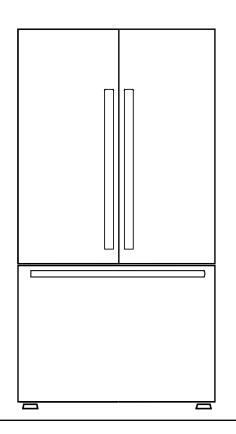
Service MANUAL



FULGOR MILANO

REFRIGERATOR F6FBM36S1 F6FBM36S2

- Notice -

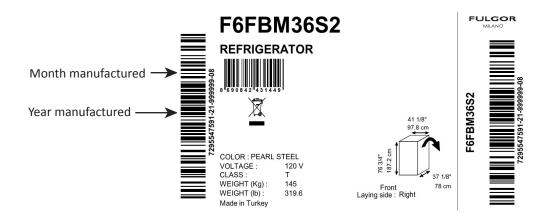
This Manual is prepared for the use of trained Service Technicians and should not be used by those not properly qualified. This Manual is not intended to be all-encompassing. You should read, in its entirety, the repair procedure you wish to perform to determine if you have the necessary tools, instruments, and skills required to perform the procedure. Procedures for which you do not have the necessary tools, instruments, and skills should be performed by a trained Service Technician.

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Serial Number

The serial tag is located on either the upper left-hand wall of the refrigerator section, or bottom of the compartment, beneath the large crisper drawer.









SAVE THESE INSTRUCTIONS

REVIEW ALL SERVICE INFORMATION IN THIS SERVICE MANUAL BEFORE BEGINNING REPAIRS.

This product should only be serviced by a qualified service technician, who is familiar with the standard safety producers required for servicing this product. The technician should be equipped with the proper tools, parts, and test equipment before beginning.

Safety Information

We have provided many important safety messages in this manual and on the appliance. ALWAYS READ AND OBEY ALL SAFETY MESSAGES.

This is the safety alert symbol

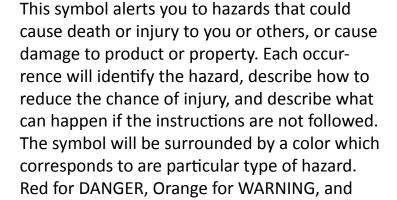
Yellow for CAUTION.





DANGER

INDICATES A HAZARDOUS SITUATION WHICH, IF NOT AVOIDED, WILL RESULT IN DEATH OR SERIOUS INJURY.



These categories are defined in the boxes to the right



WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury. Repairs should not be attempted by unauthorized personnel.



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor personal injury or product or property damage.

Technical Services

Please contact your authorized Fulgor Milano dealer.



Fulgor Milanowill not be responsible for any injury or property damage from improper procedures. If performing service on your own product, you must assume responsibility for any personal injury or property damage that may result.



Safety Instructions

The manufacturer reserves the right to make changes in the technical specifications in order to improve the appliance quality without any prior notice. Figures included in this manual are for schematic purposes only and may not match the appliance exactly. Values stated on the markings of the appliance, or in other printed documents supplied with the appliance, are obtained under laboratory conditions as per relevant standards. These values may vary according to the usage of the appliance and ambient conditions.

Proper Installation - Be sure your appliance is properly installed and grounded by a qualified technician.

If the supplied electrical cord is damaged, it must be replaced by a power cord or assembly from the manufacturer. It must also be installed by a qualified service technician.



Service repairs must always be performed by an Authorized Servicer. Installations must be performed by a Certified Installer (This can include certified and licensed electrician or plumbers. The Manufacturer cannot be held responsible for damages caused by operations performed by unauthorized, uncertified or unlicensed persons.

- If the refrigerator is malfunctioning, it must not be operated until it is repaired by an Authorized Servicer. There is a risk of electrical shock!
- The unit should be plugged into a three-prong, grounded and polarized 15A, 120V, 60Hz dedicated wall outlet. Fulgor Milano will not be responsible for damages incurred while using the product in a way that does not comply with the electrical code of the location where the product is installed.
- If the unit is not going to be used for an extended period of time, turn off the power to it via the circuit breaker, shut of the water supply, and leave the doors open.
- Never wash the refrigerator by spraying or pouring water on it. There is a risk of electric shock!
- Caution should be used when unplugging the unit for service. Make sure your hands are not wet, and always hold the plug when disconnecting from the outlet, not the cord. If the outlet is loose, have a licensed electrician repair or replace the outlet.
- This unit was designed to operate on a normal 60Hz, 120VAC electrical grid system.
 If it is connected to any energy saving system, alternative power, or solar power system, etc. and is experiencing any operational issues, please contact your local electrical provided for further information.
- Shut off power to the refrigerator at the circuit breaker during installation, cleaning near exposed electrical components, or service repairs.

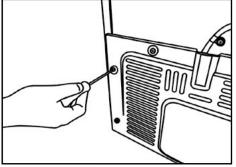
SERVICE MANUAL

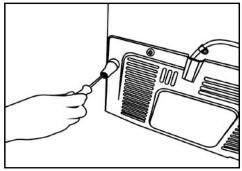


Installation, Electrical & Plumbing Requirements

- The refrigerator must not be located too close to a heat source. Be sure it is installed at least 12" (30cm) from cooktops, ovens, radiators or stoves, and at least 2" (5cm) from electric ovens. Also, be sure the unit is not subject to direct sunlight or exces-sively humid locations.
- Do not install the refrigerator in place where the temperature falls below 50°F/10°C.
- The refrigerator requires adequate air circulation to function efficiently. Ensure the product has at least a 5/8" on each side, 2" above the unit, and 1 3/4" in back of the unit.
- To facilitate proper airflow, two 1 3/4" spacers were provided with the product. These must be installed. Remove the screw as shown in the illustration below and install the spacer in its place. (Part #: 4385910100 Spacers & Screws, 4298950100 Spacer only)







13/4" Spacers

Remove screw.

Install spacer in its place.



If two refrigerators are installed side by side, there should be at least 1 3/4" (4cm) between them.

- This product requires a 120VAC, 60Hz service.
- The electrical connection must comply with national regulations.
- Be sure power cable is accessible after installation.
- Do not make connections via extension cords or multi-plugs.
- Rated total current draw is 2.7A. A circuit breaker above this amount must be used, in compliance with local regulations.
- GFCI outlets will provide added protection, but any failure of the GFCI could cause food spoilage, which is not covered by the manufacturer's warranty.



WARNING: A damaged power cord must be replaced by an Authorized Service Technician.

- The refrigerator should only be connected to the cold water line.
- Operating pressure should be between 25psi (1.7 bars) and 125 psi. (8.6 bars)
- If water pressure exceeds 80psi (5.5 bars), a pressure limiting device should be used.
- Reverse Osmosis systems are not recommended due to decreased water pressure and excessive air in the line.



Theory of Operation

Compressor & Evaporators

The Fulgor Milano Three-Door refrigerator has two evaporators, but only one compressor, charged with R600a refrigerant <u>The evaporator in the Fresh Food section is not accessible for service.</u> It is located behind the rear wall, along

with the evaporator sensor. The Fresh Food and Freezer compartments are sealed off from each other. As there is no transfer of air between the two compartments, the temperature management for each compartment is accomplished by the individual evaporators and sensors. A refrigerant valve is not used to regulate the flow of gas between the two evaporators. Gas is flowing between both evaporators whenever the compressor is running.

Display

The Display is the operational interface for the customer. Information about each key and option is found on page 13.

Inverter

This product uses a variable speed compressor. The speed adjustments are done by the Inverter, which receives the control signals from the main control board. The inverter is located on the side of the compressor.

Temperature Sensors

There are six thermistors on this product - Two for the Fresh Food (Air & Evaporator), Two for the Freezer (Air & Evaporator) and Two for the Ice Maker (one for each tray). All of these sensors are NTC thermistors. Temperature information is transmitted to the main board via changes in their resistance. These thermistors ensure that the product operates according to the parameters set by the system software.

