

SAMSUNG

Refrigeration Line Up



Refrigerator Model Number Nomenclature

- RM= Four Door
- RF = French Door
- RS = Side by Side
- RB = Bottom Mount Freezer

Introduction

Samsung Technology Refrigeration

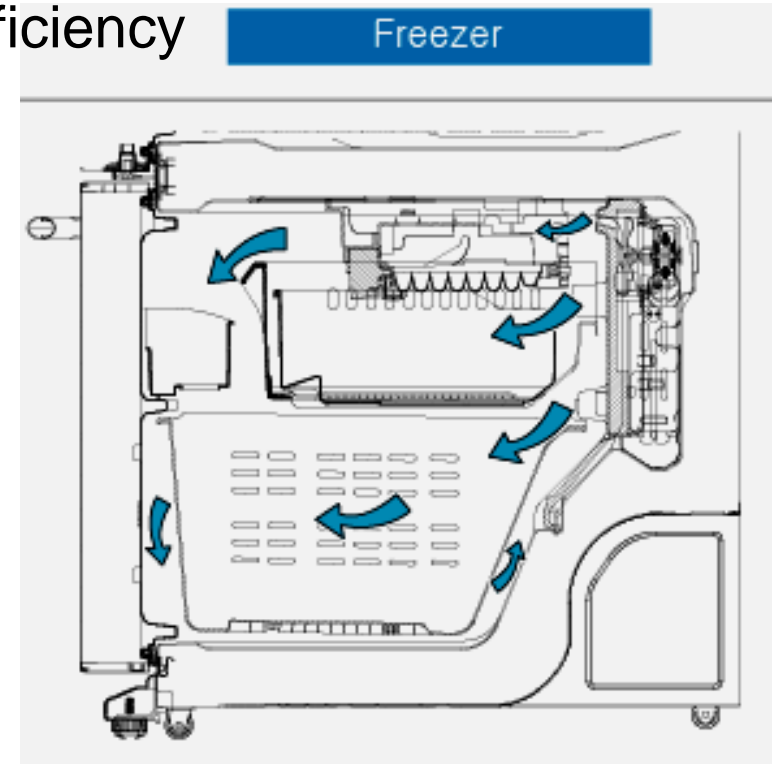
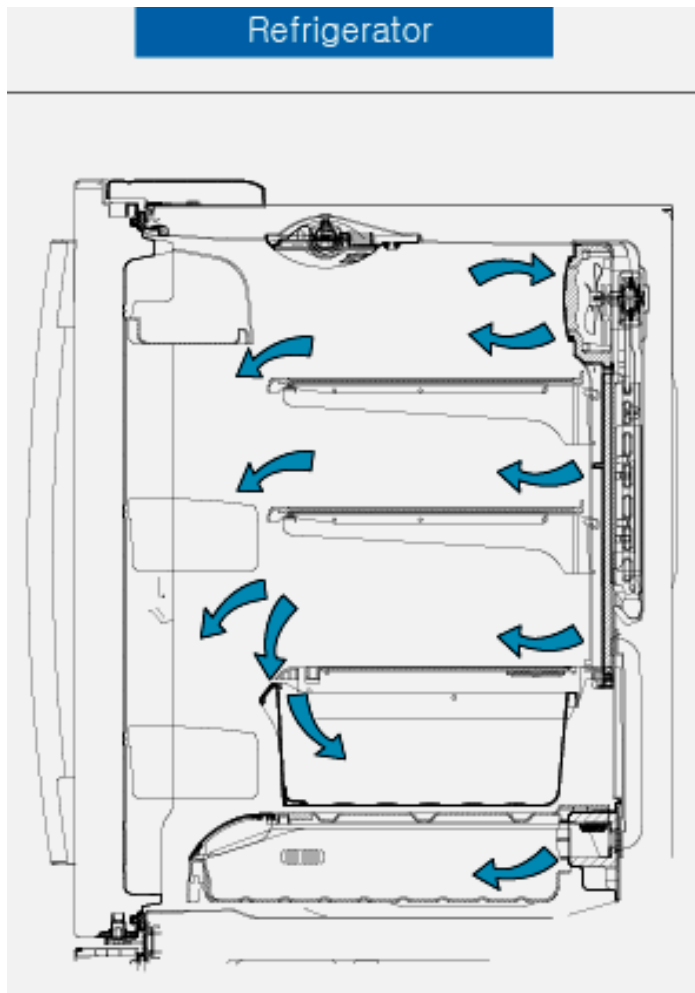
- Twin Cooling
- Temperature Control with Stepper (TDM) Valve
- Sensors Control Everything
- Computer Controlled DC Fan Motors

Twin Cooling Design

French Door Internal cool air circulation path

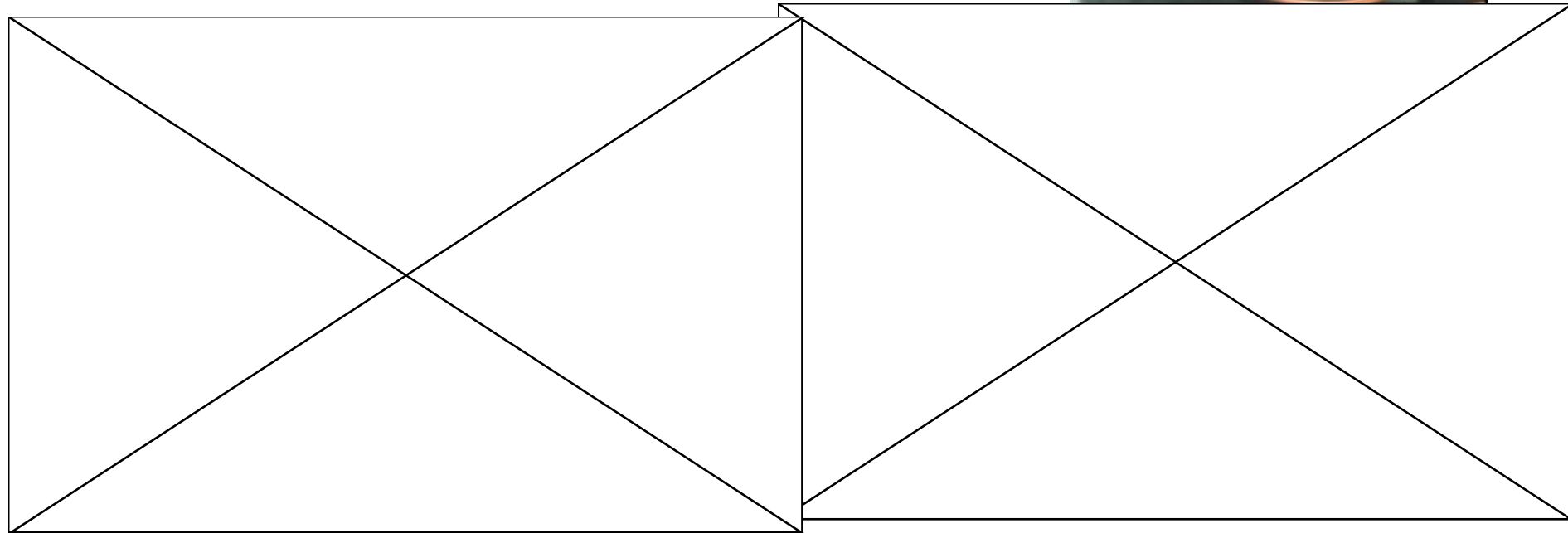
Advantages

- More accurate control of temperatures
- No air exchange between compartments
- Energy efficiency



Dual Evaporator with TDM valve

The Time Divided Multi-cycle (TDM) System (Stepper Valve) is used to switch refrigerant flow in the 4 Door (RM25*) and French Door (RFG29*). This improves temperature control and energy efficiency.



Quad Cooling RM Model

Twin Cooling RS/RF/RB Models

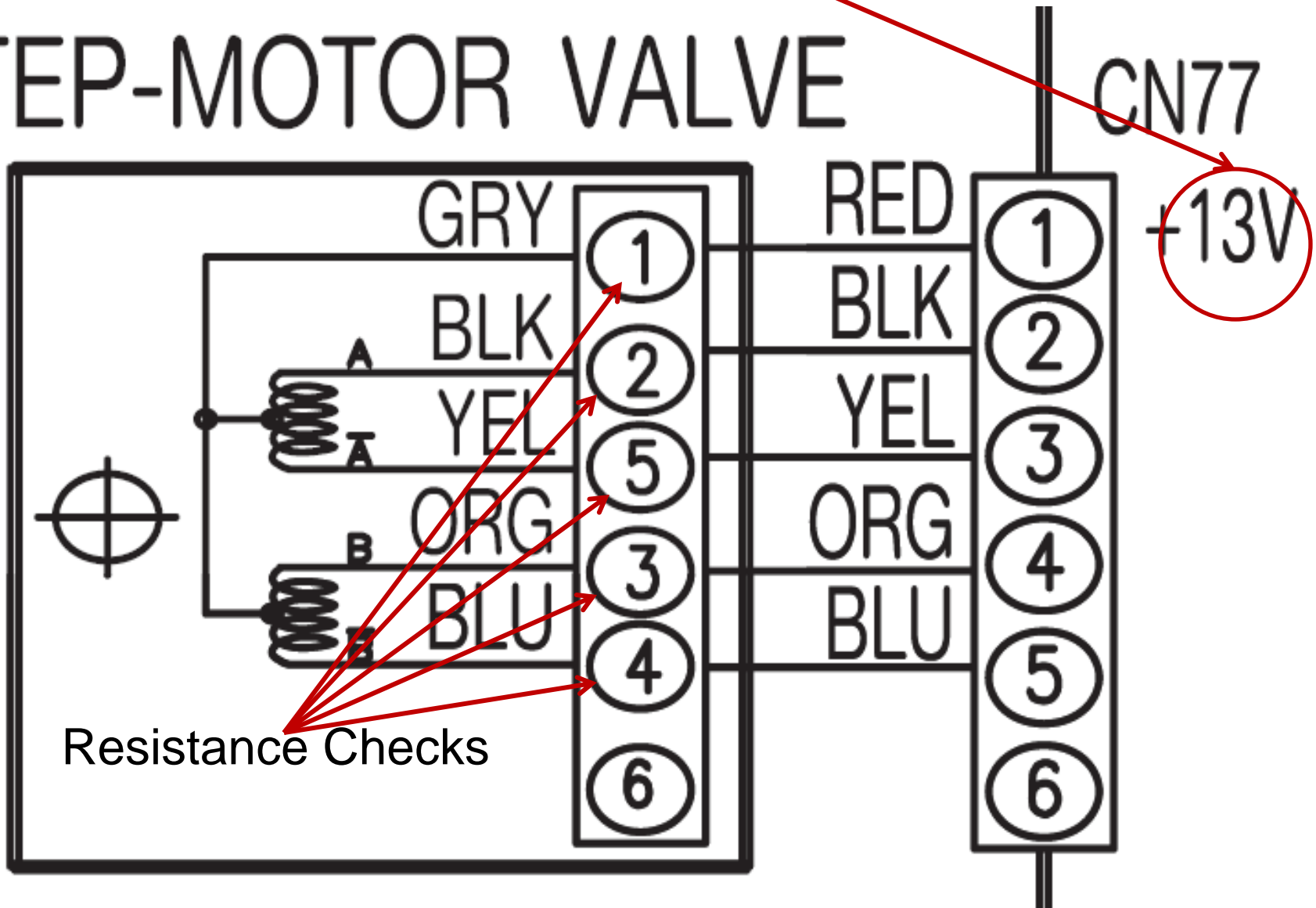
Troubleshoot TDM Valve

- If it fails in the full system mode, it should work properly, using slightly more energy, possibly cooling fridge a little too much.
 - **For testing, set fridge temp warmer than the actual temp, monitor the defrost sensor(s) to see if voltage drops.**
- If it fails in the Freezer evaporator loop only mode, there will be a Fridge no cool symptom
 - **Force on the Fridge with the “Pwr Cool” option. Monitor the Fridge evap(s) temp by using the Defrost Sensor(s). If the temp doesn’t decrease, then suspect the Main PCB is not supplying signal to switch the diverter valve.**

System Diverter Valve

Voltage Check

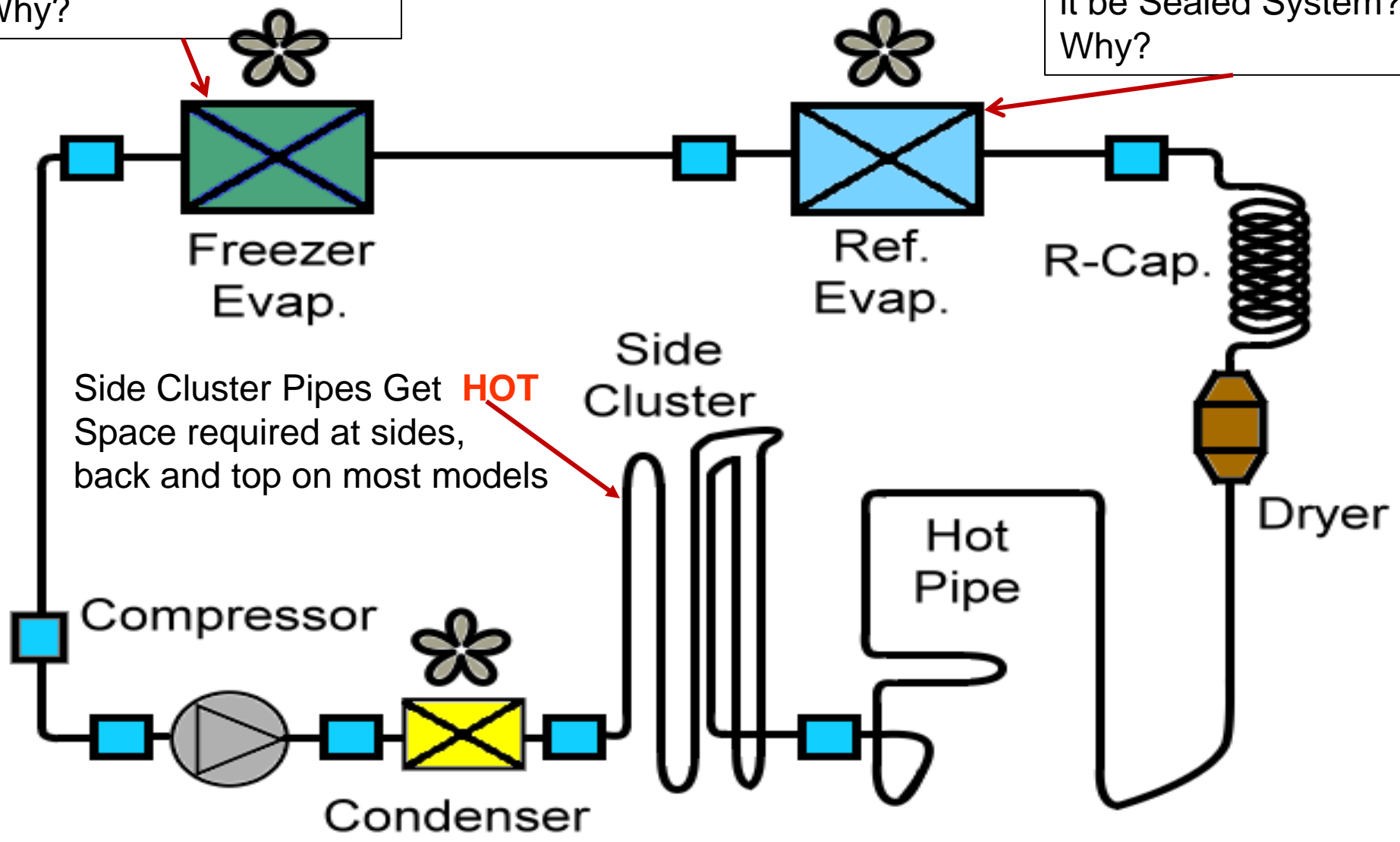
STEP-MOTOR VALVE



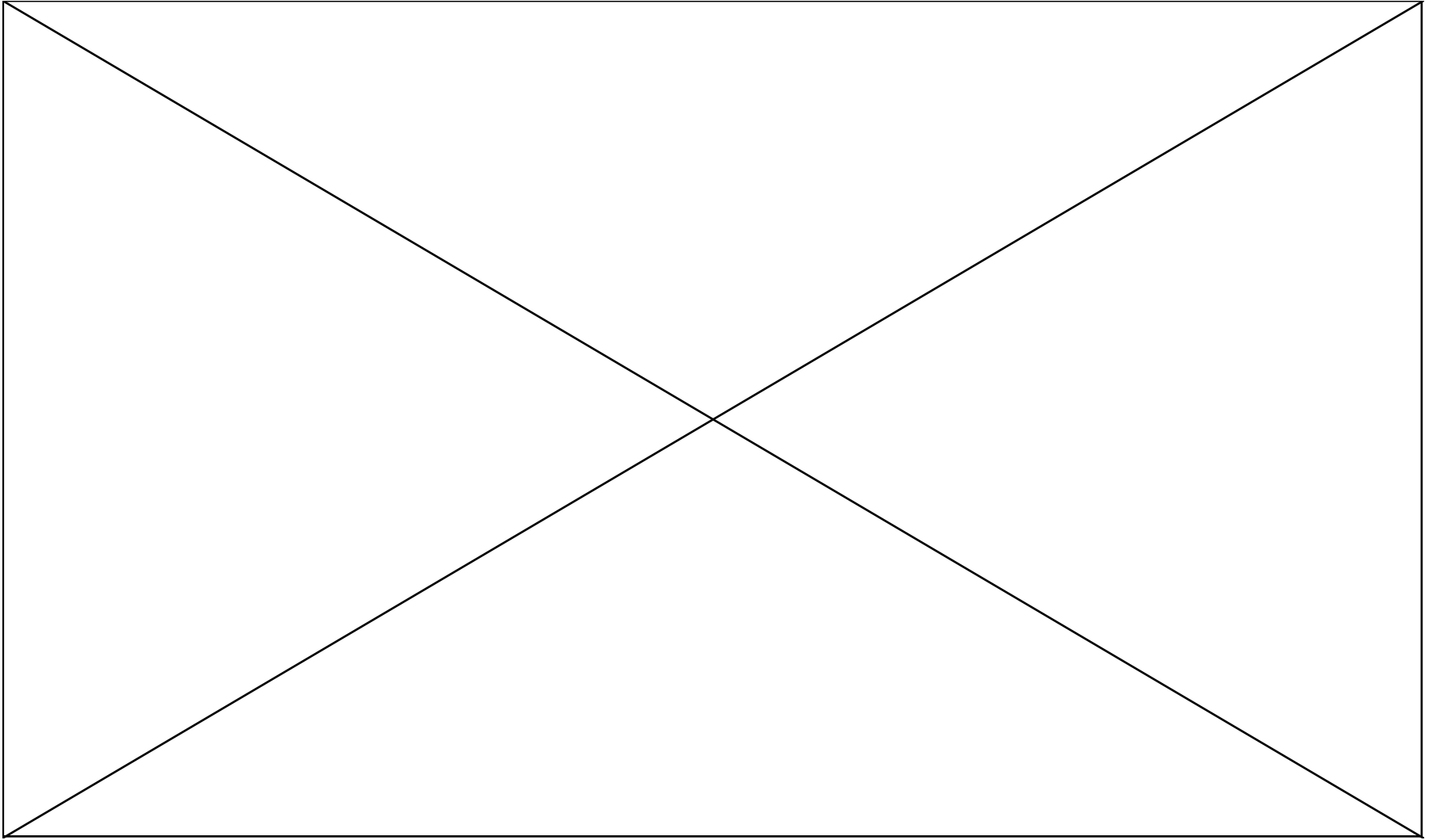
RB, RF and RS units, non Diverter

No Cool Freezer, can it be Sealed System? Why?

No Cool Fridge, can it be Sealed System? Why?



Inverter Compressor



Inverter compressors offer energy savings not available in a standard compressor

Troubleshooting

Refrigeration Troubleshooting

What's done when tech arrives at home?

- Talk to the Consumer, don't trust the work order
- The Diagnostic Mode is the most valuable troubleshooting tool you have for diagnosing a refrigerator. **When you are at the product this MUST be the first test you should do.**
- Removing power will erase Defrost Fault Codes, for 4-6 hours.
- When a Samsung refrigerator is powered up it performs a Self Diagnosis, if an **open or shorted sensor** is detected it will **lock the display** and flash the code in the display. The refrigerator may have **no operation**, or operate in the **emergency mode**. Other faults detected will not lock the display or stop operation.
- To restart operation put into Manual Diagnostic Mode.
- Sensors that are off value, but not shorted or open, will not bring up a fault code.

Refrigeration Troubleshooting

- The Forced Operation Mode is a valuable troubleshooting tool for testing compressor operation & fan operation.
- Forced Freeze (FF) Mode
 - The compressor is started without the 5 minute delay
 - You can check the compressor current draw or check voltage at the main PCB in this mode.
 - You can accurately check defrost sensor voltages in this mode with the cold evaporators.
 - All fans will be turned on in this mode, to allow voltage testing. The door switches still control the fan operation. (Fridge fan is still controlled by the compartment sensor)
 - For Inverter Compressors, all 3 speeds (FF1, FF2, FF3) can be selected and check all fans, current draw or Compressor control voltage in the Forced Operation

Refrigeration Troubleshooting

- The Forced Operation Mode is a valuable troubleshooting tool for testing defrost operation.
- Forced Defrost Mode
 - The Fridge (RD) defrost function can be activated.
 - You can check the Fridge current draw or defrost voltage at the main PCB in this mode.
 - All defrost function
 - You can check All (FD) defrost current draw or All defrost voltages in this mode.
 - Inverter Compressors only
 - You can check All (FD) defrost current draw or All defrost voltages in this mode.

Refrigeration Troubleshooting

- The Forced Operation Mode
 - All inverter compressor models will show the forced function in the display FF1, FF2, FF3, FD.
 - Most standard compressor models manufactured after 2007 will show the forced function in the display FF, RD, FD
 - Most models 2006 and older will have a blank display during the forced mode, wait 5 seconds between button pushes so you know what mode you are in (FF, RD, FD). If in doubt, unplug the unit and start over.

Refrigeration Troubleshooting

- The Forced Operation Mode is a very valuable troubleshooting tool for testing compressor operation, fan operation and defrost operation.
- Forced Freeze Mode
 - The compressor is started without the 5 minute delay
 - You can check the compressor voltage at the main PCB in this mode.
 - You can accurately check defrost sensor voltages in this mode
 - All fans will be turned on in this mode, to allow voltage testing. The door switches still control the fan operation.

Refrigeration Troubleshooting

- Forced Freeze Mode Inverter Compressors
 - The compressor is started without the 5 minute delay
 - You can force the three speed options of this compressor
 - You can accurately check the temp and sensor operation
 - All fans will be turned on in this mode, to allow voltage testing. The door switches still control the fan operation.

Refrigeration Troubleshooting

- Forced Defrost Operation
 - Standard compressor models can activate the Fridge defrost only, or both the Fridge and Freezer defrost.
 - Inverter compressor models activate all heaters at once.
 - In the Forced Defrost Mode the defrost sensor still controls the heater operation. When defrost is activated the main PCB will turn over defrost control to the sensor in about 90 seconds. If the defrost sensor reads a temperature above the shut off point it will tell the main PCB to turn off the defrost voltage.
 - Even when the defrost is turned off the unit will stay in the forced mode for up to 24 hours.

Refrigeration Troubleshooting

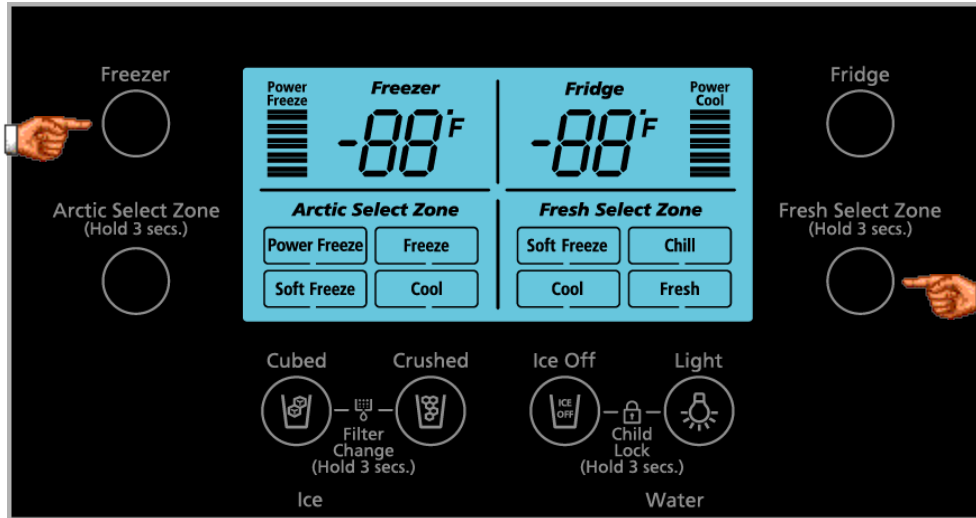
- Selecting the Forced Modes
 - When the two buttons are pressed together to enter the Forced Modes you must wait for the beep and the display to go blank. You then have 8 seconds to press the Freeze button to activate the Forced Freeze Mode. Once you are in this mode, press the Freeze button to advance to the next function.
 - Depending on the model, there are from two to four Forced Modes. You must always wait for the beeping to start before advancing to the next mode, if you wait over 8 seconds to press the Freeze button, you will have to start over again. If you lose track of where you are in the Forced Modes, unplug the unit and start over.

Forced Mode Troubleshooting

Forced Operation and Test Mode

Test Mode

Press both buttons simultaneously for ~8 seconds!



