

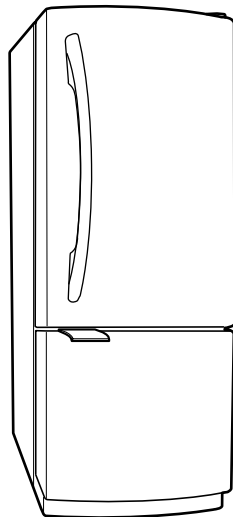


LG

REFRIGERATOR

SERVICE MANUAL

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



MODEL:

LRBN20512WW

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SAFETY PRECAUTIONS

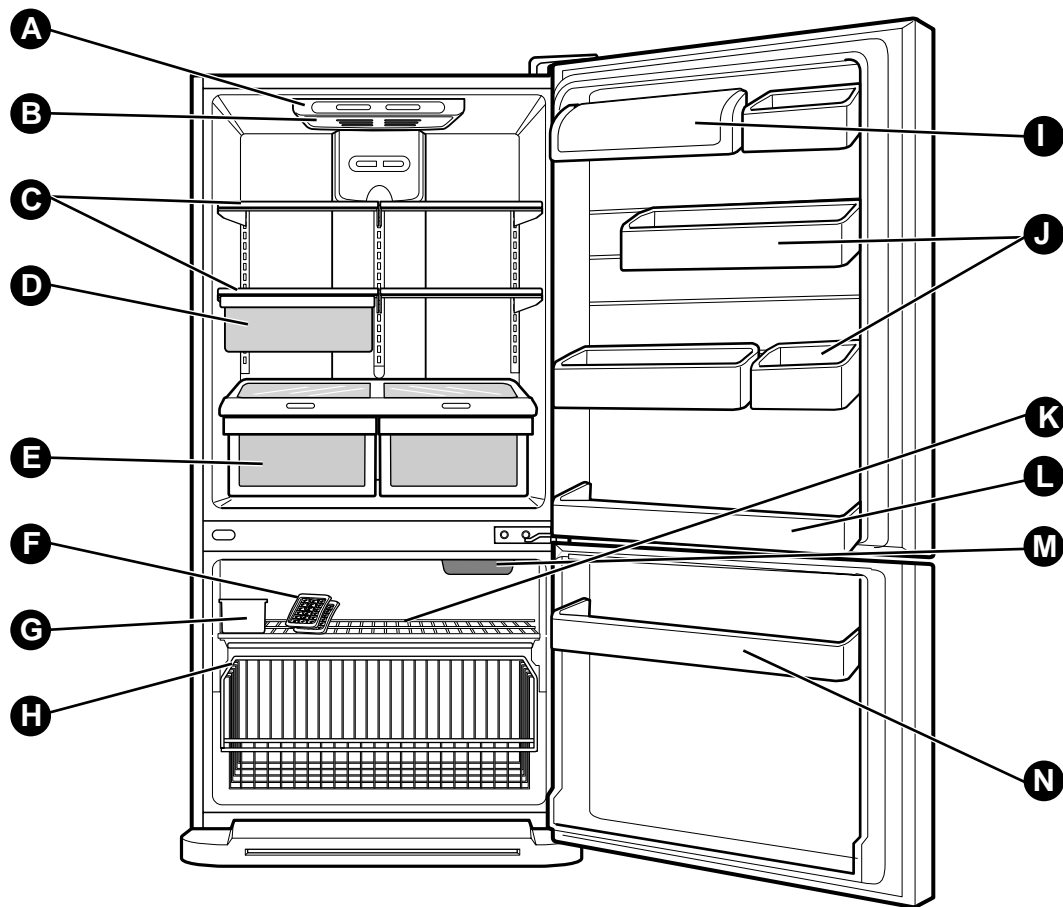
Please read the following instructions before servicing your refrigerator.

1. Check the refrigerator for electrical faults.
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 or cause your skin to freeze and stick to the surfaces inside the freezer.
6. Prevent water from flowing onto electric elements in the mechanical parts.
7. Close the top door before opening the bottom door. Otherwise, you might hit your head when you stand up.
8. When tilting the refrigerator, remove any materials on the refrigerator, especially the glass shelves and stored foods.
9. When servicing the evaporator, wear cotton gloves. This is to prevent injuries from the sharp evaporator fins.
10. Disassembly, repair, and servicing the sealed refrigeration system should be performed only by qualified and certified personnel. Refrigerant should not be vented into the atmosphere; proper recovery equipment should be used.

