



BOTTOM FREEZER REFRIGERATOR

REFRIGERATOR SERVICE MANUAL

**CAUTION
BEFORE SERVICING THE PRODUCT
READ THE SAFETY PRECAUTIONS IN THIS MANUAL**



ENGLISH

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795.77304.600/601
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795.77309.600/601
795.77312.600/601
795.77314.600/601
795.77316.600/601
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SAFETY PRECAUTIONS

Please read the following instructions before servicing your refrigerator.

1. Check the refrigerator for current leakage.
2. To prevent electric shock, unplug before servicing.
3. Always check line voltage and amperage.
4. Use standard electrical components.
5. Don't touch metal products in the freezer with wet Hands. This may cause frost bite.
6. Prevent water from spilling onto electrical components Or the Machine parts.
7. Before tilting the refrigerator, remove all materials from On or in the refrigerator.
8. When servicing the evaporator, wear gloves to prevent Injuries from the sharp evaporator fins.
9. Service on the refrigerator should be performed by a Qualified technician. Sealed system repair must be Performed by a CFC certified technician.

1. SPECIFICATIONS

1-1 DISCONNECT POWER CORD BEFORE SERVICING IMPORTANT: RECONNECT ALL GROUNDING DEVICES.

All parts of this appliance capable of conducting electrical current are grounded. If grounding wires, screws, straps, clips, nuts or washers used to complete a path to ground are removed for service, they must be returned to their original position and properly fastened.

1-2 IMPORTANT NOTICE

This information is intended for use by individuals possessing adequate background of electrical, electronic and mechanical experience. Any attempt to repair a major appliance may result in personal injury and property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.

1.3 ELECTRICAL SPECIFICATIONS

Freezer Temperature Control (Middle setting)	-6°F to +8°F
Defrost Control	Automatic
Defrost Thermostat	50°F
Electrical Rating : 115VAC, 60Hz.....	1- 5 A
Maximum Current Leakage	0.5mA
Maximum Ground Path Resistance	0.14 Ohms
Energy Consumption.....	22 cu.ft. 493 kWh/yr (Energy Star)

1-4 NO LOAD PERFORMANCE

Control Position: MID/MID

And Ambient of:	70°F	90°F
Fresh Food, °F.....	33°F to 41°F	33°F to 41°F
Frozen Food, °F.....	-4°F to +4°F	-4°F to +4°F
Percent Running Time.....	25%-35%	45%-60%

1-5 REFRIGERATION SYSTEM

Minimum Compressor Capacity Vacuum	21 in
Minimum Equalized Pressure	
@70°F.....	49PSIG
@90°F.....	56PSIG
Refrigerant R134a.....	4.2 oz
Compressor	700 BTU/hr

1-6 INSTALLATION

Clearance must be provided at top, sides and rear of the refrigerator for air circulation.

AT TOP.....	1 in
AT SIDES.....	1/8 in
AT REAR.....	1 in

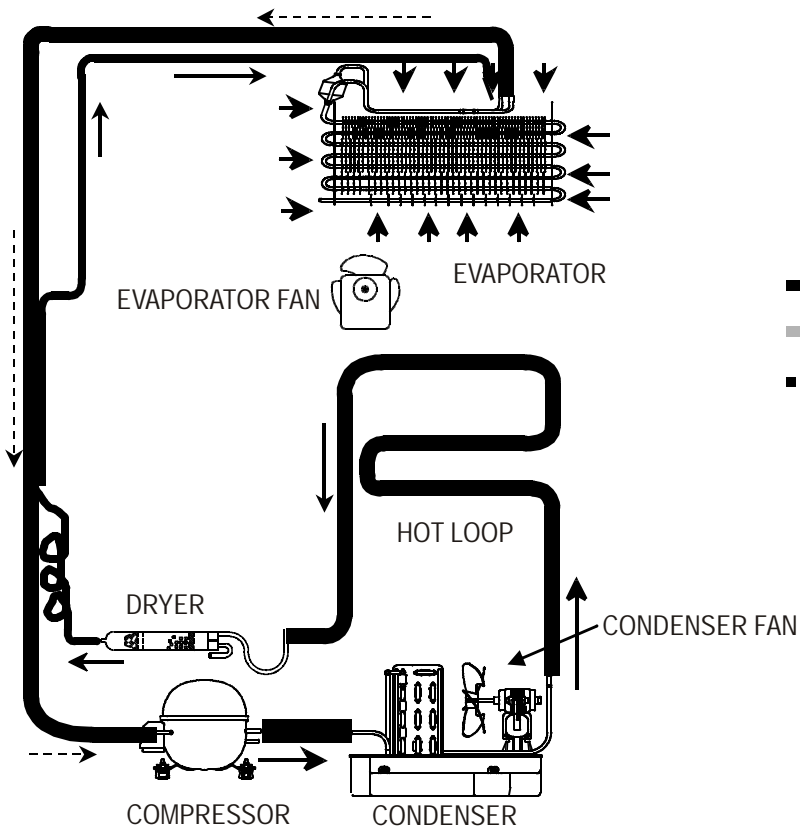
**PERFORMANCE DATA
(NORMAL OPERATING CONDITIONS)**

AMB	WATTS	SYSTEM PRESSURE (PSIG)	
		HIGH SIDE	LOW SIDE
70°F	98 (+10 / -10)	98 (+5 / -3)	(-5) to (-2)
90°F	98 (+10 / -10)	132 (+3 / -3)	(-4) to 1
110°F	103 (+5 / -5)	180 (+5 / -5)	(-2) to 3

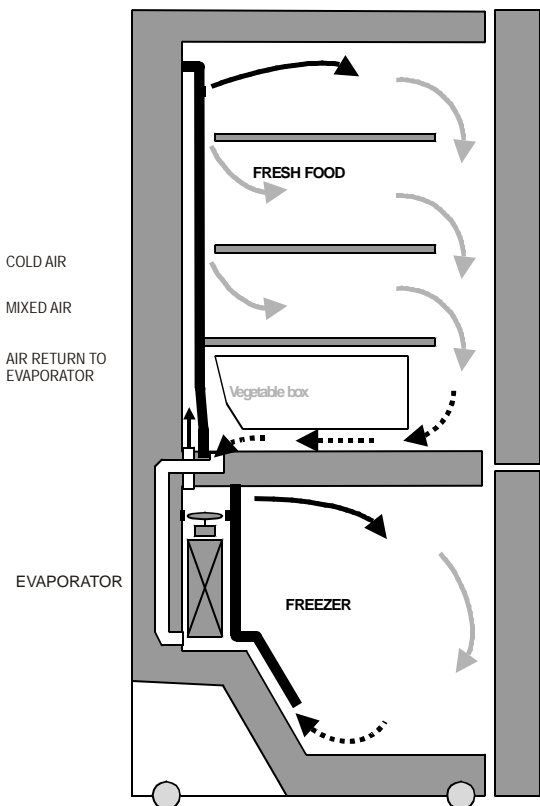
1-7 REPLACEMENT PARTS

Relay	EBG32606502
Overload	6750C-0004S
Defrost Thermostat	6615JB2005C
Defrost Heater	5300JB1100J
Evaporator fan motor	4681JK1004A
Capacitor	0CZZJB2012J
Compressor (Hi-Side)	2521CRA5715
Evaporator (Lo-Side)	5421JJ1001B
Condenser	5403JJ1007A
Dryer	5851JJ2002F
Condenser fan motor	4681JB1029J
Temperature Control	6871JB1374C
Main Control	6871JK1011A

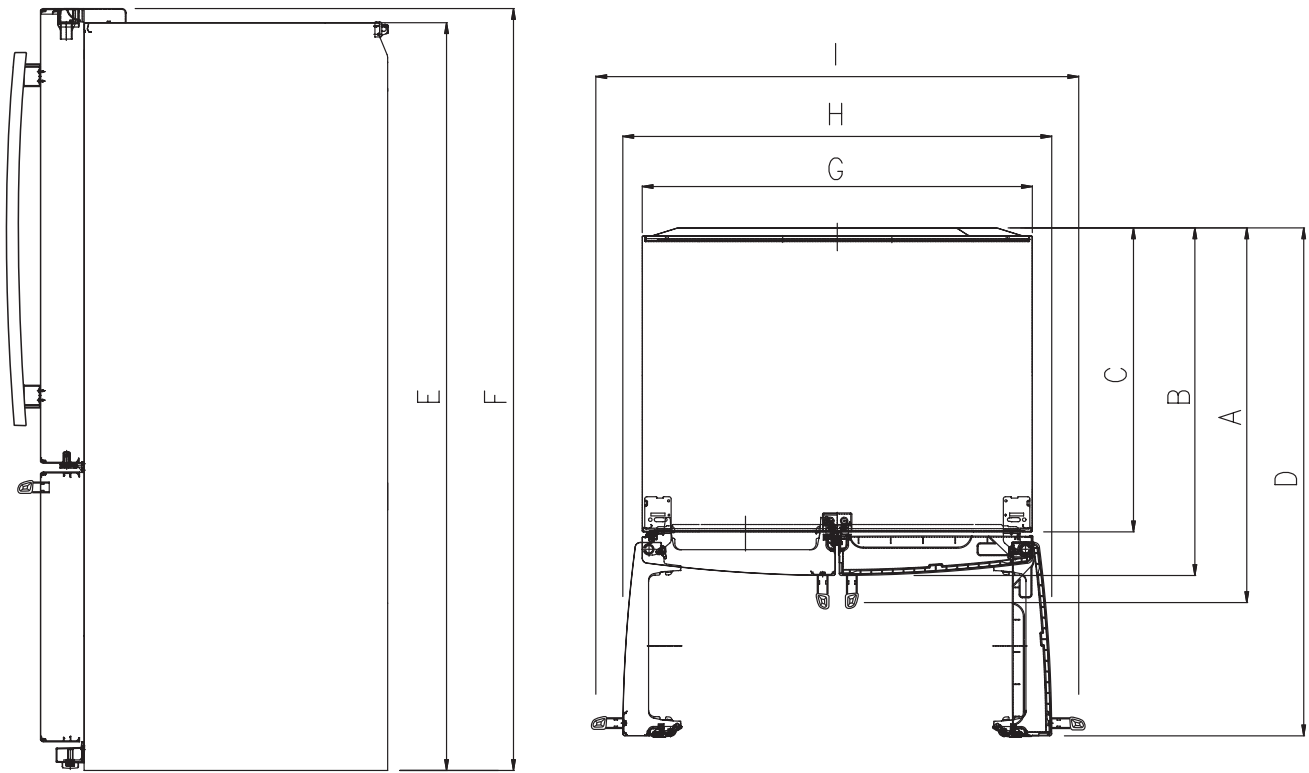
1-8 AIR FLOW / CIRCULATION D'AIR.



COLD AIR
 MIXED AIR
 AIR RETURN TO EVAPORATOR

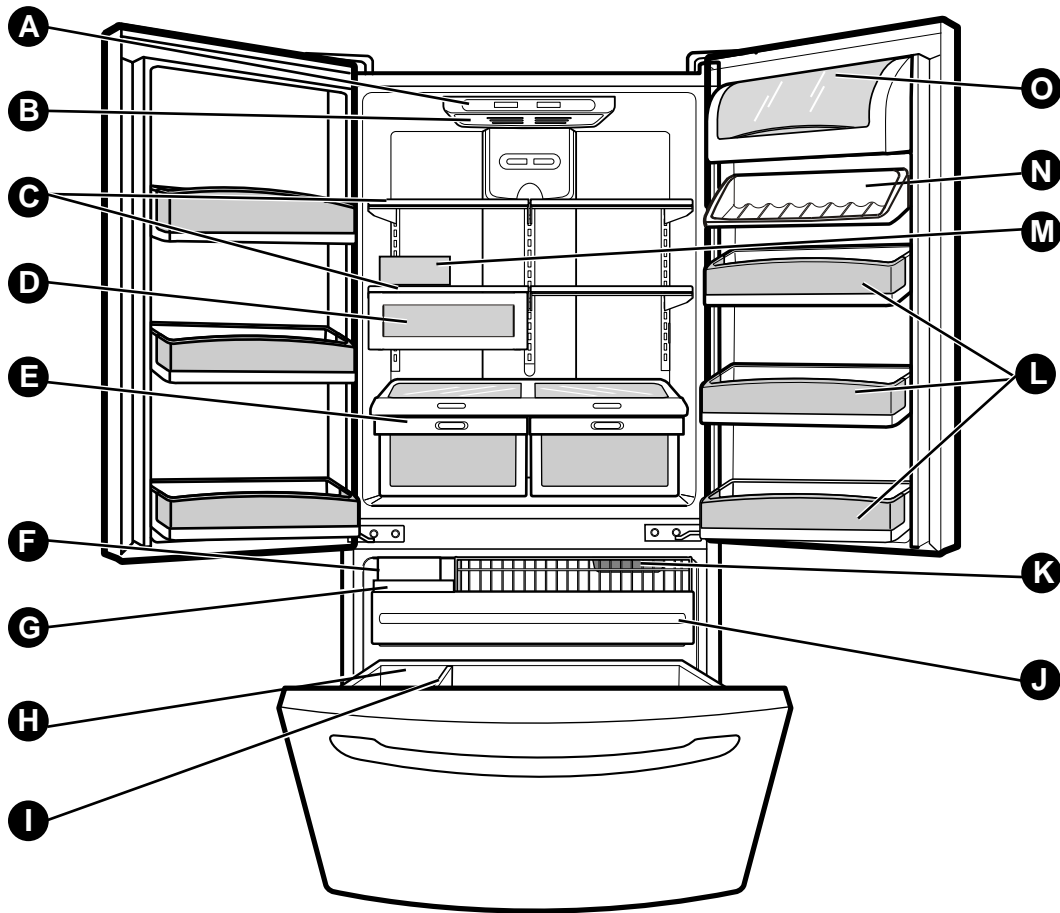


DIMENSIONS



Description		7730* / 7731*
Depth w/ Handles	A	34 ½
Depth w/o Handles	B	32
Depth w/o Door	C	28 ¼
Depth (Total with Door Open)	D	45 ½
Height to Top of Case	E	67 1/16
Height to Top of Door Hinge	F	68 7/8
Width	G	32 ¾
Width (door open 90 deg. w/o handle)	H	36
Width (door open 90 deg. w/ handle)	I	41

2. PARTS IDENTIFICATION



Use this section to become more familiar with the parts and features.

NOTE:This guide covers several different models.The refrigerator you have purchased may have some or all of the items listed below.The locations of the features shown below may not match your model.

- | | |
|---|----------------------------------|
| A Cool Sense Electronic Temperature Control System | J Glide-Out Drawer Basket |
| B Refrigerator Light | K Freezer Light |
| C Refrigerator Shelves | L Modular Door Bins |
| D Snack Pan | M Egg Box |
| E Supra Fresh Crisper with Tilt-Out Compartment | N Can Rack* |
| F Adjusta Cube Ice Maker | O Dairy Corner |
| G Ice Bin | |
| H Durabase | |
| I Divider | |

*On some models

3. DISASSEMBLY

3-1 DOOR

► Left Door

- Loosen the cover screw (1).
- Disconnect door switch wire (2).
- Loosen hinge bolts (3).
- Lift off the top hinge (4).
- Place the door on a non-scratching surface with the inside up.

► Right Door

- Loosen the cover screw (1).
- Disconnect door switch wire (2).
- Disconnect wire harness (3).
- Loosen hinge bolts (4).
- Loosen ground screw (5).
- Lift off the top hinge (6).
- Place the door on a non-scratching surface with the inside up.

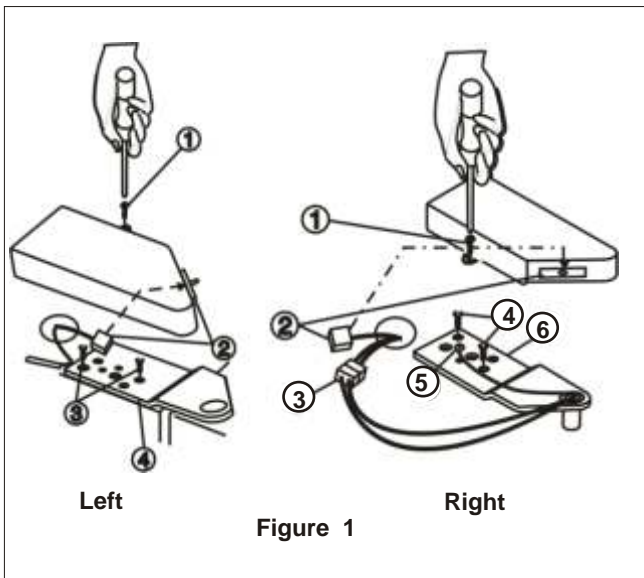


Figure 1

Door Gasket Removal

1. Remove door frame cover

Starting at top of cover and working down, snap cover out and away from door.

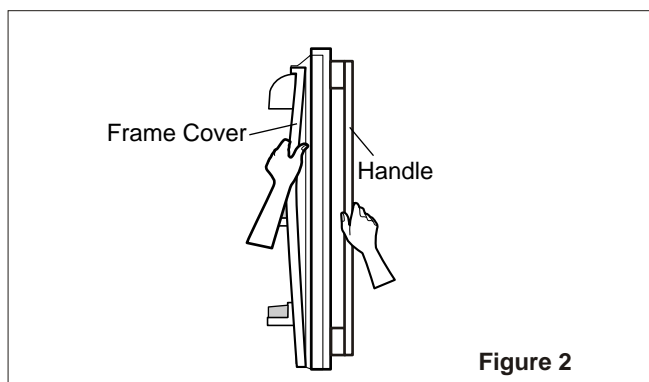


Figure 2

2. Remove gasket bracket clips

There are two clips on each door. Start bracket removal near one of the middle clips.