Display Code	Function
FF	Forced Compressor Run
RD	Forced Refrigerator Defrost
FD	Forced Freezer Defrost
--	Test Mode active

Press any button one more time to cancel the Forced Mode

Cancellation



Press any button One time at the Test Mode

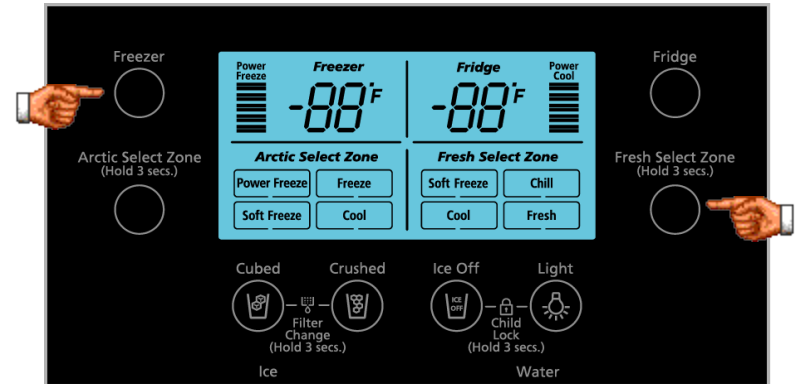
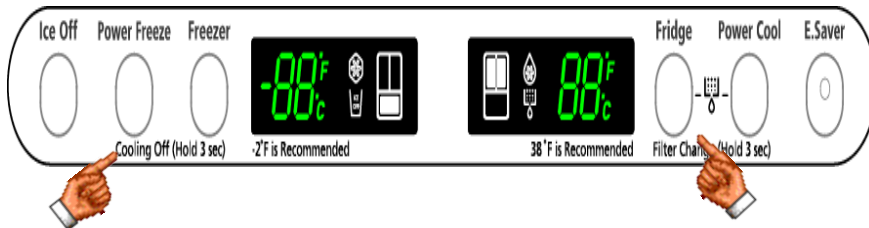
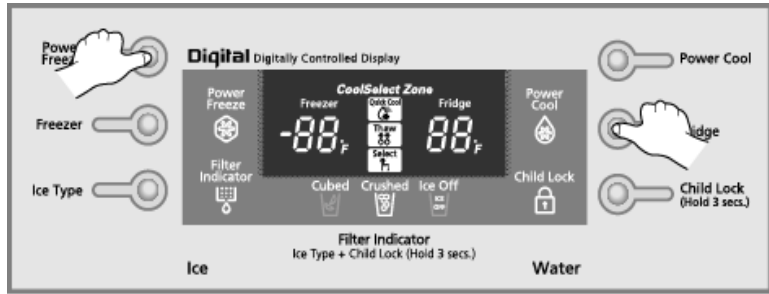
Press any button One time at the Forced Operation

Press any button one more time at the Forced Defrost for Fridge

Forced Operation

For various refrigerator panels

Press both buttons simultaneously for ~8 seconds!



Cancellation, unplug unit

Press Freezer button a third time to Force Defrost for Fridge & Freezer

Press Freezer button One time at the Test Mode to Force Compressor

Press Freezer button Second time for Forced Defrost of Fridge

Forced Compressor

Forced Defrost for Fridge

Forced Defrost for both compartment

RFG29* Series Inverter Compressor Forced Mode



To enter the Forced Mode
Press both buttons simultaneously for ~15 seconds!

Press any button one time in the Test Mode to Force each Compressor test

**Forced
Compressor
High**

3600 RPM

**Forced
Compressor
Mid**

2450 RPM

**Forced
Compressor
Low**

2050 RPM

**Wait 5 seconds between
button presses**



Simultaneous manual defrost (refrigerator and freezer compartments) function



Press Freezer button a 4th time to Force Defrost for ALL Compartments

Press Freezer button a 5th time to cancel the forced mode

**Forced Defrost
for ALL
compartments**

RM257*** Series Inverter Compressor Forced Mode

For Test Mode

Press both buttons simultaneously for ~15 seconds!

Press any button one time in the Test Mode to Force each Compressor test



Wait 5 seconds between button presses

**Forced
Compressor
High**

~ 3600 RPM



**Forced
Compressor
Mid**

~ 2450 RPM



**Forced
Compressor
Low**

~ 2050 RPM



Simultaneous manual defrost (all four compartments) function



Press Freezer button a 4th time to Force Defrost for ALL Compartments

Press Freezer button a 5th time to cancel the forced mode

**Forced Defrost
for ALL
compartments**

Forced Mode for Single Evaporator units

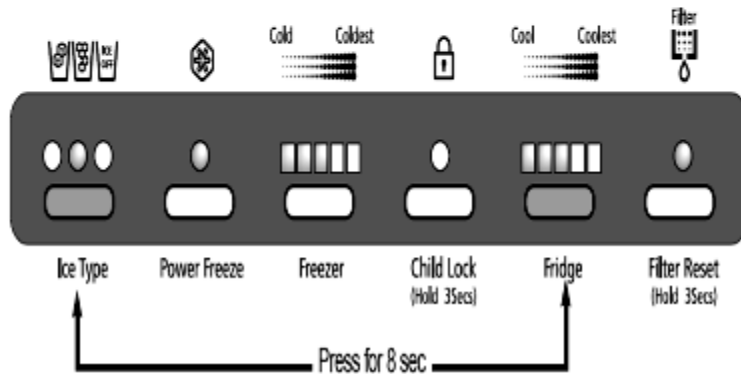
Use Freezer Key as a Test Key

Wait 5 seconds between button pushes

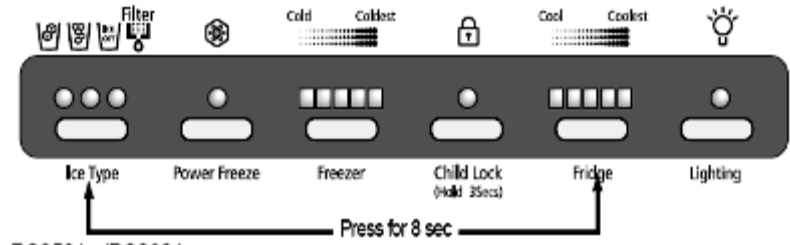
7-11) TEST (FORCED OPERATION / FORCED DEFROST)

- When pressing Refrigerator temp set KEY and ice selection KEY in PANEL PCB simultaneously for more than 8 sec. PANEL DISPLAY will go off and it moves onto TEST MODE. At this point, although Freezer/Refrigerator temp set KEY, quick freezing KEY, and ice selection KEY are pressed, it operates by TEST KEY.
- When pressing TEST KEY, Test function shall be changed in the order as Forced Operation → Forced Freezer Defrost → Cancellation(normal operation) → Forced Operation. If functions are canceled during the operation of TEST function, it is most desirable to turn off the power and turn it on again.

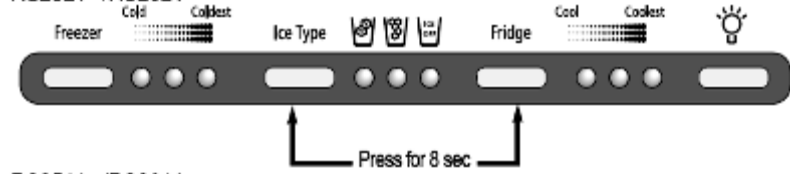
RS2630SW/XAA (for Best Buy)



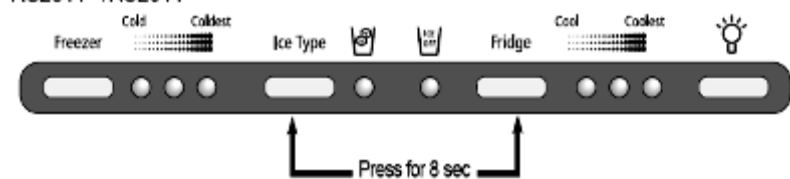
RS2531**/RS2631**



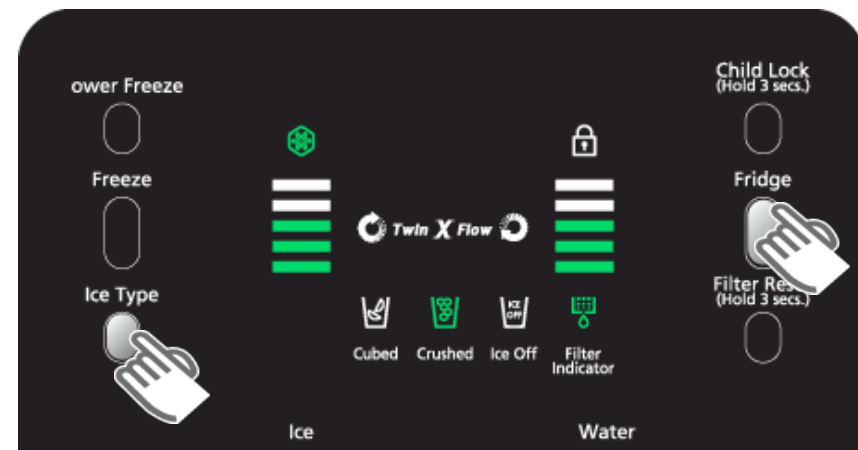
RS2521**/RS2621**



RS2511**/RS2611**



RS26/2530**



Self Diagnostics

Refrigeration Troubleshooting

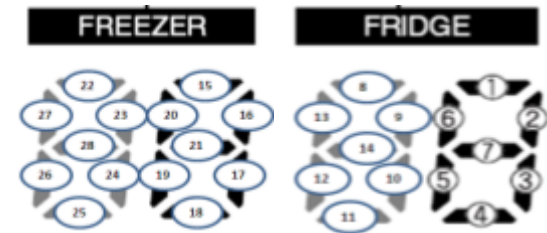
- The Diagnostic Mode is the most valuable troubleshooting tool you have for troubleshooting a refrigerator. When you are at the product this is the first test you should do.
- When a Samsung refrigerator is powered up it performs a Self Diagnosis, if an open or shorted sensor is detected it will lock the display and flash the code in the display. The refrigerator may have no operation, or operate in the emergency mode. Other faults detected will not lock the display or stop operation.
- To restart operation put into Manual Diagnostic Mode.
- Sensors that are off value, but not shorted or open, will not bring up a fault code.

Note: accessing this function resets ALL programming and error codes.

Refrigeration Troubleshooting


- To enter the manual Diagnostic Mode you must press and hold two buttons, and hold them until the display stops blinking and beeps.
- Fault code display for all models that have temperature numbers in the display:

- Each 8 is made up of 7 segments, each of those segments is a possible fault code.



- If there are no faults, the display will be blank or have all four (8888) showing.
- On single evaporator units, no number display, lines or symbols will light up for faults.
- On all models the display will come back to normal in about 12 seconds

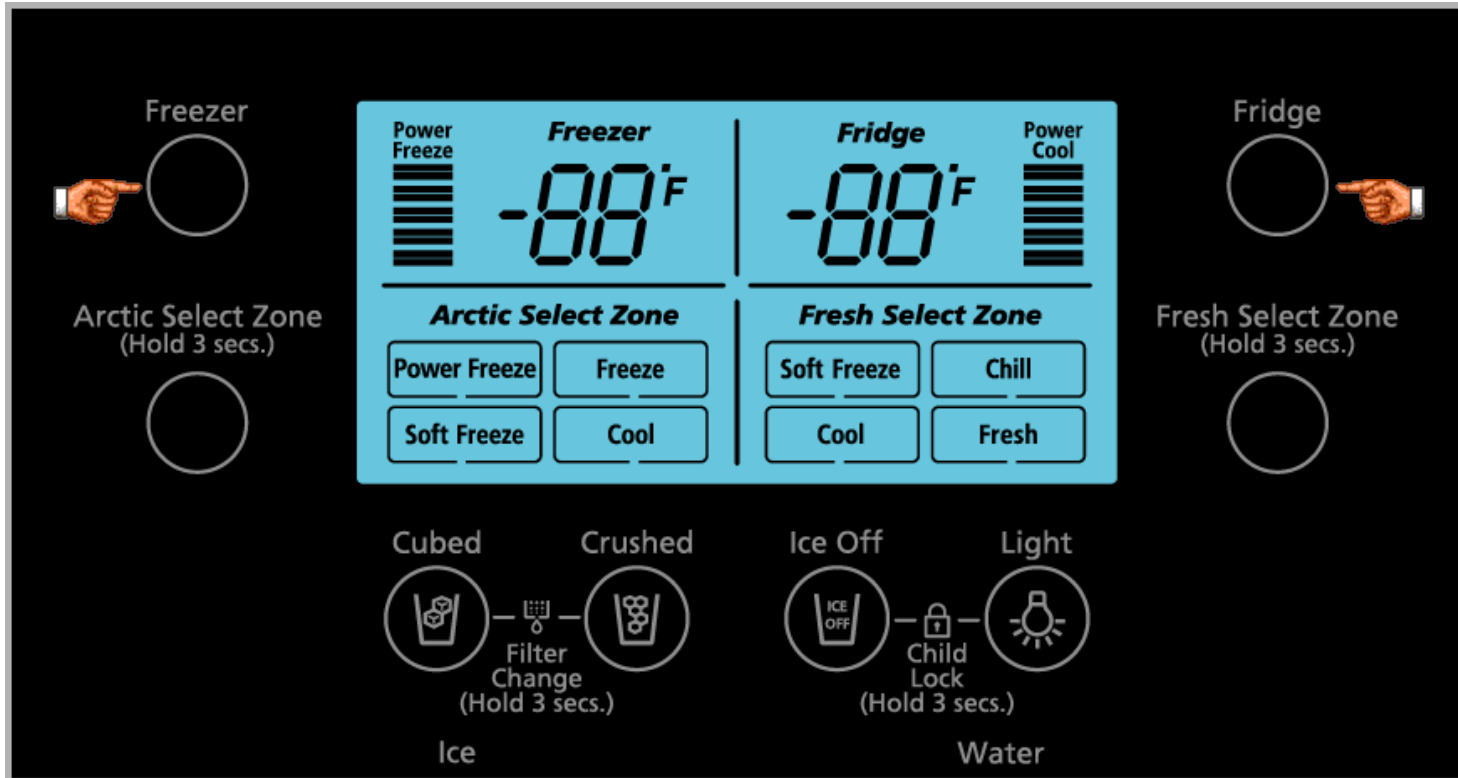
Refrigeration Troubleshooting

- A Sample fault code would be  this is an example of an Ice Maker Sensor failure.
- Things that can happen with this fault.
 - After a power failure the unit would be “dead”, lights work and blinking this code.
 - The Ice Maker is not making any ice
 - The Ice Maker is dumping partially frozen cubes
- If you see the fault below, ignore it. This is a modem communication error not applicable in the US.



Self Diagnostics

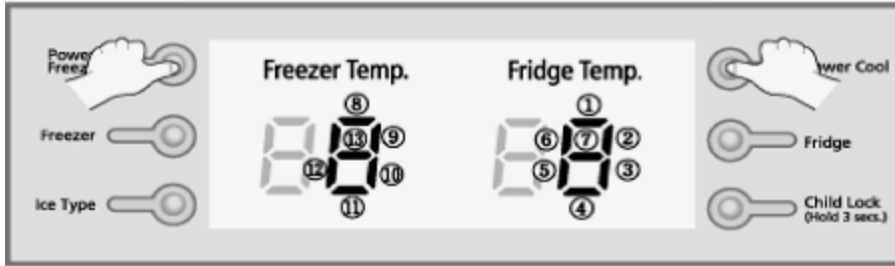
Press both buttons simultaneously for ~8 seconds



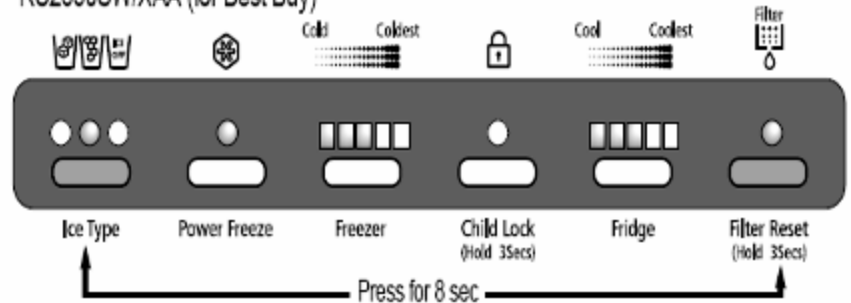
If a corresponding LED flickers, it means an abnormality of a sensor or component.

Self Diagnosis

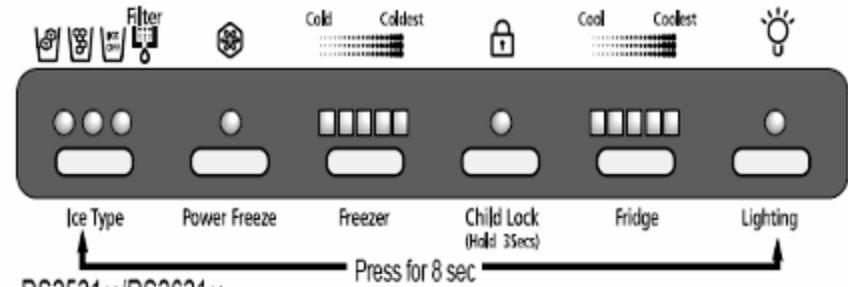
Hold the buttons until the display stops blinking and beeps, then release and read fault codes. Various refrigerator panels are shown.



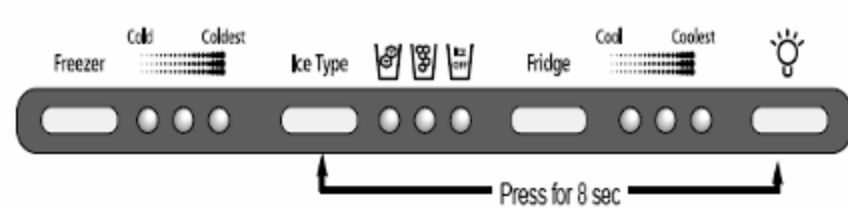
RS2630SW/XAA (for Best Buy)



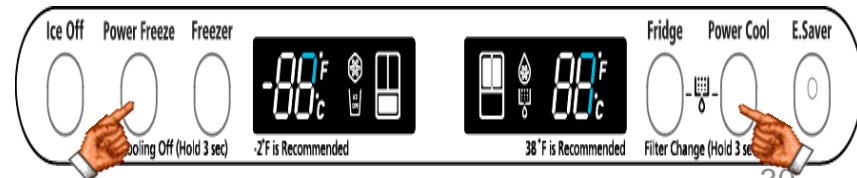
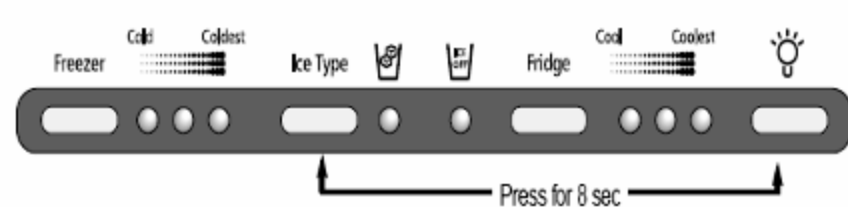
RS2531**/RS2631**



RS2521**/RS2621**







RS2511**/RS2611**



Error Code Display Pt 1

Error items for self-diagnostics




NO	Error items	LED	TROUBLE
1	I/M-SENSOR	<i>Fridge</i> 	Ice maker sensor measures open or shorted
2	R-SENSOR	<i>Fridge</i> 	Refrigerator sensor measures open or shorted
3	DEFROSTING SENSOR OF R COMPARTMENT	<i>Fridge</i> 	Refrigerator Defrost Sensor measures open or shorted
4	R-FAN ERROR	<i>Fridge</i> 	Refrigerator fan motor stuck or spinning to fast

Codes are shown for example, a full list of codes for the specific product is available in the service manual

Temperature Sensors are Negative Temp. coefficient measuring between 2.2 K and 100K Ω

Error Code Display Pt 2





Error items for self-diagnostics

NO	Error items	LED	TROUBLE
5	I/M FUNCTION ERROR	<p><i>Fridge</i></p> 	Ice maker did not return to level after an ice harvest, this is displayed after three attempts
7	R-DEFROSTING ERROR	<p><i>Fridge</i></p> 	Refrigerator Compartment defrosting heater- electric wire cut, short-circuit, contact failure, missing of sensor housing, or defective temperature fuse/bi-metal. The defect is also displayed if defrosting is not finished until after continuous heating over 80 minutes.
8	CR-SENSOR	<p><i>Fridge</i></p> 	CR Compartment Sensor Error- This can be an Electric wire cut, short-circuit, contact failure, or missing sensor. This can also be caused by a temperature reading > 122° or < -58 °F.

Codes are shown for example, a full list of codes for the specific product is available in the service manual

Error Code Display Pt 3





Error items for self-diagnostics

NO	Error items	LED	TROUBLE
9	DEFROSTING SENSOR OF CR COMPARTMENT	<p><i>Fridge</i></p> 	CR compartment Defrost Sensor Error- This can be an Electric wire cut, short-circuit, contact failure, or missing sensor. This can also be caused by a temperature reading > 122° or < -58 °F.
10	DEFROSTING SENSOR OF CF COMPARTMENT	<p><i>Fridge</i></p> 	CF compartment Defrost Sensor Error- This can be an Electric wire cut, short-circuit, contact failure, or missing sensor. This can also be caused by a temperature reading > 122° or < -58 °F.
11	CR-DEFROSTING ERROR	<p><i>Fridge</i></p> 	CR Compartment defrosting heater- electric wire cut, short-circuit, contact failure, missing of sensor housing, or defective temperature fuse/bi-metal. The defect is also displayed if defrosting is not finished until after continuous heating over 80 minutes.
12	CF-DEFROSTING ERROR	<p><i>Fridge</i></p> 	CR Compartment defrosting heater- electric wire cut, short-circuit, contact failure, missing of sensor housing, or defective temperature fuse/bi-metal. The defect is also displayed if defrosting is not finished until after continuous heating over 80 minutes.

Codes are shown for example, a full list of codes for the specific product is available in the service manual

Error Code Display Pt 4





Error items for self-diagnostics

NO	Error items	LED	TROUBLE
13	WATER HEATER ERROR	Fridge 	Water Reservoir Heater measures open
14	EXT-SENSOR	Freezer 	Ambient Temperature Sensor reads open or shorted
15	F-SENSOR	Freezer 	Freezer Temperature Sensor reads open or shorted
16	F-DEF-SENSOR	Freezer 	Freezer compartment Defrost Sensor Error- This can be an Electric wire cut, short-circuit, contact failure, or missing sensor. This can also be caused by a temperature reading > 122° or < -58 °F.

Codes are shown for example, a full list of codes for the specific product is available in the service manual

Error Code Display Pt 5

Error items for self-diagnostics




NO	Error items	LED	TROUBLE
17	F-FAN ERROR	Freezer 	Freezer fan motor stuck or spinning to fast
18	C-FAN ERROR	Freezer 	Compressor fan motor stuck or spinning to fast
19	CF-SENSOR	Freezer 	CF Compartment Temperature Sensor reads open or shorted
20	F-DEFROSTING ERROR	Freezer 	Freezer Compartment defrosting heater- electric wire cut, short-circuit, contact failure, missing of sensor housing, or defective temperature fuse/bi-metal. The defect is also displayed if defrosting is not finished until after continuous heating over 80 minutes.

Codes are shown for example, a full list of codes for the specific product is available in the service manual

Error Code Display Pt 6

Error items for self-diagnostics




Codes are shown for example, a full list of codes for the specific product is available in the service manual

NO	Error items	LED	TROUBLE
21	CF-FAN ERROR	<i>Freezer</i> 	CF Compartment fan motor stuck or spinning to fast
22	CR-FAN ERROR	<i>Freezer</i> 	CR Compartment fan motor stuck or spinning to fast
24	ICE PIPE HEATER ERROR	<i>Freezer</i> 	Ice Maker Fill line heater measures open

Error Code Display Pt 7

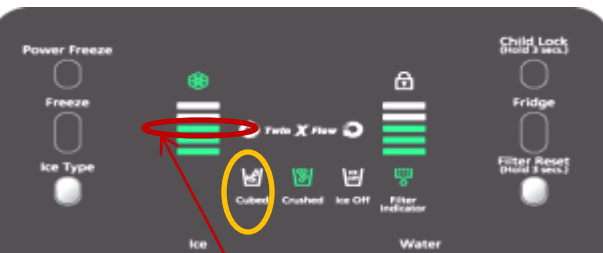
Error items for self-diagnostics

Codes are shown for example, a full list of codes for the specific product is available in the service manual

NO	Error items	LED	TROUBLE
25	Uart COMMUNICATION ERROR	<i>Freezer</i> 	This error is not applicable if you encounter this error during diagnostics ignore it
26	L↔M COMMUNICATION ERROR	<i>Freezer</i> 	Bad communication between LOAD↔MAIN MICOM
27	P↔M COMMUNICATION ERROR	<i>Freezer</i> 	Bad communication between LCD Panel ↔MAIN MICOM

Fault Codes

all fault codes are on the CD and in Fast Tracks



Samsung 'Refrigerator' Diagnostic Code Quick Guide

Samsung Single Evaporator 'Refrigerator' Diagnostic Code Quick Guide

No	Error Items	Display LED	TROUBLE
1	Fridge Sensor	Fridge "Mid"	Fridge Room Sensor Error- This can be an wire cut, short-circuit, contact failure, or missing sensor. This can also be caused by a temperature reading $> 149^{\circ}$ or $< -58^{\circ}$ F.
2	Peripheral Temp Sensor	Fridge "Min"	Ambient Temp. Sensor Error- This can be a wire cut, short-circuit, contact failure, or missing sensor. This can also be caused by a temperature reading $> 149^{\circ}$ or $< -58^{\circ}$ F.
3	Freezer Sensor	Freezer "Max"	Freezer Room Sensor Error- This can be an wire cut, short-circuit, contact failure, or missing sensor. This can also be caused by a temperature reading $> 149^{\circ}$ or $< -58^{\circ}$ F.
4	Freezer Defrost Sensor	Freezer "Mid"	Freezer Room Defrost Sensor Error- This can be a wire cut, short-circuit, contact failure, or missing sensor. This can also be caused by a temperature reading $> 149^{\circ}$ or $< -58^{\circ}$ F.
5	Freezer Defrost Error	Freezer "Min"	Freezer Room defrosting heater- wire cut, short-circuit, contact failure, missing sensor housing, or defective temperature fuse/bi-metal. Defrost on for over 90 minutes
6	I/M Function Error	No Ice	This error indicates the Ice tray has not returned to level after an ice harvest. The error is displayed after three failed attempts.
7	I/M Sensor Error	Cubed Ice	Ice Maker Sensor Error- This can be a wire cut, short-circuit, contact failure, or missing sensor. This can also be caused by a temperature reading $> 149^{\circ}$ or $< -58^{\circ}$ F.

