



Fast Track Troubleshooting

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Models Covered:
RM257AB**/XAA,

4 Door Refrigeration

IMPORTANT SAFETY NOTICE – “For Technicians Only” This service data sheet is intended for use by persons having electrical, electronic, and mechanical experience and knowledge at a level generally considered acceptable in the appliance repair trade. Any attempt to repair a major appliance may result in personal injury and property damage. The manufacturer or seller cannot be responsible, nor assume any liability for injury or damage of any kind arising from the use of this data sheet.

Self Diagnosis: Press both buttons (Freezer–Fridge) *simultaneously* (No sound when both buttons are pressed at the same time) 'til the display quits blinking and beeps, 8-12 seconds, then release and read Fault Codes. This will also cancel the Fault Mode created by self-diagnosis at power up.

Forced Mode: Press both buttons (Freezer–Fresh Select Zone) *simultaneously* (No sound when both buttons are pressed at the same time) 'til it beeps and goes blank, 8-12 seconds



Wait 5 seconds between button pushes

3600RPM



Press Freezer button one time at the Test Mode to Force Compressor High Speed Run, measure fan and Compressor voltages at main PCB

2450RPM



Press Freezer button a 2nd time to Force Mid Speed Run

2200RPM



Press Freezer button a 3rd time to Force Low Speed Run

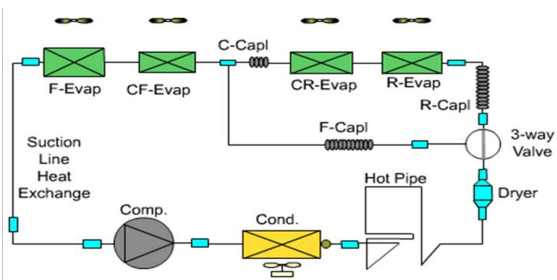


Press Freezer button a 4th time to Force Defrost of Fridge & Freezer, measure defrost voltage at PCB

Sales Mode, No Compressor Operation: Press Freezer & Arctic Select Zone buttons simultaneously for 3 sec (you will hear a “Ding Dong”) to remove or put into Sales Mode. When in the Sales Mode the Display will show "OF" "OF" Removing power will not cancel this mode.

FREEZER TEMPERATURE CONTROL BY THE ICE MAKER

Interior Temperature of the freezer will be set to -14 degrees Fahrenheit 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 set to -14 degrees Fahrenheit. Selecting "Ice Off" will allow the freezer to be controlled by the set temperature. If water is not hooked up, the freezer will always be at -14 unless “Ice Off” is selected.



Sealed System

Refrigerant Charge
R134a
7.76 oz

Component Value Chart

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
Sensors	2.5kΩ-89kΩ	N/A	1~4.5vdc
Fans	N/A	N/A	7~12vdc

1. Compressor → Sub-condenser → Hot Pipe → Back Cluster Pipe → Dryer → R Capillary Tube → Refrigerator Evaporator /CR Evaporator→ Connected Capillary → Freezer Evaporator/CF Evaporator → Suction Pipe → Compressor

2. Compressor → Sub-condenser → Hot Pipe → Back Cluster Pipe → Dryer →F Capillary Tube → Freezer Evaporator/ CF Evaporator → Suction Pipe → Compressor

DC FAN MOTORS

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

TO TEST THE FAN CIRCUIT VOLTAGE.

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

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

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

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

FLEX TRAY Ice Makers

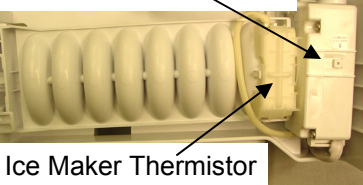
When the initial power is applied, the ice tray will stand by for 2 hours. After the 2-hour standby time, the Ice Maker Sensor will check the temperature, when it is lower than 1.5°F for more than 5 minutes, it will do a harvest, with or without ice in the tray, then fill with water. 58 minutes after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

Thermistor senses temperature to determine water fill on newer units

Filling the tray

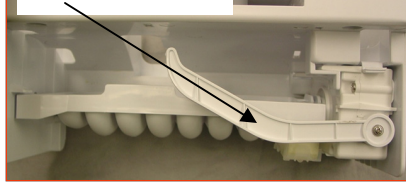
After the water fill is completed, the ice maker sensor will evaluate the water volume one and a half minutes later. When it detects no or low water level, it will add more water. First supply time will be 1.5 sec, next one will be 1 sec and the last will be 2 sec.