1. SPECIFICATIONS

SPECIFICATIONS		MODELS	LRBN20512WW
GENERAL FEATURES	CAPACITY litre(F/R/T)/cuft	(176.72/382.33/559.05)/ 6.24*13.5*19.74	
	DIMENSIONS mm(W*H*D)/(in)	(758.825/67.875/863.6) / 29 7/8*67 7/8* 34	
	WEIGHT kg/(lb)	110/ (242.5)	
	HANDLE	PL-SMOOTH/ WHITE	
	REVERSIBLE DOOR	YES	
	DOOS FINISH	EMBO	
	REFRIGERANT	R134a	
	DOOR COOLING	NO	
FREEZER	DEFROST SYSTEM	AUTOMATIC	
	ICE TRAY	I/T(2EA)+I/B	
	SHELF	WIRE	
	BASKET	PLASTIC 1	
	LAMP	YES(1) 60W/blue	
REFRIGERATOR	TRAY MEAT	YES	
	SHELF	1Fix(Full Non S/Proof)+2Fix(Non S/Proof)	
	LAMP	YES(2) 60W/blue	
	EGG BANK	NO	
	GUIDE BOTTLE	NO	
	MAGIC CRISPER	NO	
	WINE RACK	NO	
	BASKET	2 1/3 + 2 2/3 + 1Full	

2. PARTS IDENTIFICATION



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
- B** Refrigerator Light
- C** Shelves
- D** Snack Pan
- E** Optibin Crisper
Keeps fruits and vegetable fresh and crisp
- F** Ice Trays
- G** Ice Bin
- H** Wire Durabase

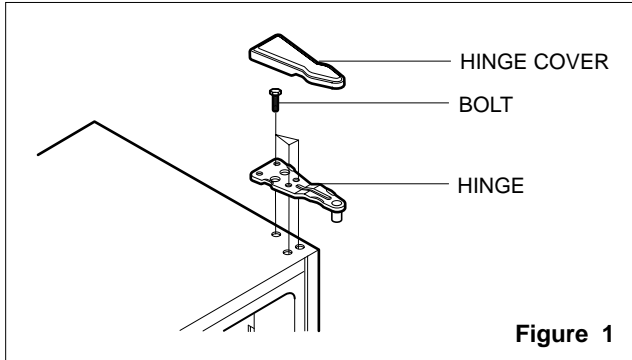
- I** Dairy Bin
- J** Design-A-Door
- K** Wire Freezer Shelf
- L** Refrigerator Door Rack
- M** Freezer Light
- N** Freezer Door Rack

3. DISASSEMBLY

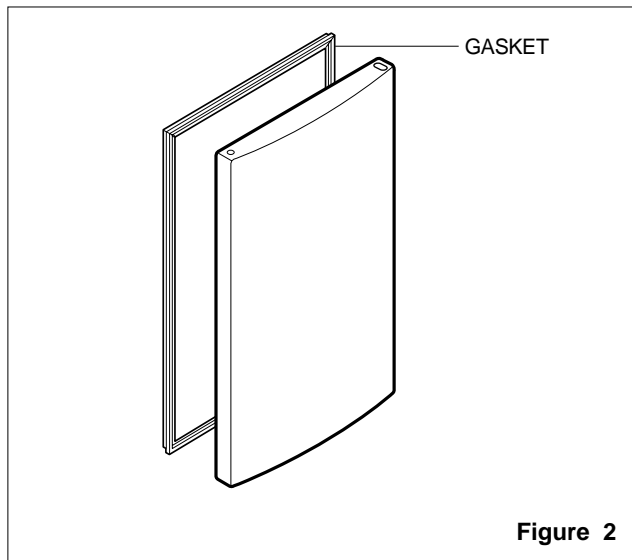
3-1 DOOR

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.

