



Fast Track Troubleshooting

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Models Covered:
RSG309AARS

WiFi model

**IF EVAPORATOR IS
FROZEN SEE LAST PAGE
FOR INSTRUCTIONS ON
REPAIR**

Installation Note:

2" space required top and
rear and 3 3/4" space re-
quired on sides

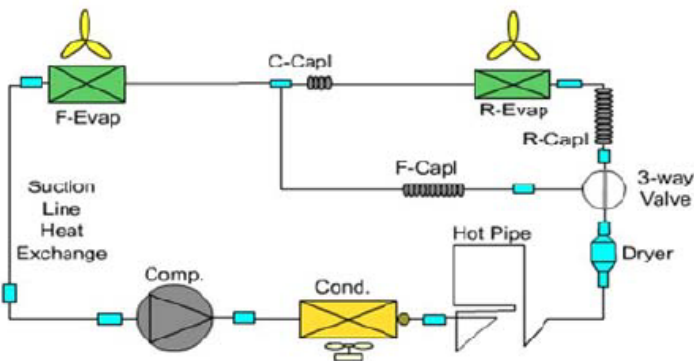
Sales Mode

No Compressor Operation
Press the Settings Icon on
the screen, scroll to the sec-
ond page of the menu and
toggle the setting "Cooling
Off"

Refrigerant Charge
R134a 5.64 oz.

Sealed System

Compressor → Condenser → Hot Pipe →
Back Cluster Pipe → Dryer → Capillary Tube →
Refrigerator Evaporator → Freezer Evaporator →
Suction Pipe → Compressor



SUPPORT INFORMATION

Training — Plus One
<http://my.plus1solutions.net/clientPortals/samsung/>
Help — GSPN
<http://service.samsungportal.com/>

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Forced Mode and Diagnostic Mode Operation: (1) Press the upper left and upper right corners alternately (A-B-A-B-A-B) until “Engineer Mode Enabled” is displayed on screen. Engineer Mode allows you to access both Diagnostic and Forced operation Modes. (2) Press the settings icon then scroll through the menus to the Engineer Mode sub menu. (3) Then select the Fridge Function Test, (4) Press the Test button. (5) Press the NEXT button to cycle through the different modes.

Forced Mode Operating Sequence -

Force Run 1 (RPM 3600) →

Force Run 2 (RPM 3600):(TDM F valve Fixed) →

Force R Defrost → Refrigerator Defrost Heater on

Force F/R Defrost → All heaters on

Test Cancel

In Force Run Mode the compressor will run at once cancelling defrost mode where applicable. Use care, as this can cause the compressor to overload.

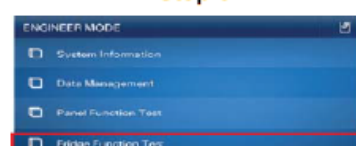
Step 1



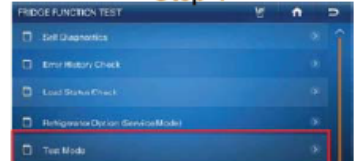
Step 2



Step 3



Step 4



Step 5



Component Value Chart

Component	Resistance	Wattage	Voltage
Freezer Defrost Heater	62.6Ω	230	120vac
Fridge Defrost Heater	120Ω	120	120vac
French Mullion Heater	1446Ω	10	120vac
Ice Duct Heater	2057Ω	7	120vac
Dispenser Heater	5760Ω	2.5	120vac
Ice Maker Heater	93Ω	156	120vac
Damper	144Ω	1	12vdc
Sensors	2.5kΩ-89kΩ	N/A	1~4.5vdc
Fans	N/A	N/A	7~12vdc

DC FAN MOTORS

Brushless DC Fan motors are used to save energy. The fans operate at two speeds. Fan speed information is read by the Main PCB. If the fan speed exceeds 600 RPM or the speed is too slow, or stopped the fan drive circuit is disabled. After 10 seconds the circuit tries again with 3 seconds of DC voltage. If the fan continues this activity for 5 cycles, 10 seconds off 3 seconds on, the fan drive circuit is disabled for 10 minutes.

TO TEST THE FAN CIRCUIT VOLTAGE.

Power off and back on to check the DC voltage to the motor, wait from 10 to 60 seconds for the fan voltage to kick in, and then check fan voltage, the average reading is 9 VDC. If you get 3 seconds of voltage every 10 seconds for the 5 fan power up cycles, then the Main PCB is good.