Ice Maker Test Button



Ice Maker Thermistor

Guide – Bin Full



Shattered Ice – Flex Tray

When all ice shatters, it's because of a bad tray or ice cube temp that is too cold (lower than -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 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. Ice that is too cold will shatter during harvest. This can be from the (1) sensor not reading the correct temp (2) or 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 3.7 volts at the main board connector when the cube temperature is 1 degree. After the fill, the sensor will read water temp 1.5 to 2.2 volts.

Please note, some shattering is normal for a flex tray icemaker.

Temperature/Resistance/Voltage Chart for Refrigerators Sensors

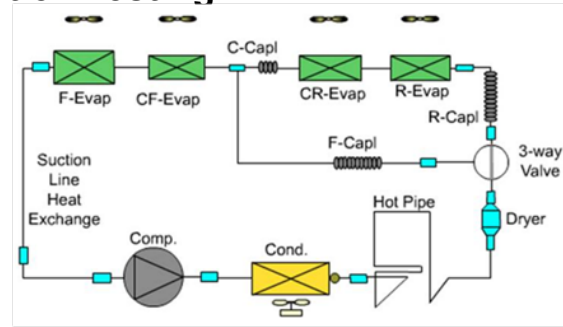
Temp.	(Ω)	Volts	Temp.	(Ω)	Volts	Temp.	(Ω)	Volts	Temp.	(Ω)	Volts
-29.2°F	64227	4.326	1.4°F	28021	3.685	32.0°F	13290	2.853	62.6°F	6771	2.019
-27.4°F	61012	4.296	3.2°F	26760	3.64	33.8°F	12749	2.802	64.4°F	6521	1.974
-25.6°F	57977	4.264	5.0°F	25562	3.594	35.6 °F	12233	2.751	66.2°F	6281	1.929
-23.8°F	55112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