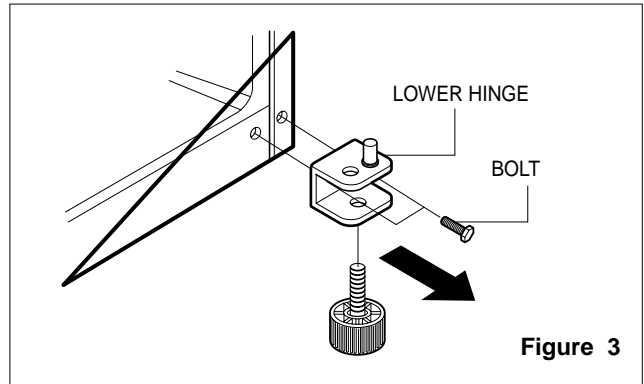


3. Pull out the door gasket to remove from the door foam assembly.



Freezer Door

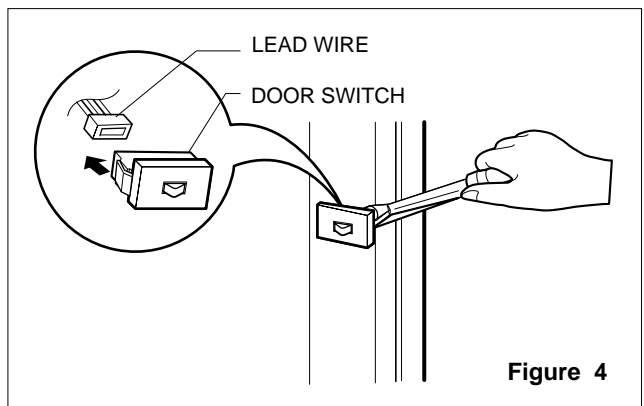
1. Loosen the hexagonal bolts attaching the lower hinge to the body to remove the refrigerator door only.



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 grille by pulling it out and by loosening a screw.
3. Remove the Fan Motor assembly by loosening 2 screws and disassemble the shroud.
4. Pull out the fan and separate the Fan Motor and Bracket.

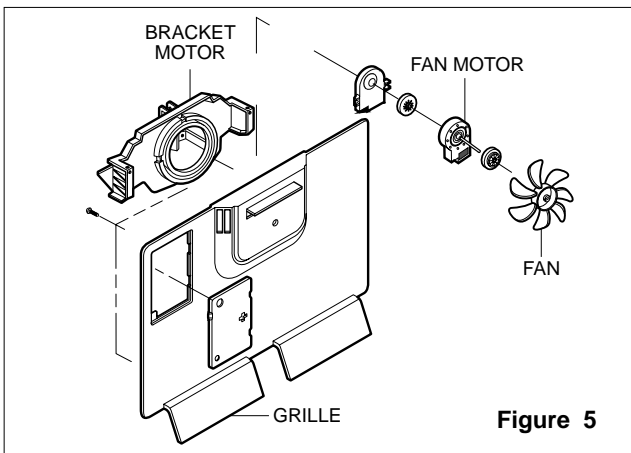


Figure 5

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)

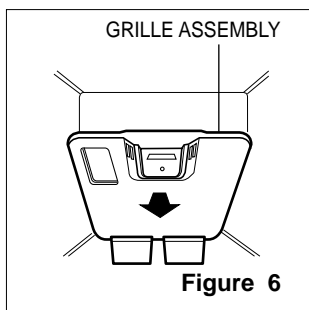


Figure 6

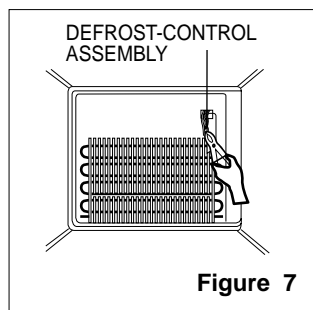


Figure 7

3-5 LAMP

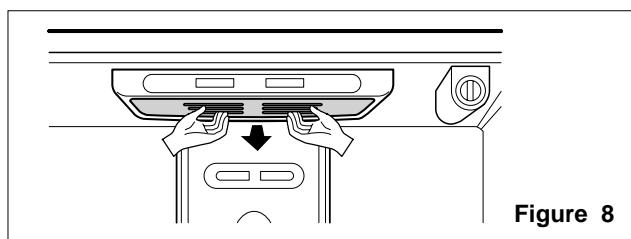


Figure 8

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).