NOTE: You may need to put unit in FORCED FREEZE mode to activate the fans/compressor.

If the fan blade is blocked by ice, then defrost and check the motor again, after removing power from the unit.

If the evaporator is ice blocked and thus blocking the air flow, the fan will over RPM and is stopped. Remove ice and check the motor again. If everything is clear around the fan blade then the motor would be at fault. Continuous fan errors will be displayed on the front panel display. **PLEASE NOTE:** The door switches control the evaporator fan motors. Have them closed to test the motors. Delay time 10 – 60 seconds.

Heat Release Ice Makers

Heat Release Ice production Explanation

38 minutes after the water fill is complete, the control board will check the temperature of the eject Thermistor on the Ice Maker Head. If the Thermistor reads a temperature lower than 18.5°F for more than 5 seconds, the ice production process is complete. The Ice Maker will harvest if the ice bucket is not sensed as full. If a Fault Mode is detected with the Ice Maker operation, the Ice Maker stops working for 3 hours, which means that the Ice Maker checks the operation every 3 hours until it works properly.

Heat Release I/M Test Mode

Press and hold the ICE TEST Switch for at least 1.5 sec. and the harvest function will start. If the Ice Maker thermistor is below 0°F, the Ice Maker heater turns on for about two minutes. If the temperature exceeds 0°F, the Ice Maker heater turns on for 30 seconds. After the Ice Maker heater turns on for 30 seconds, the heater turns off and the Ice Maker harvest motor turns on. The motor will rotate in right direction for about 3 minutes, then the water supply valve is energized and then de-energized and the test mode is complete. If the above operation is not carried out within 6 minutes, the Ice Maker will go into a fault mode.

FREEZER TEMPERATURE CONTROL BY THE ICE MAKER

Interior Temperature of the freezer will be set to -14°F until the ice bucket is full. When the ice bucket is full, the freezer will maintain original set temperature. Also, whenever some ice is used, the freezer will again set to -14°F. Selecting "Ice Off" will allow the freezer to be controlled by the set temperature. *****NOTE***** If water is not hooked up, the freezer will always be at -14°F unless "Ice Off" is selected.

Temperature/Resistance/Voltage Chart for Samsung Refrigerators Sensors

Temp.	(Ω)	Volts	Temp.	(Ω)	Volts	Temp.	(Ω)	Volts	Temp.	(Ω)	Volts
-29.2°F	64227	4.326	1.4°F	28021	3.685	32.0°F	13290	2.853	62.6°F	6771	2.019
-27.4°F	61012	4.296	3.2°F	26760	3.64	33.8°F	12749	2.802	64.4°F	6521	1.974
-25.6°F	57977	4.264	5.0°F	25562	3.594	35.6°F	12233	2.751	66.2°F	6281	1.929
-23.8°F	55112	4.232	6.8°F	24425	3.548	37.4°F	11741	2.7	68.0°F	6052	1.885
-22.0°F	52406	4.199	8.6°F	23345	3.501	39.2°F	11271	2.649	69.8°F	5832	1.842
-20.2°F	49848	4.165	10.4°F	22320	3.453	41.0°F	10823	2.599	71.6°F	5621	1.799
-18.4°F	47431	4.129	12.2°F	21345	3.405	42.8°F	10395	2.548	75.2°F	5225	1.716
-16.6°F	45146	4.093	14.0°F	20418	3.356	44.6°F	9986	2.498	77.0°F	5000	1.675
-14.8°F	42984	4.056	15.8°F	19537	3.307	46.4°F	9596	2.449	78.8°F	4861	1.636
-13.0°F	40938	4.018	17.6°F	18698	3.258	48.2°F	9223	2.399	80.6°F	4690	1.596
-11.2°F	39002	3.98	19.4°F	17901	3.208	50.0°F	8867	2.35	86.0°F	4218	1.483
-9.4°F	37169	3.94	21.2°F	17142	3.158	51.8°F	8526	2.301	87.8°F	4072	1.447
-7.6°F	35433	3.899	23.0°F	16419	3.107	53.6°F	8200	2.253	89.6°F	3933	1.412
-5.8°F	33788	3.858	24.8°F	15731	3.057	55.4°F	7888	2.205	91.4°F	3799	1.377
-4.0°F	32230	3.816	26.6°F	15076	3.006	57.2°F	7590	2.158	95.0°F	3547	1.309
-2.2°F	30752	3.773	28.4°F	14452	2.955	59.0°F	7305	2.111	96.8°F	3428	1.277
-0.4°F	29350	3.729	30.2°F	13857	2.904	60.8°F	7032	2.064	100.4°F	3204	1.213