- 1) Pull gasket back to expose gasket bracket clip and door frame.
- 2) Insert a flat tip screwdriver into seam between gasket bracket and door frame and pry back until clips snap out.
- 3) Continue prying back along seam until all clips snap out.

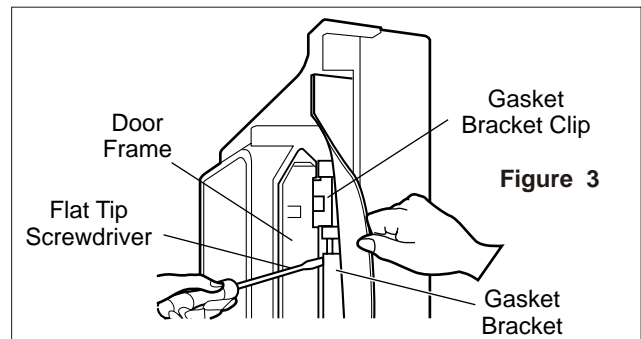


Figure 3

3. Remove gasket

Pull gasket free from gasket channel on the three remaining sides of door.

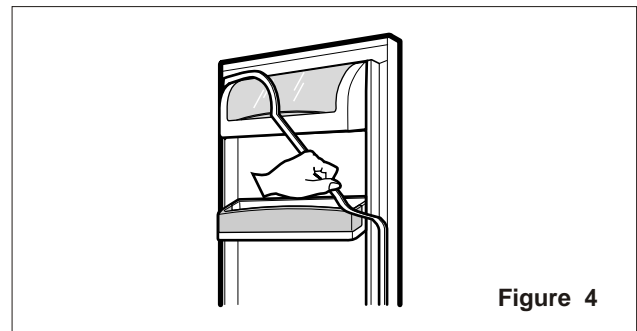


Figure 4

Door Gasket Replacement

1. Insert gasket bracket clips

- 1) Insert gasket bracket edge beneath door frame edge.
- 2) Turn upper gasket bracket spring so that both spring ends are in the door channel.
- 3) Push in clip until you hear it snap securely into place.

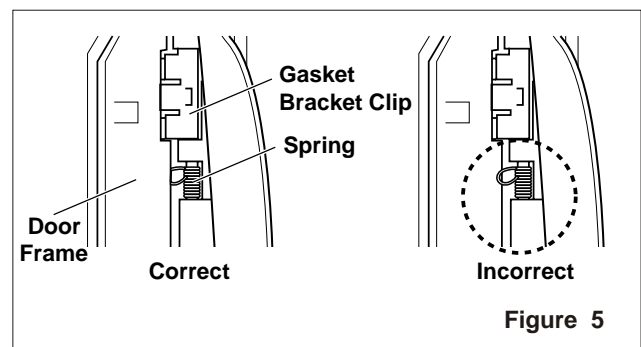


Figure 5

- 4) Push in remaining two clips until you hear each snap securely into place.

Note: Make sure that no part of gasket bracket edge protrudes from beneath door frame edge.

2. Insert gasket into channel

1) Snap gasket assembly into the door bracket.

Inserting the Gasket Assembly into the Bracket Door.

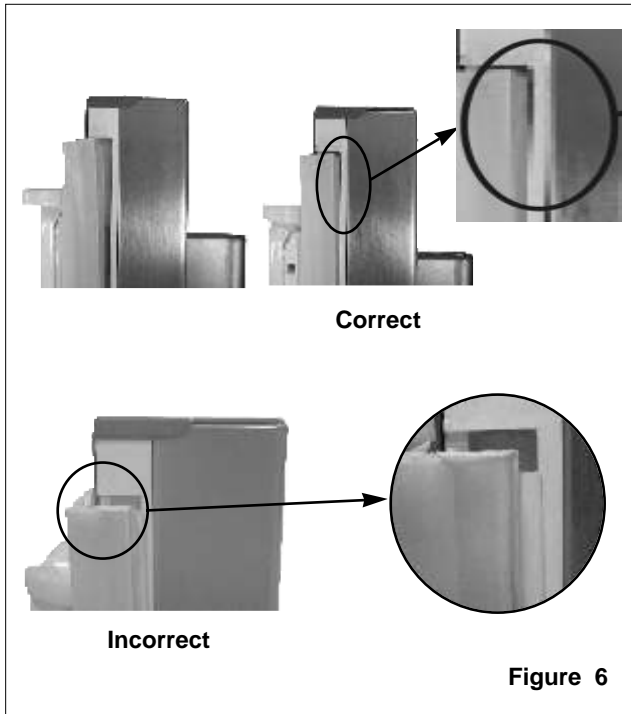


Figure 6

2) Press gasket into channel on the three remaining sides of door.

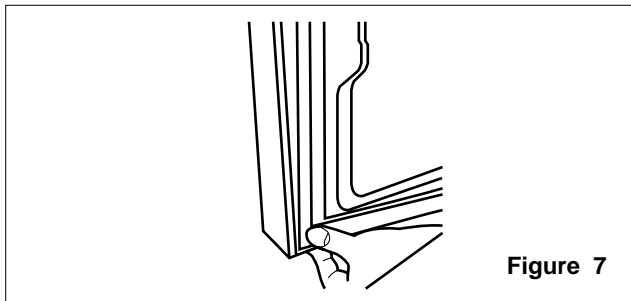


Figure 7

3. Replace door frame cover

Starting at top of cover and working down, snap the cover back into door.

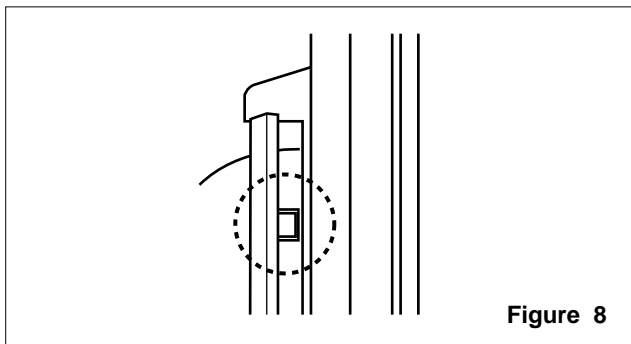


Figure 8

3-2 DOOR ALIGNMENT

If the space between your doors is uneven, follow the instructions below to align the doors:

1. With one hand, lift up the door you want to raise near the middle hinge.
2. With other hand, use pliers to insert snap ring at the middle hinge as shown.
3. Insert additional snap rings until the doors are aligned. (Three snap rings are provided with the product.)

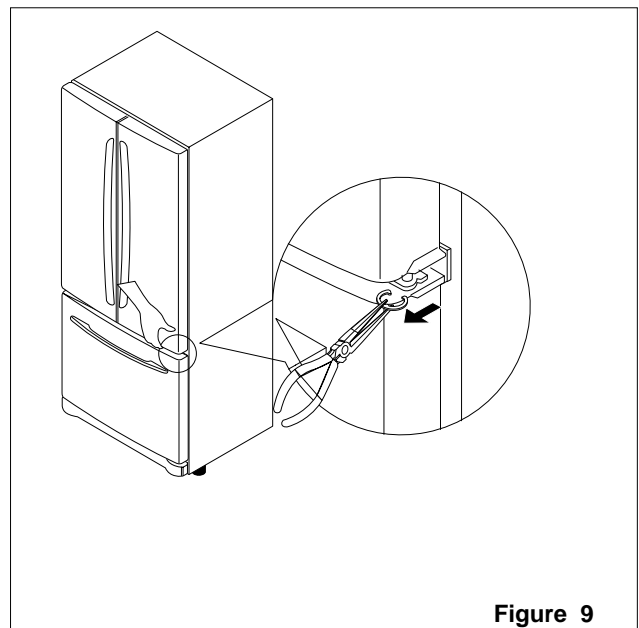


Figure 9

3-3 FAN AND FAN MOTOR

1. Remove the freezer shelf. (If your refrigerator has an icemaker, remove the icemaker first)
2. Remove the plastic guide for slides on left side by unscrewing phillips head screws.
3. Remove the grille by removing one screw and pulling the grille forward.
4. Remove the Fan Motor assembly by loosening 2 screws.
5. Pull out the fan and separate the Fan Motor and Bracket.

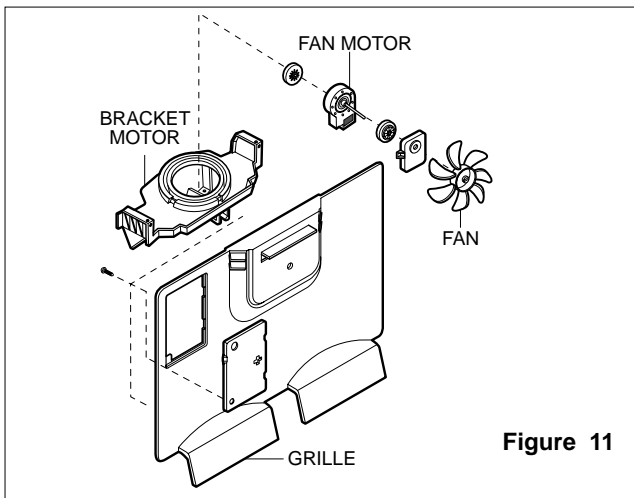


Figure 11

3-4 DEFROST CONTROL ASSEMBLY

Defrost Control assembly consists of Defrost Sensor and FUSE-M.

The Defrost Sensor works to defrost automatically. It is attached to the metal side of the Evaporator and senses its Temperature.

Fuse-M is a safety device for preventing over-heating of the evaporator area when defrosting.

At 72°C, it turns the Defrost Heater off.

1. Pull out the grille assembly. (Figure 12)
2. Separate the connector with the Defrost Control assembly and replace the Defrost Control assembly after cutting the tie wrap. (Figure 13)
3. Be sure to retie the wires when reassembling after service.

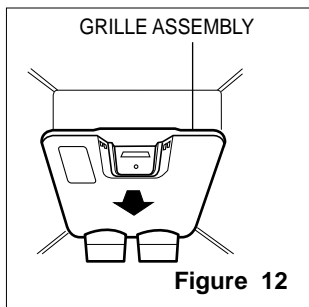


Figure 12

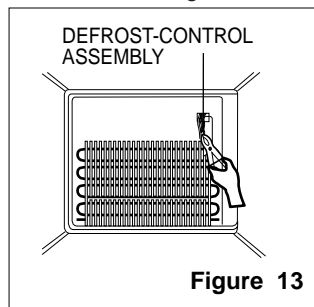


Figure 13

3-5 LAMP

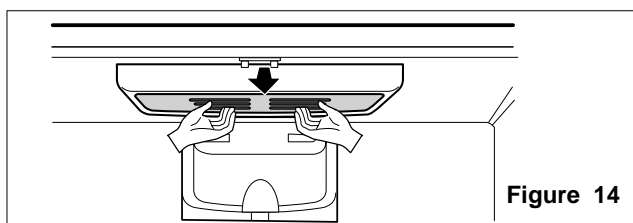


Figure 14

3-5-1 Refrigerator Compartment Lamp

1. Unplug Refrigerator, or disconnect power at the circuit breaker.
2. If necessary, remove top shelf or shelves.
3. Release the hooks on both ends of the lamp shield and pull the shield downward to remove it.
4. Turn the lamp counterclockwise.
5. Assembly is the reverse of disassembly. Replacement bulb must be the same specification as the original (Max. 60 W, 2 EA).

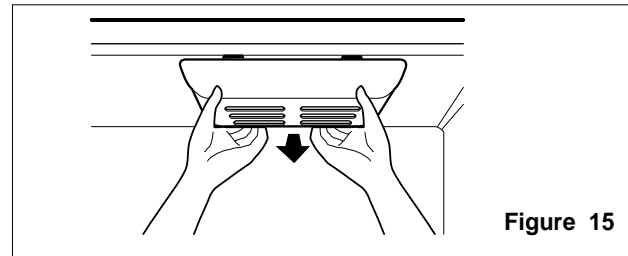


Figure 15

3-5-2 Freezer Compartment Lamp

1. Unplug Refrigerator, or disconnect power at the circuit breaker.
2. Release the hooks at back of light cover and pull the cover down to remove it. (Figure 15)
3. Turn the lamp counterclockwise.
4. Assembly is in the reverse order.
Replacement bulb must be the same specification as the original. (Max 60W)

3-6 REFRIGERATOR CONTROL BOX

1. First, remove all shelves in the refrigerator, then remove the Refrigerator control Box by loosening 2 screws.

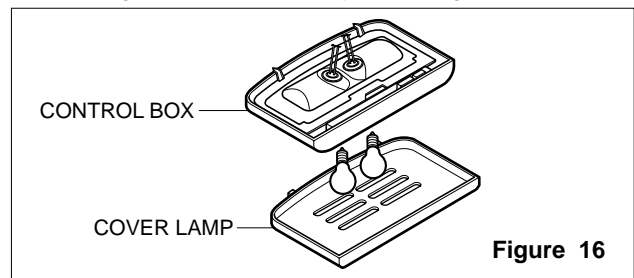


Figure 16

2. Remove the Refrigerator Control Box by pulling it downward.
3. Disconnect the lead wire on the right position and separate the lamp sockets.

3-7 MULTI DUCT

1. Remove the upper and lower caps by using a flat screwdriver, and remove 2 screws. (Figure 17)
2. Disconnect the lead wire on the bottom position.

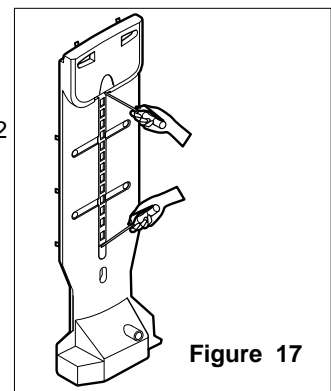


Figure 17

3-8 HOW TO REMOVE AND REINSTALL THE PULL OUT DRAWER

3-8-1 FOLLOW STEPS TO REMOVE

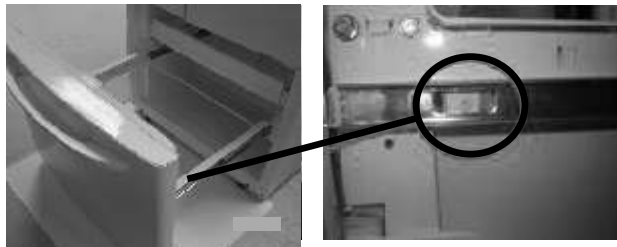
Step 1) Open the freezer door.



Step 2) Remove the lower basket.



Step 3) Remove the two screws from the guide rails (one from each side).



Step 4) Lift the freezer door up to unhook it from the rail support and remove. Pull both rails to full extension.

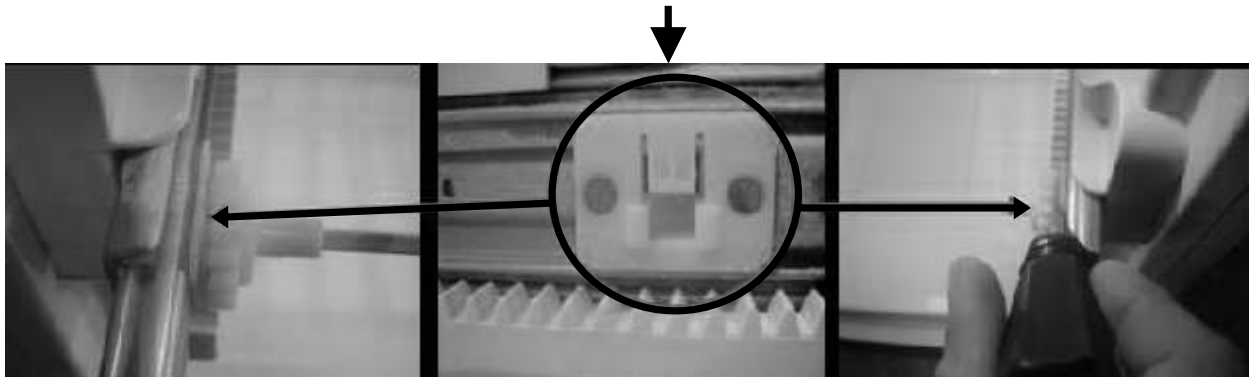


Step 5) First: Remove the gear from the left side first by releasing the tab behind the gear, place a screwdriver between the gear and the tab and pull up on the gear.

Second: Remove the center rail.

Third: Remove the gear from the right side by following the same steps for the left side.

NOTE: THIS TAB MUST BE PUSHED IN TO RELEASE THE GEAR.



3-8-2 FOLLOW STEPS TO REINSTALL

Step 1) Reinstall the right side gear into the clip.



Step 2) Insert the rail into the right side gear. Gears do **not** need to be perpendicular to each other.



Step 3) Insert the rail into the left side gear, and insert the gear into the clip.



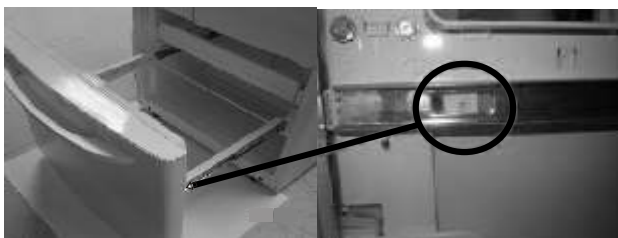
Step 4) The rail system will align itself by pushing the rails all the way into the freezer section. Pull the rails back out to full extension.