Samsung 'Refrigerator' Diagnostic Code Quick Guide				
Error Items	LED	TROUBLE	TESTING	
I/M-SENSOR (R on Twin I/M units)		Ice Maker Sensor Error- open or short-circuit, connector failure. Cause is also a temperature reading > 122° or < -58 ° F	The voltage at MAIN PCB Sensor between 4.5V~1.0V	
R-SENSOR		Refrigerator Room Sensor Error- open or short-circuit, connector failure. Cause is also a temperature reading > 122° or < -58 ° F.	The voltage at MAIN PCB Sensor between 4.5V~1.0V	
DEFROST SENSOR OF R ROOM		Ref. Defrost Sensor Error- open or short-circuit, connector failure. Cause is also a temperature reading > 122° or < -58 ° F	The voltage at MAIN PCB Sensor between 4.5V~1.0V	
R-FAN ERROR		This error indicates the Refrigerator Evap Fan is not spinning at the correct RPM or the fan feedback line is open.	Fan voltage at MAIN PCB shall be between 7V~12V	
I/M FUNCTION ERROR(R on Twin I/M)		This error indicates the Ice tray has not returned to level after an ice harvest. The error is displayed after three failed attempts.	Replace I/M	
COOL SELECT ZONE SENSOR		Cool Select Zone Sensor Error- open or short-circuit, connector failure. Cause is also a temperature reading > 122° or < -58 ° F	The voltage at MAIN PCB Sensor between 4.5V~1.0V	
R-DEFROSTING ERROR		Refrigerator Room defrost heater- open or short-circuit, connector failure, or defective temperature fuse/bi-metal. Defrost on over 80 minutes	Disconnect defrost connector from PCB, check resistance	
PANTRY-DAMPER-HEATER ERROR		Sensor system in Pantry Room errors	Disconnect heater connector from PCB, check resistance	
CR-SENSOR 4-Door		CR Room Sensor Error- This can be an open or short-circuit, contact failure. Cause is also a temperature reading > 122° or < -58 ° F.	The voltage of MAIN PCB Sensor between 4.5V~1.0V	
DEFROST SENSOR CR ROOM 4-Door		CR Room Defrost Sensor Error- open or short-circuit, connector failure. Cause is also a temperature reading > 122° or < -58 ° F.	The voltage at MAIN PCB Sensor between 4.5V~1.0V	
DEFROST SENSOR OF CF ROOM 4-Door		CF Room Defrost Sensor Error- open or short-circuit, connector failure. Cause is also a temperature reading > 122° or < -58 ° F.	The voltage at MAIN PCB Sensor between 4.5V~1.0V	
CR-DEFROSTING ERROR 4-Door		CR Compartment Defrosting heater- open or short-circuit, connector failure, or defective temperature fuse/bi-metal. Defrost on for over 80 minutes	Disconnect heater connector from PCB, check resistance	
CF-DEFROSTING ERROR 4-Door		CF Compartment defrosting heater-open or short-circuit, connector failure, or defective temperature fuse/bi-metal. Defrost on for over 80 minutes	Disconnect heater connector from PCB, check resistance	
WATER TANK HEATER ERROR		Error is displayed when the water reservoir tank heater is open or shorted	Disconnect heater connector from PCB, check resistance	
EXT-SENSOR		Ambient Temp. Sensor Error- open or short-circuit, connector failure. Cause is also a temperature reading > 122° or < -58 ° F	The voltage at MAIN PCB Sensor between 4.5V~1.0V	
F-SENSOR		Freezer Compartment Sensor Error- open or short-circuit, connector failure. Cause is also a temperature reading > 122° or < -58 ° F	The voltage at MAIN PCB Sensor between 4.5V~1.0V	
F-DEF-SENSOR		Freezer Room Defrost Sensor Error- open or short-circuit, connector failure. Cause is also a temperature reading > 122° or < -58 ° F	The voltage at MAIN PCB Sensor between 4.5V~1.0V	
F-FAN ERROR		This error indicates the Freezer Evap. Fan is not spinning at the correct RPM or the fan feedback line is open.	Fan voltage at MAIN PCB shall be between 7V~12V	
C-FAN ERROR		This error indicates the Condenser Fan is not spinning at the correct RPM or the fan feedback line is open.	Fan voltage at MAIN PCB shall be between 7V~12V	
CF-SENSOR 4-Door		CF Room Sensor Error- open or short-circuit, connector failure. Cause is also a temperature reading > 122° or < -58 ° F	The voltage at MAIN PCB Sensor between 4.5V~1.0V	
F-DEFROSTING ERROR		Freezer defrosting heater- open or short-circuit, connector failure, or defective temperature fuse/bi-metal. Defrost on for over 80 minutes	Disconnect defrost connector from PCB, check resistance	
CF-FAN ERROR 4-Door		This error indicates the CF Compartment Evap. Fan is not spinning at the correct RPM or the fan feedback line is open.	Fan voltage at MAIN PCB shall be between 7V~12V	
CR-FAN ERROR 4-Door		This error indicates the CR Compartment Evap. Fan is not spinning at the correct RPM or the fan feedback line is open.	Fan voltage at MAIN PCB shall be between 7V~12V	
ICE PIPE HEATER ERROR		Error is displayed when the ice maker fill pipe heater is open or shorted.	Replace Fill Tube Ass'y	
Uart ERROR COMMUNICATION		This error is not applicable, if the error is detected during diagnostic testing please ignore it.	No Repair Necessary	
L?M ERROR COMMUNICATION		Communication error within the Main PCB	Replace main PCB	
P?M ERROR COMMUNICATION		Communication between the Main PCB and Keypad	Check wiring in door & cabinet, Panel PCB, Main PCB	

Compressor & System Operation Testing

The Time Divided Multi-cycle (TDM) System (Stepper Valve) is used to switch refrigerant flow . This improves temperature control and energy efficiency.

