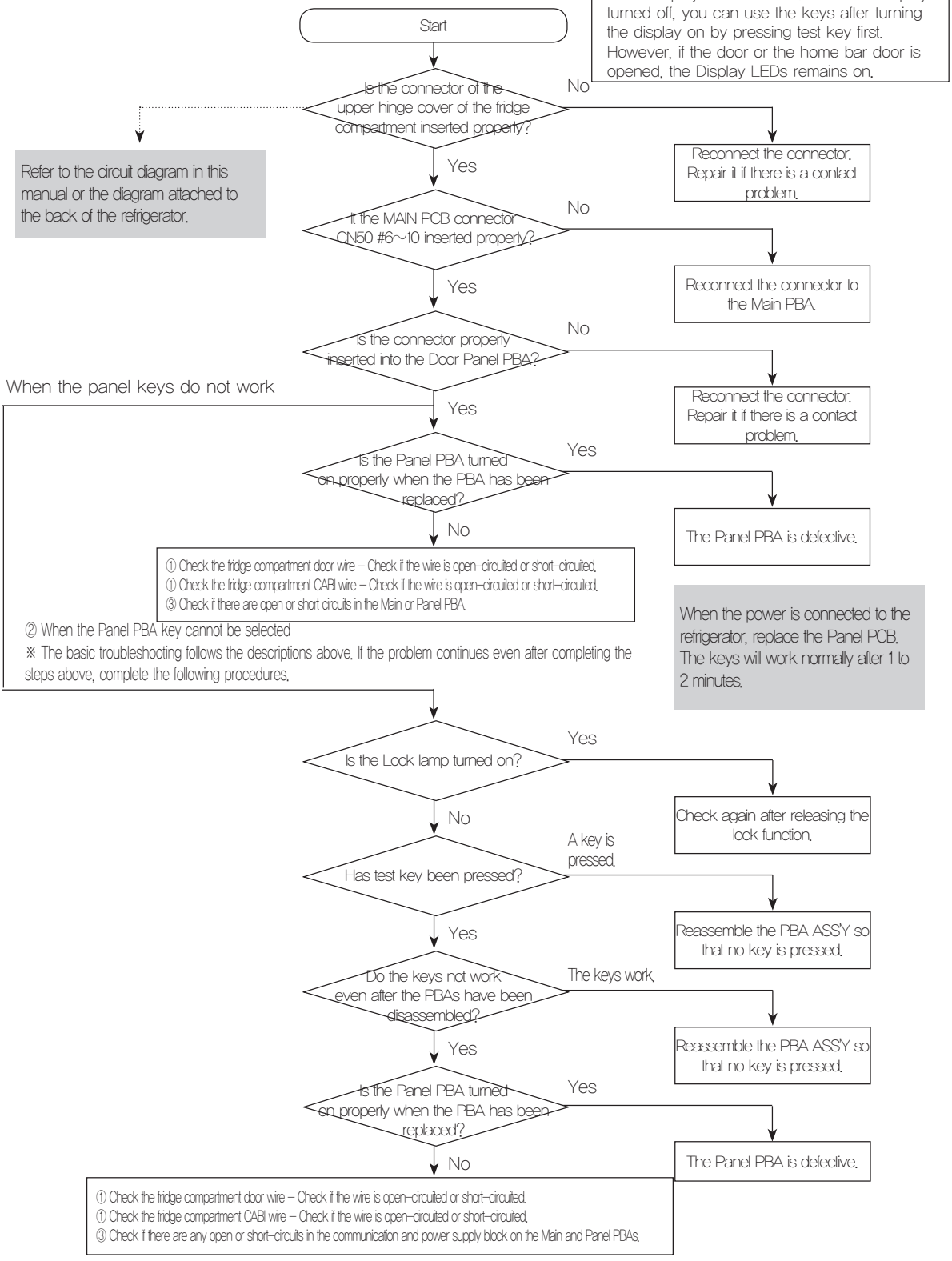
※ Note that the problem may not be identified when the refrigerator is a built-in appliance of the house or the installation location is very noisy.



4-2-13. When the DISPENSER Panel PBA does not work properly

When the Panel PBA is not turned on or only some of the lamps are turned on

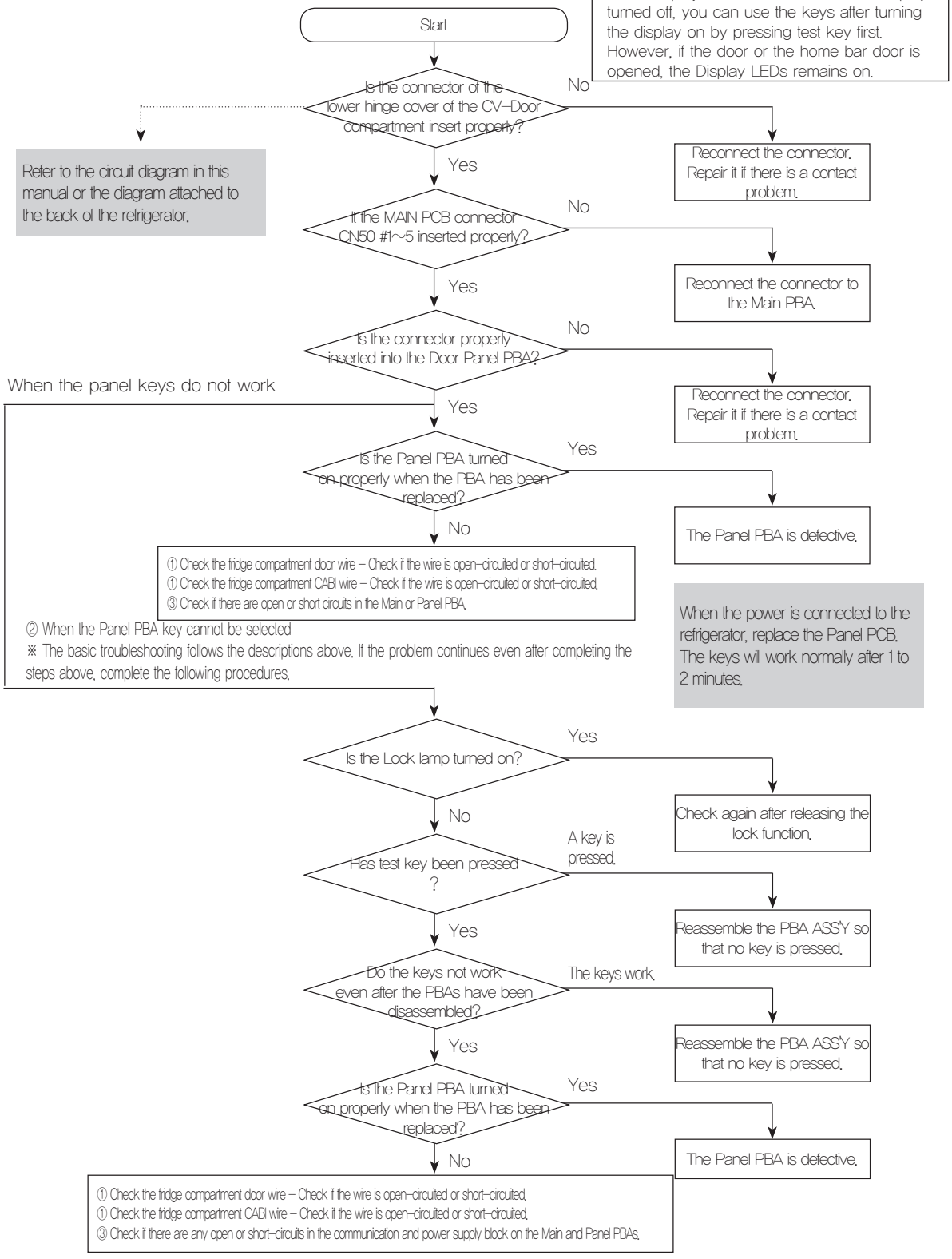
※ If no key is pressed for 10 seconds, the LEDs of the display are turned off. When the display is turned off, you can use the keys after turning the display on by pressing test key first. However, if the door or the home bar door is opened, the Display LEDs remains on.