Step 5) Reinstall the freezer door by inserting the rail tabs into the guide rail.



Step 6) Reinstall the two screws into the guide rails (one from each side).

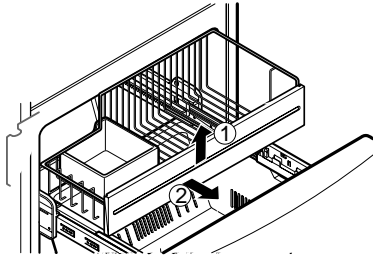


Step 7) Reinstall the lower basket, and close the freezer door.

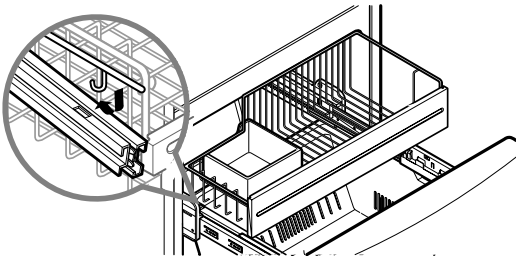
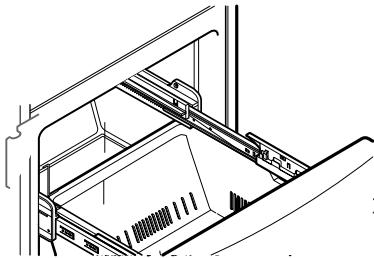


3.8.3 GLIDE-OUT DRAWER BASKET

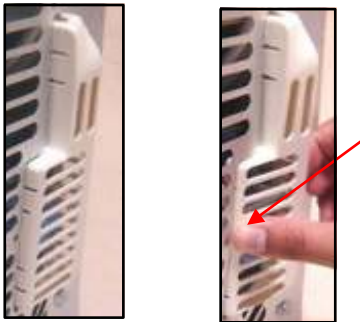
1. To remove, lift basket up and pull out straight out.



2. To Install, pull both rails out to full extension.
Hook the basket supports into the rail tabs and push to the back of compartment.



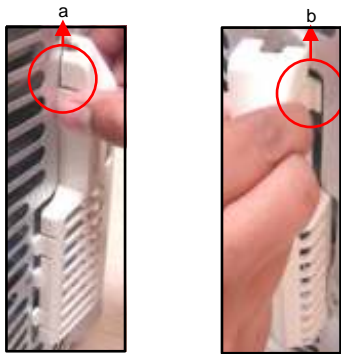
3-9 Cover Valve
- Disassemble



1. Push to inside the cover valve.



2. Push to the right and release.

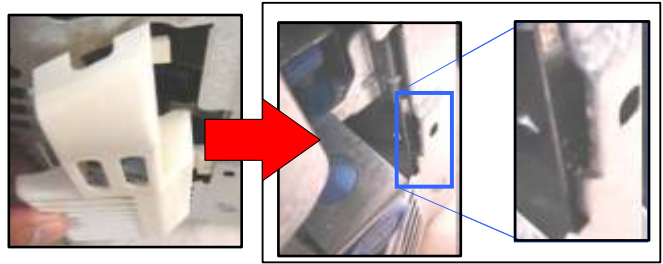


3. Release hook a & b

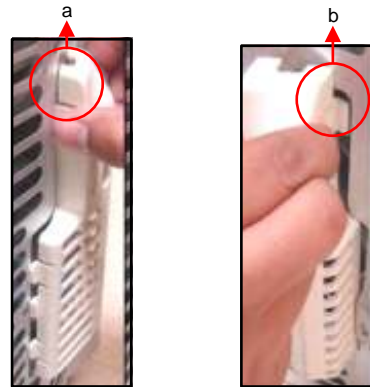


4. Turn the cover valve 120° as shown in the picture, then release it.

- Assemble



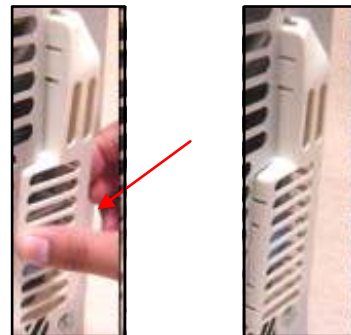
1. Insert the cover valve as shown in the picture, push to insert (may need force).



2. Insert hook a & b



3. Push to the right to insert the cover valve.



4. Then push to inside to assembly.

4. COMPRESSOR ELECTRICAL

4-1 COMPRESSOR

4-1-1 Role

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

4-1-2 Composition

The compressor includes overload protection. The PTC starter and OLP (overload protector) are attached to the outside of the compressor. Since the compressor is manufactured to tolerances of 1 micron and is hermetically sealed in a dust and moisture-free environment, use extreme caution when repairing it.

4-1-3 Note for Usage

- (1) Be careful not to allow over-voltage and over-current.
- (2) If compressor is dropped or handled carelessly, poor operation and noise may result.
- (3) Use proper electric components appropriate to the particular compressor in your product.
- (4) Keep compressor dry.
If the compressor gets wet (in the rain or a damp environment) and rust forms in the pin of the Hermetic Terminal, poor operation and contact may result. If the hermetic connector rusts out or fails, refrigerant and oil will be expelled into the contact area, probably resulting in smoke and fire.
- (5) When replacing the Compressor, be careful that dust, humidity, and soldering flux don't contaminate the inside of the compressor. Contamination in the cylinder may cause noise, improper operation or even cause it to lock up.

4-2 PTC-STARTER

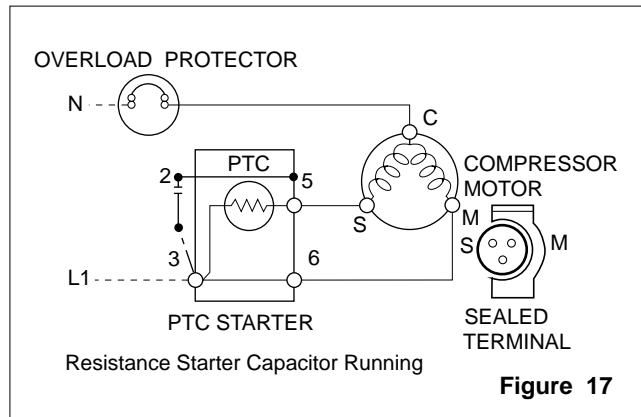
4-2-1 Composition of PTC-Starter

- (1) PTC (Positive Temperature Coefficient) is a no-contact semiconductor starting device which uses ceramic material consisting of BaTiO_3 .
- (2) The higher the temperature is, the higher the resistance value. These features are used as a starting device for the motor.

4-2-2 Role of PTC-Starter

- (1) The PTC is attached to the sealed compressor and is used for starting the motor.
- (2) The compressor is a single-phase induction motor. During the starting operation, the PTC allows current flow to both the start winding and main winding.
- (3) As the compressor starts, the current through the PTC causes its temperature to rise, and so the resistance also rises. When the resistance reaches a high enough level, only a trickle current will be running through the start winding. This small current then keeps the PTC hot and the resistance high.

4-2-3 PTC-Applied Circuit Diagram •Starting Method for the Motor



4-2-4 Motor Restarting and PTC Cooling

- (1) It requires approximately 5 minutes for the pressure to equalize before the compressor can restart.
- (2) The PTC device generates heat during operation. Therefore, it must be allowed to cool before the compressor can restart.

4-2-5 Relation of PTC-Starter and OLP

- (1) If the compressor attempts to restart before the PTC device is cooled, the PTC device will allow current to flow only to the main winding.
- (2) The OLP will open because of the overcurrent condition. This same process will continue (3 to 5 times) when the compressor attempts to restart until the PTC device has cooled. The correct OLP must be properly attached to prevent damage to the compressor.

Parts may appear physically identical but could have different electrical ratings. Replace parts by part number and model number. Using an incorrect part could result in damage to the product, fire, injury, or possibly death.

4-2-6 Note for Using the PTC-Starter

- (1) Be careful not to allow over-voltage and over-current.
- (2) Do not drop or handle carelessly.
- (3) Keep away from any liquid.
If liquid such as oil or water enters the PTC, PTC materials may fail due to breakdown of their insulating capabilities.
- (4) If the exterior of the PTC is damaged, the resistance value may be altered. This can cause damage to the compressor and result in a no-start or hard-to-start condition.
- (5) Always use the PTC designed for the compressor and make sure it is properly attached to the compressor. Parts may appear physically identical but could have different electrical ratings. Replace parts by part number and model number. Using an incorrect part could result in damage to the product, fire, injury, or possibly death.

4-3 OLP (OVERLOAD PROTECTOR)

4-3-1 Definition of OLP

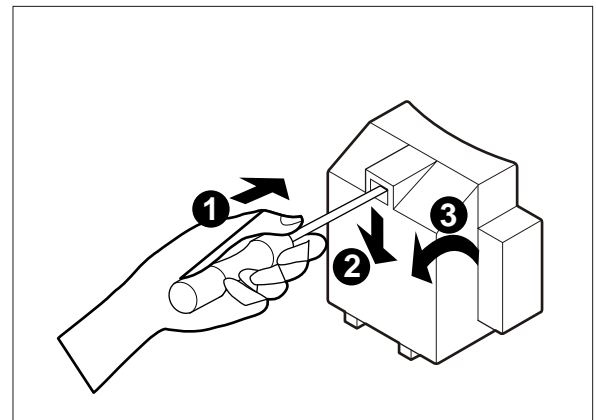
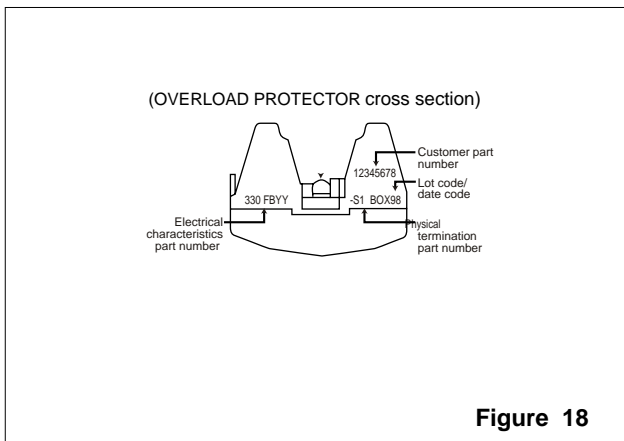
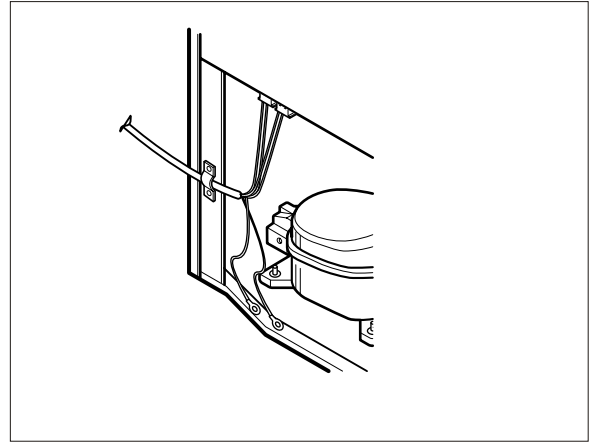
- (1) OLP (OVERLOAD PROTECTOR) is attached to the compressor and protects the motor by opening the circuit to the motor if the temperature rises activating the bimetal spring in the OLP.
- (2) When high current flows to the compressor motor, the bimetal works by heating the heater inside the OLP, and the OLP protects the motor by cutting off the current flowing to the compressor motor.

4-3-2 Role of the OLP

- (1) The OLP is attached to the sealed compressor used for the refrigerator. It prevents the motor coil from being started in the compressor.
- (2) For normal operation of the OLP, do not turn the adjust Screw of the OLP in any way.

4-4 TO REMOVE THE COVER PTC

- 1) Remove the back cover of the mechanical area.