If it fails in the all evaporator mode, it should work properly, using slightly more energy. If it fails in the Freezer evaporator only mode, there will be a Fridge & CR no cool Force on the Fridge with the "Power Cool" option. Monitor the Fridge evaporator(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.



TEST BEFORE INTERPRETING LED BLINKING FREQUENCY

Compressor not running

1. Activate Forced Compressor Operation, wait 2 minutes (in case of high head pressure)
2. If compressor doesn't start, check CN75 for 2.5vdc (if not there replace Main PCB)
3. If voltage is OK, remove power, disconnect CN03 (Inverter PCB) and check resistance to the windings. Aproxametly 10 ohms. If not correct , inspect wire harness, if OK replace compressor.
4. Disconnect CN02 (SMPS PCB), check resistance to Overload , if open replace overload.



CN77 To Comp Inverter Board

2- (CN74-7) (Brn-Gry) 5vdc

3- (CN74-7) Comp control (Org-Gry) 2.5vdc

CN03 Compressor Windings

1 Compressor (Blue)

3 Compressor (Prp)

5 Compressor (Wht)

CN04 Compressor Control

1-(CN74-7) 5vdc (Blk-Gry)

3 Comp Signal (Org)

CN02

Overload &

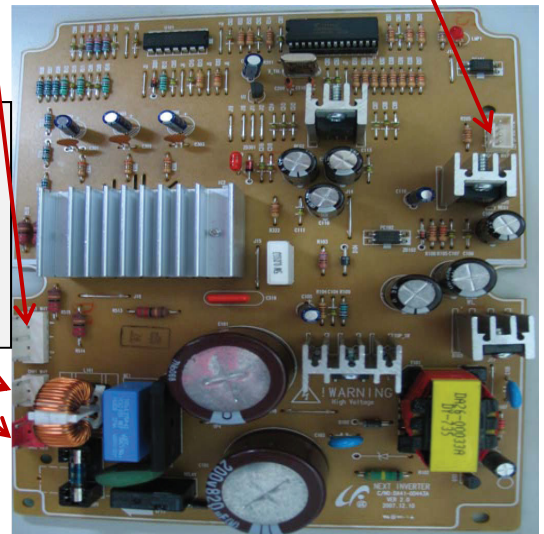
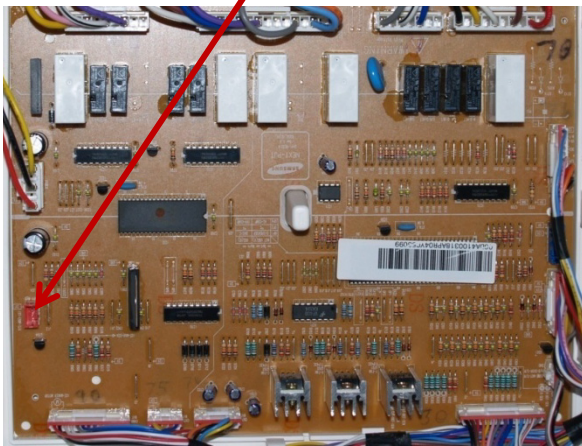
A/C Line

1 OLP (Red)

3 OLP (S/Blu)

3 L (Red)

1 N (Gry)



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

RM257AB

CN73 120vac
 1-(CN70-9) Cube Mtr (Yel-Red)
 3-(CN70-9) Auger Mtr (Pnk-Red)
 5-(CN70-9) Water Solenoid/Valve (W/Blk-Red)
 7-(CN70-9) Ice Solenoid/Valve (Prp-Red)