4-2-14. When the MAIN Panel PBA does not work properly

When the Panel PBA is not turned on or only some of the lamps are turned on

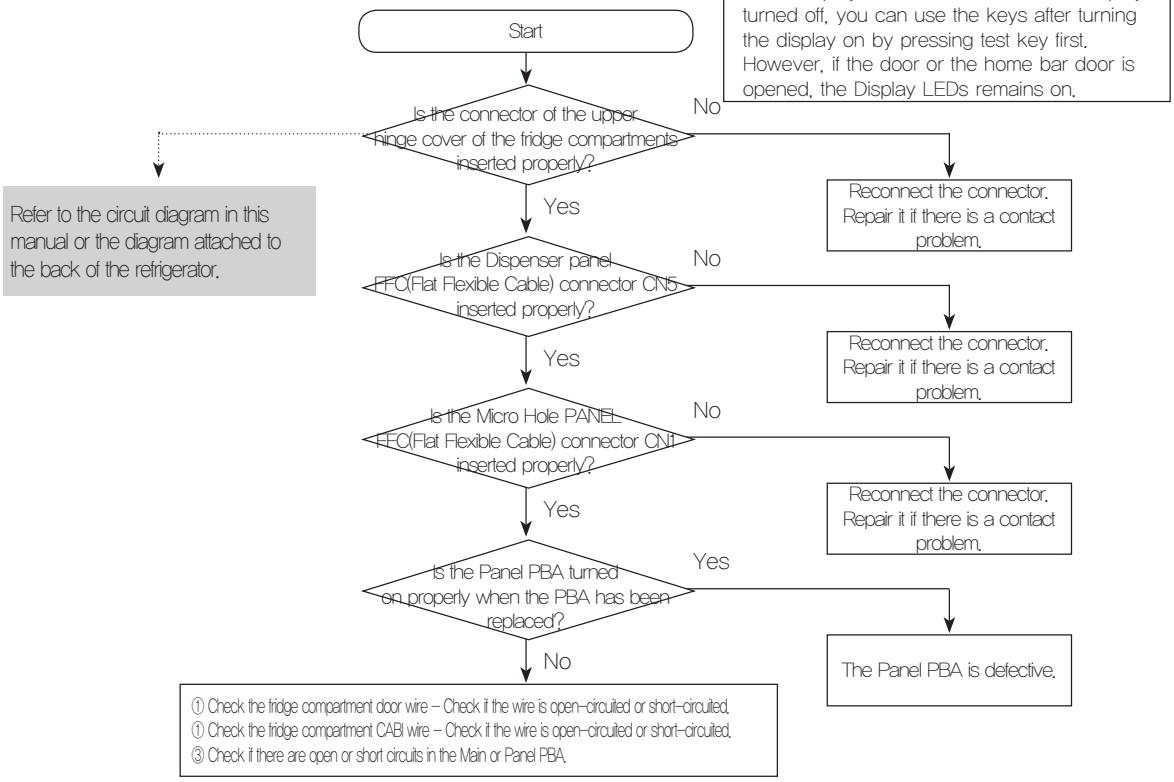
※ If no key is pressed for 10 seconds, the LEDs of the display are turned off. When the display is turned off, you can use the keys after turning the display on by pressing test key first. However, if the door or the home bar door is opened, the Display LEDs remains on.



4-2-15. When the Micro Hole Panel PBA does not work properly

When the Panel PBA is not turned on or only some of the lamps are turned on

※ If no key is pressed for 10 seconds, the LEDs of the display are turned off. When the display is turned off, you can use the keys after turning the display on by pressing test key first. However, if the door or the home bar door is opened, the Display LEDs remains on.

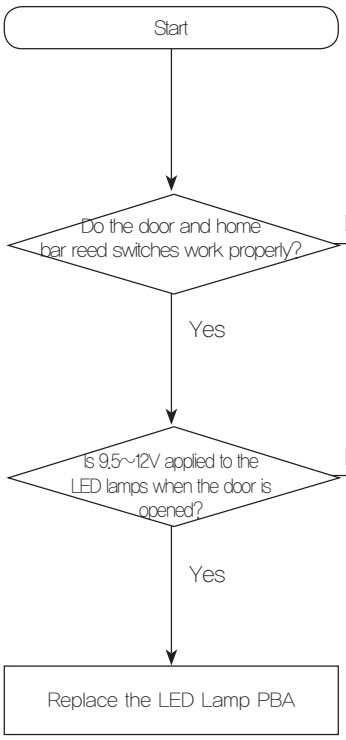


4-2-16. When the internal LED Lamp of the F-Room or R-Room or Cool select-room is not turned on

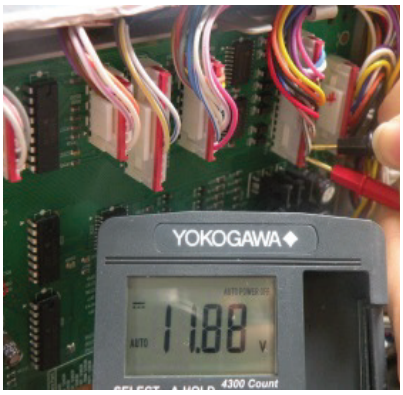
Note. 1. If the freezer door is opened, the door switch is open-circuited and 5V is input to the micom indicating that the door is open. Then, if 5V is measured for 2 minutes or longer, the door open alarm "dingdong" sounds for 10 seconds every minute (1). Therefore, if the door switch is out of order, the "dingdong" may sound every minute. Please make a note of this for customer service.
2. Turning the internal lamp on and off is controlled by the door switch.

※ Tips when checking the reed switch
The reed switch is turned on or off by the magnetic force of the magnet attached to the door.
- When the reed switch is magnetised → 0Ω (when the door is closed.)
- When the reed switch is not magnetised → ∞Ω (when the door is open.)

If the magnetic force of the magnet on the door is weak or the location of the reed switch is not correct, consider replacing the part.



Freezer : Measure the voltage between CN77 #1 and #2.
Fridge : Measure the voltage between CN77 #3 and #4.
Cool Select Room : Measure the voltage between CN74 #1 and CN10 #3



MICOM State		
Door	MICOM(#65)	
	Right and Left	
Close	0V(Low)	0V(Low)
Open	5V(High)	5V(High)

MICOM State		
Door	FF	CV
	#64	#63
Close	0V(Low)	0V(Low)
Open	5V(High)	5V(High)

■ Voltage and resistance of the temperature sensor by temperature

Temp. (°F)	Temp. (°C)	Resistance (kΩ)	Voltage (V)
-43.6	-42	98.9	4.54
-41.8	-41	93.7	4.52
-40.0	-40	88.9	4.49
-38.2	-39	84.2	4.47
-36.4	-38	79.8	4.44
-34.6	-37	75.7	4.42
-32.8	-36	71.8	4.39
-31.0	-35	68.2	4.36
-29.2	-34	64.7	4.33
-27.4	-33	61.5	4.30
-25.6	-32	58.4	4.27
-23.8	-31	55.6	4.24
-22.0	-30	52.8	4.20
-20.2	-29	50.2	4.17
-18.4	-28	47.8	4.13
16.6	-27	45.5	4.10
-14.8	-26	43.3	4.06
-13.0	-25	41.2	4.02
-11.2	-24	39.2	3.99
-9.4	-23	37.4	3.95
-7.6	-22	35.7	3.91
-5.8	-21	34.0	3.86
-4.0	-20	32.4	3.82
-2.2	-19	30.9	3.78
-0.4	-18	29.5	3.73
1.4	-17	28.1	3.69
3.2	-16	26.9	3.64
5.0	-15	25.7	3.60
6.8	-14	24.5	3.55
8.6	-13	23.4	3.50
10.4	-12	22.4	3.46

Temp. (°F)	Temp. (°C)	Resistance (kΩ)	Voltage (V)
12.2	-11	21.4	3.41
14.0	-10	20.5	3.36
15.8	-9	19.6	3.31
17.6	-8	18.7	3.26
19.4	-7	17.9	3.21
21.2	-6	17.2	3.16
23.0	-5	16.4	3.11
24.8	-4	15.7	3.06
26.6	-3	15.1	3.01
28.4	-2	14.5	2.96
30.2	-1	13.9	2.90
32.0	0	13.3	2.85
33.8	1	12.7	2.80
35.6	2	12.2	2.75
37.4	3	11.7	2.70
39.2	4	11.3	2.65
41.0	5	10.8	2.60
42.8	6	10.4	2.55
44.6	7	10.0	2.50
46.4	8	9.6	2.45
48.2	9	9.2	2.40
50.0	10	8.8	2.35
51.8	11	8.5	2.30
53.6	12	8.2	2.25
55.4	13	7.9	2.20
57.2	14	7.6	2.15
59.0	15	7.3	2.10
60.8	16	7.0	2.06
62.6	17	6.7	2.01
64.4	18	6.5	1.97
66.2	19	6.2	1.92