Heating Elements

There are seven heating elements on this refrigerator - a Fresh Food Heater (not accessible), a Flapper Heater between the two Fresh Food Doors, Two Fill Tube Heaters, an Ice Maker Heater (The Flapper, Fill Tube Heaters and Ice Maker Heater are in a parallel circuit), a Freezer Defrost Heater, and a Drain Heater (not accessible)(The Defrost and Drain Heaters are in a parallel circuit). There are three defrost profiles: When the refrigerator is in Quick Freeze Mode, the Defrost Element will energize every 10hrs for 60 minutes or until the Evap. thermistor reads 50°F/10°C. In Door Open Mode the Defrost Element will energize every 38hrs or when the compressor has been running for 28hrs. Again, it will run for 60 minutes or until the Evap thermistor reads 50°F/10°C. In Door Closed Mode the Defrost Element will energize every 50hrs and will run for only 5 minutes, or until 50°F/10°C is reached.

Fans

There are five fans on this product - a Fresh Food Fan, a Freezer Fan, a Condenser Fan, and two fans on the Ice Maker. All fans are 12VDC, and directly powered by the Main Control Board. The Fresh Food and Freezer Fans ensure proper air movement in their respective compartments. The condenser assembly in the compressor area is used to expel the heat pulled from all compartments. The Condenser Fan accelerates this heat transfer. Each ice tray has its own fan, which serves to freeze the water in the tray quicker. These fan come with the complete Ice Maker assembly.

Ice Makers & Water Valves

There are two 12VDC motors that twist the ice trays to eject the ice cubes once the sensors on the bottom of the trays register a temperature of 32°F (0°C). A water valve is used to send water to the ice trays after each ice harvest. No flow meter is used to measure the water amount. A solenoid on the main water valve assembly is energized for the time set by the system software. This time can be adjusted in the Service Mode (page 14) to adapt to various water pressures. The default time is 9.9 seconds. A secondary water valve, located inside the partition between the crisper drawers, is energized when the microswitch at the dispenser is depressed.

Lights

12VDC LED light boards are used to illuminate Freezer and Fresh Food Compartments. Reed switches at the top of the doors activate the lights when a door is opened. The Fresh Food section is also equipped with ActiveFresh Blue lights. These lights remain on even when the door is closed, and in Sabbath mode. Their purpose is to simulate sunlight and extend the freshness of fruits and vegetables by continuing the process of photosynthesis in them.

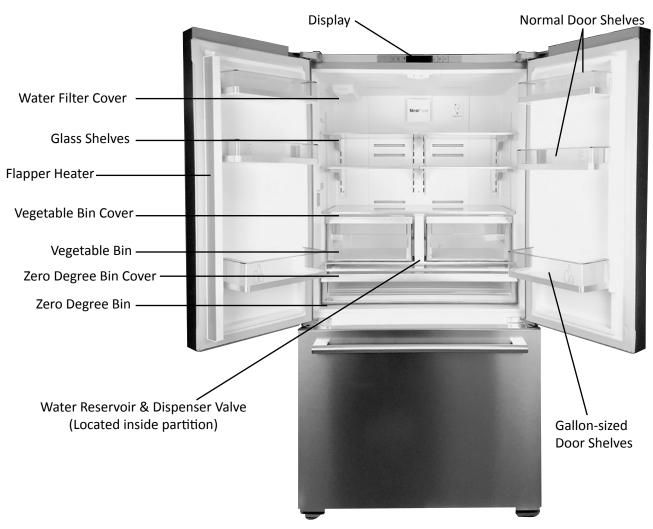
Ionizer & Air Filter

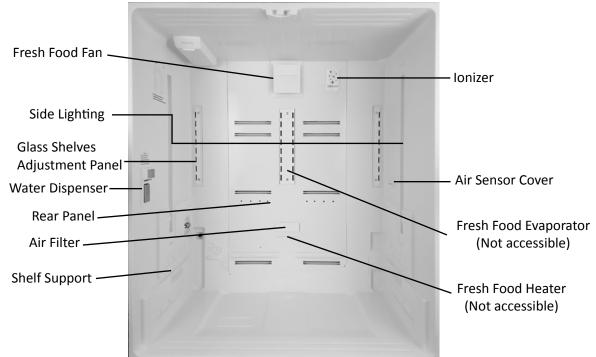
An ionizer is located behind the rear panel in the Fresh Food section. This component energizes for 6 minutes every hour, infusing the compartment with negative ions to capture odor molecules and pull them out of the air. A charcoal filter, located at the bottom of the rear panel also helps to eliminate unpleasant odors.

Controller

All the components listed above are operated by the Main Control Board located at the top of the product. Access to this, and all other components, is explained in the disassembly section of this manual (beginning on page 26).