CN78
 1 **+5 VDC** (Red)
 3 **VDC GND** (Blk)
 5 **+12 VDC** (Yel)

CN72 & CN79 120vac
 1-(CN70-9) CR Room Lt (Wht-Red)
 3-(CN70-9)CF Room Lt (Brn-Red)
 5-(CN70-9) R Room Lt (Blu-Red)
 7-(CN70-9) F Room Lt (Prp-Red)
 11 Line N (Gry)
 15-CN70 Htr GNDs (Org)

CN71 120vac
 3-1 Dispenser Htr (W/Blk-Gry)
 5-7 Home Bar Htr (Blu-Gry)

Ext Sensor read 7-8 of
 F Hinge connector
1.2-2 vdc

CN70 120vac
 1-(CN72-15) CR Def Htr (Blk-Org)
 3-(CN72-15) CF Def Htr (Yel-Org)
 5-(CN72-15) R Def & Drain Htr (Wht-Org)
 7-(CN72-15) F Def & Drain Htr (Brn-Org)
 9 Line1 (Red)

CN77
 1-(CN74-7) **+5 VDC** (Red-Gry)
 3-(CN74-7) Comp (Org-Gry) **2.5vdc**

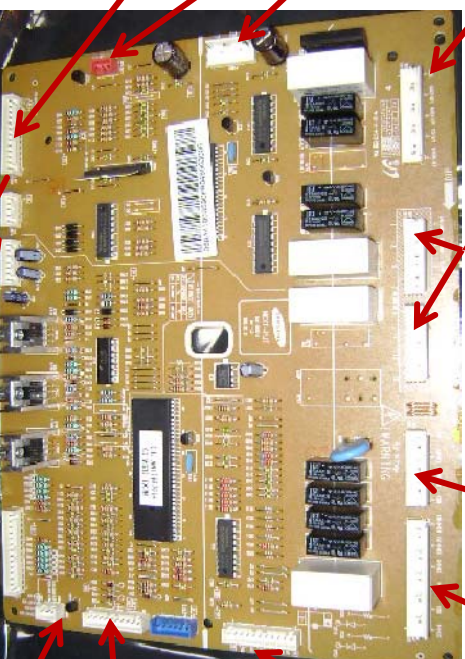
CN76
 1 & 11 **+12 VDC** (Blk-S/Blu)
 1-2 CF Fan Mtr (Blk-Brn) **7-12vdc**
 3 CF Fan FG (Red)
 1-4 Ice Pipe Heater (Blk-Org) **12vdc**
 11-5 CR Fan Mtr (S/Blu-Yel) **7-12vdc**
 6 CR Fan FG (Pnk)
 11-10 H2O Tank Htr (S/Blu-Wht) **12vdc**

CN90 Ice Maker
 1-2 I/M Motor (Red-Blk) **12vdc**
 3-4 I/M Sensor (Wht-Wht) **2.1-3.7vdc**
 5-8 Test Sw (Gry-S/Blu)
 6-8 **+5 VDC** (Blu-S/Blu)
 7 Hall IC Out (Prp)

CN50 Display
 4-6 **+12 VDC** (Org-Pnk)
 5-6 **+5 VDC** (Yel-Pnk)
 8-7 Ice sw (Prp-Blu)
 9-7 Water sw (Wht-Blu)
 6 **vdc GND** (Pnk)

CN75
 1 **+12 VDC** (Red)
 2 Coil A (Blk)
 3 Coil A Inverse (Yel)
 4 Coil B (Org)
 5 Coil B Inverse (Blu)

CN40
 1-3 Cube Mtr Sw (Blk-Gry)
 2 Home Bar Dr Sw (W/Red)



