

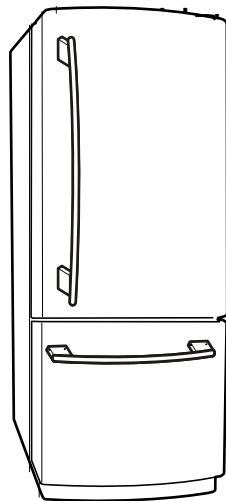


LG

REFRIGERATOR

SERVICE MANUAL

CAUTION
BEFORE SERVICING THE PRODUCT,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



MODELS
LB*22515**

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SAFETY PRECAUTIONS

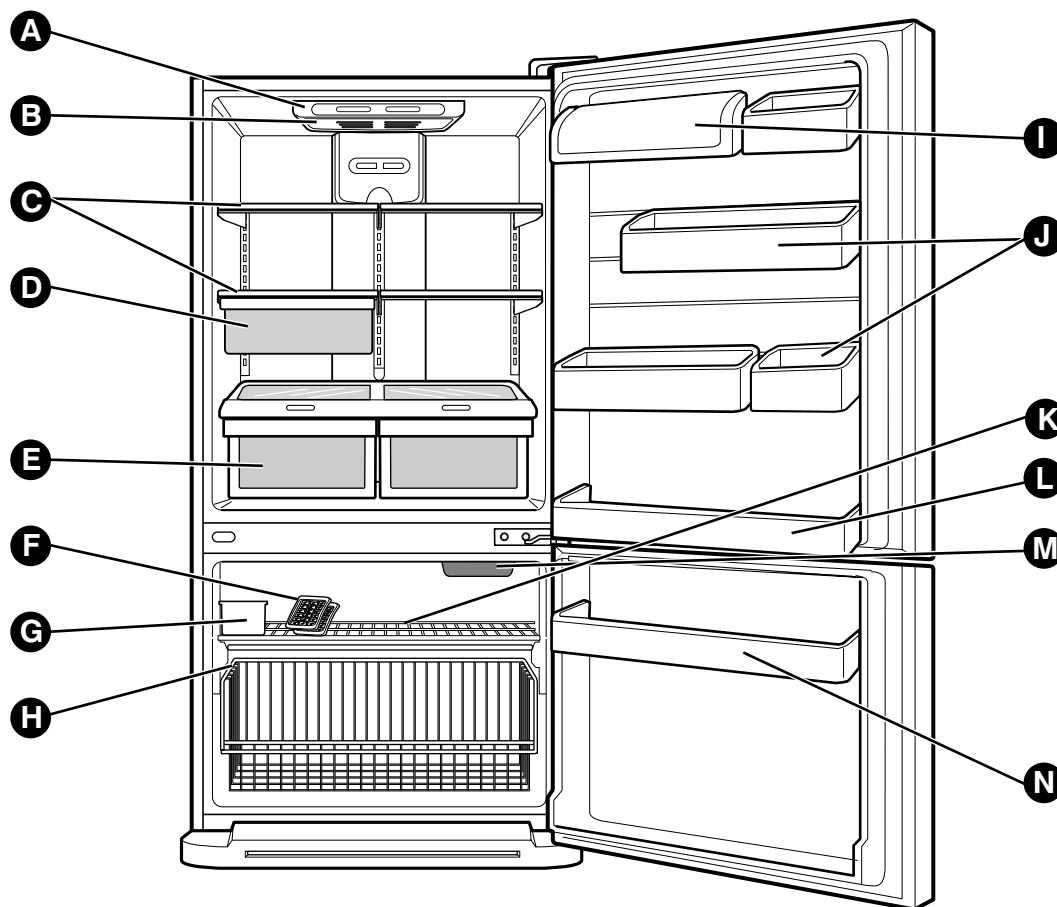
Please read the following instructions before servicing your refrigerator.

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 frostbite.
6. Prevent water from spilling on to electric elements 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

MODELS		LBN22515**
SPECIFICATIONS		
GENERAL FEATURES	CAPACITY litros(F/R/T)	195.98/438.97/634.95
	DIMENSIONS in(W*H*D)	32 7/8*68 1/2*34
	WEIGHT kg	125
	HANDLE TYPE	CURVED
	REVERSIBLE DOOR	YES
	DOOR FINISH	STAINLESS STEEL
	REFRIGERANT/gr	R134a 120±3
FREEZER	ICE TRAY	I/T(2EA)+I/B
	SHELF	WIRE
	BASKET DOOR	PLASTIC(1)
	LAMP	YES(1)60W/BBLUE
REFRIGERATOR	TRAY MEAT	YES
	SHELF	4FIX
	MAGIC CRISPER	NO
	LAMP	YES(2)60W/BBLUE
	GUIDE BOTTLE	NO
	DOOR COOLING	NO
	TRAY VEGETABLE	NORMAL
	BASKET DOOR	2 1/3+2 2/3+ 1FULL

2. PARTS IDENTIFICATIONS



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.

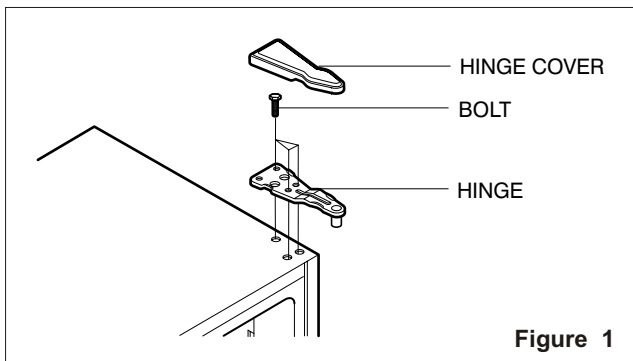
- | | |
|--|---------------------------------|
| A Digital Sensor Control | I Dairy Bin |
| B Refrigerator Light | J Design-A-Door |
| C Shelves | K Wire Freezer Shelf |
| D Snack Pan | L Refrigerator Door Rack |
| E Optibin Crisper
Keeps fruits and vegetable fresh and crisp | M Freezer Light |
| F Ice Trays | N Freezer Door Rack |
| G Ice Bin | |
| H Wire Durabase | |

3. DISASSEMBLY

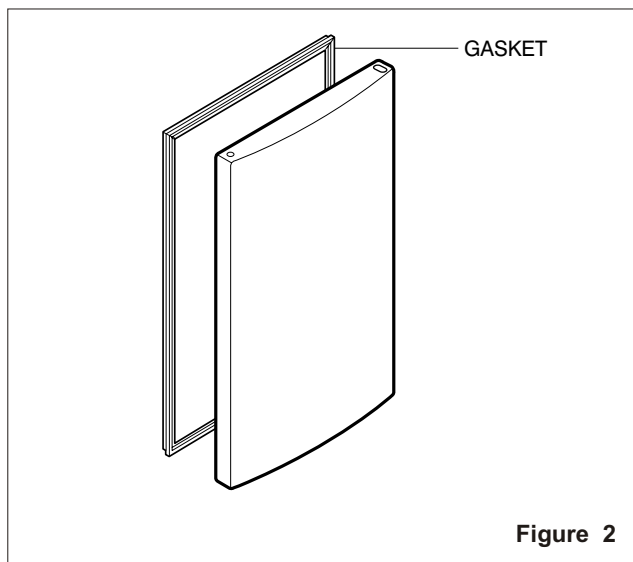
3-1 DOOR

Refrigerator Door

1. Remove the hinge cover by pulling it upwards.
2. Loosen the hexagonal bolts attaching the upper hinge to the body and lift the freezer door.

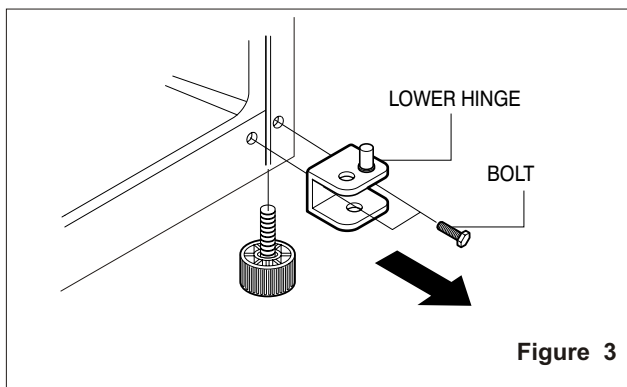


3. Pull out the door gasket to remove from the door foam assembly.



Freezer Door

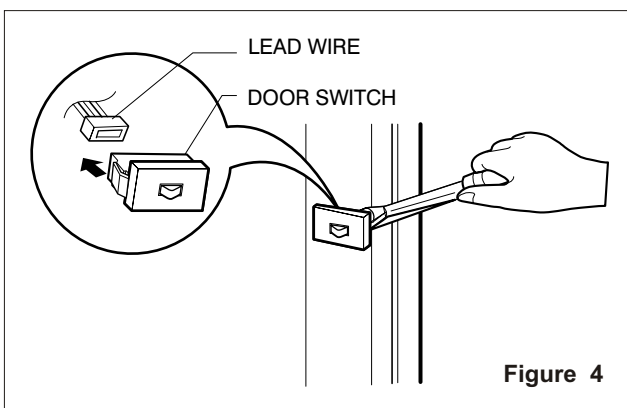
1. Loosen the hexagonal bolts attaching the lower hinge to the body to remove the refrigerator door only.



2. Pull out the door gasket to remove from the door foam assembly.

3-2 DOOR SWITCH

1. To remove the door switch, pry it out with a slotted-type driver, as shown in (Figure 4).
2. Disconnect the lead wire from the switch.



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 and disassembling the shroud.
5. Pull out the fan and separate the Fan Motor and Bracket.

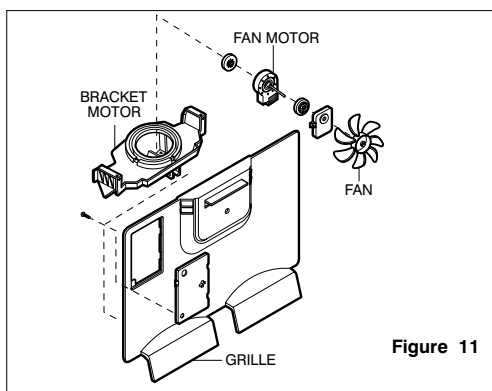


Figure 11

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

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

1. Pull out the grille assembly. (Figure 6)
2. Separate the connector with the Defrost Control assembly and replace the Defrost Control assembly after cutting the Tie Wrap. (Figure 7)

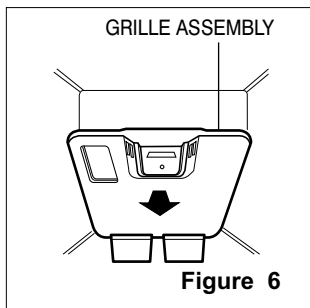


Figure 6

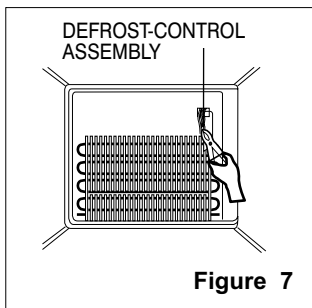


Figure 7

3-5 LAMP

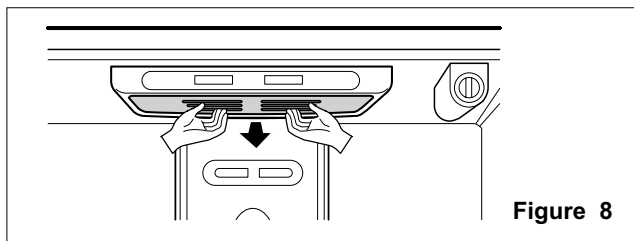


Figure 8

3-5-1 Refrigerator Compartment Lamp

1. Unplug the power cord from the outlet.
2. Remove refrigerator 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. Assemble in reverse order of disassembly. Replacement bulb must be the same specification as the original (Max. 60 W-2EA).

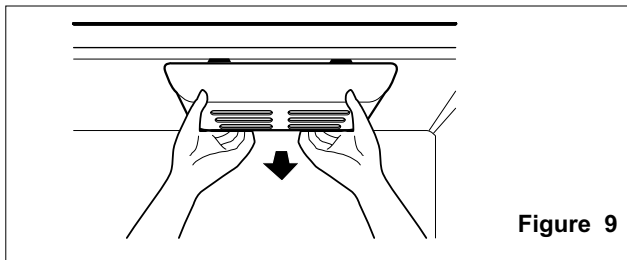


Figure 9

3-5-2 Freezer Compartment Lamp

1. Unplug refrigerator or disconnect power.
2. Reach behind light shield to remove bulb.
3. Replace bulb with a 60-watt appliance bulb.
4. Plug in refrigerator or reconnect power.

3-6 CONTROL BOX-REFRIGERATOR

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

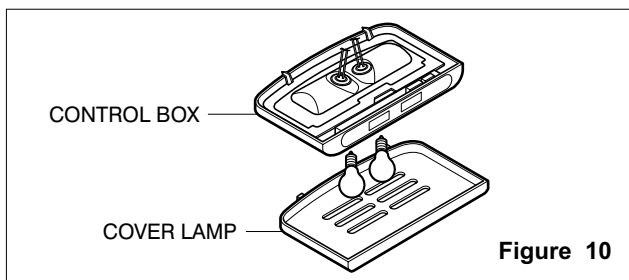


Figure 10

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 an upper and lower Cap by using a flat screwdriver, and loosen 3 screws. (Figure 11)
2. Disconnect the lead wire on the bottom position.

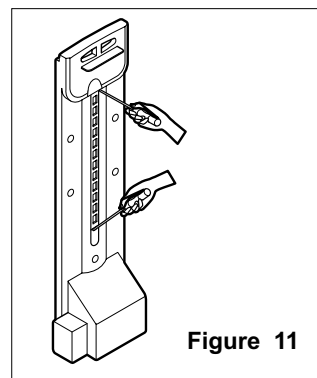


Figure 11

4. ADJUSTMENT

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.
- (5) When replacing the Compressor, be careful that dust, humidity, and soldering flux don't contaminate the inside of the compressor. Dust, humidity, and solder flux contaminate the cylinder and may cause noise, improper operation or even cause it to lock up.

4-2 PTC-STARTER

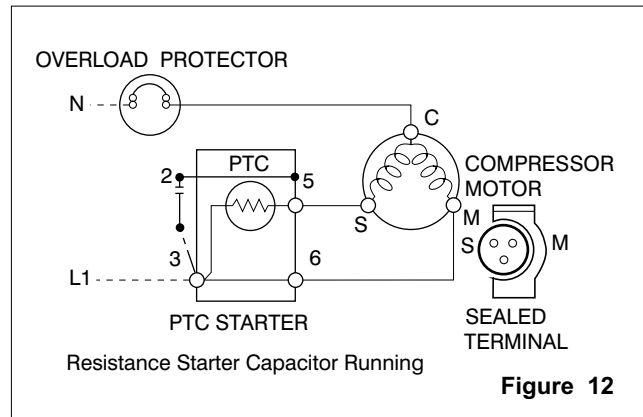
4-2-1 Composition of PTC-Starter

- (1) PTC (Positive Temperature Coefficient) is a no-contact semiconductor starting device which uses ceramic material consisting of BaTiO₃.
- (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.

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 over current 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 and 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.

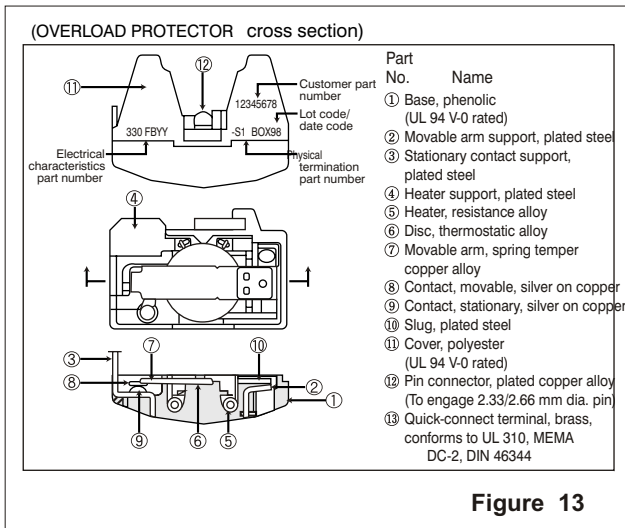
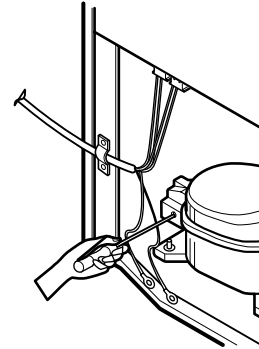
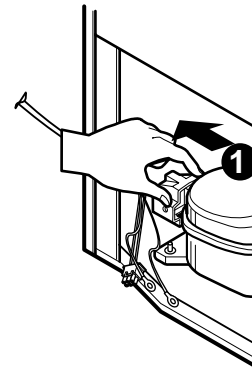


Figure 13

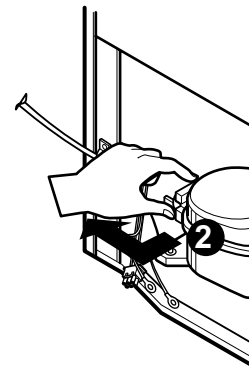
4-4 TO REMOVE THE COVER PTC



- 1) Remove the Cover Back M/C.
- (2) Remove the screw on Cover PTC.