Fault Codes

all fault codes are on the CD and in Fast Tracks

Samsung Older "RB" Series 'Refrigerator' Diagnostic Code Quick Guide

<u>No</u>	<u>Error Items</u>	<u>Display LED</u>	<u>TROUBLE</u>
1	R-SENSOR	Fridge 5	Fridge Compartment Sensor Error- This can be a wire cut, short-circuit, contact failure, or missing sensor. This can also be caused by a temperature reading $> 150^{\circ}$ or $< -58^{\circ}$ F.
2	DEFROST SENSOR, R ROOM	Fridge d	Fridge Compartment defrosting heater- wire cut, short-circuit, contact failure, missing sensor housing, or defective temperature fuse/bi-metal. This can also be caused by a temperature reading $> 150^{\circ}$ or $< -58^{\circ}$ F.
3	Peripheral Temp Sensor	Freezer E5	Ambient Temp. Sensor Error- This can be an wire cut, short-circuit, contact failure, or missing sensor. This can also be caused by a temperature reading $> 150^{\circ}$ or $< -58^{\circ}$ F.
4	F-SENSOR	Freezer F5	Freezer Compartment Sensor Error- This can be a wire cut, short-circuit, contact failure, or missing sensor. This can also be caused by a temperature reading $> 150^{\circ}$ or $< -58^{\circ}$ F.
5	F-DEF-SENSOR	Freezer d5	Freezer Compartment defrosting heater- wire cut, short-circuit, contact failure, missing sensor housing, or defective temperature fuse/bi-metal. This can also be caused by a temperature reading $> 150^{\circ}$ or $< -58^{\circ}$ F.

RFG299***



Function for operational diagnosis
For details download the complete Service Manual

Function for failure diagnosis
For details, download the Fast Track Troubleshooting guide

Functions	How to operate		Use this functions...
	Keys	Time	
Forced Operation	"Lighting" + "Ice Off"	8 sec	To set the forced operation and forced defrost.
Cooling Off	"Slide Show" + "Lighting"		To set Display Mode at the shop
Touch screen Calibrations	"Lighting" + "Home"		To calibrate the stylus pen touch point of LCD Touch Screen
Self-Diagnostics	"Slide Show" + "Home"		To check the failure modes
Load Operation Check			To check the present operating load of refrigerator.
Set Point Shift Mode			To change the setting options about the refrigerator operating status. Need careful decision for the option change.
Error History			To check the latest 5 errors.
Check LCD Pixel			To check the LCD Pixel failures.
S/W Upgrade			To upgrade the Software on the Panel.
User Data Back up/Restoration			To back up & restoration the user's data when update software and/or replace PBA panel.
OS Upgrade		Reset as pressing the "Ice Off" button	Reset

Sensor Troubleshooting

Sensors Control Everything

The Sensors provide accurate control of the temperatures at various locations in the refrigerator, up to 11.

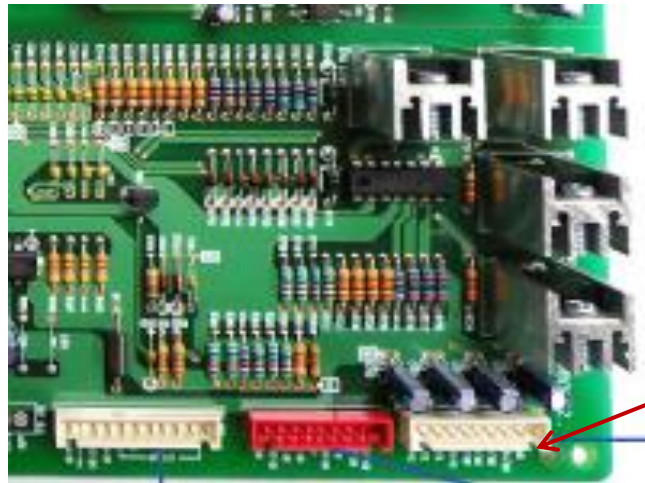
Samsung Refrigerators always do a Self Diagnostic on power up, Open/Short Sensor will lock the unit at this time

- **Compartment (Room) Temperature Sensor 2 or 4**
- **Cool Zone Drawer/Cool select Pantry**
- **Ice Production I/M Sensor**
- **Ice Room Sensor**
- **Ambient Sensor – Condenser Fan control**
- There is a **defrost sensor** on each evaporator in Samsung Refrigerators, 1, 2, or 4

Compartment Temperature Sensor Testing

- To show actual temps on older models, after checking Fault Codes, power off & on. The display will show actual compartment temperature for a short time, check the actual temperature at the top rear of the compartment and compare readings.
- Newer models, press temp pad, set temp displays, then actual displays before going blank.

How to Read Fast Track PCBs



- CN76 F, R, C Fans
- 2-1 Ice Room Fan (Blk-Gry) 7-11vdc**
- 3-1 F Fan (Yel-Gry) 7-11vdc
- 4-1 R Fan (Org-Gry) 7-11vdc
- 5-1 C Fan (S/Blu-Gry) 7-11vdc
- 6 Ice Room Fan FG(Pnk)
- 7 F Fan FG(Brn)
- 8 R Fan FG(Red)
- 9 C Fan FG(Blu)

Connectors for measuring voltages

Component to be measured

Nominal voltage reading to be expected

CN30 Sensors & Switches
3-(CN76-1) F Sensor (Red-Gry) 3.5~4.2vdc

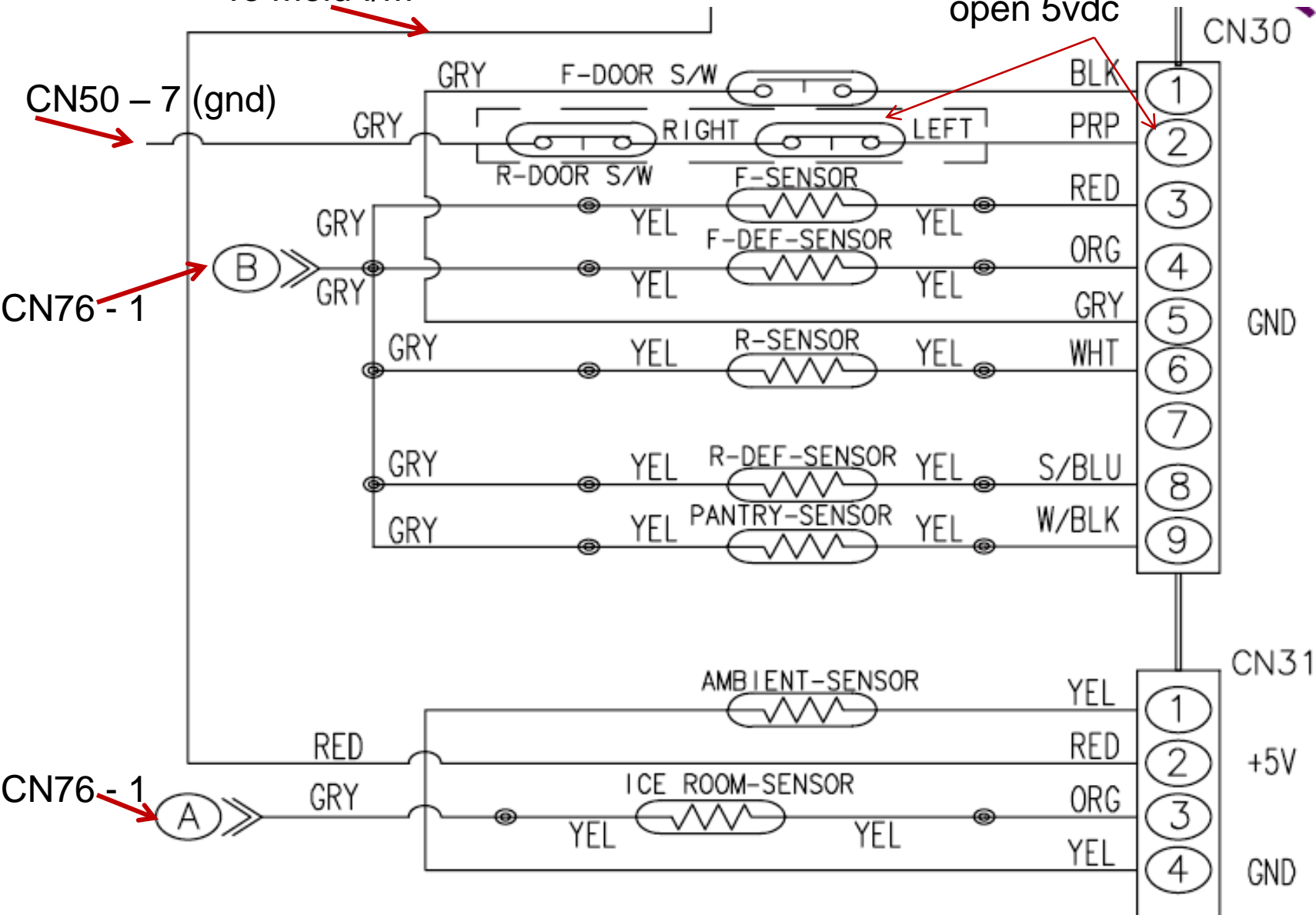
Pin (Connector) numbers for meter leads to measure voltage

Wire colors for meter leads test points

Sensors - Door Switch

To Mold I/M

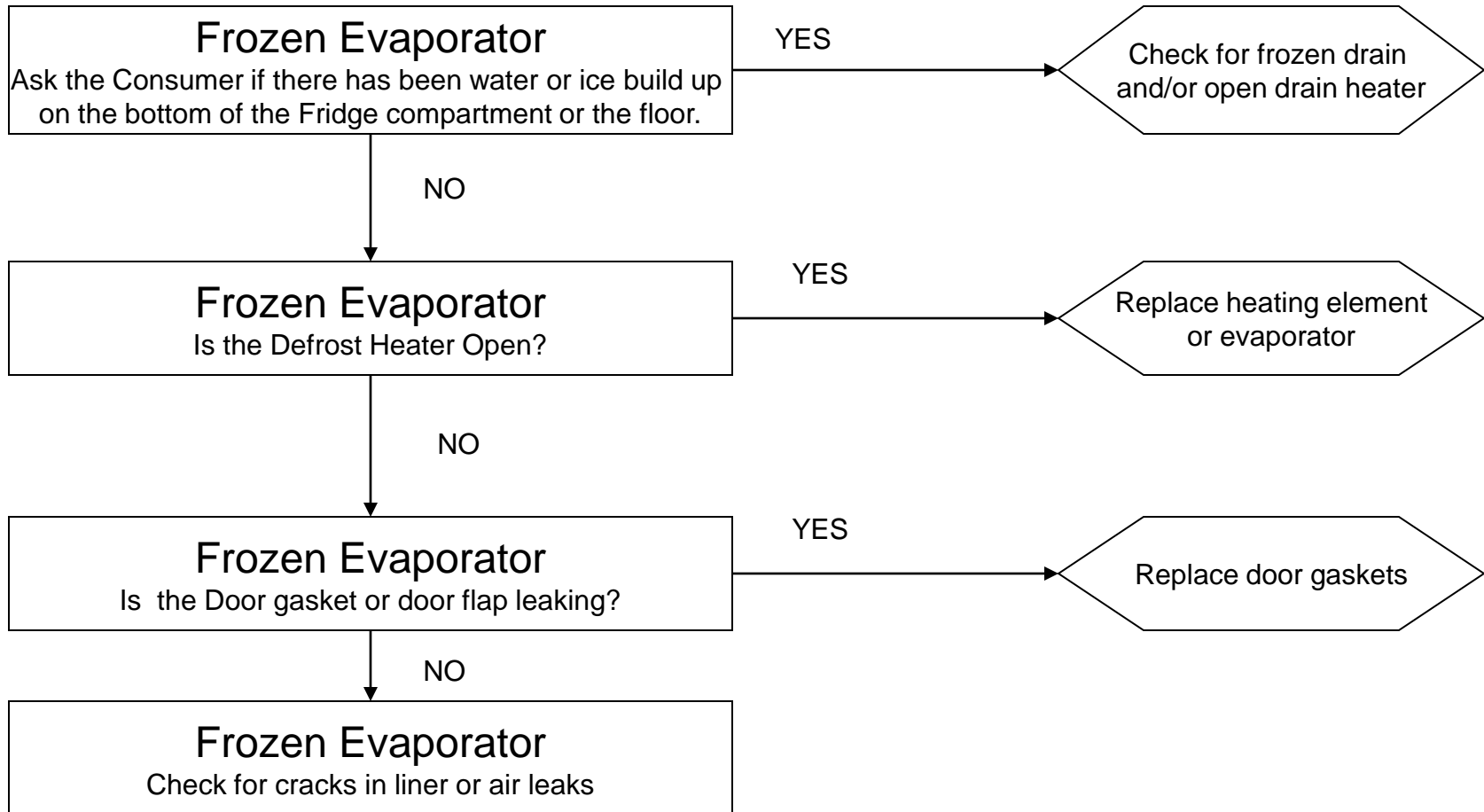
When door is open 5vdc



Defrost Problem Troubleshooting

Defrosting Troubleshooting

Check for any fault codes in the manual Diagnostic Mode



Testing Defrost Circuits

Access the main PCB for voltage/resistance testing

- With the compressor running test the sensors
- Enter Forced Mode Defrost
- Measure the heater voltage
- Remove the power and heater connector and check the heater circuit resistance

- Defrost Sensor

- The sensor shuts off heater At 50°F in Freezer, 63°F in Fridge
- If the sensor is bad it may shut off the defrost circuit in a few minutes or not start, causing ice build-up, or it could lock up in defrost mode and become a total no cool.

Note: A defective sensor may check OK at room temperature, test at operating temperature only.

Defrosting Troubleshooting Part 1

- **Defrost Sensors**

- **Testing:** Check the DC voltage across both evaporator defrost sensors, with the compressor running. They should read less than a tenth of a volt difference, as they are both on the same refrigerant line. They usually read ~ 3.7VDC, after the compressor has been running for about 10 minutes. You may find one reading about 30 to 50 degrees off (lower voltage = higher temp), if so replace it.

- **Alternate Sensor Testing**

Make ice slurry. To do this, fill a cup with ice (preferably crushed), then add water and a teaspoon of salt to make a slush. Mix thoroughly and allow to sit for 2 to 3 minutes. This will give you a 32°F reference. Lower the sensor into the mixture and leave for about 1 minute, check the resistance. It should be very close to 13,300 Ω. Before reinstalling the sensor, be sure to rinse it with fresh water and dry it.

Defrosting Troubleshooting Part 2

Enter the Forced Mode per instructions

- Check heater circuit amperage at the Main PCB or A/C line; look for ~1.2 amps for the Fridge and ~2.2 amps for the freezer or 3.4 amps total.
NOTE: If compartment is warm, you only have about 90 seconds to test.
- **Freezer** - Check service manual for connector and wire color code for the model being serviced.
- **Fridge** - Check service manual for connector and wire color code for the model being serviced.
- **Low Current draw?** Check individual defrost circuits, if one is low check for open defrost heater
- **No Current draw?** Check voltages and resistances next.

Defrosting Troubleshooting Part 3

Enter the Forced Mode per instructions

- Check the heater circuit voltage at the Main PCB; should be 120VAC for Freezer and Fridge.

NOTE: If compartment is warm, you only have about 90 seconds to test.

Listen for the relay closing then check the heaters.

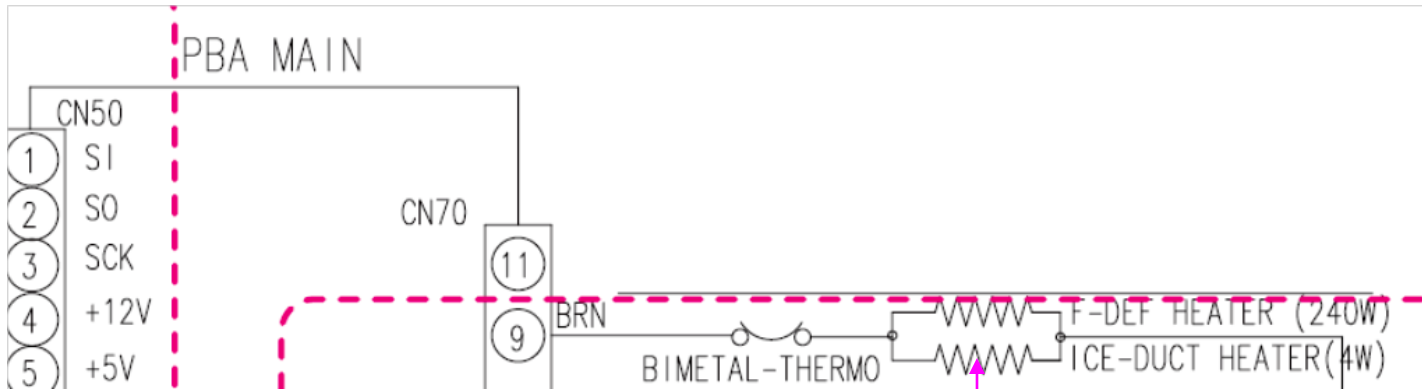
- **Freezer Defrost Heater** - Check service manual for connector and wire color code for the model being serviced.
- **Fridge Defrost Heater** - Check service manual for connector and wire color code for the model being serviced.
- **No AC Voltage?** Change Main PCB

Defrosting Troubleshooting Part 4

Heater circuit resistance - Unplug the refrigerator. Remove the defrost heater connector from PCB.

- **Freezer** - Check heater circuit resistance at the Main PCB, look for 35–50 Ω average.
- **Fridge** - Check heater circuit resistance at the Main PCB, look for 60-95 Ω average.
- **Freezer & Fridge** - If resistance is around 2600 Ω , Thermo-Fuse (Bi-metal) is good, Defrost heater is open.
- **Open Circuit** - Check the Thermal Fuse (Bi-metal), Heater and Connectors

Defrosting Troubleshooting



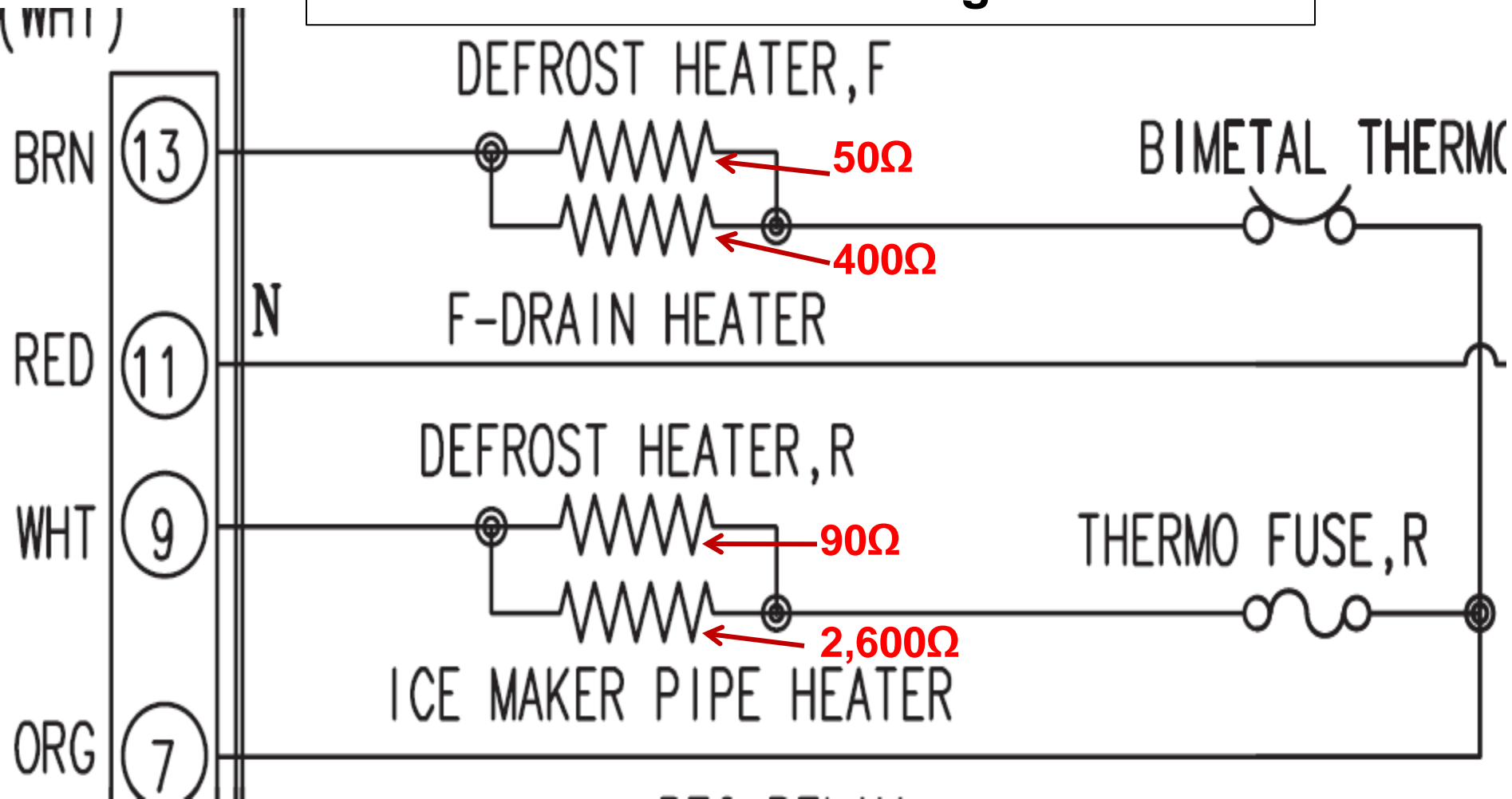
Example of a
2600 Ω heater

Heater Resistances

Heater part of Evap Coil

Pins 7-9 = 2,600Ω What's Wrong

Pins 7-9 = ∞ What's Wrong



Sample Heater Resistances

Older RB Models

Component	Resistance	Wattage	Voltage
Freezer Defrost Heater	60Ω	242	120vac
Fridge Defrost Heater	120Ω	120	120vac
Freezer Drain Heater	277Ω	52	120vac
Fridge Drain Heater	379Ω	38	120vac
Fill Tube Heater	1100Ω	10	120vac

New RB Models

Component	Resistance	Wattage	Voltage
Fridge Defrost Heater	120Ω	120	120vac
Freezer Defrost Heater	60Ω	240	120vac
Fill Tube	1108Ω	13	120vac

Older RS Models

Component	Resistance	Wattage	Voltage
Freezer Defrost Heater	58Ω	215	120vac
Fridge Defrost Heater	103Ω	140	120vac
Freezer Drain Heater	320	45	120vac
Dispenser Heater	2880Ω	5	120vac
Water Tank Heater	3600Ω	4	120vac
Fill Tube Heater	2880Ω	5	120vac

Go to Fridge Fast Tracks for each Model

RF & RFG Models

Component	Resistance	Wattage	Voltage
Freezer Defrost Heater	60Ω	240	120vac
Fridge Defrost Heater	120Ω	120	120vac
French Mullion Heater	1800Ω	8	120vac
Ice Duct Heater	3600Ω	4	120vac
Dispenser Heater	9000Ω	1.6	120vac
Water Tank Heater	72Ω	2	12vdc
Fill Tube Heater	72Ω	2	12vdc

RM Models

Component	Resistance	Wattage	Voltage
Freezer Defrost Heater	72Ω	200	120vac
Fridge Defrost Heater	180Ω	80	120vac
CF Defrost Heater	144Ω	100	120vac
CR Defrost Heater	180Ω	80	120vac
F Drain Tube/Heater	2880Ω	5	120vac
R Drain Tube/Heater	2880Ω	5	120vac
Dispenser Heater	2880Ω	5	120vac
Water Tank Heater	29Ω	5	12vdc
Fill Tube Heater	29Ω	5	12vdc

Defrost Error Symptoms

NOTE: Evaporator covers may break if removed while frozen as they are plastic, replace if damaged.

- Ice build up in either the freezer or refrigerator compartment can be caused by a blocked drain. It is possible that the drain is not being defrosted by the heaters enough to properly clear the drain and pass the melted water into the catch pan.
- Noise from the refrigerator/freezer fan or weak cooling. Noise disappears when the customer opens door. The defrost sensor, heater, thermal fuse/bimetal device are OK but ice is built up in the drain area of evaporator cover.

Defrosting Error Causes

- The heat from the defrost heater does not transfer to the evaporator drain
- The Styrofoam around the evaporator cover absorbs moisture and frost begins to form on the evaporator, defective evaporator cover.
- During the defrost cycle, the frost melts and drips down to the drain where it becomes frozen again.
- Ice blockage in the drain grows larger with every defrost cycle.
- Because of the growing ice block, cooling efficiency diminishes at a growing rate and eventually blocks the fan blades.
- Self diagnostics will eventually show a fan error.

Defrost Circuit Modification

Cause

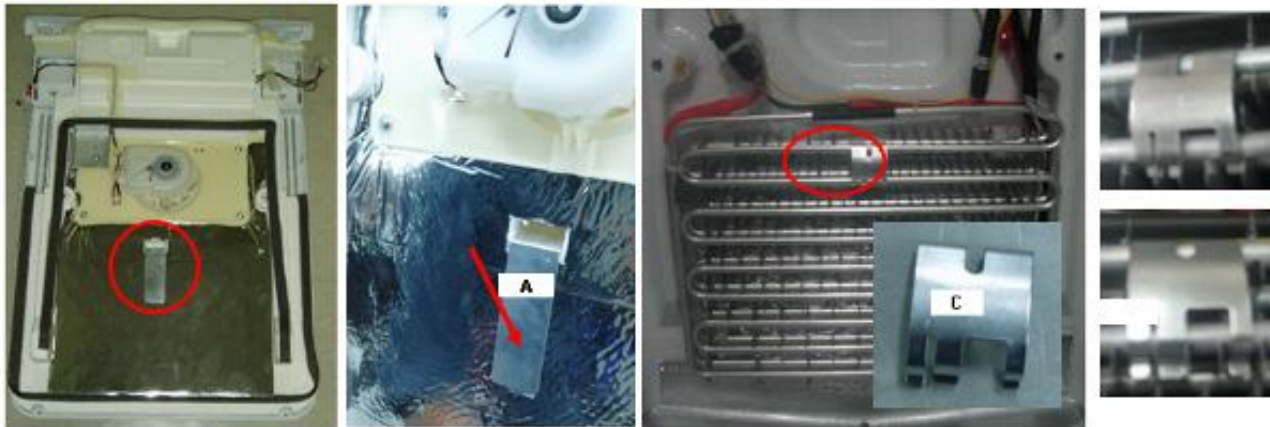
1. The heat of defrost heater does not transfer to the drain hole of ASSY COVER EVAP REF
- 2 Styrofoam around fan absorbs moisture and frost grows.
3. During defrost, the frost melts and it get to be frozen again after defrost completed.
4. Ice gets bigger and bigger. Finally, the ice interferes with Fan.
5. Weak cooling appears.
6. With Self diagnosis mode, Fan motor error is shown.