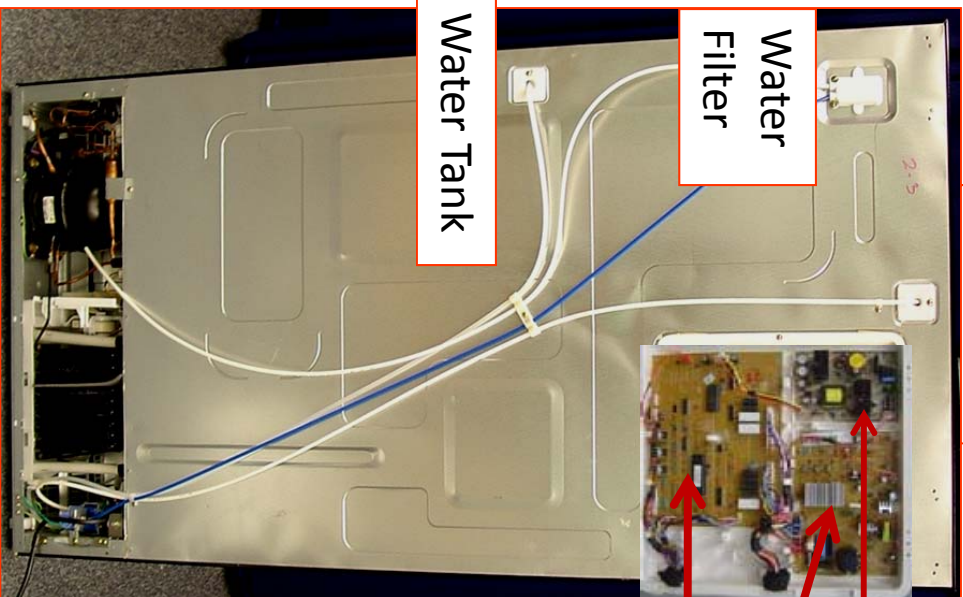
CN74
 1 C Fan FG (Red)
 2 R Fan FG (Brn)
 3 F Fan FG (Blk)
 4-7 C Fan Mtr (S/Blu-Gry) **7-12vdc**
 5-7 R Fan Mtr (Org-Gry) **7-12vdc**
 6-7 F Fan Mtr (Yel-Gry) **7-12vdc**
 7 **vdc GND** (Gry)

CN30
 1-7 F Dr Sw (Blk-Gry)
 3-7 F Sensor (Red-Gry) **3.5-4.2vdc**
 5-7 CF Sensor (Yel-Gry) **2.7-4.05vdc**
 8-14 R Dr Sw (Prp-Gry)
 10-14 R Sensor (Wht-Gry) **2.4-2.8vdc**
 12-14 CR Sensor (W/Blk-Gry) **2.4-3.2vdc**
 2-7 CF Dr Sw (Brn-Gry)
 4-7 F Def Sensor (Org-Gry) **2.3-4.2vdc**
 6-7 CF Def Sensor (Pnk-Gry) **2.3-4.2vdc**
 9-14 CR Door Sw (Blu-Gry)
 11-14 R Def Sensor (S/Blu-Gry) **2-4.2vdc**
 13-14 CR Def Sensor (W/Red-Gry) **2-4.2vdc**