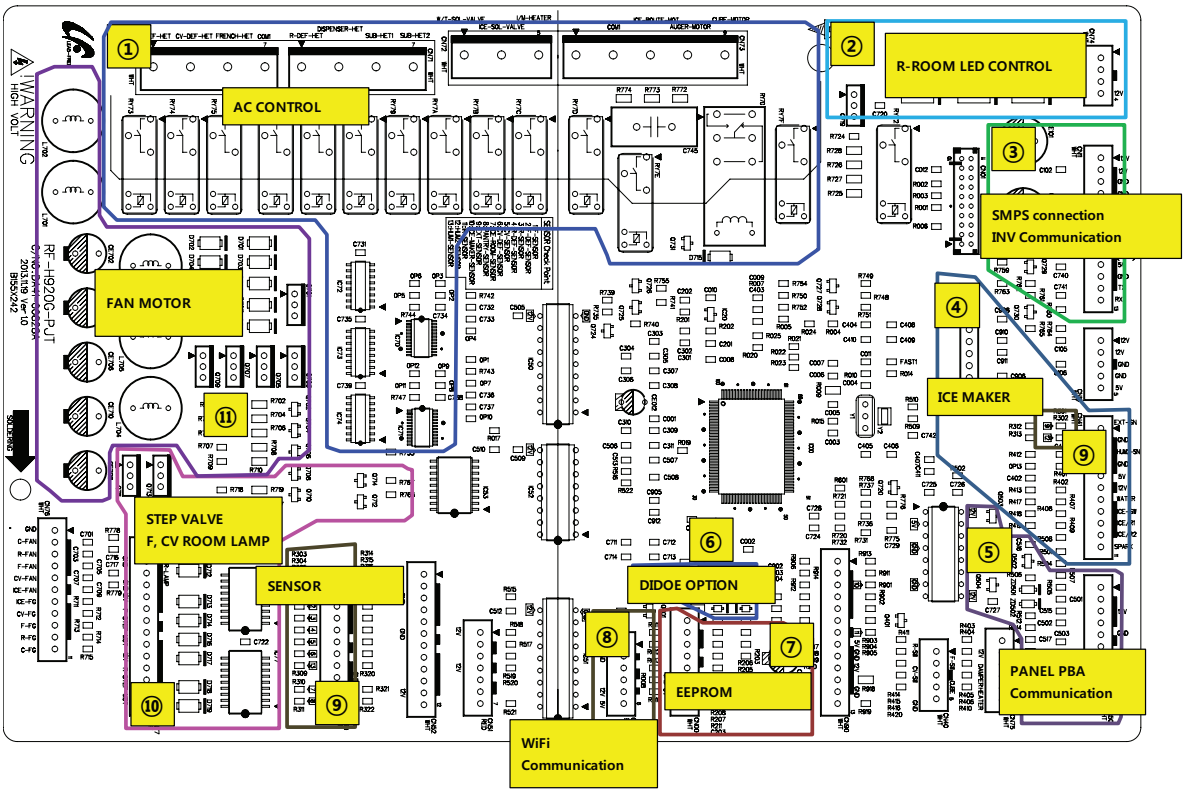
Temp. (°F)	Temp. (°C)	Resistance (kΩ)	Voltage (V)
68.0	20	6.01	1.88
69.8	21	5.79	1.83
71.6	22	5.58	1.79
73.4	23	5.38	1.75
75.2	24	5.19	1.71
77.0	25	5.00	1.67
78.8	26	4.82	1.63
80.6	27	4.65	1.59
82.4	28	4.49	1.55
84.2	29	4.33	1.51
86.0	30	4.18	1.47
87.8	31	4.03	1.44
89.6	32	3.89	1.40
91.4	33	3.76	1.37
93.2	34	3.63	1.33
95.0	35	3.51	1.30
96.8	36	3.39	1.27
98.6	37	3.28	1.23
100.4	38	3.17	1.20
102.2	39	3.06	1.17
104.0	40	2.96	1.14
105.8	41	2.86	1.11
107.6	42	2.77	1.09
109.4	43	2.68	1.06
111.2	44	2.59	1.03
113.0	45	2.51	1.00
114.8	46	2.43	0.98
116.6	47	2.35	0.95
118.4	48	2.28	0.93
120.2	49	2.21	0.90

■ Voltage of the humidity sensor by humidity

RH (%)	Output (mV)	RH (%)	Output (mV)
0	909	51	2376
1	943	52	2402
2	977	53	2428
3	1010	54	2454
4	1043	55	2480
5	1076	56	2505
6	1109	57	2530
7	1141	58	2555
8	1173	59	2580
9	1205	60	2605
10	1235	61	2630
11	1266	62	2655
12	1297	63	2680
13	1328	64	2705
14	1359	65	2730
15	1390	66	2756
16	1420	67	2782
17	1450	68	2808
18	1480	69	2834
19	1510	70	2860
20	1540	71	2886
21	1569	72	2912
22	1598	73	2938
23	1627	74	2964
24	1656	75	2990
25	1685	76	3017
26	1713	77	3044
27	1741	78	3071
28	1769	79	3098
29	1797	80	3125
30	1825	81	3152
31	1852	82	3179
32	1879	83	3206
33	1906	84	3233
34	1933	85	3260
35	1960	86	3288
36	1986	87	3316
37	2012	88	3344
38	2038	89	3372
39	2064	90	3400
40	2090	91	3426
41	2116	92	3452
42	2142	93	3478
43	2168	94	3504
44	2194	95	3530
45	2220	96	3566
46	2246	97	3595
47	2272	98	3624
48	2298	99	3653
49	2324	100	3683
50	2350		

5. PCB DIAGRAM

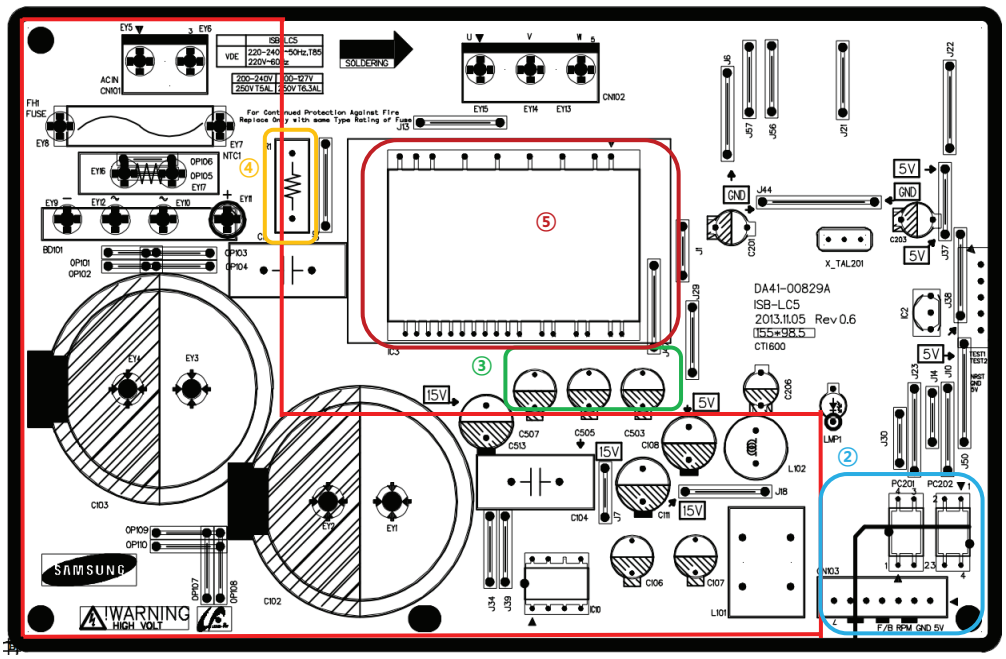
5-1. PCB Layout with part positions (Main Board)



① Relay parts that controls AC load and receives Micom operating signal through Sink Driver IC.
② R-ROOM LED Controlling
③ DC 12V, 5V, GDN supplied from SMPS PBA, MAIN ↔ INV PBA Communication
④ Operate Ice Maker, supply power to Motor, and sense the variation of switch
⑤ MAIN & DISPENSER Panel PBA Communication
⑥ Diode Option Setting Section
⑦ EEPROM : Save and record every kinds of data.
⑧ WiFi Communication
⑨ By receiving various sensor signals, it sends them to MICOM afer removing noise.
⑩ F & R Step-Valve Controlling circuit.(Parallel cycle)
⑪ Fan Motor Driving Circuit(F, R, C, CV, ICE Fan) : It supplies to various types of motors.(DC 7.0~12.0V)