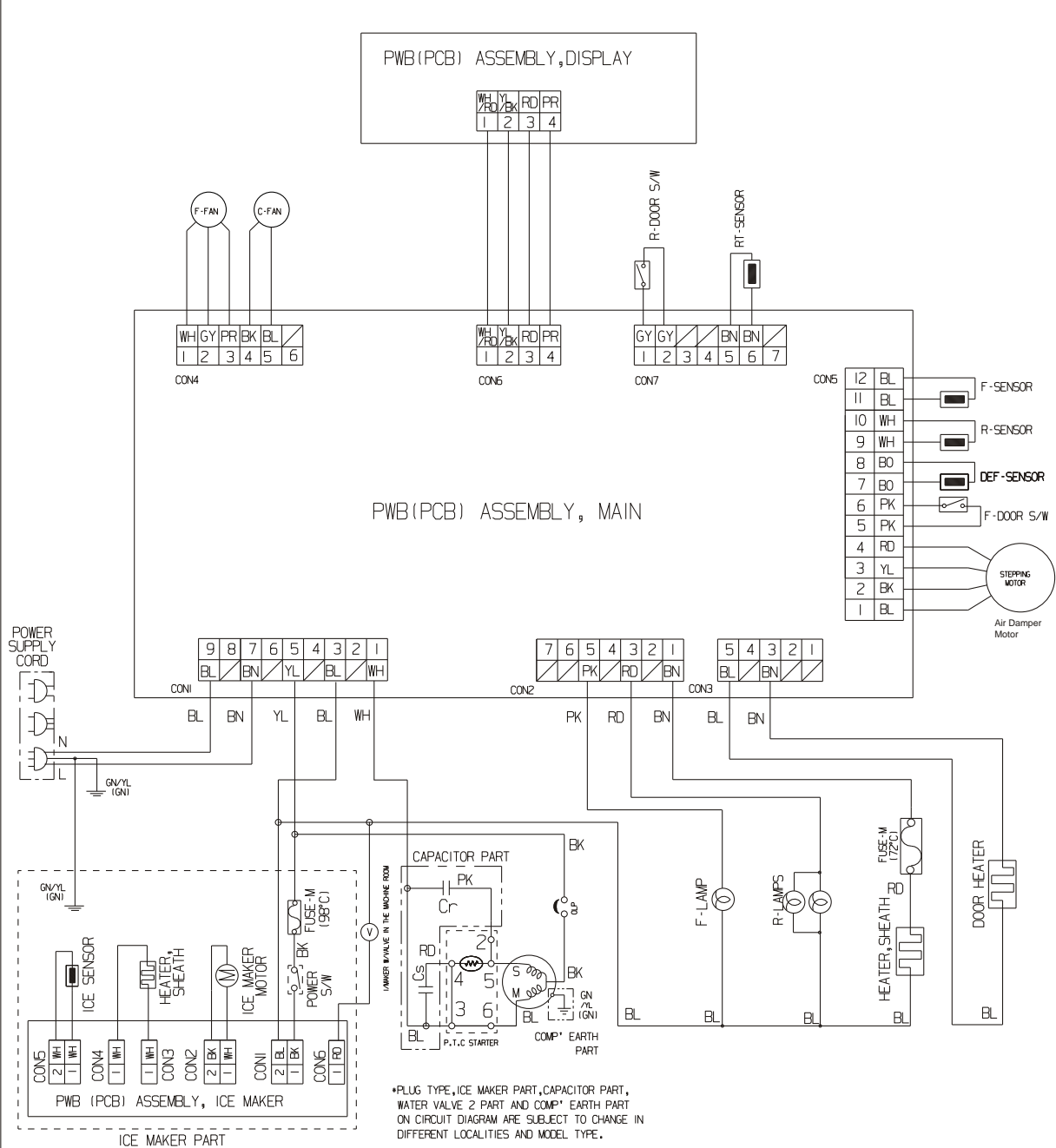


5. CIRCUIT DIAGRAM

PCB main, 6871JB1375



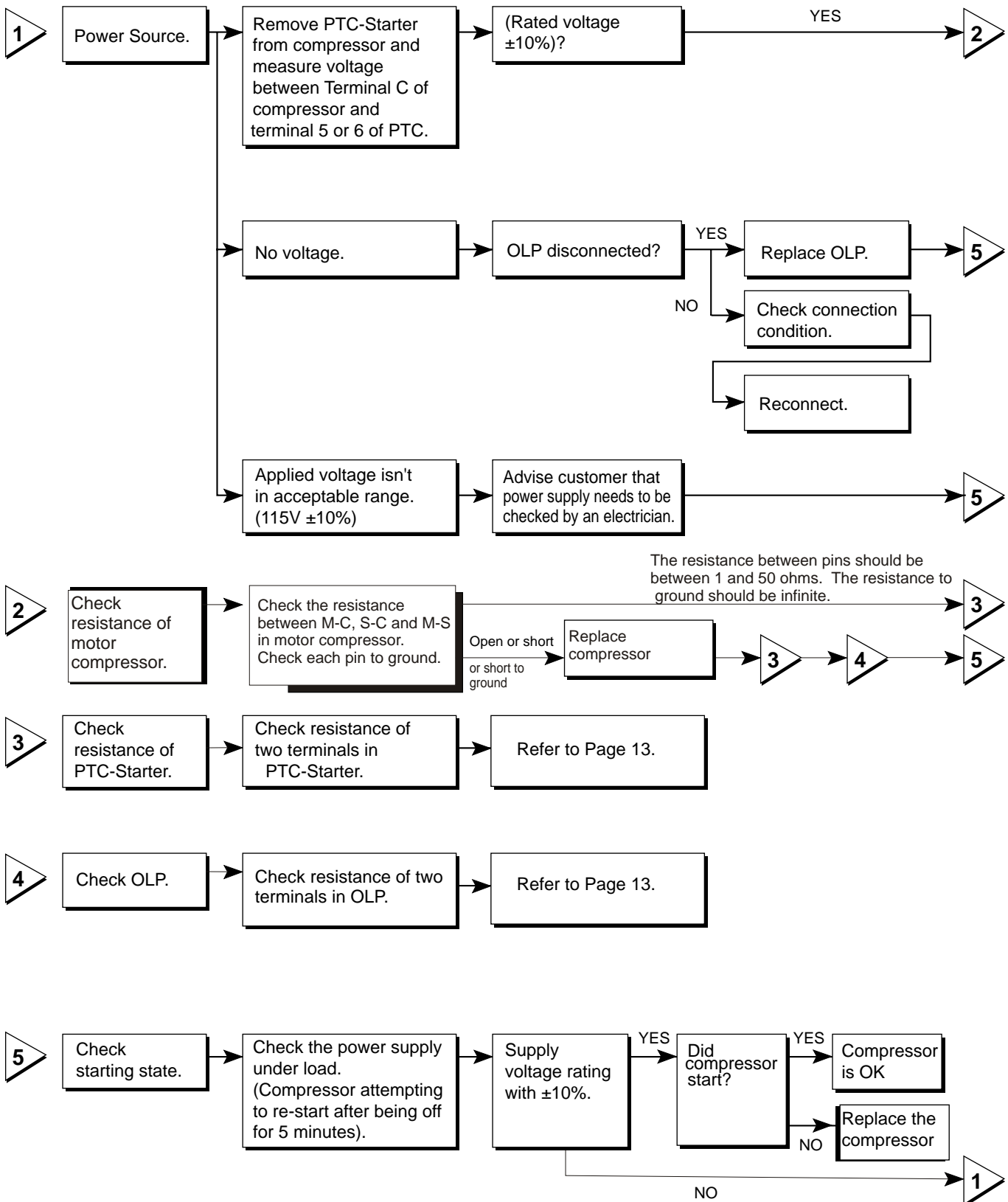
LG Electronics CIRCUIT DIAGRAM



BK:BLACK BN:BROWN RD:RED BO:BRIGHT ORANGE YL:YELLOW GN:GREEN BL:BLUE
 WH:WHITE PK:PINK GY:GREY PR:PURPLE SB:SKY BLUE

6. TROUBLESHOOTING

6-1 COMPRESSOR AND ELECTRIC COMPONENTS



6-2 PTC AND OLP

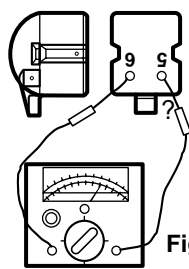
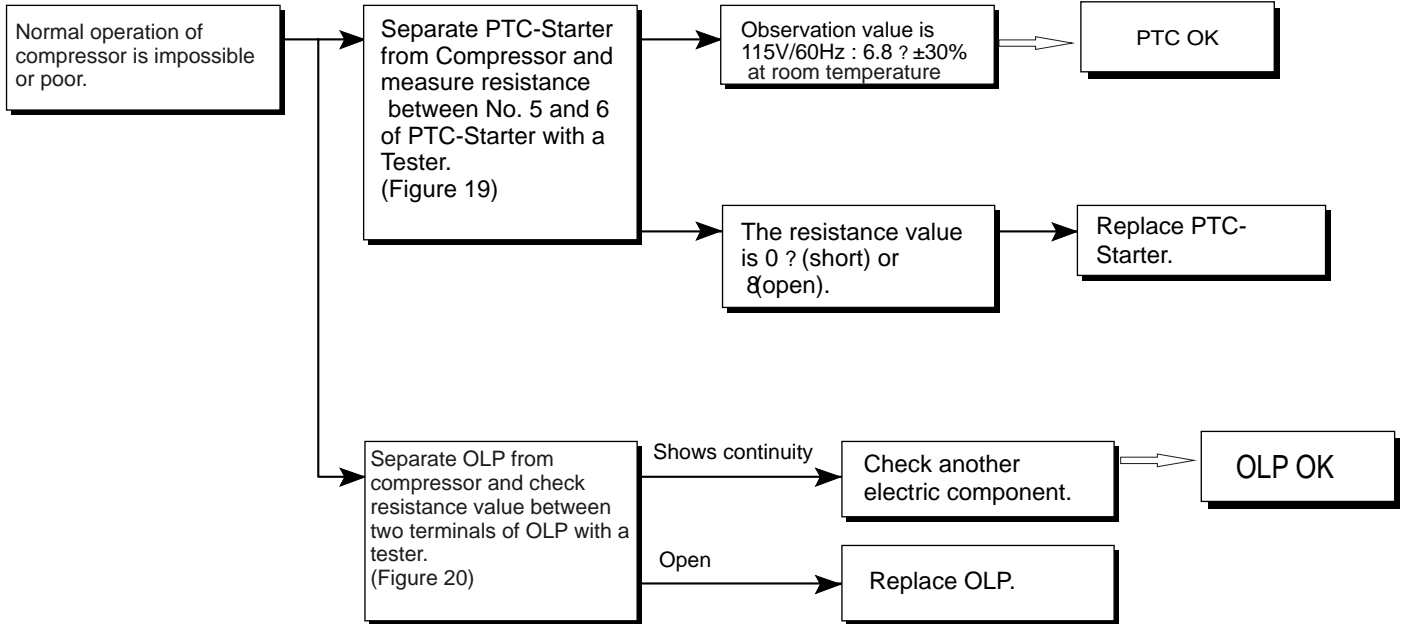


Figure 19

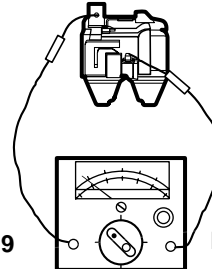
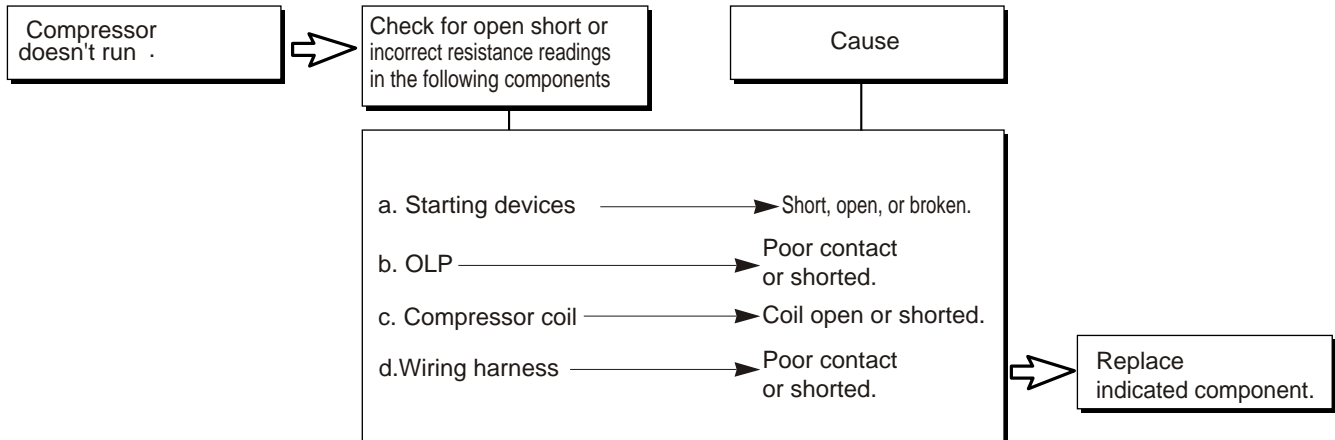


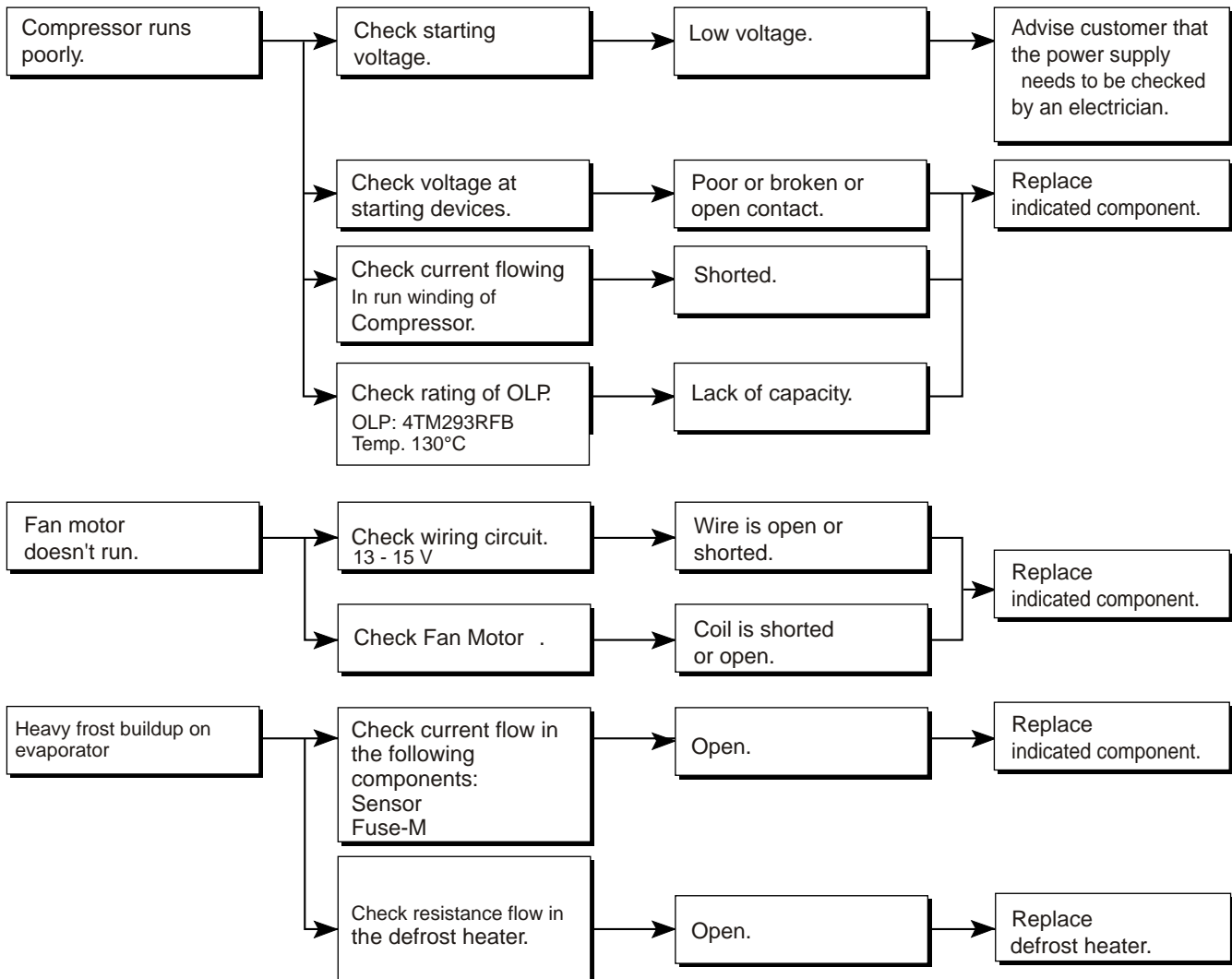
Figure 20

6-3 OTHER ELECTRICAL COMPONENTS

•Not cooling at all



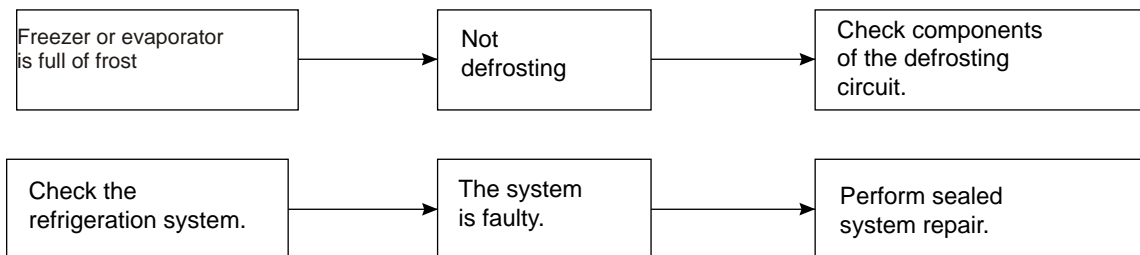
•Poor cooling performance



6-4 SERVICE DIAGNOSIS CHART

COMPLAINT	POINTS TO BE CHECKED	REMEDY
No Cooling.	<ul style="list-style-type: none"> •Is the power cord unplugged from the outlet? •Check if the power switch is set to OFF. •Check if the fuse of the power switch is open. •Measure the voltage of the power outlet. 	<ul style="list-style-type: none"> • Plug into the outlet. •Set the switch to ON. • Replace the fuse. • If the voltage is low, correct the wiring.
Cools poorly.	<ul style="list-style-type: none"> •Check if the unit is placed too close to the wall. •Check if the unit is placed too close to the stove, Gas cooker, or in direct sunlight. •Is the ambient temperature too high or the room door closed? •Check if food put in the refrigerator is hot. •Did you open the door of the unit too often or check if the door is sealed properly? •Check if the Control is set to Warm position. 	<ul style="list-style-type: none"> • Place the unit about 4 inches (10 cm) from the wall. •Place the unit away from these heat sources. • Lower the ambient temperature. • Put in foods after they have cooled down. • Don't open the door too often and close it firmly. •Set the control to Recommended position
Food in the Refrigerator is frozen.	<ul style="list-style-type: none"> •Is food placed in the cooling air outlet? •Check if the control is set to colder position . Is the ambient temperature below 5° C (41°F)? 	<ul style="list-style-type: none"> •Place foods in the high-temperature section. (front part) •Set the control to Recommended position •Set the control to Warm position .
Condensation or ice forms inside the unit.	<ul style="list-style-type: none"> •Is liquid food sealed? •Check if food put in the refrigerator is hot. •Did you open the door of the unit too often or check if the door is sealed properly? 	<ul style="list-style-type: none"> • Seal liquid foods with wrap. •Put in foods after they have cooled down. •Don't open the door too often and close it firmly.
Condensation forms On the Exterior Case.	<ul style="list-style-type: none"> •Check if the ambient temperature and humidity of the surrounding air are high. •Is there a gap in the door gasket? 	<ul style="list-style-type: none"> •Wipe moisture with a dry cloth. It will disappear in low temperature and humidity. • Repair or replace the gasket as needed.
There is abnormal noise.	<ul style="list-style-type: none"> •Is the unit positioned in a firm and even place? •Is it properly installed? •Are any unnecessary objects placed Beside side of the unit? •Check if the Drip Tray is not firmly attached. •Check if the cover of the compressor enclosure Is lose. 	<ul style="list-style-type: none"> •Adjust the leveling screw, and position the refrigerator in a firm place. •Remove the objects. •Fix the drip tray firmly in the original position. •Place the cover in its original position.
Door does not close well.	<ul style="list-style-type: none"> •Check if the door gasket is dirty with an item like juice. •Is the refrigerator level? •Is there too much food in the refrigerator? 	<ul style="list-style-type: none"> •Clean the door gasket. •Position in a firm place and level the leveling screw. •Make sure food stored in shelves does not prevent the door from closing.
Ice and foods smell unpleasant.	<ul style="list-style-type: none"> • Check if the inside of the unit is dirty. • Are foods with a strong odor unwrapped? The unit smells of plastic. 	<ul style="list-style-type: none"> • Clean the inside of the unit. • Wrap foods that have a strong odor. • New products smell of plastic, but this will go away after 1-2 weeks.

