Hisense

Refrigerator Service Manual

Model:

RD-60WC1SKA/USE-003

HBM17***

WARNING:

This service information is designed to be used ONLY by experienced repair technicians and is not designed for use by the general public. It does not include Warnings and Cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity and/or use gas refrigerant should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products covered in this service manual by anyone without this knowledge and experience could result in serious injury or death.

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1. Safety

Please read the following Safety information before servicing this refrigerator.

General Service Precautions

- Disconnect power before handling any electrical components.
- Check the rated current, voltage, and capacity.
- Do NOT allow water to get near any electrical components.
- Use exact replacement parts.
- Remove any objects from the top of the cabinet before tilting the refrigerator.

Important Safety Instructions

WARNING: To reduce the risk of fire, electrical shock, injury to persons, or damage when using the refrigerator, follow basic precautions, including the following:

- Plug into a grounded 3 prong outlet.
- Do not remove ground prong.
- Do not use an adapter.
- Do not use an extension cord.
- Disconnect power before servicing.
- Replace all parts and panels before operating.
- Flammable refrigerant used. To be repaired only by trained service personnel. Do not puncture refrigerant tubing.
- Flammable refrigerant used. Dispose of properly in accordance with federal or local regulations.
- Flammable refrigerant used. Follow handling instructions carefully. Risk of fire or explosion due to puncture of refrigerant tubing.
- Use nonflammable cleaner.
- Keep flammable materials and vapors, such as gasoline, away from refrigerator.
- Use two or more people to move and install refrigerator.
- If your refrigerator is not being used, remove the doors. This will reduce the possibility of danger to children.

Read and Save These Instructions

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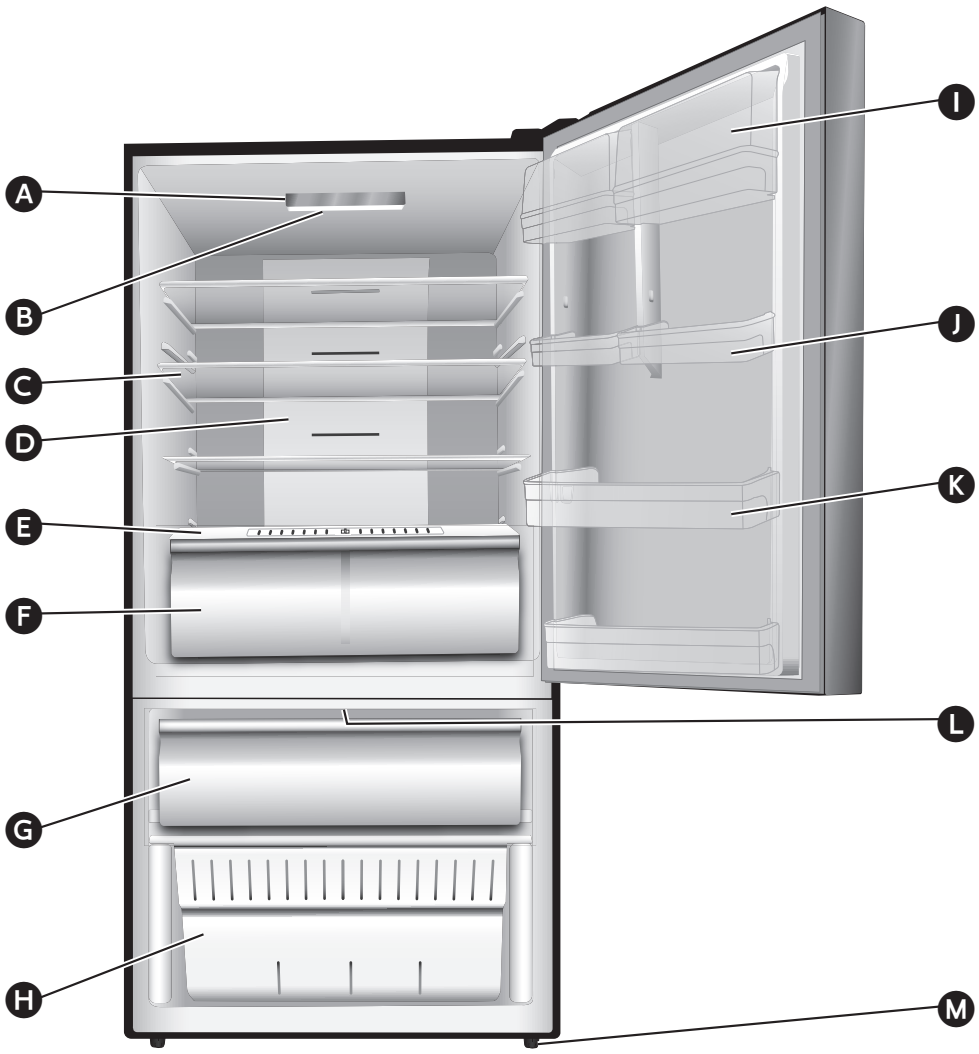
2. Model Specifications

CONTENT	UNIT	VALUE
Voltage/frequency		115V / 60Hz
Gross capacity (fridge/freezer)	Cu Ft	17.0 (12.1 / 4.9)
Climate class (SN=50~90°F, N=61~90°F, ST=61~100°F, T=61~109°F)		55°F to 110°F
Freezer compartment star rating		4 Star
Energy consumption / year	kWh/year	449.68
Energy consumption (EN153) per 24 h (A/A+)	kWh/24 h	1.232
Kind of coolant /Charge (R600a) / grammes	R / g	R600a/55
Foaming components (R141b/C-PĐ	PU/	C-P
Certifications (CE / ISO 9001/2 / LGA etc.)		ETL;UL

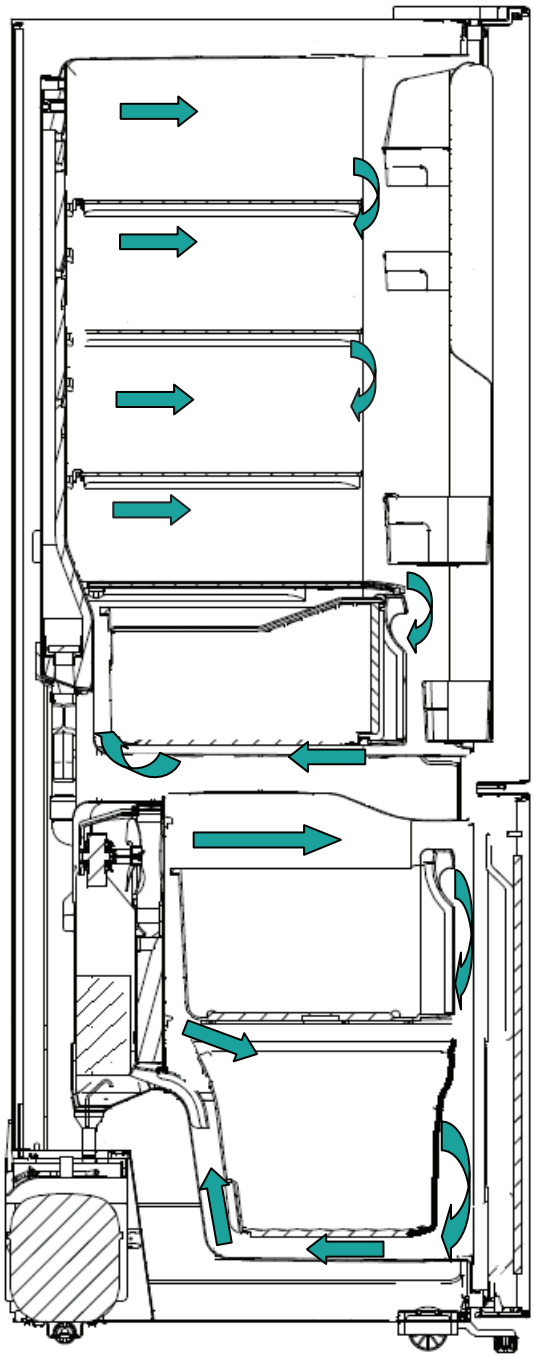
3. Parts Identification

Refrigerator Parts

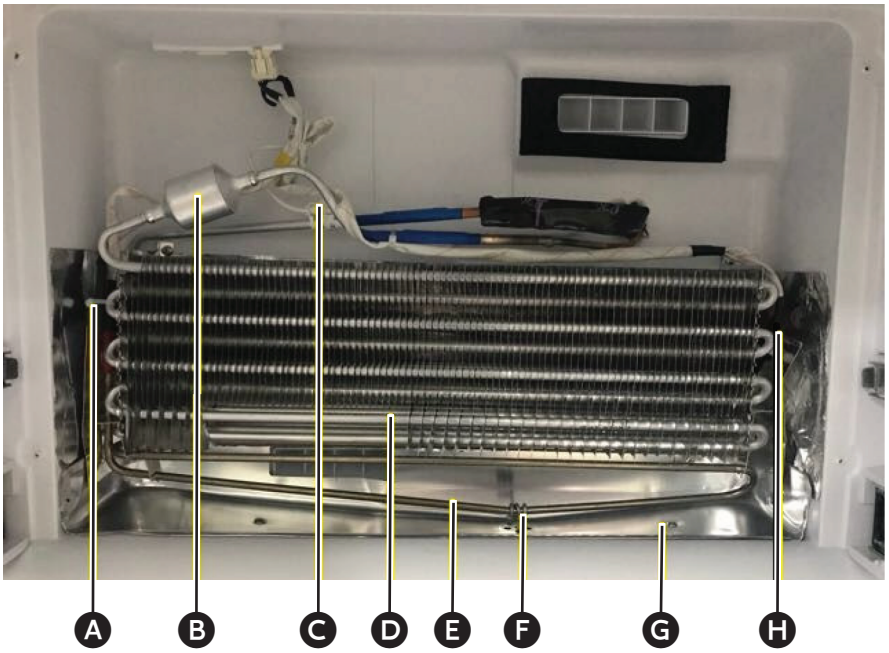


- A Control Panel
- B Refrigerator LED Light
- C Glass Shelf
- D Air Duct Cover
- E Crisper Cover
- F Crisper Drawer
- G Upper Freezer Drawer
- H Lower Freezer Drawer
- I Door Bin Cover
- J Door Bin
- K Full-width Door Bin
- L Freezer LED Light
- M Leveling Leg

Air Flow Structure

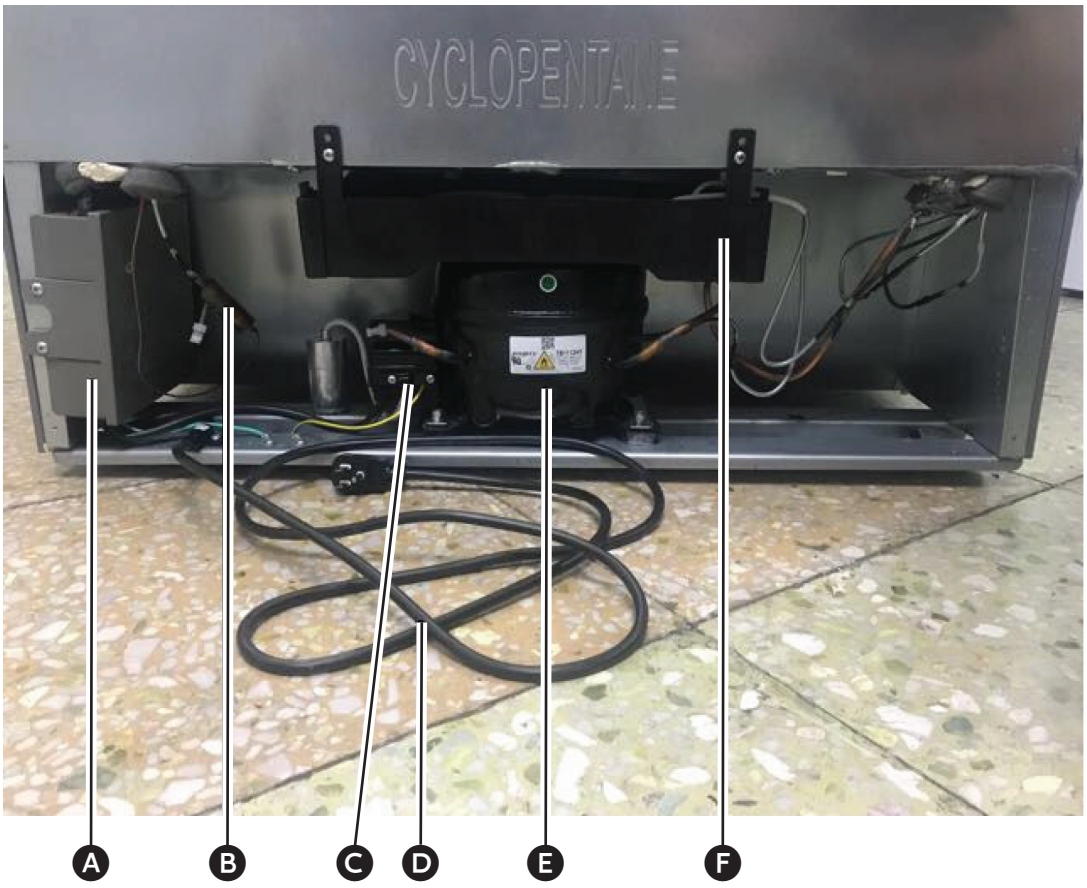


Evaporator Structure



- A Temperature Fuse
- B Accumulator
- C Temperature Sensor
- D Wing Slice Evaporator
- E Defrost Heater
- F Defrost Stick
- G Water Drain
- H Temperature Fuse

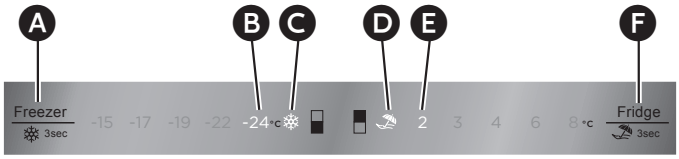
Compressor Compartment Structure



- A Main Board
- B Filter Dryer
- C PTC Starter Relay
- D Power Line
- E Compressor
- F Evaporator Dish

4. Operation

Display Controls



- **A** Freezer Temp Control
- **B** Freezer Compartment Temperature
- **C** Super Freeze Icon
- **D** Vacation Mode Icon
- **E** Refrigerator Compartment Temperature
- **F** Refrigerator Temp Control

Control Panel

The control panel, located on the top of the cabinet interior, displays the set temperature for each compartment.

The number or icon illuminates and a beep sounds, each time a control or feature is pressed.

Setting Compartment Temperatures

When you set a temperature, you are setting an average temperature for the entire compartment. The actual compartment temperatures may vary from the temperatures displayed depending on the amount and placement of stored food, and the surrounding room temperature.

Recommended Temperature Settings

- Refrigerator Compartment: 39°F (4°C)
- Freezer Compartment: -2°F (-19°C)

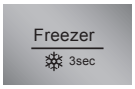
Refrigerator (Fridge) Compartment Temperature

1. Press FRIDGE to cycle through the available temperature settings ranging from 36°F to 46°F.

2. Release the Fridge control when the desired temperature setting is illuminated.

Freezer Compartment Temperature

1. Press FREEZER to cycle through the available temperature settings ranging from -11°F to 5°F.



2. Release the Freezer control when the desired temperature setting is illuminated.

Additional Features

Super Freeze Control

The Super Freeze feature helps to keep food stored in the freezer at the set temperature during periods of high usage, large grocery loads, or temporarily warm room temperatures.