Solution

- Aluminum clips for better heat-transfer are applied

Clip A faces with C which's assembled on the heater line of Evaporator. So heat of defrost heater transfers directly to drain hole.

- This improvement is to be applied from March 2007 production.



- Metal clips “A” and “C” can be placed on both the evaporator cover and the evaporator. The metal clips will touch and transfer heat more efficiently from the defrost heaters to the drain preventing ice build up.

Part numbers for these parts are as follows:

A: DA61-03502A PLATE-DRAIN INS EVAP, REF

C: DA61-03585A FIXER-EVAP REF

Defrost Cycle Timing

Model Series	First Defrost Cycle, Both Fridge & Freezer	Defrost Cycle Fridge only	Defrost Cycle Fridge & Freezer
RSG	6 hrs, Pause Time 10 minutes	6~12 hrs (varies according to conditions)	12~24 hrs (varies according to conditions)
RS	4 hrs, Pause Time 10 minutes	6~12 hrs (varies according to conditions)	12~24 hrs (varies according to conditions)
RF	6 hrs, Pause Time 12 minutes	6~17 hrs (varies according to conditions)	12~34 hrs (varies according to conditions)
RFG	6 hrs, Pause Time 12 minute	6~11 hrs (varies according to conditions)	12~23 hrs (varies according to conditions)
RB 2009	6 hrs, Pause Time 12 minutes	6~11 hrs (varies according to conditions)	12~23 hrs (varies according to conditions)
RB Pre 2009	4 hrs, Pause Time 10 minutes	6~11 hrs (varies according to conditions)	12~22 hrs (varies according to conditions)
RS2530	4 hrs, Pause Time 7 minutes	N/A	6~11 hrs (varies according to conditions) * Single Evaporator in Freezer
RS2630	4 hrs, Pause Time 7 minutes	N/A	6~11 hrs (varies according to conditions) * Single Evaporator in Freezer

Defrost Operation

- Defrost cycle is initiated by the main PCB.
- 120vac is supplied to the defrost heater circuits, for the Fridge and/or for the Freezer
- The heaters remain on until the defrost sensor voltage tells the PCB to terminate the cycle.
 - The PCB shuts off the heater at Sensor temps 50 °F in Freezer, and 63 °F in Fridge, after the main PCB initiates the cycle.
 - **WHAT COULD POSSABLY GO WRONG?**
- The Thermal Fuse or Bi-Metal is the fail safe for this circuit
 - The Thermal Fuse or Bi-Metal is in series with the defrost heater for protection (140 degree) for failure.
 - **WHAT COULD GO WRONG?**
- Defrost drains are warmed by the defrost heater with reflected heat from the evaporator cover or a separate defrost drain heater to allow for proper flow of defrost water
 - The Ice Maker fill tube heater is activated during refrigerator defrost.

Defrosting Troubleshooting

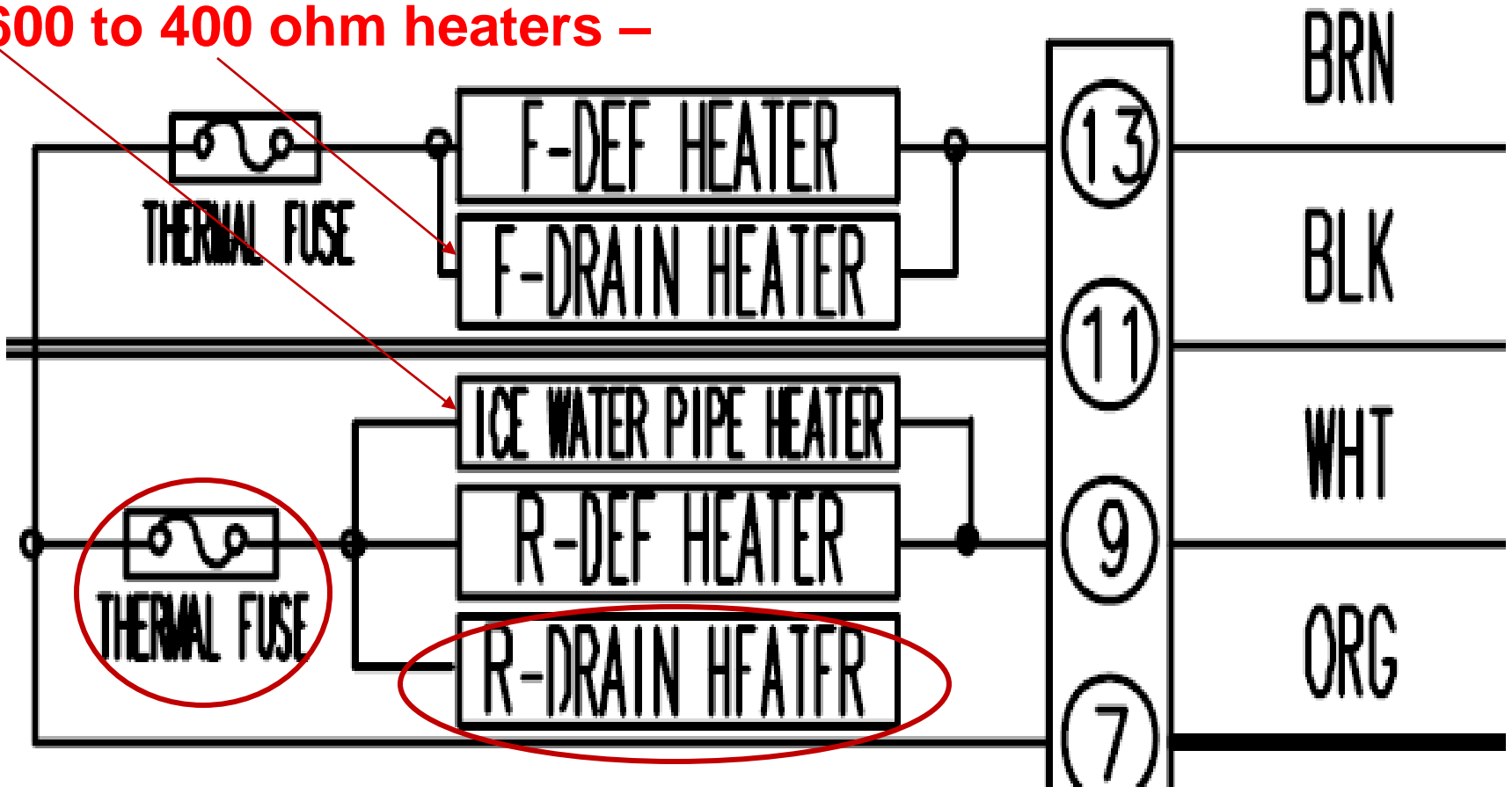
- Testing Defrost Circuits – Always test all compartments, even if only one is bad.
 - Access main PCB for voltage/resistance testing
 - 1 With the compressor running test the defrost sensors
 - Enter Forced Mode Defrost
 - 2 Measure heater voltage
 - 3 Remove power and heater connector and check heater circuit resistance
- Defrost Sensor
 - The sensor voltage shuts off heater At 50 in Freezer, 63 in Fridge
 - If the sensor is bad it will shut off the defrost circuit in a few minutes or not start, causing ice build-up, or it could lock up in defrost and become a total no cool.
- **Note:** A defective sensor may check OK at room temperature, test at operating temperature only.

Defrosting Troubleshooting

Heater part of Evap Coil

Resistance and use vary by Model

2600 to 400 ohm heaters –



Defrosting troubleshooting

NOTE: Evaporator Covers May Break If Removed While Frozen To Coil, replace if damaged.

- Ice build up in either the freezer or refrigerator compartment can be caused by a blocked drain. It is possible that the drain is not being defrosted by the heaters enough to properly clear the drain and pass the melted water into the catch pan.
- In the Freezer compartment this may be caused by an open defrost foil drain heater
- In the Fridge compartment this may be caused by a bowed or damaged evaporator cover ass'y. Any cracks in Styrofoam or breaks in the foil will cause ice buildup. Check drain tubes next to condenser coil.

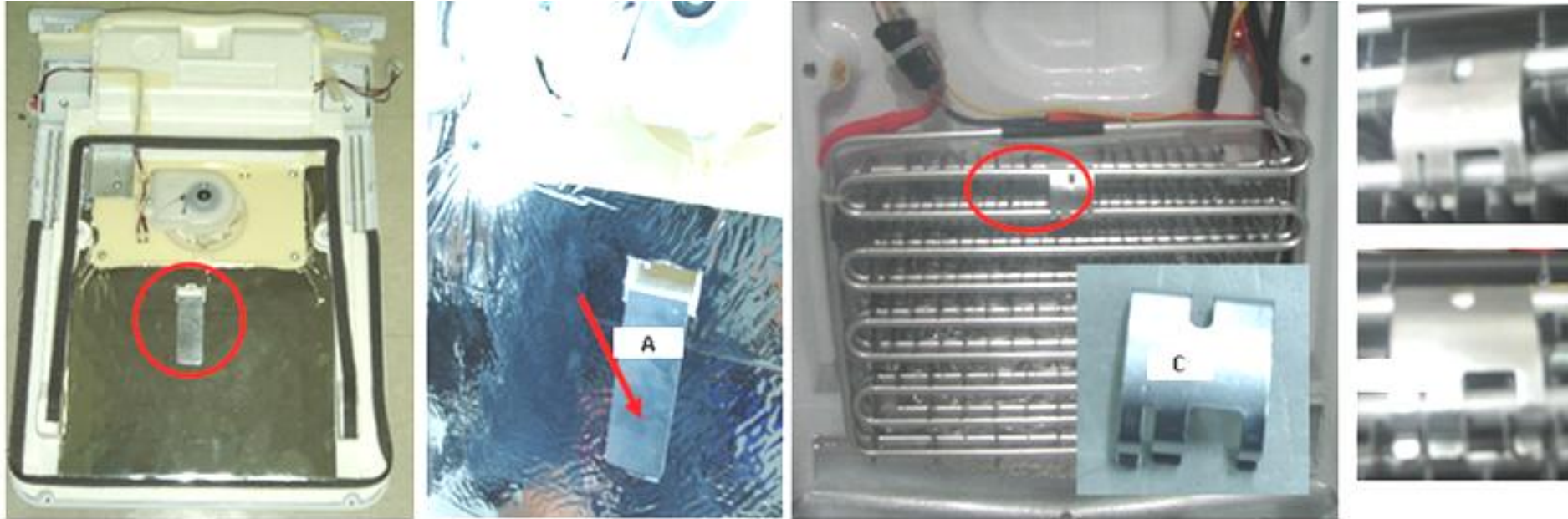


SPEEDY DEFROST



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Defrosting Troubleshooting



- Metal clips “A” and “C” can be placed on both the evaporator cover and the evaporator. The metal clips will touch and transfer heat more efficiently from the defrost heaters to the drain preventing ice build up.
- **Part numbers for these parts are as follows:**
- **A: DA61-03502A PLATE-DRAIN INS EVAP, REF**
- **C: DA61-03585A FIXER-EVAP REF**

Defrost Heater Replacement

Out of Warranty Only

New Refrigerator Evaporator Ass'y

The Heater Tubing is the front pass on the evaporator ass'y, it can be removed from the new ass'y and reinstalled on the one in the refrigerator compartment, after removal of the defective heater. This is for the Refrigerator side only.

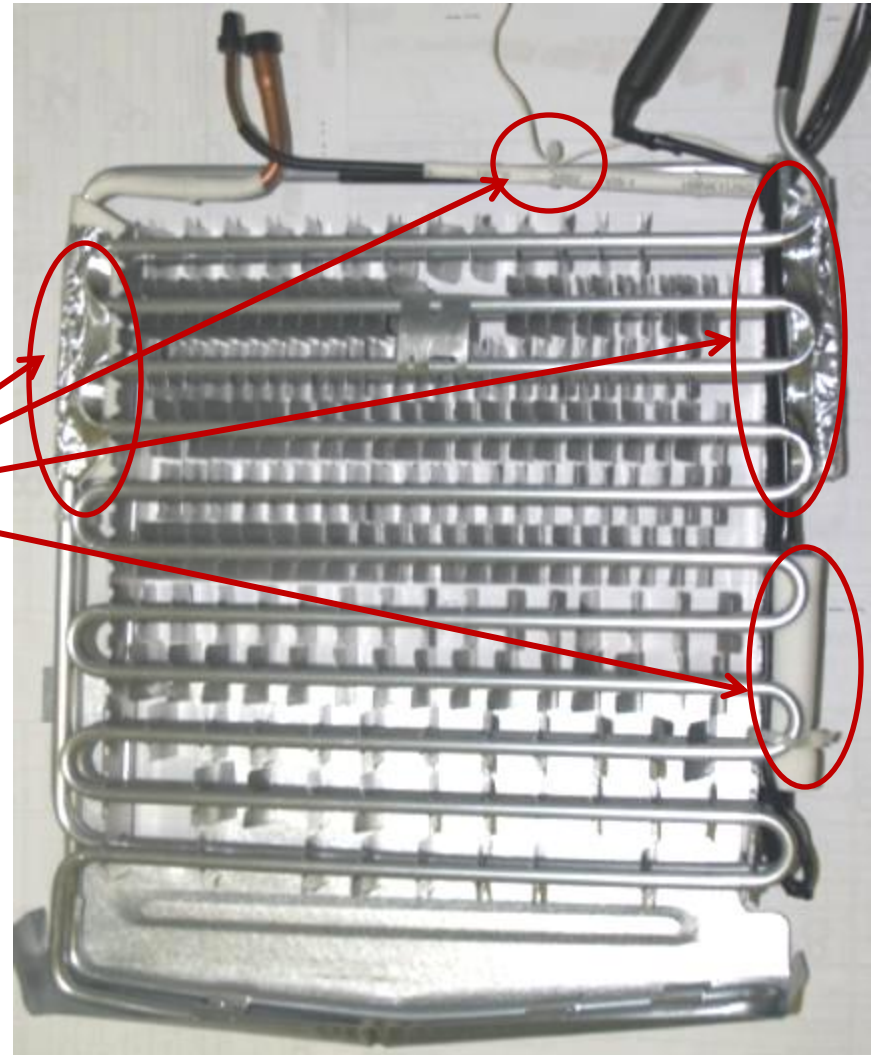
Extreme Caution must be used

The Evaporator ass'y is very sharp and can cause injury.

Note the position of the foil tape, sensor, thermal fuse, and each zip tie.

The tabs holding the heater tubing must be twisted with care to avoid breakage.

Reinstallation of the heater on the refrigerator evaporator must be done with care to prevent defrost drain freezing issues. Lock each tab properly to assist in heat transfer and position the foil tape, sensor, thermal fuse, and each zip tie exactly as removed. Straighten all fins



Tools required

Foil Tape

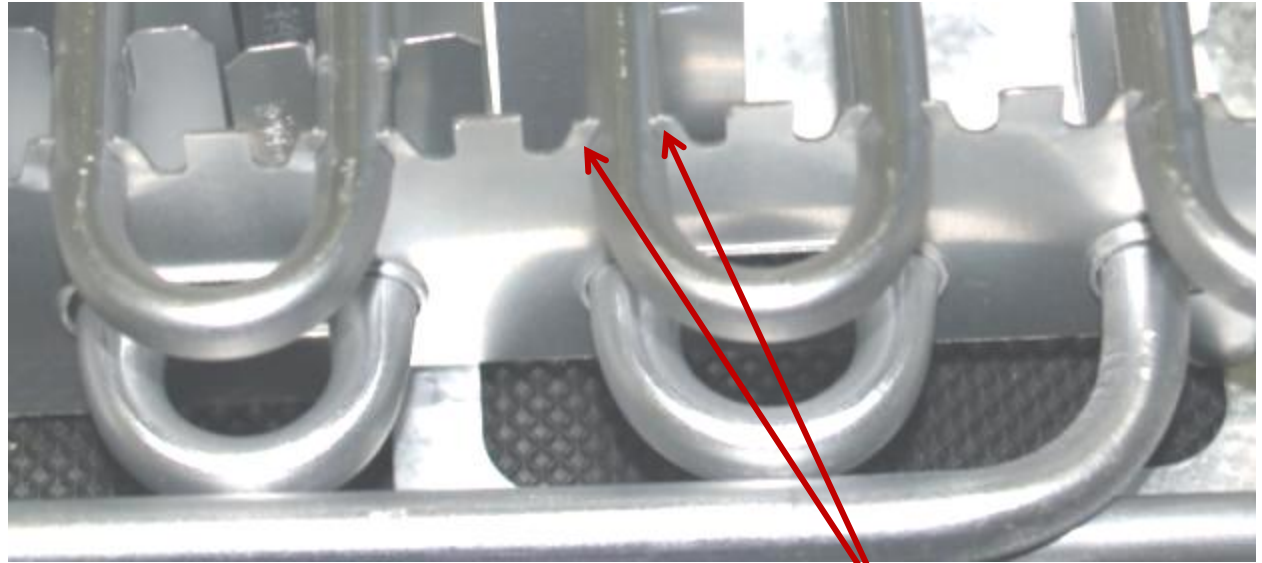
Zip Ties

Long Nose Pliers

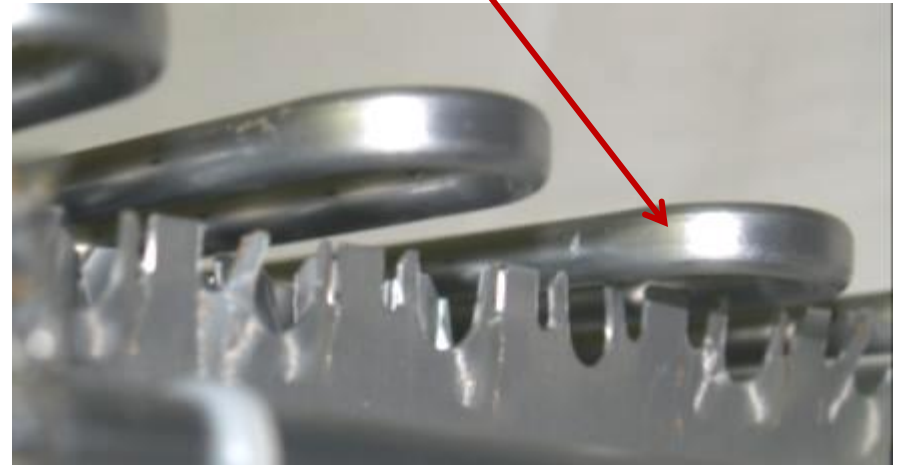
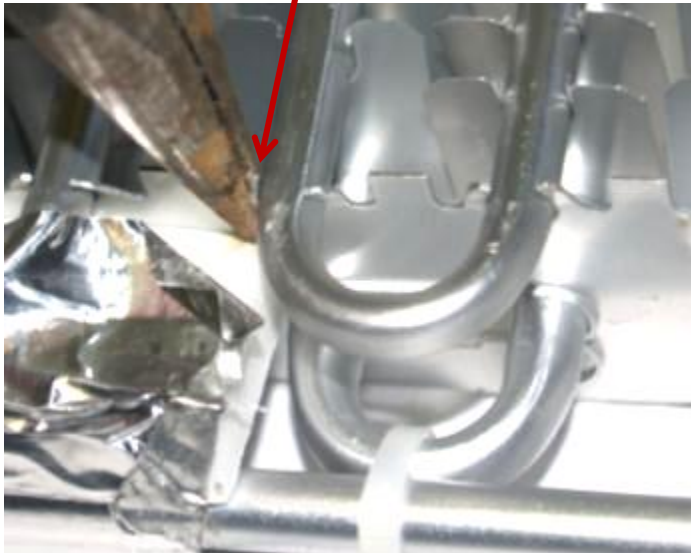
Cutter

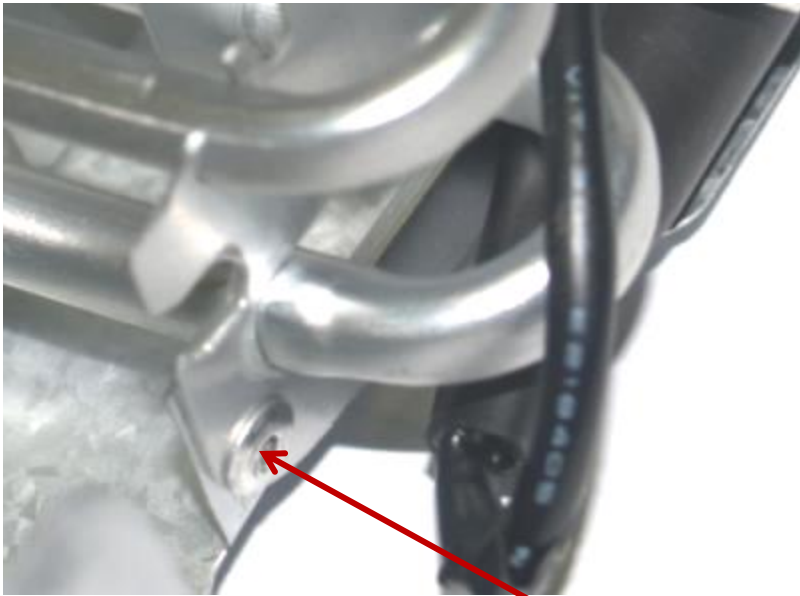
Drill

Pop Rivet tool



Heater aluminum tube is locked to the evaporator frame with two tabs on each pass. Twist each tab carefully to avoid breakage and lift up heater tubing.





Drain Tray is riveted to the evaporator frame
Drill out rivet to separate heater/tray ass'y from the evaporator coil.
Use Pop River tool to reinstall on evaporator ass'y in the refrigerator.



Heater Ass'y after
separation from the
evaporator coil



Common Defrost Problems

Evaporator frozen, solid ice

- Fridge
 - Bad evaporator cover, open drain heater, add Fixer and Plate, or blocked drain.
- Freezer
 - Open drain heater, bad evaporator cover, add fixer and plate, or blocked drain

Evaporator frozen, all frost

- Fridge or Freezer
 - Bad defrost sensor, open thermal fuse, bad main PCB, open defrost heater
- Ice Chute Flapper not Sealing properly

Defrost Service

Single Evaporator Models

- Frost/Ice forming on the evaporator cover and blocking fan and air tunnel to fridge.
 - Install Repair Kit for Serial Number range: up to **42BL3*****
Units manufactured before April of 2006 For model RS2630
 - Check for ice chute failure, leak at ice maker fill tube, air leak around defrost water drain by evaporator coil, cracks in liner, or door seal on fridge or freezer.
 - Excessive door openings, doors left open for long periods, hot foods put in fridge

Evaporator frozen, solid ice

- Blocked drain

Evaporator frozen, all frost

- Bad defrost sensor, open thermal fuse, bad main PCB, open defrost heater

Inverter Compressor Troubleshooting

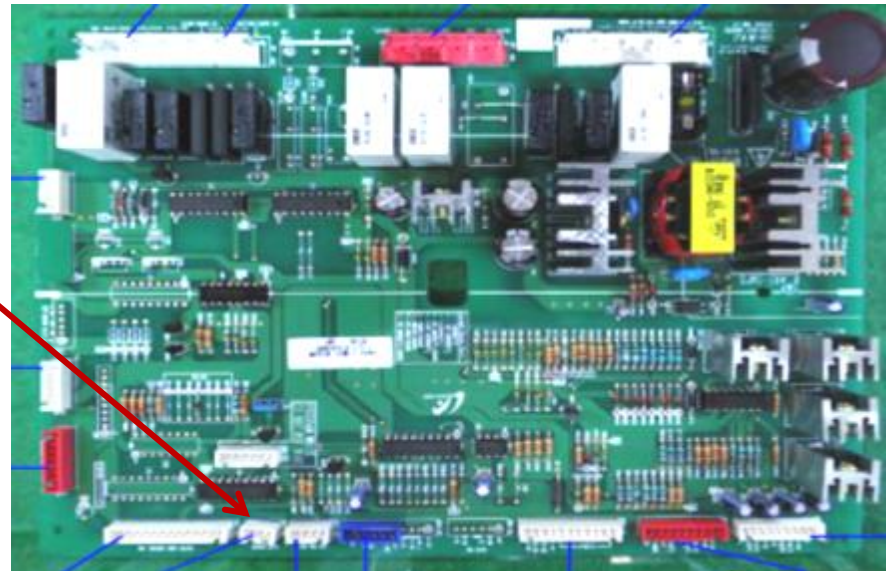
Inverter Compressor & System Operation Testing

TEST BEFORE INTERPRETING LED BLINKING FREQUENCY

Compressor not running, LED is out

1. Activate Forced Compressor Operation, wait 3 minutes (in case of high head pressure)
2. If compressor doesn't start, and LED is out, check Compressor Control pin for 2.5vdc (if not there replace Main PCB)

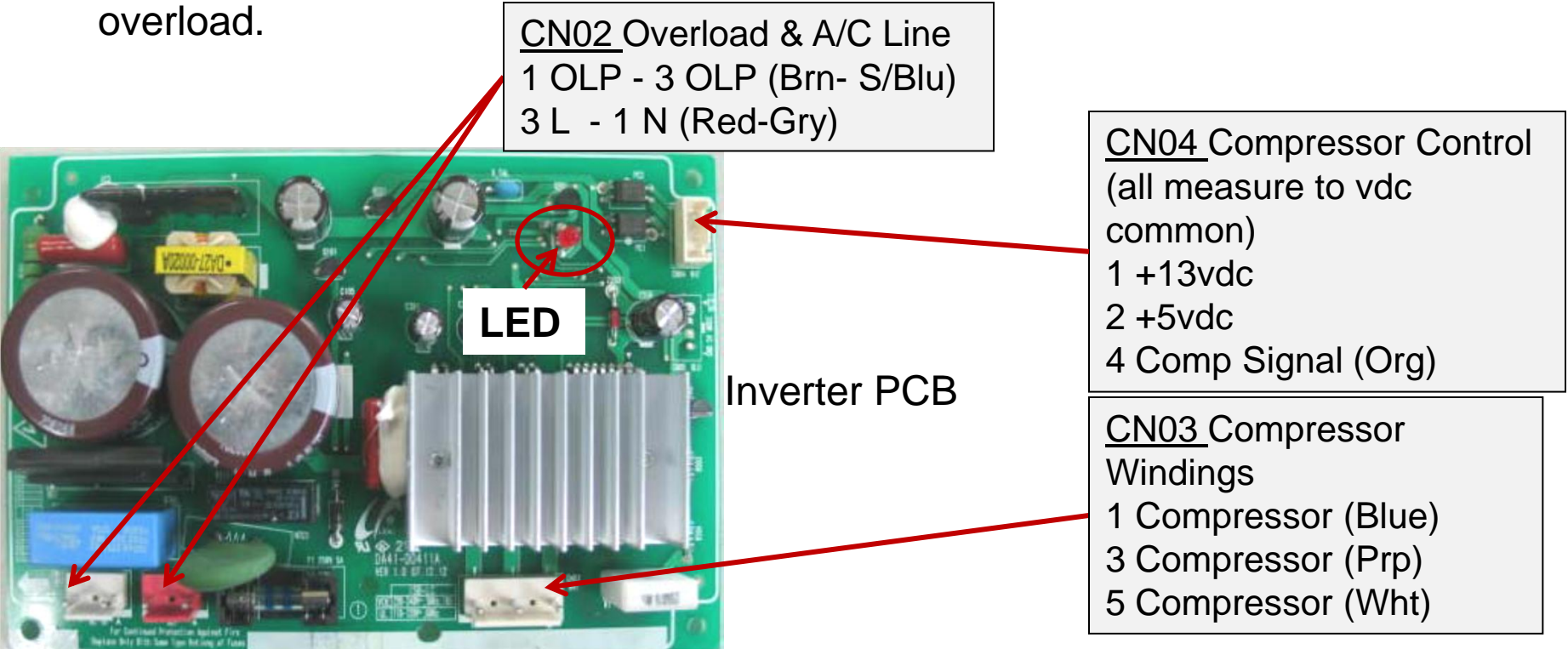
CN** To Comp Inverter
Board Comp control (Org-
vdc to vdc common) 2.5vdc



Inverter Compressor & System Operation Testing

TEST BEFORE INTERPRETING LED BLINKING FREQUENCY

- 1) Compressor not running LED Blinking
- 2) Activate Forced Compressor operation, wait 3 min. (in case of high head pressure)
- 3) Check for 120vac at CN02 Red and Gray wires.
- 4) 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.
- 5) Disconnect CN02 (Inverter PCB), check resistance to Overload , if open replace overload.