PCB DIAGRAM

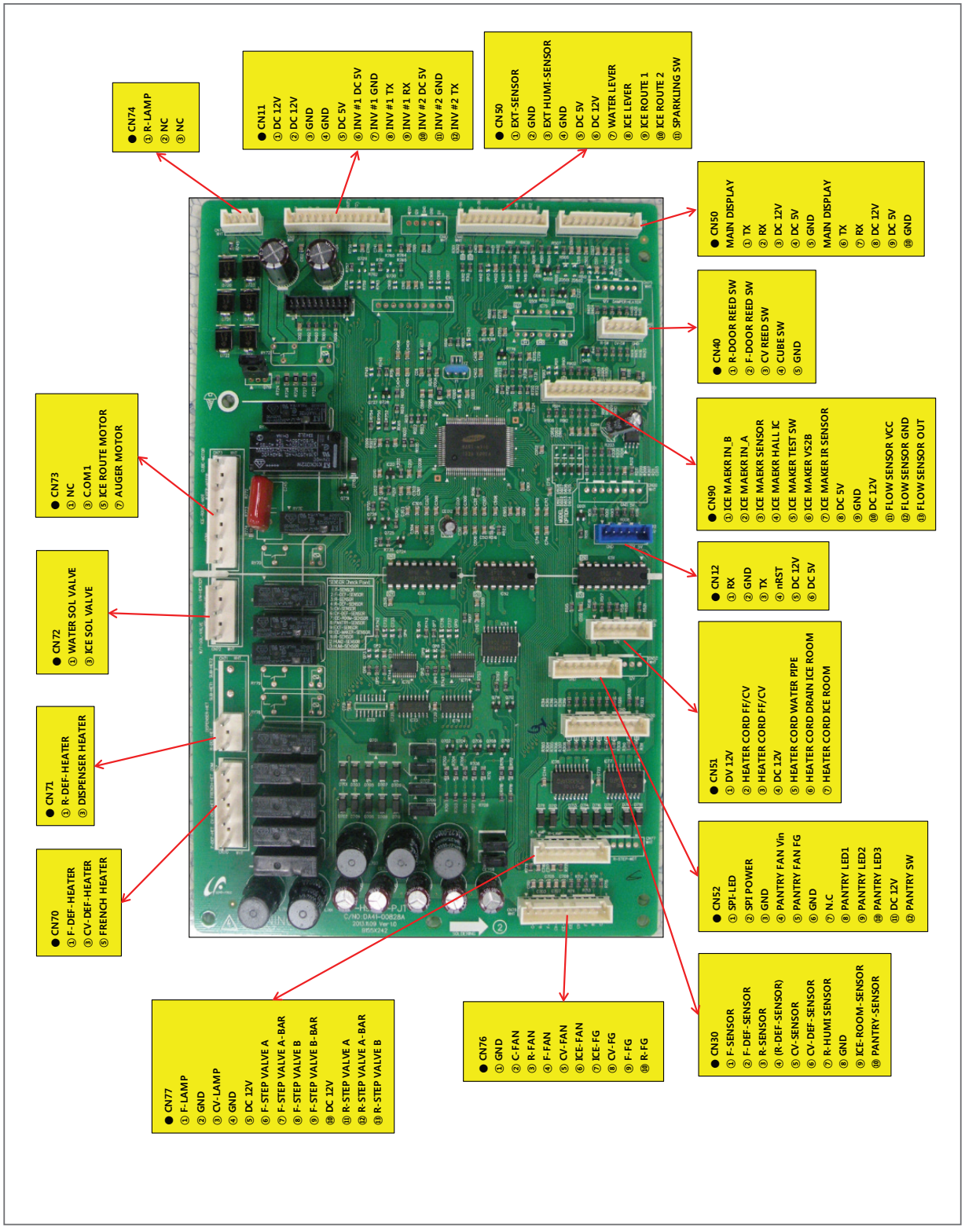
5-2. Inverter PCB Layout positions



1. PCB Power Supply : Supplies DC 15V and 5V to the inverter circuit for the compressor control.
2. Inverter Control Circuit : Fridge Compressor Control Circuit
3. Bootstrap Charger : This is an independent power circuit for driving the IPM High-Phase IGBT.
4. Current Pickup Circuit : This picks up the currents taken by the Shunt resistance and performs the PWM Duty control
5. IPM (FNB40560)

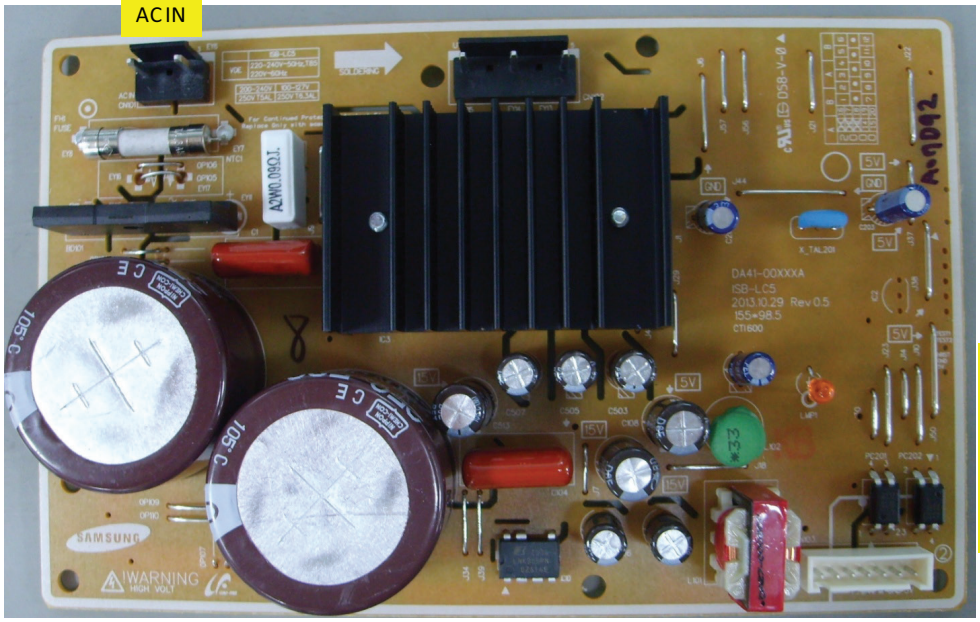
PCB DIAGRAM

5-3. Connector Layout with part positions (Main Board)



PCB DIAGRAM

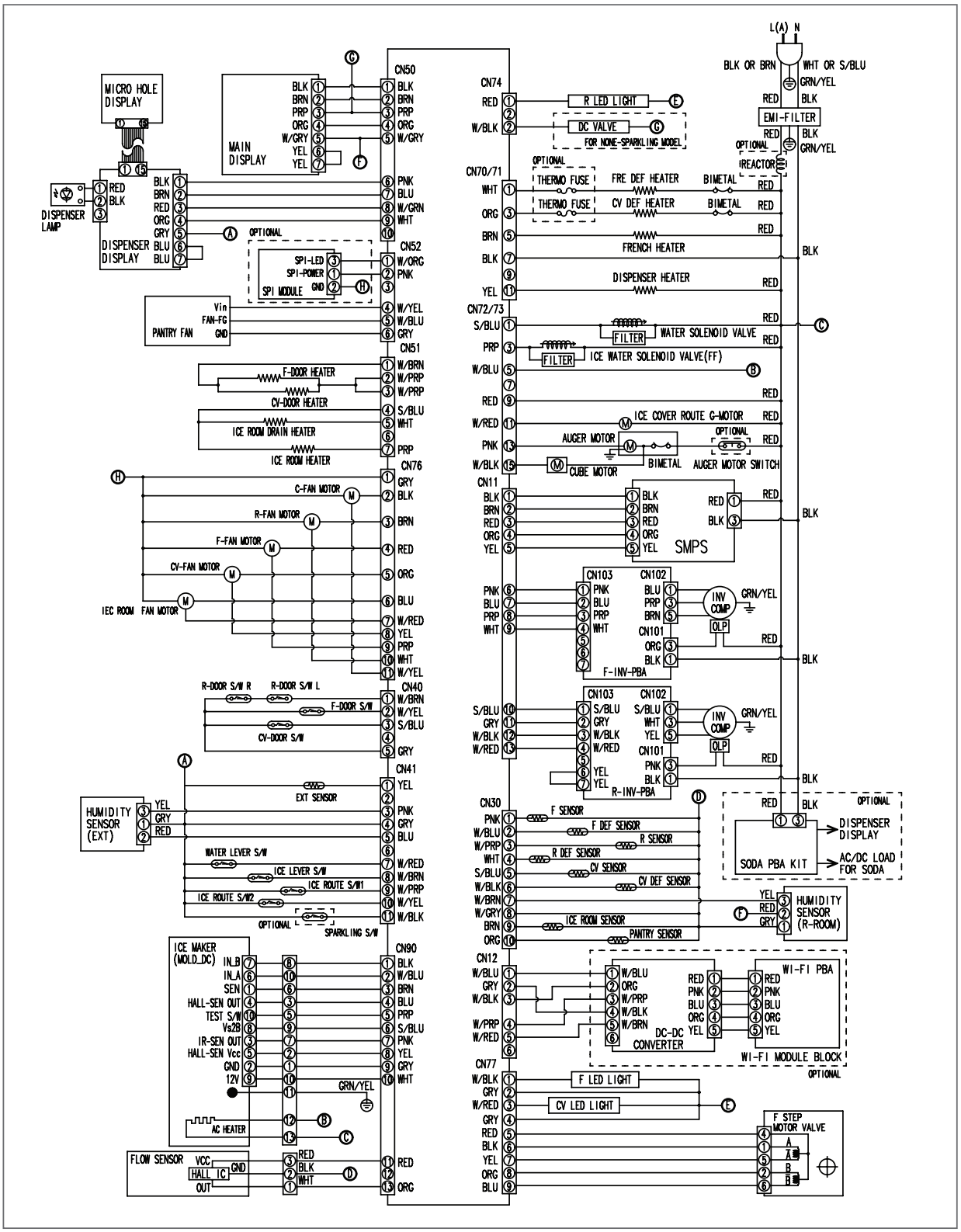
5-4. Connector Layout with part positions