The Super Freeze feature rapidly lowers the temperature in the freezer compartment to -13°F (-25°C) to freeze food faster.

- Press and hold FREEZER for 3 seconds until the Super Freeze icon ❄ illuminates.
- Press FREEZER to manually turn off Super Freeze and return to the previously set temperature.

  NOTE: Super Freeze will automatically turn off in a couple days, and the freezer will revert to its previous temperature setting.

Vacation Mode Control

IMPORTANT: DO NOT store any food in the refrigerator compartment if Vacation Mode is turned on.

If you are going to be away for a long period of time, and wish to reduce energy use you may choose to activate Vacation Mode.

In Vacation Mode, the Refrigerator Compartment temperature is raised to 59 °F (15 °C).

- Press and hold FRIDGE for 3 seconds until the Vacation icon illuminates.

  NOTE: When the refrigerator is in Vacation mode, is illuminated.
- Press FRIDGE to manually turn off the Vacation feature.

Reverse Door Swing (optional)

The door hinges are installed on the right-hand side. If you want the door to open from the opposite direction, you can reverse the door swing.

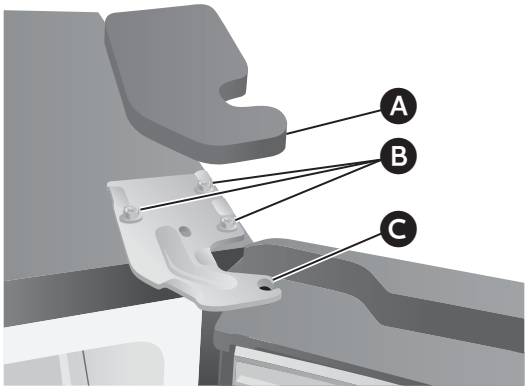
Tools and Parts Provided:

- Hex-key Wrench (4 mm)
- Bottom Hinge (left-hand side)
- Top Hinge (left-hand side)
- Top Hinge Cover (left-hand side)

Tools Needed:

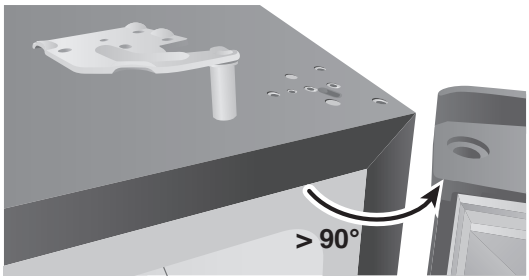
- Phillips Screwdriver
- Putty Knife
- Socket Wrench (8 mm)

1. Unplug the refrigerator, or disconnect power.
2. Remove all door bins.
3. Using a putty knife, pry upward on the top hinge cover to remove. Set the cover aside.
4. Using an 8 mm socket wrench, remove the three hex-head bolts fastening the top hinge to the cabinet.

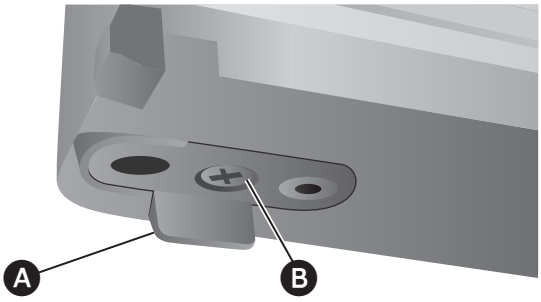


A Hinge Cover
B Hex-head Bolts
C Top Hinge

5. Holding the door closed, remove the top hinge and set it aside.
6. Using both hands, open the door to past 90°, and then lift it off the bottom hinge.

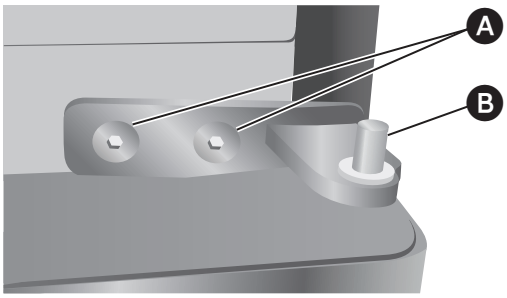


7. Set the door on a soft surface to protect the finish.
8. Using a Phillips screwdriver, remove the screw fastening the door stop to the bottom of the refrigerator door, and then reinstall the door stop on the opposite side.



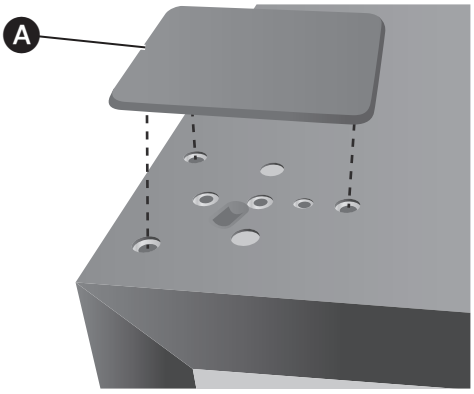
A Door Stop
B Screw

9. Open the freezer drawer to access the bottom hinge screws.
10. Using the 4 mm hex-key wrench (provided) remove the bottom hinge.



A Screws
B Bottom Hinge

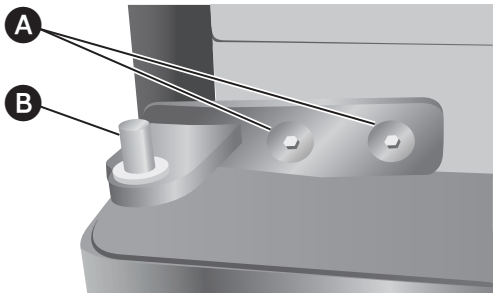
11. Using a putty knife, remove the screw hole covers from the left-hand side, and then insert them into the screw holes on the right-hand side.
12. Remove the screw hole covers from the top left-hand side of the cabinet, and then insert them into the screw holes on the right-hand side.



A Hinge Hole Cover

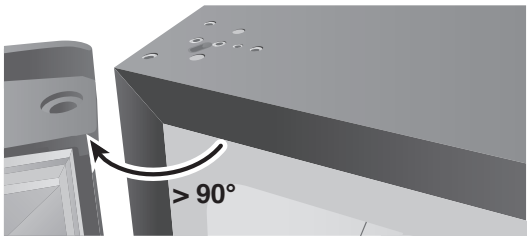
13. Remove the top hinge cover and both the left-hand hinges (bottom and top) from the parts package (provided).

14. Using the 2 screws removed earlier, install the bottom, left-hand hinge onto the cabinet.



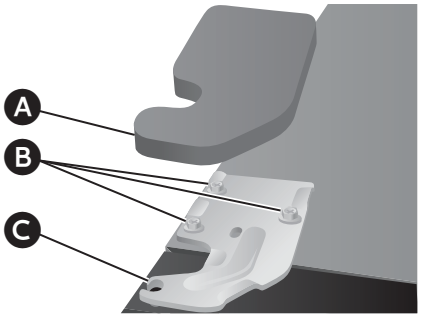
A Screws
B Bottom Hinge

15. Holding the refrigerator door at an angle greater than 90°, set the door onto the bottom hinge.



16. Close the door. Holding the door closed, insert the top, left-hand hinge into the hinge hole at the top of the door.

17. Using the three screws removed earlier, install the top hinge to the cabinet. Tighten completely.



A Hinge Cover
B Hex-head Bolts
C Top Hinge

18. Install the top hinge cover.

NOTE: Keep the right-hand side hinges and hinge cover in case you would need to reverse the door swing at a later time.

Install Handles

Two handles are provided. The longer of the two handles is to be installed on the refrigerator door and the other handle is to be installed on the freezer drawer.

1. Remove the handles from the packaging, and then place them on a soft surface.

NOTE: Handle mounting setscrews are pre-installed inside the handle.

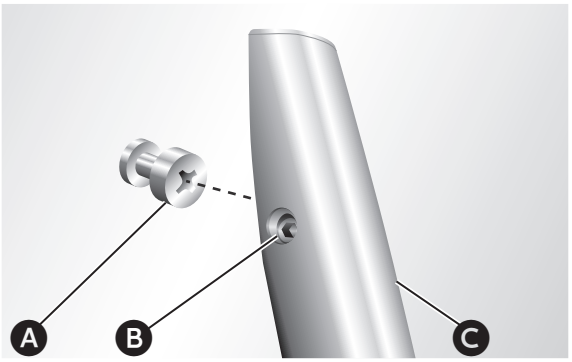
Refrigerator Door

Install the refrigerator door handle on the front of the door on the side opposite the hinge.

IMPORTANT: If you reverse the door swing, you will have to move the shoulder screws to the opposite side.

1. Place the refrigerator handle onto the shoulder screws so that the set screws are facing the hinge.

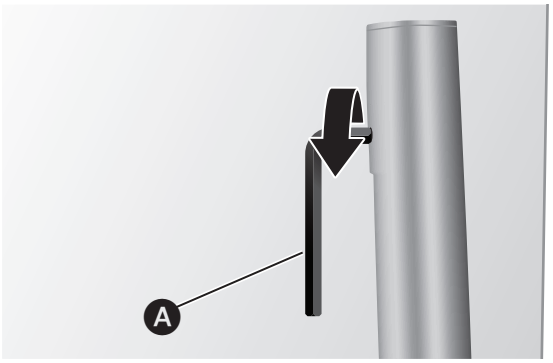
2. Firmly push the handle toward the door until the handle base is flush against the door.



A Shoulder Screw
B Setscrew
C Handle

3. While holding the handle, insert the short end of the hex key into the upper hole and slightly rotate the hex key until it is engaged in the setscrew.

4. Tighten the setscrew a quarter turn at a time just until it begins to contact the shoulder screw. Do not fully tighten.



A Hex Key

5. Repeat steps 3 and 4 to fasten the other setscrew to the shoulder screw.
6. Once both setscrews have been partially tightened as instructed in the previous steps, fully tighten both setscrews.

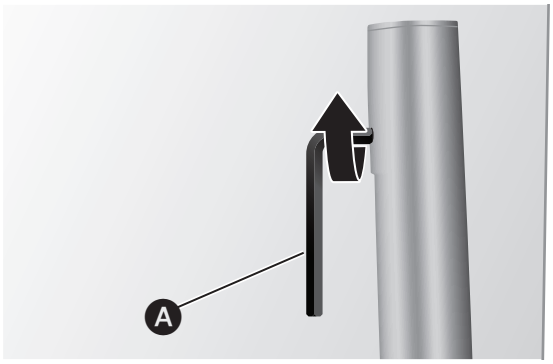
   IMPORTANT: When the screws feel tight, tighten them an additional quarter turn. The handle is not properly installed without this extra tightening.
7. Save the hex key and all instructions.

Freezer Drawer

1. With the drawer closed, place the handle onto the shoulder screws so that the setscrews are facing down toward the floor.
2. Firmly push the handle toward the drawer until the handle base is flush against the drawer.
3. Insert the short end of the hex key into the left-hand hole and slightly rotate the hex key until it is engaged in the setscrew.
4. Using a left-to-right motion, tighten the setscrew a quarter turn at a time just until it begins to contact the shoulder screw. Do not fully tighten.
5. Repeat steps 3 and 4 to fasten the other setscrew to the shoulder screw.
6. Once both setscrews have been partially tightened as instructed in the previous steps, fully tighten both setscrews.

Remove the Handles

1. While holding the handle, insert the short end of the hex key into a setscrew hole and slightly rotate the hex key until it is engaged in the setscrew.
2. Loosen the setscrew a quarter turn at a time.



A Hex Key

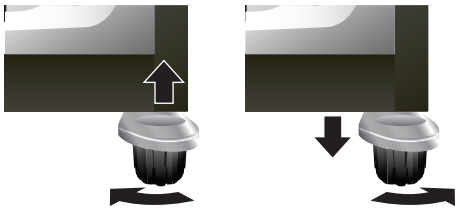
3. Repeat steps 1 and 2 for the other setscrew. Slowly pull the handle away from the door or drawer.

Level Refrigerator (if needed)

The refrigerator must be level to maintain optimal performance and appearance.

1. Turn the leveling feet on the bottom, front of the cabinet to raise or lower that side of the refrigerator until the refrigerator is level side-to-side.
2. Turn both feet, by the same amount, to slightly raise the front of the refrigerator. This will make it easier for the doors to close.

   NOTE: Having someone push against the top of the refrigerator takes some weight off the leveling feet. This makes it easier to turn the feet.



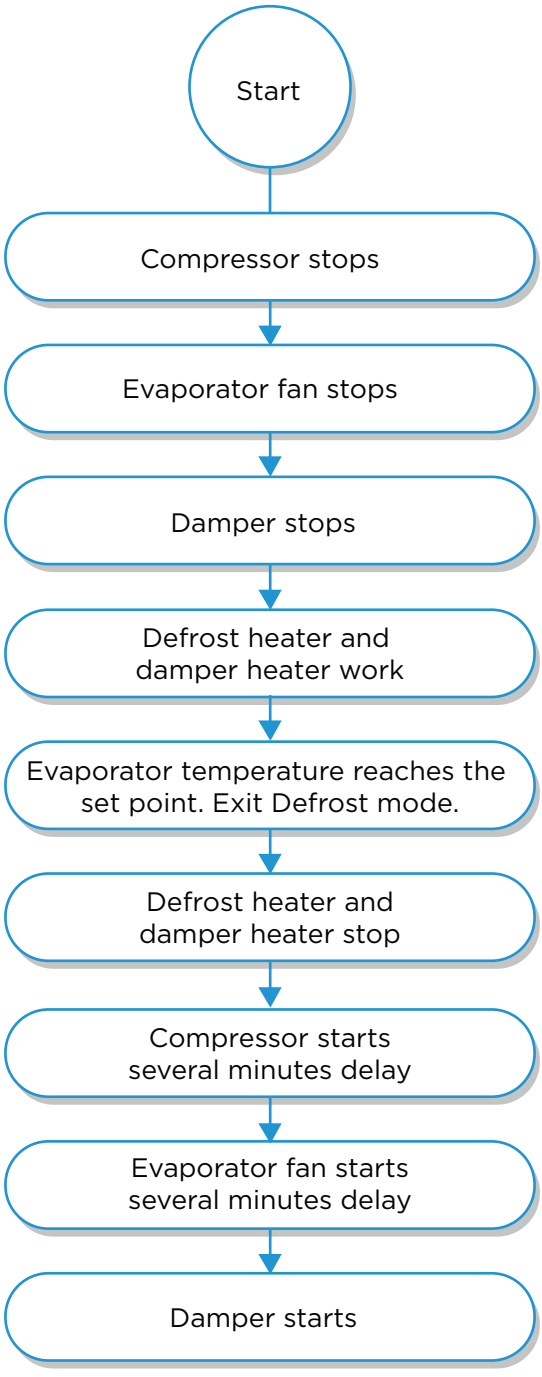
Defrost Mode

Automatic Defrost

Conditions that trigger Automatic Defrost:

- The Evaporator temperature is between 27°F and 39°F
- The Evaporator temperature is below 27°F, and the last compressor running time, according to the power failure memory, has been 6 hours or the total time of the compressor running time reaches 10 hours.
- The Door has been opened 60 times

When the accumulated running time of the compressor reaches the set point (dependent on the temperature) the compressor will automatically enter defrost mode.