Refrigerator Components

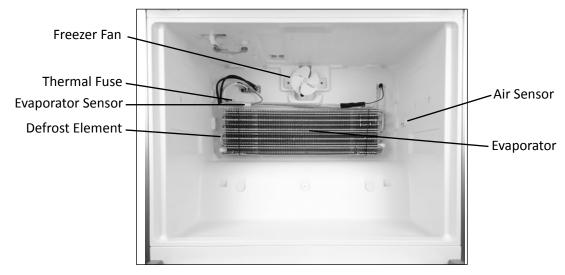




Freezer Components



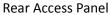


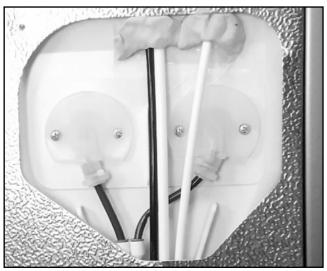




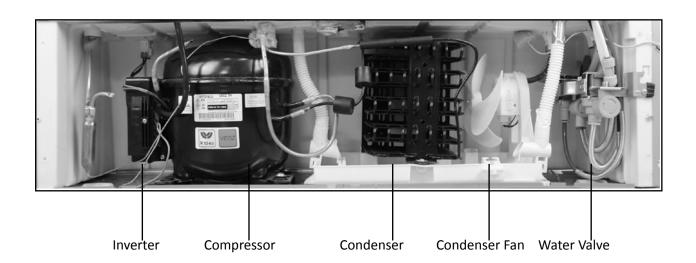
Rear & Compressor Area Components



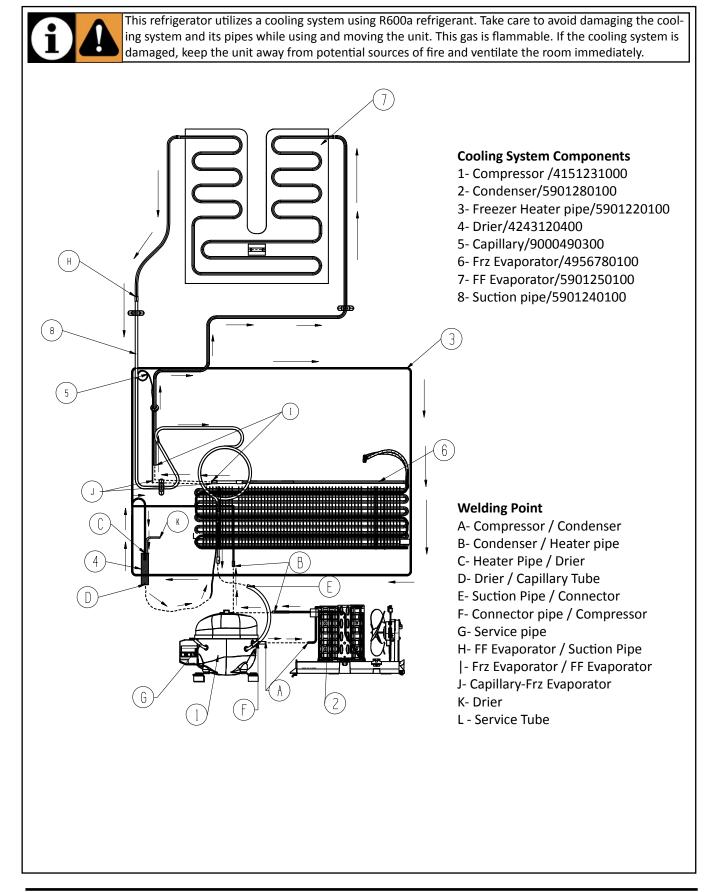




Fill Tube Heaters & Water Lines



Gas Flow Diagram & Parts

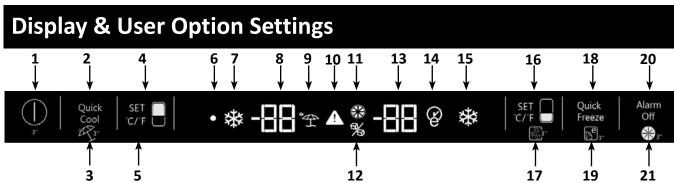




Electrical Components & Specifications

Quantity	Component	Stock Number	Specifications
1	Compressor	4151231000*	230VDC, 130W, .71A, 6.4Ω (between any two)
1	Freezer Fan Motor	5782940300*	12VDC, 2W ± 20%, CCW -2200RPM ± 200
1	Condenser Fan Motor	5783015200*	12VDC, 1.8W ± 20%, CCW - 1600RPM ± 200
2	Ice Maker Fan Motor	5751240100*	12VDC, 2.76W, CW - 4400RPM ± 200
1	Fresh Food Fan Motor	5799900100*	12VDC, .78W, CW - 2100RPM ± 200
5	LED Board (6 LED)	4940162100*	12VDC, 1.4W, 120mA
2	LED Board w/Blue Light	5750730100*	12VDC, 2.4W, 200mA
1	Dispenser LED Board	5751370100*	12VDC, .48W, 40mA
1	Freezer Defrost Heater	5749480200*	120VAC, 175W, 82.4Ω
1	lonizer	4362700300*	120VAC
1	Ice Maker Water Valve	5724340100*	120VAC, 20W ± 10%, 1.4Gal./Min
2	Ice Maker Motor	4827350300*	12VDC, 50mA
1	VCC Inverter	4896853600*	115VAC, Drop in RPM 4500/1200
1	Display Board	5712631200*	5VDC
1	Thermal Fuse	4919820700*	Cut-out Temperature: 162°F (72°C)
1	Control Board	4934269501*	Input voltage: 120VAC, Output: 5V -12VDC
1	Main Water Valve	4346600500*	120VAC
1	Freezer Reed Switch	5733280300*	5VDC
2	Fresh Food Reed Switches	5733280100*	5VDC

^{*}Note: For the exact stock number information, look at the BOM List on the Manusoft System.



- 1. Power key Press and hold this key for 3 seconds to turn the refrigerator on and off.
- **2. Quick Cool key** Press this key to turn on the Quick Cool option, which will drop the temperature to 34.7 -35°F for an hour. It will return to the previously set temperature afterwards.
- **3.** Vacation Mode key Press and hold the Quick Cool key for 3 seconds to turn on/off vacation mode. In Vaca-tion Mode the Fresh Food temperature will remain at 50°F, while the Freezer maintains its set temperature. Dashes will appear in the temperature displays.
- **4.** Fresh Food Temperature set key Press this key to adjust the temperature in the Fresh Food section between 33°F and 46°F (0°C and 7°C)
- **5. Temperature Scale selection** Press both the Fresh Food Temperature set key (4) AND the Freezer Tempera-ture set key (16) simultaneously to select between Fahrenheit and Celsius temperature scales.
- 6. Power "off" Indicator This red light will be on when the unit is plugged in but powered off.
- 7. Quick Cool Indicator This snowflake icon will be illuminated when the Fresh Food Quick Cool option is on.
- 8. Fresh Food Temperature Display This is where the Fresh Food Temperature will be displayed.
- **9. Vacation Mode Indicator** This umbrella icon will be illuminated when Vacation Mode is on, as well as the dashes in the temperature display sections.
- **10. High Temperature/Error Indicator** This icon will be displayed if refrigerator doesn't cool adequately or if there is a sensor failure.
- 11. Filter Replacement Indicator This icon will be displayed when the water filter needs to be replaced. Press Ice Off (17) before replacing filter. See User Guide for instructions on replacing the filter. Press Ice Off (17) again after replacement.
- **12.** Ice Off Indicator This icon will appear when the ice maker is turned off.
- **13.** Freezer Temperature Display This is where the Freezer temperature will be displayed.
- 14. Eco-Extra Indicator This icon will be illuminated when the Eco-Extra option is turned on.
- 15. Quick Freeze Indicator This icon will be illuminated when the Quick Freeze option is turned on.
- **16. Freezer Temperature Set key** Press this key to adjust the temperature in the Freezer section between -8°F and 0°F (-22°C and -18°C)
- 17. Ice Maker Off key Press and hold the Freezer Temp Set key for 3 seconds to turn off/on the Ice Maker.
- **18. Quick Freeze key** Press this key to turn on the Quick Freeze option, which will drop the Freezer temperature to -16.6°F (-27°C) for 24 hours. It will return to the previously set temperature afterwards.
- **19. Eco-Extra option key** Press the Quick Freeze key for 3 seconds to turn on the Eco-Extra option, which will activate approximately 6 hours later. This option ensures the unit operates in its most efficient mode.
- **20.** Alarm Off key Press this key to silence audible alarms.
- 21. Filter Reset key Press the Alarm Off key for 3 seconds to reset the water filter timer.

Special Options

Sabbath Mode - Press and hold the Fresh Food Temperature Set key for 3 seconds to enter Sabbath Mode. "SA" will appear in the display while the unit is in Sabbath Mode.

Showroom Mode - Press and hold "Power" & "Alarm Off" until PS 0 appears. Change the 0 to an 8 by pressing the "Freezer Temperature Set" key. Then press "Fresh Food Temperature Set" key to activate. To deactivate, press and hold the "Power" & "Alarm Off" again.



Service Mode (Service Mode should be done before any other diagnostic or disassembly procedures.) Fresh Food Quick Freezer Ouick Alarm Power **Left Display Right Display Temp Set Temp Set** Freeze Off Cool Quick Alarm SET Ouick Off Cool With the refrigerator and display on, press the "Power" & "Alarm Off" keys for 2 seconds, until PS 0 appears. Tap the Fresh Food Temp Set key once to enter the Display Test. ·*-BB~~~~BB @ * **Display Test** All icons blink in the display: Press any key to advance to the next level: Display Board Software Version and Revision. **Display Software** The software version will appear in the left display, and the revision will appear in the right display. **Version & Revision** Example: Press any key to advance to the next level: Control Board Software Version & Revision. **Control Board Software** The software version will appear in the left display, and the revision will appear in the right display. Example: Version & Revision Press any key to advance to the next level: Sensor Readings. **Sensor Readings** The display will scroll through all 6 sensor readings, according to Chart A below. Quickly press the "Power" and "Alarm Off" keys to advance to the next level: Low Voltage Test **Low Voltage Test** "SC OF" appears in the display. Press the Freezer Temp Set key to turn on/off. (All lights & fans) When lights and fans are on "SC ON" will appear. Quickly press the "Power" and "Alarm Off" to advance to the next level: Component Test Scroll through the list of components in Chart B with the Fresh Food Temp Set & Quick Freeze keys. Turn components on/off with the Freezer Temp Set key. **Component Test** rF, CF will show Fan Speed in RPMs - 14, 15, 22 (14=1400 etc) Ir has two choices, 1 = CCW direction, 2 = CW direction Quickly press the "Power" and "Alarm Off" to advance to the next level: Ice Maker Fill Time Adjust fill time with the Fresh Food Temp Set key (90 = 9.0 seconds, etc.) Ice Maker Fill Time Quickly press the "Power" and "Alarm Off" to advance to the next level: Dispenser Lighting Time **Dispenser Lighting Time** Adjust fill time with the Fresh Food Temp Set key. (35 = 3.5 seconds, etc.)