Accessing Self Diagnostic Mode: Press the upper left and upper right corners alternately (A-B-A-B-A-B) until "Engineer Mode Enabled" is displayed on screen. Press the "Self Diagnostics" button on the screen. The display will show the currently detected errors on the left side of the display panel. Use the onscreen scroll buttons to access all the information

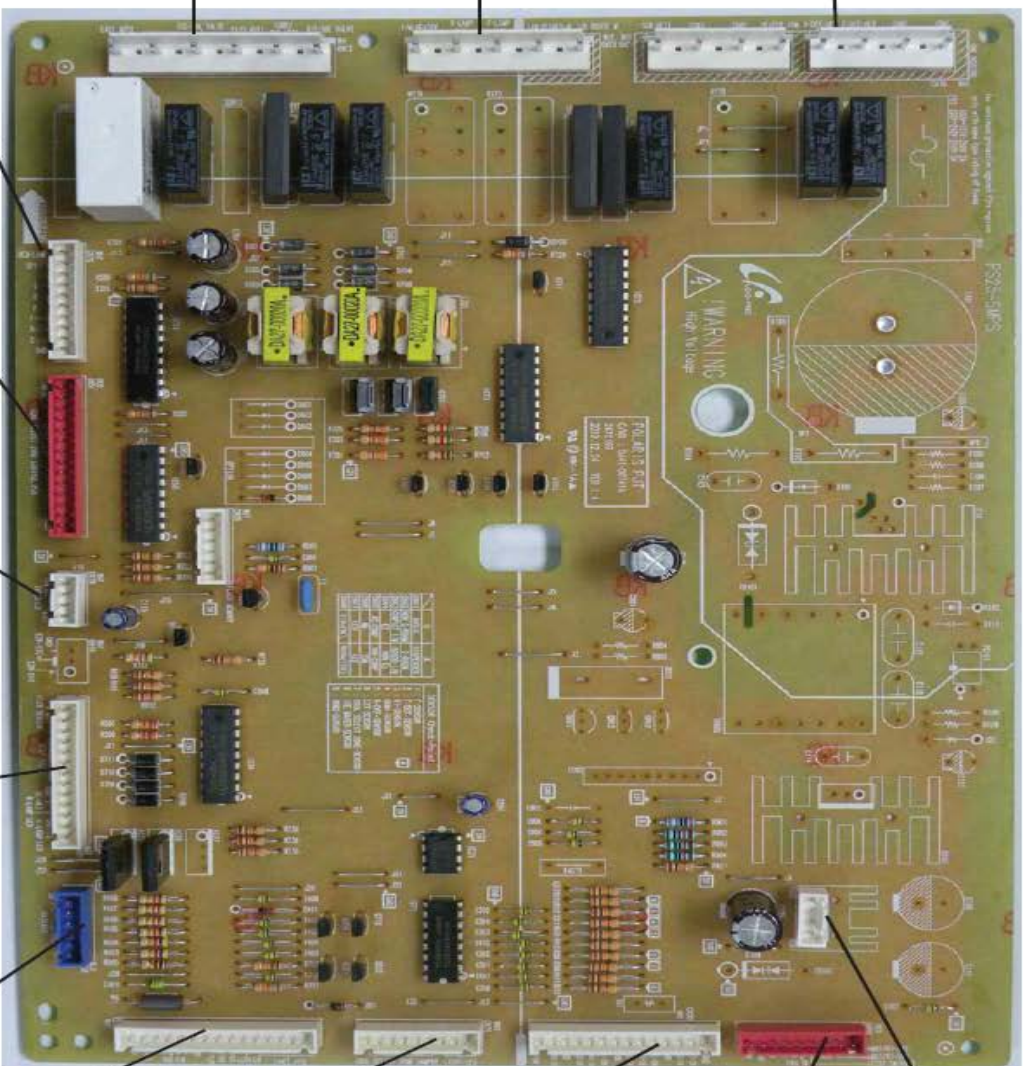
ERROR CODES

Error Code	Item	Trouble contents
1 E	FZ SENSOR ERROR	The respective sensor is read as open or shorted, check the wiring connections in the respective compartment and at the Main PCB
2 E	R SENSOR ERROR	
4 E	FZ DEF SENSOR ERROR	
5 E	R DEF SENSOR ERROR	
6 E	AMBIENT-SENSOR ERROR	
7 E	FLEX SENSOR ERROR	
13 E	HUMIDITY-SENSOR ERROR	The Humidity sensor is read as open or shorted, check the wiring connections in the respective compartment and at the Main PCB
21 E	FZ FAN ERROR	The Freezer Fan motor is read as not connected or the fan has stopped, check the wiring connections in the freezer and at the Main PCB
22 E	R FAN ERROR	The Ref. Fan motor is read as not connected or the fan has stopped, check the wiring connections in the freezer and at the Main PCB
23 E	C-FAN ERROR	The Comp. Fan motor is read as not connected or the fan has stopped, check the wiring connections in the freezer and at the Main PCB
24 E	FZ DEF FUNCTION ERROR	The freezer defrost heater is read as open or the heater has been heating continuously for more than 80 minutes.
25 E	R DEF FUNCTION ERROR	The refrigerator defrost heater is read as open or the heater has been heating continuously for more than 80 minutes.