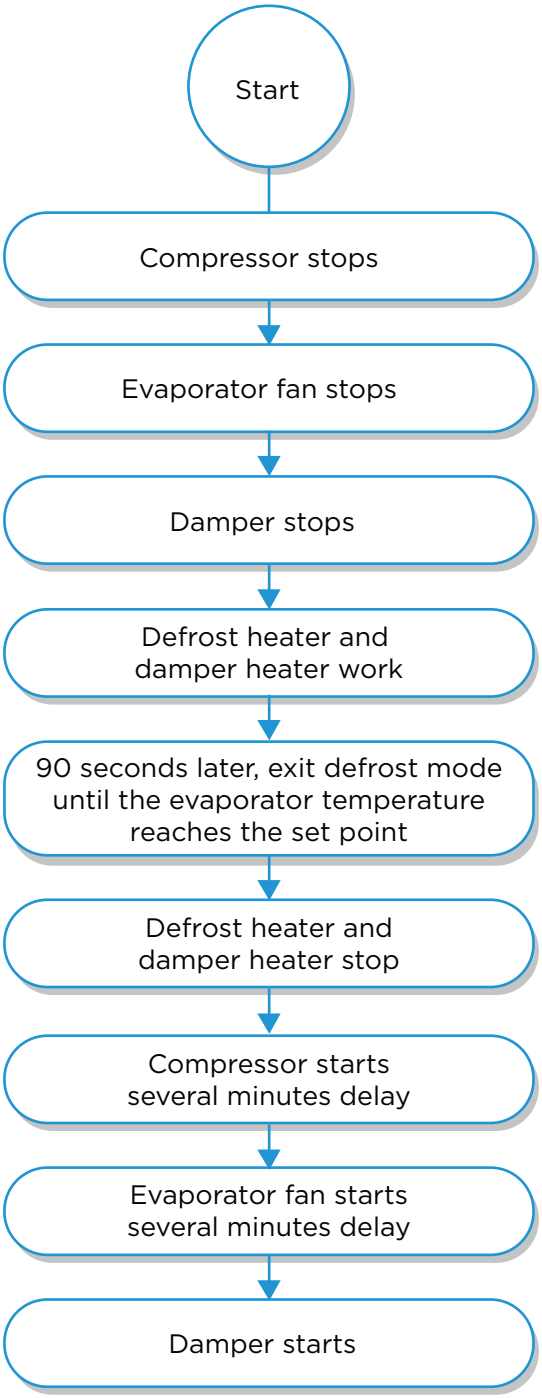


Forced Defrost

IMPORTANT: Forced Defrost must be initiated within 10 minutes of the refrigerator being powered on.

1. Unplug power supply cord, and then plug it back into the electrical outlet.
2. Press and hold the FRIDGE and FREEZER controls at the same time for 5 seconds.
3. The refrigerator enters Forced Defrost mode.

NOTE: When entering Forced Defrost mode, there will be a long buzzing sound, and the LED lights of the display will cycle through the temperature options from left to right.



5. Troubleshooting Charts

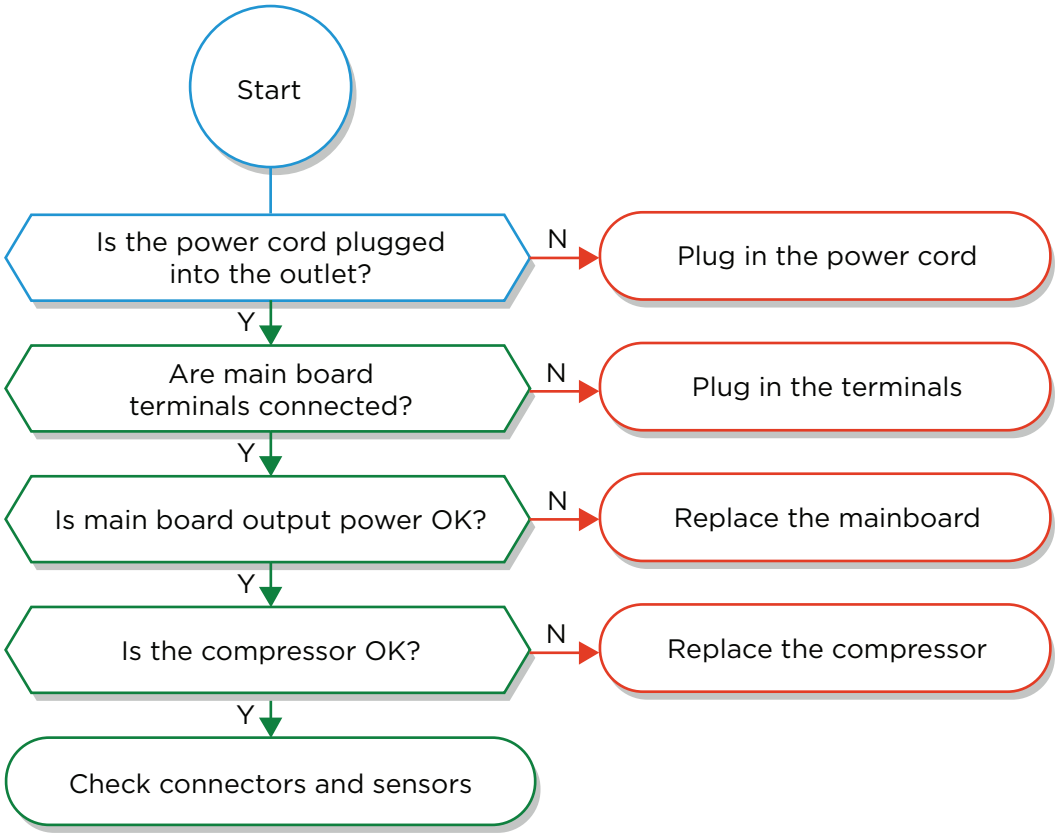
Refrigerator is Not Operating

PROBLEM	POSSIBLE CAUSE(S)	SOLUTION
Refrigerator does not run	Refrigerator is unplugged.	Plug refrigerator into a grounded 3 prong outlet.
	Breaker is tripped or turned off, or fuse is blown.	Reset/Turn on breaker or replace fuse.
	Refrigerator is in defrost mode.	Wait for defrost cycle to end and cooling system to restart.
Refrigerator compressor runs frequently or for long periods of time **NOTE:** This refrigerator is designed to run for longer periods of time at a lower energy usage.	Refrigerator is first plugged in.	This is normal. Allow 24 hours for the refrigerator to cool down.
	Warm or large amounts of food added.	This is normal.
	Door is left open, or refrigerator is not level.	Check that an item is not preventing door from closing. Level the refrigerator. See “Level Refrigerator.”
	Hot weather or frequent openings	This is normal.
	Temperature control set to coldest setting.	Adjust temperature to a warmer setting.
Refrigerator has an odor	Food is not sealed or packaged properly.	Reseal packaging. Place an opened box of baking soda in the refrigerator, replace every 3 months.
	Interior needs to be cleaned.	Clean the interior. See “Cleaning.”
	Food stored too long.	Dispose of spoiled food.
Light does not come on	Refrigerator is unplugged.	Plug refrigerator into a grounded 3 prong outlet.
	LED light is burned out.	Check wiring and replace light as needed.
Doors do not close properly	Refrigerator is not level.	See “Level Refrigerator.”
	Something is obstructing door closure.	Check for and remove obstructions.
Vibration or rattling	Refrigerator is not resting firmly on floor.	See “Level Refrigerator.”
Normal Sounds	It sounds like water is flowing from the refrigerator.	Refrigerant flowing in the lines will make this sound when the compressor starts and stops.
		The refrigerator has an automatic defrosting system. The defrosted water will make this sound.
	Humming or buzzing sounds	The compressor and fans used for cold air circulation can make this sound. If the refrigerator is not level, the sound will be louder.
	Cracking or clicking sounds	The interior parts will make this sound as they contract and expand in response to temperature changes.
	Popping noise	May occur during automatic defrosting.

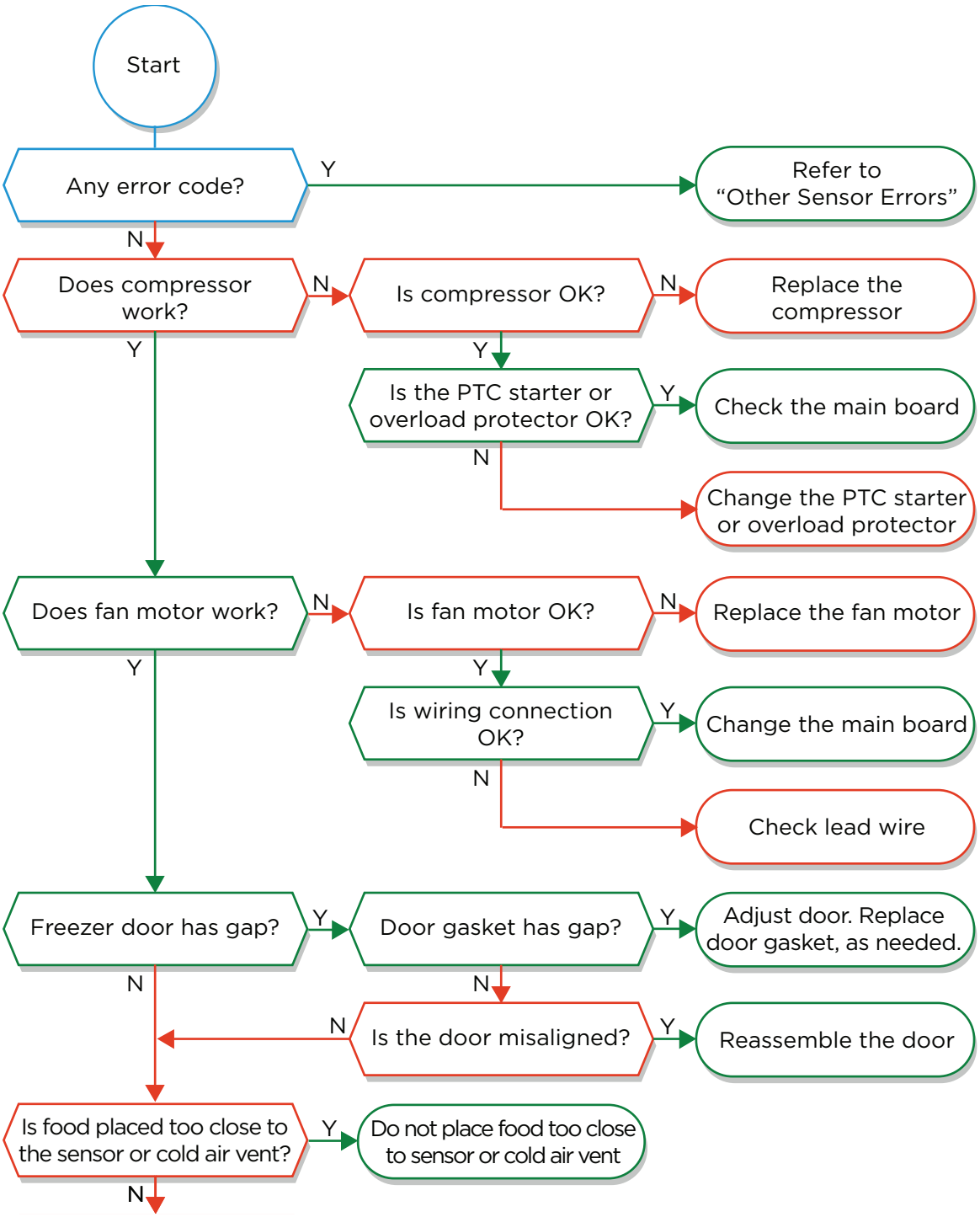
Temperature and Moisture

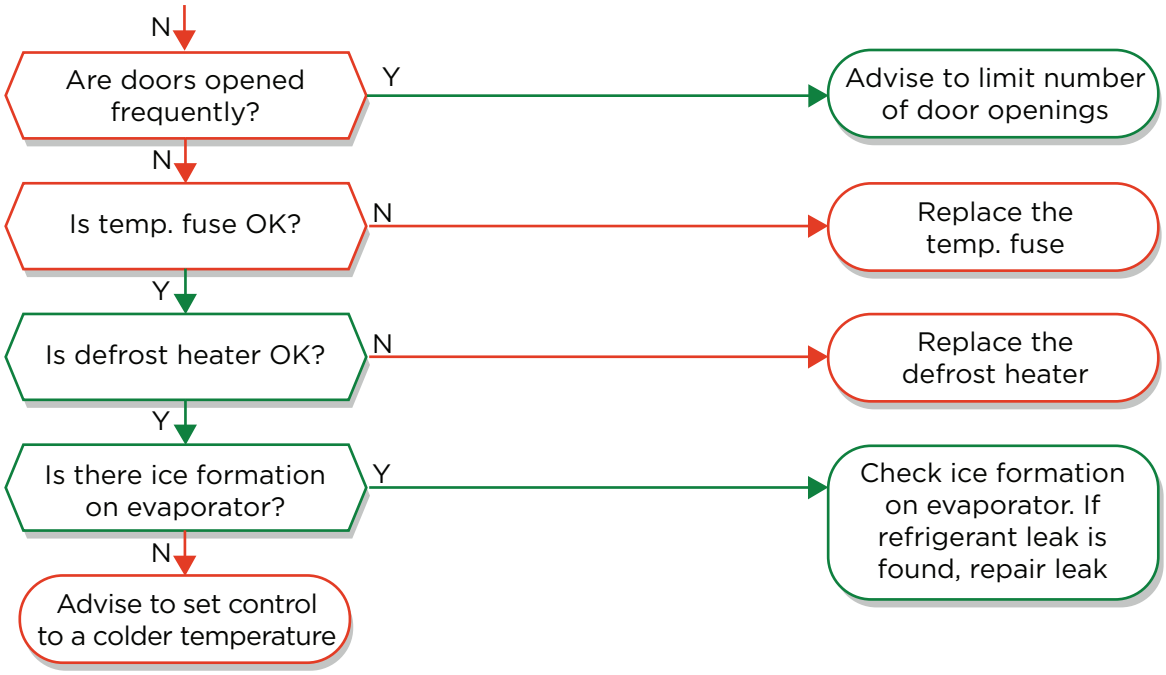
PROBLEM	POSSIBLE CAUSE(S)	SOLUTION
Refrigerator or freezer is too warm	Temperature control is not set cold enough.	Adjust the compartment to a colder setting; allow 24 hours for the temperature to adjust.
	Doors opened frequently or left open.	Limit door openings to maintain the internal temperature. Check that an item is not preventing door from closing.
	Warm food added recently.	Allow time for food and refrigerator to cool.
	The refrigerator is too close to the surrounding walls or cabinets.	Allow 2″ (5 cm) of space between the back of the refrigerator and the rear wall, and 2” of space between the sides of the refrigerator and the adjacent walls or cabinets.
	Items against back of compartments are blocking proper airflow.	Store items only inside the trim of the glass shelves; don’t place items against sides of the compartments or directly in front of any vents.
Refrigerator or freezer is too cold	Temperature control is set too cold.	Adjust temperature in the compartment to the next warmer setting; allow 24 hours for temperature to adjust.
Moisture on exterior/ interior of refrigerator	High humidity	This is normal during times of high humidity. Dry surface and adjust temperature to a slightly colder setting.
	Doors opened frequently or left open.	Keep door closed. Check that an item is not preventing the door from closing. Level the refrigerator. See “Level Refrigerator.”
	Open container of water in refrigerator	Cover or seal container
Frost or ice crystals on frozen food	Freezer door left open or opened frequently.	Limit door openings to maintain the internal temperature. Check that an item is not preventing door from closing.
	Refrigerator door is not closing completely or the door gasket is not sealing.	Level the refrigerator. See “Level Refrigerator.” Confirm condition of door gasket, and replace if necessary.
	Items blocking freezer air vents and preventing proper air flow.	Move items away from rear wall.
Food freezing in refrigerator	Food placed too close to the air vent.	Move items away from back and top of the refrigerator.
	Temperature control set too cold.	Adjust the temperature to a less cold setting.