Press and hold the "Power" & "Alarm Off" keys to exit the Service Mode

Chart A - Temperature Sensors		
FH Fresh Food Air Temperature		
FE Fresh Food Evaporator Temp		
rH	Freezer Air Temperature	
rE	Freezer Evaporator Temp	
IS	Ice Maker Sensor 1	
IS	Ice Maker Sensor 2	

Left Screen	Right Screen
Sensor Code	Temperature (°C)
CA (Cabin)	Temperature (°C)
Cabin Code (0 or 1)	Temperature (°C)
Temperature (°C)	Temperature (°C)

Chart B - Components					
SC	All Fans & Lights Ir Ice Maker (L)				
FF	Fresh Food Fan	dA	Ice Maker (R)		
FO	Fresh Food Heater	AU	Main Water Valve		
lo	Ionizer	dU	Dispenser Valve*		
bA	Blue Lights	bU	Ice Maker Valve*		
FL	FF & Freezer Lights	Sb	Fill Tube Heater		
rF	Freezer Fan	CF	Condenser Fan		
rE	Freezer Defrost Heater	Co	Compressor		
* When the time Discourage Queen Malan Value and a second					

^{*} When testing Dispenser & Ice Maker Valves, you must turn on the Main Water Valve as well for water to flow.

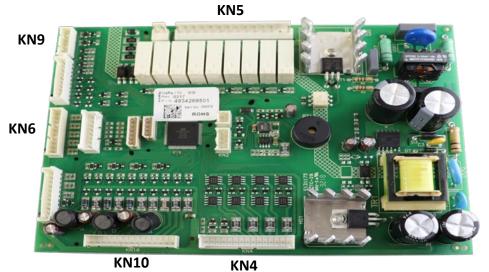
Cabin Code: 0 - Fresh Food, 1 - Freezer



Error Codes

Error Codes	Error Explanation
<u>E0</u>	Freezer Compartment Air Sensor Error
<u>E1</u>	Freezer Compartment Evaporator Sensor Error
<u>E2</u>	Fresh Food Compartment Evaporator Sensor Error
<u>E3</u>	Fresh Food Compartment Air Sensor Air
<u>E4</u>	Freezer Compartment Defrost System Error
<u>E8</u>	Ice Maker Air Sensor Error
<u>E9</u>	Ice Maker Malfunction
<u>E13</u>	Freezer Fan Error
<u>E15</u>	Condenser Fan Error
Warning Icon	High Temperature Error

Knowing the connection numbers on the control board will be necessary for the following error code explanations.

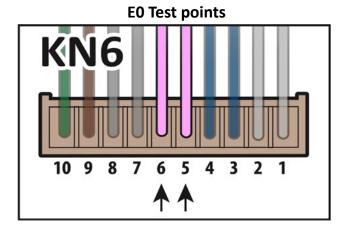


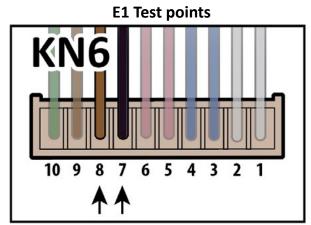
Control Board Connection Numbers			
KN5	AC Components		
KN9	Reed Switches		
KN6	Sensors		
KN10	Lights & Fans		
KN4	Ice Maker & Water Switch		



EO	E0 - Freezer Compartment Air Sensor Error				
		Yes	No		
1	Is E0 flashing?	>>2	Stop		
2	Check cables connected to control board sensor socket (KN6) pins 5 & 6. Is the cable disconnected?	>>3	>>		
3	Reconnect the cable and turn the refrigerator back on. Is error still there?	>>4	Solved		
4	Remove the harness from the KN6 socket on the control board. Using a multimeter, measure the sensor pins (5 & 6). Is the resistance reading between 5k and 200k. (10k at 77°F (25°F)) (See chart on page 23)	>>5	>>6		
5	Replace the Control Board. (Turn refrigerator back on)	Solved			
6	Replace the <u>faulty Sensor.</u> (Turn refrigerator back on)	So	lved		

E1	E1 - Freezer Compartment Evaporator Sensor Error				
		Yes	No		
1	Is E1 flashing?	>>2	Stop		
2	Check cables connected to control board sensor socket (KN6) pins 7 & 8. Is the cable disconnected?	>>3	>>4		
3	Reconnect the cable and turn the refrigerator back on. Is error still there?	>>4	Solved		
4	Remove the harness from the KN6 socket on the control board. Using a multimeter, measure the sensor pins (7 & 8). Is the resistance reading between 5k and 200k? (10k at 77°F (25°F)) (See chart on page 23)	>>5	>>6		
5	Replace the Control Board. (Turn refrigerator back on)	So	lved		
6	Replace the <u>faulty Sensor.</u> (Turn refrigerator back on)	So	lved		

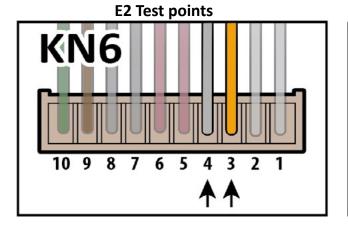


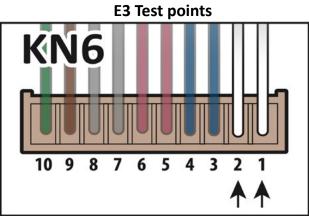




E2	E2 - Fresh Food Compartment Evaporator Sensor Error				
		Yes	No		
1	Is E2 flashing?	>>2	Stop		
2	Check cables connected to control board sensor socket (KN6) pins 3 & 4. Is the cable disconnected?	>>3	>>4		
3	Reconnect the cable and turn the refrigerator back on. Is error still there?	>>4	Solved		
4	Remove the harness from the KN6 socket on the control board. Using a multimeter, measure the sensor pins (3 & 4). Is the resistance reading between 5k and 200k? (10k at 77°F (25°F)) (See chart on page 23)	>>5	>>6		
5	Replace the Control Board. (Turn refrigerator back on)	Solved			
6	As the sensor is enclosed in polyurethane, it cannot be replaced.	Contact Fulgor Milano			

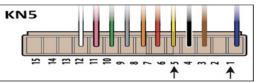
E3 - Fresh Food Compartment Air Sensor Error			
		Yes	No
1	Is E3 flashing?	>>2	Stop
2	Check cables connected to control board sensor socket (KN6) pins 1 & 2. Is the cable disconnected?	>>3	>>5
3	Reconnect the cable and turn the refrigerator back on. Is error still there?	>>4	Solved
4	Remove the harness from the KN6 socket on the control board. Using a multimeter, measure the sensor pins (1 & 2). Is the resistance reading between 5k and 200k? (10k at 77°F (25°F)) (See chart on page 23)	>>5	>>6
5	Replace the Control Board. (Turn refrigerator back on)	Solved	
6	Replace <u>faulty Air Sensor</u> .	So	lved

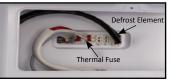






E4	- Freezer Defrost System Error		
<u>Aı</u>	h E4 error does not necessarily mean you have a fault in the defrost heating system. Follow these steps to determine the true cause.	Yes	No
1	Is E4 flashing?	>>2	Stop
2	Is there significant <u>frost</u> build-up (not ice, see question 3 for ice) in the freezer?	>>4	>>3
3	Is there an ice build-up at the bottom of the freezer compartment?	>>10	>>15
4	Does the frost build-up appear to be an air leak/door sealing issue?	>>5	>>6
5	Address air leak/door sealing issue.	So	lved
6	Is there heavy frost build-up on the evaporator cover?	>>7	>>3
7	Remove access panel and check for continuity on the Thermal Fuse. Is there continuity (between White/White & Red/Red)?	>>8	>>9
8	Unplug the defrost element and check for proper resistance. Is it reading approximately 78Ω ?	>>12	>>11
9	Replace <u>Thermal Fuse.</u>	Solved	
10	Remove evaporator cover. Is there ice build-up in the drain trough?	>>13	>>7
11	Replace <u>Defrost Element</u>	Solved	
12	Is Evaporator Sensor clipped onto evaporator coil?	>>15	>>14
13	Remove ice and inspect drain for blockage. Be sure to inspect entire drain line. Is there a physical blockage?	>>19	>>20
14	Reattach Evaporator Sensor to evaporator coil.	So	lved
15	Enter <u>Service Mode</u> and energize the Defrost element. Does it come on?	>>16	>>17
16	Take the unit out of Service Mode, unplug Defrost Element and take reading inside the defrost element receptacle. This is the Drain Heater. Do you read approx. 325 Ohms?	>>20	>>20
17	While Defrost element is on, measure voltage on KN5 between 1 & 5 (Blue & Yellow) Do you read 120VAC?	>>20	>>18
18	Replace the Control Board.	So	lved
19	Remove physical object blocking drain line.	Solved	
20	Contact Tech Line for further guidance: 1-888-905-0799	So	lved