26 E	IM FUNCTION ERROR	The Icemaker release heater reads as open circuit
41 E	MAIN<->LCD COMM ERROR	The Main PCB and the LCD display are not communicating properly verify the wiring at both PCB's
81 E	COMP STARTING FAILURE	The compressor did not start properly, check for an overload condition
82 E	COMP IPM FAULT ERROR	Inverter power control issue, Check the Inverter Drive PCB
83 E	COMP ABNORMAL CURRENT DETECTION	Excessive current detected at the Compressor check the compressor windings for shorts
84 E	COMP MOTOR LOCKED OVER RPM ERROR	Compressor Over speed error check for low refrigerant levels
85 E	COMP UNDER VOLTAGE	Low voltage to the compressor Check the DC supply from the Inverter drive board
86 E	COMP OVER VOLTAGE	Over voltage to the compressor Check the DC supply from the Inverter Drive Board

- ① R-H/B-HEATER
- ③ **COMMON LINE(N)**
- ⑤ NC
- ⑦ HEATER COMMON
- ⑨ R-DEF-HEATER
- ⑪ F-DEF-HEATER
- ⑬ **COMMON LINE(L)**
- ⑮ **COMMON LINE(N)**
- ②④⑥⑧⑩⑫⑭ 〇 BLANK

- ① I/M HEATER
- ③ NC
- ⑤ NC
- ⑦ I/M GEARED MOTOR
- ⑨ ICE ROUTE MOTOR

- ① NC
- ③ AUGER MOTOR
- ⑤ ICE SOLENOID VALVE
- ⑦ NC
- ⑨ CUBE MOTOR
- ⑪ W/T SOLENOID VALVE



- ① **GND**
- ② C-FAN Voltage
- ③ R-FAN Voltage
- ④ F-FAN Voltage
- ⑤ F-FAN FG Signal
- ⑥ R-FAN FG Signal
- ⑦ C-FAN FG Signal
- ⑧ **13V**
- ⑨ NC
- ⑩ NC

- ①~⑦ C/S Zone Data
- ⑧ KEY Input (1)
- ⑨~⑪ C/S Zone Grid
- ⑫ KEY Input (2)
- ⑬ C/S Zone Sensor
- ⑭ **GND**

- ① COMP Feedback
- ② **+5V**
- ③ **GND**
- ④ COMP Signal

- ① F-Room-LED Lamp
- ② **GND**
- ③ R-Room-LED Lamp
- ④ NC
- ⑤ **GND**
- ⑥ **+13V**
- ⑦ STEP Motor A
- ⑧ STEP Motor A
- ⑨ STEP Motor B
- ⑩ STEP Motor B
- ⑪~⑬ NC