Start Fault


Start
Is the power cord plugged into the outlet?
N
Plug in the power cord
Y
Are main board terminals connected?
N
Plug in the terminals
Y
Is main board output power OK?
N
Replace the mainboard
Y
Is the compressor OK?
N
Replace the compressor
Y
Check connectors and sensors

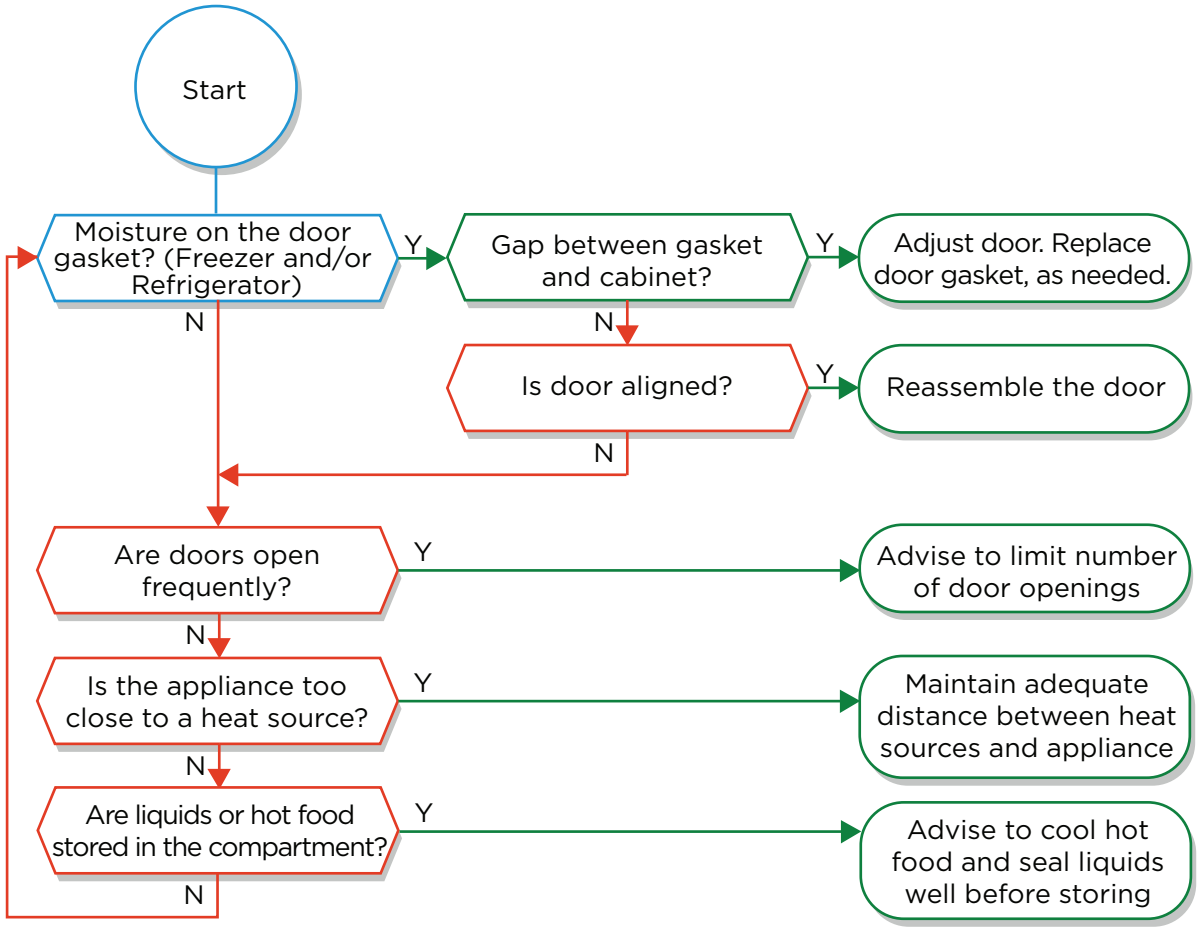
Freezer Compartment Temperature



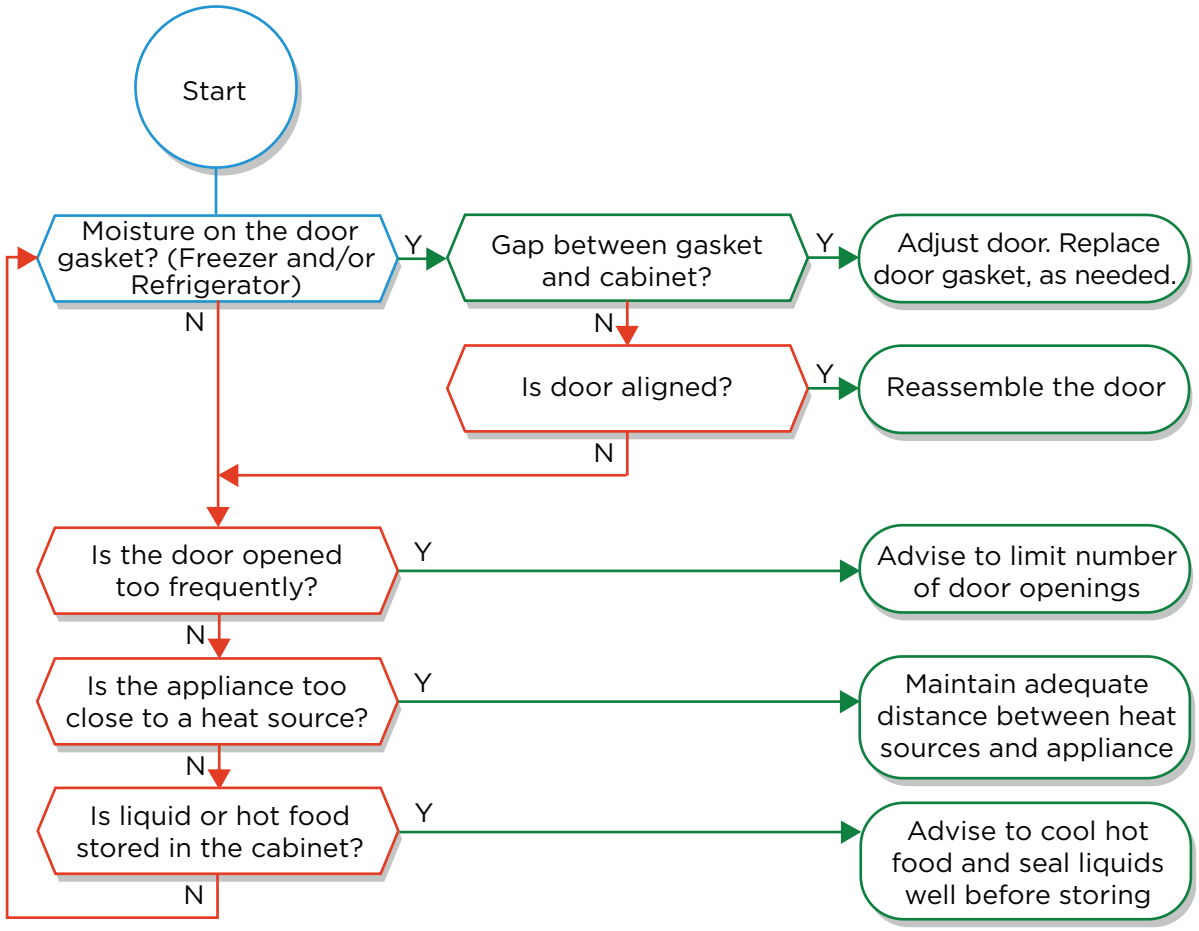

N
Are doors opened frequently?
Y
Advise to limit number of door openings
N
Is temp. fuse OK?
N
Replace the temp. fuse
Y
Is defrost heater OK?
N
Replace the defrost heater
Y
Is there ice formation on evaporator?
Y
Check ice formation on evaporator. If refrigerant leak is found, repair leak
N
Advise to set control to a colder temperature