Compressor Controller PCB RM257AB*

Forced Modes:

- FF1 - Compressor high speed - 2.7 amps
- FF2 - Compressor low speed - 1.6 amps
- FF3 - Compressor medium speed - 2.0 amps
- FD - All defrost elements on - ~ 4.0 amps

NOTE: FF2 & FF3 could be reversed.

Compressor not running

Check for 5 minute delay

- Not in delay

Force Operation

- If no operation, disconnect CN03 (SMPS PCB) and check resistance to the windings. ~10 Ω

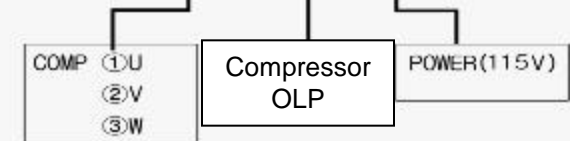
Comp windings OK

- Disconnect CN02 (SMPS PCB), check resistance to overload

Overload OK

- Replace Main PCB and Inverter PCB

- ① 12VDC
- ② 5VDC
- ③ Ground
- ④ Compressor RPM



Model: RFG294 **, RFG295 **, RFG299 **

Compressor Troubleshooting



Compressor not running

Check for 5 minute delay -- Not in delay

Force Operation

If no operation, disconnect CN03 (SMPS PCB) and check resistance to the windings. ~ 10 Ω

Comp windings OK

Disconnect CN02 (SMPS PCB), check resistance to overload

Overload OK

Replace Main PCB and SMPS PCB







Forced Modes:

FF1 - Compressor high speed	-	2.7 amps
FF2 - Compressor medium speed	-	2.0 amps
FF3 - Compressor low speed	-	1.6 amps
FD - All defrost elements on	-	~ 3.4 amps

Inverter Compressors

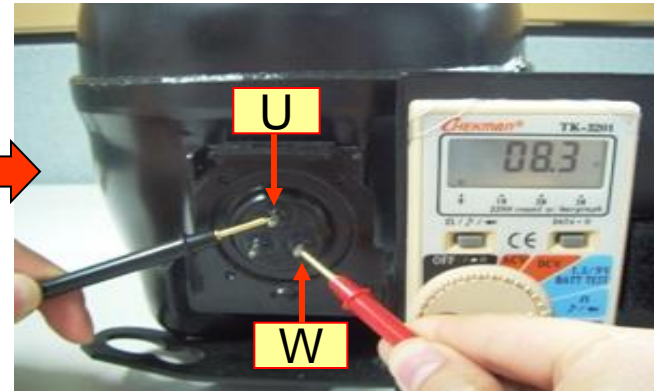
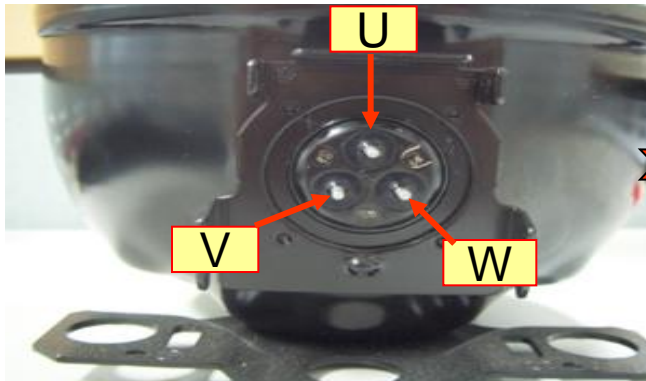
Samsung Refrigerators

All use the same code

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

Note: Failure rate for inverter compressors is very low, also the failure rate for a new PCB is very low.

Inverter Compressor Troubleshooting



Measure the resistance of the Compressor terminals

- Normal: / U / V terminal resistance are equal

Measure the resistance between terminals W & U

Normal: W,V,U resistances (Ω) are the same

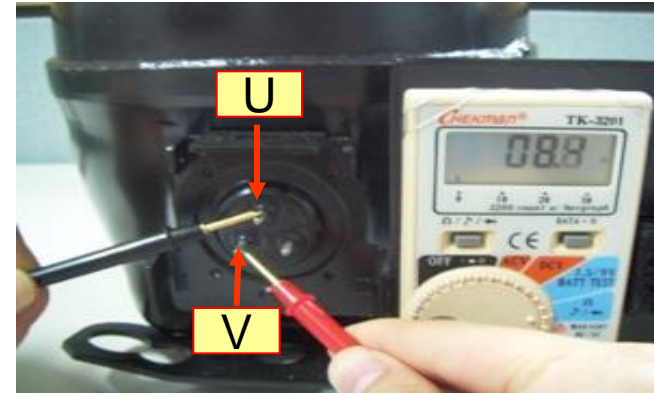
Defect: W,V,U resistances (Ω) are not the same



Measure the resistance between terminals V & W

Normal: W,V,U phase resistances (Ω) are the same

Defect: W,V,U phase resistances (Ω) are not the same

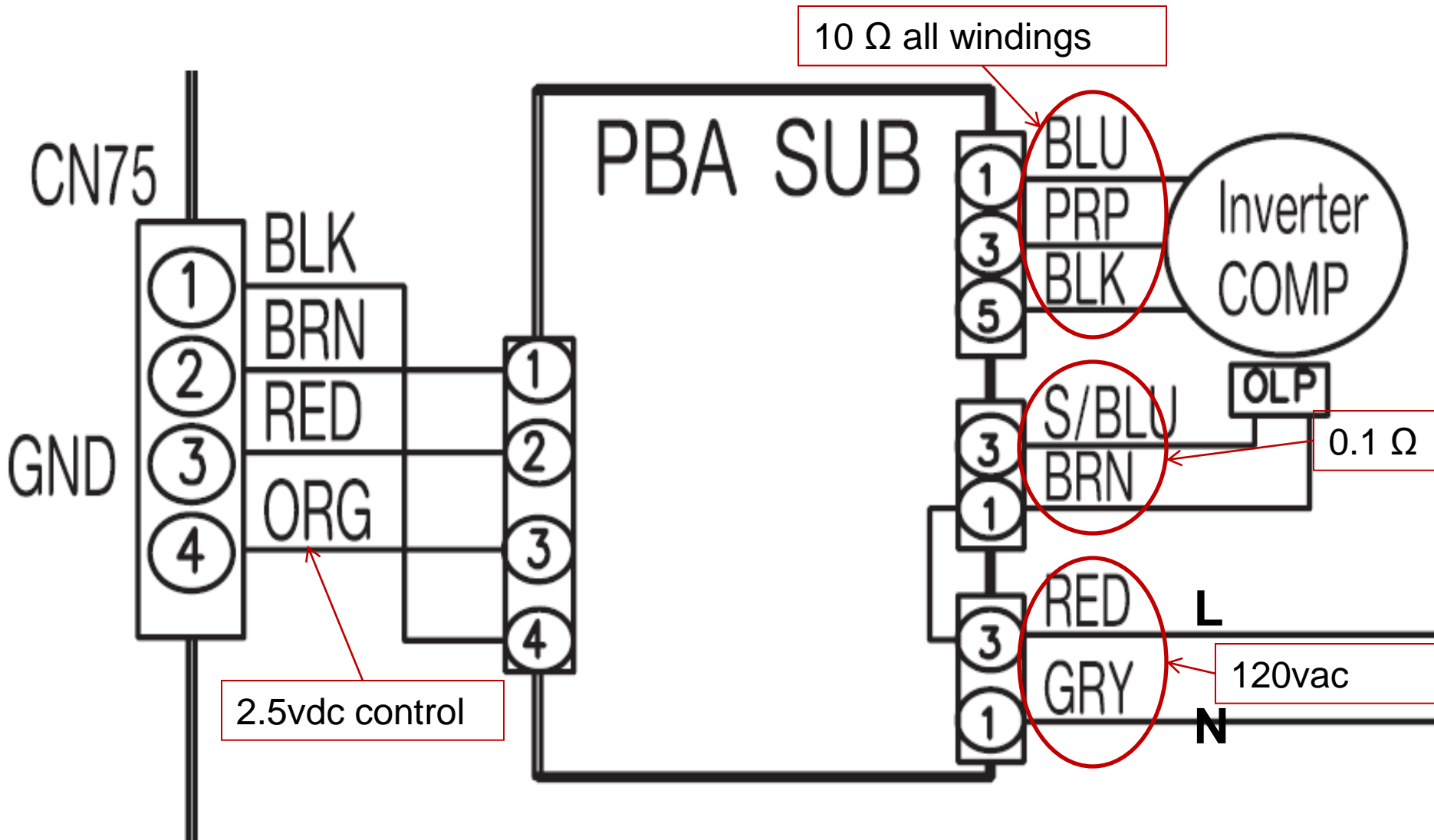


Measure the resistance between terminals U & V

Normal: W,V,U phase resistances (Ω) are the same

Defect: W,V,U phase resistances (Ω) are not the same

Inverter Compressor Checks

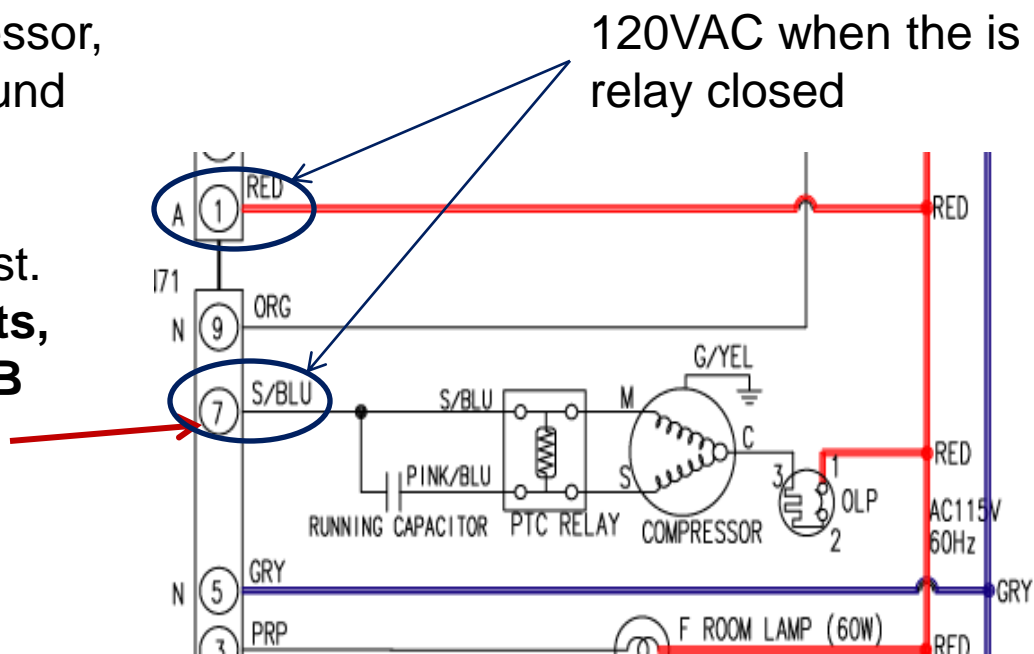


Standard Compressor Operation

- The Compressor is the heart of the refrigerator, creating the pressure difference for refrigeration.
- Line voltage is supplied through the Overload Protector.

Neutral is switched to power compressor, measuring voltage from chassis ground will show voltage at PTC Relay.

Use Forced Compressor mode to test.
Use L1 Common for measurements, tap compressor relay on Main PCB when checking voltage to find intermittent problems.



- **When ordering compressors, they are not shipped with a PTC Relay, Overload Protector, or Drier.**

Ice Production Problems

Twist Tray Type

Heat Release Type

Flex Tray Ice Maker

Ice Production Explanation

- When the initial power is applied, the ice tray will stand by for 2 hours.
- After the 2-hour standby time, the Ice Maker Sensor will check the temperature , when it is lower than 1.5°F for more than 5 minutes, it will harvest, with or without ice in the tray, then fill with water.
- 58 minutes after water is supplied to the Ice Tray, the Ice Maker Sensor temperature will be checked.
- When the Ice Maker Sensor maintains lower than 1.5°F for 5 minutes, it will completes the harvest, if the ice bin is not sensed as full.

Filling the tray

- After the water fill is completed, the ice maker sensor will evaluate water volume, one and a half minutes later. When it detects no or low water level it will add more water. First supply time will be 1.5 sec, next one will be 1 sec and the last will be 2 sec.

Flex Tray Ice Maker

No Ice Production

- #1 Check Fault Codes
- #2 Check temperature at the I/M
- #3 Run a test harvest

If the Freezer temperature at the I/M is above 1.5° it will not make ice.

Verify the I/M works with a test harvest, then troubleshoot the temperature issue.

No Ice - Flex Tray I/M

- For the ice maker to operate properly, water pressure between 20 and 125 PSI is required. A quick test of water pressure would be filling a 6 Oz paper cup in less than 10 seconds. If the internal water filter is clogged, the water pressure to the icemaker will be reduced. The foreign matter at the water supply valve near the icemaker can also reduce the water pressure. Additionally, low water pressure at the fill tube can be caused by a defective fill tube heater.
- If the tray seems to be filling completely but the unit never harvests, verify the operation of the Icemaker sensor in the tray. Normally the unit harvests when the sensor reads approximately 1.5 °F for 5 minutes. The sensor should read about 3.7VDC at the main board connector when the cube temperature is 1.5 °F. After the fill, the sensor will read water temp, 1.5 to 2.2VDC. Remember, using frame ground might produce inaccurate values; instead use the DC ground on the PC board. If this value is incorrect the sensor is suspected to be defective.
- You can also verify the operation of the harvest motor by pressing the black test unit on the motor housing near the back of the assembly.
- Is the freezer not dropping below 10 °F?
- Make sure the Freezer defrost circuit is working properly and the evaporator and condenser fans are working correctly. Inspect condenser coil for air blockage.

Slow Ice - Flex Tray I/M

- This problem is usually caused by a defective sensor or low water pressure. The I/M sensor will delay the time by adding extra fills if the water pressure is low. Also check the operation of the freezer, if the freezer temperature is above 1.5 °F, ice production will be delayed. This can also be caused by a problem with the freezer air vent, make sure the air duct near the ice maker is not restricted. If the unit is on an R/O water system, water pressure may be too low for consistent ice production.
- Is there any frost in the freezer compartment?
- Excessive frost could mean warm air leaking into the compartment warming the top of the freezer preventing the ice maker sensor from maintaining the necessary 1.5 °F to harvest.
- Check for ice chute failure, a leak at ice maker fill tube, an air leak around defrost water drain by evaporator coil, cracks in liner or a bad door seal.
- Finally make sure the most updated version of Ice maker kit has been installed. The ice maker designs in many models have been updated for better performance. Check GSPN for any related service bulletins regarding Ice-maker changes.

Shattered Ice Cubes - Flex Tray I/M

- When all ice shatters it's because of a bad tray or harvesting at a temp that is too cold (lower than 1.5 °F), in some areas hard water issues that can also cause shattered cubes. The temp in the freezer should not have any effect on this issue, as long as it's below 1.5 °F, as a properly installed sensor will not read the freezer temp, only the water/ice temp.
- Check the Ice tray for defects in the plastic. Impurities or hard water can cause the plastic to become rough and inhibit the ice falling from the tray during the twisting. If this is the case, replace the tray assembly.
- It is possible to get ice too cold. Ice that is too cold will shatter during harvest. This can be from the (1) sensor not reading the correct temp (2) the sensor not mounted correctly (3) by programming the icemaker offset value to a lower number (4) the board not understanding the reading.
- To check the sensor you must check the tray temp (not air temp) and compare it to the sensor reading. The sensor should read about 3.7VDC at the main board connector when the cube temperature is 5 degrees. After the fill the sensor will read water temp 1.5 to 2.2VDC.
- To clear offsets, put unit into Diagnostics mode.
- Please note, some shattering is normal for a flex tray icemaker, especially if the Ice Off feature was used recently.

Service Concerns

Flex Tray I/M Shattered Ice Cubes

- When all ice shatters it's because of a **bad tray** or harvesting at a **temp that is too cold** (lower than 1.5 degrees), in some areas there are **water issues** that can also cause shattered cubes. The temp in the freezer should not have any effect on this issue, as long as it's below 1.5 degrees, as a properly installed sensor will not read the freezer temp, only the water/ice temp.
- Check the Ice tray for defects in the plastic. Impurities or hard water can cause the plastic to become rough and inhibit the ice falling from the tray during the twisting. If this is the case, replace the tray assembly.
- It is possible to get ice too cold. Ice that is too cold will shatter during harvest. This can be from the (1) sensor not reading the correct temp (2) the sensor not mounted correctly (3) by programming the icemaker offset value to a lower number (4) the board not understanding the reading.
- To check the sensor you must check the tray temp (not air temp) and compare it to the sensor reading. The sensor should read about 3.7 volts at the main board connector when the cube temperature is 1.5 degrees. After the fill the sensor will read water temp 1.5 to 2.2 volts.
- To clear offsets, put unit into Diagnostics mode.
- Please note, some shattering is normal for a flex tray icemaker.

Service Concerns- Heat Release I/M

- Troubleshooting Observations
- Is there any frost in the freezer compartment?
- Excessive frost on the evaporator coil will either coat the coil enough to warm the air to 32 °F to supply the ice room or block the air duct completely to the ice room. Make sure the Freezer defrost circuit is working properly and the freezer and ice room compartments are sealed properly
- The consumer complaint could be “it only makes ice once or twice a day”
The Ice maker will harvest within a few hours of the freezer defrost cycle, when the evaporator is frost free. As the frost builds up on the evaporator again the ice maker will stop as the temperature is too warm. Ice making will stop until the next defrost cycle completes which will be 12 to 23 hours later. This is a defrost error not an icemaker error. Check the freezer door seal, ice room door seal and the freezer defrost heater.

Service Concerns – Heat Release I/M

- Is the Ice Bucket locked firmly in position?
- Try to move the bucket, when locked in place, any movement would mean that one of the locks is not latched. This will cause warm fridge air to enter the ice room and stop ice production.
- Temperature checks (Actual)
- The Back of Ice Room should measure 0 to 6 °F when making ice
- The Back of Freezer compartment should measure -4 to +3 °F

Heat Release Ice Maker - Troubleshooting

- Voltage tests
- The Ice Room Sensor voltage should match the actual ice room temperature; refer to the sensor voltage/ temperature chart in the service manual.
- The Freezer Sensor voltage should match the freezer temperature and also be close to the actual ice room temperature, refer to the sensor voltage/ temperature chart in the service manual. If the bucket is full the Ice Room temperature should be around 24 °F.

Heat Release Ice Maker - Troubleshooting

- The Freezer Defrost Sensor Voltage should be 0 to -17 °F, with the compressor running, to show no frost/ice buildup and good operating system, refer to the sensor voltage/temperature chart in the service manual.
- The Ejecting Thermistor should not measure below 17 °F, unless the bucket is full, as it should harvest at 18 °F. If Ejecting Thermistor measures actual ice room temperature, and the bucket is not full, it would mean that the I/M is not harvesting. If there has been a recent harvest, the thermistor might measure up to 50 °F as the mold heater and fresh water has warmed the sensor.

Heat Release Ice Maker - Troubleshooting

- If any of the sensors measure incorrectly replace the defective sensor
- The Ice Room Fan should read around 7 to 9 VDC when it is running. Be sure to defeat the door open switch when testing the fans. You can force the fan to turn on by putting the unit into the Forced Freeze mode.
- If the I/M Thermistor reads below 18 °F after 38 minutes and there is no harvest replace the main PCB

RF267**, RF26VAB** Not all Connectors and pins used on all models

CN73 A/C Load

- 1-(CN70-1) Cube Solenoid (Yel/Red) **RF267**
- 3-(CN70-1) Auger Motor (Pink/Red) **RF267**
- 5-(CN70-1) Dispenser Valve (W/Blk-Red) **RF267,266**
- 7-(CN70-1) Ice Maker Valve (Vio/Red)
- 9-(CN70-1) Ice Cover Route (Brown/Red) **RF267**

CN71

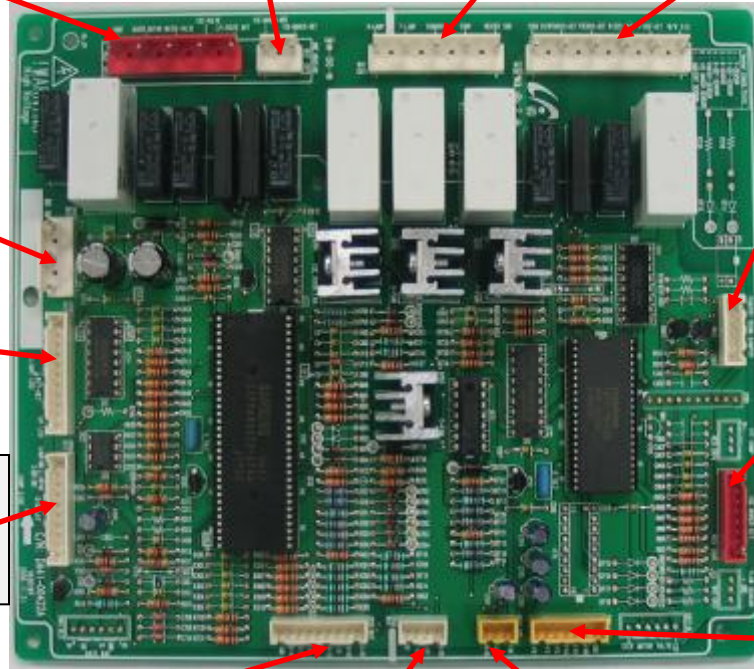
- 1-(CN70-1) R Lamps (Blue/Red)
- 3-(CN70-1) F Lamp (Vio/Red)
- 5 Common N (Gray)
- 7-(CN70-1) Comp (SkyBlue/Red)
- 9 Heater Common (Org)

CN70

- 1 Common Line L (Red)
- 3-(CN71-5) Disp Heater (Black/Gray) (**RF267**)
- 5-(CN71-5) French Heater (Yel/Gray)
- 7-(CN71-9) R Defrost (White/Orange)
- 9-(CN71-9) F Defrost (Brown/Orange)

CN72 (RF267 only)

- 1-(CN70-1) Ice Maker Motor (Brn)
- 3-(CN70-1) Ice Maker Heater (Wht)



CN10 Low Volt Power

- 1-3 5VDC (Red/Black)
- 5-3 12VDC (Yel/Black)

CN78

- 4-5 Water Tank Heater (Brn/Blk) **RF267**
- 6,7,8 Pantry Display
- 9-11 +12vdc (Blue/White)
- 10-11 +5vdc Switch input (Vio/White)

CN50 Display

- 4-6 +12 VDC (Org/Pink)
- 5-6 +5 VDC (Yel/Pink)
- 8-(CN75-1) Water Switch (Blue/Red) **RF266**

CN91 Pantry Room Damper

- 1-2 Damper Heater 12VDC (Blk/Brn)
- 3-4 Damper Motor (White/Blue)
- 5-6 Damper Motor (Yel/Red)

CN90 Ice Maker (RF267 only)

- 4-8 Eject Sensor (White/SkyBlu)
- 5-8 Test Switch 5VDC (Gry/SkyBlue)
- 6 Full Switch (Blue)
- 7 Horizontal Switch (Violet)
- 8 Ground (Sky/Blue)

CN75 F, R, C Fans

- 2-1 F Fan (Yel/Gray)
- 3-1 R Fan (Org/Gray)
- 4-1 C Fan (S/Blu-Gry)
- 5 F Fan FG (Black)
- 6 R Fan FG (Brown)
- 7 C Fan FG (Red)

CN76 Ice Room (RF267 only)