- ① **RX**
- ② **GND**
- ③ TX
- ④ NC
- ⑤ **+13V**
- ⑥ **+5V**

- ①② **+13V**
- ③ **GND**
- ④ **+5V**

- ① Ice-Route-Switch 1
- ② Ice-Route-Switch 2
- ③ I/M Sensor
- ④ Test S/W
- ⑤ Full S/W
- ⑥ Horizontal S/W
- ⑦ **+5V**
- ⑧ **GND**
- ⑨ NC

- ① **GND**
- ② EXT-Sensor
- ③ F-Door-Switch
- ④ **GND**
- ⑤ F-Room-Sensor
- ⑥ F-DEF-Sensor
- ⑦ R-Door-Switch
- ⑧ **GND**
- ⑨ R-Room-Sensor
- ⑩ Humidity-Sensor
- ⑪ R-DEF-Sensor
- ⑫ **GND**
- ⑬⑭ NC

- ① **+13V**
- ② NC
- ③ LED Module GND Drive
- ④⑤ Damper Heater
- ⑥~⑨ Damper Motor

- ① PANEL TX
- ② PANEL RX
- ③ **+13V**
- ④ **+5V**
- ⑤ **GND**
- ⑥ Water & Ice Lever Switch
- ⑦ R-Homebar-S/W
- ⑧~⑨ NC
- ⑩ **GND**
- ⑪~⑮ NC

※ Caution:  means connector in Ref.F-Hinge,
 means connector in Ref.R-Hinge.