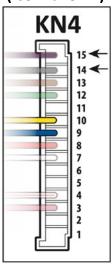


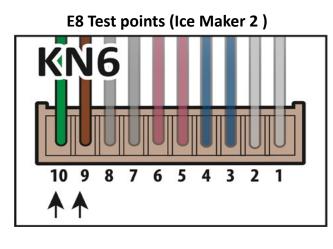


E8	E8 - Ice Maker Air Sensor Error					
I -	There are two ice maker sensors. One for each tray. E8 could refer to a fault with either one. Repeat these steps for both Ice Makers					
1	Is E8 flashing?	>>2	Stop			
2	Check cables connected to control board Ice Maker socket (KN4) pins 14 & 15 or Sensor socket (KN6) pins 9 & 10. Is the cable disconnected?	>>3	>>4			
3	Reconnect the cable and turn the refrigerator back on. Is error still there?	>>4	Solved			
4	Remove the harness from the KN4 socket on the control board. Using a multimeter, measure the sensor pins (KN4 -14 & 15). Is the resistance reading between 5k and 200k? (10k at 77°F (25°F)) (See chart on page 23)	>>5	>>6			
5	Replace the <u>Control Board.</u> (Turn refrigerator back on) Solved		lved			
6	Replace the <u>faulty Sensor.</u> (Turn refrigerator back on)	Solved				

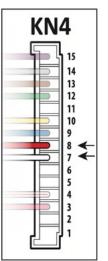
E9	E9 - Ice Maker Malfunction					
<u>The</u>	Yes	No				
1	Is E9 flashing?	>>2	Stop			
2	In <u>Service Mode</u> , rotate Ice Maker motor 1 & 2 in ejecting direction. Is there 12VDC at control board socket (KN4) pins 7 & 8 and 5 & 6?	>>3	>>4			
3	Replace the <u>Ice Maker assembly.</u> (Turn refrigerator back on) Solved		lved			
4	Replace the Control Board. (Turn refrigerator back on)	Solved				

E8 Test points (Ice Maker 1)

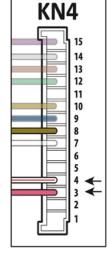




E9 Test points Ice Maker 1



E9 Test points Ice Maker 2

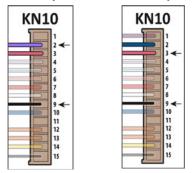




E13	E13 - Freezer Fan Error					
		Yes	No			
1	Is E13 flashing?	>>2	Stop			
2	Check cables connected to control board Lights & Fan socket (KN10) pins 2 & 9. Is the cable disconnected?	>>3	>>4			
3	Reconnect the cable and turn the refrigerator back on. Is error still there?	>>4	Solved			
4	Using a multimeter, measure the DC voltage between pins 2 & 9. Is the resistance reading approximately 12VDC?	>>5	>>6			
5	Remove the evaporator cover and ensure nothing is preventing fan blade rotation. Remove blockage. Turn refrigerator back on. Is error still there?	>>6	Solved			
6	Replace the Freezer Fan. Turn refrigerator back on. Is error still there?	>>7	Solved			
7	Replace <u>control board.</u> Turn refrigerator back on.	Solved				

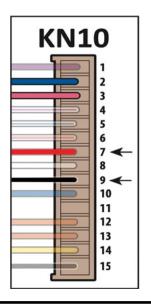
E15	E15 - Condenser Fan Error					
		Yes	No			
1	Is E15 flashing?	>>2	Stop			
2	Check cables connected to control board Lights & Fan socket (KN10) pins 3 & 9. Is the cable disconnected?	>>3	>>4			
3	Reconnect the cable and turn the refrigerator back on. Is error still there?	>>4	Solved			
4	Using a multimeter, measure the DC voltage between pins 3 & 9. Is the resistance reading approximately 12VDC?	>>5	>>6			
5	Remove the compressor compartment cover and ensure nothing is preventing the condenser fan blade rotation. Remove blockage. Turn refrigerator back on. Is error still there?	>>6	Solved			
6	Replace the Condenser Fan. Turn refrigerator back on. Is error still there?	>>7	Solved			
7	Replace control board. Turn refrigerator back on.	Solved				

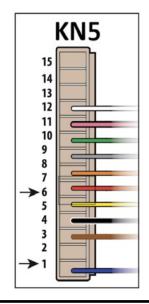
E13 Test points E15 Test points

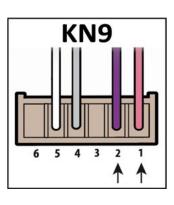




Fre	ezing in the Fresh Food Compartment		
		Yes	No
1	Are things freezing in the Fresh Food compartment?	>>2	Stop
2	What temperature is the Fresh Food compartment set to? The factory default setting is 39°F (4°C). Is the temperature set too low?	>>3	>>4
3	Set the temperature to the default setting.	So	lved
4	Enter the <u>Service Mode</u> and activate the Fresh Food Fan. Does the fan come on?	>>5	>>6
5	Exit the Service Mode. Open the Fresh Food door and place a magnet over the Reed Switch. Does the fan still come on?	>>7	>>12
6	While the fan is still activated in Service Mode, check for DC voltage on the control board at socket KN10, pins 7 & 9. Do you read voltage?	>>12	>>14
7	Test resistance of Fresh Food heater at control board socket KN5 pins 1 & 6. Do you read approximately 975Ω ?	>>8	>>10
8	Plug harness back into KN5. Turn on refrigerator. Enter Service Mode and activate the Fresh Food heater. Do you read 120VAC between pins 1 & 6?	>>9	>>14
9	Fresh Food heater functioning properly.	Solved	
10	Fresh Food heater not accessible, not repairable.	Contact Fulgor Milano	
12	With the doors closed, check for continuity on the control board at socket KN9 between pins 1 & 2. Do you have continuity?	>>15	>>13
13	After ensuring there are not unplugged or broken wires, replace the faulty Reed Switch. Plug refrigerator back in and test temperature control.	Solved	
14	Replace control board	Solved	
15	Replace Fresh Food Fan	Solved	

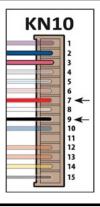








Not Cooling in the Fresh Food Compartment Yes No 1 Are there any error codes in the display? >>2 >>3 2 Follow the instructions for that error code for resolution. Solved Is the refrigerator in Vacation Mode? Are there dashes in the temperature 3 >>4 >>5 display? 4 Take unit out of Vacation Mode. (See page 13) Solved **STOP** 5 Is the Fresh Food compartment actually too warm? >>6 >>7 6 Is the Freezer compartment temperature higher than normal also? >>8 Enter Service Mode and find out what the evaporator sensors in both com-7 >>9 >>17 partments are reading (FE,rE). Are they within 5-10°F of each other? 8 Is the Fresh Food temperature set too high? >>10 >>9 9 In Service Mode, turn on the Fresh Food fan. Does it come on? >>11 >>10 10 Set Fresh Food temperature to default setting (39°F). Solved Exit Service Mode and place a magnet over the reed switch. Does the 11 >>14 >>13 Fresh Food fan come on? With the fan still energized in Service Mode, check for DC voltage at KN10 12 >>15 >>16 7 & 9. Do you read voltage? Inspect Fresh Food compartment for air blockage. Clear blockage. Solved 13 14 Replace Reed Switch Solved 15 Replace the Fresh Food Fan Solved Replace Control Board Solved 16 17 Inspect Sealed System for leak/restriction. Call Tech Line: 1-888-905-0799 Solved