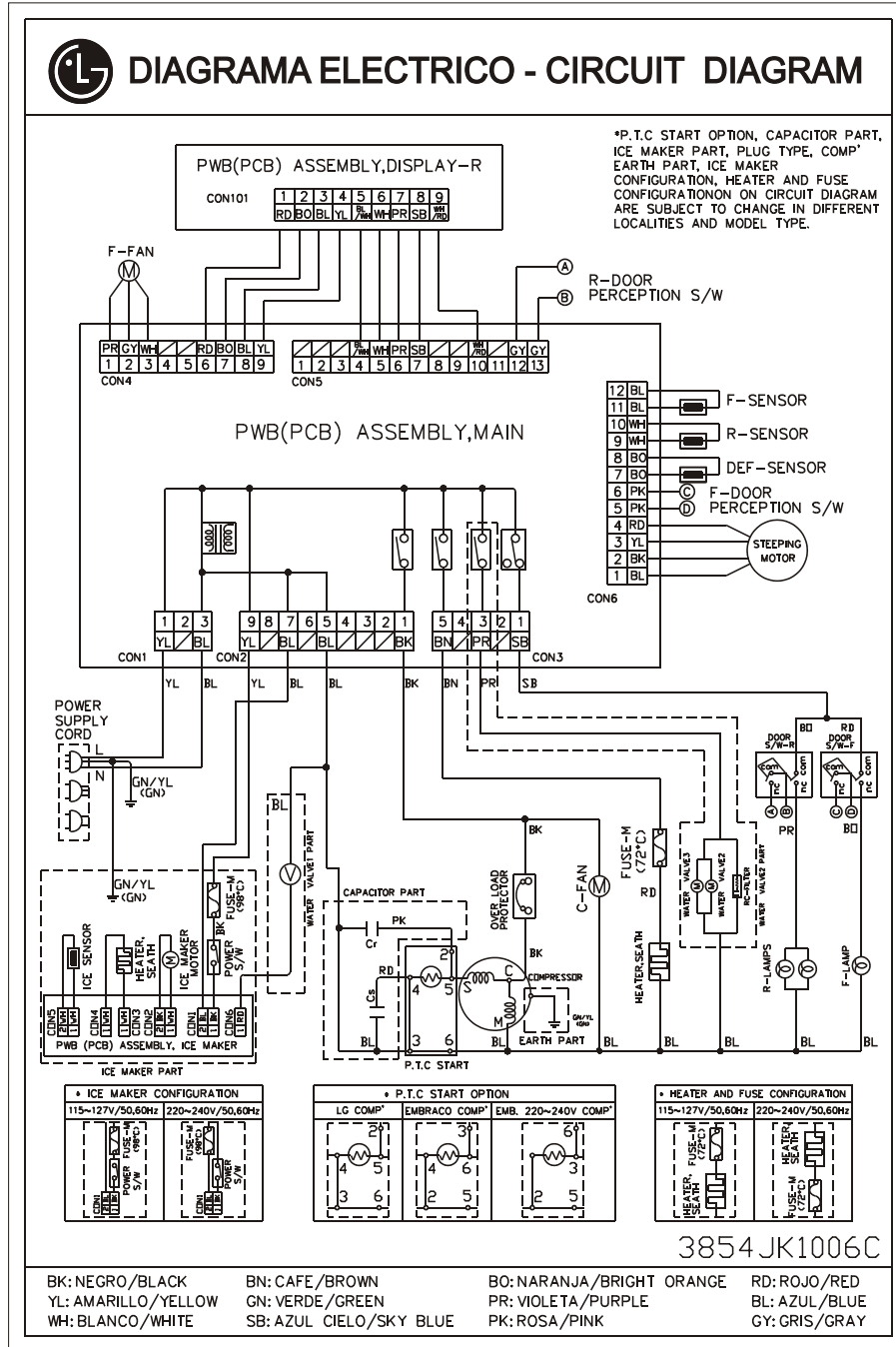


- (3) Remove two Housings on upper part of Cover PTC.
- (4) Take out the cover PTC from upper to lower position like (1).



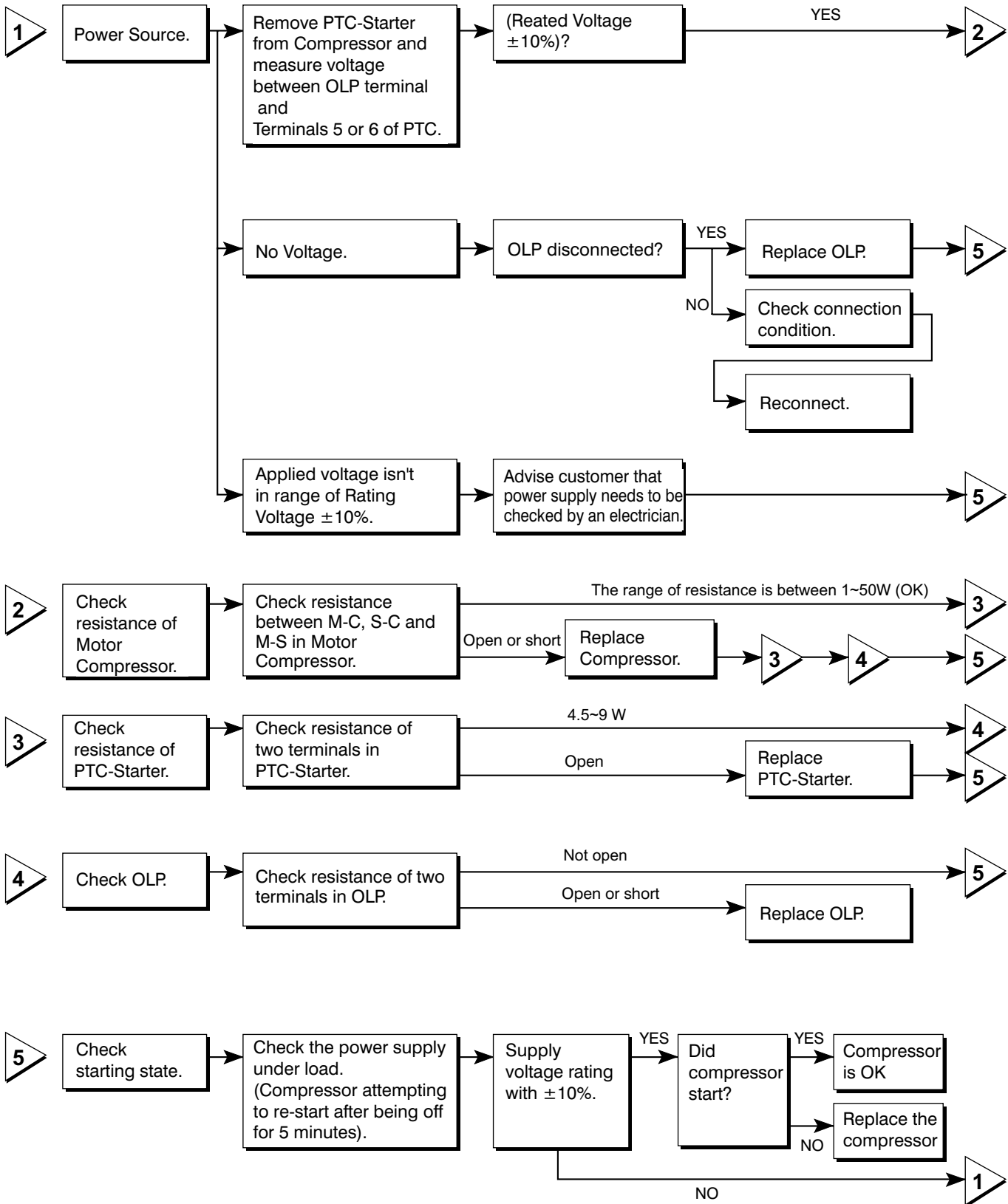
- (5) Turn 45° in the direction of (2) and take it out.
- (6) Assembly in reverse order of disassembly.

5. CIRCUIT DIAGRAM



6. TROUBLESHOOTING

6-1 COMPRESSOR AND ELECTRIC COMPONENTS



6-2 PTC AND OLP

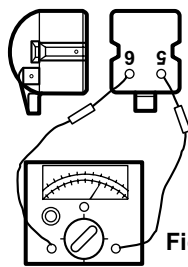
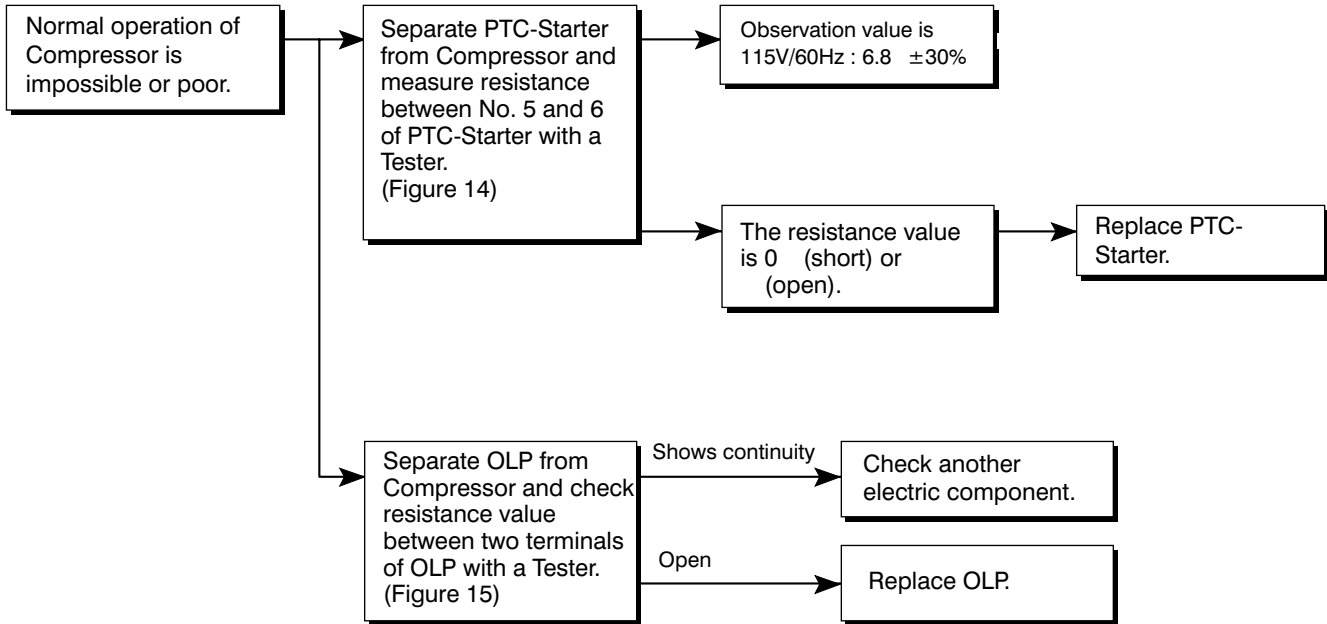


Figure 14

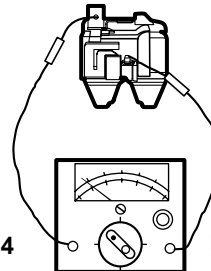
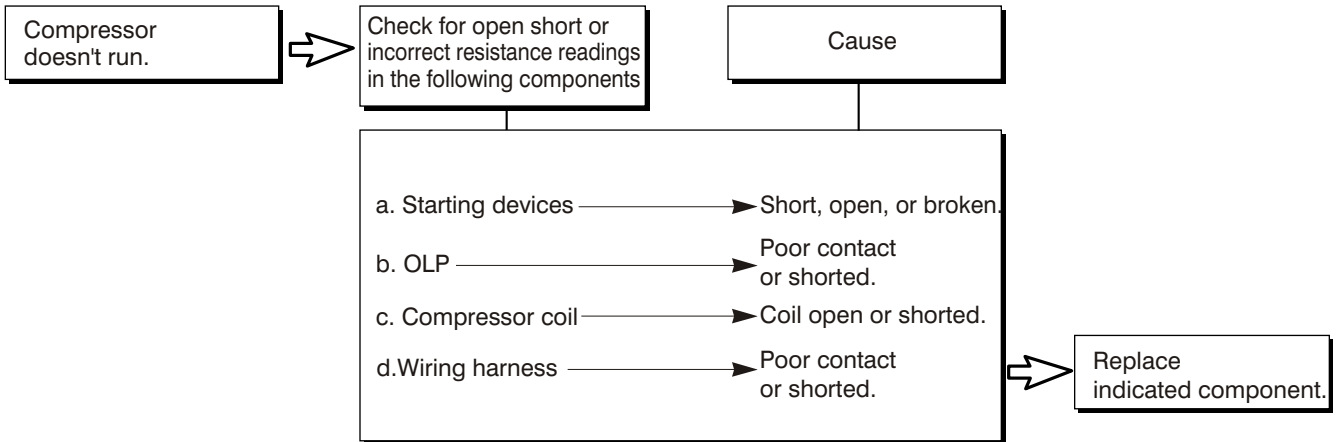


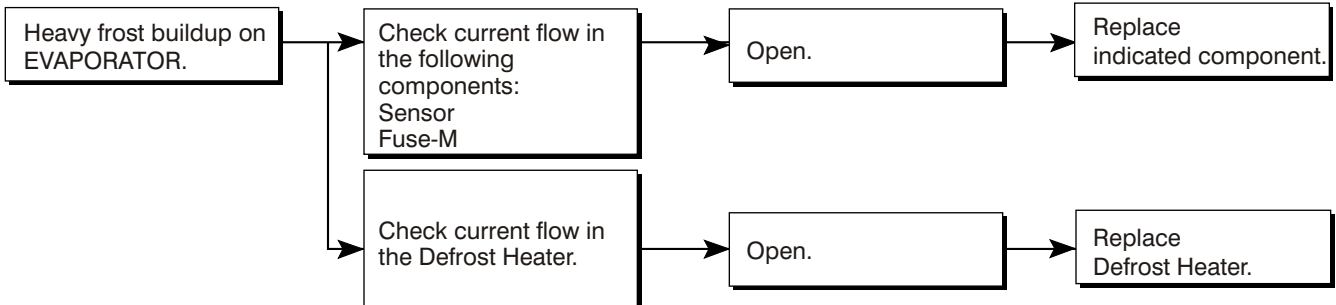
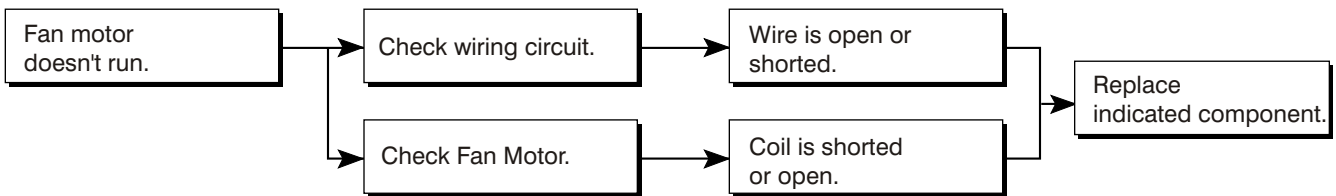
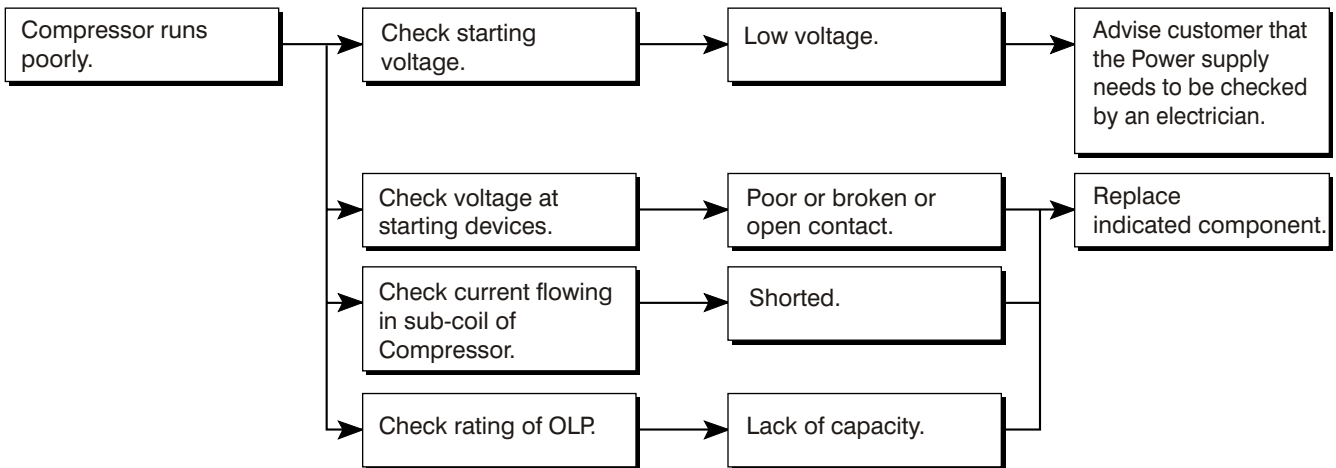
Figure 15

6-3 OTHER ELECTRICAL COMPONENTS

Not cooling at all



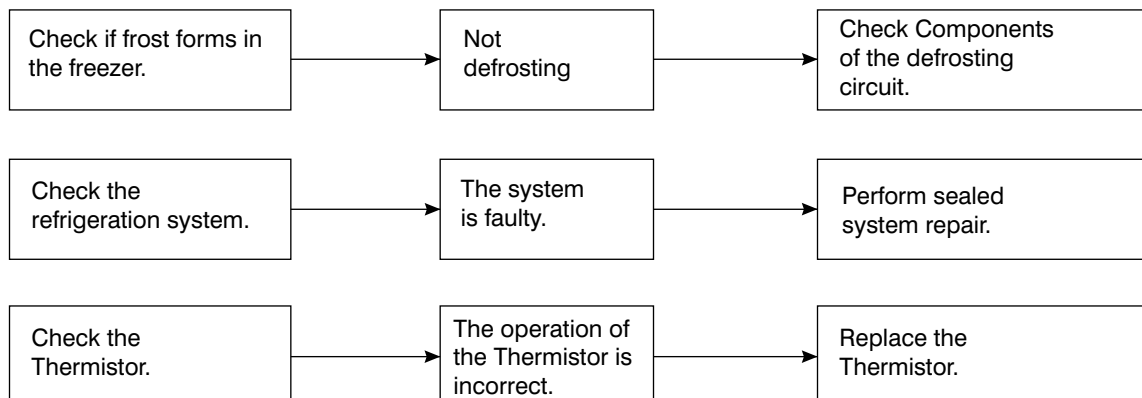
Poor cooling performance



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 shorted. • 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.
Foods in the Refrigerator are 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 41°F(5°C)? 	<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 in 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. • Fill up the gap.
There is abnormal noise.	<ul style="list-style-type: none"> • Is the unit positioned in a firm and even place? • Are any unnecessary objects placed in the back side of the unit? • Check if the Tray Drip is not firmly fixed. • Check if the cover of the compressor enclosure in the front lower side is taken out. 	<ul style="list-style-type: none"> • Adjust the Leveling Screw, and position the refrigerator in a firm place. • Remove the objects. • Fix the Tray Drip 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 the 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:



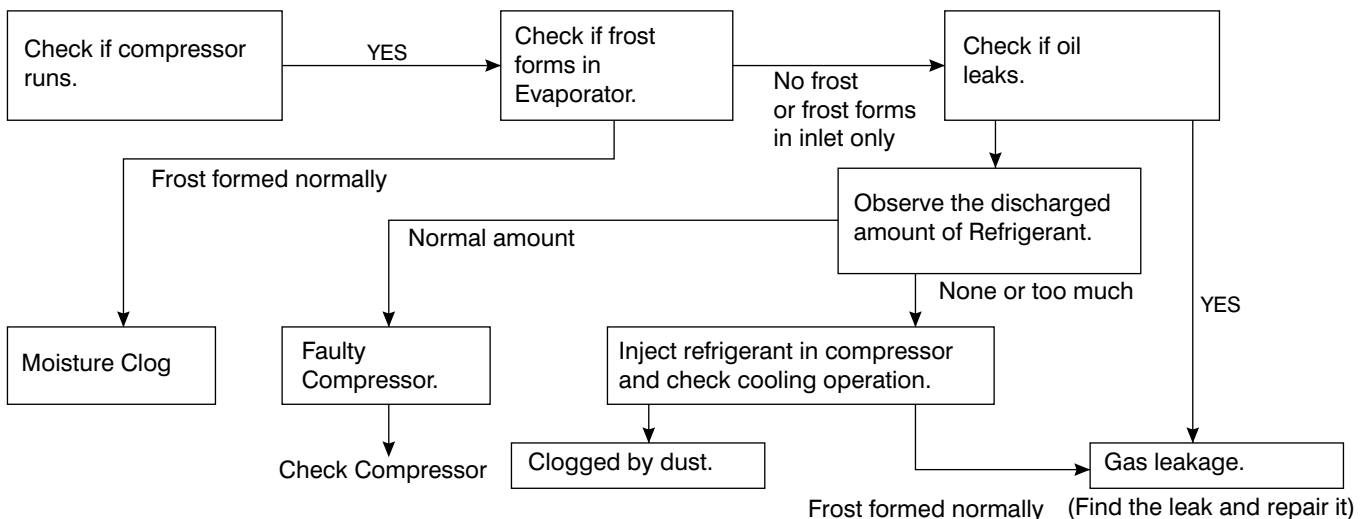
6-5 REFRIGERATION CYCLE

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.	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> No discharging of Refrigerant. Normal cooling is possible by restoring the normal amount of refrigerant and repairing the leak.
CLOGGED BY DUST	PARTIAL 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.	<ul style="list-style-type: none"> Normal discharging of the refrigerant. The capillary tube is faulty.
	WHOLE CLOG	Freezer compartment and Refrigerator don't cool.	Flowing sound of refrigerant is not heard and frost isn't formed.	Equal to ambient temperature.	<ul style="list-style-type: none"> Normal discharging of the Refrigerant.
MOISTURE CLOG		Cooling operation stops periodically.	Flowing sound of refrigerant is not heard and frost melts.	Lower than ambient temperature.	<ul style="list-style-type: none"> Cooling operation restarts when heating the inlet of the capillary tube.
DEFECTIVE COMPRESSION	COMPRESSION	Freezer and Refrigerator don't cool.	Low flowing sound of refrigerant is heard and frost forms in inlet only.	A little higher ambient temperature.	<ul style="list-style-type: none"> 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.	<ul style="list-style-type: none"> No pressure in the high pressure part of the compressor.

Leakage Detection

Observe the discharging point of the refrigerant, which may be in the oil discharging part of the compressor and in a hole in the evaporator.



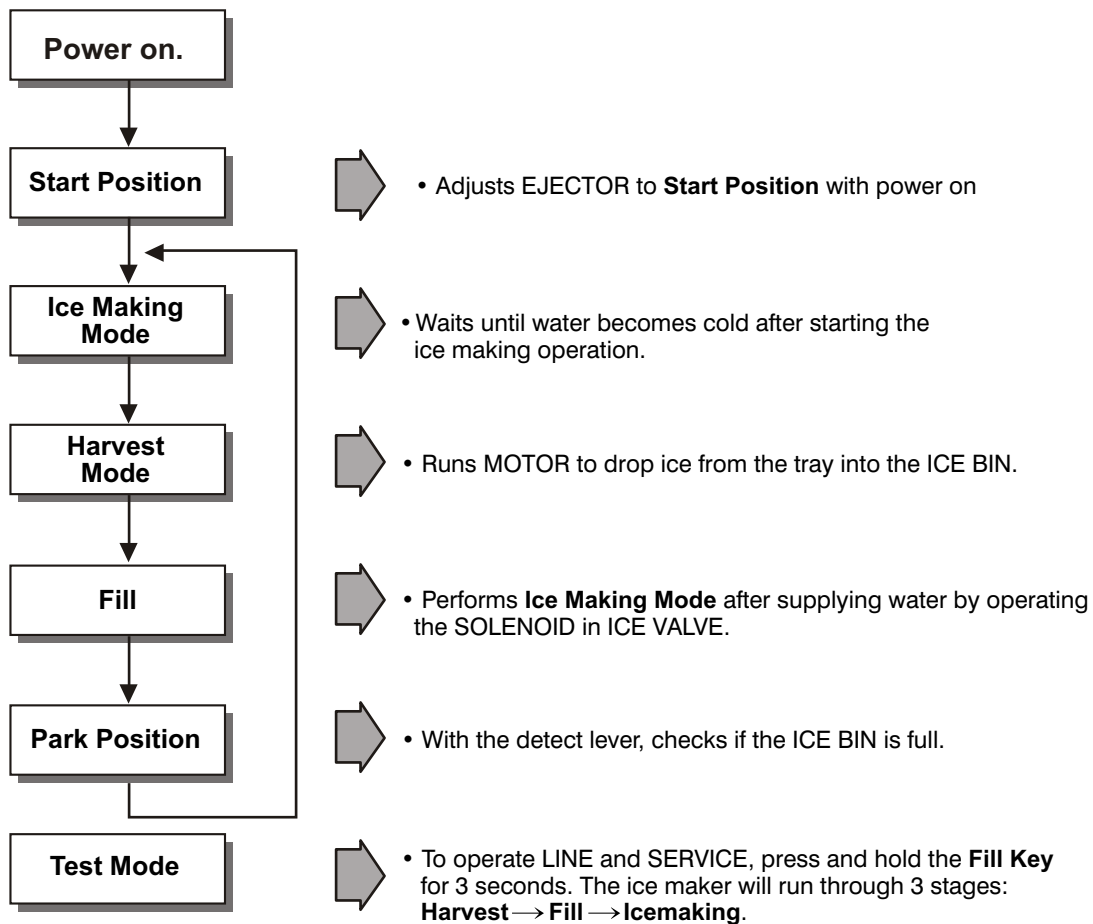
General Control of Refrigerating Cycle

NO.	ITEMS	UNIT	STANDARDS	PURPOSES	REMARKS	
1	Pipe and piping system opening time	Min.	Pipe: within 1 hour. Comp: within 10 minutes. Drier: within 20 minutes.	To protect moisture penetration.	The opening time should be reduced to a half of the standards during rain and rainy seasons (the penetration of water into the pipe is dangerous).	
2	Welding	Nitrogen pressure	Weld under Nitrogen atmosphere. (N ₂ pressure: 0.1~0.2 kg/cm ²)	To protect oxide scale formation.	- Refer to repair note in each part. - R-134a refrigerant is more susceptible to leaks than R-12 and requires more care during welding. - Do not apply force to pipes before and after welding to protect pipe from cracking.	
3	N ₂ sealed parts	Confirm N ₂ leak	Confirm the sound of pressure relief when removing the rubber cap. Sound: usable No sound: not usable	To protect moisture penetration.	- In case of evaporator parts, if it doesn't make sound when removing rubber cap, blow dry air or N ₂ gas for more than 1 min. and then use the parts.	
4	Refrigeration Cycle	Evacuation time	Min.	More than 40 minutes	To remove moisture.	
		Vacuum degree	Torr	Below 0.03 (ref)		Note: Only applicable to the model equipped with reverse flow protect plate.
		Vacuum	EA	High and low pressure sides are evacuated at the same time for models above 200l.		Vacuum efficiency can be improved by operating compressor during evacuation.
		Vacuum piping	EA	Use R-134a manifold exclusively.	To protect mixing of mineral and ester oils.	The rubber pipes for R-12 refrigerant will be melted when they are used for R-134a refrigerant (causes of leak.)
		Pipe coupler	EA	Use R-134a manifold exclusively.	To protect R-12 refrigerant mixing.	
		Outlet (Socket)		R-134a manifold exclusively.	To protect R-12 refrigerant mixing.	
		Plug		R-134a manifold exclusively.	To protect R-12 refrigerant mixing.	
5	Refrigerant weighing	EA	Use R-134a exclusively. Weighing allowance: 5g Note: Winter: -5g Summer: +5g	Do not mix with R-12 refrigerant.	- Do not weigh the refrigerant at too hot or too cold an area. (77°F [25°C] is adequate.) - Make Copper charging canister (Device filling refrigerant) Socket: 2SV Plug: 2PV R-134a Note: Do not burn O-ring (bushing) during welding.	
6	Drier replacement		- Use R-134a exclusively for R-134a refrigerator. - Replace drier whenever repairing refrigerator cycle piping.	To remove the moisture from pipe inside.		
7	Leak check		- Do not use soapy water for check. It may be sucked into the pipe by a vacuum.	Defect in refrigerant leak area.	- Check for an oil leak at the refrigerant leak area. Use an electronic leak detector if an oil leak is not found. - The electronic leak detector is very sensitive to halogen gas in the air. It also can detect R-141b in urethane. Practice many times before using this type of detector to avoid false readings.	

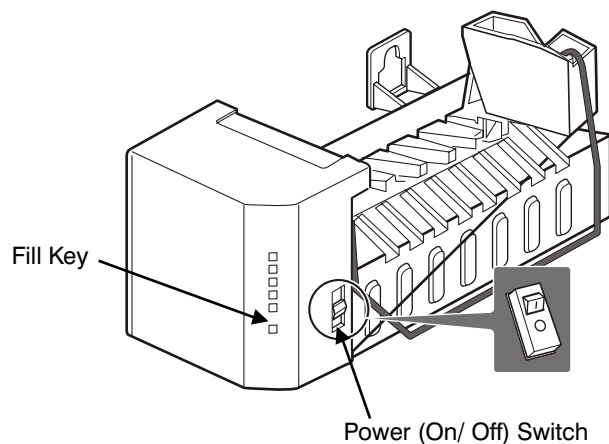
7. OPERATION PRINCIPLE AND REPAIR METHOD OF ICEMAKER

7-1 OPERATION PRINCIPLE

7-1-1 Operation Principle of IceMaker



1. Turning the Icemaker stop switch off (O) stops the ice making 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 Start Position

1. After POWER OFF or Power Outage, check the EJECTOR's position with MICOM initialization to restart.
2. How to check if it is in place:
 - Check **HIGH/LOW** signals from HALL SENSOR in MICOM PIN.
3. Control Method to check if it is in place:
 - (1) EJECTOR is in place,
 - It is an initialized control, so the mode can be changed to ice making control.
 - (2) EJECTOR isn't in place:
 - A. If EJECTOR is back in place within 2 minutes with the motor on, it is being initialized. If not, go to Step B.
 - B. If EJECTOR is back in place within 18 minutes after the heater turns from ON to OFF, it is being initialized. If not, it is not functioning. Repeat Step B with Heater and Motor off.

7-2-2 Ice Making Mode

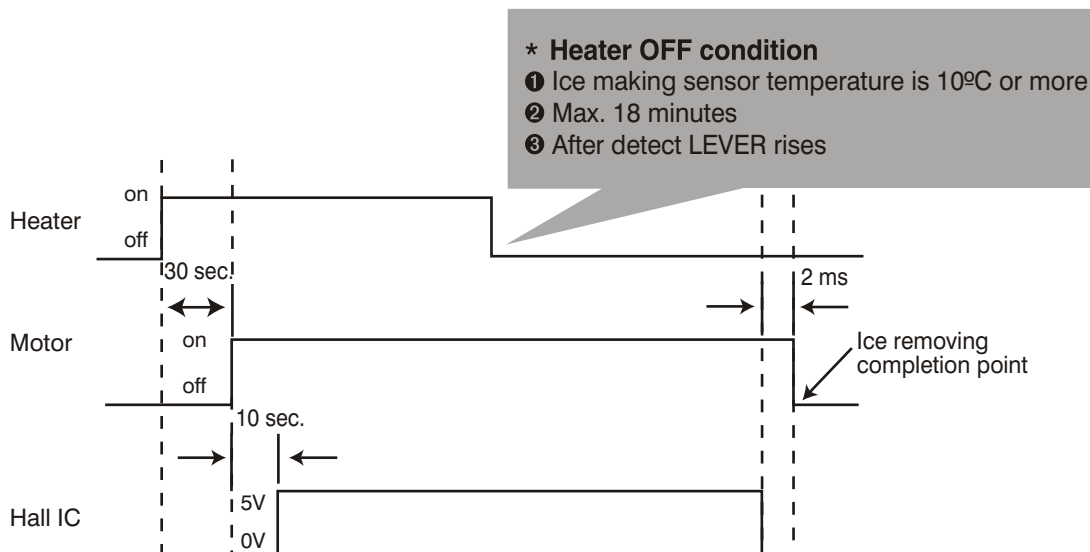
1. Ice Making refers to the freezing of supplied water in the ice trays. Complete freezing is assured by measuring the temperature of the Tray with Ice-Making SENSOR.
2. Ice Making starts after completion of the water fill operation.
3. The Ice Making function is completed when the sensor reaches -7°C , 60 to 240 minutes after starting.
4. If the temperature sensor is defective, the ice-making function will be completed in 4 hours.

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

7-2-3 Harvest Mode

1. Harvest (Ice removing) refers to the operation of dropping cubes into the ice bin from the tray when ice-making has completed.
2. Harvest mode:
 - (1) The Heater is ON for 30 seconds, then the motor starts.
 - (2) After performing Step 1 (the Heater is turned OFF), the Ejector will be back in place within 18 minutes. (Hall SENSOR sign = 0V). Ice removal is then complete. Then the Ice Maker cycles to the Fill Mode. The water supply fails to start, it is not functioning. Put the Heater and Motor in the off position. Restart every 2 hours. (Refer to fig.1)

NOTE : If the motor malfunctions and starts before the detect lever rises, MICOM regards the Ice-Removing phase as completed. Water then starts flowing. To prevent this, MICOM doesn't switch to water-supply mode, but restarts the ice-removing mode. If this happens 3 times, the motor is malfunctioning and you should stop the loads (Heater, Motor). Then restart the Ice-Removing mode every 2 hours. (See Step 2 above.)








<fig1. Harvest mode Process>

7-2-4 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.		<p>The water amount will vary depending on the water control Switch setting, as well as the water pressure of the connected water line.</p>
2	6.5 sec.		
3	7 sec.		
4	7.5 sec.		
5	8 sec.		

7-2-5 Function TEST



1. This is a compulsory operation for TEST, SVC, cleaning, etc. It is operated by pressing and holding the Fill Key for 3 seconds.
2. The test works only in the Ice Making 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 Maker 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: **ice making** → **Harvest** → **Fill** → **Park Position**.
5. Five seconds after Stage 5 is completed, the Ice Maker 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 10iC or lever is in up position.
2	MOTOR		Five seconds after heater starts, you can confirm that motor is moving.
3	HALL IC I (detection of position)		You can confirm Hall Ic detection of position.
4	VALVE		Two seconds after detection of initial position, you can confirm that valve is on.
5	HALL IC II (detection of full-filled Ice)		You can check whether hall is sensing Full ice condition. (If there is a full-filled 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	CONTENTS	REMARKS
1	Normal	Mark time to supply	None	Display switch operates properly
2	Ice-Making Sensor malfunction		Open or short-circuited wire	Make sure that the wire on each sensor is connected.
3	Ice Maker Kit malfunction		When ejector blades don't reach park position over 18 minutes after Harvest Mode starts.	Check HALL IC/MOTOR/HEATER/RELAY

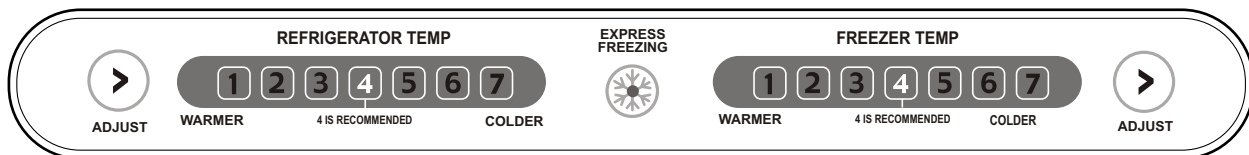
ERROR indicators in table can be checked only in TEST mode.

8. DESCRIPTION OF FUNCTION & CIRCUIT OF MICOM

8-1 FUNCTION

8-1-1 Function

1. When the appliance is plugged in, it is set to "4" for Refrigerator and "4" for 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 "4" & "4".



8-1-2 Control of freezer fan motor

1. Freezer fan motor has high and standard RPMs.
2. High RPM is used when electricity is first on, for EXPRESS FREEZING, and when refrigerator is overloaded.
But standard RPM is used for general purposes.
3. To improve cooling speed and load corresponding speed, the RPM of freezer fan motor shall change from normal speed to high speed.
4. High speed (2500RPM) : Initial power on or load corresponding operation, EXPRESS FREEZING.
Normal speed (2200 RPM): general working conditions.
5. Fan motor stops when refrigerator or freezer door opens.