Refrigerator Compartment Temperature

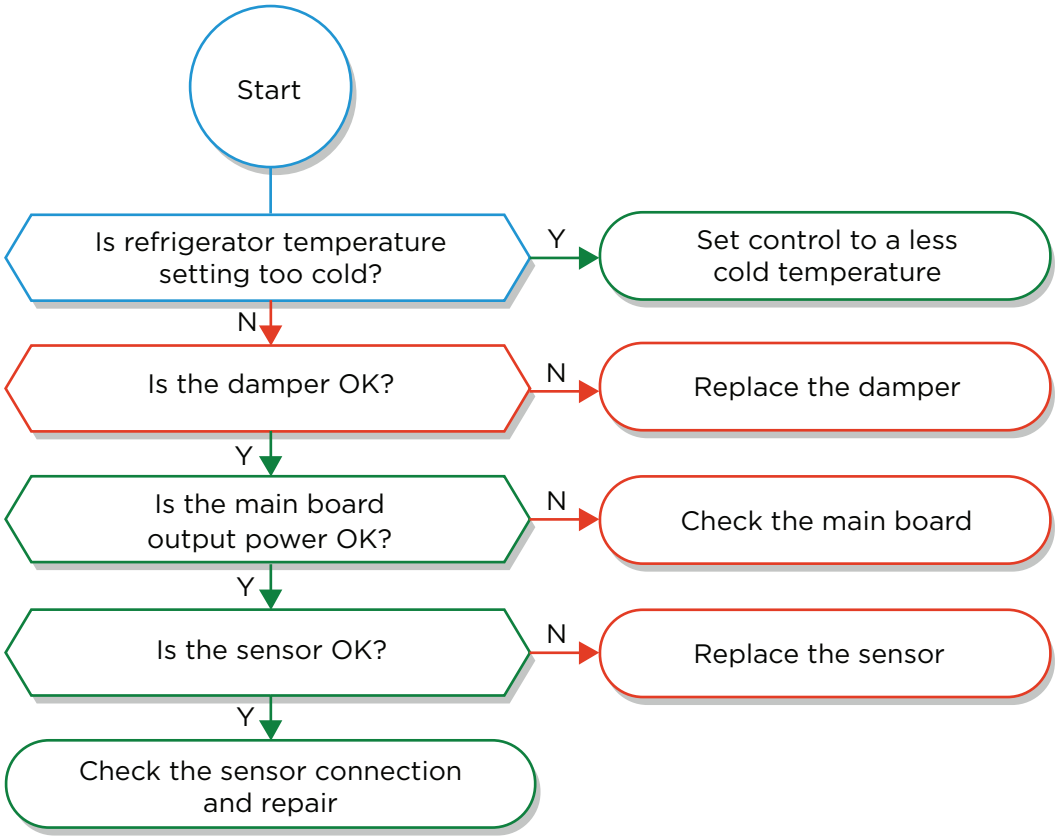
Thick Frost in Freezer Compartment



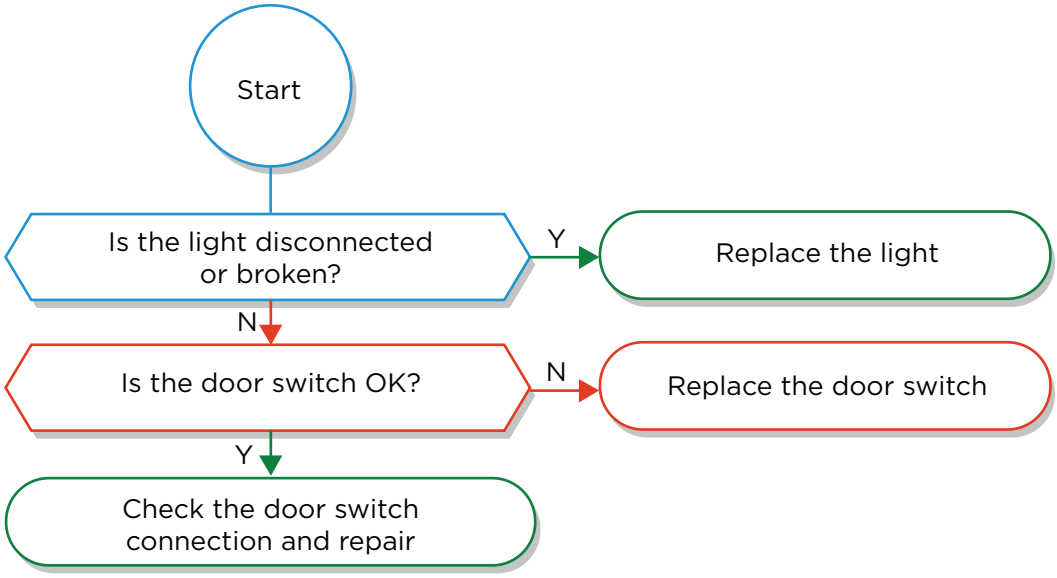
Moisture in Refrigerator Compartment



Crisper Temperature

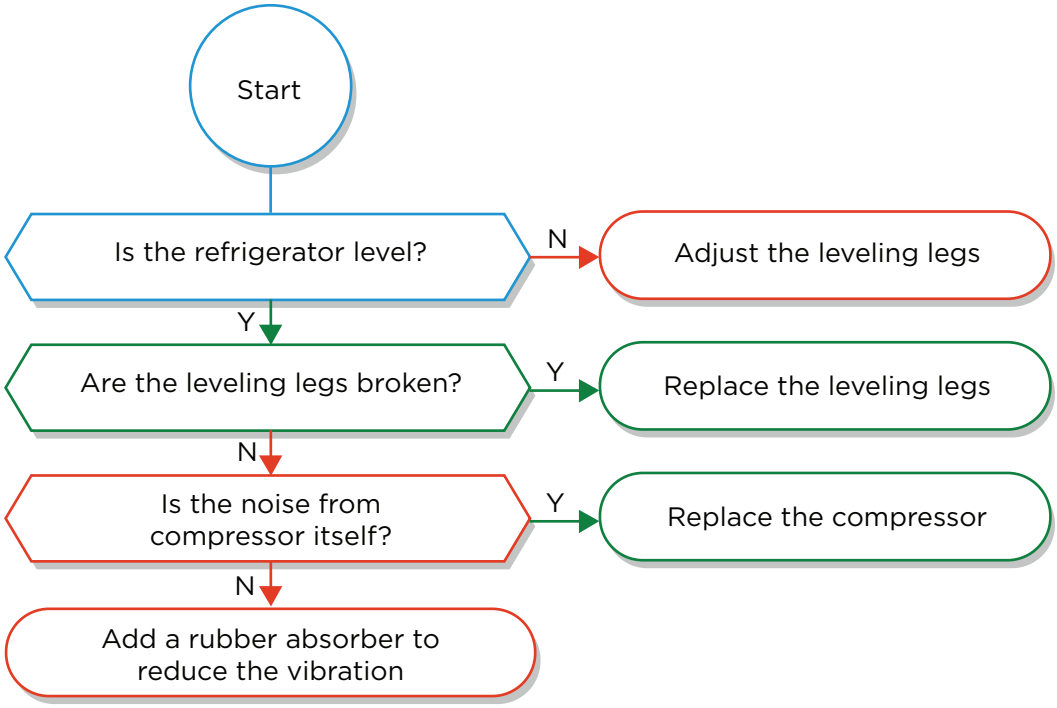


Light Function

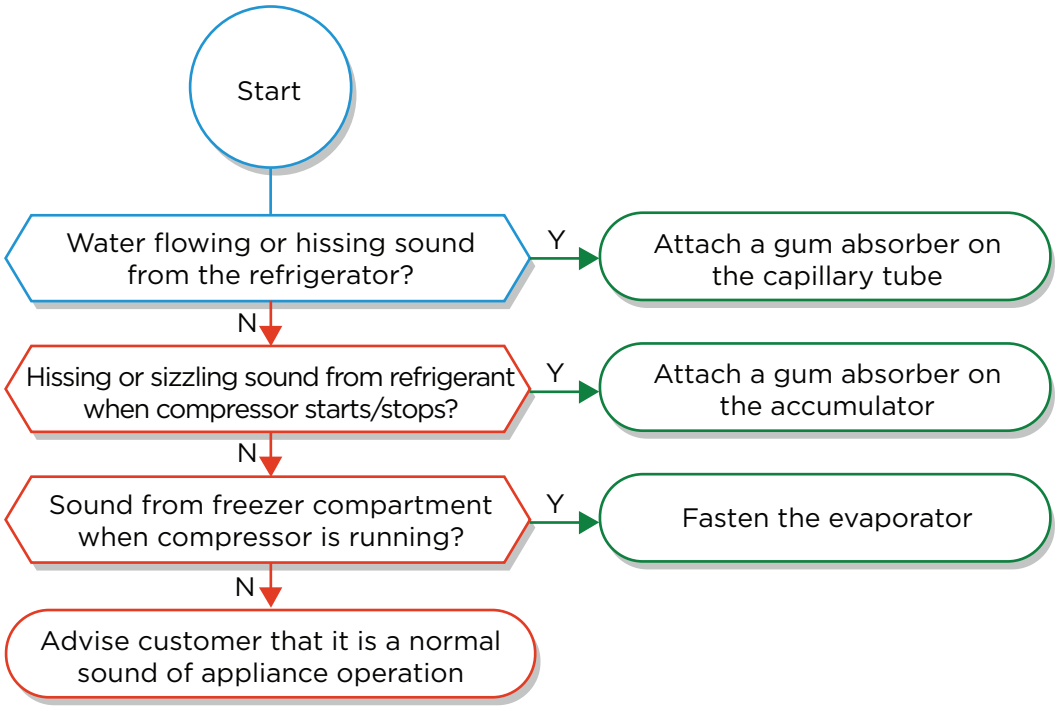


Noise

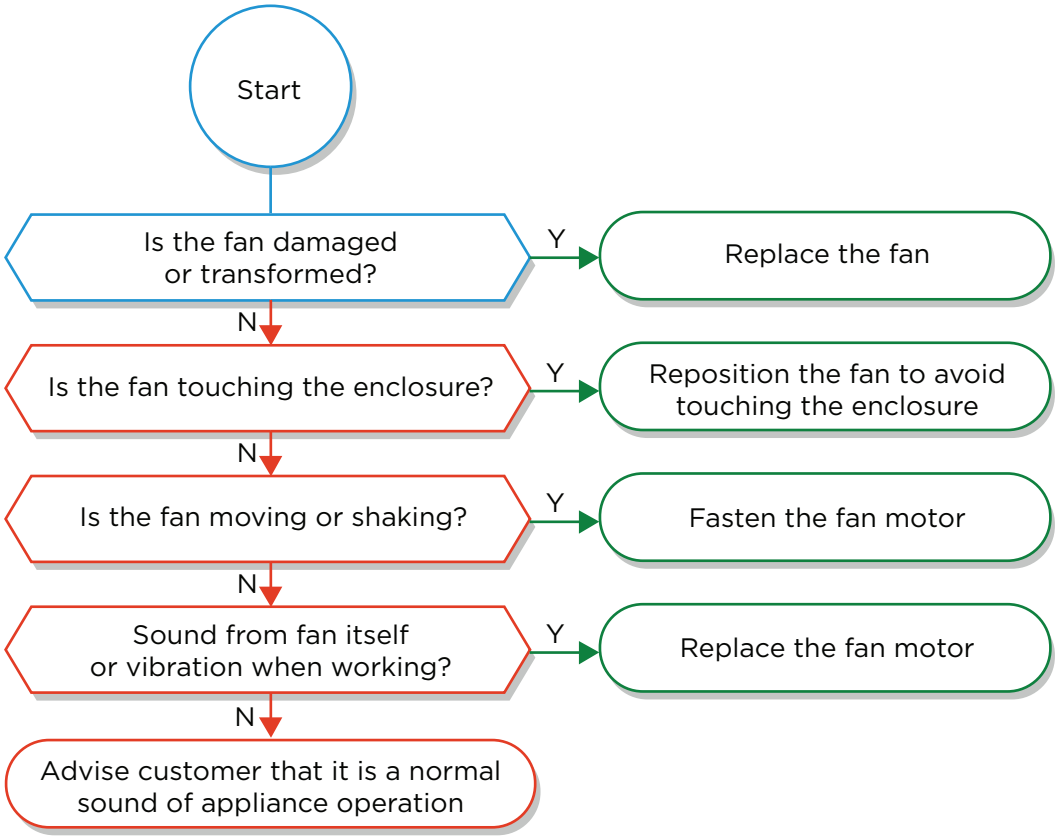
Compressor Noise



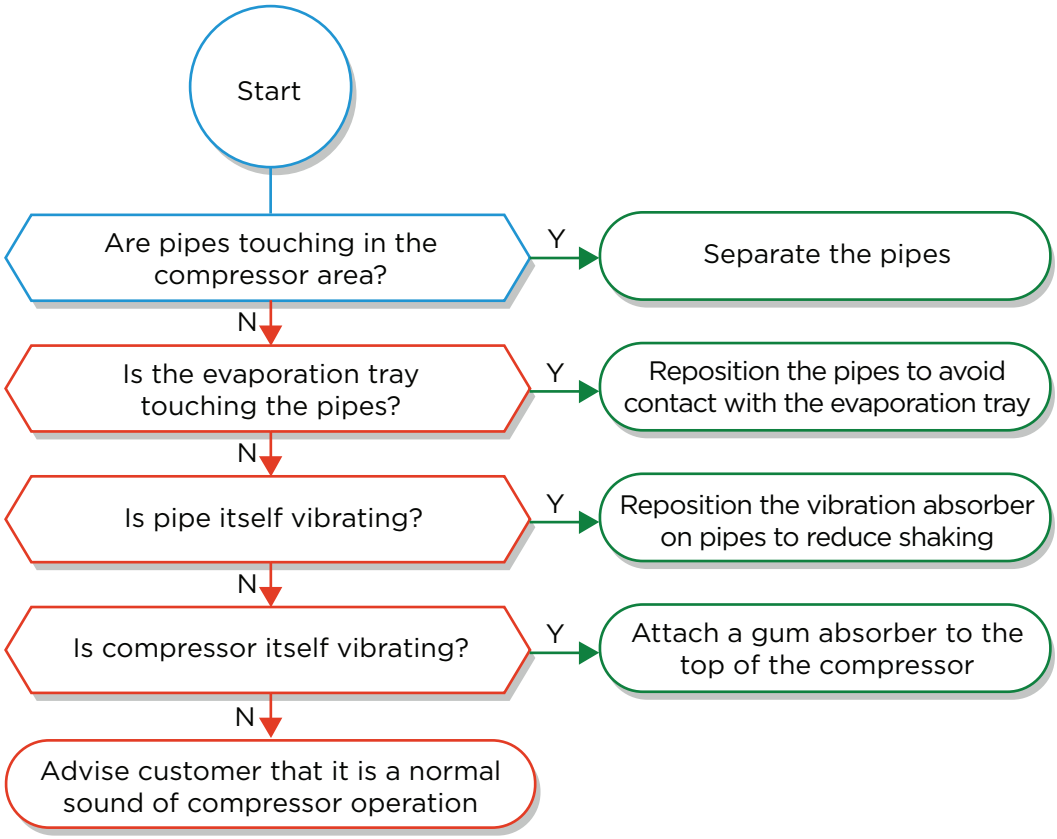
Refrigerant Flowing Noise



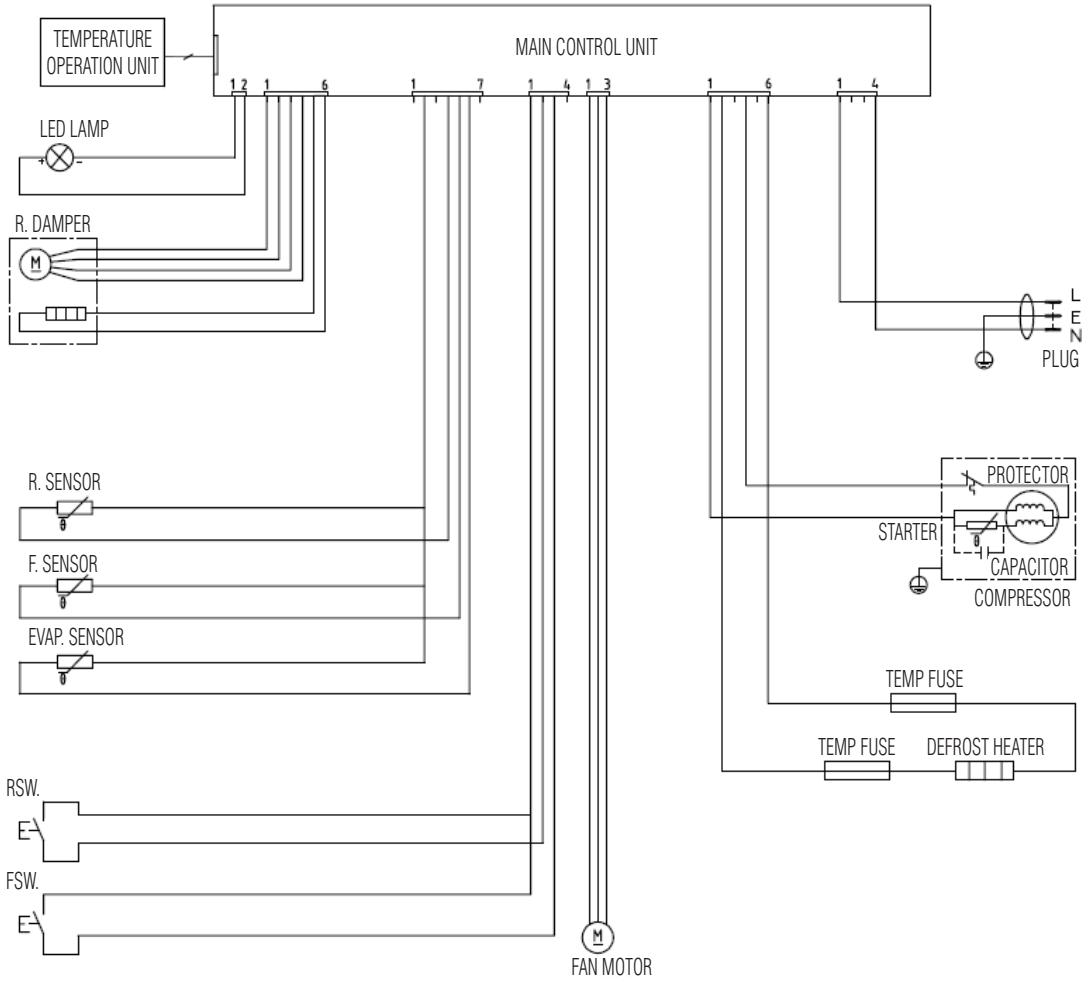
Fan Motor Noise



Pipe Noise



6. Wiring Diagram



7. Component Testing and Disassembly

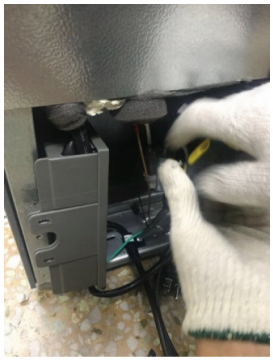
Main Board

Check the Main Board

IMPORTANT: If the problem is most likely caused by a faulty main board, replace the main board first to confirm.

Remove the Main Board

1. Unplug the refrigerator or disconnect power.
2. Using a screwdriver, remove the screws and remove the power line.



3. Using a screwdriver, remove the two screws fastening the junction box cover to the cabinet.

4. Unplug the terminals on the main board, as shown.

5. Using a screwdriver, remove the screws fastening the main board to the junction box, and then remove the main board.

Compressor

Input Voltage: 115V

Input Frequency: 60Hz

The compressor takes low temperature and low pressure gas from the evaporator and compresses this gas to form high-temperature and high-pressure gas. It then delivers the gas to the condenser.

Check the Compressor

The compressor will start within 10 seconds of the refrigerator being powered on. If the compressor does not start, remove the electrical compartment cover to check the main board.

Wiring Connection

Check the wiring connection between the compressor and the main board. If the connection is loose, repair the connection.

Measure Voltage

- Use a multimeter to measure the voltage between Pins No. 1 and No. 6 on the CN1 connector of the main board.
- Use a multimeter to measure the frequency between Pins No. 10 and No. 11 on CN6 connector of the main board.

1. If the voltage is equal to the Electric Supply Power and there is stable output frequency, the Compressor is faulty. Replace the compressor.
2. If the voltage is NOT equal to the power supply output and/or the output frequency is NOT stable, replace the main board. For instructions, see “Main Board.”

Test the Resistance

Use a multimeter to test the resistance between C & S, M & S, and M & C.

Normal range of C&S: About 6.42 ± 7%

Normal range of M&S: About 13.03 ± 7%

Normal range of M&C: 16.61 ± 7%

If the test result is NOT within the Normal Range, there is a problem with the inner coil, and the compressor cannot function properly.

PTC Starter and OverLoad Protector (OLP)

The compressor has Overload Protection. The Positive Temperature Coefficient (PTC) starter and the Overload Protector (OLP) are attached to the sealed compressor.