High Temp Error



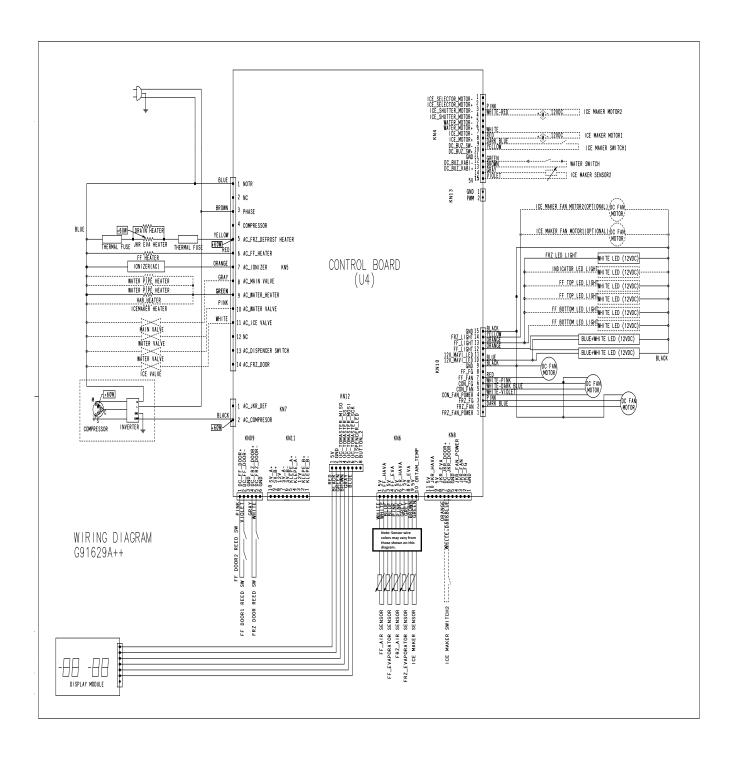
The High Temp Error icon is displayed when the Freezer temperature is too warm after the initial 72 hours of operation. If the Freezer temperature reaches 28°F (-2.2°C) or higher, and doesn't drop below 16°F (-9°C) within 12 hours, the High Temp Error icon will be illuminated, an alarm will sound and the set temperature and highest temperature reached in the Freezer will alternate in the display. If the customer presses the "Alarm Of" key, the alarm will be silenced, but the icon and flashing temperature will continue until the Freezer gets below 16°F (-9°C). If the Freezer does not cool below 16°F (-9°C) in the next 3.5 hours, the audible alarm will return. The audible alarm can be silenced again with the "Alarm Off" key. If the error continues to return, the doors should be checked for proper closure and sealing, and inquiry should be made regarding any power outages, or the consistency of the customer's power supply. To remove the warning icon and reset the display, enter the Service Mode, advance to the Display Test and then exit Service Mode (See page 14)

Temperature to Resistance Chart

Low Range						
Temp	Resistance	Temp	Resistance			
-40ºF/-40ºC	339.39 ΚΩ	-15ºF/-26ºC	135.81 ΚΩ			
-38ºF/-39ºC	316.75 ΚΩ	-13ºF/-25ºC	127.72 ΚΩ			
-36ºF/-38ºC	295.79 ΚΩ	-11ºF/-24ºC	120.16 ΚΩ			
-35ºF/-37ºC	276.37 ΚΩ	-9ºF/-23ºC	113.11 ΚΩ			
-33ºF/-36ºC	258.38 ΚΩ	-8ºF/-22ºC	106.52 ΚΩ			
-31ºF/-35ºC	241.70 ΚΩ	-6ºF/-21ºC	100.37 ΚΩ			
-29ºF/-34ºC	226.22 ΚΩ	-4ºF/-20ºC	94.61 ΚΩ			
-27ºF/-33ºC	211.85 ΚΩ	-2ºF/-19ºC	89.23 ΚΩ			
-26ºF/-32ºC	198.49 ΚΩ	3ºF/-18ºC	84.19 ΚΩ			
-24ºF/-31ºC	186.09 ΚΩ	1ºF/-17ºC	79.47 ΚΩ			
-22ºF/-30ºC	174.55 ΚΩ	3ºF/-16ºC	75.05 ΚΩ			
-20ºF/-29ºC	163.81 ΚΩ	5ºF/-15ºC	70.91 ΚΩ			
-18ºF/-28ºC	153.81 ΚΩ	7ºF/-14ºC	67.02 ΚΩ			
-17ºF/-27ºC	144.49 ΚΩ	9ºF/-13ºC	63.38 ΚΩ			

	Normal Operator Range						
Temp	Resistance	Temp	Resistance				
10ºF/-12ºC	59.96 ΚΩ	59ºF/15ºC	15.51 ΚΩ				
12ºF/-11ºC	56.75 ΚΩ	61ºF/16ºC	14.82 ΚΩ				
14ºF/-10ºC	53.73 ΚΩ	63ºF/17ºC	14.17 ΚΩ				
16ºF/-09ºC	50.89 ΚΩ	64ºF/18ºC	13.55 ΚΩ				
18ºF/-08ºC	48.23 KΩ	66ºF/19ºC	12.96 ΚΩ				
19ºF/-07ºC	45.72 ΚΩ	68ºF/20ºC	12.41 ΚΩ				
21ºF/-06ºC	43.36 ΚΩ	70ºF/21ºC	11.88 ΚΩ				
23ºF/-05ºC	41.14 ΚΩ	72ºF/22ºC	11.37 ΚΩ				
25ºF/-04ºC	39.04 ΚΩ	73ºF/23ºC	10.89 ΚΩ				
27ºF/-03ºC	37.07 ΚΩ	75ºF/24ºC	10.43 ΚΩ				
28ºF/-02ºC	35.21 ΚΩ	77ºF/25ºC	10.00 ΚΩ				
30ºF/-01ºC	33.46 ΚΩ	79ºF/26ºC	9.59 ΚΩ				
32ºF/00ºC	31.80 ΚΩ	81ºF/27ºC	9.19 ΚΩ				
34ºF/01ºC	30.24 ΚΩ	82ºF/28ºC	8.82 ΚΩ				
36ºF/02ºC	28.77 ΚΩ	84ºF/29ºC	8.46 ΚΩ				
37ºF/03ºC	27.38 ΚΩ	86ºF/30ºC	8.12 ΚΩ				
39ºF/04ºC	26.06 ΚΩ	88ºF/31ºC	7.79 ΚΩ				
41ºF/05ºC	24.82 ΚΩ	90ºF/32ºC	7.48 ΚΩ				
43ºF/06ºC	23.64 ΚΩ	91ºF/33ºC	7.19 ΚΩ				
45ºF/07ºC	22.53 ΚΩ	93ºF/34ºC	6.90 ΚΩ				
46ºF/08ºC	21.48 ΚΩ	95ºF/35ºC	6.64 ΚΩ				
48ºF/09ºC	20.48 ΚΩ	97ºF/36ºC	6.38 ΚΩ				
50ºF/10ºC	19.54 ΚΩ	99ºF/37ºC	6.13 ΚΩ				
52ºF/11ºC	18.64 ΚΩ	100ºF/38ºC	5.90 ΚΩ				
54ºF/12ºC	17.79 ΚΩ	102ºF/39ºC	5.67 ΚΩ				
55ºF/13ºC	16.99 ΚΩ	104ºF/40ºC	5.46 ΚΩ				
57ºF/14ºC	16.23 ΚΩ						