•Other possible problems:

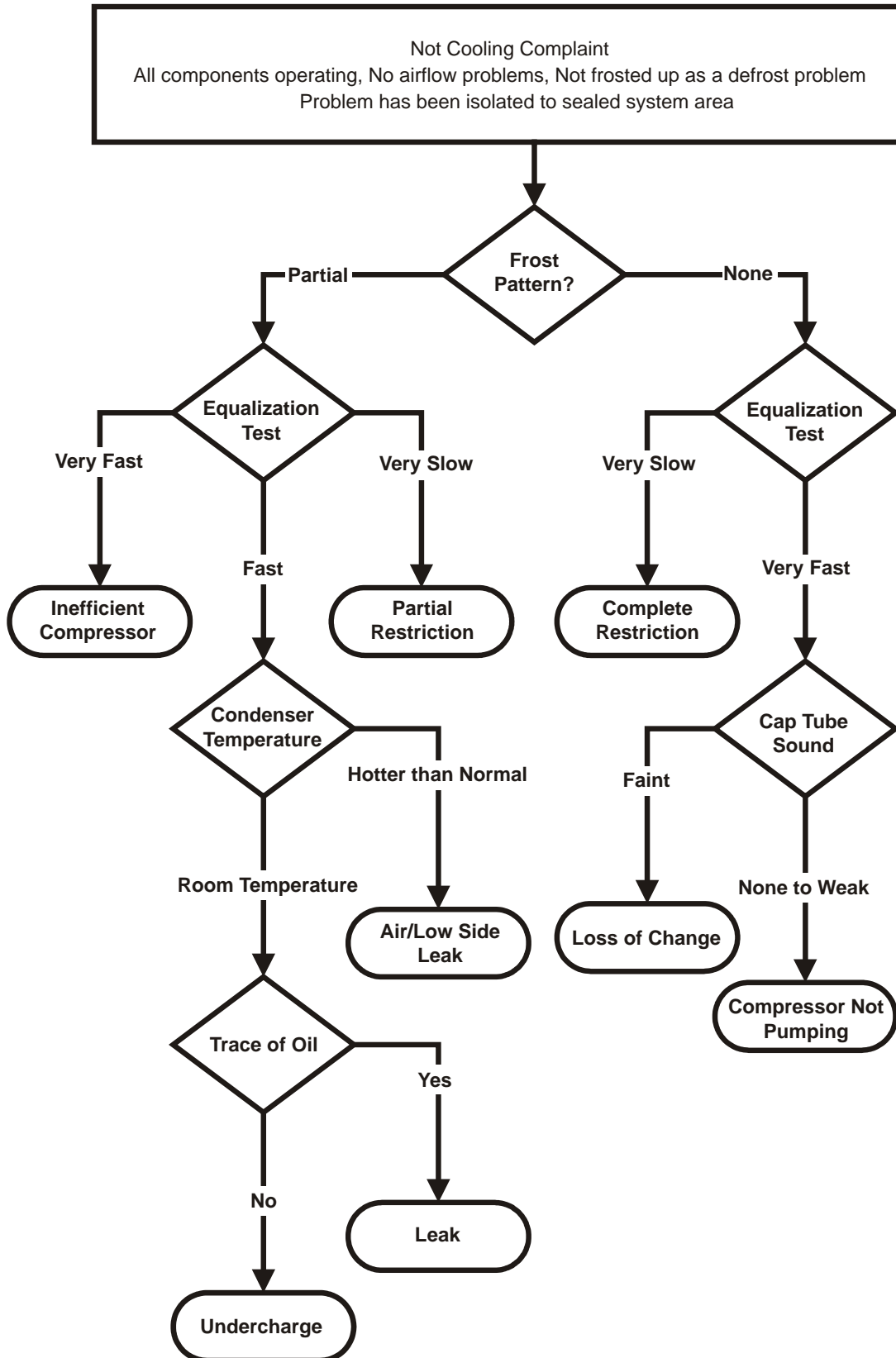


6-5 REFRIGERATION CYCLE

* Troubleshooting Chart

CAUSE		STATE OF THE UNIT	STATE OF THE EVAPORATOR	TEMPERATURE OF THE COMPRESSOR	REMARKS
LEAKAGE	PARTIAL LEAKAGE	Freezer compartment and refrigerator don't cool normally	Low flowing sound of refrigerant is heard and frost forms in inlet only.	A little higher than ambient temperature.	- Refrigerant level is low due to a leak. - Normal cooling is possible by restoring the normal amount of refrigerant and repairing the leak.
	COMPLETE LEAKAGE	Freezer compartment and refrigerator don't cool normally	Flowing sound of refrigerant is not heard and frost isn't formed.	Equal to ambient temperature.	- No discharging of refrigerant. - Normal cooling is possible by restoring the normal amount of refrigerant and repairing the leak.
RESTRICTION	CLOG	Freezer compartment and refrigerator don't cool normally	Flowing sound of refrigerant is heard and frost forms in inlet only.	A little higher than ambient temperature.	- Normal discharging of the refrigerant. - The capillary tube is faulty.
	CLOG	Freezer compartment and refrigerator don't cool.	Flowing sound of refrigerant is not heard and frost isn't formed.	Equal to ambient temperature.	- Normal discharging of the refrigerant.
MOISTURE RESTRICTION		Cooling operation stops periodically.	Flowing sound of refrigerant is not heard and frost melts.	Lower than ambient temperature.	- Cooling operation restarts when heating the inlet of the capillary tube.
INEFFICIENT COMPRESSOR	LOW COMPRESSION	Freezer and refrigerator don't cool.	Low flowing sound of refrigerant is heard and frost forms in inlet only.	A little higher than ambient temperature.	- Low pressure at high side of compressor due to low refrigerant level.
	NO COMPRESSION	No compressing operation.	Flowing sound of refrigerant is not heard and there is no frost.	Equal to ambient temperature	- No pressure in the high pressure part of the compressor.

6-5-1 SEALED SYSTEM DIAGNOSIS

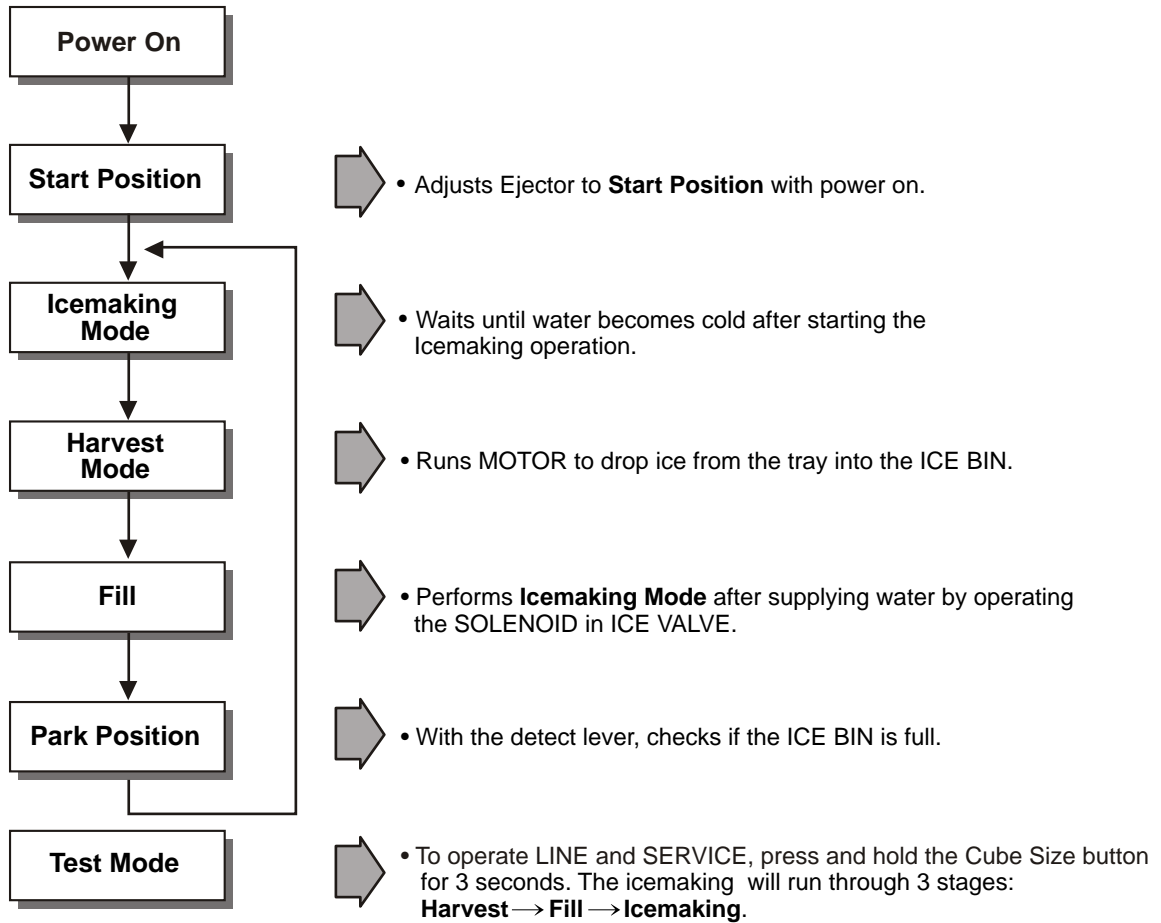


(The equalization test is trying to restart a compressor after it has been operating.)

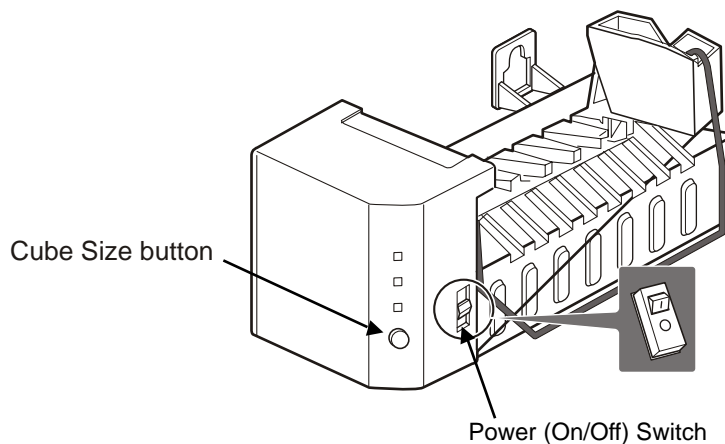
7. ICEMAKER OPERATING PRINCIPLES AND REPAIR

7-1 OPERATION PRINCIPLE

7-1-1 Operation Principle of Icemaker



1. Turning the Icemaker stop switch off (O) stops the icemaking function.
2. Setting the Icemaker switch to OFF and then turning it back on will reset the icemaker control.



7-2 ICE MAKER FUNCTIONS

7-2-1 Ice Making Mode

1. Icemaking refers to the freezing of supplied water in the ice trays. Complete freezing is assured by measuring the temperature of the Tray with icemaking SENSOR.
2. Icemaking starts after completion of the water fill operation.
3. The icemaking function is completed when the sensor reaches -7°C, 60 to 240 minutes after starting.

NOTE :After icemaker power is ON, the icemaker heater will be on for test for 9 sec.

7-2-2 Harvest Mode




1. Harvest (Ice removing) refers to the operation of dropping ices into the ice bin from the tray when icemaking has completed.
2. Harvest mode:
 - (1) The Heater is ON for 30 seconds, then the motor starts.
 - (2) Harvest mode is completed if it reaches start position again while Heater & Motor are on at the same time.
 - A. ice bin is full : The EJECTOR stops (heater off).
 - B. ice bin is not full : The EJECTOR rotates twice to open for ice.

NOTE :If the EJECTOR does not rotate once within 5 minutes in status (2), separate heater control mode starts operating to prevent the EJECTOR from being constrained. (It is recommended that the user open for ice to return to normal mode.)

7-2-3 Fill/Park Position

1. Once a normal harvest mode has been completed, the water solenoid will be activated.
2. The amount of water is adjusted by pressing the fill key repeatedly. This changes the time allowed for fill as illustrated in the table below.






Water supply amount table

STAGE	TIME TO SUPPLY	INDICATIONS	REMARKS
1	6 sec.		The water amount will vary depending on the water control switch setting, as well as the water pressure of the connected water line.
2	7 sec.		
3	8 sec.		

7-2-5 Function TEST



1. This is a compulsory operation for test, service, cleaning, etc. It is operated by pressing and holding the Cube Size button for 3 seconds.
2. The test works only in the Icemaking Mode. It cannot be entered from the Harvest or Fill mode. (If there is an ERROR, it can only be checked in the TEST mode.)
3. **Caution!** If the test is performed before water in the icemaker is frozen, the ejector will pass through the water. When the fill mode begins (Stage 4), unless the water supply has been shut off, added water will overflow into the ice bin. If the control Doesn't operate normally in the TEST mode, check and repair as needed.
4. After water is supplied, the normal CYCLE is followed: **icemaking** ⇒ **Harvest** ⇒ **Fill** ⇒ **Park Position**.
5. Five seconds after Stage 5 is completed, the icemaker returns to MICOM control. The time needed to supply water resets to the pre- test setting.

Diagnosis TABLE

STAGE	ITEMS	INDICATOR *	REMARKS
1	HEATER		Five seconds after heater starts, heater will go off if temperature recorded by sensor is 10°C (50°F) or lever is in up position.
2	MOTOR		Five seconds after heater starts, you can confirm that motor is moving.
3	HALL IC (TRAY)		You can confirm Hall IC detection of position.
4	SOLENOID VALVE		Two seconds after detection of initial position, you can confirm that valve is on.
5	HALL IC (LEVER)		You can check when the Hall IC is sensing a full ice condition. (If there is a water fill error, the fifth LED is not on.)
6	Reset	Return to Status prior to TEST MODE	Five seconds after fifth stage is completed, the icemaker resets to initial status.

7-3 DEFECT DIAGNOSIS FUNCTION

7-3-1 ERROR CODES shown on Ice Maker water supply control panel

NO	DIVISION	INDICATOR	PROBLEM	REMARKS
1	Normal	Note fill times (see previous page)	None	Display switch operates properly
2	Icemaking Sensor malfunction		Open or shorted wire or sensor	Make sure that the wire on each sensor is connected.
3	Icemaker Kit malfunction		Ejector blades have not reached the park position after 18 minutes from start of harvest mode	Check HALL IC/MOTOR/ HEATER/RELAY

* ERROR indicators in table can be checked only in TEST mode.

8. DESCRIPTION OF FUNCTION & CIRCUIT OF MICOM

8-1 FUNCTION

8-1-1 Function

1. When the appliance is plugged in, it defaults 37 ° F, for the refrigerator and 0°F for the freezer.
You can adjust the refrigerator and the freezer control temperature by pressing the ADJUST button.
2. When the power is initially applied or restored after a power failure, it is automatically set to 37 & 0.



8-1-2 How to toggle the Display between °F & °C

1. The display temperature mode can be changed from °F to °C or °C to °F by pressing and holding the COLDER FREEZER TEMP and the COLDER REFRIGERATOR TEMP keys at the same time for over one second.
2. The initial setting is °F. Whenever the mode is changed, the appropriate LED is it.

8-1-3 Control of freezer fan motor

1. Freezer fan motor runs at either regular or high speed (2,400 or 2,700 rpm.)
2. High RPM is used when electricity is first on, for ULTRA ICE, and when refrigerator is overloaded.
Standard RPM is used for normal usage.
3. The fan motor is stopped when refrigerator door is opened
4. The fan motor is stopped when freezer door is opened (only if compressor is OFF.)

8-1-4 ULTRA ICE

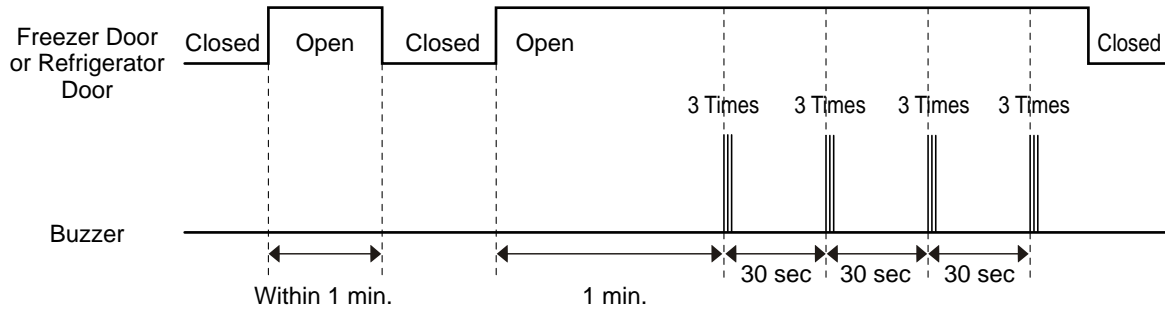
1. The purpose of this function is to intensify the cooling speed of freezer and to increase the amount of ice.
2. Whenever selection switch is pressed, selection/release, the LED will turn ON or OFF.
3. If there is a power outage and the refrigerator is powered on again, ULTRA ICE will be canceled.
4. To activate this function you need to press the ULTRA ICE key and the LED will turn ON. This function will remain activated for 24 hrs. The first three hours the compressor and Freezer Fan will be ON. The next 21 hours the freezer will be controlled at the lowest temperature. After 24 hours or if the ULTRA ICE key is pressed again, the freezer will return to its previous temperature.
5. During the first 3 hours:
 - (1) Compressor and freezer fan (HIGH RPM) run continuously.
 - (2) If a defrost cycle begins during the first 90 minutes of ULTRA ICE, the ULTRA ICE cycle will complete its cycle after defrosting has ended. If the defrost cycle begins when ULTRA ICE has run for more than 90 minutes, ULTRA ICE will run for two hours after the defrost is completed.
 - (3) If ULTRA ICE is pressed during defrost, ULTRA ICE LED is on, this function will start seven minutes after defrost is completed and it shall operate for three hours.
 - (4) If ULTRA ICE is selected within seven minutes after compressor has stopped, the compressor (compressor delays seven minutes) will start after the balance of the delay time.
 - (5) The fan motor in the freezer compartment rotates at high speed during ULTRA ICE.
6. For the rest of 21 hours, the freezer will be controlled at the lowest temperature.

8-1-5 Refrigerator Lamp Auto OFF

1. To protect the risk of lamp heat, when refrigerator door is opened for 7 minutes be turned off automatically .

8-1-6 Alarm for Open Door

1. This feature sounds a buzzer when the freezer or refrigerator door is not closed within 1 minute after it is opened.
2. One minute after the door is opened, the buzzer sounds three times each for ½ second. These tones repeat every 30 seconds.
3. The alarm is cancelled when the freezer or the refrigerator is closed, while the buzzer sounds.



8-1-7 Buzzer Sound

When the button on the front display is pushed, a Ding~ Dong~ sound is produced.