8-1-3 EXPRESS FREEZING

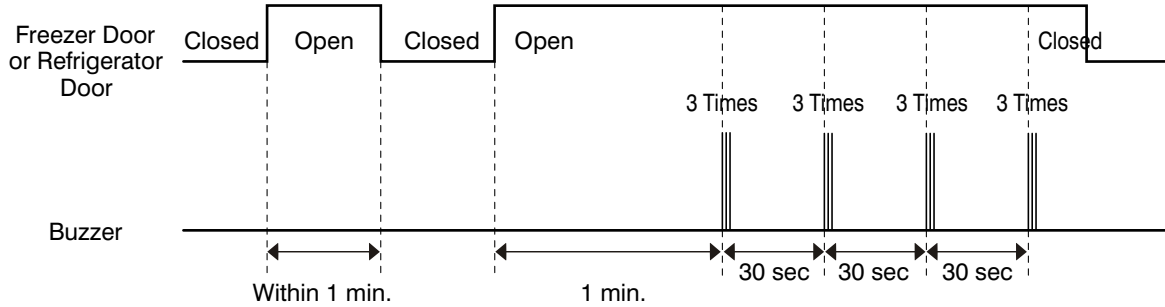
1. The purpose of this function is to intensify the cooling speed of freezer and to increase the amount of ice.
2. Whenever selection switch is pressed, selection/release, the LED will turn ON or OFF.
3. If there is a power cut and the refrigerator is power on again, EXPRESS FREEZING function will be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

8-1-4. REFRIGERATOR LAMP AUTO OFF

1. To protect the risk of lamp heat, when Refrigerator door opens for 7 min., refrigerator lamp is auto off.

8-1-5 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 1/2 seconds. These tones repeat every 30 seconds.
3. The alarm is cancelled when the freezer or the refrigerator is closed while the buzzer sounds.



8-1-6 Buzzer Sound

When the button on the front Display is pushed, a Ding~ Dong~ sound is produced.
(Refer to the Buzzer Circuit 8-2-4 No. 2)

8-1-7 Defrosting (removing frost)

1. Defrosting starts each time the COMPRESSOR running time reaches 7 hours.
2. For initial power on or for restoring power, defrosting starts when the compressor running time reaches 4 hours.
3. Defrosting stops if the sensor temperature reaches 46.4°F(8°C) or more. If the sensor doesn't reach 46.4°F(8°C) in 2 hours, the defrost mode is malfunctioning. (Refer to the defect diagnosis function, 7-1-9.)
4. Defrosting won't function if its sensor is defective (wires are cut or short circuited)

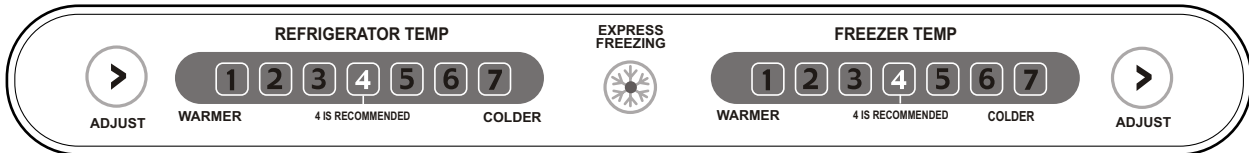
8-1-8 Electrical Parts Are Turned On Sequentially

Electrical parts such as COMP, 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 or more (when unit is newly purchased or when moved)	POWER ON	in 1/2 second	COMP ON	in 1/2 second	Freezer FAN ON
	Temperature of defrosting sensor is lower than 45°C (when power cuts, SERVICE)	POWER ON	in 1/2 second	Defrosting heater ON	in 10 second	Defrosting heater OFF
			in 1/2 second	COMP ON	in 1/2 second	Freezer FAN ON
	Reset to normal operation from TEST MODE	Total load OFF	in 7 minute	COMP ON	in 1/2 second	Freezer FAN ON

8-1-9 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 the defect CODE removes the sign, it returns to normal operation (RESET).
4. The defect CODE shows on the Refrigerator and Freezer Display.



ERROR CODE on display panel

● LED OFF LED ON ○

NO	ITEM	ERROR CODE							CONTENTS	REMARKS	
1	Failure of freezer sensor	All off	●	○	○	○	○	○	○	Cut or short circuit wire	Inspect Connecting wires on each sensor
2	Failure of Refrigerator sensor	All off	○	●	○	○	○	○	○	Cut or short circuit wire	
3	Failure of defrost sensor	All off	○	○	●	○	○	○	○	Cut or short circuit wire	
4	Poor of defrost	All off	●	●	●	●	○	○	○	2 hours later after starting defrost, If sensor doesn't be over 46°F (8°C)	Snapping of defrost heater or Temperature fuse, pull-out of Connector (indicated minimum 2 Hours after failure occurs)
5	Failure of BLDC fan motor at freezing compartment	All off	●	●	●	●	●	○	○	If there is no fan motor signal, for more than 65 seg. In operation fan motor.	Poor motor, hocking to wires of fan, contact of structures to fan, snapping or short of lead

8-1-10 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 at Display panel.
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 EXPRESS FREEZING key and ADJUST key of Freezer Temperature at the same time over 3 seconds.	<ol style="list-style-type: none"> 1. Continuous operation of the COMPRESSOR 2. Continuous operation of the freezer fan 3. STEPPING DAMPER OPEN 4. Defrosting Heater OFF 5. Every DISPLAY LED ON 	
TEST2	Push EXPRESS FREEZING key and ADJUST key of Freezer Temperature at the same time over 3 seconds in TEST MODE 1	<ol style="list-style-type: none"> 1. COMP OFF 2. Freezer FAN OFF 3. STEPPING DAMPER CLOSE 4. Defrosting heater ON 5. DISPLAY LED 1, 3, 5, 7 ON 	Reset if the temperature of the Defrosting sensor is 46°F (8°C) or more.
Reset	Push EXPRESS FREEZING key and ADJUST key of Freezer Temp. at the same time over 3 seconds. in TEST MODE 2	Reset to the previously setting before TEST MODE	The compressor will Start after a 7-minute delay.

NOTE : LED CHECK MODE: When the refrigerator temperature control and the freezer temperature control button at the same time are hold for 1 second or longer, every LED on the display turns on at the same time. when the button are relese, the previous mode is restored.

*** Freezer Fan RPM Variable Check:**

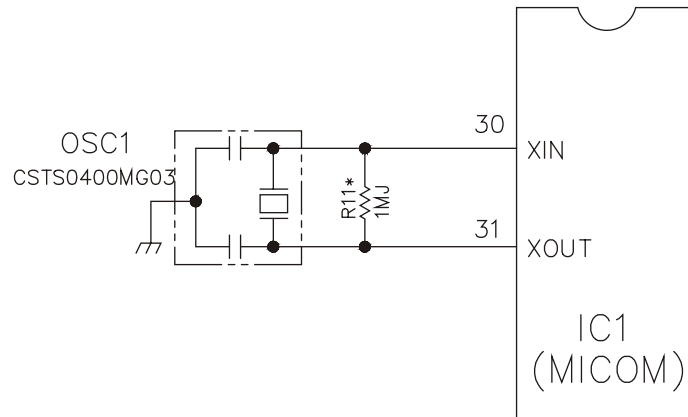
In case the freezer fan is in operation when the ADJUST key in Refrigerator and Freezer Temp. Control are pressed for more than one second at the same time freezer fan RPM changes. (for example if high speed, to normal speed or if normal speed, to high speed for 30 seconds)

After 30 seconds, it turns to its original RPM.

*** Demonstration MODE:**

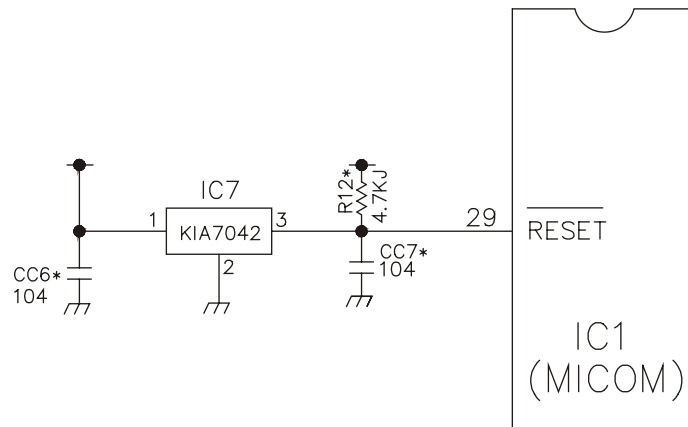
1. When the EXPRESS FREEZING key and ADJUST key of refrigerator temperature control are pressed for more than 3 seconds at the same time temperature's it converts to demonstration mode.
2. In this status, each LED is rotated with 1 second interval.
3. In this status, all Loads are off (Compressor / Fan / Damper / Heater)
(Even is Demonstration Mode, the refrigerator Lamp automatic off function works normally and can be demonstrated)
4. It reset if you do again as clause.

8-2-2 Oscillation Circuit



This circuit generates the base clock for calculating time and the synchro clock for transmitting data from and to the inside logic elements of the IC1 (MICOM). Be sure to use specific replacement parts, since calculating time by the IC1 may be changed. If changed, the OSC1 SPEC will not work.

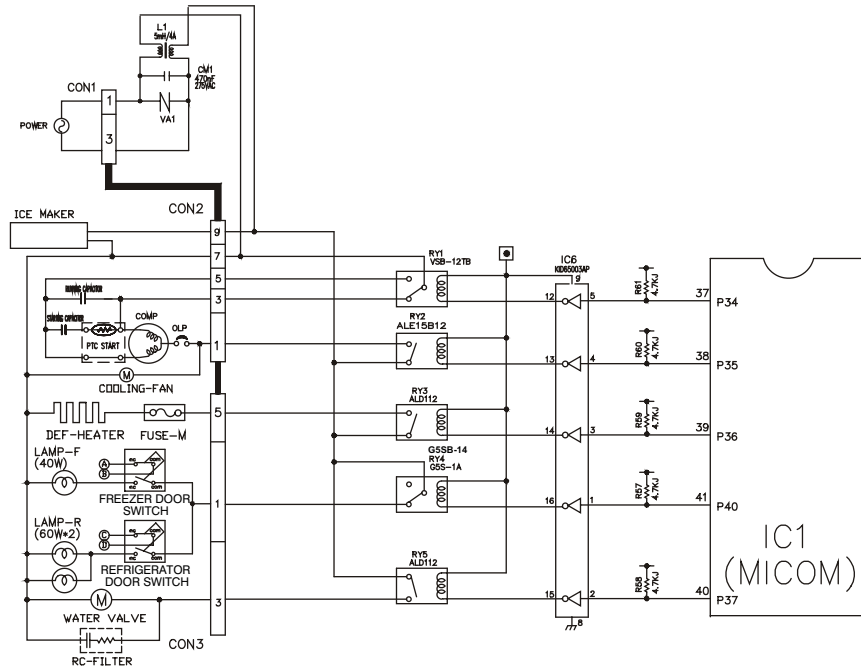
8-2-3 Reset Circuit



The RESET circuit allows all the functions to start at the initial conditions by initializing various parts, including the RAM inside the MICOM (IC1) when the power is initially supplied or the power supply to the MICOM is restored after a momentary power failure. For the initial 10ms of power supply, LOW voltage is applied to the MICOM RESET terminal. During a normal operation, 5V is applied to the RESET terminal. (If a malfunction occurs in the RESET IC, the MICOM will not operate.)

8-2-4 Load / Buzzer Drive & Open Door Detection Circuit

1. Load Drive Condition Check

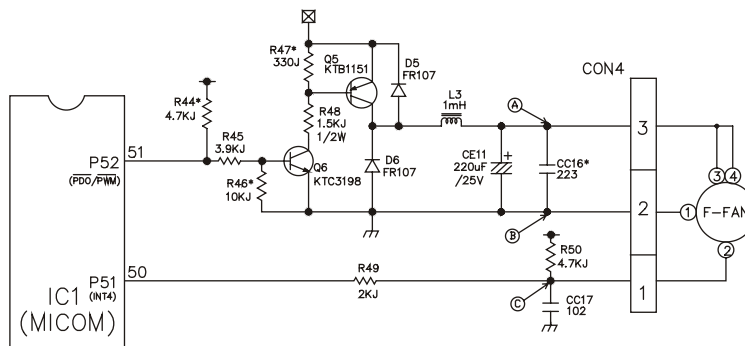


LOAD TYPE		COMP	DEFROSTING HEATER	LAMP	TCM POWER MODE (OPTIONAL)	VALVE (DISPENSER MDL)
Measurement Location (IC6)		NO.13	NO.14	NO.16	NO.12	NO.15
Condition	ON	1V or below				
	OFF	12V				

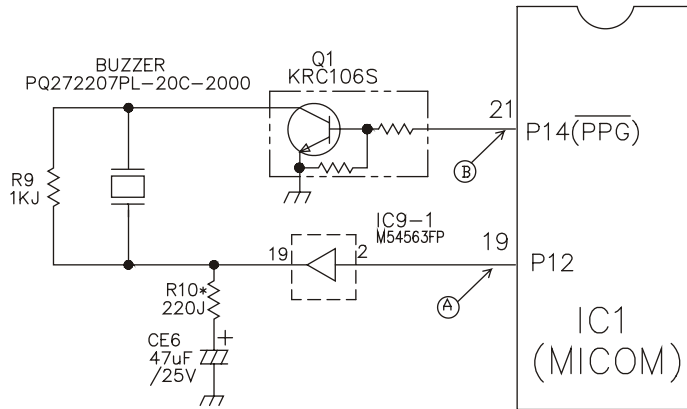
2. Fan motor driving circuit (freezing compartment fan)

1. This circuit makes standby power 0 by cutting off power supplied to ISs inside of the fan motor in the fan motor OFF.
2. This is a circuit to perform a temporary change of speed for the fan motor and applies DC voltage up to 7.5V ~ 16V to motor.
3. This circuit prevents over-driving the fan motor by cutting off power applied to the fan motor in the lock of fan motor by sensing the operation RPM of the fan motor.

	Ⓐ part	Ⓑ part	Ⓒ part
MOTOR OFF	2V or less	0V	5V
MOTOR ON	13V~15V	0V	2V~3V

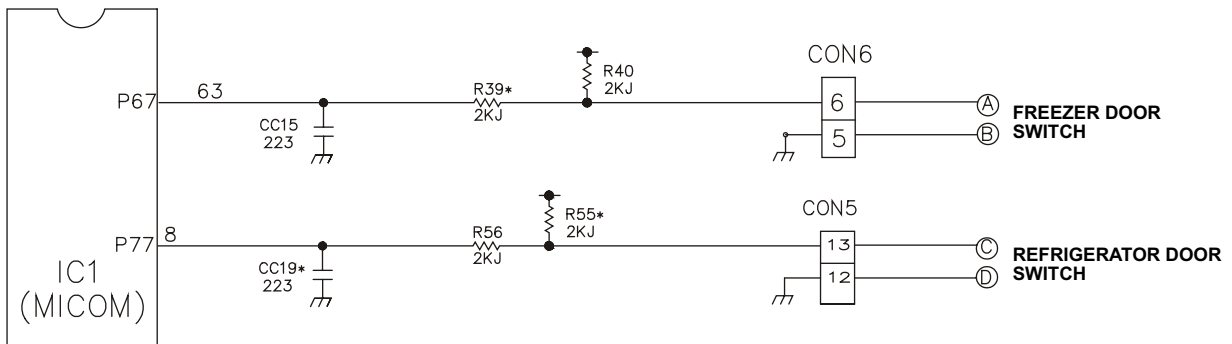


3. Buzzer Drive Condition Check



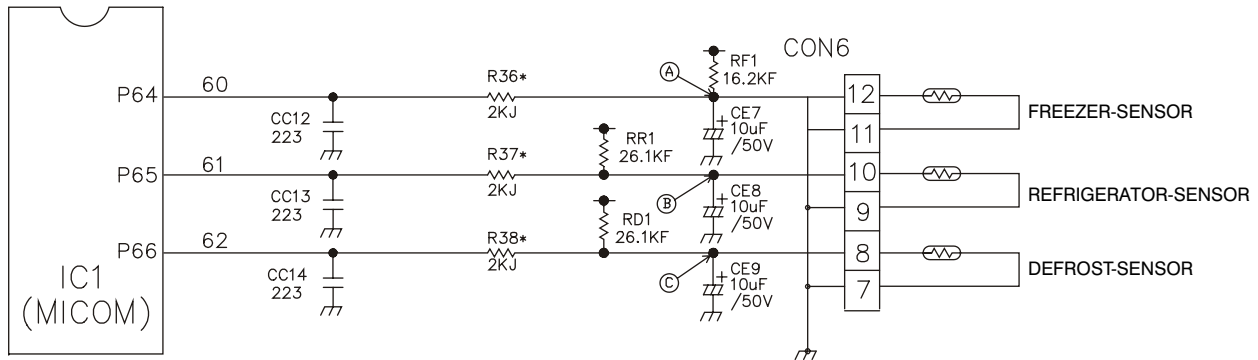
Condition Measurement Location	Tone (Ding~Dong~) when the button on the display is pushed.	Alarm for open door (beep-beep-beep)	OFF
IC1 (A)			0 V
IC1 (B)			0 V

4. Open Door Detection Circuit Check



Measurement Location Freezer/ Refrigerator Door	(PIN NO.63 & PIN NO.8)
Closed	5 V
Open	0 V

8-2-5 Temperature Sensor Circuit

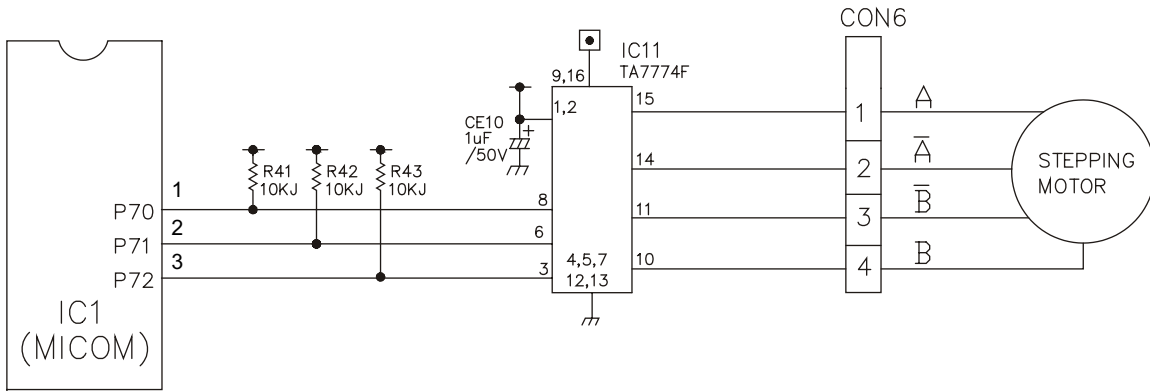


The upper CIRCUIT reads REFRIGERATOR temperature, FREEZER Temperature, and DEFROST-SENSOR temperature for defrosting and the indoor temperature for compensating for the surrounding temperature into MICOM. OPENING or SHORT state of each TEMPERATURE SENSOR are as follows:

SENSOR	CHECK POINT	NORMAL (-30°C ~ 50°C)	SHORT-CIRCUITED	OPEN
Freezer Sensor	POINT ① Voltage	0.5 V ~ 4.5 V	0 V	5 V
Refrigerator Sensor	POINT ② Voltage			
Defrosting Sensor	POINT ③ Voltage			

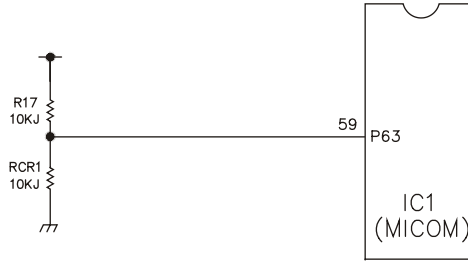
8-2-6 Refrigeration Compartment Stepping Motor Damper Circuit

* The circuit shown below is the damper circuit to regulate the refrigerator temperature.