Ice Maker

Water
Filter

Water Tank



SMPS

Inverter

Main PCB

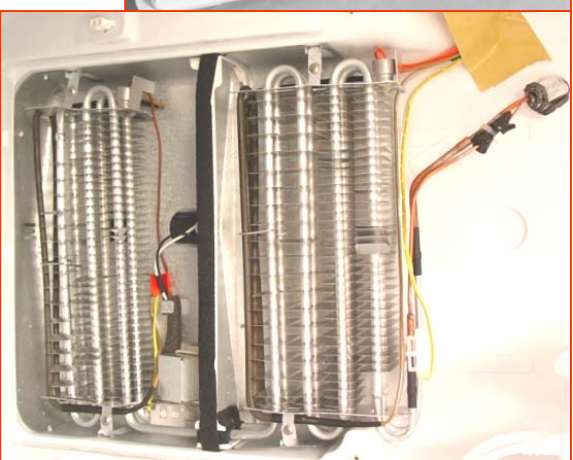


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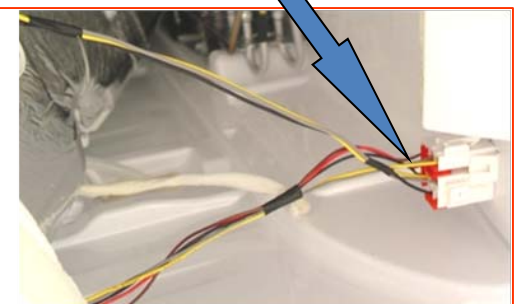
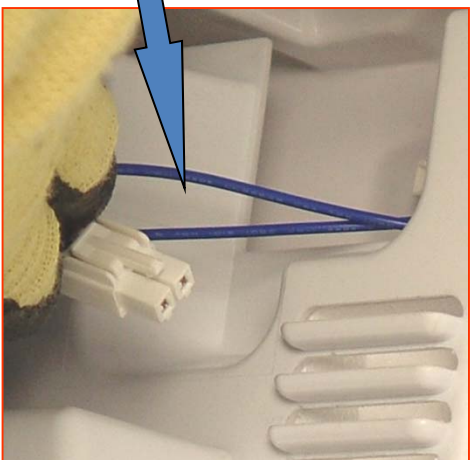
Insert flat blade screwdriver in the slot
shown and unlock the tabs

Service Access

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

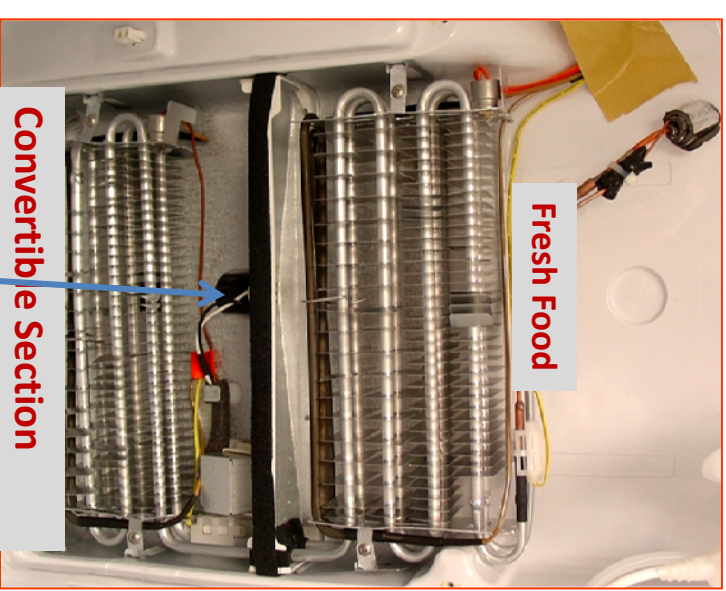


Water Tank Heater Connector



Pull cover up and out far enough to unplug wire harnesses
Remember to lock in bottom first when reinstalling

Accessing the Refrigerator Evaporators



Failure of the Drain Hose Heater could cause water build up on fridge floor and cooling issues