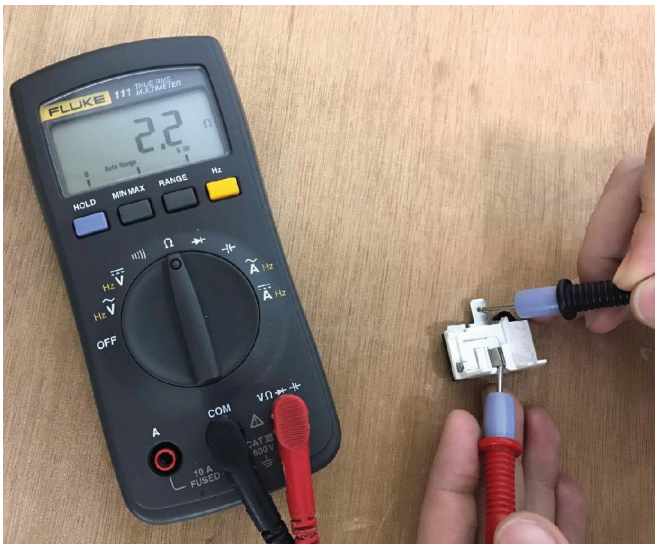
The PTC starter relay starts the compressor.

If the exterior of the PTC is damaged, the resistance value may be altered. The altered resistance can damage the compressor and result in a no-start or hard-to-start condition.

Check the Overload Protector

Compressor Overload Protector Test

1. Use a multimeter to test the resistance between the two ends, as shown.



- If the measurement is 000 or almost 0, the Overload Protector is good.
- If there is no response, the Overload Protector is faulty.

Check the PTC Starter

1. Use a multimeter to test the resistance between the two ends, as shown.

- If the measurement is between About 15 ± 5Ω, the PTC starter is good.
- If the measurement is 000, or there is NO response, the PTC starter is faulty.

Remove the PTC Starter and overload Protector

1. Unplug the refrigerator or disconnect power.
2. Using a screwdriver, pry up the jump ring on the protector cover.

3. Using a screwdriver, remove the protector cover.

4. Grasp the Overload Protector, and then pull it out, as shown.

5. Grasp the PTC starter, and then pull it out.

Fan Motor

Rated Voltage: DC13.2V

Rated Input Power: 2W

The Freezer Fan Motor corresponds to Pins No. 1~3 on the CN9 connector of the main board.

- Pin No. 2 connects the 12V power.
- Pin No. 1 connects the Ground Wire.

Check the Fan Motor

Main Board Wiring Connection

1. Make sure the wiring connection between the damper and main board is secure. If the wiring connection is loose, repair the connection.
2. If the freezer fan motor works normally, first replace the main board.
3. If the fan motor does not work normally, replace the fan motor.

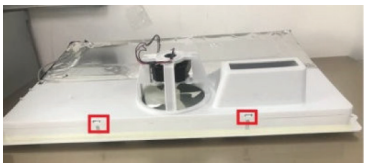
Remove the fan motor

1. Unplug the refrigerator, or disconnect power.
2. Remove the freezer drawer. See “Remove Freezer Drawer.”
3. Pull out the drawer slides to their full extension.

4. Using a screwdriver, remove the 4 screws fastening the air flow channel cover.

5. Unplug the terminal, as shown, and then remove the channel cover.

6. Remove the tape around the air flow channel, open the clips, and then separate the two parts of the air flow channel.



7. Cut the cable tie, as shown.

8. Using a screwdriver, remove the screws.

Damper

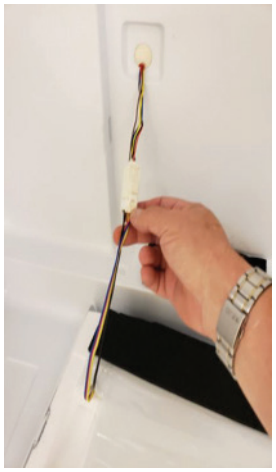
Remove the Back Cover

1. Using a screwdriver, remove the center screw.

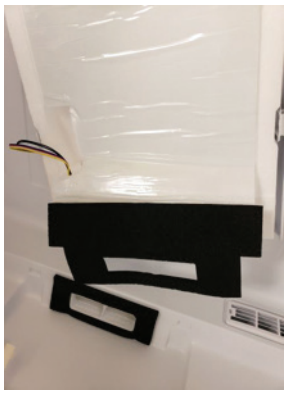
2. Using both hands pry cover from the back panel.

Remove and Replace Damper

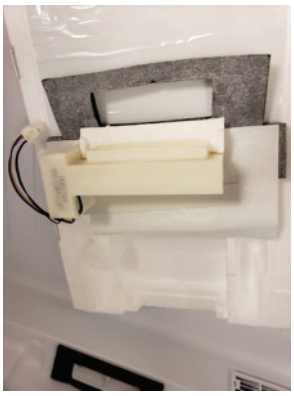
1. Disconnect the damper plug.



2. Peel back the black felt and the foam insulation.



3. Remove and replace damper.



Light

Rated Voltage: DC12V

Rated Power: 1W

Check the Light

Wiring Connection

1. Make sure the wiring connection between the light and main board is secure. If the wiring connection is loose, repair the connection.

   Refrigerator Light 1: Corresponds to Pins No. 1 and No. 2 on CN7 connector on the main board.

Check Output Voltage

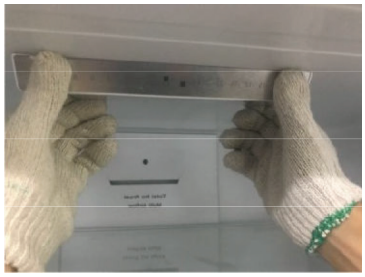
Using a multimeter, check the voltage output of the pins on the main board that correspond with the non-working light.

If the voltage measures 12V, the main board is good. Replace the light.

If the voltage does not measure 12V, the main board is faulty. Replace the main board.

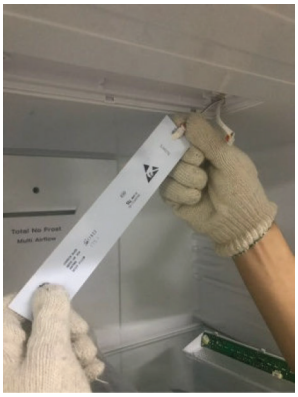
Remove the Light

1. Unplug the refrigerator or disconnect power.
2. Remove the light cover, as shown.



3. Unplug the display panel terminal.

4. Remove the LED from the display panel.



5. Unplug the light terminal.

Display Panel

Input Voltage: 5V

Check the Panel

The display panel should illuminate immediately after the refrigerator is powered on. If it does not illuminate, remove the display panel cover and check.

Wiring Connection

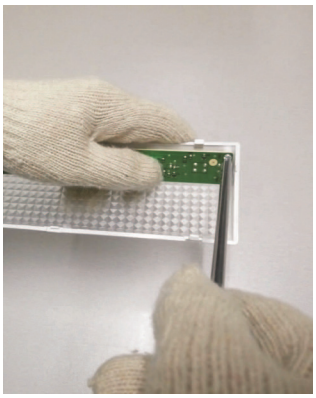
1. Inspect the wiring connection between the display panel and main board.
   - If the wiring connection is secure, check the Output Voltage
   - If the wiring connection is loose, the connection is faulty.
2. Repair the wiring connection, if faulty.

Check Output Voltage

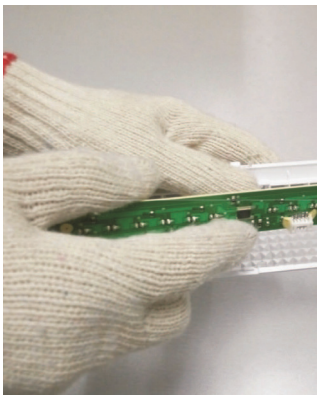
1. Using a multimeter, measure the voltage between Pins No. 3 and No. 4 on CN4 connector of the main board.
   - If the voltage is equal to 5V, the display panel is faulty. Replace the display panel.
   - If the voltage is NOT equal to 5V, the main board is faulty.
2. Replace the display panel or main board.

Remove the Display Panel

1. Unplug the refrigerator or disconnect power.
2. Unplug the display panel terminal.
3. Using a screwdriver, remove the screws, as shown.



4. Remove the display panel.



Defrost Heater and Fuse

Input Voltage: 115V

Rated Power: 180W

Check the Defrost Heater

Check Output Voltage

1. Enter Forced Defrost mode. See “Defrost Mode.”
2. Use a multimeter to measure voltage between Pins No. 2 and No. 8 on the CN2 connector of the main board.
   - If the voltage is not equal to the Power Supply Output, the main board is faulty.
3. Replace the main board.

Check Heater Resistance

1. Unplug the refrigerator.
2. Use a multimeter to measure the resistance of the heater.
   - If the measurement is NOT 294Ω ± 5%, the defrost heater is faulty.
3. Replace the heater.

Remove the Defrost Heater and Temperature Fuse

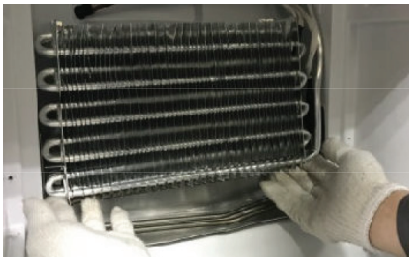
1. Unplug the refrigerator.
2. Remove the air flow channel.
3. Unplug the terminals, as shown.

4. Cut the cable ties.

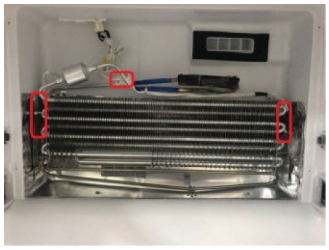
5. Using a screwdriver, remove the 2 screws fastening the evaporator to the compartment.

6. Move the defrost stick, as shown.

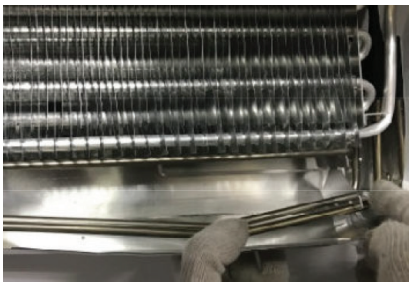
7. Slowly, remove the evaporator from the compartment, so as to NOT disturb the wiring connections.



8. Remove the fuses and sensor from the evaporator.



9. Pry up the clips holding the defrost heater, and then remove the heater.



Checking The Sensors

1. Use a multimeter with the ohm switch to measure the resistor of the sensor.

   On the CN10 connector of the main board:

   - Evaporator Sensor: between Pins No. 2 and No. 6
   - Freezer Sensor: between Pins No. 2 and No. 5
   - Refrigerator Sensor: between Pins No. 2 and No. 4

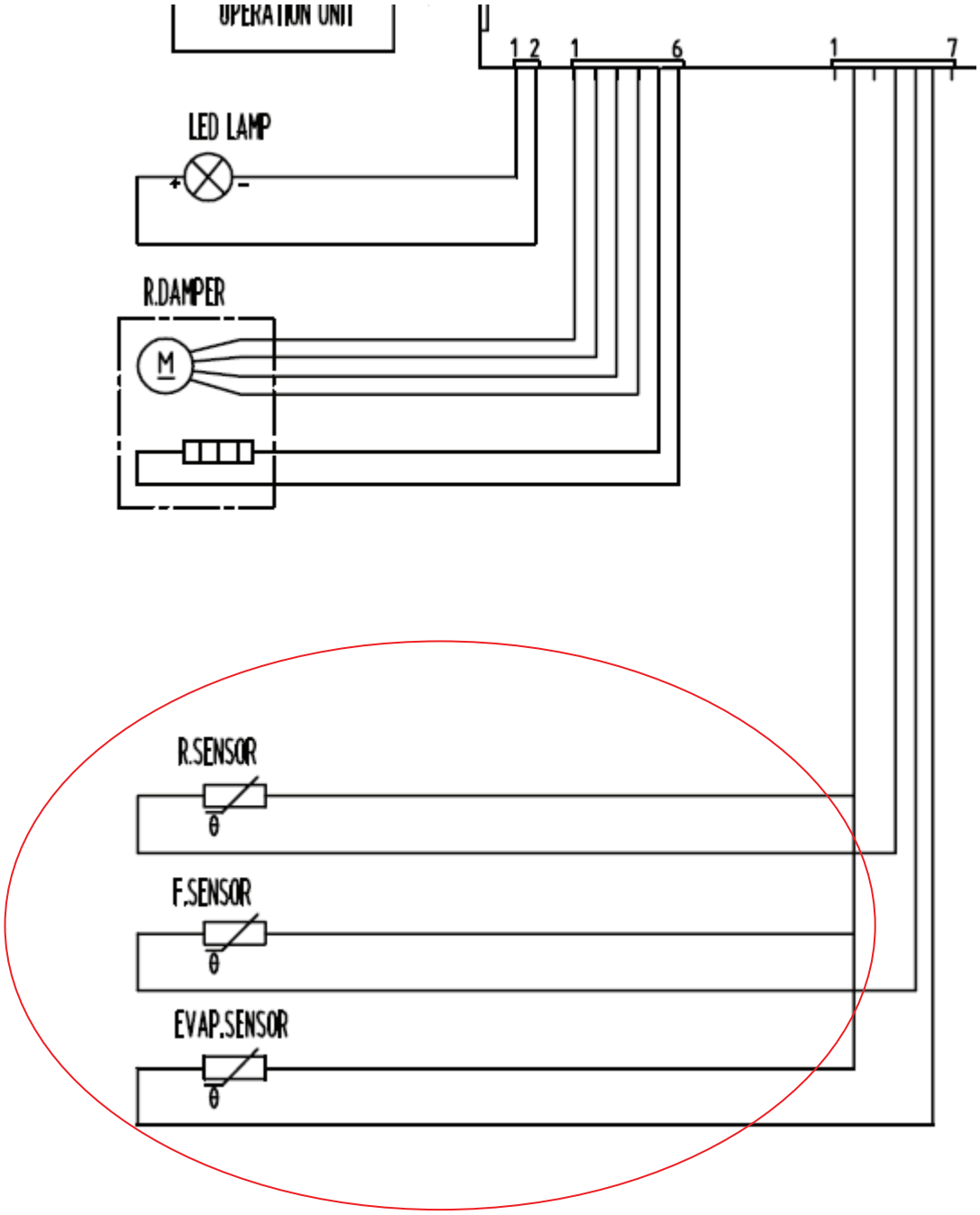
   With each decrease of 34°F, the corresponding resistor value should increase approximately 100ohm.

   NOTE: This is only an estimation, because there is NOT a linear relationship between resistance and temperature.

2. It is more accurate to measure for temperature resistance. If the measured value is NOT within the following normal ranges, the sensor is faulty.

   - At a temperature of 0°F the corresponding resistance is approximately 17k ohm
   - At a temperature of 41°F the corresponding resistance is approximately 5k ohm
   - At a temperature of 77°F the corresponding resistance is approximately 2k ohm

3. If faulty, replace the sensor.



Refrigerator Door Switch

Checking

1. Place a strip of painters' tape on liner along the top edge of the switch.

2. Insert the tip of a flat-blade screwdriver at the top edge of the switch, and then pry downward and out to remove the door switch.
3. Disconnect the connector.
4. Using an ohm meter, test the door switch.