8-2-8 Temperature Compensation & Overcooling/Undercooling Compensation Circuit

1. Refrigerator Temperature Compensation



Refrigerator		Remark
Resistance (RCR)	Temperature Compensation	
180 K	+2.5°C	Compensation by raising the temperature ↑
56 K	+2.0°C	
33 K	+1.5°C	
18 K	+1.0°C	
12 K	+0.5°C	
10 K	0 °C	Standard Temperature
8.2 K	-0.5°C	Compensation by lowering the temperature ↓
5.6 K	-1.0°C	
3.3 K	-1.5°C	
2 K	-2.0°C	
470	-2.5°C	

Table of Temperature Compensation by adjusting the resistance (difference from the current temperature) e.g., If the refrigerator compensation resistance (RCR) is changed from 10K (the current resistance) to 18K (the adjustment resistance), the temperature of the refrigerator rises 33.8°F(+1°C).

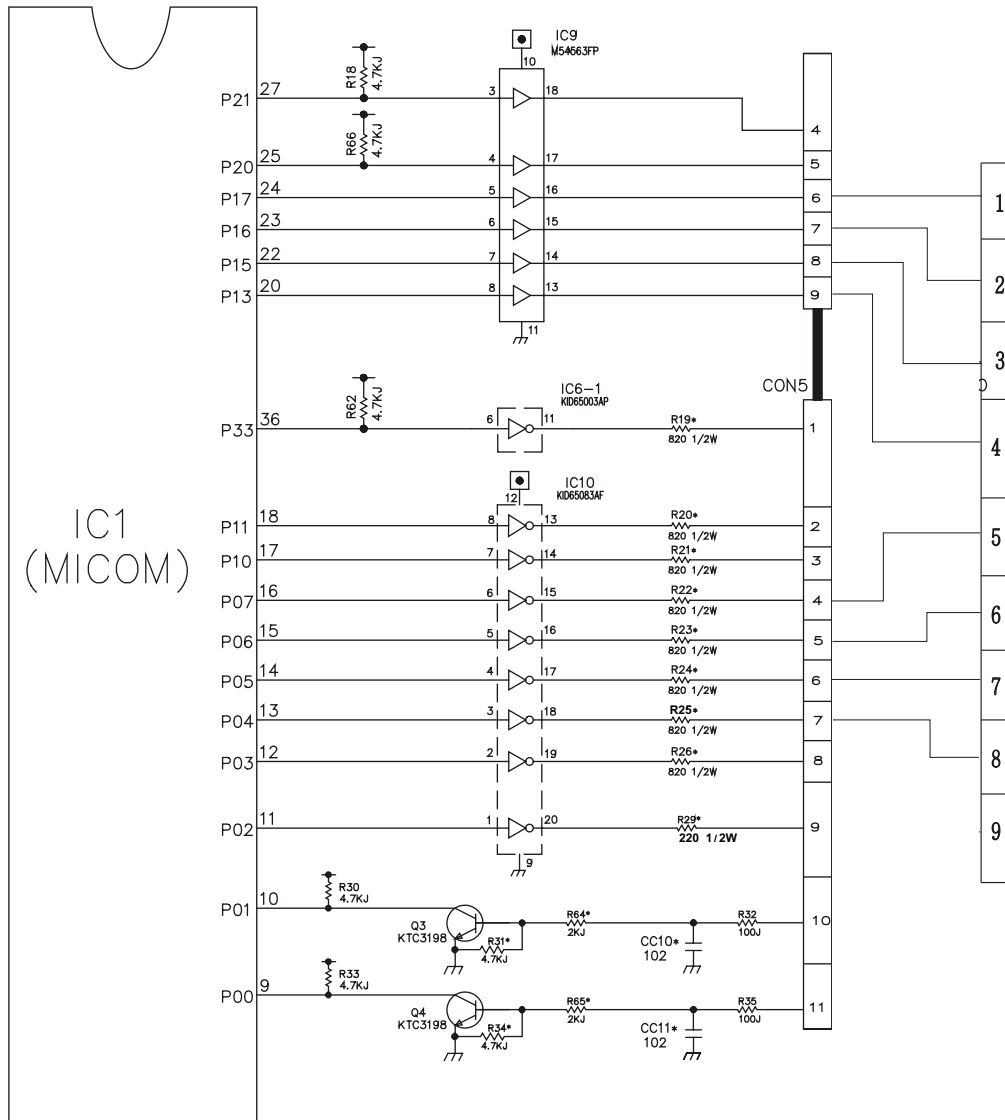
2. The temperature compensation for refrigerator compartment is in the following table:

	Revised resistance	470	2k	3.3k	5.6k	8.2k	10k	12k	18k	33k	56k	180k
	Present resistance											
Refrigerator (RCR)	470	No change	0.5°C Up	1°C Up	1.5°C Up	2°C Up	2.5°C Up	3°C Up	3.5°C Up	4°C Up	4.5°C Up	5°C Up
	2k	0.5°C Down	No Change	0.5°C Up	1°C Up	1.5°C Up	2°C Up	2.5°C Up	3°C Up	3.5°C Up	4°C Up	4.5°C Up
	3.3k	1°C Down	0.5°C Down	No Change	0.5°C Up	1°C Up	1.5°C Up	2°C Up	2.5°C Up	3°C Up	3.5°C Up	4°C Up
	5.6k	1.5°C Down	1°C Down	0.5°C Down	No Change	0.5°C Up	1°C Up	1.5°C Up	2°C Up	2.5°C Up	3°C Up	3.5°C Up
	8.2k	2°C Down	1.5°C Down	1°C Down	0.5°C Down	No Change	0.5°C Up	1°C Up	1.5°C Up	2°C Up	2.5°C Up	3°C Up
	10k	2.5°C Down	2°C Down	1.5°C Down	1°C Down	0.5°C Down	No Change	0.5°C Up	1°C Up	1.5°C Up	2°C Up	2.5°C Up
	12k	3°C Down	2.5°C Down	2°C Down	1.5°C Down	1°C Down	0.5°C Down	No Change	0.5°C Up	1°C Up	1.5°C Up	2°C Up
	18k	3.5°C Down	3°C Down	2.5°C Down	2°C Down	1.5°C Down	1°C Down	0.5°C Down	No Change	0.5°C Up	1°C Up	1.5°C Up
	33k	4°C Down	3.5°C Down	3°C Down	2.5°C Down	2°C Down	1.5°C Down	1°C Down	0.5°C Down	No Change	0.5°C Up	1°C Up
	56k	4.5°C Down	4°C Down	3.5°C Down	3°C Down	2.5°C Down	2°C Down	1.5°C Down	1°C Down	0.5°C Down	No Change	0.5°C Up
180k	5°C Down	4.5°C Down	4°C Down	3.5°C Down	3°C Down	2.5°C Down	2°C Down	1.5°C Down	1°C Down	0.5°C Down	No Change	

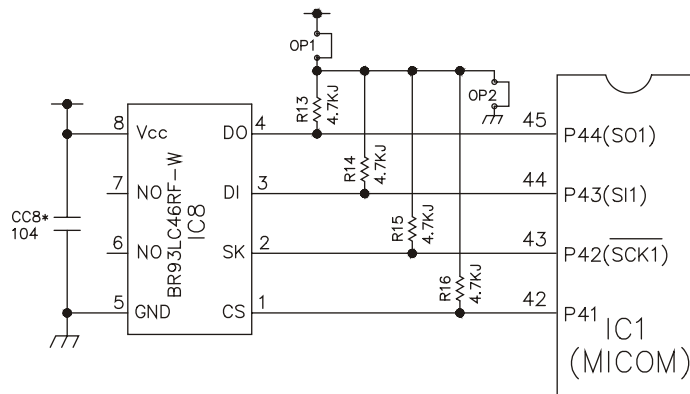
NOTE: This circuit is designed to input the necessary temperature compensation values into the MICOM. This adjusts the refrigerator temperature, which is different in each model.

8-2-9 Key Button Input & Display Light-On Circuit

▶The circuit shown above determines whether a function control key on the operation display is pushed. It also turns on the corresponding function indication LED (LED Module) SEVEN SEGMENT DISPLAY (SEVEN SEGMENT DISPLAY MODULE). The drive type is the scan type



8-2-10 Power Failure Compensation Circuit (DISPENSER MODEL)



8-3 RESISTANCE SEPECIFICATION OF SENSOR

TEMPERATURE DETECTED BY SENSOR	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 $\pm 5\%$ common 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.

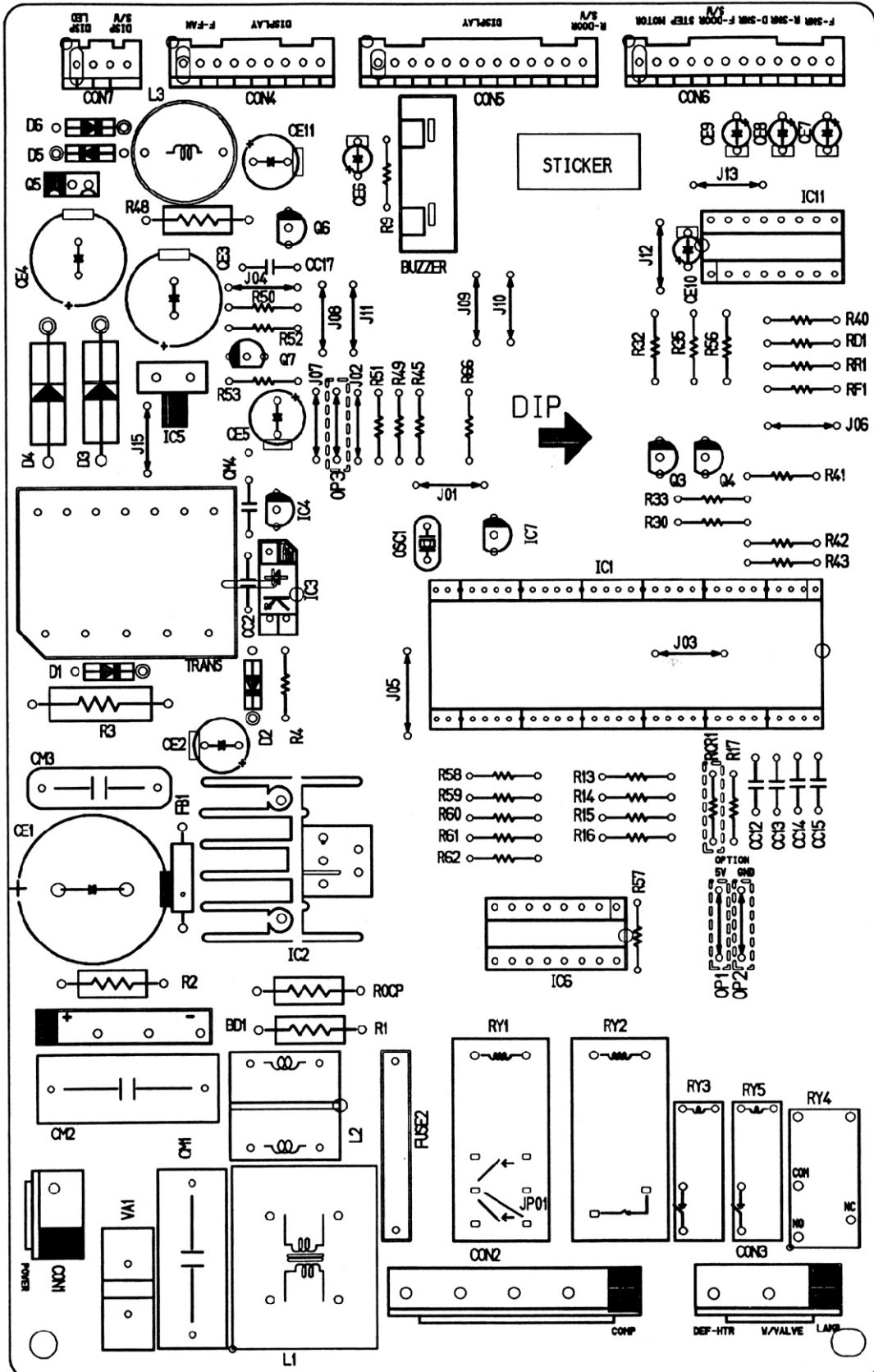
8-4 TROUBLESHOOTING

PROBLEM	INDICATED BY	CHECK	CHECKING METHOD	CAUSE	SOLUTION
POWER SOURCE is poor.	1. The whole DISPLAY LED/SEVEN SEGMENT DISPLAY's off. 2. DISPLAY LED/SEVEN SEGMENT DISPLAY operates abnormally	1. FREEZER/REFRIGERATOR. 2. If LAMP is dim. 3. The connection of the MAIN PWB CONNECTOR.	Check if FREEZER/REFRIGERATOR DOOR IS OPEN and check display. Check visually. Check connection of CONNECTOR.	POWER SOURCE is poor.	Check outlet Voltage.
				Applied voltage error. CONNECTOR connection is poor. TRANS FUSE is open.	Use boosting TRANS. Reconnect CONNECTOR. Replace TRANS.
COOLING is poor.	NO COOLING.	1. If the COMPRESSOR operate. 2. If refrigerant is leaking.	USE TEST MODE1 (forced COOLING). If less than 7 minutes pass after compressor shuts off, don't press the KEY and wait. Measure the amount of frost sticking on EVAPORATOR and the surface temperature of the condenser pipe.	COMPRESSOR locked or blocked. OLP, PTC is poor. COMPRESSOR RELAY is poor. THE CONNECTING WIRE is poor.	Replace COMPRESSOR. Replace OLP, PTC. Replace MAIN PWB. 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 MODE1 (forced COOLING).	1. If FANMOTOR operates. 2. If DEFROSTING is normal. 3. If SENSOR is normal. 4. Door Line contact.	USE TEST MODE1 (forced COOLING). Check the amount of frost sticking on the EVAPORATOR Check the resistance of the Refrigerator SENSOR. Check the seal when the door is closed.	FAN MOTOR is poor.	Replace the FAN MOTOR.
				CONNECTING WIRE is poor.	Certify the MOTOR and the connection of the black wire of the MAIN PWB CONNECTOR (CON2).
				DEFROSTING is poor.	See DEFROSTING is poor .
				SENSOR RESISTANCE is poor.	Replace SENSOR.
				Door liner damaged.	Replace door liner.

PROBLEM	INDICATED BY	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 attached.
		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. EVA frozen.	Replace FAN MOTOR. Remove impurities.
DEFROSTING is poor.	NO DEFROSTING.	3. Door Line contact:	Check door seal when door is closed.	Door liner damaged.	Replace Door liner.
		1. If HEATER emits heat.	USE TEST MODE2 (forced DEFROSTING).	HEATER disconnection.	Replace HEATER.
DEFROSTING is poor.	NO DEFROSTING.	1. If HEATER emits heat.	USE TEST MODE2 (forced DEFROSTING).	TEMPERATURE FUSE disconnection.	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 RY3 of MAIN PWB.
				DRAIN PIPE is blocked.	Remove ice and impurities. Check HEATER PLATE resistance.
DEFROSTING is poor.	NO DEFROSTING.	2. If DRAIN PIPE is blocked.	Check DRAIN PIPE.	Connection is poor.	Reassemble the DEFROST-SENSOR.
				Make sure that DEFROST SENSOR is connected.	Reassemble DOOR.
				Make sure that FREEZER / REFRIGERATOR DOOR is closed.	Replace GASKET.
DEFROSTING is poor.	NO DEFROSTING.	3. If ice remains after DEFROSTING.	Make sure that DEFROST SENSOR is connected.	DOOR does not close properly.	Replace GASKET.