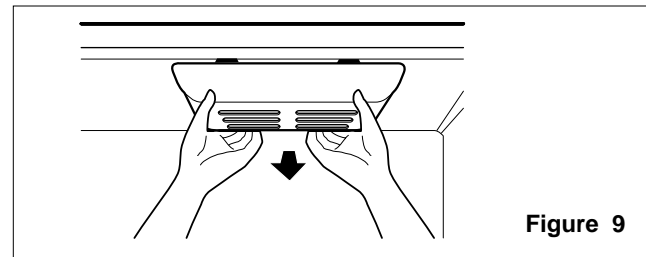


Figure 9

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.

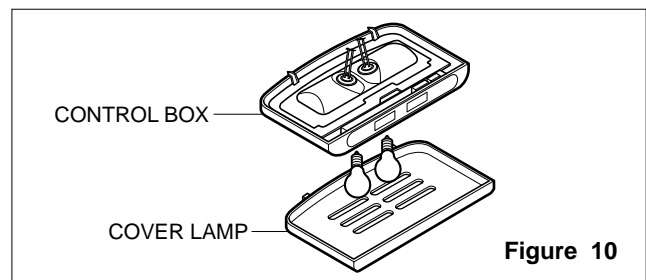


Figure 10

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.

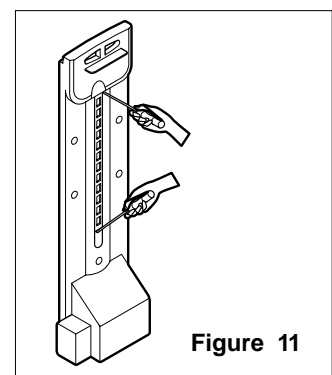


Figure 11

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

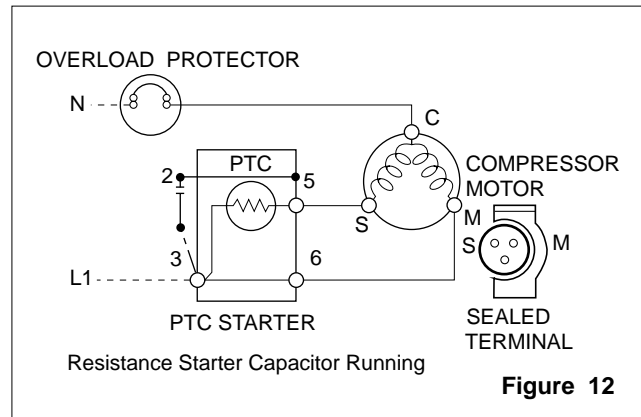
4-2-1 Composition of PTC-Starter

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

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.

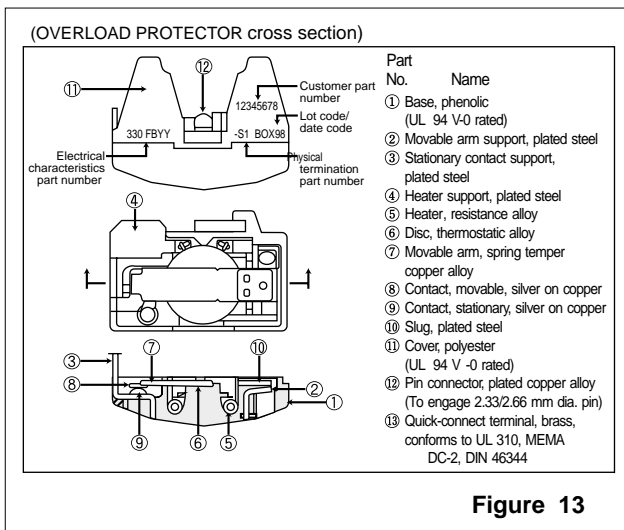
4-3 OLP (OVERLOAD PROTECTOR)

4-3-1 Definition of OLP

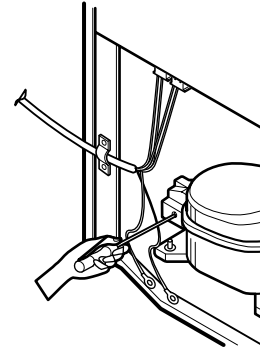
- (1) OLP (OVERLOAD PROTECTOR) is attached to the Compressor and protects the Motor by opening the circuit to the Motor if the temperature rises and activating the bimetal spring in the OLP.
- (2) When high current flows to the Compressor motor, the Bimetal works by heating the heater inside the OLP,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