Wiring Diagram

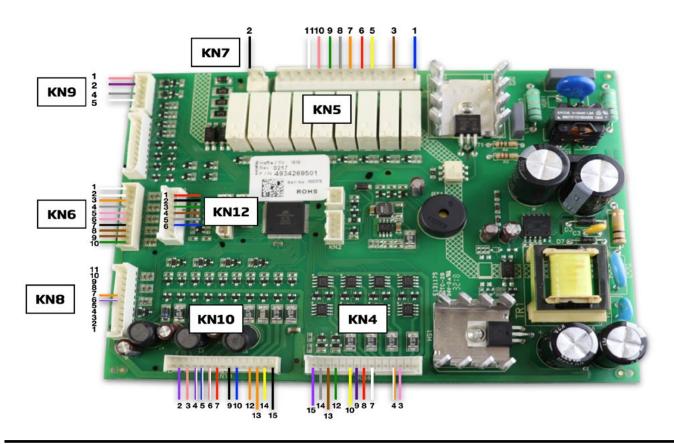




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Test Points

KN5	AC Components	Contacts	Values	KN9	Reed Switches	Contacts	Values
	Defrost & Drain Element	1 & 5	120VAC, 62.9Ω		Fresh Food Doors (Both)	1&2	Continuity when closed
	Fresh Food Heater	1 & 6	120VAC, 975Ω		Freezer Drawer	4 & 5	Continuity when closed
	lonizer	1 & 7	120VAC	KN6	Temp Sensors	Contacts	Values
	Flapper, Fill Tube & Ice Maker Heaters	1 & 9	120VAC, 685.7Ω		Fresh Food Air Sensor	1 & 2	
	Main Water Valve	1 & 8	120VAC, 397Ω		Fresh Food Evap Sensor	3 & 4	
	Both Dispenser Water Valves	1 & 10	120VAC, 188Ω		Freezer Air Sensor	5&6	(See chart on
	Ice Maker Water Valve	1 & 11	120VAC, 397Ω		Freezer Evap Sensor	7 & 8	page 23)
KN10	Lights & Fans	Contacts	Values		Ice Maker Sensor (R)	9 & 10	
	Fresh Food Fan	7 & 9	12VDC	KN4	Ice Maker Sensor (L)	14 & 15	
	Freezer Fan	2 & 9	12VDC	KN12	Display voltage	1 & 2	5VDC
	Condenser Fan	8 & 9	12VDC				





Component Access and Removal



Disassembly should only be done with the product unplugged and by an authorized technician.

Control Board



1. The control board is located on the top of the refrigerator cabinet. Remove the single screw securing the cover and slide the cover toward the same side to remove it. (Note: The list of error codes is found on the inside of the cover.)

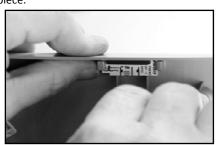


2. With the unit unplugged, carefully remove the harnesses, noting their proper positions. Unclip the board from its housing and lift up to remove it.

Display & Reed Switches



1. Remove the 7 screws securing the top trim piece.



3. Unplug the Reed Switches.



2. Unclip the top trim piece from the upper hinges.



4. Unplug the display harness.



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5. Unclip the access panel at the bottom of the Left Fresh Food Door.



6. Unplug the harness to the Reed Switch.



7. Unscrew the Reed Switch to remove it from the bottom access panel.



Bottom Access Panel with Reed Switch



Handles





- 1. To remove the Fresh Food handles, using a rubber mallet, gently tap up on the bottom of the Fresh Food Door Handles, while pulling the handle away from the door.
- 2. To remove the Freezer Drawer Handle, using a rubber mallet, gently tap the Freezer Drawer Handle to the left, while pulling away from the Freezer Drawer.

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kemoving the kear wall



1. Remove all the shelves and drawers.







2. Remove the crisper lids.



3. Remove the two screws that secure the hose & harness cover.



4. Remove the hose & harness cover.



5. Lift up and pull forward on the partition. Set it off to the left side.



6. Remove the single screw securing the bottom shelf.



7. Pull forward on the bottom shelf to remove it.



8. Remove the two T-20 Torx screws securing the middle bracket.



9. Carefully remove the two screw covers at the top of the rear panel.



10. Remove the two screws securing the rear panel.

Removing the Rear Wall (Continued)



11. Pull out on the middle of the rear panel and unclip the bottom.



12. Unplug the Fan and Light harnesses and remove the rear panel.

Removing the Fresh Food Fan



1. After removing the rear panel, unclip the four retaining clips on the fan trim. Note: Be sure to note the direction of the fan, as indicated by the sticker on the fan hub. Replace in the same direction.



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Water Dispenser & Microswitch



1. After removing the lower shelves and drawers, remove the three screws securing the connection cover in the left-hand side.



2. Disconnect the water line to the dispenser from the John Guest fitting.



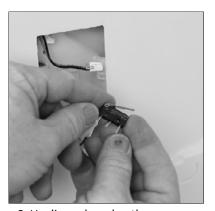
3. Carefully pry the dispenser trim from the side wall with a plastic tool.



4. Unplug the harness from the dispenser.

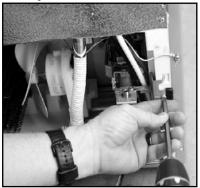


5. Pull the dispenser and hose out of the side wall.

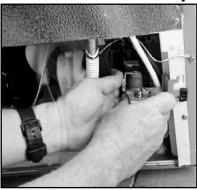


6. Unclip and unplug the microswitch to remove it.

Dispenser Water Valve & Reservoir Assembly



1. After removing the back panel, remove the screw securing the water valve.



2. Lift the water valve and pull it out of the cabinet.



3. Disconnect the water line indicated in the picture above.



4. After removing the connection cover, unplug the harness beneath it, and pull hose out.



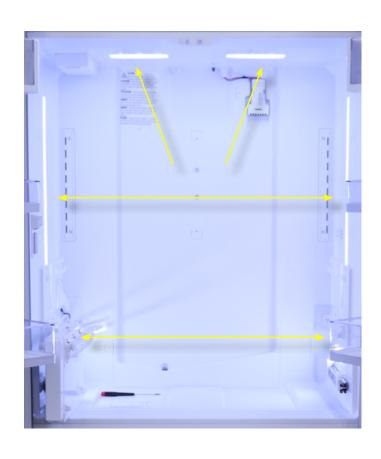
5. Pull the entire assembly out and replace in reverse order.



The partition contains the water valve and reservoir, but comes as a complete assembly.

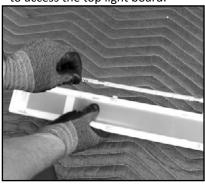
Fresh Food Compartment Lights







1. Unclip the lens from the ceiling to access the top light board.



4. Unclip the light board from the side lens.



2. Unclip the light board to remove it



5. Unclip the bottom lens to access the light board.



3. Unclip the side lens from the side wall.



6. Unclip the light board to remove it.

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Ionizer



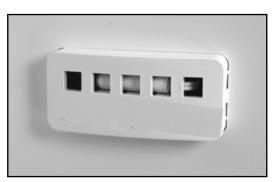
1. After removing the back panel, unplug the lonizer, located in the upper right-hand corner.



2. Remove the single screw securing it to the back wall to remove it.



Fresh Food & Freezer Air Sensor



1. Carefully pry the sensor cover off with a plastic tool. Unplug the sensor and replace.





Flapper Heater



1. Remove the four screws securing the flapper heater to the door.



2. Lift up on the flapper heater assembly to disengage it from the door.



3. Unplug the flapper heater harness to remove the heater.



Freezer Drawer & Forever Rails



1. Lift out the Freezer Bins.



2. Lift out the lower Freezer basket.



3. Remove the two screws securing the drawer to the rails.



4. Remove the drawer assembly by lifting it off the rails.

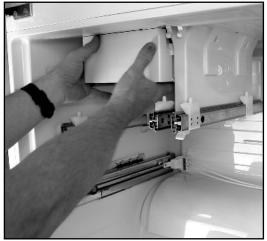


5. Using a T-20 Torx bit, remove the 9 screws securing the rails on both sides.



6. Pull both rails and cables out as a complete assembly and replace in reverse order.

Ice Maker



1. After removing the drawer assembly, pull forward on the ice maker and then down. (Note: Some models use a screw to secure to the ceiling. Check for screw before removing.)