- 1-(CN75-1) Ice Room Fan (Black/Gray)
- 2 Ice Fan FG (Brown)
- 3-(CN75-1) Ice Bucket Switch (Red/Gray)

CN32 Sensor

- 1-4 Ambient Sensor (White/White)
- 2-(CN75-1) 5VDC to I/M (Red/Gray) **RF267**
- 3-(CN75-1) Ice Room Sensor (Org/Gray) **RF267**

CN30 Sensors & Switches

- 1-5 Freezer Dr Switch (Black/Gray)
- 2-(CN50-7) R Door Switch (Vio/Gray)
- 3-(CN75-1) F Sensor (Red/Gray)
- 4-(CN75-1) F Def Sensor (Org/Gray)
- 6-(CN75-1) R Sensor (White/Gray)
- 7-(CN75-1) R Def Sensor (SkyBlu-Gry)
- 8-9 Pantry Sensor (W/Black-Gry)

Model : RFG 294 **, RFG295**, RFG299** Not all Connectors and pins used on all models

CN74 A/C Load
 1-(CN70-9) Cube Solenoid (Yel/Red)
 3-(CN70-9) Auger Motor (Pink/Red)
 5-(CN70-9) Dispenser Valve (W/Blk-Red)
 7-(CN70-9) Ice Maker Valve (Vio/Red)
 9-(CN70-9) Ice Cover Route (Blue/Red)

CN71
 1-(CN70-9) R Lamps (Blue/Red)
 3-(CN70-9) F Lamp (Violet/Red)
 9 Heater Common (Orange)

CN70
 1-11 Disp Heater (Black/Gray)
 3-11 French Heater (Yel/Gray)
 5- (CN71-9) R Defrost (Wht/Org)
 7- (CN71-9) F Defrost (Brn/Org)
 9- L1 (Red)
 10- N (Gray)

CN73
 1-(CN70-9) I/M Heater (Brn/Red)
 3-(CN70-9) I/M Motor (Wht/Red)

CN76 F, R, C Fans
 2-1 Ice Room Fan (Blk/Gry)
 3-1 F Fan (Yellow/Gray)
 4-1 R Fan (Orange/Gray)
 5 C Fan (SkyBlue/Gray)
 6 Ice Room Fan FG (Pink)
 7 F Fan FG (Brown)
 8 R Fan FG (Red)
 9 C Fan FG (Blue)

CN31 Sensor
 1-4 Ambient Sensor (White/White)
 2-(CN90-8) 5VDC to I/M (Red/SkyBlu)
 3-(CN76-1) Ice Room Sensor (Org/Gray)

CN78 Lamp/Veg LED
 4-7 +13VDC (Red/Gray)

CN77 Stepper Motor
 1 +13VDC (Red)

CN91 Pantry Room Damper
 1-2 Damper Heater 12VDC (Blk/Brn)
 3-4 Damper Motor (White/Blue)
 5-6 Damper Motor (Yel/Red)

CN30 Sensors & Switches
 1-5 Freezer Dr Switch (Black/Gray)
 2-(CN50-7) R Door Switch (Vio/Gray)
 3-(CN76-1) F Sensor (Red/Gray)
 4-(CN76-1) F Def Sensor (Org/Gray)
 6-(CN76-1) R Sensor (White/Gray)
 8-(CN76-1) R Def Sensor (SkyBlu/Gray)
 9-(CN76-1) Pantry Sensor (W/Blk-Gry)

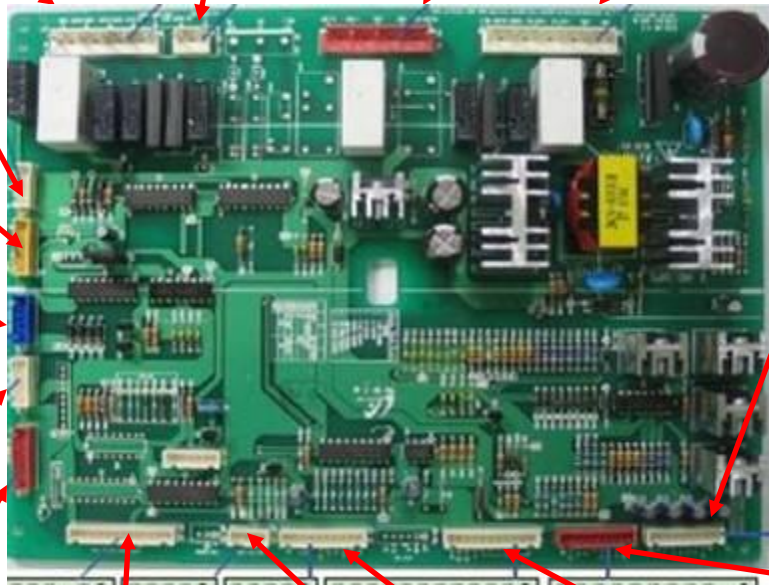
CN90 Ice Maker
 4-8 Eject Sensor (White/SkyBlu)
 5-8 Test Switch 5VDC (Gry/SkyBlu)
 6 Full Switch (Blue)
 7 Horizontal Switch (Violet)
 8 Ground (Sky Blue)

CN51 Pantry Room
 7-5 +13VDC (Blue/White)

CN50 Display
 4-6 +13 VDC (Orange/Pink)
 5-6 +5 VDC (Yellow/Pink)
 8-6 Ice/Water Switch (Blue/Pink)
 9-6 Ice Rte Switch 1 (Vio/Gray)
 10-6 Ice Rte Switch 2 (White/Gray)

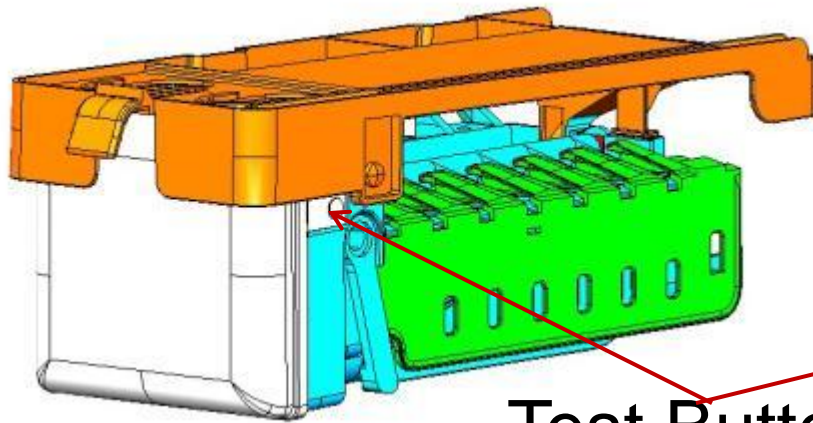
CN75
 To Comp Inverter Board

CN79
 1-2 Photosynthesis Module (Blk/Brn)
 10-6 Water Tank Heater (White/Pink)

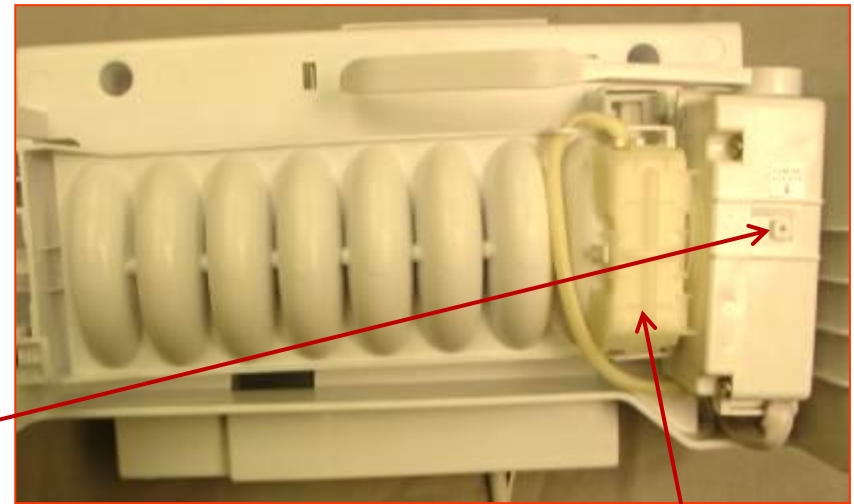


Ice Makers

- Heat Release (7 & 9 Cube I/M)
 - Ice Maker Sensor / Ice Room Sensor



Test Button



- Flex Tray (new 8 cube trays) I/M Sensor
 - Sensor Harvest Control

Heat Release Ice Maker

Ice Production & Test 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 degrees for more than 5 seconds, the Ice maker will harvest if the ice bucket is not sensed as full.
- Press and hold the ICE TEST S/W for at least 1.5sec, the harvest function will start. The Ice maker heater turns on for 30 seconds to 2 minutes. After the Ice maker heater turns off, the Ice maker harvest motor turns on. The motor will rotate in right direction for about 3 minutes, after this, water supply valve is turned on, then the valve is turned off, the test mode is completed. If the above operation is not carried out within 6 minutes, it will go into a fault mode.
- You must have patience, this is not as fast as the flex tray test cycle.

Service Concerns

Heat Release I/M Troubleshooting Observations

- Is there any frost in the freezer compartment?
- Excessive frost on the evaporator coil will either coat the coil enough to warm the air to 32 degrees to supply the ice room or block the air duct completely to the ice room. Make sure the Freezer defrost circuit is working properly and the freezer and ice room compartments are sealed properly
- The Ice-Duct Heater is a foil heater that keeps the duct, on the evaporator cover, from frosting up and blocking air flow to the I/M. If this heater fails there will be low or no ice production.

Freezer Drawer

Reasons for Frost Buildup, drawer sealing

Gear alignment off, drawer pulled open, on one side, too hard.



Tab Broken

A close-up photograph of the internal mechanism of a freezer drawer. A white plastic gear is visible on the left. A red circle highlights a small white tab that has broken off. A red arrow points from the text 'Gear alignment off, drawer pulled open, on one side, too hard.' to the gear area. Another red arrow points from the text 'Bar Missing, from plastic rivet not installed' to a hole in the plastic where a bar is missing.

Bar Missing, from plastic rivet not installed



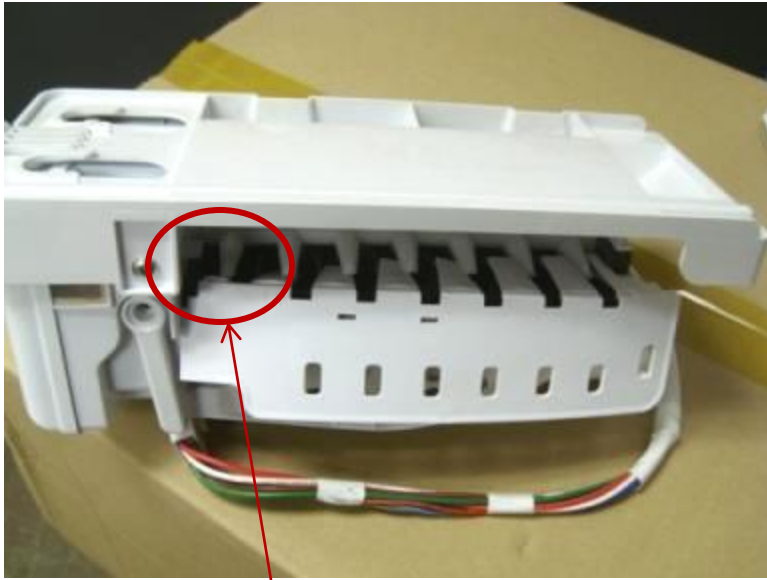
A close-up photograph showing a hand holding a black metal bar. A red circle highlights the bar, and a red arrow points from the text 'Bar Missing, from plastic rivet not installed' to it.

Heat Release I/M Testing

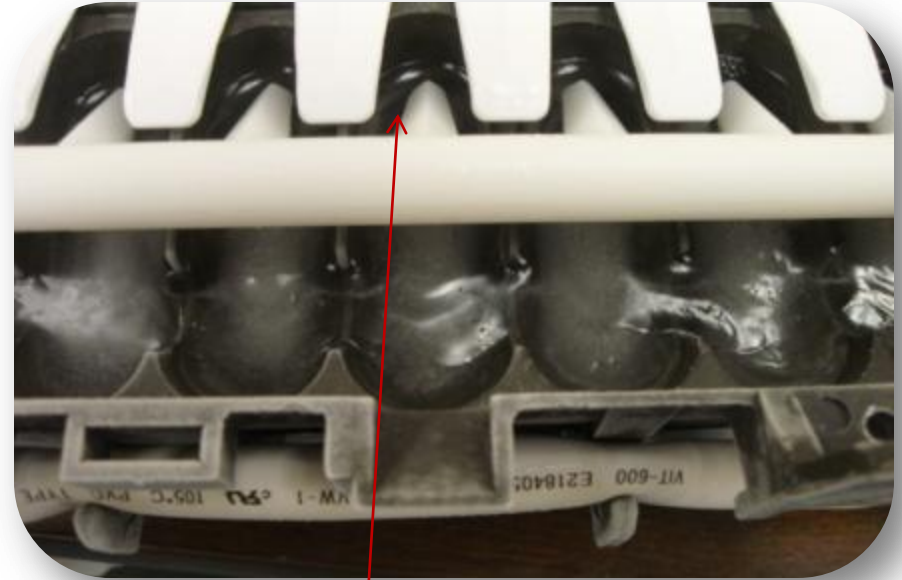
All Tests must be done before the Ice Bucket is removed and with the compressor running.

- Ice Room Sensor – record voltage and convert to temp.
- Ice Maker Eject Sensor - record voltage and convert to temp.
- Ice Room Fan voltage measures 7-11 VDC means motor speed is correct.
- Freezer Defrost Sensor - record voltage and convert to temp.
If Ice Bucket is full, the fan may be off, Ice Room and I/M Sensor may be around 23°.
- When making ice, the Ice Room should be around 6°. The I/M Sensor will be above 18°. The Ice Room Fan should be running. With the compressor running the Freezer Defrost Sensor should be around -10°.

Heat Release I/M Error

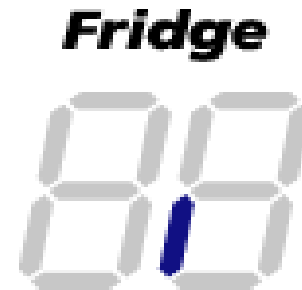


Check the blade on the sweep arm, it may be out of alignment, like the picture shown above. Replace I/M



Ice cubes are stuck in the ice tray. The sweep arm is not able to harvest the cubes because the heater is not activating. Replace I/M

This is the error that may be displayed in this case. This error code indicates the sweep arm has not returned to level after an ice harvest. The error is displayed after three failed attempts, each attempt is 3 hours.



No, Slow and/or “wet” ice

Door adjust
is too low or
bent hinge.



Carefully inspect
hinge for damage
(bending) before
adjusting door,
replace if necessary.

Use this part # to raise door height
DA60-00143B
Description : FASTENER-RING INSERT



Twin I/M Models



A Heat Release I/M is used in the Ice Room
A Flex Tray I/M is used in the Freezer

Common Refrigerator / Freezer Problem Troubleshooting

No Cool Service Issues

Both Compartments

- Unit locked in defrost mode
- Compressor relay failure on main PCB
- Failure of both defrost circuits
- No sealed system charge

Fridge

- Failure of defrost circuit
- Evaporator fan failure
- Door switch failure

Freezer

- Failure of defrost circuit
- Evaporator fan failure
- Door switch failure
- Low sealed system charge

FAN MOTORS

DC Fan Motors

- Brushless DC Fan motors are used to save energy. The fans operate at two speeds, High when the ambient temperature is high and Low when the temperature is low. Generally, it is operated in the High mode during the day and in the Low at night.
- This circuit design is to protect the Main PCB from a failed fan motor.
- 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, then fan drive circuit is disabled for 10 minutes.

A/C Fan Motors

- These motors operate on 120 vac from a relay on the main PCB. A 5 dc voltage is switched on and off by the door switch for the main PCB to activate the fan relays

Compartment Fan

- A/C fan motors. With a closed door switch the sensor calls for cold and activates the relay, (delayed from 10 – 60 seconds).
- DC fan motors. With a closed door switch the sensor calls for cold and the main PCB activates the DC voltage to the motor, (delayed from 10 – 60 seconds).

Fridge Cooling Issues

No Cool

- Single Evaporator Models
 - Auto Damper Ass'y
 - Frost in air duct to fridge
 - Door seal
 - Defrost Failure
 - Main PCB
 - Compressor/Sealed System

Fridge Cooling Issues

No Cool

- Twin & Quarto Evaporator Models
 - Door seal
 - Defrost Failure
 - Defrost Drain Failure
 - Main PCB
 - Compressor/Sealed System

Freezer Cooling Issues

No Cool

- Single Evaporator Models
 - Frost build up stopping evaporator fan
 - Door seal
 - Defrost Failure
 - Compartment Sensor
 - Main PCB
 - Compressor/Sealed System

Freezer Cooling Issues

No Cool

- Twin & Quarto Evaporator Models
 - Door seal
 - Defrost Failure
 - Defrost Drain Failure
 - Compartment Sensor
 - Main PCB
 - Compressor/Sealed System

Fridge Cooling Issues

Poor Cooling

- Single Evaporator Models
 - Auto Damper Ass'y
 - Frost in air duct to fridge
 - No or very small food load
 - Door seal
 - Defrost Failure
 - Main PCB
 - Compressor/Sealed System

Fridge Cooling Issues

Poor Cooling

- Twin & Quarto Evaporator Models
 - Door seal
 - Defrost Failure
 - Defrost Drain Failure
 - Main PCB
 - Compressor/Sealed System

Freezer Cooling Issues

Poor Cooling

- Single Evaporator Models
 - Frost build up blocking evaporator fan
 - Door seal
 - Defrost Failure
 - Compartment Sensor
 - Main PCB
 - Compressor/Sealed System

Freezer Cooling Issues

Poor Cooling

- Twin & Quarto Evaporator Models
 - Frost build up blocking evaporator fan
 - Door seal
 - Defrost Failure
 - Compartment Sensor
 - Main PCB
 - Compressor/Sealed System

Fridge Cooling Issues

Too Cold

- Single Evaporator Models
 - Auto Damper Ass'y
- Twin & Quarto Evaporator Models
 - Failure on Main PCB causing evaporator fan to stay on.
 - Failure of Compartment Sensor.
 - Evaporator Cover Ass'y not properly installed or damaged.
 - Pantry or Cool Zone auto damper stuck open

Freezer Cooling Issues

Too Cold

- Single Evaporator Models
 - Failure of Compartment Sensor.
 - Using large amounts of ice or water not hooked up.
 - Failure on Main PCB causing evaporator fan to stay on.
- Twin & Quarto Evaporator Models
 - Failure on Main PCB causing evaporator fan to stay on.
 - Failure of Compartment Sensor.
 - Using large amounts of ice or water not hooked up.

Frost in Freezer Most Models

FREEZER TEMPERATURE CONTROL BY THE ICE MAKER

Very cold temps will cause frosting with door openings

- Interior Temperature of the freezer will be set to a colder temperature until the ice bucket is full. When the ice bucket is full, the freezer will maintain original set temperature. Also, whenever the ice is used, the freezer will again be set to a colder temperature.
- Selecting "Ice Off" will allow the freezer to be controlled by the set temperature on the display.
- If water is not hooked up, the freezer will always run colder than the display setting unless "Ice Off" is selected.

Model : RFG298AA**/XAA Dual Ice Maker

nominal voltages listed

CN31 Sensor
 1-4 Ambient Sensor (Wht-Wht) **1.2~2 vdc**
 2-(CN90-8) I/M (Blu-S/Blu) **5vdc**
3-(CN76-1) Ice Room Sensor (Org-Gry) 3~3.8vdc

CN78 Lamp/Veg LED
 4-7 (Red-Gry) **13vdc**

CN77 Stepper Motor
 1-(CN76-1) (Red-Gry) **13vdc**

CN91 Pantry Room Damper
 1-2 Damper Heater (Blk-Brn) **12vdc**
 3-4 Damper Motor (Wht-Blu)
 5-6 Damper Motor (Yel-Red)

CN90 Ice Maker
1-2 I/M Mtr Frz (Red-Blk) 13vdc
3-4 Eject Sensor Frz(Wht-Wht) 2.1~3.7vdc
 5-8 Test Sw Frz (Gry-S/Blu) **5vdc**
 6 Full Hall IC Fridge I/M (Blu)
 7 Horiz Hall IC Frz (Prp)
 8 **Ground vdc** (S/Blu)

CN51 Pantry Room
 7-5 (Blu-Wht) **13vdc**

CN32 Flow Sensor (Frz I/M)
 3-2 (Red-Blk) **5vdc**

CN75 To Comp Inverter Board
 1- (CN76-1) Test Sw Fridge I/M (Blk-Gry)
 2- (CN76-1) (Brn-Gry) **5vdc**
 4-3 Compressor control (Org-Red) **2.5vdc**

CN74 A/C Load 120vac
 1-(CN70-9) Cube Solenoid (Yel-Red)
 3-(CN70-9) Auger Motor (Pnk-Red)
 5-(CN70-9) Dispenser Valve (W/Blk-Red)
7-(CN70-9) I/M Valve Fridge (Prp-Red)
 9-(CN70-9) Ice Cover Route (Blu-Red)
 11-(CN70-9) I/M Motor CW (R) (Brn-Red)
 13-(CN70-9) I/M Motor CCW (R) (Wht-Red)

CN72 A/C Load 120vac
 5-(CN70-9) Ice Maker Valve Frz (Brn-Red)

CN71 A/C Load 120vac
 3-(CN70-9) F Lamp (Prp-Red)
 5 N (Gray)
 9 Heater Common (Org)

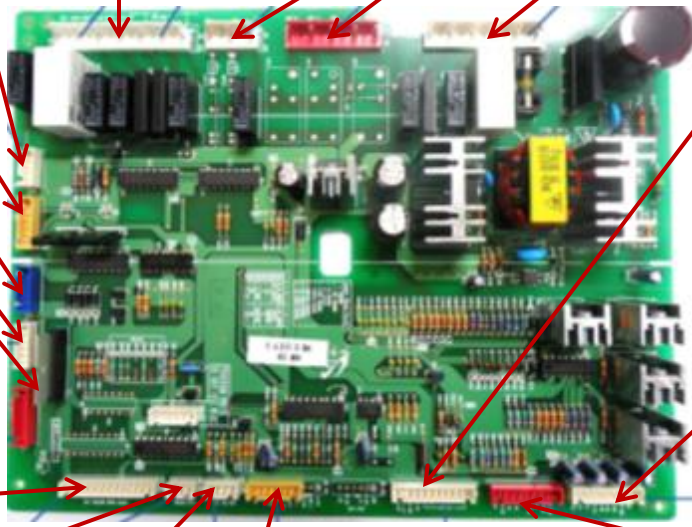
CN70 A/C Load 120vac
 1-11 I/M Heater (Blk-Gry)
 3-11 French-Dsp Heaters (Yel-Gry)
 5- (CN71-9) R Defrost (Wht-Org)
7- (CN71-9) F Defrost/Ice Duct heater (Brn-Org)
 9- L1 (Red)
 11- N (Gry)

CN50 Display
 4-6 (Org-Pnk) **13vdc**
 5-6 (Yel-Pnk) **5vdc**
 7 Fridge Door Sw (Gry) (**vdc ground**)
 8-6 Ice/Water Sw (Blu-Pnk) **5vdc**
 9-6 Ice Rte Sw 1(Prp-Gry) **5vdc**
 10-6 Ice Rte Sw 2 (Wht-Gry) **5vdc**
 11 Fridge I/M Horiz Sw (S/Blu) **5vdc**

CN76 F, R, C Fans
2-1 Ice Room Fan (Blk-Gry) 7-11vdc
 3-1 F Fan (Yel-Gry) **7-11vdc**
 4-1 R Fan (Org-Gry) **7-11vdc**
 5-1 C Fan (S/Blu-Gry) **7-11vdc**
 6 Ice Room Fan FG(Pnk)
 7 F Fan FG(Brn)
 8 R Fan FG(Red)
 9 C Fan FG(Blu)

CN30 Sensors & Switches
 1-5 Freezer Dr Sw (Blk-Gry) **5vdc**
 2-(CN50-7) R Door Sw (Prp-Gry) **5vdc**
3-(CN76-1) F Sensor (Red-Gry) 3.5~4.2vdc
4-(CN76-1) F Def Sensor (Org-Gry) 2.3~4.2vdc
 6-(CN76-1) R Sensor (Wht-Gry) **2.4~2.8vdc**
7-(CN76-1) Eject Sensor Fridge I/M (Brn-Gry) 2.1~3.3vdc
 8-(CN76-1) R Def Sensor (S/Blu-Gry) **2~4.2vdc**
 9- (CN76-1) Pantry Sensor (W/Blk-Gry) **2.6~2.8vdc**

CN79
2-7 Fill tube heater freezer (Blu-Wht) 13vdc
 3-7 Water Tank Htr (Pnk-Wht) **13vdc**



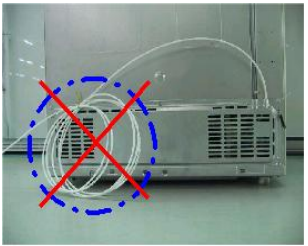



Service Access

- Disassembly of Quattro Cool Evaporator Covers, both access the same way



Water Connection

1	Connect Water Pipe Hose	<ul style="list-style-type: none"> - Insert the plastic water pipe hose to the existing water source and fix it with compression hardware. If there is no existing icemaker water line consult a licensed plumber. - Check if there is any water leakage at the connection areas and if the hose is being kinked. When there is water leaking, try connecting again. 	
2	Secure the Water Pipe Tube	<ul style="list-style-type: none"> - With a C/F clip, fix the water pipe hose to the refrigerator wall. Make sure that the water pipe hose is not kinked or damaged when dressing the excess water pipe. 	
Dress the Water Pipe Tube	Example of Bad Installation	Coiled hose, no backup tube, water hose touching the floor.	
	Example of Good Installation	No coiled hose, backup tube added, water hose does not touch on the floor.	

Refrigerator Filter Housing Damage

Always use the original Samsung filter when replacement is required at the six month interval. When aftermarket filters are used, there is the possibility that the filter will leak causing the water to freeze if the refrigerator temperature is set too low. When the water freezes there is the possibility that the filter housing will crack and start flowing water into the refrigerator compartment. When this happens the housing must be replaced.