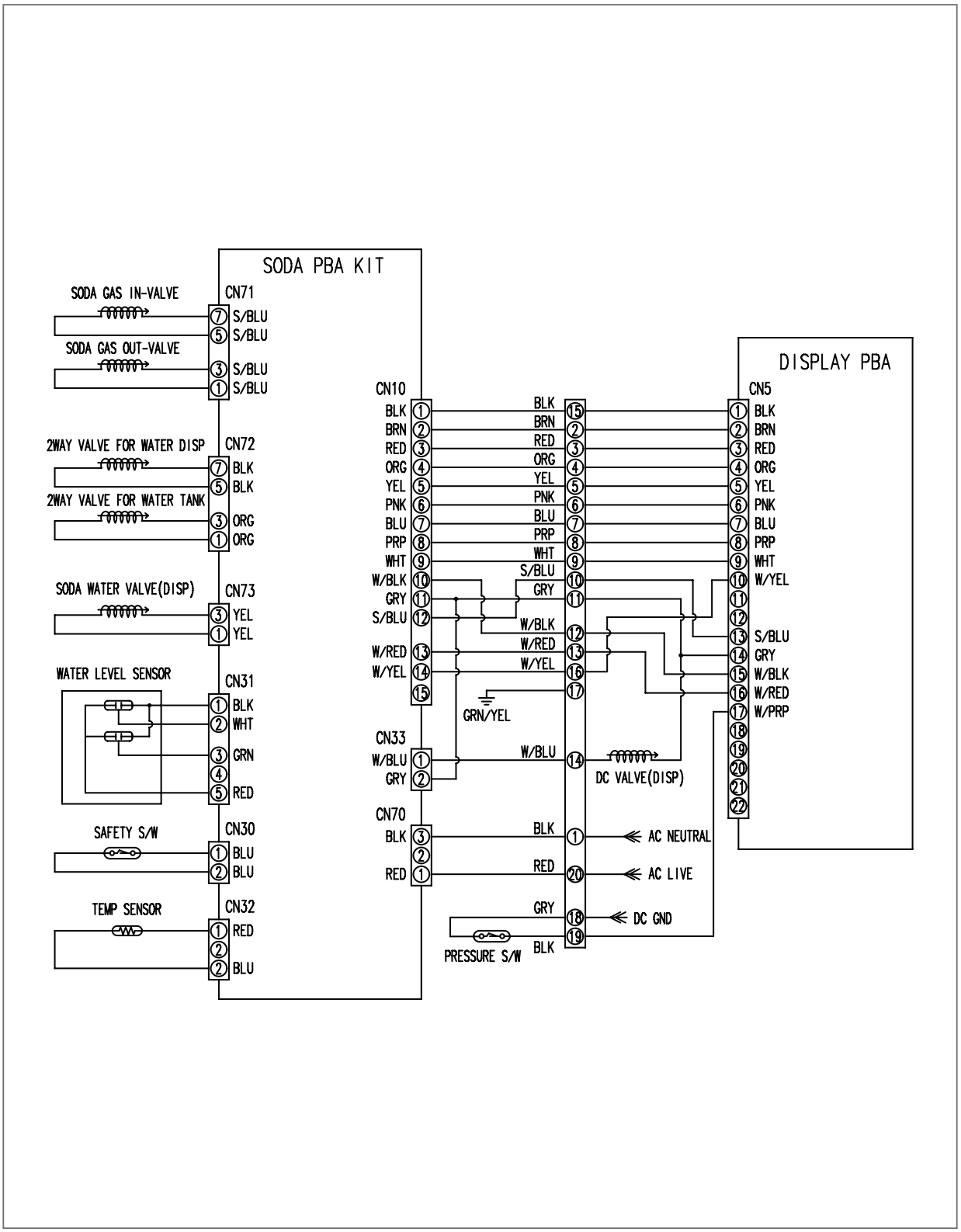
1. 5V
2. GND
3. RPM
4. F/B
5. NC
6. PBA function
7. PBA function