8-1-8 Defrosting (removing frost)

1. Defrosting starts each time when compressor running time reaches 7 hours, if any door hasn't been opened.
2. In case of any door has been opened the defrosting period will start considering the next conditions:
If compressor running time is bigger than 7 hrs when door is opened: defrosting starts immediately.
If compressor running time is less than 7 hrs when door is opened: defrosting starts after a compensation time is applied.
3. For initial power on or for restoring power, defrosting starts when the compressor running time reaches 4 hours.
4. Defrosting stops if the sensor temperature reaches 8°C (46°F) or more. If the sensor doesn't reach 8°C (46°F) in 2 hours, the defrost mode is malfunctioning.
5. Defrosting won't function if its sensor is defective (wires are cut or short circuited)

8-1-9 Electrical Parts Sequence of Operation

Electrical parts such as compressor , defrosting heater, freezer fan, etc. are turned on in the following order to prevent noise and parts damage. Several parts are started at the same time at initial power on and are turned off together when TEST is completed.

OPERATING		ORDERS				
Initial power on	Temperature of Defrosting Sensor is 45°C (113°F) or more (when unit is newly purchased or when moved)	POWER ON	in 0.5 sec →	COMP ON	in 0.5 sec →	Freezer FAN ON
	Temperature of defrosting sensor is lower than 45 °C (113°F) (During power outages Or for service)	POWER ON	in 0.5 sec →	Defrosting heater ON	in 10 sec →	Defrost heater OFF
		in 0.5 sec →	COMP ON	in 0.5 sec →	Freezer FAN ON	
Reset to normal operation from TEST MODE		Total load OFF	in 7 min →	COMP ON	in 0.5 sec →	Freezer FAN ON

8-1-10 Defect Diagnosis Function

1. Automatic diagnosis makes servicing the refrigerator easy.
2. When a defect occurs, the buttons will not operate; but the tones, such as ding, will sound.
3. When defect is repaired the defect code is removed and refrigerator returns to normal operation (RESET)
4. The defect CODE is shown on the display
5. LED check function: If press and hold the warmer key of Refrigerator Temp and the warmer key of Freezer Temp for a second, all display LED graphics on. When you release the buttons, LED graphics displays the previous status.



ERROR CODE on display panel

NO	ITEM	ERROR CODE		CONTENTS	REMARKS
		①	②		
1	Failure of freezer sensor	Er	FS	Open or shorted circuit wire or sensor	Inspect sensors and connecting wires to each sensor
2	Failure of refrigerator sensor	Er	rS	Open or shorted circuit wire or sensor	
3	Failure of defrost sensor	Er	dS	Open or shorted circuit wire or sensor	
4	Failure of room temperature sensor	Er rt (displayed only in display check mode – see Note 1)		Open or shorted circuit wire or sensor	
5	Failure of defrost mode	Er	dH	When defrost sensor doesn't reach 8 °C (46°F) within 2 hours after starting defrost.	Snapping of defrost heater or temperature fuse, pull-out of connector (indicated minimum 2 hours after failure occurs)
6	Failure of BLDC fan motor at freezing compartment.	Er	FF	If there is no fan motor signal for more than 65seconds in operation fan motor	Poor motor wire connection to fan, contact of structures to fan, open or short circuit of lead wires.

Note 1) Room Temperature Sensor is not indicated on the failure indication part but it is indicated in DISPLAY CHECK MODE.

* DISPLAY CHECK MODE: Press at the same time WARMER REFRIGERATOR TEMP & WARMER FREEZER KEYS for more than 1 sec. This Mode is for LED inspection and ALL LED will turn ON at this time, If releasing the buttons, the display will indicate the previous status.

8-1-11 TEST Mode

1. The test mode allows checking the PCB and the function of the product as well as finding out the defective part in case of an error.
2. The test mode is operated by pressing two buttons on the display panel. (See chart below)
3. While in the test mode, the function control button is not recognized, but the recognition tone (beep~) sounds.
4. After exiting the test mode, be sure to reset by unplugging and then plugging in the appliance.
5. If an error, such as a sensor failure, is detected while in the test mode, the test mode is cleared and the error code is displayed.
6. While an error code is displayed, the test mode will not be activated.

MODE	MANIPULATION	CONTENTS	REMARKS
TEST1	Push ULTRA ICE Key and COLDER key of Freezer Temp. at the Same time for 3 seconds OR Push TEST switch (on the main Board) Once.	1) Continuous operation of the compressor and the freezer fan 2) Stepping damper open 3) Defrosting heater OFF 4) Display LED all ON	Maximum test time: 5 minutes
TEST2	Push ULTRA ICE Key and COLDER Key of Freezer Temp. at the Same time for 3 seconds In TEST MODE 1 OR Push TEST switch Once in TEST MODE 1	1) Continuous operation of the compressor and the freezer fan 2) Stepping damper close 3) Defrosting heater OFF 4) Display LED shows 2	Maximum test time: 5 minutes
TEST3	Push ULTRA ICE Key and COLDER Key of Freezer Temp. at the Same time for 3 seconds In TEST MODE 2 OR Push TEST switch Once in TEST MODE 2	1) Compressor and the freezer fan OFF 2) Stepping damper close 3) Defrosting heater ON 4) Display LED shows 3	Reset if the temperature of the defrosting sensor is 8°C (46°F) or more.
Reset	Push ULTRA ICE Key and COLDER Key of Freezer Temp. at the Same time for 3 seconds In TEST MODE 3 OR Push TEST switch Once in TEST MODE 3	Resets to the settings before TEST MODE was entered	The compressor will start after a 7-minute delay.

* Freezer Fan RPM Variable Check:

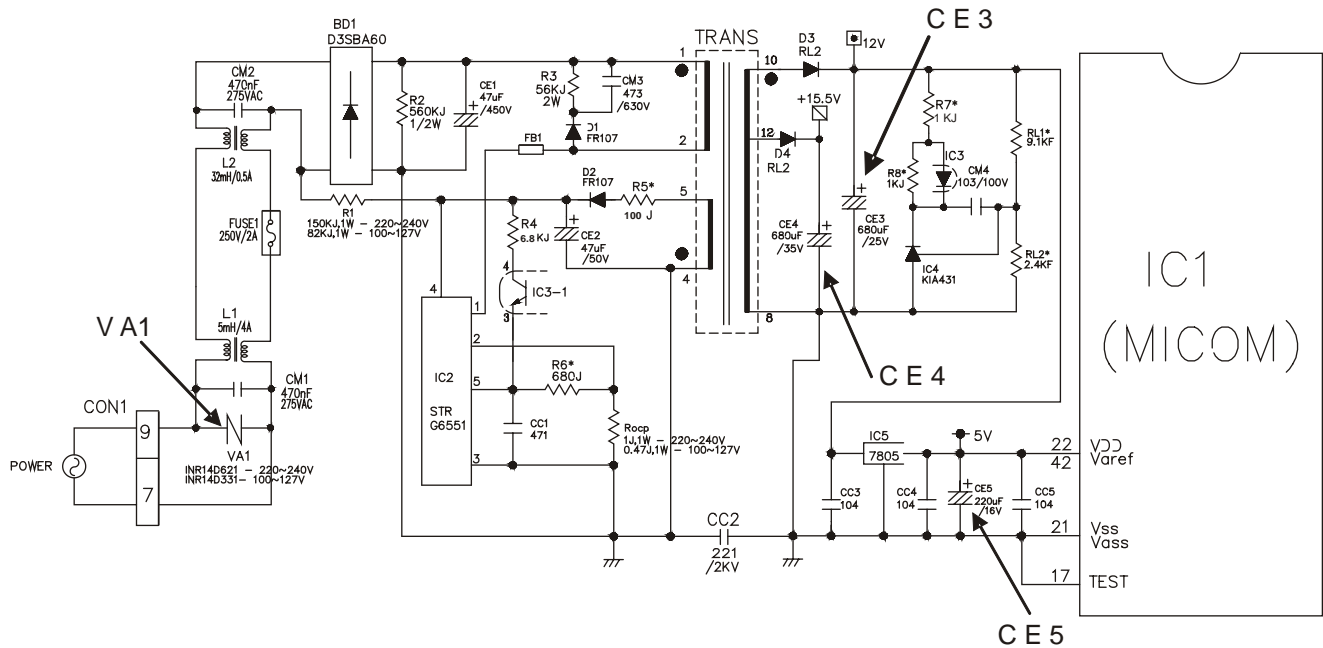
If the freezer fan is in operation when the WARMER REFRIGERATOR TEMP KEY & WARMER FREEZER TEMP KEY are pressed for more than one second at the same time then the freezer fan RPM changes. (for example if high speed, to normal speed or if normal speed, to high speed for 30 seconds)
After 30 seconds, it turns to its original RPM.

* Demonstration (Display) MODE:

1. To enter this mode, raise either the Refrigerator or Freezer temperature to its highest setting. Then, press and hold that same WARMER TEMP KEY.
2. The LED panels will display OFF, to indicate that the compressor, fans, damper, and defrost heater are not operating.
3. The Open Door Alarm and the Lamp Auto-Off feature will work normally and can be demonstrated.
4. To reset to normal operation, press and hold either Warmer Key for about 3 seconds.

8-2 PCB FUNCTION

8-2-1 Power Circuit



The secondary part of the TRANSFORMER is composed of the power supply for the display, the BLDC FAN Motor drive (15.5 V dc), the relay drive (12 Vdc) and the MICOM and IC (5 Vdc).

The voltage for each part is as follows:

PART	VA 1	CE 3	CE 4	CE 5
VOLTAGE	115 Vac	12 Vdc	15.5 Vdc	5 Vdc

VA1 is a part for preventing over voltage and noise. When 385V or higher power is applied, the inside elements are short-circuited and broken, resulting in blowout of the fuse in order to protect the elements of the secondary part of the TRANSFORMER.

8-3 RESISTANCE SPECIFICATION OF SENSORS

TEMPERATURE	RESISTANCE OF FREEZER SENSOR	RESISTANCE OF REFRIGERATOR & DEFROST SENSOR & ROOM SENSOR
- 20 °C	22.3 K Ω	77 K Ω
- 15° C	16.9 K Ω	60 K Ω
- 10° C	13.0 K Ω	47.3 K Ω
- 5° C	10.1 K Ω	38.4 K Ω
0 °C	7.8 K Ω	30 K Ω
+ 5° C	6.2 K Ω	24.1 K Ω
+ 10° C	4.9 K Ω	19.5 K Ω
+ 15° C	3.9 K Ω	15.9 K Ω
+ 20° C	3.1 K Ω	13 K Ω
+ 25° C	2.5 K Ω	11 K Ω
+ 30 C	2.0 K Ω	8.9 K Ω
+ 40 C	1.4 K Ω	6.2 K Ω
+ 50 C	0.8 K Ω	4.3 K Ω

The resistance of the SENSOR has a \pm 5% tolerance difference.

Measure the resistance of the SENSOR after leaving it for over 3 minutes in the measuring temperature.

This delay is necessary due to sensor response speed.

Measure the F-SENSOR, SUPER FROST SENSOR, R1, R2-SENSOR after disconnect CON5 of PWB ASSY, MAIN.

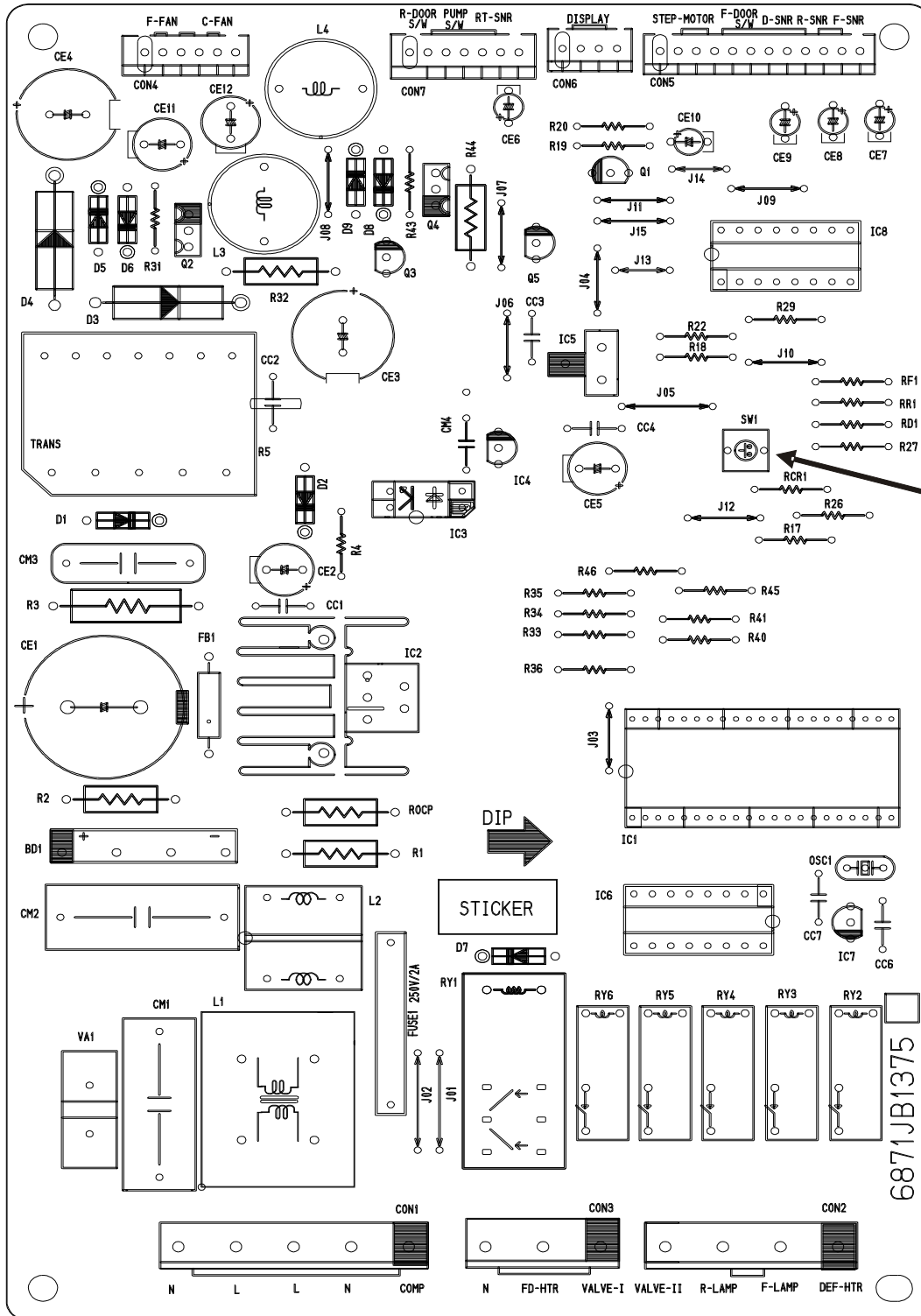
8-4 TROUBLESHOOTING

PROBLEMS	CHECK	CHECKING METHOD	CAUSE	SOLUTION
The whole DISPLAY LED/SEVEN SEGMENT DISPLAY's off. DISPLAY LED/SEVEN SEGMENT DISPLAY operates abnormally	1. FREEZER/REFRIGERATOR.	Check if FREEZER/REFRIGERATOR DOOR IS OPEN and check display.	POWER SOURCE is poor.	Check outlet Voltage.
		Check visually.	Applied voltage error.	
	3. The connection of the MAIN PWB CONNECTOR.	Check connection of CONNECTOR.	CONNECTOR connection is poor.	Reconnect CONNECTOR.
			TRANS FUSE is open.	Replace TRANS.
No cooling.	1. If the compressor operate.	Use Test Mode 1 (forced cooling). If less than 7 minutes pass after compressor shuts off, don't press the KEY and wait.	COMPRESSOR locked or blocked.	Replace COMPRESSOR.
			OLP, PTC is poor. COMPRESSOR RELAY is poor.	Replace OLP, PTC. Replace MAIN PWB.
	2. If refrigerant is leaking.	Check the amount of frost sticking on EVAPORATOR and the surface temperature of the condenser pipe is hot.	THE CONNECTING WIRE is poor.	Check the connection of the black wire of the MAIN PWB CONNECTOR (CON2).
		Refrigerant leakage.		Replace the leaking part and replace any lost refrigerant.
FREEZER TEMPERATURE is incorrect	1. If FANMOTOR operates.	USE TEST MODE 1 (forced COOLING).	FAN MOTOR is poor.	Replace the FAN MOTOR.
			CONNECTING WIRE is poor.	Refer to 8-2-4. 2 and check
	2. If DEFROSTING is normal.	Check the amount of frost sticking on the EVAPORATOR.	DEFROSTING is poor.	See DEFROSTING is poor.
		Check the resistance of the Refrigerator SENSOR.	SENSOR RESISTANCE is poor.	Replace SENSOR.
4. DoorGasket contact .	Check the seal when the door is closed.	Door liner damaged.	Replace door liner.	