2. Unplug the harness to the ice maker to remove. Replace in reverse order.

Fill Tube Heater



1. Unplug the harness to the heater you wish to remove.



2. Remove the screw securing the access panel on the back of the cabinet.



3. Remove the screws securing the heater you wish to remove.



4. Disconnect the water line from the John Guest fitting.



5. Pull the Fill Tube heater out of the cabinet. Replace in reverse order.



Freezer Fan (Freezer Drawer must be removed first. See page 33 for instructions)



1. Remove the four screws securing the partition to the Freezer ceiling.



2. Remove the partition by pulling down and out.



3. Remove the two screws securing the upper rail on one side.



4. Remove the single screw securing the evaporator cover.



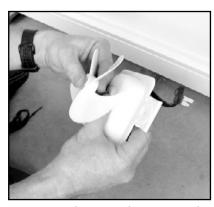
5. Remove the evaporator cover by pulling out on the bottom.



6. Remove the two screws securing the fan to the rear wall.



7. Unplug the fan.



8. Pull the fan blade from the shaft.



9. Unclip the fan housing and open it up.



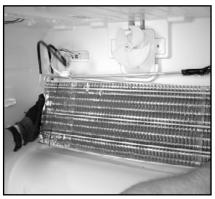
10. Pull the fan motor from the housing. Replace in reverse order.



Defrost Element & Thermal Fuse (Accessing the Defrost Element requires removal of the drawer and rear wall. See pages 33 & 35 for those instructions)



1. Unplug the Defrost Element.



2. Carefully pull forward on the evaporator to unclip it from the rear wall.



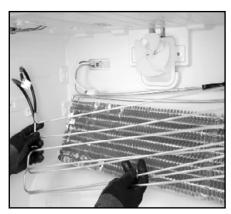
3. Remove the two retaining clips from the front of the evaporator.



4. Remove the two rear retaining clips from the back of the evaporator.



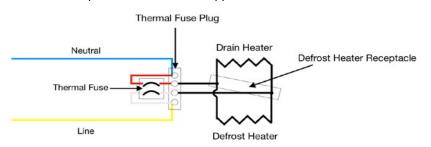
5. Carefully peel the defrost element off of the front of the evaporator.



6. Peel the defrost off the back and remove. Replace in reverse order.



A Drain Heater is located inside the rear wall and is therefore not accessible or replaceable. It is, however, possible to test its resistance by placing your meter leads inside the defrost element receptacle. It should read approx. 325Ω .





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Inverter



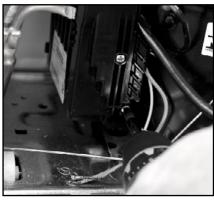
1. Remove the six screws securing the compressor.



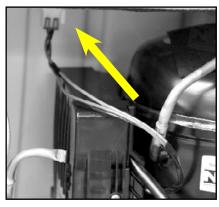
2. Remove the screw securing the power cord to the back wall.



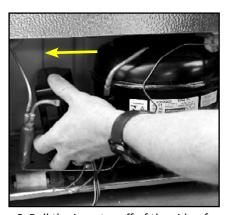
3. Remove the screw securing the ground wire.



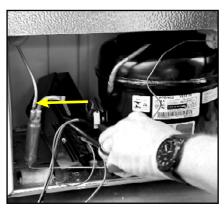
4. Remove the screw securing the inverter to the side of the compressor.



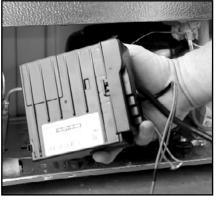
5. Unplug the inverter harness.



6. Pull the inverter off of the side of the compressor.



7. Using a pry tool, pull the plug and ground wire from the compressor. Note the orientation of the plug before removing.



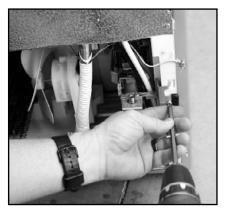
8. The inverter can now be removed. Replace in reverse order.



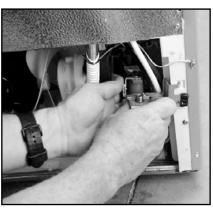
FULGOR

MILANO

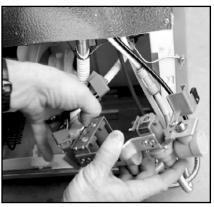
Main Water Valve



1. Remove the screw securing the water valve to the cabinet.



2. Lift up the valve and pull out.



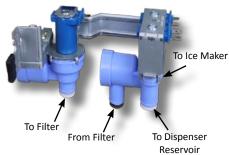
3. Unplug the harnesses from the water valve.



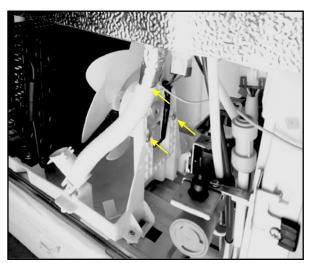
4. Note the hose colors and positions before disconnecting them.



5. Disconnect the hoses from the water valve assembly.



Condenser Fan



1. Remove the three screws securing the fan to the fan bracket.



2. Unplug the fan harness from the cabinet and remove the fan. Replace in reverse order.



Troubleshooting

Symptom	Possible Cause	Corrective Action
The Freezer compart- ment is too cold, but the refrigerator tem- perature is fine.	The Freezer compartment temperature is set too low.	Set Freezer temperature to a higher setting.
The Fresh Food com- partment is too cold , but the Freezer tem-	The Fresh Food tempera- ture is set too low.	Set Fresh Food temperature to a higher setting.
perature is fine.	Door not sealing	Check door gaskets.
	Fan not running	Check fan.
The refrigerator's operating sounds varies over time.	The operating sounds will vary according to different cycles, food volume and environmental conditions.	This is normal.
The refrigerator makes vibration or other strange noises.	Various components make vibration sounds, such as when water valves energize. Also gas flowing through refrigerant lines can make gurgling noises. And popping and sizzling sounds can occur during the defrost cycle.	As long as both compartments are maintaining proper temperatures, these sounds are normal.
Evaporator Fan is noisy.	The fan blade may be irregular.	Remove evaporator cover and inspect fan for irregularities. Replace if necessary.
	Fan blade may be hitting something.	Remove evaporator cover and inspect fan area for any obstructions. Adjust fan or remove obstructions.
	Fan speed may be too high.	Check fan speed for proper RPMs. Fan may be noisy if RPMs are too high. Replace fan motor, if so.
Condenser Fan is noisy.	The fan blade may be irregular.	Remove compressor cover and inspect fan for irregularities. Replace if necessary.
	Fan blade may be hitting something.	Remove compressor cover and inspect the fan area for any obstructions. Adjust fan or remove obstructions.
	Fan speed may be too high	Check fan speed for proper RPMs. Fan may be noisy if RPMs are too high. Replace fan motor, if so.
	Dust and debris may have ruined fan motor	Replace fan motor.



Troubleshooting (Continued)

Symptom	Possible Cause	Corrective Action
Condensation develops on outside of refrigerator, or between doors. Excessive ambient heat or humidity can cause moisture to develop on cooler surfaces.		It is normal during hot or humid seasons to see increased condensation on the outside of the unit. This will decrease as ambient humidity goes away.
		Flapper heater between doors may not be operating properly. Inspect and replace, if necessary.
Refrigerator doors will not close.	Something may be blocking the door.	Check food placement and adjust if necessary.
	The door gasket may not be seating properly	Inspect gasket. Adjust or replace.
The doors squeak when opening or closing.	Door hinges are worn.	Replace door hinges.
Water cannot be dispensed from the water	Water supply may be turned off.	Ensure water to refrigerator is turned on.
dispenser.	The dispenser switch may be faulty.	Inspect dispenser switch and replace, if necessary.
	The water valve(s) may be faulty.	Inspect water valves in Service Mode. Replace, if necessary.