6. WIRING DIAGRAM

6-1. Sparkling/Dispenser Model

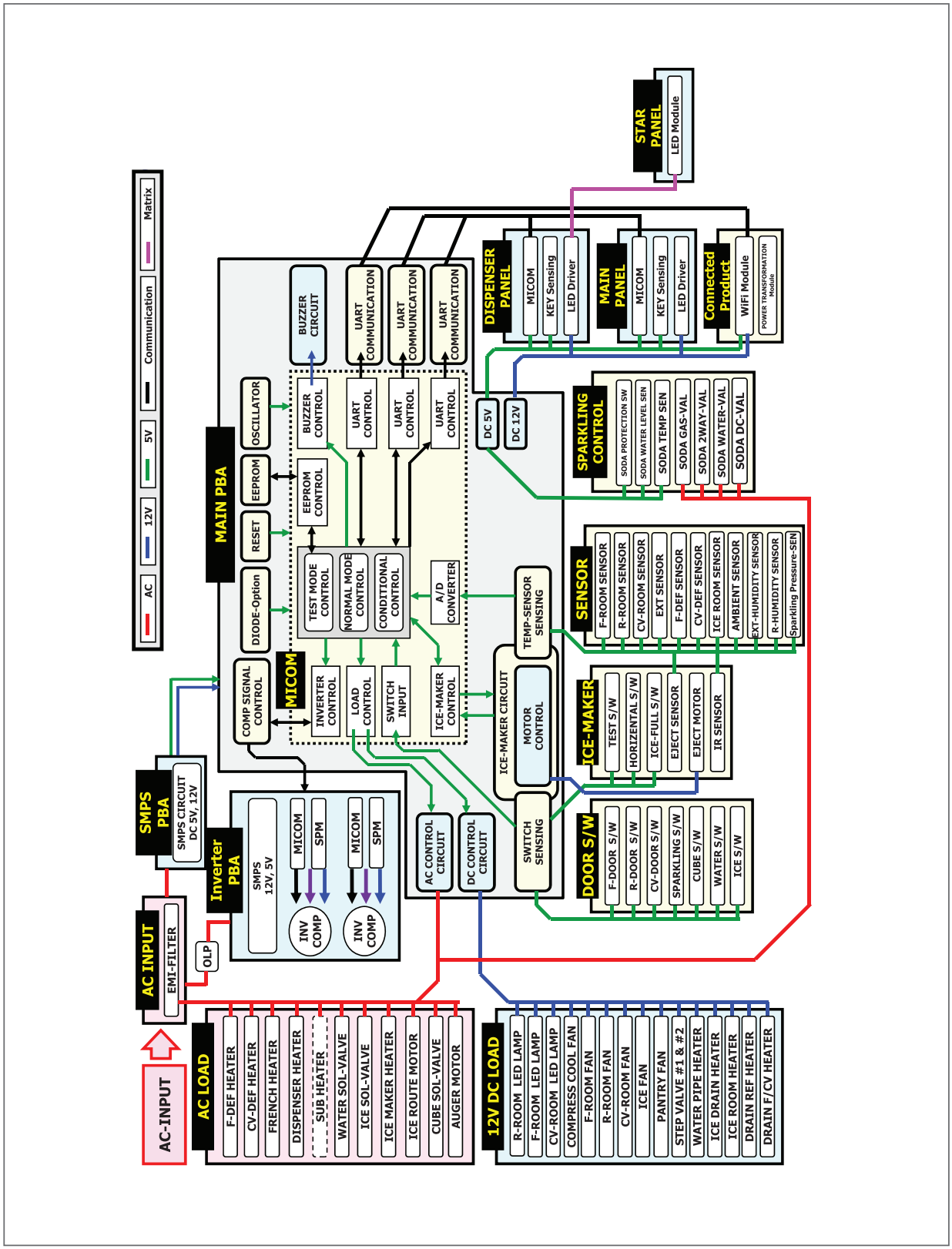


6-2. Dispenser Display+SODA PBA



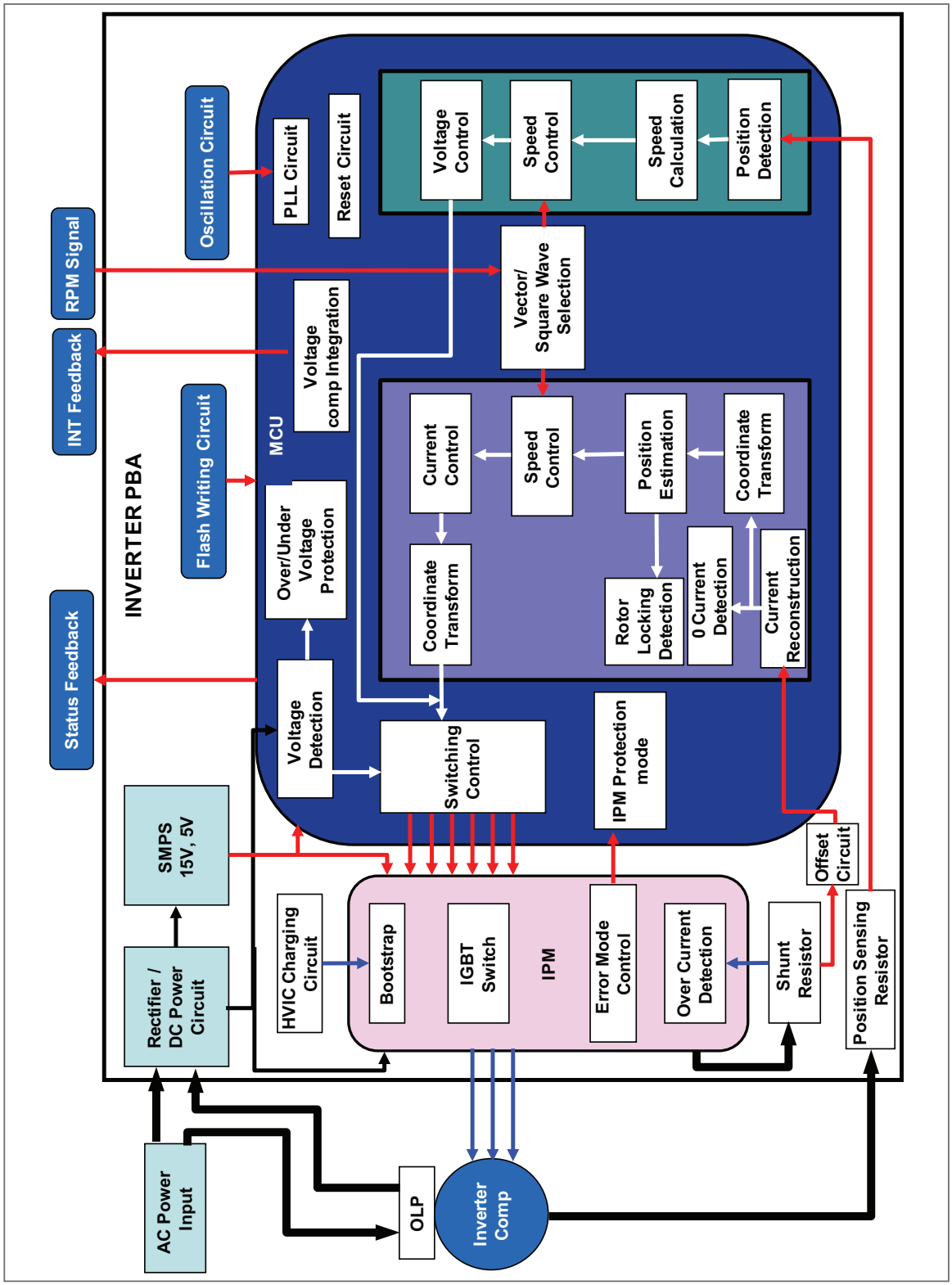
7. BLOCK DIAGRAM

7-1. Dispenser + Sparkling + MHD



BLOCK DIAGRAM

7-2. Whole block diagram (ISB-LC5)

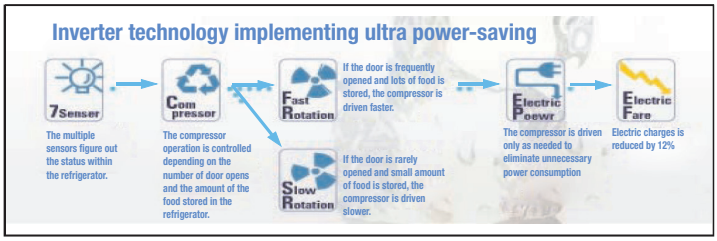


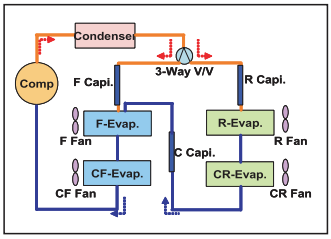
8. REFERENCES

8-1. Glossary

About Inverter technology

This is a technology for ensuring efficiency that automatically controls the freezing and cooling performance depending on the various conditions including the surrounding temperature, the number of times the door is opened and the amount of stored food.





About the TDM cycle

The TDM cycle stands for Time-Divided-Multi-Evaporator System and which refers to technology that preserves the unique "taste" and "fragrance" of food by isolating the compartments and maintaining a high humidity at a high efficiency.

About Natural Defrosting

- This is a technology that helps keep food fresh by raising the humidity in the refrigerator by removing frost that has formed on the evaporator by running the fan when the cooling operation is not being executed.

About the Dual Cycle (2-compressors are applied.)

- This is technology that constructs separate freezing and cooling cycles that are optimized for the food in the freezing compartment and in the fridge compartment on the basis of the configured temperature settings so that the food is kept fresh and power consumption is minimized.

REFERENCES

* Glossary

Terminology	Description
LED	LED stands for Light Emitting Diode. An LED is a semiconductor device that emits visible light when an electric current passes through it.
Tx, Rx	This refers to the communication ports of the micom. TX : Transmit signal. RX : Receive Signal.
Driver IC	The IC used to electrically drive devices. (Power supply type – Source, power cut–off type–Sink)
Micom	This is also called a Micro Computer. It can be viewed as a small computer on a single chip that consists of a ROM where the program is stored, RAM where the data are stored, and ALU that calculates, I/O, Interrupt, etc.
Connector	The connector that connects a separate load and circuit.
Resistor	This is used to suppress the current in the circuit or to distribute voltages.
PCB	This stands for Printed Circuit Board and is used to mechanically support and electrically connect electronic components using conductive pathways, tracks or signal traces etched from copper sheets laminated onto a non–conductive substrate.
Single–Sided PCB	A Printed Circuit Board that only has conductive pathways on one side of the substrate.
Double–Sided PCB	A Printed Circuit Board that has conductive pathways on both sides of the substrate.
SCR SSR	SCR Silicon Control Rectifier, SSR Solid State Relay (Electrical Contact Relay)
TR	Transistor ––– An amplification device using the electric conduction of semiconductor crystals.
Varistor	This stands for Variable Resistor. There are symmetric varistors whose resistance is determined by the voltage only regardless of the polarity of the voltage and asymmetric varistors whose resistance is determined by the polarity of the applied voltage.
Compressor	Compressor – A mechanical device that compresses gas to increase the pressure of the gas. In general, the compressor used for refrigerators is a reciprocating compressor that uses pistons driven by a crankshaft that is rotated by the motor to deliver gas at high pressure.
Inverter	A device that converts DC to AC. This device converts direct current voltage (or current) to alternating current voltage (or current) that is required to drive a motor.
Alignment	This refers to the process that generates a rotating magnetic field in a direction to align the location of the rotor to the rotating magnetic field when starting a motor. In general, to drive a motor, the rotor location must be identified (except V/f) but the location of the rotor cannot be easily identified before starting the motor. Therefore, a process to locate the rotor at a specific position by force is required and this is called alignment.
Activation	A valid signal status This represents the Low status for an activation low signal and the High status for an activation high signal.
Deactivation	An invalid signal status This represents the High status for the activation low signal and the Low status for the activation high signal.
Bootstrap Capacitor	The capacitor that stores the power voltage to drive the High–Side Power Switch of the SPM. A 3–Phase Full–Bridge Inverter consists of 3 capacitors. By turning on the Low–Side Power Switch for a pre–determined period of time just before the motor starts, the capacitors are charged.
SPM	Smart Power Module Although this was originally the model name for a product, it now refers to a power semiconductor package that has an inverter function including a switching device, a driving circuit of the switching device and a protection circuit.
PWM	Pulse Width Modulation
RPM	Revolutions Per Minute This refers to the number of rotations per 1 minute.
RPS	Revolutions Per Second This refers to the number of rotations per 1 second.

8-2. French Heater Control Using a Humidity Sensor

▶ The French heater of the fridge is controlled by the humidity sensor value, the surrounding temperature and the fridge temperature.