8-5 MAIN PWB ASSEMBLY AND PARTS LIST

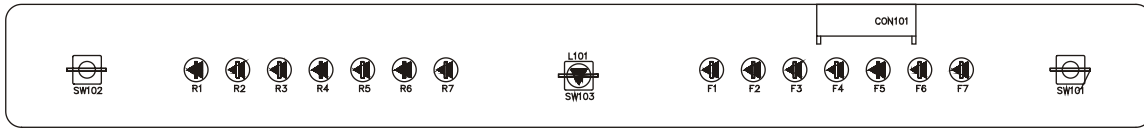
8-5-1 Main PWB Assembly



8-5-2 Replacement Parts List

No	P/N/O	DESCRIPTION	SPEC	MAKER	REMARK
1	6870.88067D	PWB(PCB)	KS-PJT BEST	DOO SAN	T-1.6
2	6170.82012A	TRANSFORMER, SMPS COIL 1	KS-PJT 220-240V	SAM IL	TRANS
3	6170.82012B	TRANSFORMER, SMPS COIL 1	KS-PJT 100-127V	SAM IL	TRANS
4	6630A09106A	CONNECTOR (CIRC), WAFER	YH395 YEONHO 9P 3.96MM AV	YEON HO	CON1
5	6630A09106B	CONNECTOR (CIRC), WAFER	YH395 YEONHO 9P 3.96MM AV	YEON HO	CON2
6	6630A09106H	CONNECTOR (CIRC), WAFER	YH395 YEONHO 9P 3.96MM AV	YEON HO	CON3
7	6630.88007H	CONNECTOR (CIRC), WAFER	917797-1 AMP 9P 2.5MM STRAIGHT SN	AMP	CON4
8	6630.88007A	CONNECTOR (CIRC), WAFER	917791-1 AMP 13PIN 2.5MM STRAIGHT SN	AMP	CON5
9	6630.88007L	CONNECTOR (CIRC), WAFER	917790-1 AMP 12P 2.5MM STRAIGHT SN	AMP	CON6
10	6630.88007C	CONNECTOR (CIRC), WAFER	917782-1 AMP 4P 2.5MM STRAIGHT SN	AMP	CON7
11	01SK655100A	IC, SANKEN	STR-6551 5PIN BK SMPS 2.4PIN FORM	SANKEN	IC2
12	01ZZ.820240	IC, DRAWING	TM870X40AN 64PIN,SDIP BK KS-PJT1 MASK 1	TOSHIBA	IC1 (1-01ZZ.82024R1)
13	-	-	-	-	-
14	01FM610001A	IC, TOSHIBA	TL772F 4P BK PHOTO COUPLER	TOSHIBA	IC3
15	01KE431000A	IC, KEC	K1A43L 3 PIN TP	KEC	IC4
16	01KE780500W	IC, KEC	K1A7805PL	KEC	IC5
17	01KE50030R	IC, KEC	K1D550R3AF 2050P LED DRIVER	KEC	IC10
18	01KE65030B	IC, KEC	K1D55003AP IGP 50IP BK DRIVE	KEC	IC6
19	015TL0001A	IC, STANDARD LOGIC	M54563FP 20 R/TP CONVERT	MITSUBISHI	IC9
20	01KE704200A	IC, KEC	K1A7042P 3P BK RESET	KEC	IC7
21	010777400A	IC, TOSHIBA	TA7774AP 16,SDIP BK DRIVE,IC STEPPING M	TOSHIBA	IC8
22	01R9346000	IC, ROHM	BR93 046FF-W 8PIN 50P BK EEPROM	ROHM	ICB
23	6920030001A	RELAY	AL1E5B1P MATSUSHITA 12V 16A 15,0V IA	NAIS	RY2
24	6920AL7001A	RELAY	ALZ12B12 NAIS 250VAC 16A 12VDC IC NO VENTING	NAIS	RY4
25	6920L82009B	RELAY	696B-14 250VAC 5A 12VDC IC	OMRON	RY1
26	6920L82007A	RELAY	V5B-121B TAKAMISAWA DC12V 60MA 250V IC	FUJITSU	RY3
27	6920A90002A	RELAY	ALD12 NAIS(THAILAND) 250V 3A 12V 16.6mA IA	NAIS	RY5
28	6212.8B001B	RESONATOR,CERAMIC	C5150400M603 MURATA 4M12 TP	MURATA	OSC1
29	6102.8B003A	VARIATOR	INR14D271 ILJIN UL/VDE TP 270V	ILJIN	VA1
30	6102.8B001B	VARIATOR	INR14D21 ILJIN UL/VDE BK 620V	ILJIN	VA1
31	00R1070004A	DIODE,RECTIFIERS	FR107 TP DELTA D041 1000V IA 3	DELTA	DI, D2, D5, D6
32	00SA00070A	DIODE,RECTIFIERS	RL2 SANKEN BK NON 400V 2A 40A 50NSEC IOUA	SANKEN	D3, D4
33	003600000A	DIODE,RECTIFIERS	D39BA60 BK SHINDENGEN 60V 4A	SHINDENGEN	D1
34	6102W5V005A	VARIATOR	INR14D33K ILJIN UL/CSA/VDE BK	ILJIN	VA1
35	0CE476B6E0	CAPACITOR, FIXED ELECTROLYTIC	47UF HE 450V 20% BULK SNAP INT105°	SAM WHA	CE1
36	0CE476B6E3B	CAPACITOR, FIXED ELECTROLYTIC	47UF KME TYPE 50V 20% FMS TP 5 1105°	SAM WHA	CE2
37	0CE1076H63B	CAPACITOR, FIXED ELECTROLYTIC	100UF 50MS/SC 25V 20% FMS TP 5	SAM WHA	CE12
38	0CE687YH6E0	CAPACITOR, FIXED ELECTROLYTIC	6800UF FR 25V 20% BULK SNAP INT105°	SAM WHA	CE3
39	0CE687YH6E1B	CAPACITOR, FIXED ELECTROLYTIC	6800UF FR 25V 20% BULK SNAP INT105°	SAM WHA	CE4
40	0CE227B6E3B	CAPACITOR, FIXED ELECTROLYTIC	220UF KME TYPE 16V 20% FMS TP 51105°	SAM WHA	CE5
41	0CE227B6E3B	CAPACITOR, FIXED ELECTROLYTIC	220UF RG TYPE 25V 20% FMS TP 51105°	SAM WHA	CE11
42	0CE105B6E3B	CAPACITOR, FIXED ELECTROLYTIC	10UF KME TYPE 50V 20% FMS TP 51105°	SAM WHA	CE10
43	0CE476B6E3B	CAPACITOR, FIXED ELECTROLYTIC	47UF KME TYPE 25V 20% FMS TP 51105°	SAM WHA	CE6
44	0CE106B6E3B	CAPACITOR, FIXED ELECTROLYTIC	10UF KM6 50V 20% FMS TP 51105°	SAM WHA	CE7-CE9
45	00H147K562	CAPACITOR, FIXED CERAMIC(HIGH DIELECTRIC)	470PF 50V K X7R1X1 1608 R/TP	MURATA	CC1
46	00K220R61A	CAPACITOR, FIXED CERAMIC(HIGH DIELECTRIC)	250PF D 250V 10% -10% B1Y5P1 R/TP	SAM WHA	CC2
47	00K104K94A	CAPACITOR, FIXED CERAMIC(HIGH DIELECTRIC)	100NF 2012 50V R/TP (1GR40X7R104K50PE)	MURATA	CC3-CC7
48	00K102K9519	CAPACITOR, FIXED CERAMIC(HIGH DIELECTRIC)	1000PF 50V K B TASE2	MURATA	CC7
49	00K220K96A	CAPACITOR, FIXED CERAMIC(HIGH DIELECTRIC)	22NF 2012 50V 80%, 20% R/TP X7R	MURATA	CC16, CC18, CC19
50	00K220K949	CAPACITOR, FIXED CERAMIC(HIGH DIELECTRIC)	22NF 50V 2 F TASE2	MURATA	CC12-CC15
51	00K102K96A	CAPACITOR, FIXED CERAMIC(HIGH DIELECTRIC)	1NF 2012 50V 80%, 20% R/TP X7R	MURATA	CC10
52	00C47418E70	CAPACITOR, FIXED FILM	0.47UF D 275V M M/PP NI R	PILKOR	CM1, CM2
53	00C22408E70	CAPACITOR, FIXED FILM	220NF O 275V 20% BULK M/PP NI	PILKOR	CM1, CM2
54	00C47327430	CAPACITOR, FIXED FILM	47000PF S 630V J M/PE NI R	SAM WHA	CM3
55	00C22418E30	CAPACITOR, FIXED FILM	0.22UF D 100V M M/PE NI R	SAM WHA	CM4
56	00C22318E00	CAPACITOR, POLYESTER	0.022UF D 100V J RC TP	SAM WHA	CM5
57	0R1220H4672	RESISTOR, METAL GLAZED(CHIP)	220 OHM 1/2 W 5% 2012 R/TP	SMART, CHOHYANG	R29
58	0R1503J609	RESISTOR, FIXED METAL OXIDE FILM	150K OHM 1/4 W 5.00% TASE2	SMART, CHOHYANG	R1
59	0R58202609	RESISTOR, FIXED METAL OXIDE FILM	82K OHM 1/4 W 5.00% TASE2	SMART, CHOHYANG	R1
60	0R5010J609	RESISTOR, FIXED METAL OXIDE FILM	1 OHM 1/4 W 5.00% TASE2	SMART, CHOHYANG	ROCP
61	0R50470J609	RESISTOR, FIXED METAL OXIDE FILM	0.47 OHM 1/4 W 5% TASE2	SMART, CHOHYANG	ROCP
62	0R56602K641	RESISTOR, FIXED METAL OXIDE FILM	56K OHM 2 W 5.00% TASE2	SMART, CHOHYANG	R3
63	0R.8200H4672	RESISTOR, METAL GLAZED(CHIP)	820 OHM 1/2 W 5% 2012 R/TP	SMART, CHOHYANG	R19-R26
64	0R5603J609	RESISTOR, FIXED CARBON FILM	560K OHM 1/2 W 5.00% TASE2	SMART, CHOHYANG	R2
65	0R0150H609	RESISTOR, FIXED CARBON FILM	1.5K OHM 1/2 W 5.00% TASE2	SMART, CHOHYANG	R48
66	0R0100G609	RESISTOR, FIXED CARBON FILM	100 OHM 1/4 W 5.00% TASE2	SMART, CHOHYANG	R32
67	0R1220L622	RESISTOR, METAL GLAZED(CHIP)	220 OHM 1/8 W 2012 5.00% D	ROHM	R35
68	0R4701L622	RESISTOR, METAL GLAZED(CHIP)	4.7K OHM 1/8 W 2012 5.00% D	ROHM	R10
69	0R1002L622	RESISTOR, METAL GLAZED(CHIP)	10K OHM 1/8 W 2012 5.00% D	ROHM	R12, R44, R31, R18
70	0R1033E672	RESISTOR, FIXED CARBON FILM	33 OHM 1/8 W 5% 2012 R/TP	ROHM	R34
71	0R0100I609	RESISTOR, FIXED CARBON FILM	1K OHM 1/4 W 5.00% TASE2	ROHM	R46
72	0R1001L622	RESISTOR, METAL GLAZED(CHIP)	1K OHM 1/8 W 2012 5.00% D	ROHM	R5
73	0R1200L622	RESISTOR, METAL GLAZED(CHIP)	2K OHM 1/8 W 2012 5.00% D	ROHM	R8, R9
74	0R0200I609	RESISTOR, FIXED CARBON FILM	2K OHM 1/4 W 5.00% TASE2	SMART, CHOHYANG	R55, R64, R36-R39
75	0R1300L622	RESISTOR, METAL GLAZED(CHIP)	330 OHM 1/8 W 2012 5.00% D	ROHM	R5
76	0R1004L622	RESISTOR, METAL GLAZED(CHIP)	1M OHM 1/8 W 2012 5.00% D	ROHM	R40, R49, R51, R52, R56
77	0R1622G409	RESISTOR, FIXED CARBON FILM	16.2K OHM 1/4 W 1.00% TASE2	SMART, CHOHYANG	R47
78	0R1262G409	RESISTOR, FIXED CARBON FILM	26.1K OHM 1/4 W 1.00% TASE2	SMART, CHOHYANG	R11
79	0R0390I609	RESISTOR, FIXED CARBON FILM	3.9K OHM 1/4 W 5.00% TASE2	SMART, CHOHYANG	RF1
80	0R0470I609	RESISTOR, FIXED CARBON FILM	4.7K OHM 1/4 W 5.00% TASE2	SMART, CHOHYANG	R01, RF1
81	0R.6600E672	RESISTOR, METAL GLAZED(CHIP)	660 OHM 1/8 W 5% 2012 R/TP	SMART, CHOHYANG	R45
82	0R0102G609	RESISTOR, FIXED CARBON FILM	10K OHM 1/4 W 5.00% TASE2	SMART, CHOHYANG	R4, R30, R33, R50, R57-R62, R66
83	0R1801L622	RESISTOR, METAL GLAZED(CHIP)	1.8K OHM 1/8 W 2012 5.00% D	ROHM	R13-R16, R53
84	0R0270G609	RESISTOR, FIXED CARBON FILM	27K OHM 1/4 W 5.00% TASE2	SMART, CHOHYANG	R6
85	0R0470G609	RESISTOR, FIXED CARBON FILM	47K OHM 1/4 W 5.00% TASE2	SMART, CHOHYANG	R7, RCR1, R41-R43
86	0R1910E472	RESISTOR, FIXED METAL FILM	9.1K OHM 1/8 W 1% 2012 R/TP	ROHM	R7
87	0R1240E472	RESISTOR, FIXED METAL FILM	2.4K OHM 1/8 W 1% 2012 R/TP	ROHM	RL1
88	0R12700E472	RESISTOR, METAL GLAZED(CHIP)	270 OHM 1/8 W 2012 5.00% D	ROHM	RL2
89	01RKE0008A	TRANSISTOR, BIPOLAR	KEC K181S1 BK 10126 60V 5A	KEC	Q5
90	01R31909AA	TRANSISTOR	KTC3198 TP-Y (KTC181S)KEC	KEC	Q3, Q6
91	01RKE80016A	TRANSISTOR, BIPOLAR	KEC KPC106S R/TP SOT23 50V 100MA	KEC	Q4
92	01R106009AC	TRANSISTOR, BIPOLAR	KRA 106M KEC	KEC	Q1
93	-	-	KTC387S KEC	KEC	Q7
94	6210.8B001A	FIL TER(CIRC), EMC	BFS3510AQ SAMMHA 52	SAM WHA	FB1
95	6600R10012	SWITCH, TACT	YH1280AG JEIL 12V DC 50MA	JEIL	SW1
96	6854B5001A	JUMP WIRE	0.6MM 52MM TP TAPING SNT10MM	DAE A LEAD	J01-J04, J06-J13, J14, JP01
97	6854B50001A	JUMP WIRE	0.6MM 52MM TP TAPING SNT12.5MM	DAE A LEAD	J05
98	6854B50001A	JUMP WIRE	0.6MM 52MM TP TAPING SNT10MM	DAE A LEAD	OPI
99	6854B50001A	JUMP WIRE	0.6MM 52MM TP TAPING SNT10MM	DAE A LEAD	OP2, OP3, R13-R16
100	6200.8B004A	FILTER(CIRC), EMC	CV940050 TNC BK	TNC	L1
101	6200.8B007X	FILTER(CIRC), EMC	UV11-05320 TNC BK 0.5A 320H	TNC	L2
102	0LR1001M4F0	INDUCTOR, RADIAL LEAD	1000UH 20% R 6X12.5 BULK	TNC	L3
103	0FM9001B521	FUSE, FAST BLOW	9000MA 250V 6.3K31-B CYGL KS	SAM JU	FUSE1
104	6901.8B001A	FUSE ASSEMBLY	KORE-PJT 1V5	SAM JU	FUSE HOLDER
105	0FZ7.8B001A	FUSE, DRAWING	2A 250V 5.0MM(BLW) LITTLE FUSE, TRIAD	SAM JU	FUSE1
106	6900L83002F	BLUZZER	GB2209P DAE YOUNG PE20 24V 750m(OHM)	DAE YOUNG	BLUZZER
107	4920.8B007A	HEAT SINK	23.1*17*25 DRIVE IC STR	-	IC121
108	15SF030241B	SCREW TAP TITE (ST), BINDING HE	+D3.0 LB.0 M5WR3F2Y	SHANJ	IC122
109	9VWF0120000	SOLDER(ROSN WIRE) 1 RSO	DI.20	-	-
110	49111004	SOLDER, SOLDERING	H63A	HISUNG	-
111	59333105	FLUX	SG10.825 0.830 KOREA F.H-205	KOKI	-
112	00C1091609	CAPACITOR, FIXED FILM	0.01UF D 100V 10% PE 1P5	SAM WHA	CM4

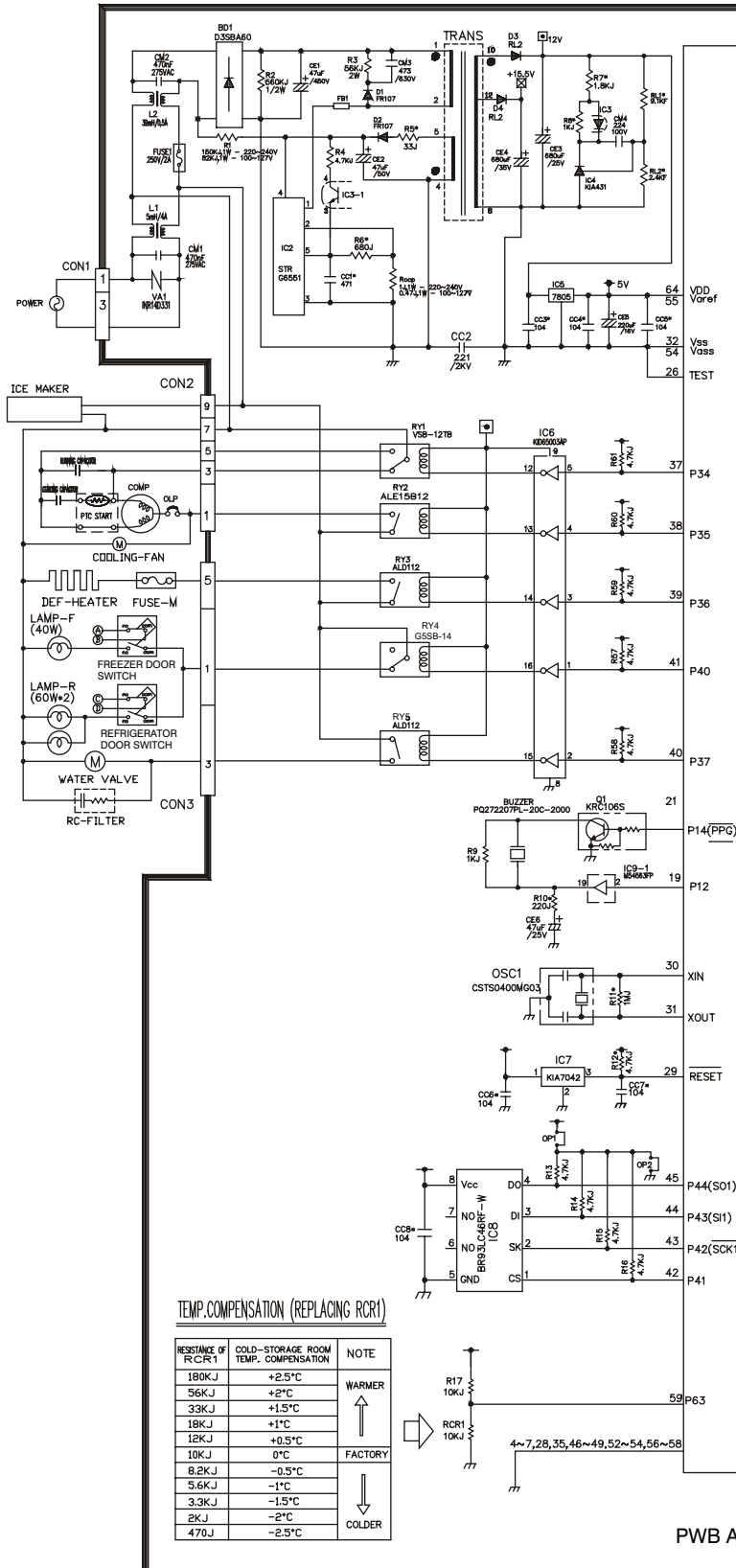
8-5-3 PWB Assembly, Display and Parts List