PROBLEM	PROBLEMS	CHECK	CHECKING METHOD	CAUSE	SOLUTION
COOLING is poor.	If REFRIGERATOR TEMPERATURE is too low.	1.If FREEZER TEMPERATURE Is normal.	Check is FREEZER TEMPERATURE is too low.	FAN MOTOR is poor.	Make sure the DOOR is colsed. Replace FAN MOTOR.
		2. If amount of cool air from FAN MOTOR is sufficient.	Make sure that the amount and speed of cool air are sufficient by touching the check supplied on the REFRIGERATOR.	Passage of cool air is blocked. Evaporator frozen.	Remove impurities. See DEFROSTING is poor .
		3. Door gasket contact	Check door seal when door is closed.	Door liner damaged.	Replace Door liner.
DEFROSTING is poor.	NO DEFROSTING.	1. If HEATER does not heat.	USE TEST MODE3 (forced DEFROSTING).	HEATER open	Replace heater
				TEMPERATURE FUSE open	Replace TEMPERATURE FUSE.
				Connection is poor.	Check EVAPORATOR connection and wire of MAIN PWB CONNECTOR.
				DEFROST-SENSOR is poor.	Replace DEFROST-SENSOR.
				HEATER RELAY is poor.	Replace of MAIN PWB.
				DRAIN PIPE is blocked.	Remove ice and impurities. Check HEATER PLATE Resistance (2.618 Kohm).
				Connection is poor.	Reassemble the DEFROST-SENSOR.
				DOOR does not close properly.	Reassemble DOOR. Replace GASKET.
				Make sure that DEFROST SENSOR is connected.	
				Make sure that FREEZER / REFRIGERATOR DOOR is closed.	

8-5 MAIN PWB ASSEMBLY AND PARTS LIST

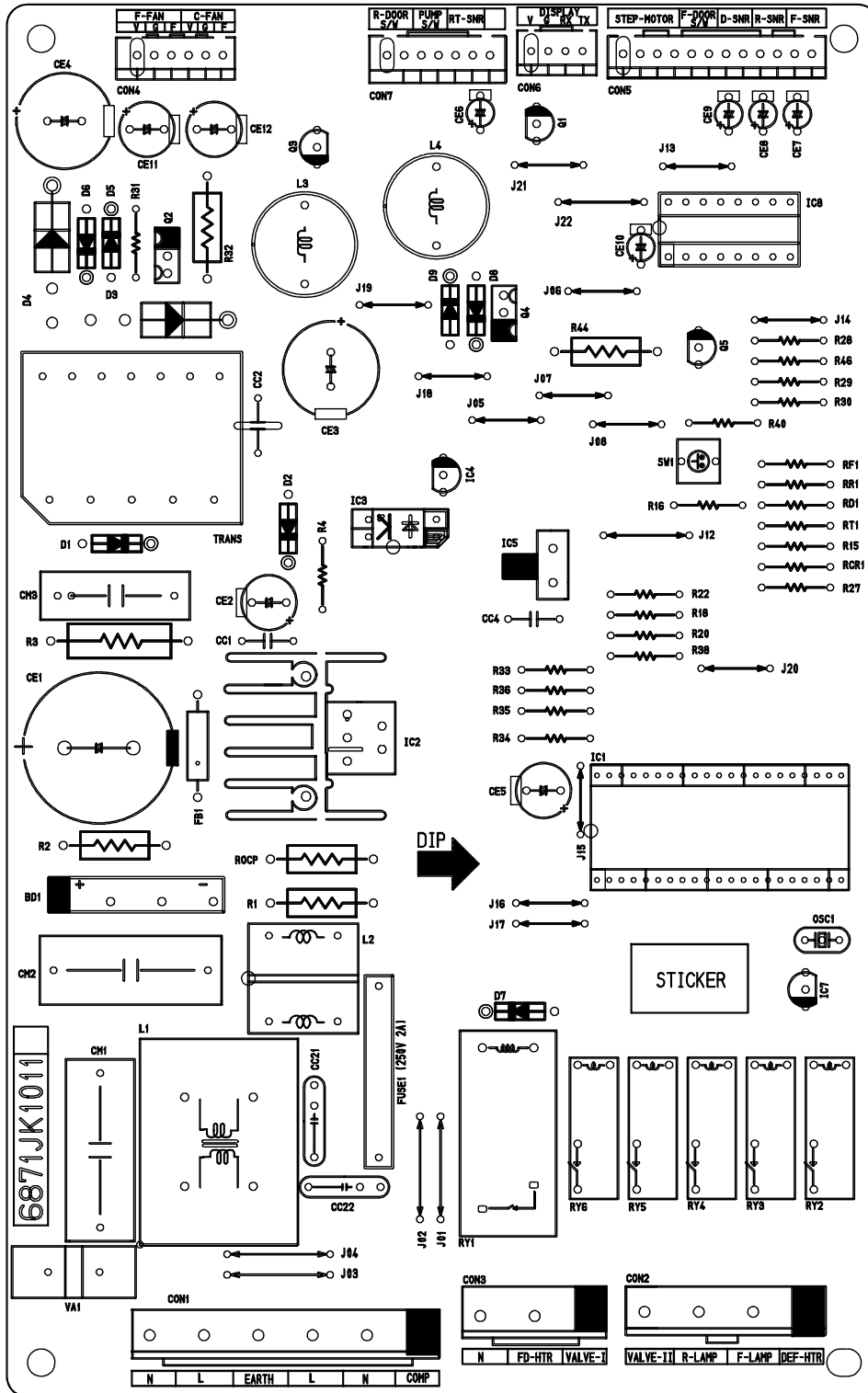
8-5-1 Main PWB Assembly 6871JB1375



TEST SWITCH (SW1)

6871JB1375

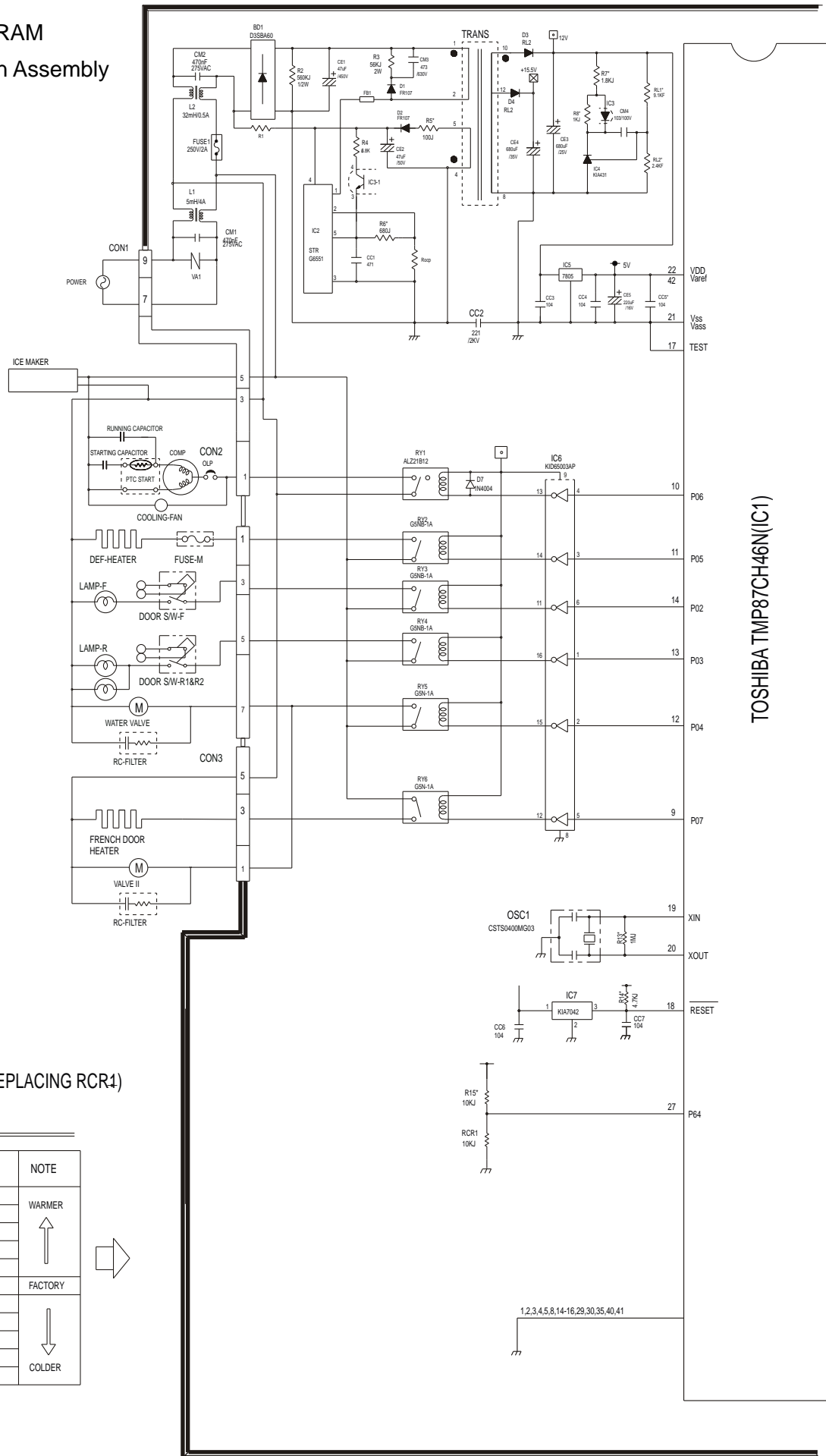
Main PWB Assembly 6871JK1011



8-6 PWB DIAGRAM

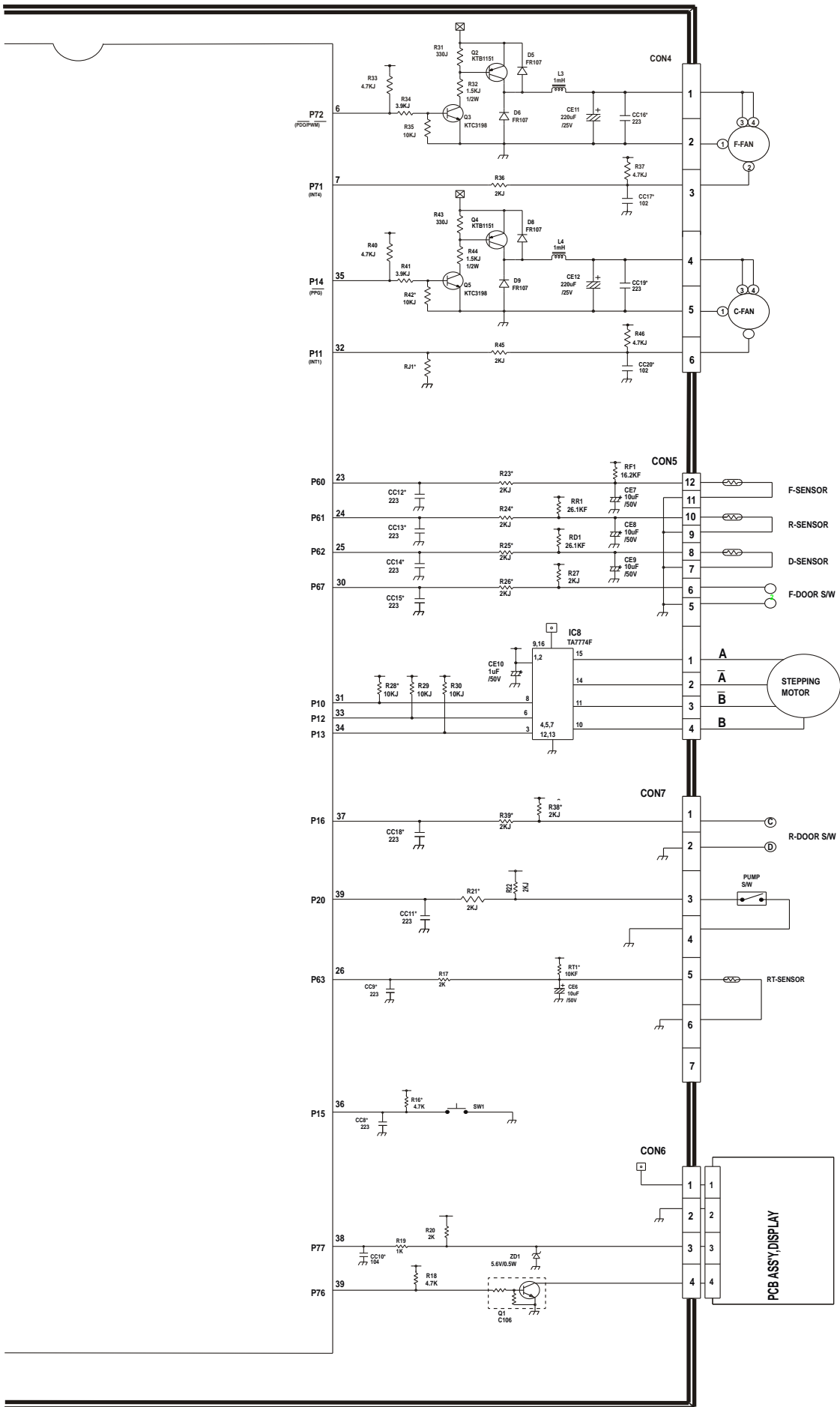
8-6-1 PWB Main Assembly

6871JB1375



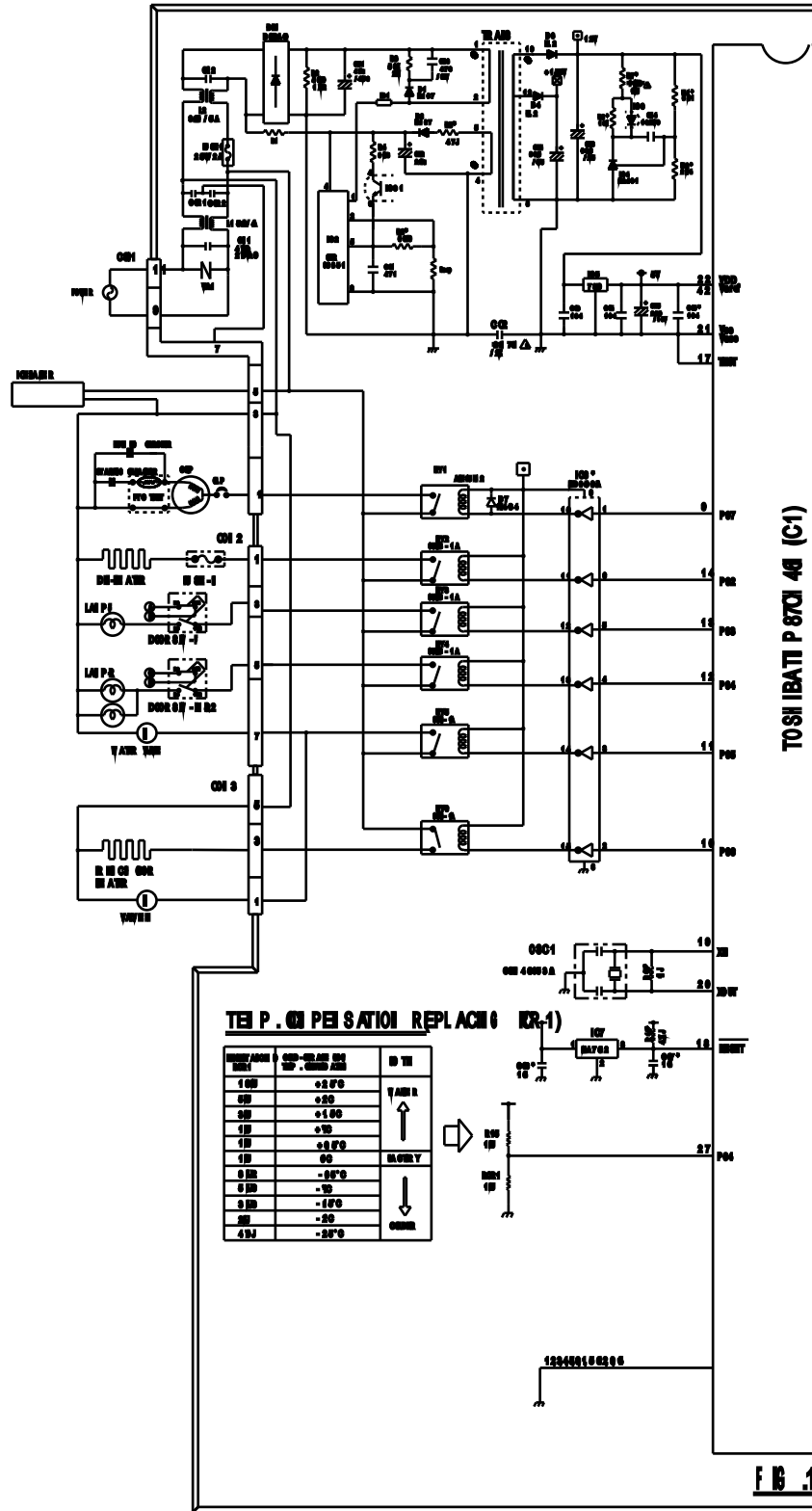
TEMP.COMPENSATION (REPLACING RCR1)

RESISTANCE OF RCR1	COLD-STORAGE ROOM TEMP. COMPENSATION	NOTE
180KJ	+2.5 °C	WARMER ↑
56KJ	+2 °C	
33KJ	+1.5 °C	
18KJ	+1 °C	
12KJ	+0.5 °C	FACTORY
10KJ	0 °C	
8.2KJ	-0.5 °C	COLDER ↓
5.6KJ	-1 °C	
3.3KJ	-1.5 °C	
2KJ	-2 °C	
470J	-2.5 °C	