▶ If the output voltage of the humidity sensor is 0.6V or lower or 4.7V or higher, it is judged to be a humidity sensor error (self diagnosis error code: 13E) and the French heater of the fridge is controlled by the surrounding temperature and the fridge temperature. (Humidity sensor voltage table : Refer to page 107)

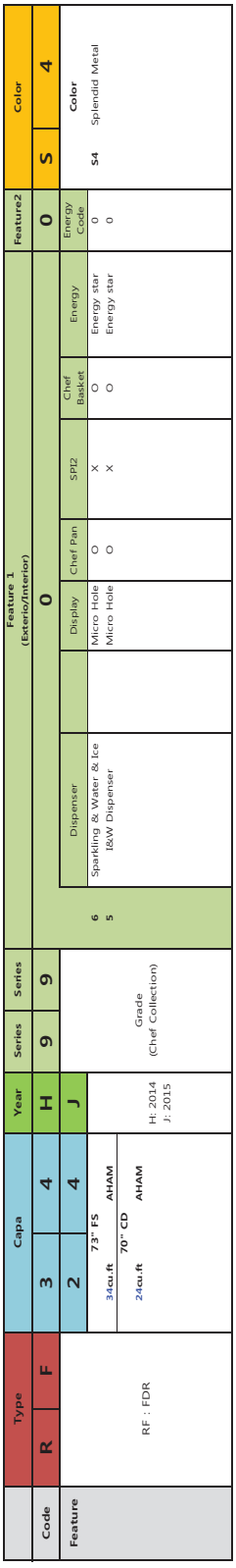
External Air Condition	High surrounding temperature			Fridge compartment internal lamp		
Humidity / Fridge Temperature Setting	High humidity	~	Low humidity	High humidity	~	Low humidity
0 ℃	The operating ratio decreases.			The operating ratio decreases.		
~						
5 ℃						

▶ The French heater operating ratio depending on whether the humidity sensor is applied or not

▶ If the humidity sensor is in the Open or Short Error state, the French Heater operates: The heater operates in the high-humidity condition

▶ The French Heater operating ratio when the control function service option is applied: 100 %

8-3. Model Numbering Convention



Code	Type		Capa		Year	Series	Series	Feature 1 (Exterio/Interior)									Feature2	Color	
	R	F	3	4	H	9	9	0									0	S	4
Feature	RF : FDR		2	4	J	H: 2014 J: 2015	Grade (Chef Collection)	6 5	Dispenser		Display	Chef Pan	SPI2	Chef Basket	Energy	Energy Code	Color	
			34cu.ft	73" FS AHAM					Sparkling & Water & Ice I&W Dispenser		Micro Hole	O	X	O	Energy star	0	S4	Splendid Metal
			24cu.ft	70" CD AHAM							Micro Hole	O	X	O	Energy star	0		

8-4. Troubleshooting. Check the following before calling the service centre

PROBLEM	SOLUTION
The refrigerator does not work at all or it does not chill sufficiently.	• Check if the power plug is properly connected. • Check if the set temperature on the digital display is warmer than the freezer or fridge inner temperature. If it is, set the freezer or fridge to a colder temperature. • Is the refrigerator in direct sunlight or located near a heat source? If so, it may not be able to cool sufficiently. Install it in a location that is out of direct sunlight and not near a heat source. • Is the back of the refrigerator too close to the wall, preventing proper ventilation? If so, it may not be able to cool sufficiently. Keep it an appropriate distance from the wall. • Is there too much food inside so that the food is blocking the outlet vent? To keep the refrigerator at a suitable temperature, do not fill the refrigerator with too much food.
The food in the fridge is frozen.	• Check if the set temperature on the digital display is too low. If so, raise the set temperature inside the refrigerator. • Is the temperature too low in the room? Set the refrigerator warmer. • Did you store food with a high moisture content in the coldest part of the refrigerator or near the cooling outlet vent? Try moving those items to the other shelves in the fridge instead of keeping them in the colder areas or bins.
You hear unusual noise or sounds.	• Check if the refrigerator is level and stable. • Is the back of the refrigerator too close to the wall, preventing proper ventilation? Try moving the back of the refrigerator at least 2 inches from the wall. • Was anything dropped behind or under the refrigerator? • If you hear a “ticking” sound from inside the refrigerator, this is normal. It occurs because various parts contract or expand in response to temperature changes in the refrigerator interior. • If it sounds as if something is hitting something else inside the refrigerator, this is normal. The sound is caused by the compressor operating at high capacity.
The cabinet-door sealing area of the appliance is hot and condensation is occurring.	• Some heat is normal as anti-condensators are installed in the vertical hinged section of the refrigerator to prevent condensation. • Is the refrigerator door ajar? Condensation can occur when you leave the door open for a long time.
The Ice Maker is not producing ice.	• It may take longer to make ice if the refrigerator is not sufficiently cool, such as when the refrigerator was first installed. • Is the water line connected and the shut-off valve opened? • Did you manually stop the ice making function? • Check if the water filter is properly installed. If it is not properly installed, the ice making function may not work.
You can hear water bubbling in the refrigerator.	• This is normal. The bubbling comes from refrigerant circulating through the refrigerator.

PROBLEM	SOLUTION
There is a bad smell in the refrigerator.	• Check for spoiled food. • Foods with strong odors (for example, fish) should be tightly covered. • Clean out your freezer periodically and throw away any spoiled or suspicious food.
Frost forms on the walls of the freezer.	• Is the air vent blocked? Remove any obstructions so air can circulate freely. • Allow sufficient space between the stored food for efficient air circulation. • Is the freezer drawer closed properly?
The water dispenser is not functioning.	• Is the water line connected and the shut–off valve opened? • Has the water supply line tubing been crushed or kinked? • Make sure the tubing is free and clear of any obstruction. • Is the water tank frozen because the fridge temperature is too low? Try selecting a warmer setting on the Digital display. • Check if the water filter is properly installed. If it is not properly installed, the water dispenser may not work.
The freezer door auto close system does not work.	• Is there an imbalance between the right and left parts of the door? • Open and close the door smoothly 1∼2 times. After you do this, the auto close system usually works properly again. • Try opening the door smoothly to avoid unbalancing the right part and the left part of the door.
Condensation or water drops forms on the vertical mullion and surroundings, etc.	• Condensation or water drops may form if the humidity is too high while the refrigerator is operating. • If condensation or water drops appears on vertical mullion and surroundings, etc., turn the Energy Saving mode off after removing the condensation.

PROBLEM	SOLUTION
Sparkling water is not dispensed.	• Is the water line connected and the shut–off valve opened? • Did you pull down the Sparkling–Selector Lever? (Applicable to Chef Collection models.) • Is the Sparkling Water Production Function Off icon on? Press the Sparkling Maker button for 3 seconds to turn on sparkling water production. The Sparkling Water Production function is set to OFF at the factory. Set it ON to get sparkling water. • Is the Sparkling Maker icon blinking? The blinking icon indicates the refrigerator is producing sparkling water. Please wait until the icon stops blinking. • Check if the Quick Sparkling button's cross bar icon is lit. The cross bar icon shows how much carbonated water is left in the carbonated water tank. (Applicable to Chef Collection models.) • Is the carbonated gas cylinder empty? If the refrigerator dispenses a small amount or no sparkling water, replace the SodaStream 60L Carbonator with a new one. If the SodaStream Carbonator runs out of CO_2, the cylinder icon ( ) turns on. If the Exchange Carbonated Gas Cylinder icon is lit, check the SodaStream Carbonator. (Applicable to Chef Collection models.) • Is the refrigerator door open? If the door is open, Sparkling water/Water/Ice are not dispensed. • Is the cylinder lever unlocked? Open the cylinder cover and lock the cylinder lever. • Is the Control Lock on? • If carbonated water or regular water is dispensed continually for 1 minute or more, dispensing may temporarily stop. Press the lever again to continue dispensing.
The Quick Making option makes a wind noise while in process.	• While the Quick Making option is active, the SodaStream Carbonator cycles through injecting and discharging CO_2 gas, which can make a wind–like noise.
The taste of the sparkling water is weak.	• Increase the Sparkling Level of the sparkling water. • When the taste of the sparkling water is too weak or there is no other taste than water, replace the SodaStream Carbonator with a new one. • If you use the Fill Up (3 sec) option immediately after replacing the Carbonator, the sparkling water tastes stronger or weaker than normal, depending on the amount and concentration of the CO_2 remaining in the water tank.