Accessing Freezer Evaporator

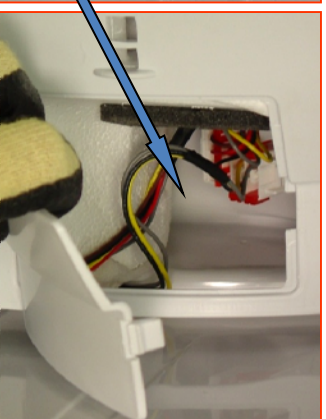
Snap off caps



Remove 4 screws

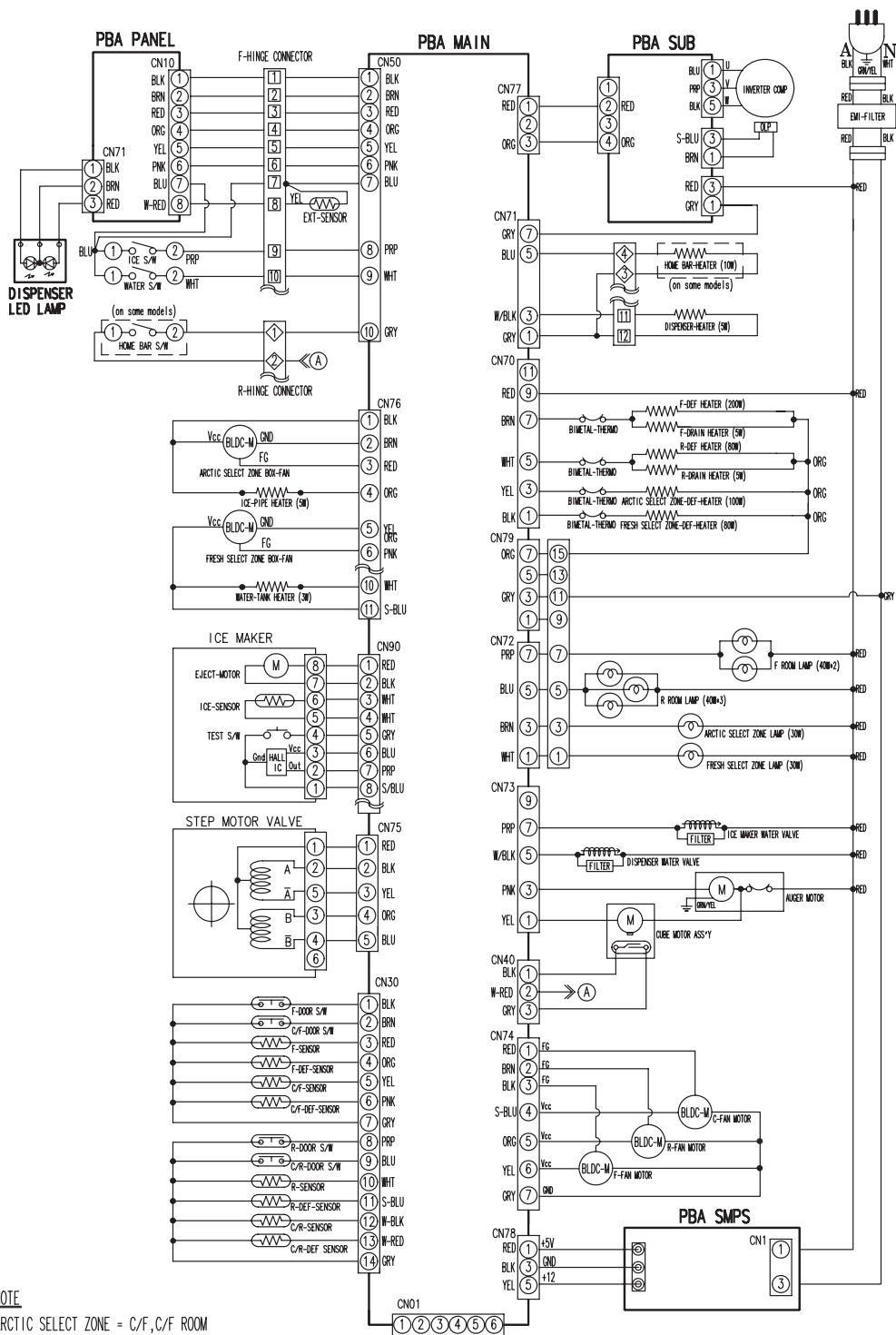


Snap off cover Unplug wire harnesses



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





NOTE

ARCTIC SELECT ZONE = C/F, C/F ROOM
FRESH SELECT ZONE = C/R, C/R ROOM

GATE WAY