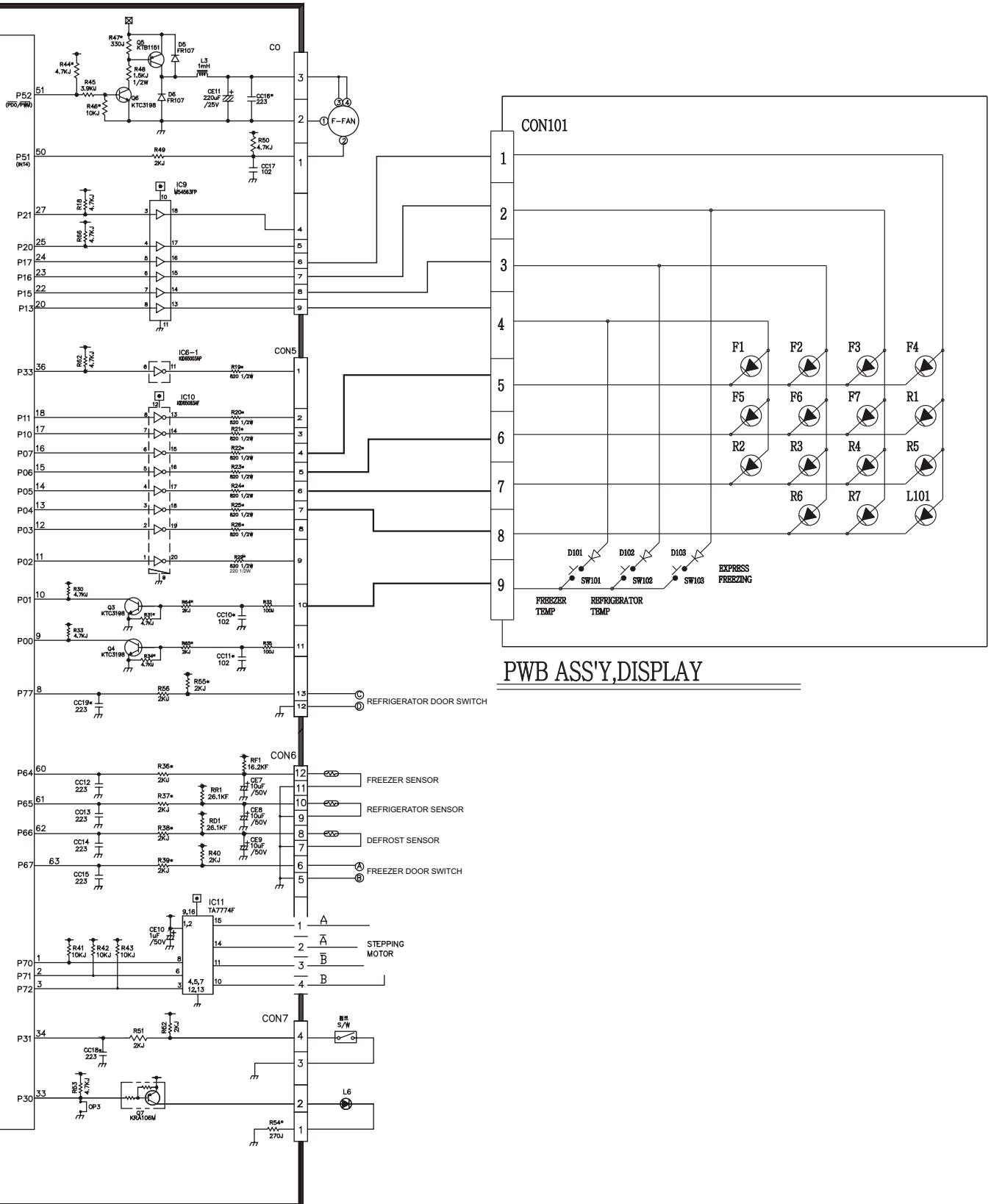
Qty	No	P/NO	DESCRIPTION	SPEC	MAKER	REMARK
1	1	6870JB8091A	PWB(PCB)	KS-PJT GOOD/BETTER DISPLAY	DOO SAN	t=1.6
	2					
1	3	6630AQ9159H	WAFER	SMAW250-09	YEON HD	CON101
	4					
2	5	6600RRT002K 6600JB8005A	SWITCH,TACT	JTP1230A JEIL 12V DC 50MA KPT-1105A	JEIL KYUNG IN	SW101,102
1	6	-	TACT S/W	KPT-1109G	KYUNG IN	SW103
14	7	0DLLE0019AA	LED	LT1824-81-BCM TP GREEN 2		R1~R7,F1~F7
3	8	0DD414809AA	DIODE,SWITCHING	1N4148 26MM	PYUNG CHANG DELTA	D101,102,103
12	10	6854B50001A	JUMP WIRE	0.6MM 52MM TP TAPING SN (10MM)	-	J101~J112
	11					
-	12	9VWF0120000	SOLDER(ROSIN WIRE) RSO	D1.20	HEE SUNG	-
001	13	49111004	SOLDER,SOLDERING	H63A	-	-
01002	14	59333105	FLUX	SG;0.825-0.830 KOREA F.H-206	KOKI	-

8-6 PWB DIAGRAM

8-6-1 PWB Main Assembly



TOSHIBA TMP87C840N(IC1)