Coat the "O" rings here



Housing may crack and leak here

In order to put the filter in smoothly and to be able to remove it without forcing it, try coating the "O" rings with medical grade silicone.
Note: Replacement refrigerator water filters will no longer be considered a service item and will exclusively be handled by Samsung sales and marketing groups.

Best Refrigerator Repair Practices

Refrigerator Truck Stock Recommendations

Part 1

- **The recommended truck stock items list updated bi-monthly please check the Tech Talk Newsletter for the most updated listing**

() = Stock Quantity

- (4) DA47-10160H Bi-Metal to replace all Thermal Fuses
 - (1) DA67-00466B Water Filter Bypass Cap (used to verify filter operation)
 - (1) DA62-00914B Water Valve
 - (2) DA73-30102E Drier
 - (2) DA73-30102F Drier
 - (1) DA31-00010C (DA31-00015A, DA31-00015B, DA31-00015C, DA31-00010D, DA31-00010F) Condenser Fan Blade
 - (1) MK183CL2U/E01 (MK183CL2U/E07) Compressor
- Defrost Sensor Common Part Number**
- (4) DA32-00006W -- Defrost Sensor with longest wires

Note: Replacement refrigerator water filters will no longer be considered a service item and will exclusively be handled by Samsung sales and marketing groups.

Refrigerator Truck Stock Recommendations

Part 2

- The recommended truck stock items list updated bi-monthly please check the Tech Talk Newsletter for the most updated listing

() = Stock Quantity

Motors

- (1) DA31-00020E DC Evaporator Fan Motor
- (1) DA31-00002V A/C Evaporator Fan Motor
- (1) DA31-00020H DC Condenser Fan Motor
- (1) DA31-00103A Condenser Fan Motor

Ice Makers with sensor

- (1) DA97-00258E ASSY ICE MAKER
- (1) DA97-00258C ASSY ICE MAKER
- (1) DA59-00294A ASSY ICE MAKER
- (1) DA97-00258J ASSY ICE MAKER
- (1) DA97-05422A ASSY ICE MAKER All Heat Release

Temperature/Resistance/Voltage Chart - ALL Fridge Sensors

Temp. (°F)	Resistance(kΩ)	Voltage (V)	Temp. (°F)	Resistance (kΩ)	Voltage (V)	Temp. (°F)	Resistance (kΩ)	Voltage (V)
-43.6	98.9	4.54	12.2	21.4	3.41	68.0	6.01	1.88
-41.8	93.7	4.52	14.0	20.5	3.36	69.8	5.79	1.83
-40.0	88.9	4.49	15.8	19.6	3.31	71.6	5.58	1.79
-38.2	84.2	4.47	17.6	18.7	3.26	73.4	5.38	1.75
-36.4	79.8	4.44	19.4	17.9	3.21	75.2	5.19	1.71
-34.6	75.7	4.42	21.2	17.2	3.16	77.0	5.00	1.67
-32.8	71.8	4.39	23.0	16.4	3.11	78.8	4.82	1.63
-31.0	68.2	4.36	24.8	15.7	3.06	80.6	4.65	1.59
-29.2	64.7	4.33	26.6	15.1	3.01	82.4	4.49	1.55
-27.4	61.5	4.30	28.4	14.5	2.96	84.2	4.33	1.51
-25.6	58.4	4.27	30.2	13.9	2.90	86.0	4.18	1.47
-23.8	55.6	4.24	32.0	13.3	2.85	87.8	4.03	1.44
-22.0	52.8	4.20	33.8	12.7	2.80	89.6	3.89	1.40
-20.2	50.2	4.17	35.6	12.2	2.75	91.4	3.76	1.37
-18.4	47.8	4.13	37.4	11.7	2.70	93.2	3.63	1.33
16.6	45.5	4.10	39.2	11.3	2.65	95.0	3.51	1.30
-14.8	43.3	4.06	41.0	10.8	2.60	96.8	3.39	1.27
-13.0	41.2	4.02	42.8	10.4	2.55	98.6	3.28	1.23
-11.2	39.2	3.99	44.6	10.0	2.50	100.4	3.17	1.20
-9.40	37.4	3.95	46.4	9.60	2.45	102.2	3.06	1.17
-7.60	35.7	3.91	48.2	9.20	2.40	104.0	2.96	1.14
-5.80	34.0	3.86	50.0	8.80	2.35	105.8	2.86	1.11
-4.00	32.4	3.82	51.8	8.50	2.30	107.6	2.77	1.09
-2.20	30.9	3.78	53.6	8.20	2.25	109.4	2.68	1.06
-0.40	29.5	3.73	55.4	7.90	2.20	111.2	2.59	1.03
1.40	28.1	3.69	57.2	7.60	2.15	113.0	2.51	1.00
3.20	26.9	3.64	59.0	7.30	2.10	114.8	2.43	0.98
5.00	25.7	3.60	60.8	7.00	2.06	116.6	2.35	0.95
6.80	24.5	3.55	62.6	6.70	2.01	118.4	2.28	0.93
8.60	23.4	3.50	64.4	6.50	1.97	120.2	2.21	0.90
10.4	22.4	3.46	66.2	6.20	1.92			

Table A

Tools for Proper Splicing



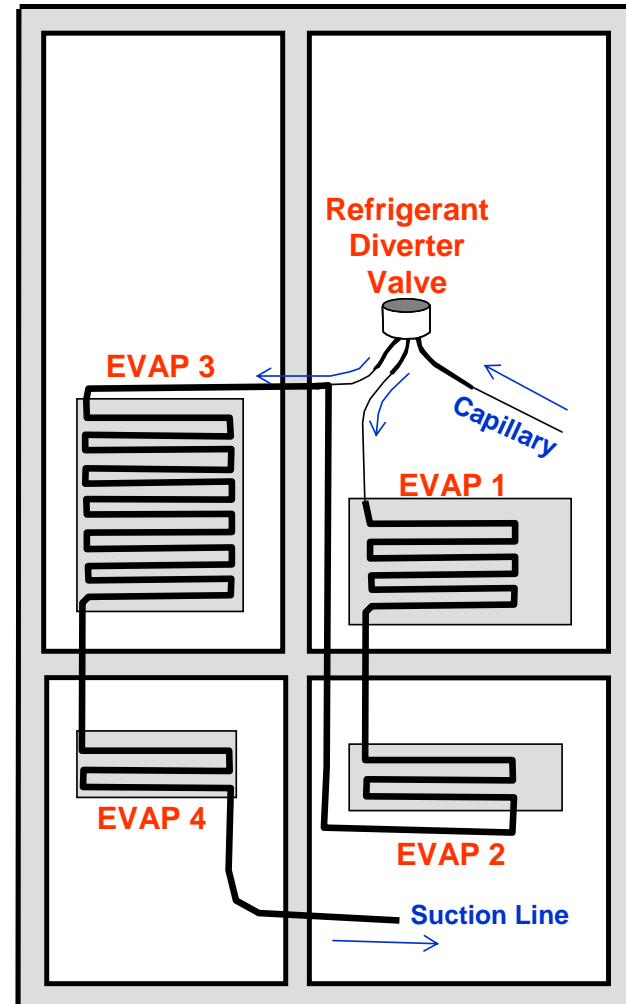
Unique Disassembly Procedures

Service Concerns

- RM Series
- French Door
- RSG SxS
- Single Evaporator SxS
- RB Series
- RS Series

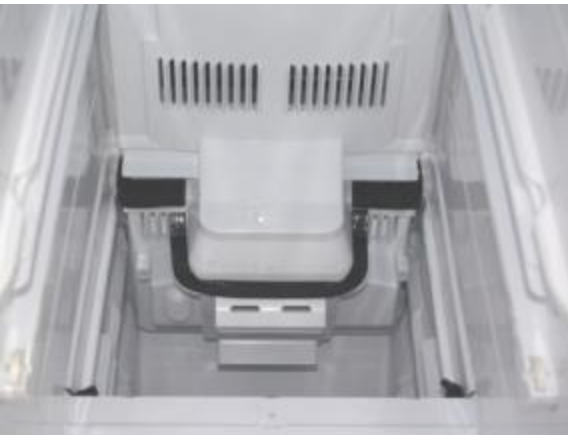
Quattro Series

RM257 (Inverter Comp) RM255****



Service Access

- Disassembly of Quatro Cool Evaporator Covers, both access the same way

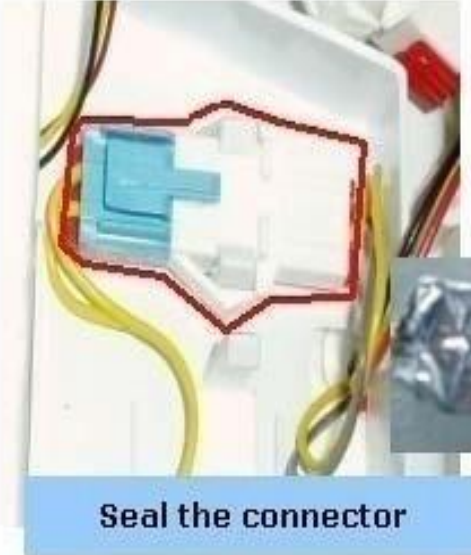


Freezing in Arctic Zone

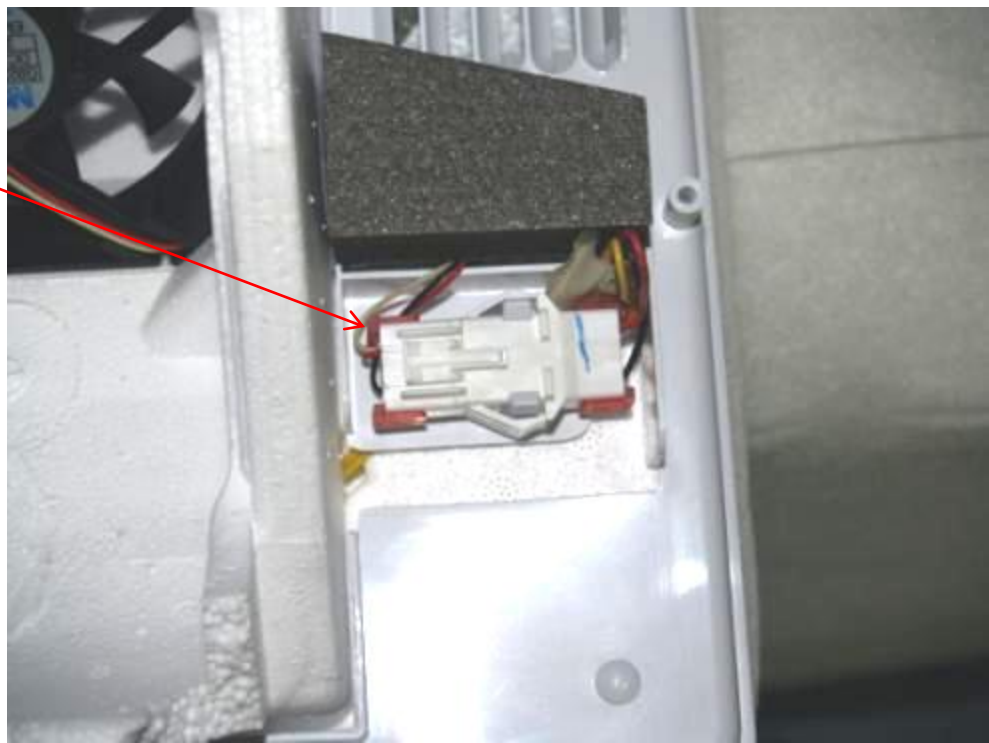
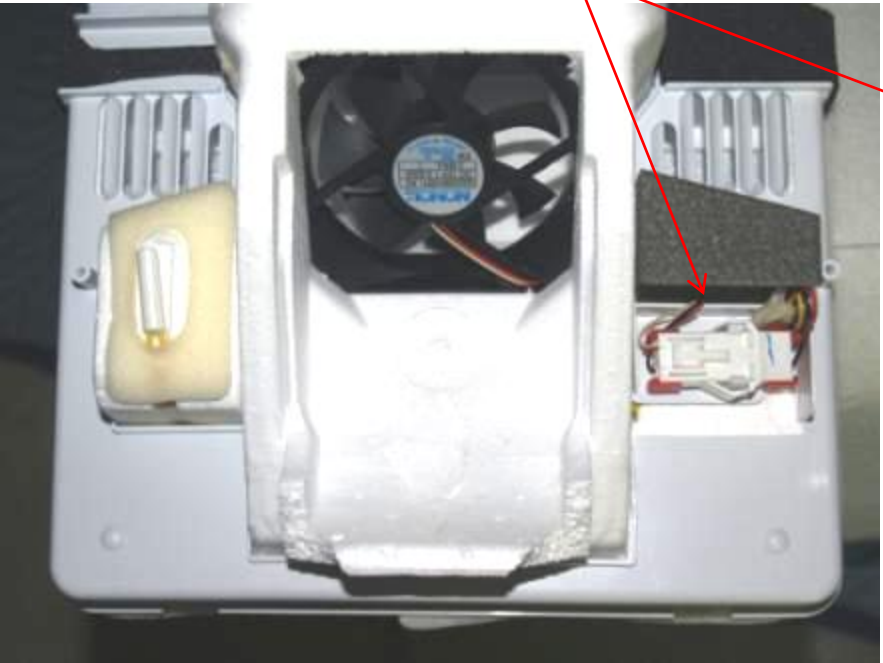
2005 & 2006 design freezer evap cover for the RM255.

2 connectors: Fan, Sensor

Dry connector completely, replace Sensor, wrap in foil tape after connecting



New design freezer evap cover for the RM255. 1 connector: Fan

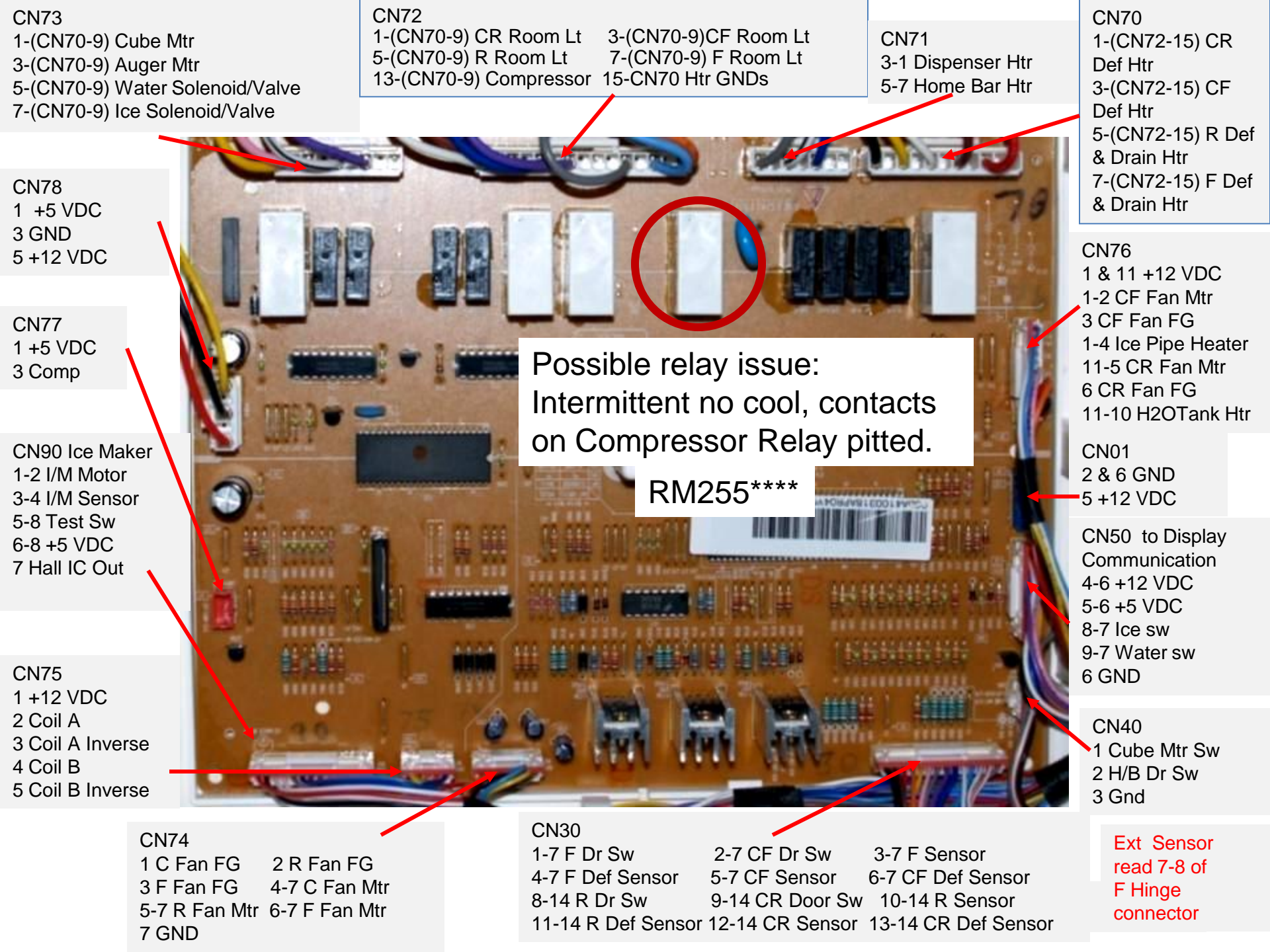


Accessing Freezer Evaporator

Failure of the Defrost Drain Hose Heater could cause ice build up on freezer floor and cooling issues in Freezer and/or Arctic Zone.

Order the evaporator assembly to get a drain hose with heater





- CN73**
 1-(CN70-9) Cube Mtr
 3-(CN70-9) Auger Mtr
 5-(CN70-9) Water Solenoid/Valve
 7-(CN70-9) Ice Solenoid/Valve

- CN72**
 1-(CN70-9) CR Room Lt 3-(CN70-9)CF Room Lt
 5-(CN70-9) R Room Lt 7-(CN70-9) F Room Lt
 13-(CN70-9) Compressor 15-CN70 Htr GNDs

- CN71**
 3-1 Dispenser Htr
 5-7 Home Bar Htr

- CN70**
 1-(CN72-15) CR Def Htr
 3-(CN72-15) CF Def Htr
 5-(CN72-15) R Def & Drain Htr
 7-(CN72-15) F Def & Drain Htr

- CN78**
 1 +5 VDC
 3 GND
 5 +12 VDC

- CN77**
 1 +5 VDC
 3 Comp

- CN90 Ice Maker**
 1-2 I/M Motor
 3-4 I/M Sensor
 5-8 Test Sw
 6-8 +5 VDC
 7 Hall IC Out

- CN75**
 1 +12 VDC
 2 Coil A
 3 Coil A Inverse
 4 Coil B
 5 Coil B Inverse

**Possible relay issue:
 Intermittent no cool, contacts
 on Compressor Relay pitted.**

RM255****

- CN76**
 1 & 11 +12 VDC
 1-2 CF Fan Mtr
 3 CF Fan FG
 1-4 Ice Pipe Heater
 11-5 CR Fan Mtr
 6 CR Fan FG
 11-10 H2OTank Htr

- CN01**
 2 & 6 GND
 5 +12 VDC

- CN50 to Display
 Communication**
 4-6 +12 VDC
 5-6 +5 VDC
 8-7 Ice sw
 9-7 Water sw
 6 GND

- CN40**
 1 Cube Mtr Sw
 2 H/B Dr Sw
 3 Gnd

- CN74**
 1 C Fan FG 2 R Fan FG
 3 F Fan FG 4-7 C Fan Mtr
 5-7 R Fan Mtr 6-7 F Fan Mtr
 7 GND

- CN30**
 1-7 F Dr Sw 2-7 CF Dr Sw 3-7 F Sensor
 4-7 F Def Sensor 5-7 CF Sensor 6-7 CF Def Sensor
 8-14 R Dr Sw 9-14 CR Door Sw 10-14 R Sensor
 11-14 R Def Sensor 12-14 CR Sensor 13-14 CR Def Sensor

**Ext Sensor
 read 7-8 of
 F Hinge
 connector**

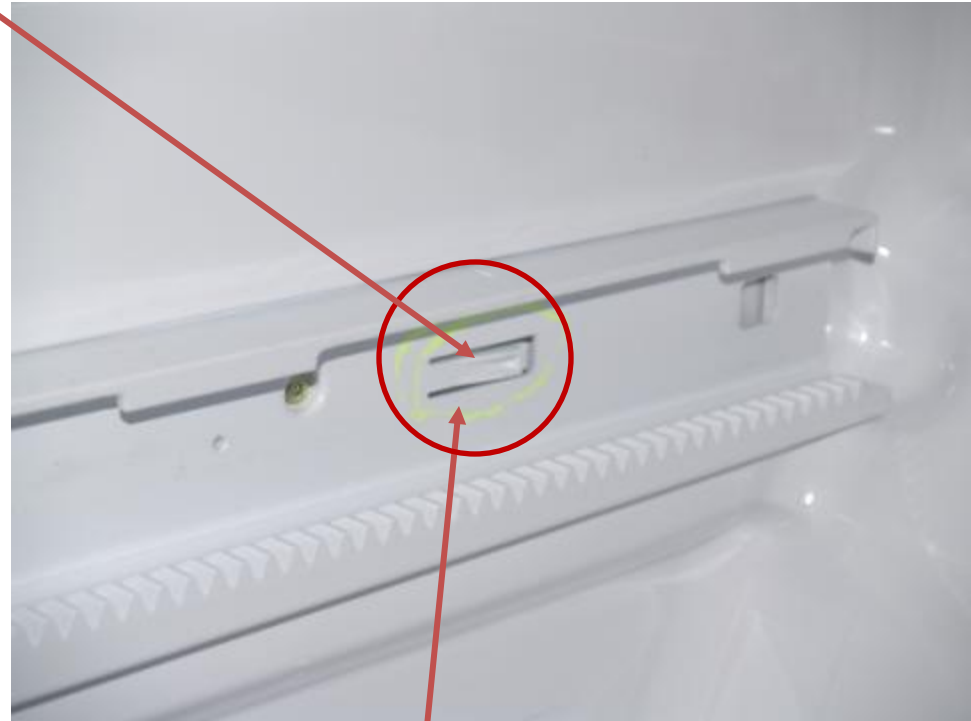
Service Concerns French Door

Frozen Water Tank

- Water Heater – Bad or unplugged
- Fridge Evap Cover – Loose at bottom
- Auto Damper – Cool Zone or Pantry failure
- RF26X***, RF267AE***, RF267AZ***
 - See service bulletin, PCB change required

Removal of Freezer Drawer

Possible breakage if
drawer pulled too hard



To Remove Drawer Rail/Door Ass'y

Push Plastic Locking Tab on each side to release.