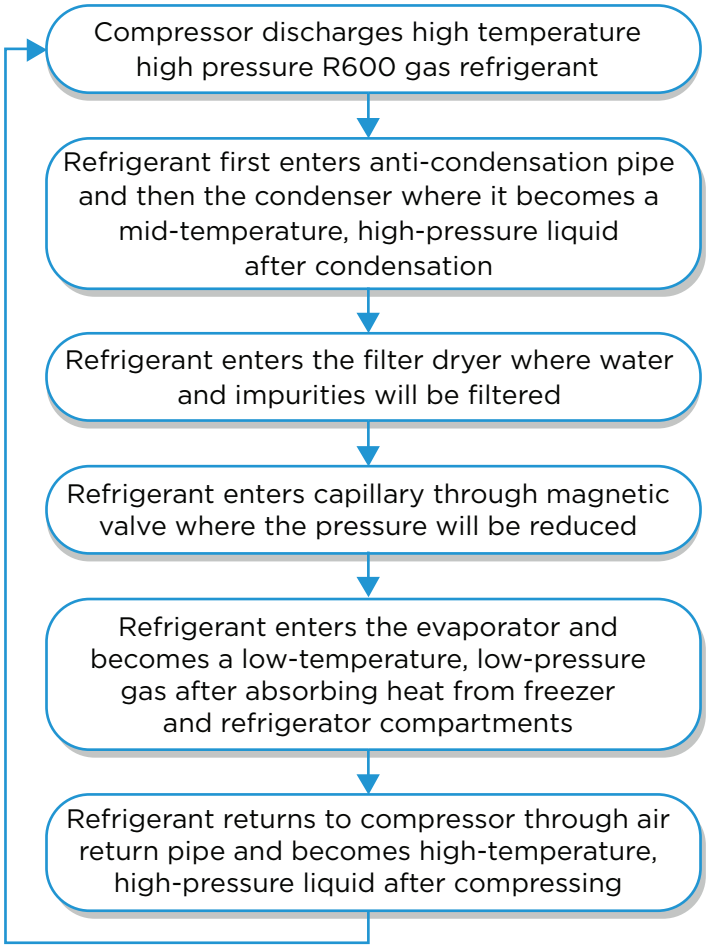
5. Replace the door switch if it always remains open or closed while depressing and releasing the switch.

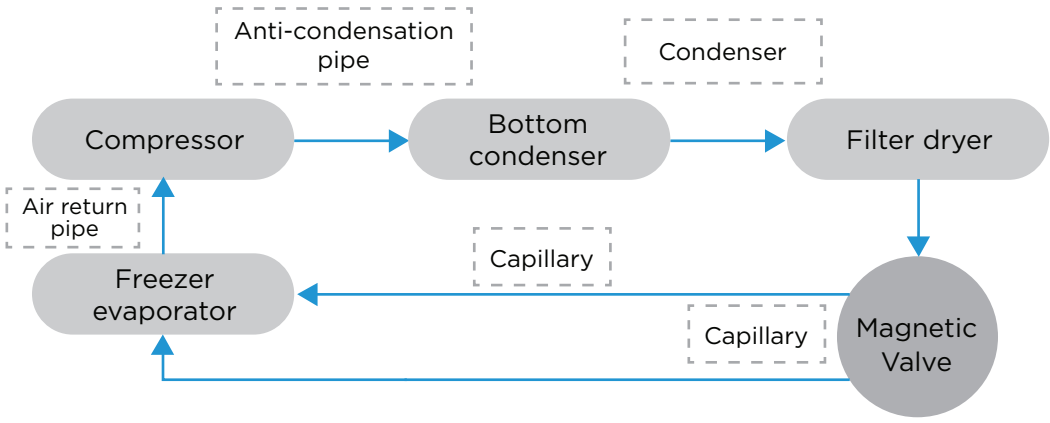
8. Refrigerant System Repair

⚠ WARNING

Flammable refrigerant used.
Use only lock rings for R-600 sealed system repair connections.
Failure to do so can result in death, explosion or fire.

Refrigeration System





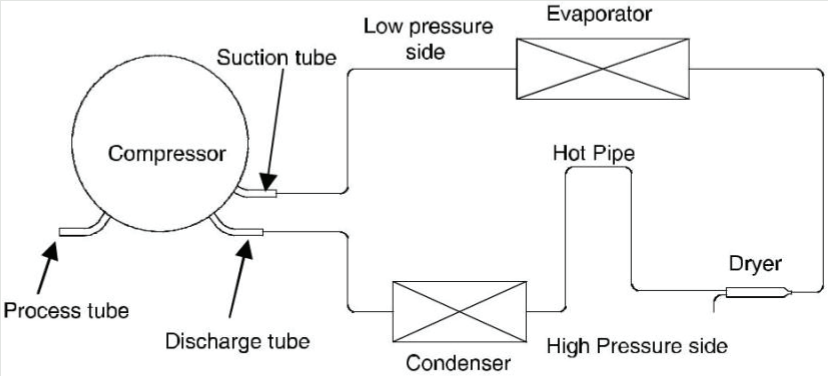
Repair Summary

PROCESS	CONTENTS	TOOLS
Remove residual refrigerant	Cut charging pipe ends (Compressor and Dryer) and discharge refrigerant from dryer and compressor.	• Nipper • Side Cutters
Parts replacement	• Confirm refrigerant (R-600) and oil for compressor and dryer. • Confirm condition of N2 sealing and packing before use. Use good parts for assembly. • Repair only in a clean and dry place.	• Pipe Cutter • Lock Rings
Vacuum	• After connecting manifold gauge hose, evacuate for more than 40 minutes and vacuum pump to high pressure side (dryer) and low pressure side (compressor).	• Vacuum Pump • Manifold Gauge
Refrigerant charging	• Weigh and control the cylinder in a vacuum condition with electronic scales and charge through compressor inlet (process tube). • Charge while refrigerator is operating	• Mass Cylinder • Refrigerant Manifold Gauge • Electronic Scales • Pinch-off Pliers

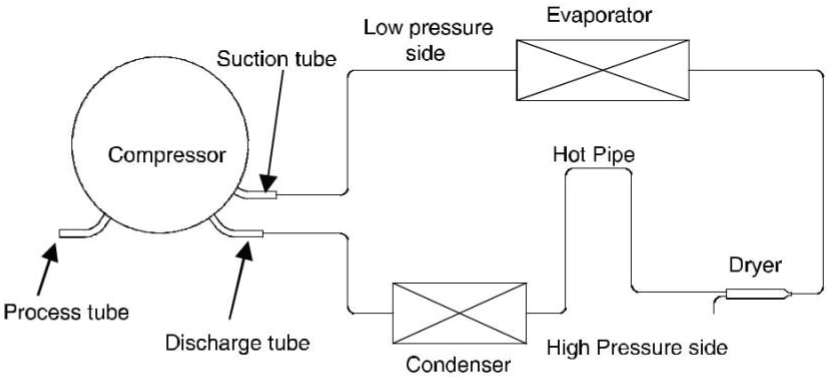
Check refrigerant leak and cooling capacity	• Check for leak at lock ring joints
	NOTE: Do not use soapy water for check.
	• Check Cooling Capacity
	  • Check condenser manually for warmth
	  • Check hot pipe manually for warmth
	  • Check for frost formation on the surface of the evaporator.
		• Electronic Leak Detector
		• Driver

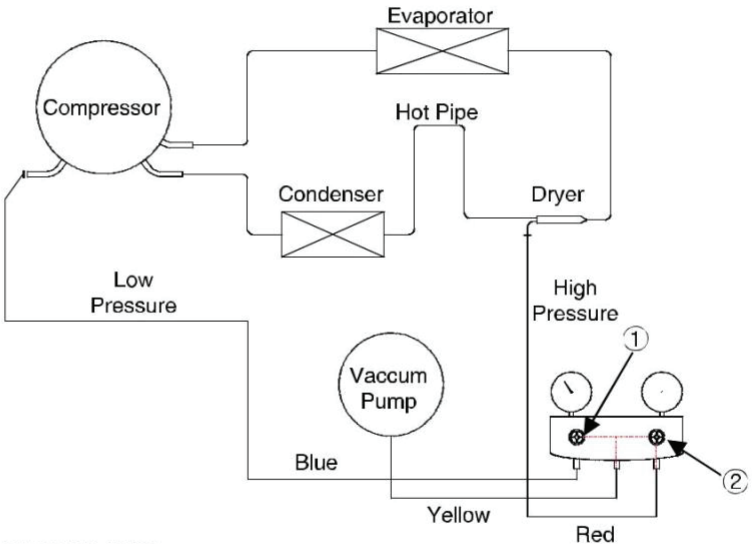
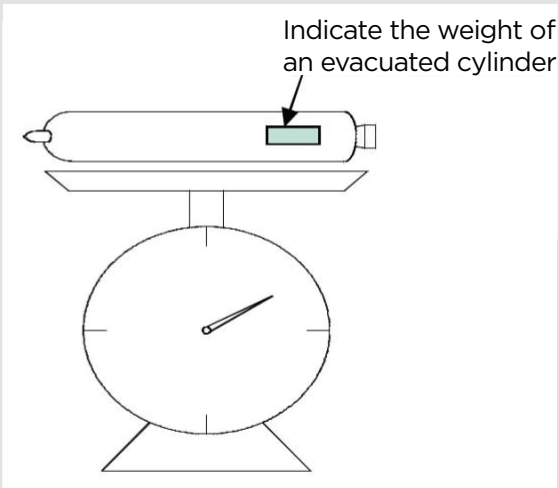
Tools organization	• Clean tools and store them in their designated place in a clean tool box	• Cleaning Cloth • Tool Box
Transportation and installation	Installation should be conducted in accordance with the standard installation procedure. Maintain recommended clearances around the refrigerator.	

Repair Regulations

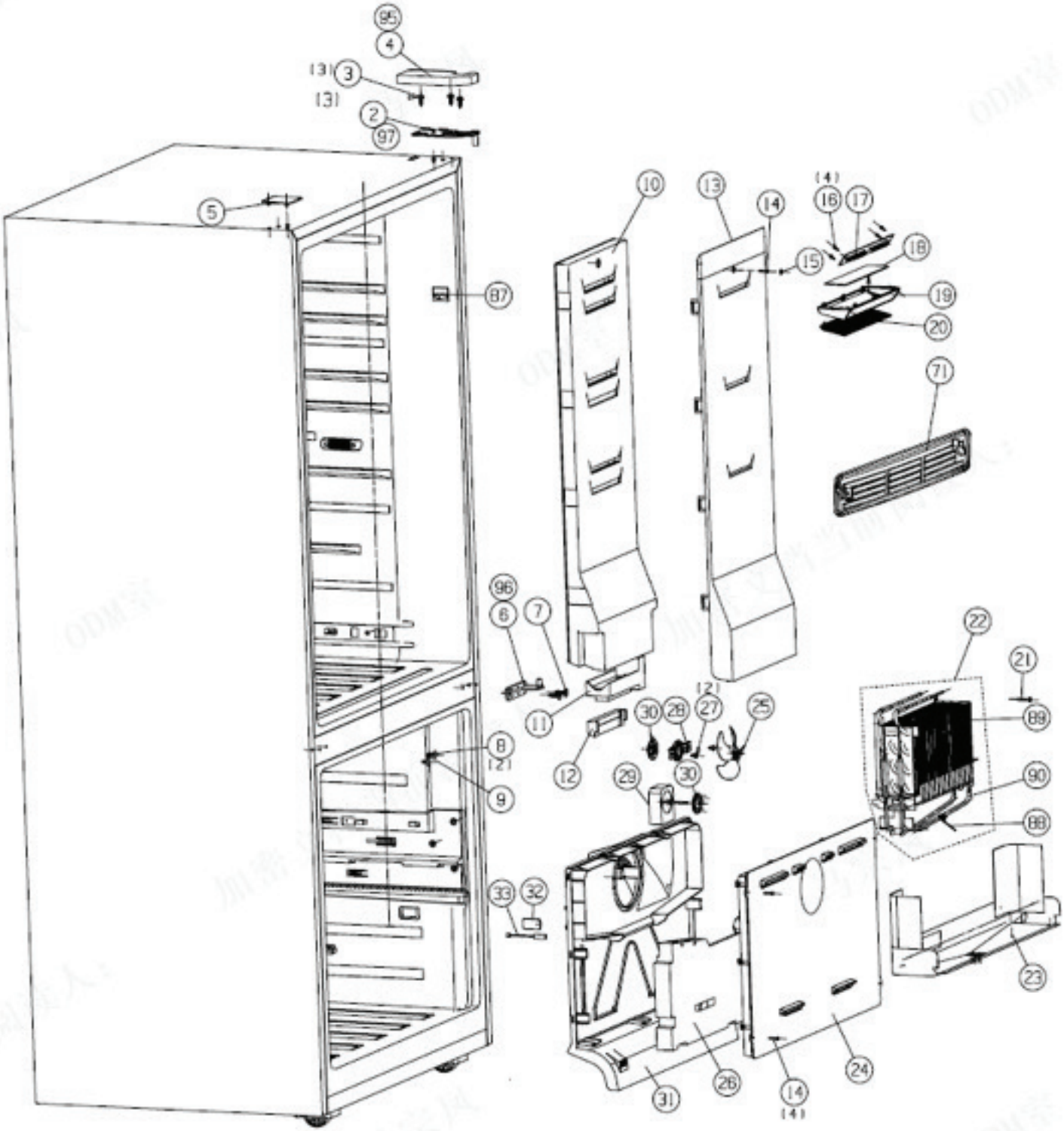
ITEMS	PRECAUTIONS
Use of tools	Use ONLY tools and parts suitable for R-600 refrigerant.
Removal of retained refrigerant	• Wait for longer than 5 minutes after turning off refrigerator before removing retained refrigerant. • Remove refrigerant, by using a nipper to first cut the high pressure side (Dryer), and then cut the low pressure side. **NOTE:** An oil leak will occur, if this order is not followed. 
Replacement of dryer	When repairing pipes and injecting refrigerant, replace the dryer.
Other	• Nitrogen only should be used when cleaning and sealing the inside of cycle pipes • Use an electronic leakage tester when checking for leakage • Use a pipe cutter when cutting pipes • Do NOT allow water to enter the refrigerant system