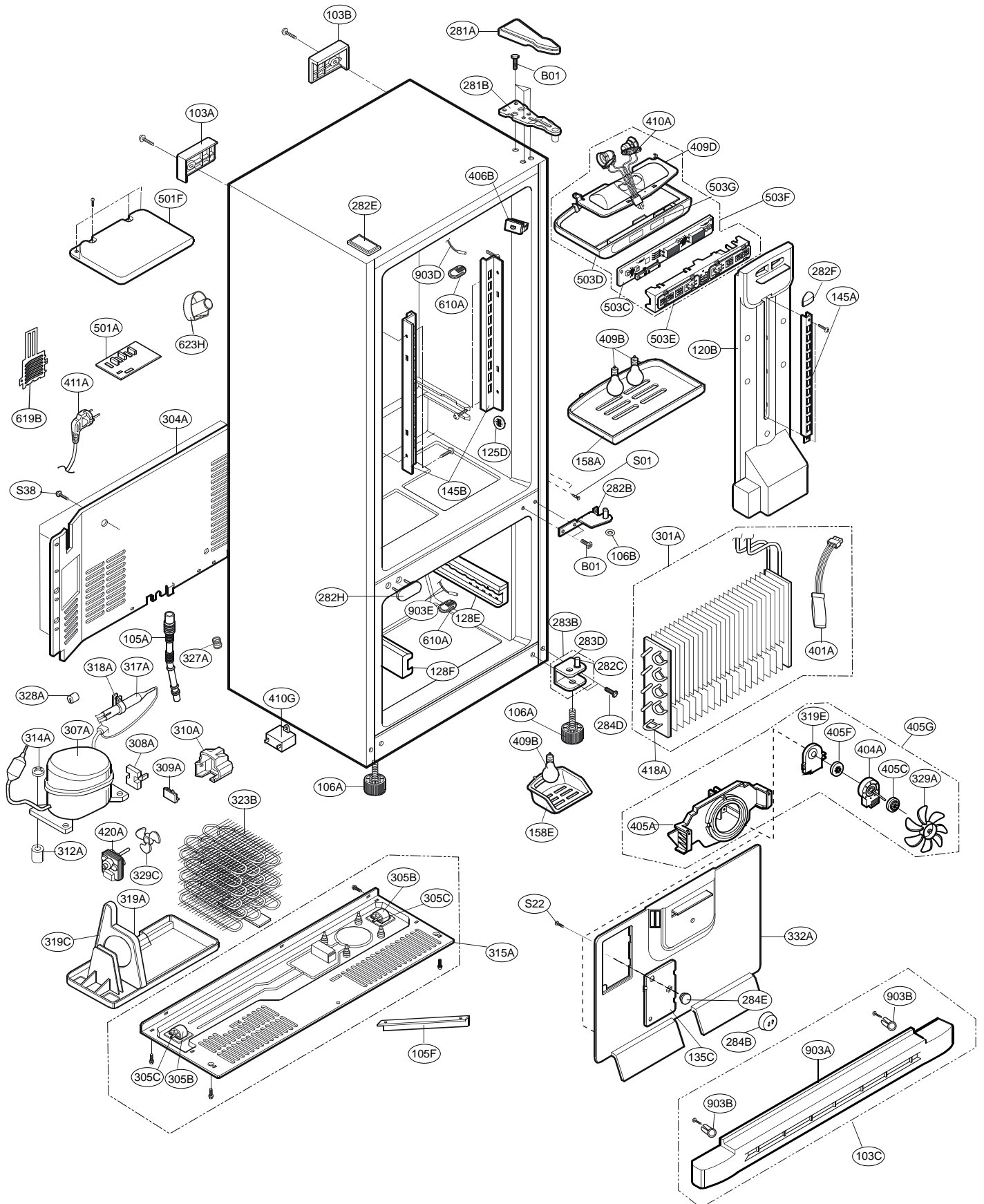


PWB ASSY, DISPLAY

9.EXPLODED VIEW AND REPLACEMENT PART LIST

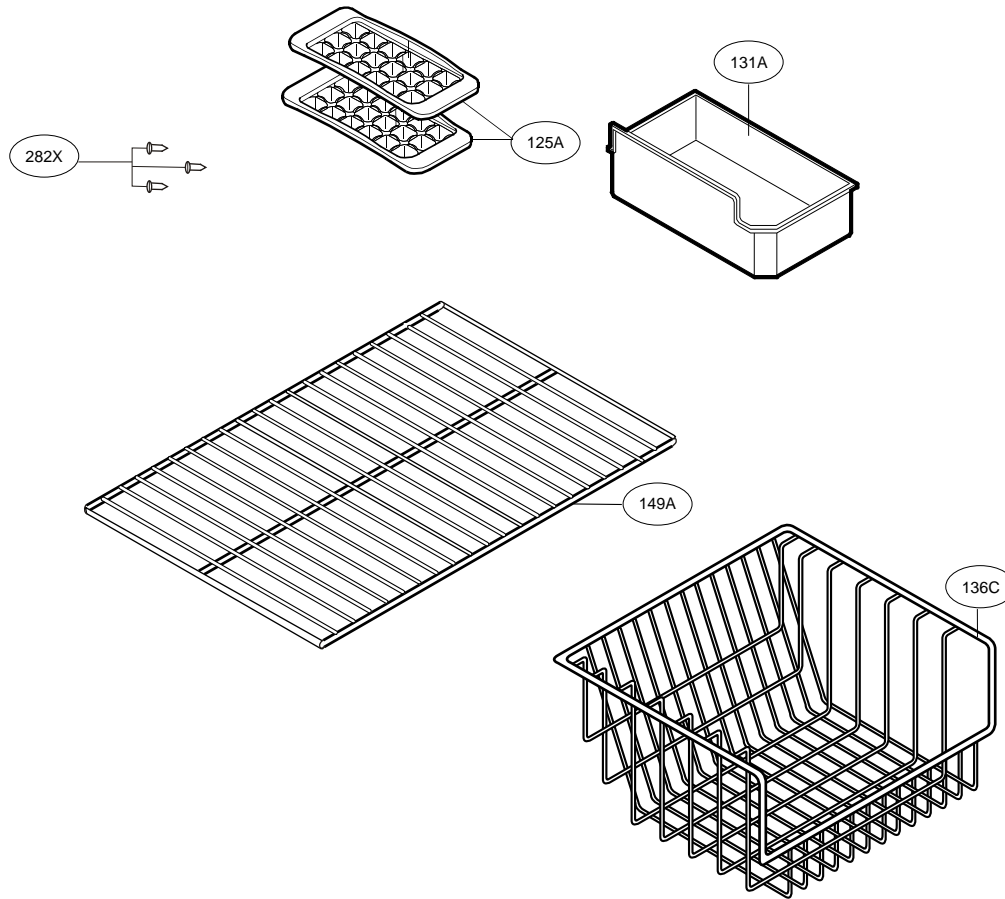
CASE PARTS

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



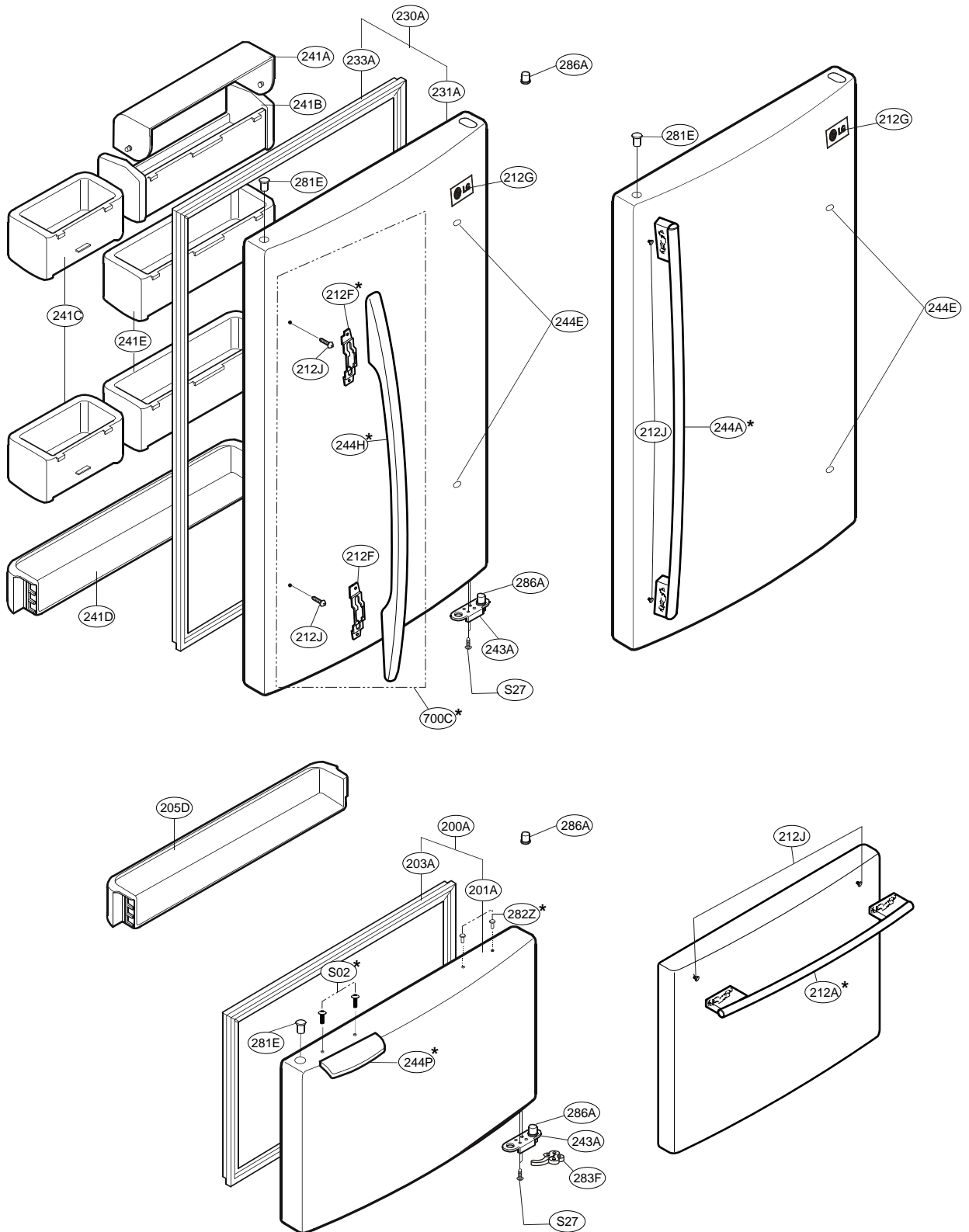
FREEZER PARTS

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



DOOR PARTS

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



* On some models

Loc No.	Part No.	Description	Loc No.	Part No.	Description
103A	3650JJ2003M	Handle,Rear	283B	4775JJ2007B	Hinge Assembly,Lower
103B	3650JJ2003L	Handle,Rear	283D	4774JJ2002A	Hinge,Lower
103C	3551JJ1015F	Cover Assembly,Lower	283F	MJB36873202	Stopper,Door
103E	5218JJ3001A	Rail,Slide	284B	3550JA3120A	Cover,Connector
105A	5251JA3003B	Tube Assembly,Drain	284D	1STZJA3004K	Screw,Customized
105F	5070JJ3002A	Skirt,Lower	284E	3550JJ3001A	Cover,Tube
106A	4779JA2003A	Leg Assembly,Adjust	286A	4984JJ3003A	BUSH
106B	4J00382C	Washer,Common	301A	5421JJ1001B	Evaporator Assembly
120B	5209JJ1002A	Duct Assembly,Multi	304A	3551JJ2008B	Cover Assembly,Machinery(Rear)
125A	3390JJ1023A	Tray,Ice	305B	4580JJ3001A	Roller
125D	4930JJ3007A	Holder,Bracket	305C	4J04238A	Pin,Common
128A	4975JJ2002A	Guide Assembly,Rail	307A	2521CRA5715	Compressor,Set Assembly
128B	4975JJ2002B	Guide Assembly,Rail	308A	EBG32606502	Thermistor Assembly,PTC
128E	4930JJ1012A	Holder,Rail	309A	6750C-0004S	Overload Protect
128F	4930JJ1012B	Holder,Rail	310A	3550JA2059A	Cover,PTC
131A	5074JJ1017A	Bucket,Ice	312A	5040JA3031A	Damper,Compressor
135C	3550JJ2030A	Cover,Grille Fan	314A	4620JA3009A	Stopper,Compressor
136C	3390JJ1057A	Tray,Drawer	315A	3103JJ1001J	Base Assembly,Compressor
140B	5027JJ2007B	Shelf Assembly,Refrigerator	317A	5851JJ2002F	Drier Assembly
140D	MHL38615403	Shelf,Net	318A	4930JA3034A	Holder,Drier
140E	MHL38615404	Shelf,Net	319A	3390JJ0003A	Tray,Drip
142D	5026JJ2001L	Shelf,Net	319C	4974JJ1009A	Guide,Fan
142E	5026JJ2001M	Shelf,Net	319E	4810JJ2005A	Bracket,Motor
143E	5027JJ1008K	Shelf Assembly,Refrigerator	323B	5403JJ1007A	Condenser Assembly,Wire
143F	5027JJ1008D	Shelf Assembly,Refrigerator	327A	5006JA3034A	Cap,Drain Tube
145A	4930JJ2003A	Holder,Shelf	328A	4J03020A	Damper,Pipe
145B	4930JJ2004A	Holder,Shelf	329A	5901JJ1005A	Fan Assembly
149A	5026JJ1026A	SHELF,FREEZER	329C	5901JJ1004B	Fan Assembly
151A	3391JJ1020C	Tray Assembly,Vegetable	332A	3531JJ1004A	Grille Assembly,Fan
151C	4940JJ2003C	KNOB,SHUTTER	401A	6615JB2005C	Controller Assembly
154A	3550JL1006C	Cover,TV	404A	4681JK1004A	AC Motor
155B	4981JJ2001B	Supporter Assembly,Cover TV	405A	4811JJ2002A	Bracket Assembly,Motor
158A	3550JJ1040A	Cover,Lamp	405C	5040JA2009B	Damper,Motor Support
158E	MCK30060901	Cover,Lamp	405F	5040JA2004B	Damper,Motor Support
167B	4890JL1002H	Shelf,Glass	405G	4811JJ2002H	Bracket Assembly,Motor
170A	3391JJ2004H	Tray Assembly,Meat	406B	6600JB1004A	Switch,Push Button
200A	3581JJ8020G	Door Assembly,Freezer	409B	6912JB2004M	Lamp,Incandescent
201A	5433JJ0058F	Door Foam Assembly,Freezer	409D	3034JJ1002B	Reflector,Lamp
203A	4987JJ1004E	Gasket Assembly,Door	410A	6621JK2002D	Drawing,Assembly
205D	5004JJ1040A	Basket,Door	410G	0CZZJB2012J	Capacitor,Electric Appliance Film,Box
212A	3651JA1033M	Handle Assembly,Freezer	411A	6411JK1006A	Power Cord Assembly
212G	3846JD1007G	Name Plate	418A	5300JB1100J	Heater,Sheath
212J	4620JJ3007E	Stopper,Handle	420A	4680JK1001B	Motor,AC
230A	3581JJ8716B	Door Assembly,Refrigerator	501A	EBR30659302	PCB Assembly,Main
231A	5433JJ0019Y	Door Foam Assembly,Refrigerator	501F	3551JJ1020A	Cover Assembly,PCB
233A	4987JJ1004F	Gasket Assembly,Door	503C	6871JB2047A	PCB Assembly,Display
241A	3550JL2003H	Cover,Tray	503D	3110JJ1005A	Case,Display
241B	5004JJ1021A	Basket,Door	503E	3550JJ2031A	Cover,Display
241C	5004JJ1031A	Basket,Door	503F	ABQ33905301	Case Assembly,Display
241D	5004JJ0001A	Basket,Door	503G	3806JL1049A	Decor,Control
241E	5004JJ1029A	Basket,Door	610A	3550JJ2020A	Cover,Sensor
243A	4620JJ3006C	Stopper,Door	619B	3550JJ2024A	Cover,Valve
244A	3651JA1023V	Handle Assembly,Freezer	623H	3550JJ2036A	Cover,Tube
244E	5006JJ3016C	Cap,Handle	903A	3550JJ0006C	Cover,Lower
281A	3550JJ2013C	Cover,Hinge	903B	4930JJ2021A	Holder,Cover(Lower)
281B	4775JJ2003B	Hinge Assembly,Upper	903D	6500JK1003A	Sensor
281E	5006JJ3014C	Cap,Hinge	903E	6500JK1004A	Sensor
282B	4775JJ8002E	Hinge Assembly,Center	B01	1STZJA3004F	Screw,Customized
282C	1PZZJJ3002F	Pin,Common	S01	1SZZJJ3010A	Screw,Customized
282E	5006JJ2001F	Cap,Hinge	S22	J471-00001J	Screw,Customized
282F	3806JL2006F	Decor,Duct	S24	1SZZJA3011B	Screw,Customized
282H	5006JJ3004E	Cap,Hinge	S27	4J01424C	Screw,Customized
282X	5006JJ3010A	Cap,Handle			

Loc No.	Part No.	Description	Loc No.	Part No.	Description
103A	3650JJ2003M	Handle,Rear	283B	4775JJ2007B	Hinge Assembly,Lower
103B	3650JJ2003L	Handle,Rear	283D	4774JJ2002A	Hinge,Lower
103C	3551JJ1015F	Cover Assembly,Lower	283F	MJB36873202	Stopper,Door
103E	5218JJ3001A	Rail,Slide	284B	3550JA3120A	Cover,Connector
105A	5251JA3003B	Tube Assembly,Drain	284D	1STZJA3004K	Screw,Customized
105F	5070JJ3002A	Skirt,Lower	284E	3550JJ3001A	Cover,Tube
106A	4779JA2003A	Leg Assembly,Adjust	286A	4984JJ3003A	BUSH
106B	4J00382C	Washer,Common	301A	5421JJ1001B	Evaporator Assembly
120B	5209JJ1002A	Duct Assembly,Multi	304A	3551JJ2008B	Cover Assembly,Machinery(Rear)
125A	3390JJ1023A	Tray,Ice	305B	4580JJ3001A	Roller
125D	4930JJ3007A	Holder,Bracket	305C	4J04238A	Pin,Common
128A	4975JJ2002A	Guide Assembly,Rail	307A	2521CRA5715	Compressor,Set Assembly
128B	4975JJ2002B	Guide Assembly,Rail	308A	EBG32606502	Thermistor Assembly,PTC
128E	4930JJ1012A	Holder,Rail	309A	6750C-0004S	Overload Protect
128F	4930JJ1012B	Holder,Rail	310A	3550JA2059A	Cover,PTC
131A	5074JJ1017A	Bucket,Ice	312A	5040JA3031A	Damper,Compressor
135C	3550JJ2030A	Cover,Grille Fan	314A	4620JA3009A	Stopper,Compressor
136C	3390JJ1057A	Tray,Drawer	315A	3103JJ1001J	Base Assembly,Compressor
140B	5027JJ2007B	Shelf Assembly,Refrigerator	317A	5851JJ2002F	Drier Assembly
140D	MHL38615403	Shelf,Net	318A	4930JA3034A	Holder,Drier
140E	MHL38615404	Shelf,Net	319A	3390JJ0003A	Tray,Drip
142D	5026JJ2001L	Shelf,Net	319C	4974JJ1009A	Guide,Fan
142E	5026JJ2001M	Shelf,Net	319E	4810JJ2005A	Bracket,Motor
143E	5027JJ1008K	Shelf Assembly,Refrigerator	323B	5403JJ1007A	Condenser Assembly,Wire
143F	5027JJ1008D	Shelf Assembly,Refrigerator	327A	5006JA3034A	Cap,Drain Tube
145A	4930JJ2003A	Holder,Shelf	328A	4J03020A	Damper,Pipe
145B	4930JJ2004A	Holder,Shelf	329A	5901JJ1005A	Fan Assembly
149A	5026JJ1026A	SHELF,FREEZER	329C	5901JJ1004B	Fan Assembly
151A	3391JJ1020C	Tray Assembly,Vegetable	332A	3531JJ1004A	Grille Assembly,Fan
151C	4940JJ2003C	KNOB,SHUTTER	401A	6615JB2005C	Controller Assembly
154A	3550JL1006C	Cover,TV	404A	4681JK1004A	AC Motor
155B	4981JJ2001B	Supporter Assembly,Cover TV	405A	4811JJ2002A	Bracket Assembly,Motor
158A	3550JJ1040A	Cover,Lamp	405C	5040JA2009B	Damper,Motor Support
158E	MCK30060901	Cover,Lamp	405F	5040JA2004B	Damper,Motor Support
167B	4890JL1002H	Shelf,Glass	405G	4811JJ2002H	Bracket Assembly,Motor
170A	3391JJ2004H	Tray Assembly,Meat	406B	6600JB1004A	Switch,Push Button
200A	3581JJ8020H	Door Assembly,Freezer	409B	6912JB2004M	Lamp,Incandescent
201A	5433JJ0058G	Door Foam Assembly,Freezer	409D	3034JJ1002B	Reflector,Lamp
203A	4987JJ1004E	Gasket Assembly,Door	410A	6621JK2002D	Drawing,Assembly
205D	5004JJ1040A	Basket,Door	410G	0CZZJB2012J	Capacitor,Electric Appliance Film,Box
212A	3651JA1033J	Handle Assembly,Freezer	411A	6411JK1006A	Power Cord Assembly
212G	3846JD1007H	Name Plate	418A	5300JB1100J	Heater,Sheath
212J	4620JJ3007E	Stopper,Handle	420A	4680JK1001B	Motor,AC
230A	3581JJ8716C	Door Assembly,Refrigerator	501A	EBR30659302	PCB Assembly,Main
231A	5433JJ0019Z	Door Foam Assembly,Refrigerator	501F	3551JJ1020A	Cover Assembly,PCB
233A	4987JJ1004F	Gasket Assembly,Door	503C	6871JB2047A	PCB Assembly,Display
241A	3550JL2003H	Cover,Tray	503D	3110JJ1005A	Case,Display
241B	5004JJ1021A	Basket,Door	503E	3550JJ2031A	Cover,Display
241C	5004JJ1031A	Basket,Door	503F	ABQ33905301	Case Assembly,Display
241D	5004JJ0001A	Basket,Door	503G	3806JL1049A	Decor,Control
241E	5004JJ1029A	Basket,Door	610A	3550JJ2020A	Cover,Sensor
243A	4620JJ3006C	Stopper,Door	619B	3550JJ2024A	Cover,Valve
244A	3651JA1023U	Handle Assembly,Freezer	623H	3550JJ2036A	Cover,Tube
244E	5006JJ3016D	Cap,Handle	903A	3550JJ0006C	Cover,Lower
281A	3550JJ2013C	Cover,Hinge	903B	4930JJ2021A	Holder,Cover(Lower)
281B	4775JJ2003B	Hinge Assembly,Upper	903D	6500JK1003A	Sensor
281E	5006JJ3014C	Cap,Hinge	903E	6500JK1004A	Sensor
282B	4775JJ8002E	Hinge Assembly,Center	B01	1STZJA3004F	Screw,Customized
282C	1PZZJJ3002F	Pin,Common	S01	1SZZJJ3010A	Screw,Customized
282E	5006JJ2001F	Cap,Hinge	S22	J471-00001J	Screw,Customized
282F	3806JL2006F	Decor,Duct	S24	1SZZJA3011B	Screw,Customized
282H	5006JJ3004E	Cap,Hinge	S27	4J01424C	Screw,Customized
282X	5006JJ3010A	Cap,Handle			

Loc No.	Part No.	Description	Loc No.	Part No.	Description
103A	3650JJ2003E	Handle,Rear	283B	4775JJ2007B	Hinge Assembly,Lower
103B	3650JJ2003A	Handle,Rear	283D	4774JJ2002A	Hinge,Lower
103C	3551JJ1015B	Cover Assembly,Lower	283F	MJB36873201	Stopper,Door
103E	5218JJ3001A	Rail,Slide	284B	3550JA3120A	Cover,Connector
105A	5251JA3003B	Tube Assembly,Drain	284D	1STZJA3004K	Screw,Customized
105F	5070JJ3002A	Skirt,Lower	284E	3550JJ3001A	Cover,Tube
106A	4779JA2003A	Leg Assembly,Adjust	286A	4984JJ3003A	BUSH
106B	4J00382C	Washer,Common	301A	5421JJ1001B	Evaporator Assembly
120B	5209JJ1002A	Duct Assembly,Multi	304A	3551JJ2008B	Cover Assembly,Machinery(Rear)
125A	3390JJ1023A	Tray,Ice	305B	4580JJ3001A	Roller
125D	4930JJ3007A	Holder,Bracket	305C	4J04238A	Pin,Common
128A	4975JJ2002A	Guide Assembly,Rail	307A	2521CRA5715	Compressor,Set Assembly
128B	4975JJ2002B	Guide Assembly,Rail	308A	EBG32606502	Thermistor Assembly,PTC
128E	4930JJ1012A	Holder,Rail	309A	6750C-0004S	Overload Protect
128F	4930JJ1012B	Holder,Rail	310A	3550JA2059A	Cover,PTC
131A	5074JJ1017A	Bucket,Ice	312A	5040JA3031A	Damper,Compressor
135C	3550JJ2030A	Cover,Grille Fan	314A	4620JA3009A	Stopper,Compressor
136C	3390JJ1057A	Tray,Drawer	315A	3103JJ1001J	Base Assembly,Compressor
140B	5027JJ2007B	Shelf Assembly,Refrigerator	317A	5851JJ2002F	Drier Assembly
140D	MHL38615403	Shelf,Net	318A	4930JA3034A	Holder,Drier
140E	MHL38615404	Shelf,Net	319A	3390JJ0003A	Tray,Drip
142D	5026JJ2001L	Shelf,Net	319C	4974JJ1009A	Guide,Fan
142E	5026JJ2001M	Shelf,Net	319E	4810JJ2005A	Bracket,Motor
143E	5027JJ1008K	Shelf Assembly,Refrigerator	323B	5403JJ1007A	Condenser Assembly,Wire
143F	5027JJ1008D	Shelf Assembly,Refrigerator	327A	5006JA3034A	Cap,Drain Tube
145A	4930JJ2003A	Holder,Shelf	328A	4J03020A	Damper,Pipe
145B	4930JJ2004A	Holder,Shelf	329A	5901JJ1005A	Fan Assembly
149A	5026JJ1026A	SHELF,FREEZER	329C	5901JJ1004B	Fan Assembly
151A	3391JJ1020C	Tray Assembly,Vegetable	332A	3531JJ1004A	Grille Assembly,Fan
151C	4940JJ2003C	KNOB,SHUTTER	401A	6615JB2005C	Controller Assembly
154A	3550JL1006C	Cover,TV	404A	4681JK1004A	AC Motor
155B	4981JJ2001B	Supporter Assembly,Cover TV	405A	4811JJ2002A	Bracket Assembly,Motor
158A	3550JJ1040A	Cover,Lamp	405C	5040JA2009B	Damper,Motor Support
158E	MCK30060901	Cover,Lamp	405F	5040JA2004B	Damper,Motor Support
167B	4890JL1002H	Shelf,Glass	405G	4811JJ2002H	Bracket Assembly,Motor
170A	3391JJ2004H	Tray Assembly,Meat	406B	6600JB1004A	Switch,Push Button
200A	3581J8020A	Door Assembly,Freezer	409B	6912JB2004M	Lamp,Incandescent
201A	5433JJ0018E	Door Foam Assembly,Freezer	409D	3034JJ1002B	Reflector,Lamp
203A	4987JJ1004A	Gasket Assembly,Door	410A	6621JK2002D	Drawing,Assembly
205D	5004JJ1040A	Basket,Door	410G	0CZZJB2012J	Capacitor,Electric Appliance Film,Box
212F	4810JJ3015A	Bracket,Handle	411A	6411JK1006A	Power Cord Assembly
212G	3846JD1007F	Name Plate	418A	5300JB1100J	Heater,Sheath
212J	4620JJ3007E	Stopper,Handle	420A	4680JK1001B	Motor,AC
230A	3581JJ8047A	Door Assembly,Refrigerator	501A	EBR30659302	PCB Assembly,Main
231A	5433JJ0019M	Door Foam Assembly,Refrigerator	501F	3551JJ1020A	Cover Assembly,PCB
233A	4987JJ1004B	Gasket Assembly,Door	503C	6871JB2047A	PCB Assembly,Display
241A	3550JL2003H	Cover,Tray	503D	3110JJ1005A	Case,Display
241B	5004JJ1021A	Basket,Door	503E	3550JJ2031A	Cover,Display
241C	5004JJ1031A	Basket,Door	503F	ABQ33905301	Case Assembly,Display
241D	5004JJ0001A	Basket,Door	503G	3806JL1049A	Decor,Control
241E	5004JJ1029A	Basket,Door	610A	3550JJ2020A	Cover,Sensor
243A	4620JJ3006A	Stopper,Door	619B	3550JJ2024A	Cover,Valve
244E	5006JJ3016A	Cap,Handle	623H	3550JJ2036A	Cover,Tube
244H	3650JJ0020A	Handle,Refrigerator	700C	3651JJ2015D	Handle Assembly,Refrigerator
244P	3650JJ2012A	Handle,Freezer	903A	3550JJ0006A	Cover,Lower
281A	3550JJ2013A	Cover,Hinge	903B	4930JJ2021A	Holder,Cover(Lower)
281B	4775JJ2003B	Hinge Assembly,Upper	903D	6500JK1003A	Sensor
281E	5006JJ3014A	Cap,Hinge	903E	6500JK1004A	Sensor
282B	4775JJ8002F	Hinge Assembly,Center	B01	1STZJA3004F	Screw,Customized
282C	1PZZJJ3002F	Pin,Common	S01	1SZZJJ3010A	Screw,Customized
282E	5006JJ2001A	Cap,Hinge	S02	1SZZJJ3010B	Screw,Customized
282F	3806JL2006F	Decor,Duct	S22	J471-00001J	Screw,Customized
282H	5006JJ3004A	Cap,Hinge	S24	1SZZJA3011B	Screw,Customized
282X	5006JJ3010A	Cap,Handle	S27	4J01424C	Screw,Customized
282Z	5006JJ3010A	Cap,Handle			



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