Auger Failure

Installer may have damaged connector



Auger/Front Panel Failure

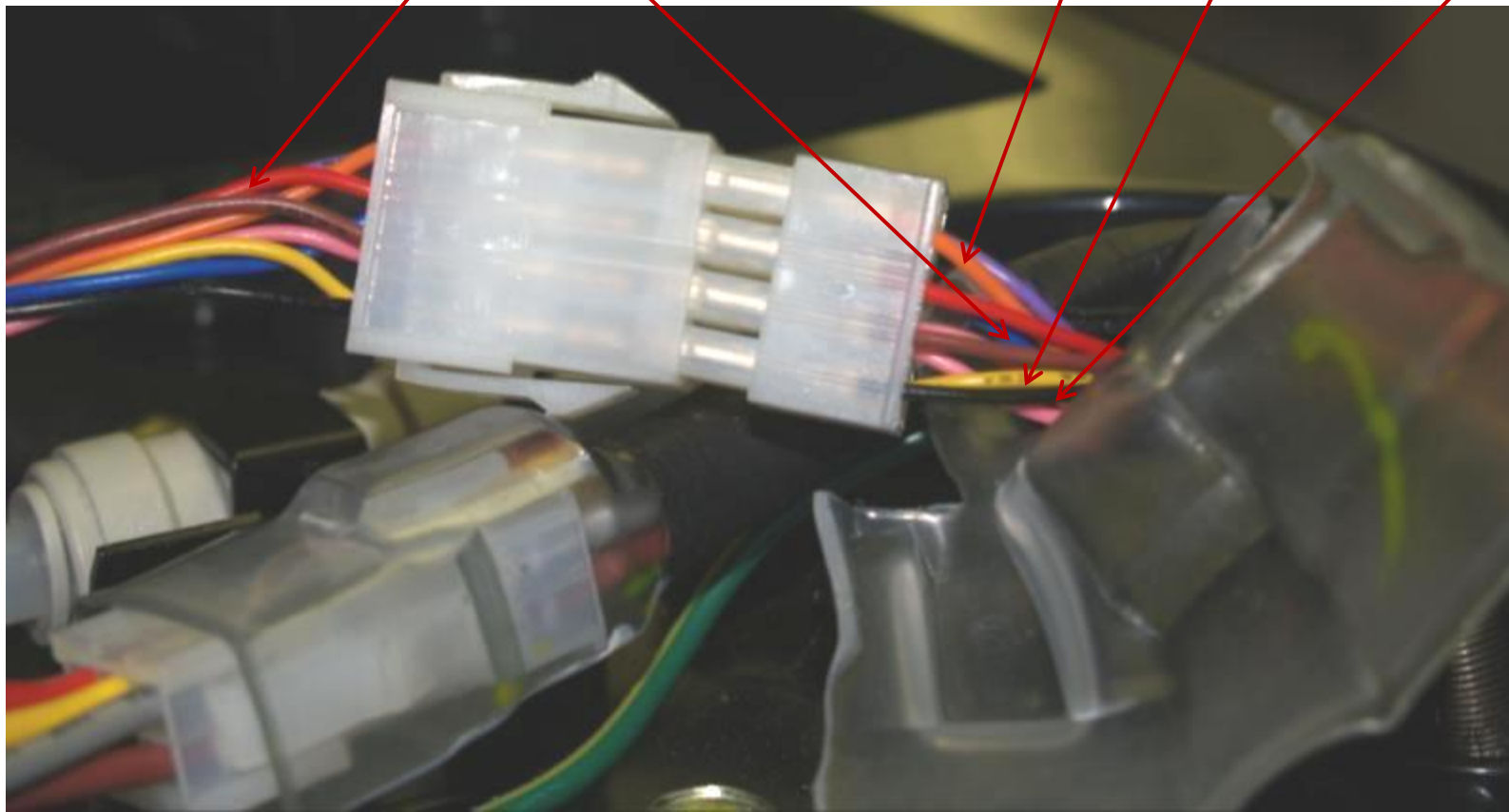
Installer may have pulled wires loose in connector

Cut away the plastic cover and black tape from behind Molex connector to free tension on wires
Inspect each connector wire to verify contact

Org = 13vdc

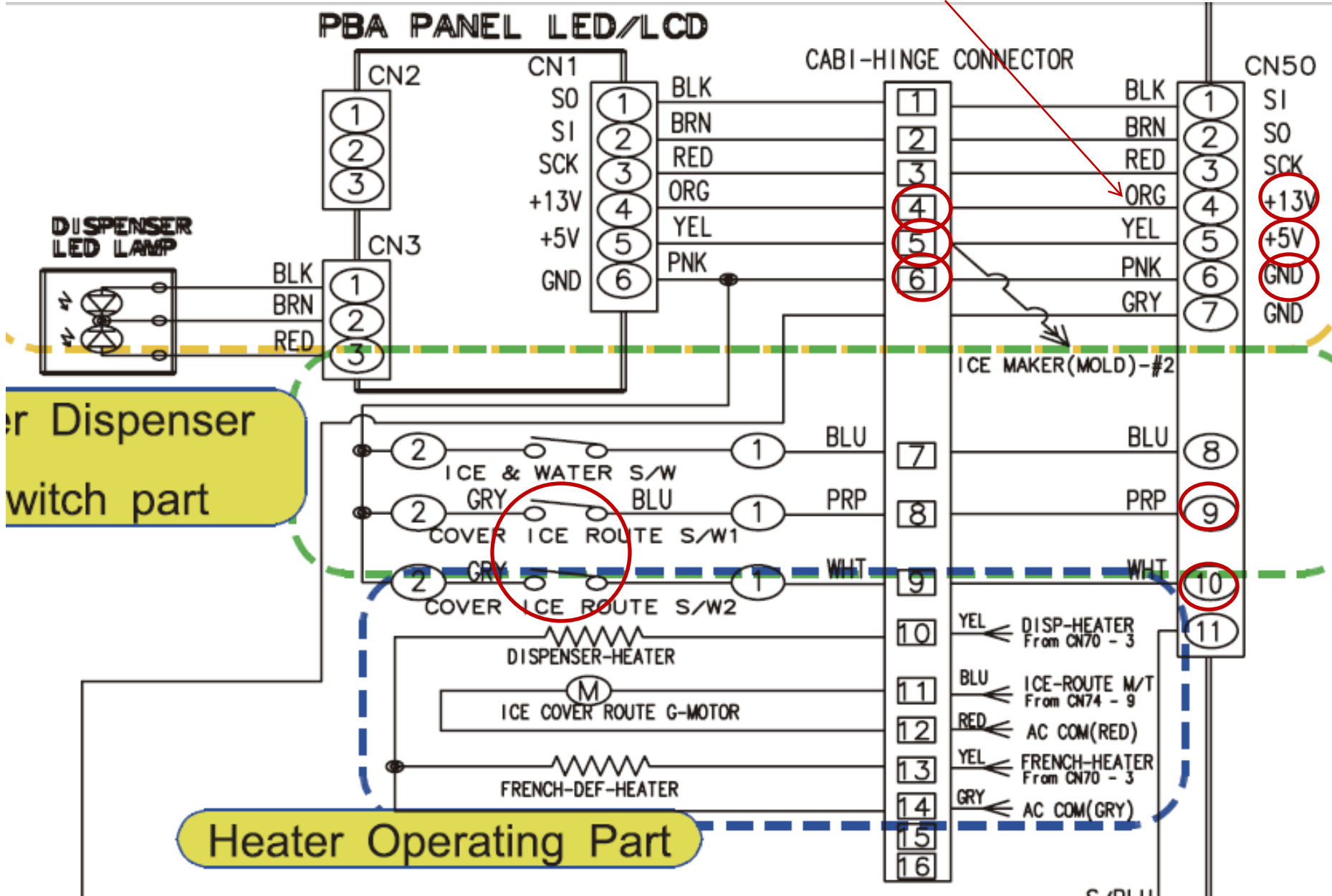
Yel = 5vdc

Pink = Gnd

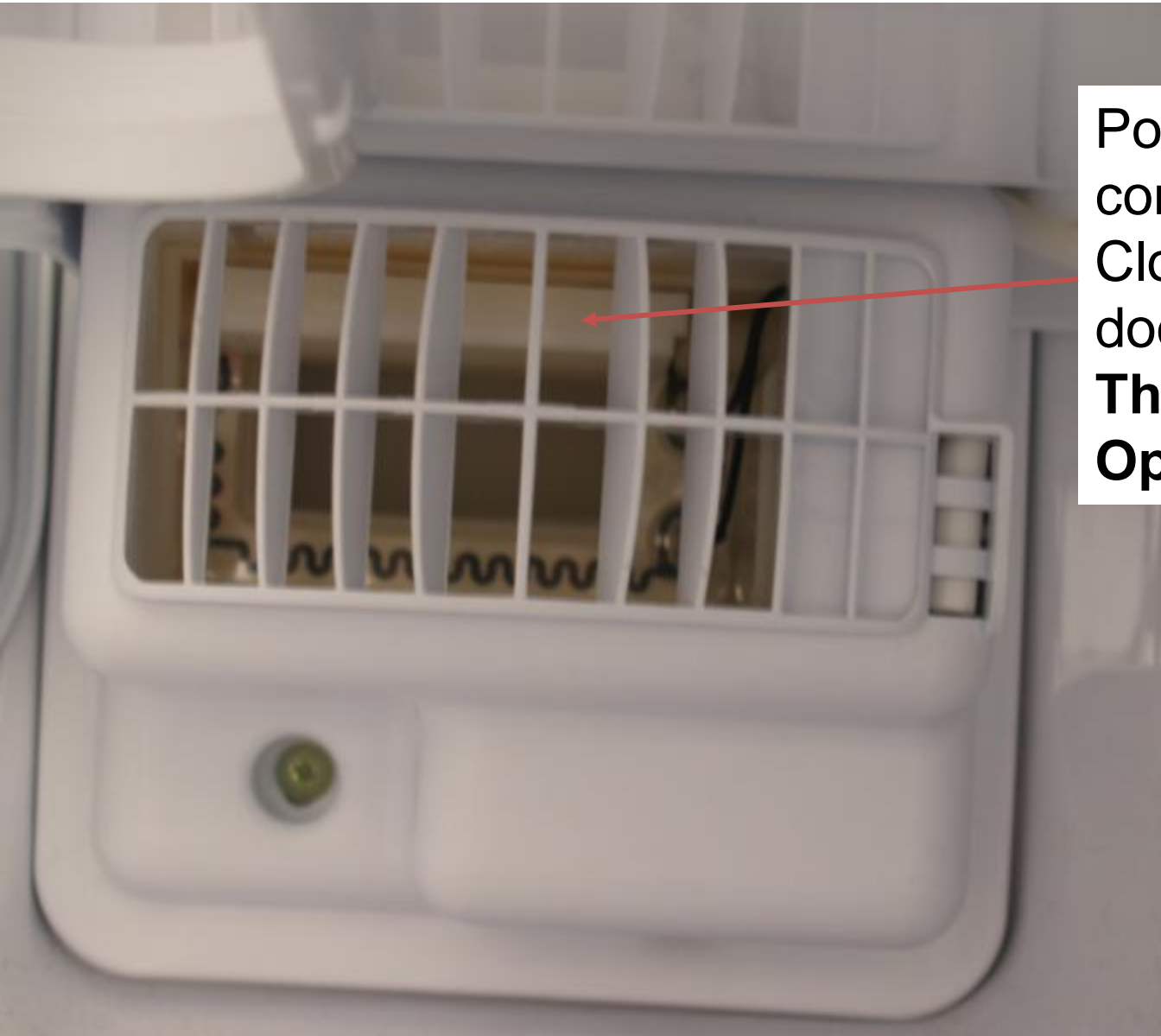


Front Panel

Check vdc at hinge connector



PANTRY DAMPER



Possible “Noise”
complaint.
Closes when Fridge
door is opened.
**This is “Normal
Operating Sounds”**

RF266**** Water Dispenser Dripping

There is a lip at the end of this sleeve, to stop the water tube



If the water tube is not in contact with the lip, water may build up in that gap and drip after the dispenser stops

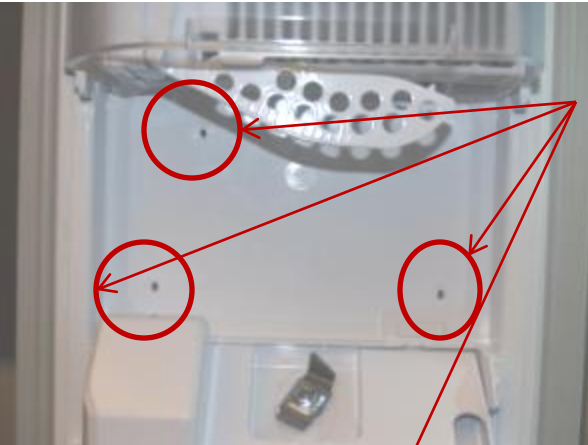
If the water tube is not in contact with the lip, try and push more tubing through the tunnel from the water tank

If tubing will not reach the lip replace the water tank ass'y

Service Concerns

RSG SxS

Accessing Ice maker, Auger, reed sw



Remove 4 screws

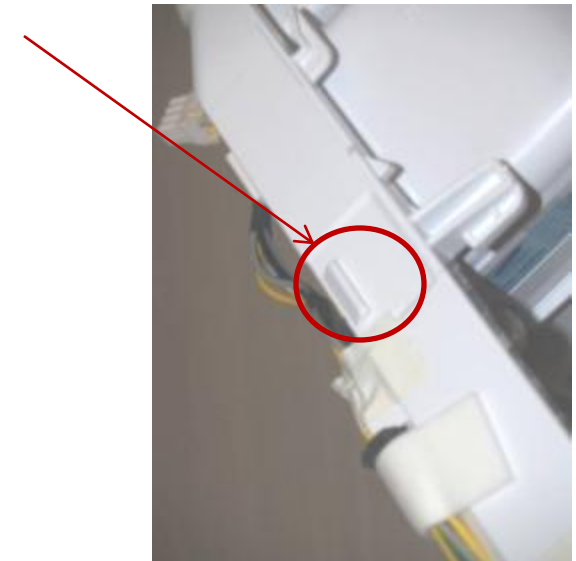
Squeeze in at this point and pull out on auger/ice maker ass'y on the left side



Auger/ice maker ass'y has plastic that locks into the two pieces on the door liner



Ice bucket reed switch, Ice Off LED flashes if bucket/magnet is not in place



RSG Auger/Ice maker ass'y

Wiring harnesses are behind the door panel assembly



Door & Connector changes by serial #, they will not match. Order by serial number using service bulletin.



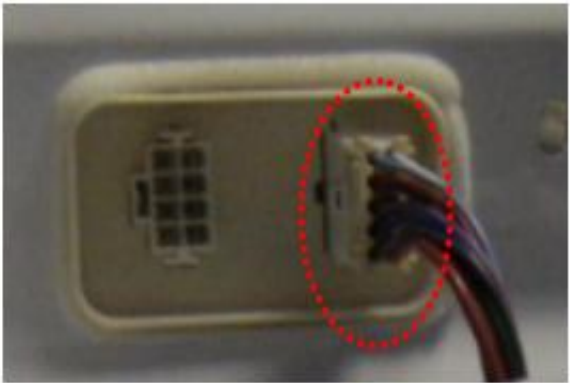
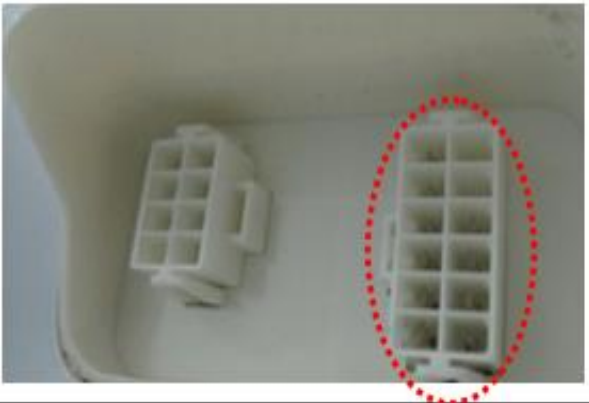
RSG I/M Connector Change

New Door, I/M, Auger Case Ass'y

There is no version change, you must order by serial number with the bulletin

Through Jan 2009
(Serial Q1- S1)

Starting Feb 1 2009 (Serial
S2 – Current Production)

<p>Assy Ice maker</p>		
<p>Assy Foam Door Fre</p>		
<p>Remark</p>	<p><u>Circle Type</u> (10 PIN HOLE)</p>	<p><u>Square Type</u> (12 PIN HOLE _but 10 PIN Used)</p>

Service Concerns

Single Evaporator SxS

SERVICE BULLETIN	
PRODUCT:	Refrigerator
BULLETIN NUMBER:	ASC20090218001
BULLETIN DATE:	02/18/2009
MODELS:	RS2530, RS2630

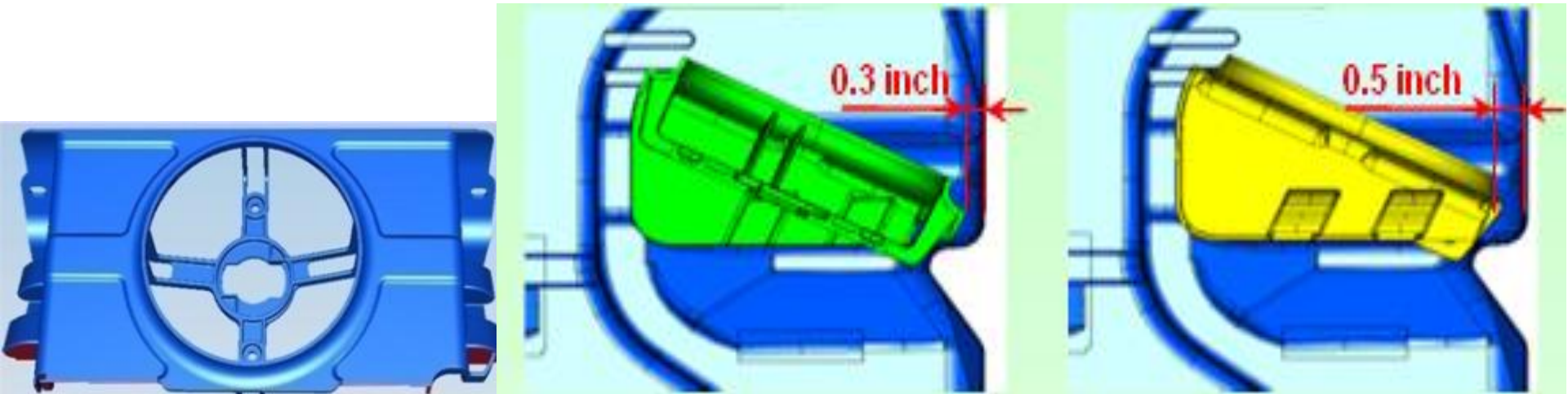


SUBJECT: Frost build up around Frz fan and air outlets

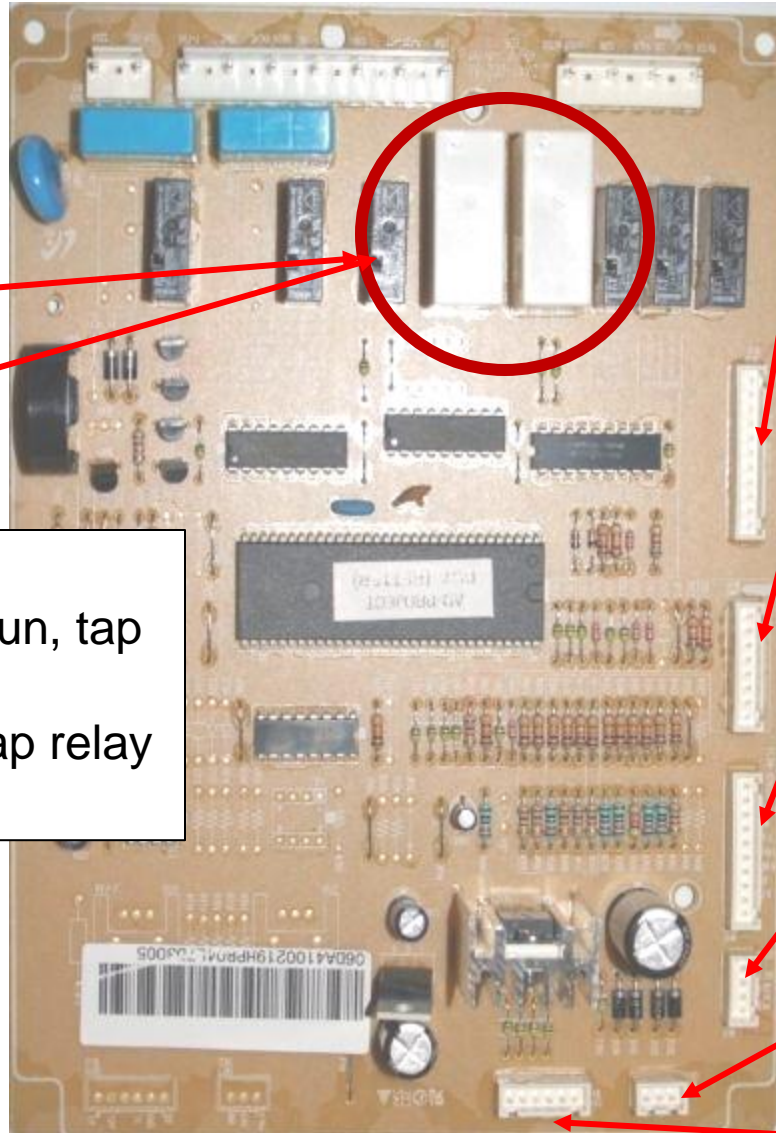
SYMPTOM: Insufficient air circulation and heat conduction is causing frost build up around the Freezer Fan & Air Outlet.

SOLUTION:

Replace with Revised part. The number is the same as before (DA97-01948A ASSY SUPPORT-MOTOR FRE)



RS2630***/XAA



Possible pitting contact relay issues:
Intermittent no cool or Intermittent defrost

Use Forced Mode:
Force compressor run, tap relay to test.
Force defrost and tap relay to test.

CN50 Panel Display

CN90 Ice Maker

1-2 I/M Motor (Red-Blk)
3-4 I/M Sensor (Wht-Wht)
5-8 Test Sw (Gry-S/Blu)
6-8 Horizontal Sw (Blu-S/Blu)
7-8 Fill Sw (Prp-S/Blu)

CN30

3-4 Frz Dr Sw (W/Red-Blk)
7-8 Ref Dr Sw (W/Blu-Blk)
5-4 F-Sensor (Yel-Blk)
6-4 F-Def Sensor (Blu-Blk)
9-8 R-Sensor (Prp-Blk)

CN31 Panel Display

1-4 Ambient Sensor (Wht/Blk-W/Yel)
2-4 Ice Sw (W/Red-W/Yel)
3-4 Water Sw (W/Blu-W/Yel)

CN10 Transformer

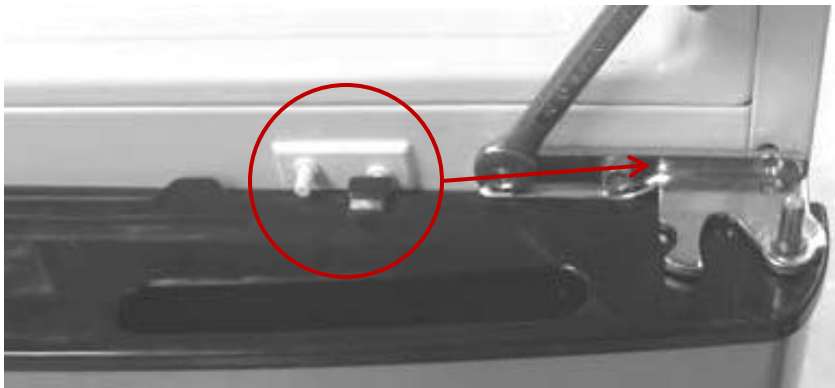
12-16VAC Pins 1-3 (Blu-Blu)

CN75 Damper Heater 12VDC Pins
1-2 (Blk-Blk)

Service Concerns RB Series

RB Series Door Reversal

Door Switch Issue, creating a no cool Fridge



The Door Switch must always be on the side the hinge is on. If not, the Fridge door may not always close properly, creating an intermittent Fridge no or poor cooling.

Intermittent no cool RB Models

CN30

1-2 F Door SW (Blk-Brn)

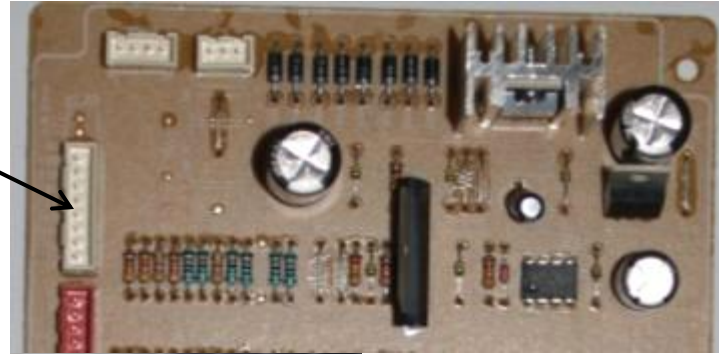
3-2 F Room Sensor (Yel-Brn) 3.5 ~ 4.2 vdc

4-2 F Def Sensor (Org-Brn) 2.3 ~ 4.2 vdc

5-2 R Door Sw (Wht-Brn)

7-6 R Room Sensor (Blu-Brn) 2.4 ~ 2.8 vdc

8-6 R Def Sensor (Prp-Brn) 2 ~ 4.2 vdc



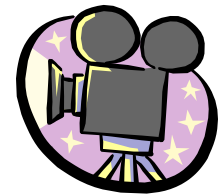
Possible door switch
issue:
Intermittent no cool

The door switch is a 5 VDC switch. A small resistance can cause the circuit not to work.

Test switch with an ohm meter, on low resistance scale. Remove switch, press the switch at least 20 times, if any resistance shows the switch is bad.

Reed Switch on many new products

Installers not seating cover properly, creating a no cool



Door Switch and Magnet Location

No Cool Freezer

RB195AB**/XAA
RB197AB**/XAA
RB215AB**/XAA
RB217AB**/XAA



Magnet missing,
door alarm keeps
going on.



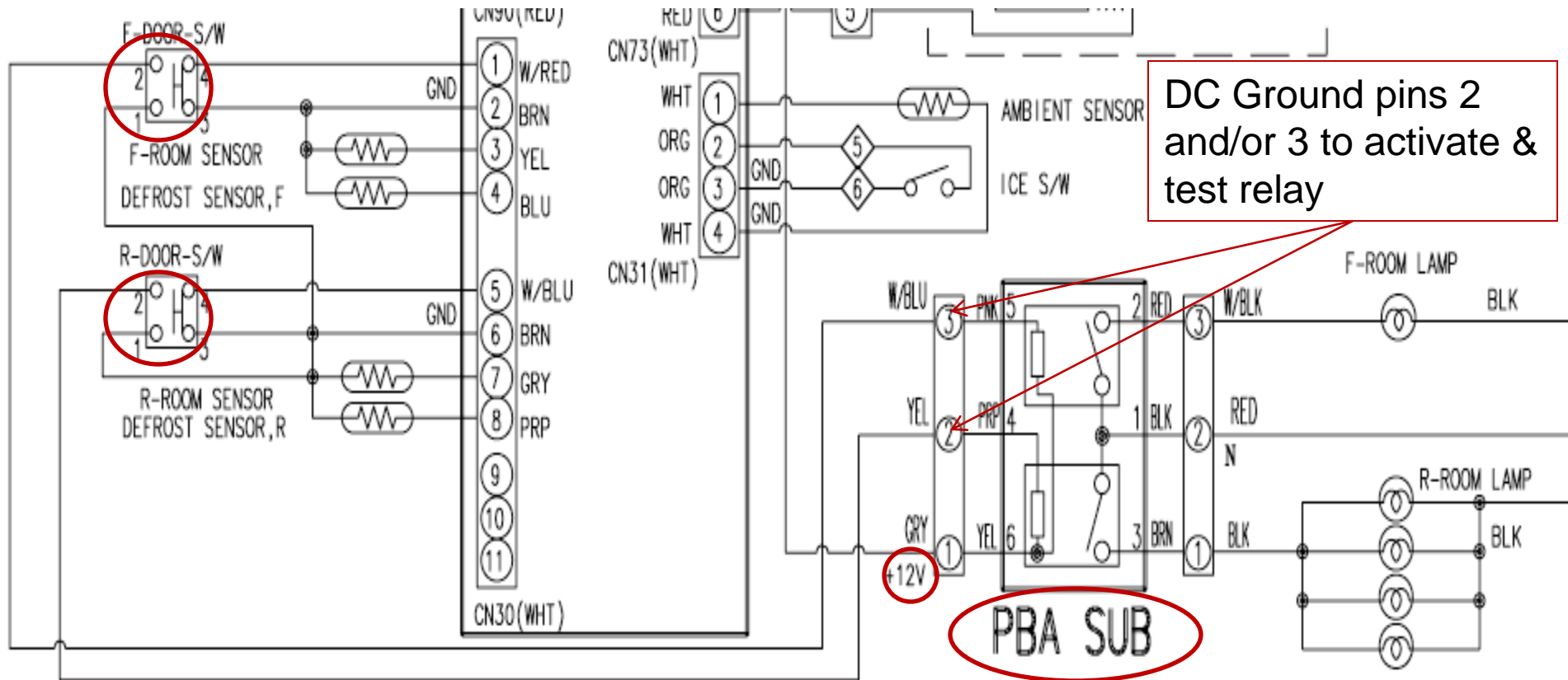
Service Concerns

RS Series

Lamp Circuits

Older models

Failure of interior lamps, test PBA Sub



LV Transformer

Older Models

Transformer powers 5 & 12 VDC circuits
Test in a dead unit to avoid double part order

IN PCB