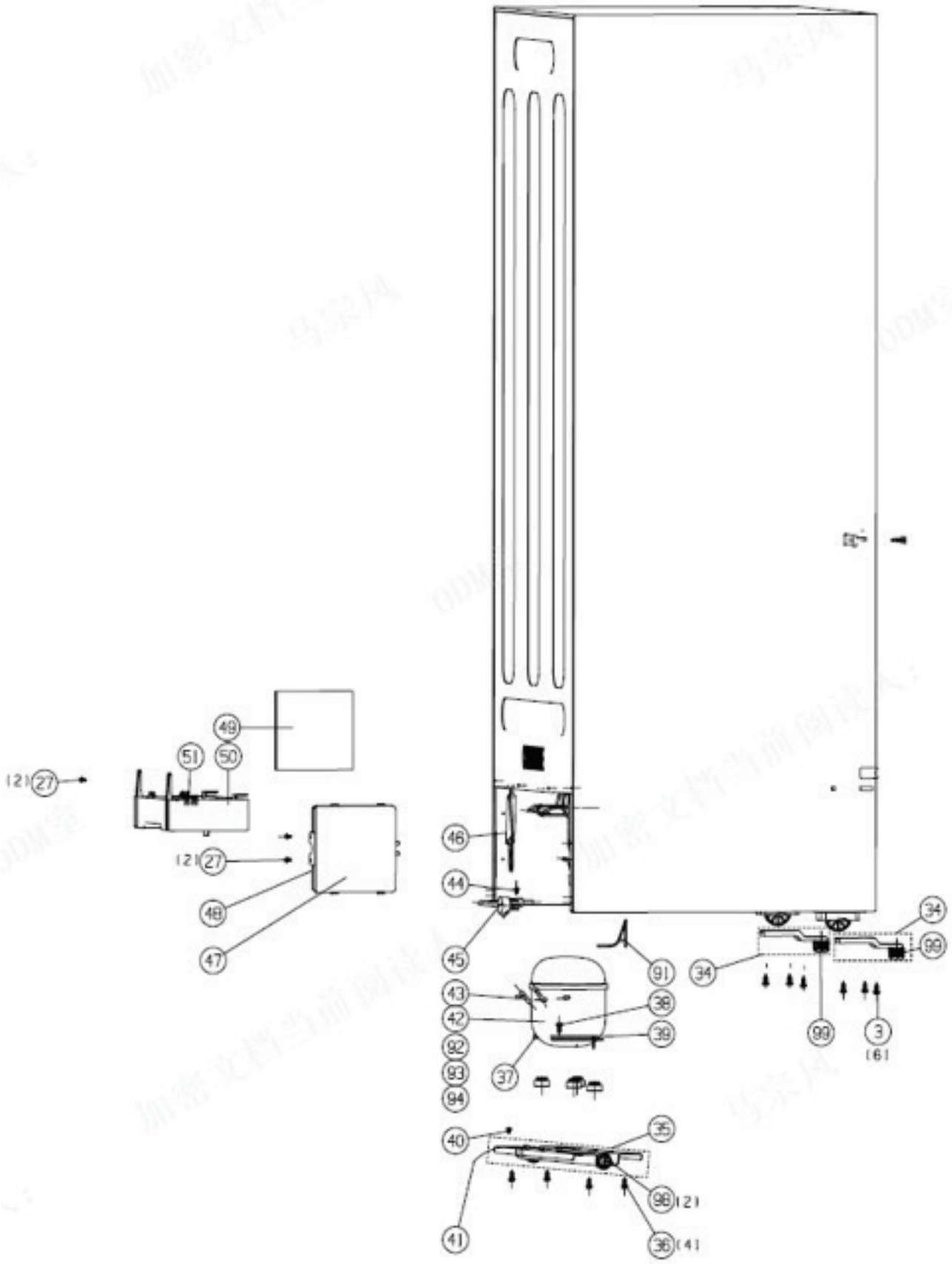
Repair Process

ITEMS	PRECAUTIONS
Removal of residual refrigerant	• After turning off refrigerator, wait for longer than 5 minutes before removing retained refrigerant. **NOTE:** If you do not wait for the recommended length of time, compressor oil may leak inside. • Remove refrigerant, by using a nipper to first cut the high pressure side (Dryer), and then cut the low pressure side. **NOTE:** An oil leak will occur, if this order is not followed. 
Sealed System Repairs	**WARNING:** Use ONLY lock rings for R600 sealed system repairs.

ITEMS	PRECAUTIONS
Vacuum Degassing	**Pipe Connection:** **1.** Connect a red hose to the high pressure side and a blue hose to the low pressure side. **Vacuum Sequence:** **1.** Open Valves 1 and 2, and evacuate for 40 minutes. **2.** Close Valve 1  **IMPORTANT:** • If power is applied during vacuum degassing, vacuum degassing will be more effective. • Operate compressor while charging refrigerant. It is easier to charge.
Refrigerant Charging	**1.** After vacuum degassing, check the amount of refrigerant supplied to each model. **2.** Evacuate cylinder with a vacuum pump. **3.** Calculate the amount of refrigerant charged. • Using an electronic scale, weigh the evacuated cylinder. • Charge refrigerant into a cylinder, and then weigh the cylinder. • Subtract the weight of an evacuated cylinder from the filled cylinder to calculate the weight of the refrigerant.  **IMPORTANT:** • Charge the refrigerant at approximately 77°F. • Subtract 5g in the winter. • Add 5g in the summer.

9. Exploded Views/Parts List

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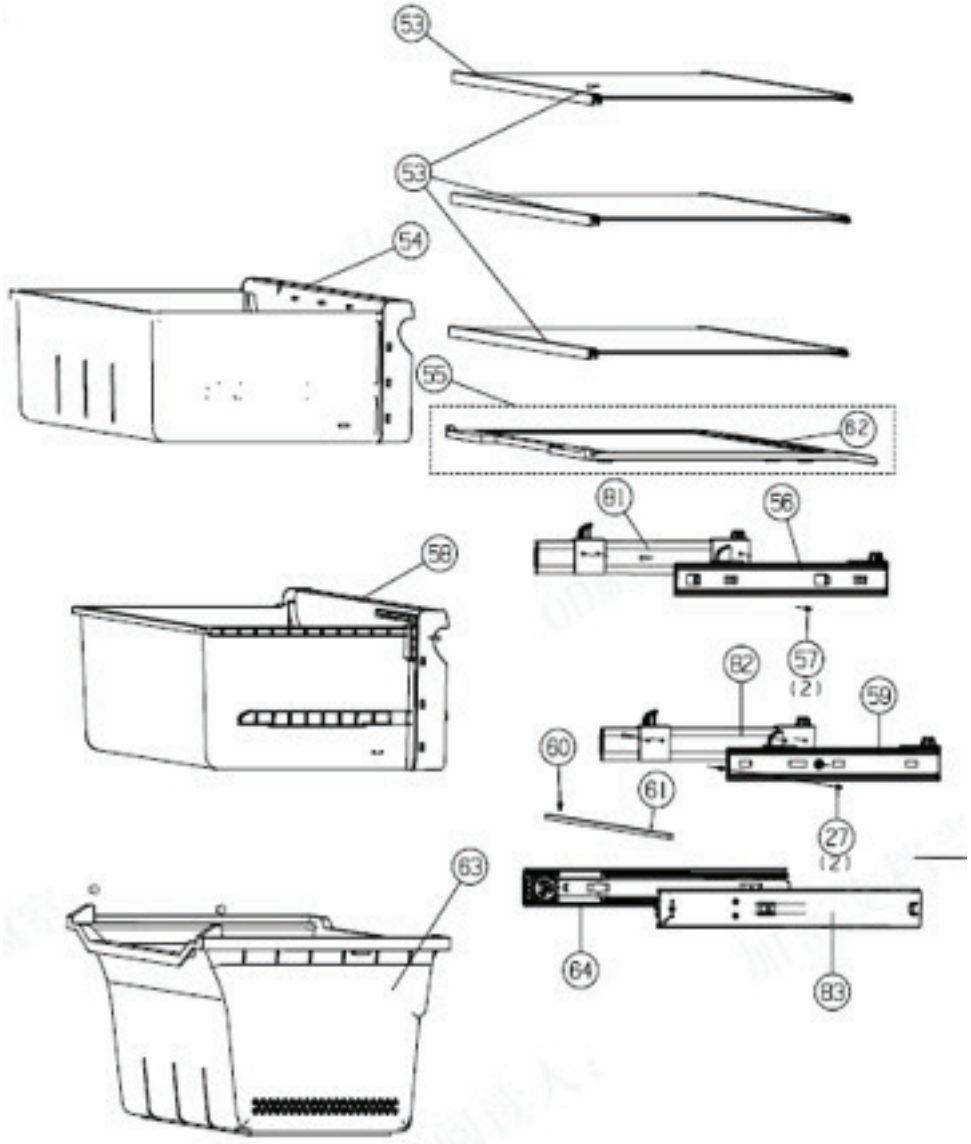
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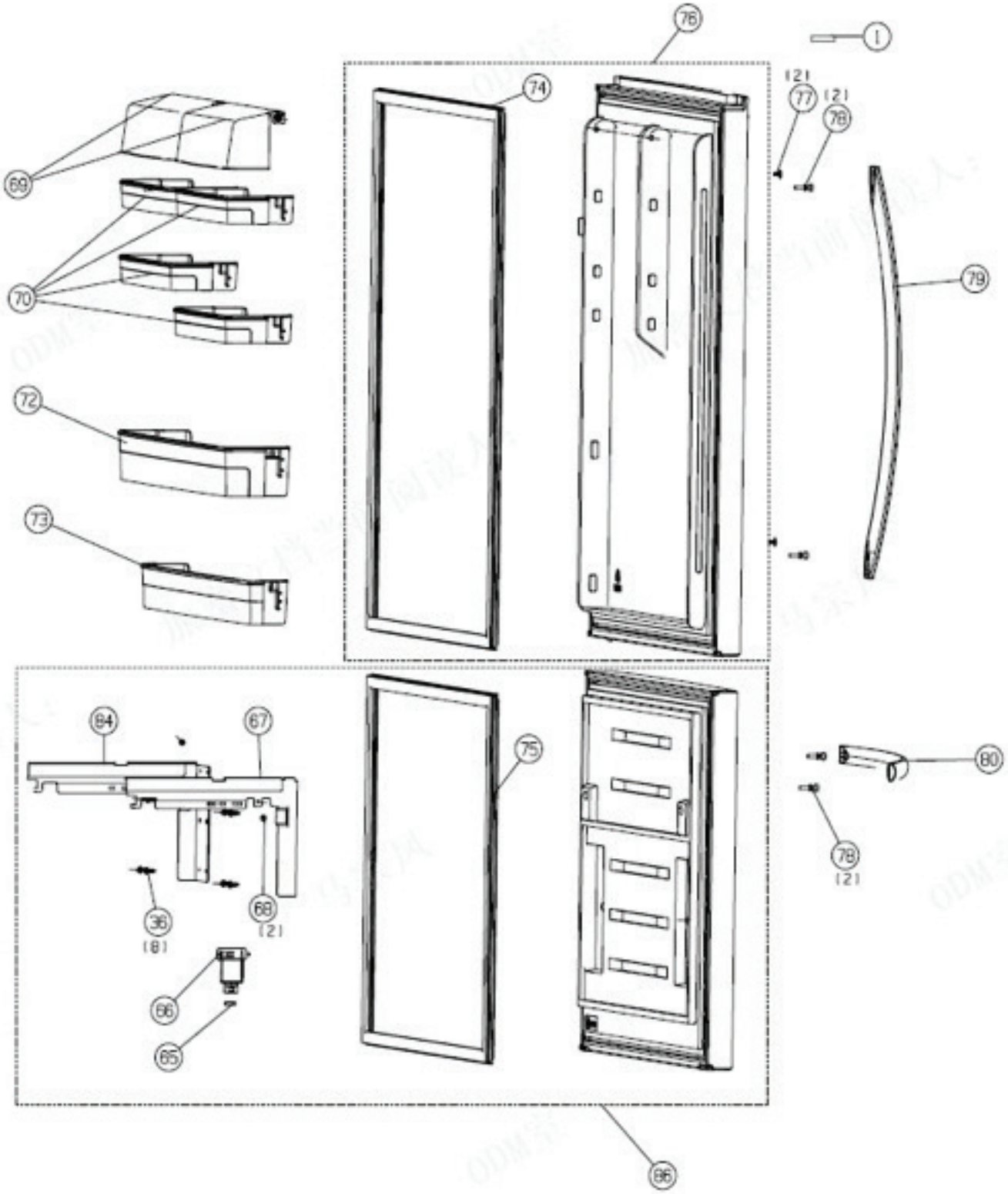

No	Part name	Part No
1	Logo	1501596
2	Upper hinge	1416576
3	Special flange self-tapping screw	1099098
4	Right upper hinge cover	1416577
5	Screw hole cover	1438991
6	Right middle hinge	1976719
7	Screw	1534952
8	Screw hole cover	1480568
9	Screw hole cover	1452135

No	Part name	Part No
10	Refrigerator wind channel foam	1475629
11	Electric wind gate	1485764
12	Wind channel foam	1475632
13	Refrigerator air duct cover drawing	1482686
14	Self-tapping screw	1104462
15	Handle cover	1118834
16	Self-tapping screw	1115532
17	Display board	1980497
18	Led light	1627681
19	Button display panel-drawing	4116936
20	Light cover	1626540
21	Self-tapping screw	1104453
22	Freezer evaporator	1979907
23	Water drain	1475669
24	Wind channel cover board in freezer chamber	1974244
25	Wind blade	1111155
26	Wind channel foam in freezer chamber	1974248
27	Self-tapping screw	1099042
28	Fan motor supporter	1461700
29	Refrigerator fan	1952119
30	Vibration pad	1461686
31	Wind channel cover board in freezer cham	1475638
32	Reed pip cover	1467095
33	Dry reed pipe	1468523
34	Ajustable bottom feet	2028148
35	Roll wheel axis	1434052
36	Special flange self-tapping screw	1115414
37	Right impact board	1111096
38	Screw	1486161
39	Impact board	1072839
40	Fastening components	1492172
41	Compressor grounding wire	1407418
42	Compressor	1980380
43	Process tube	1639201
44	Self-tapping screw	1099081
45	Power line	1611314
46	Filter dryer	1355795
47	Control board box cover	1618078
48	Control board box	1618076
49	Main control board	1623862
50	Evaporating dish	1562054
51	Condenser fixed clip	1522104
53	Shelf	1989358
54	Crisper drawer	4098983
55	Crisper box cover component	1572597
56	Guided rail for drawer	1475698
57	Screw	1099091
58	Middle drawer	1945500

No	Part name	Part No
59	Left guided rail for drawer	1980223
60	Bolt	1944366
61	Rail link pole	1978560
62	Humidity conditioning slide block	1490355
63	Freezer lower drawer	1979347
64	Left guided rail for drawer	1979569
65	Magnetic core	1467280
66	Fixed card of magnetic core	1529145
67	Left drawer rail	1557363
68	Self-tapping screw	1099076
69	Shelf cover	4098723
70	Small shelf	1945509
71	Air return cover	1468019
72	Middle shelf	4098731
73	Lower shelf	4098726
74	Gasket	1988800
75	Gasket	1988799
76	Refrigerator door	1974099
77	Handle cover	1981758
78	Hinge supporter	1540244
79	Upper hinge	1539228
80	Lower hinge	1976748
81	Guided rail for drawer	1475699
82	Right guided rail for drawer	1980225
83	Right guided rail for drawer	1979570
84	Right drawer rail	1557365
86	Freezer door	1974289
87	Door switch	1114246
88	Defrost stick	1434761
89	Wing slice evaporator	1475973
90	Tube type electric heater	1973269
91	Connecting tube	1051128
92	Starter	1512634
93	Compressor overload protector	1563801
94	Compressor running capacitor	1563802
95	Left upper hinge cover	1428339
96	Left middle hinge	1976711
97	Left upper hinge	1428326

No	Part name	Part No
98	Roll wheel	1103815
99	Ajustable bottom feet	2023827