PROBLEM	SOLUTION
The taste of the sparkling water is too high.	• Decrease the Sparkling Level of the sparkling water. (Sparkling Levels – 1: Low, 2: Medium, 3: High) • Empty the sparkling water tank, and then set the Sparkling Level lower. When the refrigerator makes sparkling water, it will make water at a lower level of carbonation. ✻ To empty the sparkling water tank, press and hold the "Sparkling Maker" button for 3 seconds to turn the Sparkling water maker off. Dispense all the remaining sparkling water. After emptying the sparkling water, press and hold the "Sparkling Maker" button for 3 seconds to activate the sparkling water maker. ✻ Did you make sparkling water by pressing the "Quick Sparkling/Fill up" button and holding for 3 seconds? If there was still sparkling water in the tank before you started the Quick Fill function, sparkling water with a higher CO_2 concentration than the level you set can be produced. Once the sparkling water tank is emptied, the refrigerator will make sparkling water at the Sparkling Level you have set.
The taste of the sparkling water did not change after you changed the sparkling concentration level.	• If you change the concentration level, the new level is applied to the subsequent production. That is, the change does not affect the sparkling water in the sparkling water tank nor does it affect the sparkling water production currently in progress. The change is only applied to subsequent productions.
After you replaced the Sodastream Carbonator, no sparkling water is being produced.	• After replacing the SodaStream Carbonator, be sure to touch and hold the "Quick Sparkling/Fill up" button for 3 seconds to reset the SodaStream Carbonator.
The sparkling water suddenly stops being dispensed even though the operation is still in progress.	• Check if the short lines inside the cup icon are turning on one by one in a clockwise direction. This indicates that the sparkling water is being produced. When production is complete, all of the short lines inside the cup icon turn on. When production is complete, the refrigerator will dispense sparkling water. • If the refrigerator is not dispensing sparkling water, check if "OFF" is displayed above the cup icon over the Sparkling Maker button. • This indicates that the sparkling water tank is empty and the automatic sparkling water production function is turned off. To produce sparkling water, touch and hold the "Sparkling Maker" button for 3 seconds to start production.
The Sparkling function is turned off but sparkling water continues to be dispensed.	• Even if you turn off the sparkling water production function, sparkling water is dispensed for as long as there is sparkling water in the sparkling water tank. • If you do not use the sparkling water maker for an extended period of time, stop the automatic sparkling water production function and remove the sparkling water through the dispenser.

PROBLEM	SOLUTION
The sparkling water dispenses at a slower rate than regular water.	• Check if the tap water valve is closed or the hose is bent and if water is being supplied to your home at the normal pressure. If the tap water pressure is too low, the sparkling water maker may not work properly because too little water is being supplied to the sparkling water tank. • When water is supplied to the sparkling water tank from a water purifier, sparkling water may not be produced properly because too much water is required over a short period of time. We recommend that you do not dispense water from a water purifier less than five minutes before you start a sparkling water production cycle. • If this problem continues, please contact the water purifier manufacturer or ask a plumber to increase the tap water pressure to a normal level.
The sparkling water is not cold enough and tastes flat.	• If you continuously produce a lot of sparkling water, you may not be able to enjoy the true taste of sparkling water because there is too little time to cool the water. To drink sparkling water at its optimal state, you have to ensure sufficient cooling time before you dispense sparkling water. • We recommend you wait at least four hours after connecting tap water to the refrigerator before making and dispensing sparkling water.
The sparkling "OFF" icon is displayed, but the sparkling water maker is not turned off.	• Check if the short lines inside the cup icon are turning on one by one in a clockwise direction. This indicates that sparkling water is being produced and cannot be stopped immediately. However, if you press and hold the "Sparkling Maker" button for 3 seconds during production, then the "OFF" icon is displayed over the cup icon and automatic sparkling water production will turn off after the current production cycle is complete.
The concentration control function is disabled during sparkling water production.	• Check if the short lines inside the cup icon are turning on one by one in a clockwise direction. This indicates that the sparkling water is being produced. Since the sparkling water concentration cannot be changed during a production operation, change the concentration level when production is complete and the blinking stops. The refrigerator applies the new Sparkling Level to the next production operation.
Sparkling water is produced continuously.	• Has the sparkling water production time limit been reached? The length of time during which sparkling water is generated is determined by the Sparkling Level setting. (Level 1: Approx. 10 mins; Level 2: Approx. 20 mins; Level 3: Approx. 30 mins) Please wait until the sparkling water production time has been reached. • Check if the refrigerator door is open. If the refrigerator door is open, the sparkling water maker stops to prevent noise that is generated by the sparkling water production. If you open the door frequently, the time during which sparkling water is produced may be extended depending on the Sparkling Level setting. Close the refrigerator door and wait until the sparkling water production time limit has been reached.

PROBLEM	SOLUTION
The cylinder icon did not turn on when the SodaStream Carbonator was removed.	• If you remove a SodaStream Carbonator that has a little gas remaining, the cylinder icon on the display may turn on after a several seconds. • If you remove a SodaStream Carbonator that has gas remaining, the cylinder icon on the display may not turn on for a period of time.
What Do I Need to use the E-Smart and Smart Grid functions?	• To use the Smart Grid (Demand Response) and E-Smart function on your Refrigerator, you need the following devices and apps: - Devices: 1) A Wireless Router, 2) A Samsung E-Smart Refrigerator, 3) A Smartphone. (Recommended: Galaxy S4, Galaxy Note3 or later models and Android OS Jelly Bean or later version) - Applications: 1) "Samsung E-Smart App" from the Google Play Store or Samsung Apps. You also need to: • Connect the Refrigerator and the Smartphone to the same Wi-Fi network in your home. • Install and run the Samsung E-Smart App on your Smartphone. • In addition, to use the Smart Grid (Demand Response) function, you must Register for the service with your electric company. The company must have an EMS (Energy Management System) that supports SEP (Smart Energy profile).
Why isn't the E-Smart function working normally?	• Confirm that the router in your home and the Internet are working properly. - Connect a Smartphone to the router (AP, Access Point), and then confirm that you can browse the Internet on the phone. • Confirm that refrigerator is connected to the AP. - Check the E-Smart icon on the panel of the refrigerator. If the refrigerator is connected, the icon will be on. • Confirm that the refrigerator and Smartphone are connected to the same router.
Why isn't the Delay Defrost Capability working normally?	• Confirm that the router in your home and the Internet are working properly. - Connect a Smartphone to the router (AP, Access Point), and then confirm that you can browse the Internet on the phone. • Confirm that the area where you live is properly entered into the Samsung E-Smart App. • Confirm that the Smart Grid function works correctly. (Check the panel. L3 andL4 should not be displayed on the panel.)

8–5. Optimum Operating Environment for Sparkling water

PROBLEM	SOLUTION
[Water temperature] "We recommend that you only drink sparkling water after it is sufficiently cooled."	• Since the temperature of the sparkling water greatly affects the taste of the water, if the temperature of water is not sufficiently low, you may not be able to get the right taste. • We recommend you wait at least four hours after connecting tap water to the refrigerator before making and dispensing sparkling water. • We also recommend that when the refrigerator is producing sparkling water, that you dispense as little regular water as possible so that the sparkling water is produced with cold water. • If you drink 0.5 gallons (2 liters) or more a day, the water may not be cooled sufficiently. • To store dispensed sparkling water, put the water in an air tight container and keep it in a cold section of the refrigerator for better taste.
[CO_2 concentration of sparkling water 1] "To ensure a precise CO_2 concentration, dispense all the remaining sparkling water before producing additional sparkling water."	• Because the current system does not measure the CO_2 concentration of the sparkling water remaining in the sparkling water tank before it starts to produce additional sparkling water, the resulting concentration may differ from the desired level, depending on the remaining sparkling water in the sparkling water tank. • If you haven't used the sparkling water function for an extended period of time (one week or longer), first remove all the sparkling from the sparkling water tank, and then produce fresh sparkling water for better quality and taste.
[CO_2 concentration of sparkling water 2] "To maintain a precise CO_2 concentration of sparkling water, replace the CO_2 cylinder before it is depleted."	• As the time to replace the SodaStream Carbonator comes closer, the CO_2 concentration decreases and sparkling water becomes weaker. • If the SodaStream Carbonator runs out of CO_2, the cylinder icon ( ) turns on. If this occurs, replace the SodaStream 60L Carbonator with a new one.
[Preparing sparkling water – Capacity] "If you want to have sufficient sparkling water prepared in the morning, we recommend that you touch and hold the Sparkling Maker button for 3 seconds to start the sparkling water production before going to bed."	• If you do not press and hold the "Sparkling Maker" button for 3 seconds to start the sparkling water production, the amount of sparkling water in the water tank may be less than the maximum production capacity of 1.1 liters. • Since a production time of 10~30min is required if you need 1.1 liters or more of sparkling water, we recommend producing and storing enough sparkling water in advance or at least securing the maximum sparkling water capacity of 1.1 liter by pressing and holding the "Sparkling Maker" button for 3 seconds to start sparkling water production.
[The water supply pressure and water taste] "If a water purifier is connected to the refrigerator, we recommend that you do not dispense water from the water purifier less than five minutes before you start a sparkling water production cycle."	• If water pressure to the refrigerator is low, check if the water line valve is fully open and if the water line is kinked or bent. • If a water purifier is connected to the refrigerator, there may be insufficient water supply for sparkling water production. • If there is insufficient water supply, the concentration of the sparkling water increases or the amount of sparkling water may decrease.

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