8-6 PWB DIAGRAM

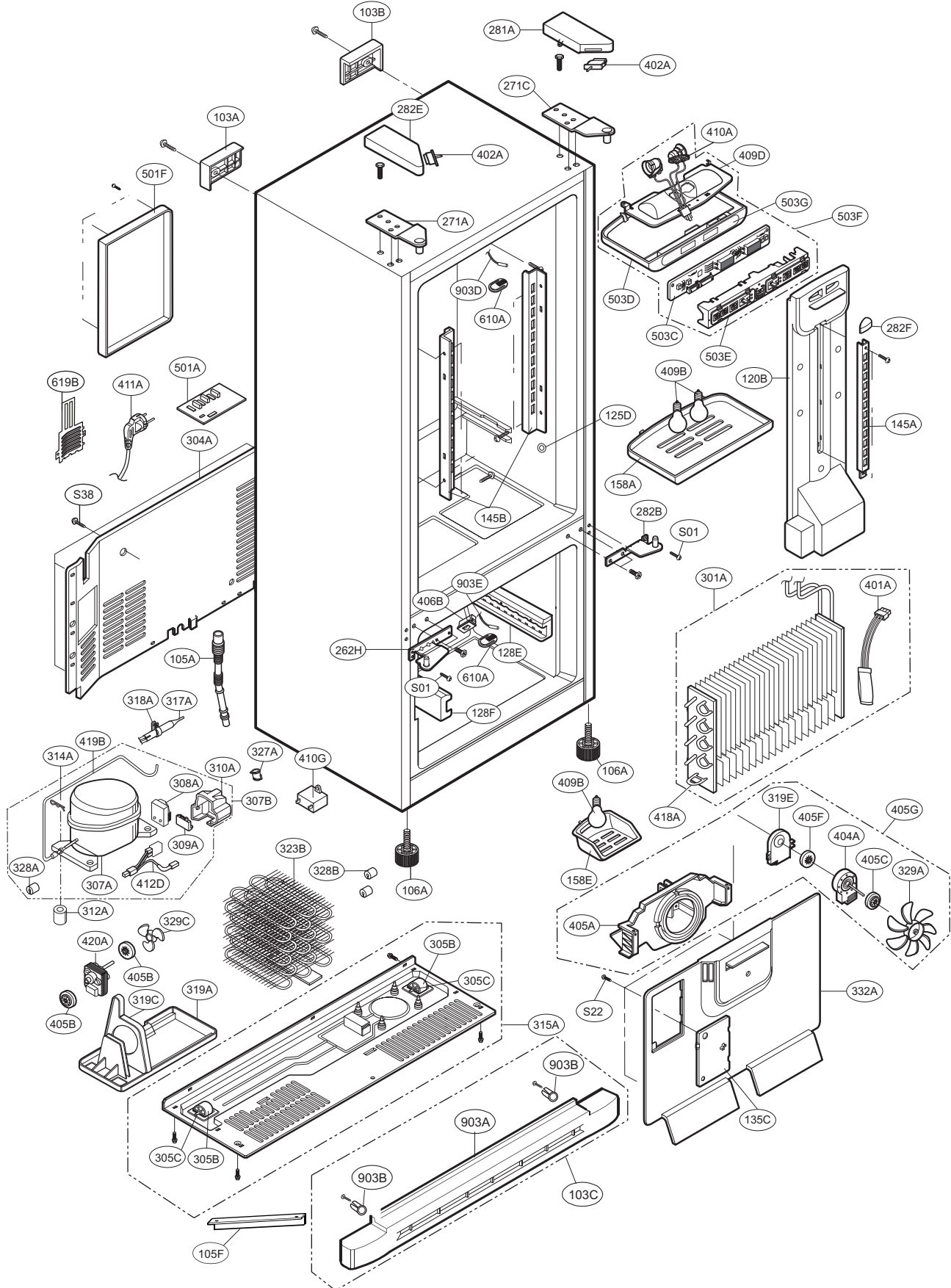
8-6-1 PWB Main Assembly 6871JK1011



9. EXPLODED VIEW

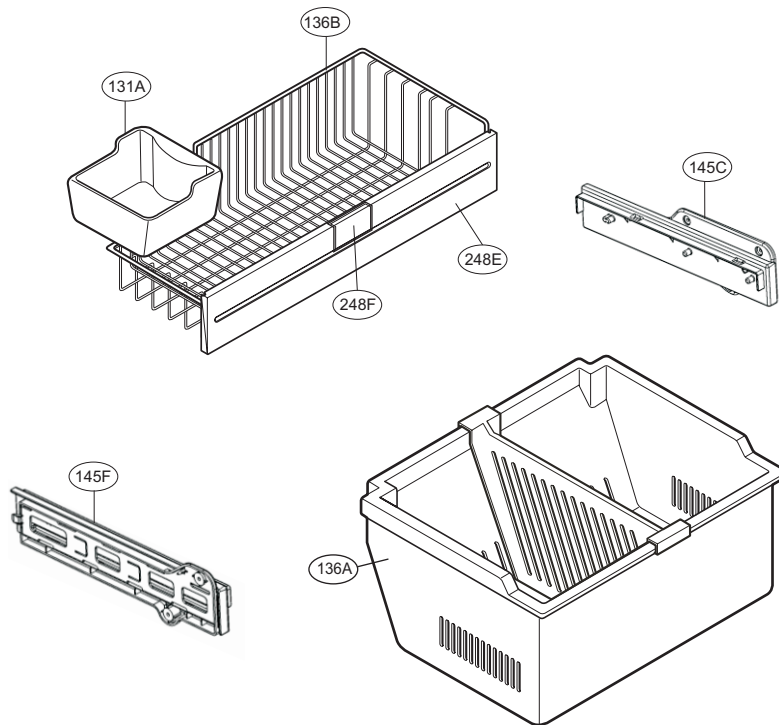
CASE PARTS

CAUTION: Use the part number to order part, not the position number.



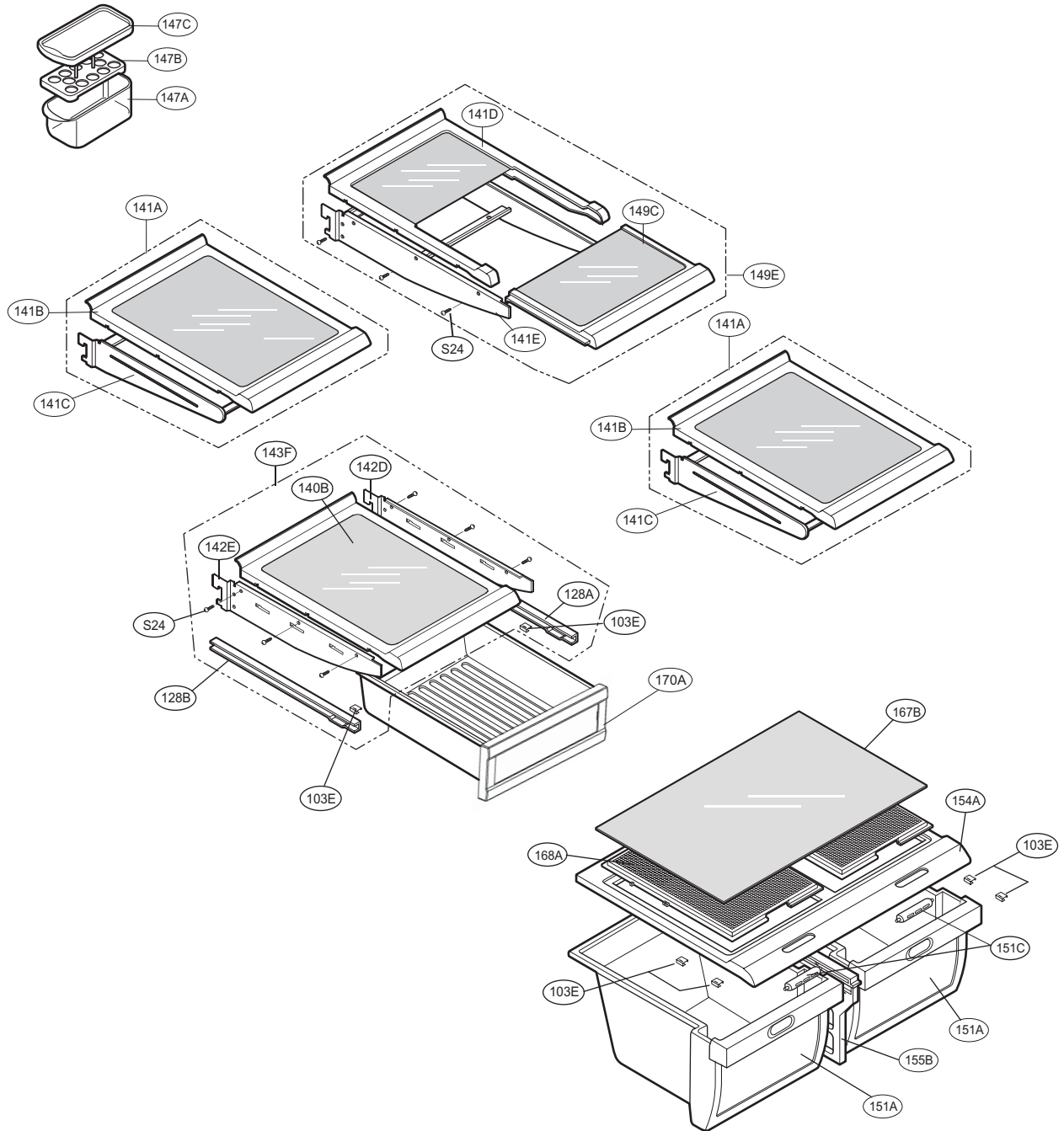
FREEZER PARTS

CAUTION: Use the part number to order part, not the position number.



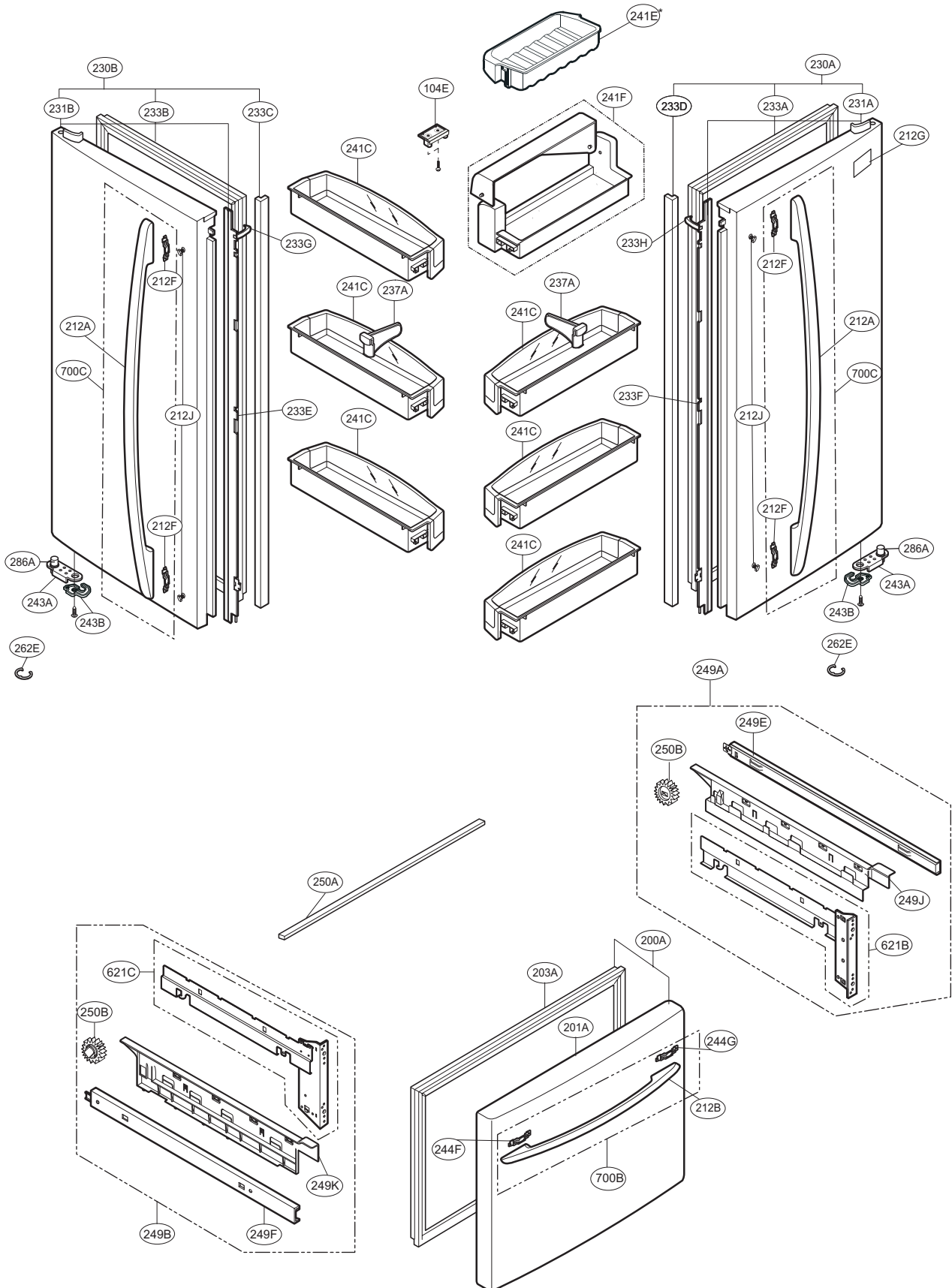
REFRIGERATOR PARTS

CAUTION: Use the part number to order part, not the position number.



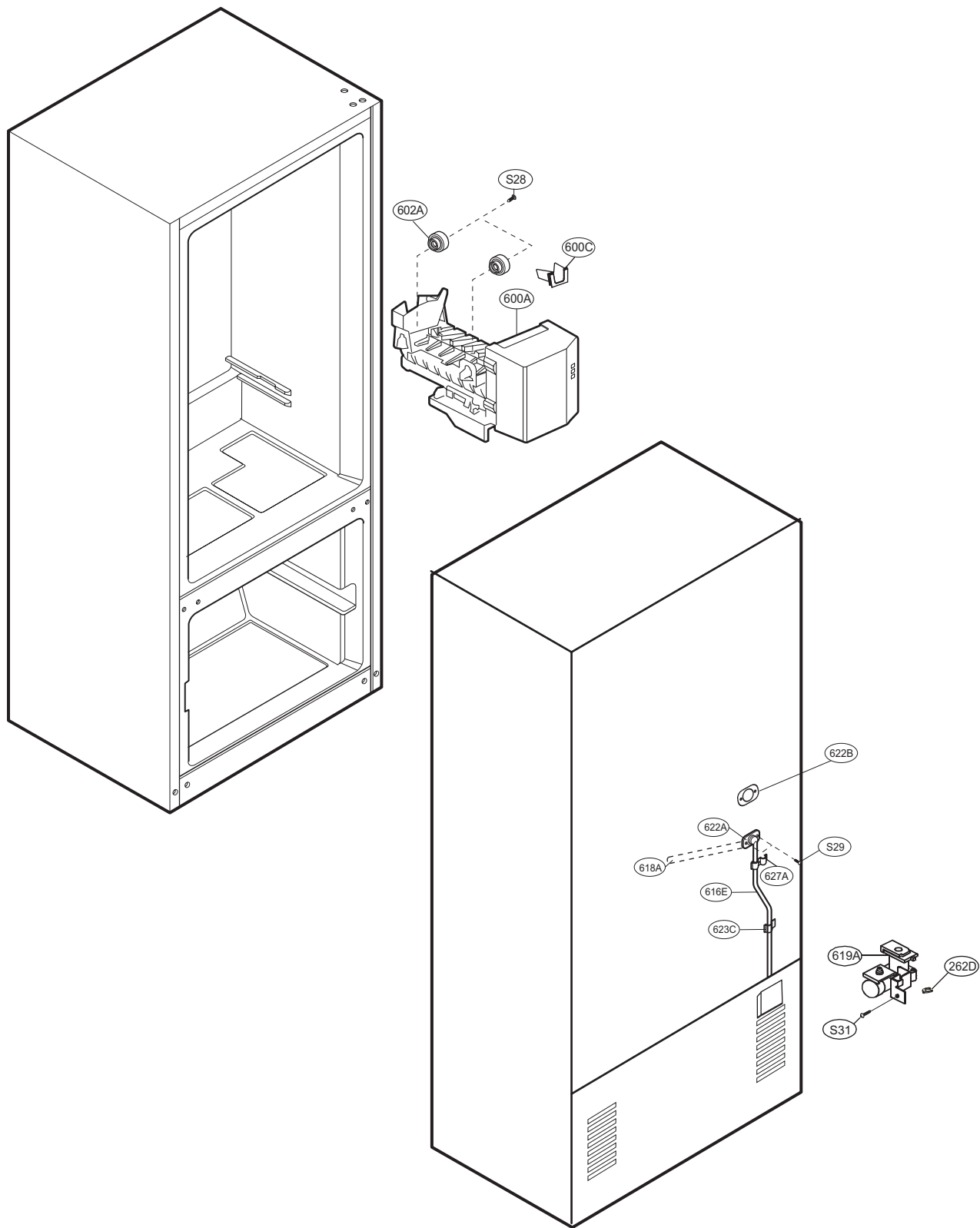
DOOR PARTS

CAUTION: Use the part number to order part, not the position number.



ICE MAKER PARTS

CAUTION: Use the part number to order part, not the position number.





*'You Can Count on me . . .
to Work Safely.'*