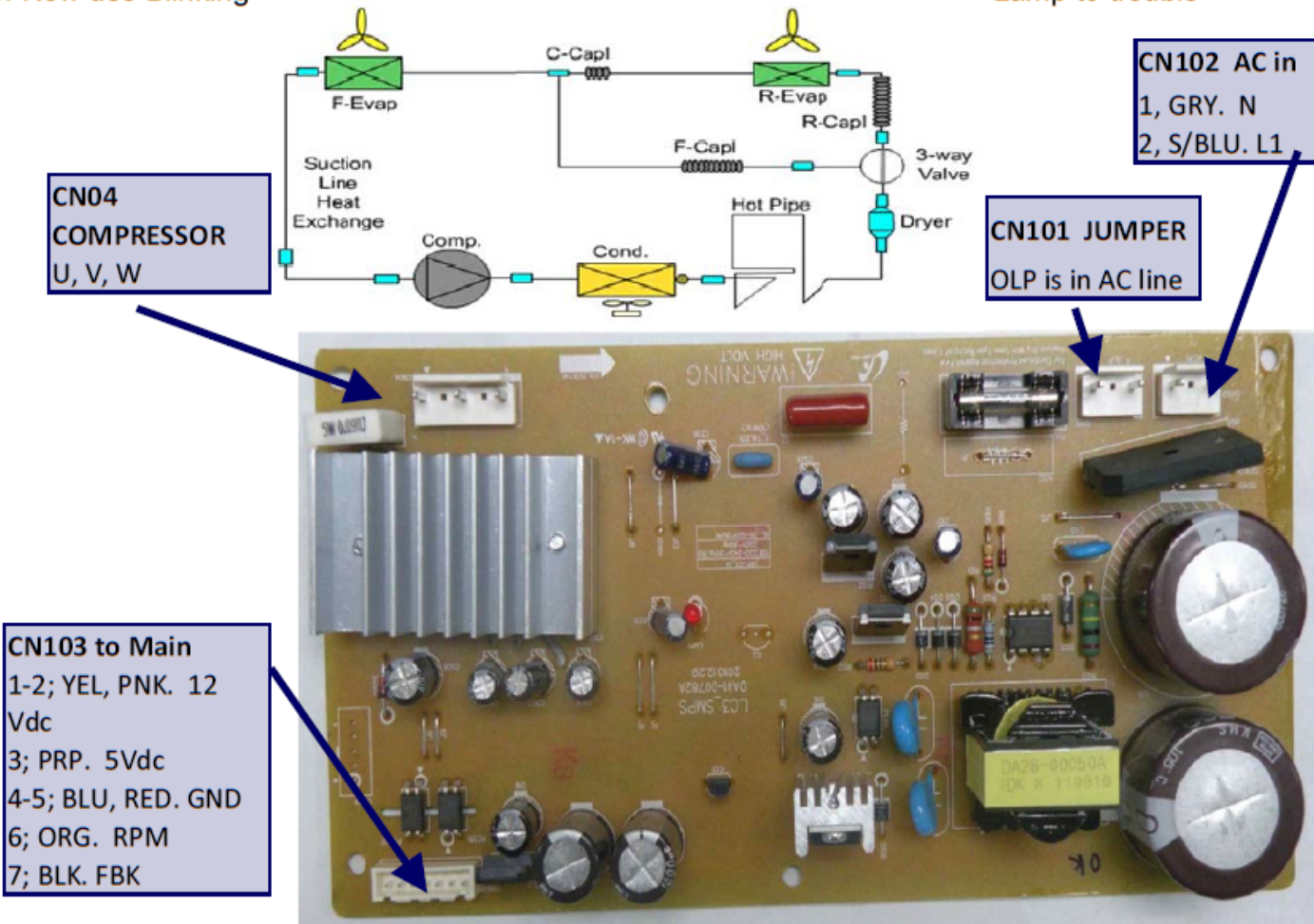
Compressor & System Operation Testing

TEST BEFORE INTERPRETING LED BLINKING FREQUENCY

Compressor not running

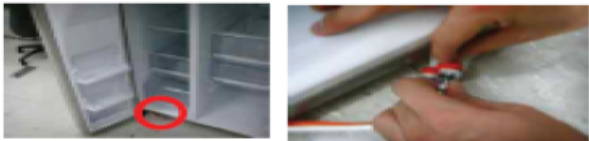
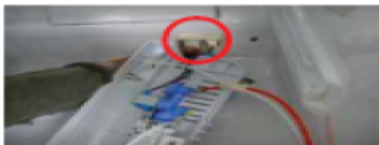
1. Activate Forced Compressor Operation, wait 2 minutes (in case of high head pressure)
2. If compressor doesn't start, check CN75 for 2.5vdc (if not there replace Main PCB)
3. If voltage is OK, remove power, disconnect CN03 (Inverter PCB) and check resistance to the windings. Aproxametly10 ohms. If not correct , inspect wire harness, if OK replace compressor.
4. Disconnect CN02 (SMPS PCB), check resistance to Overload , if open replace overload.
5. Now use Blinking

Lamp to trouble-

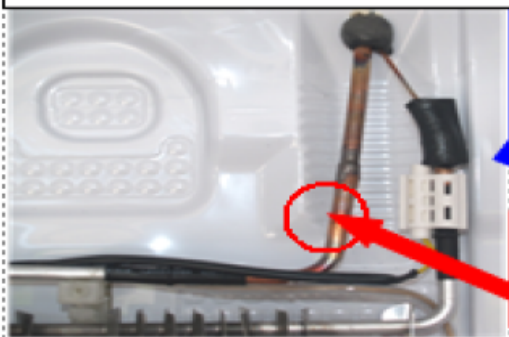


Protection Functions	LED Blinking Frequency	Test	Replace
Starting Failure	●	Check the Inverter PCB & Comp Relay Connectors	Connectors OK, replace Inverter PCB, if same, replace compressor
SPM Fault	● ●	If blinking after reset,	Check System for restriction & refrigerant, if OK replace Inverter, if same, replace compressor
Detecting Position Failure	● ● ●	Check Inverter Connectors,	Connectors measure OK, replace compressor, if same, replace Inverter PCB
Motor Locked	● ● ● ●	Compressor Locking	Compressor
Low Voltage	● ● ● ● ●	Compressor Locking, check input voltage	Replace Inverter PCB, if same, replace Compressor
Over Voltage	● ● ● ● ● ●	Compressor Locking, check input voltage	Replace Inverter PCB, if same, replace Compressor

WATER TANK & WATER VALVE REMOVAL

Case Water Filter	Before disassembling the Case Water Filter take out water filter and drawers and shelves located on the Case Water Filter.	
	Remove screws.	
	While pushing the Tube Fitting, remove the 2 Water Tube.	
	Turn the refrigerator back and remove the Water Tube.	
	Pull the Water hose out.	
	Disconnect the Housing.	
	Pick the Case Water Filter out.	

If Evaporator is Frozen follow Instructions Below



Original
location of
sensor

New
Location of
Sensor

Every time the evaporator is exposed you need to move the evaporator sensor from the original location to the other refrigerant line. (Intake to Out-take) This will allow the unit to run a longer defrost cycle, helping remove any ice build up on or above the evaporator.