4-3-2 Role of the OLP

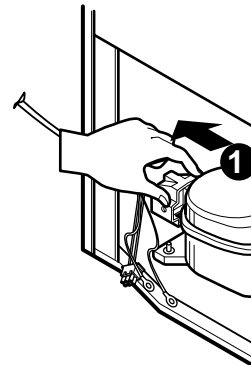
- (1) The OLP is attached to the Sealed Compressor used for the Refrigerator. It prevents the Motor Coil from being started in the Compressor.
- (2) For normal operation of the OLP, do not turn the Adjust Screw of the OLP in any way.



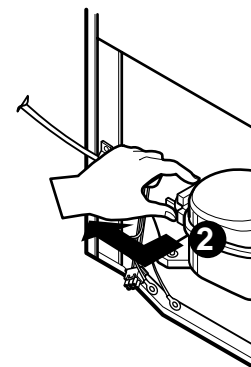
4-4 TO REMOVE THE COVER PTC



- 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.

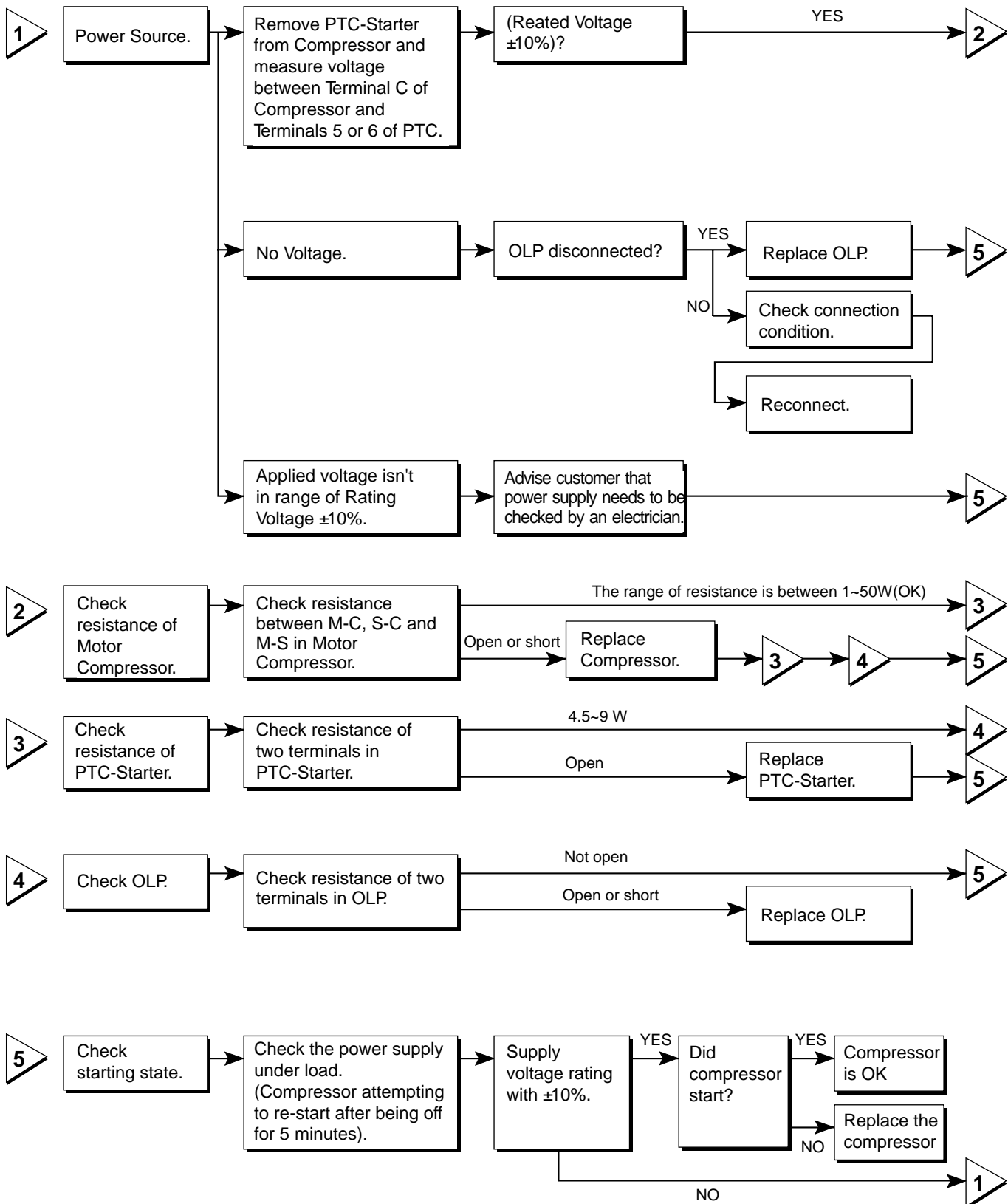


- (5) Turn 45° in the direction of 2 and take it out.
- (6) Assembly in reverse order of disassembly.



6. TROUBLESHOOTING

6-1 COMPRESSOR AND ELECTRIC COMPONENTS



6-2 PTC AND OLP

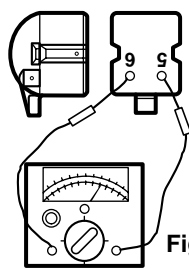
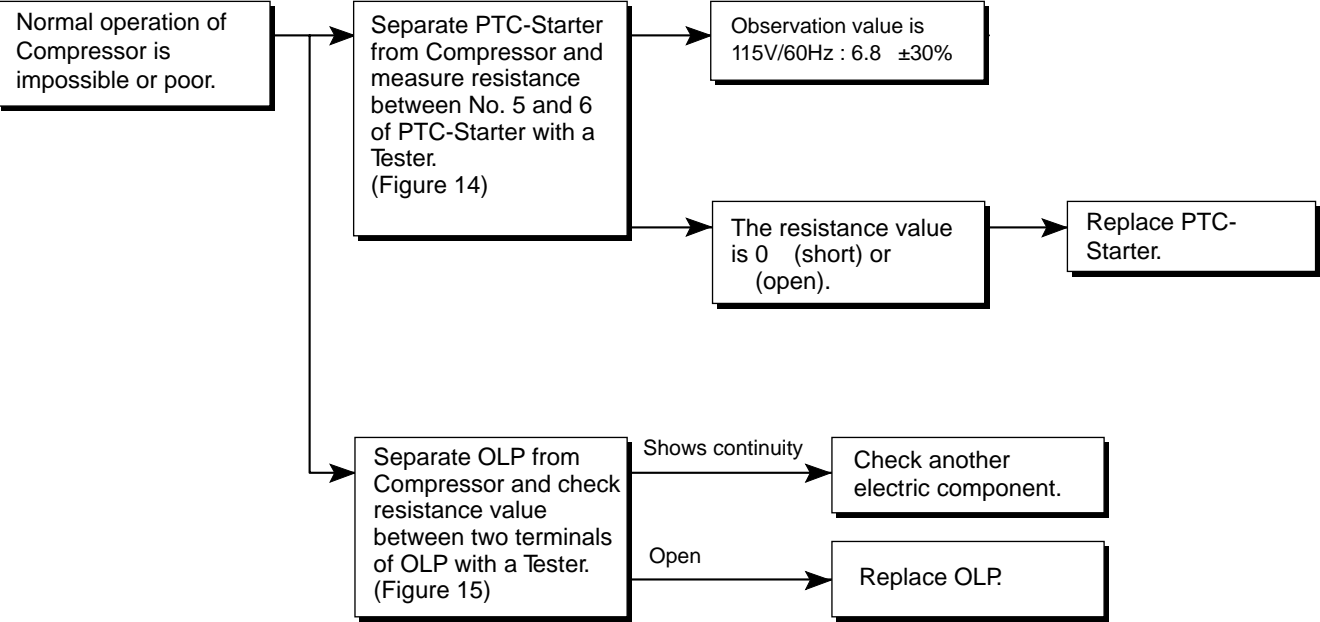


Figure 14

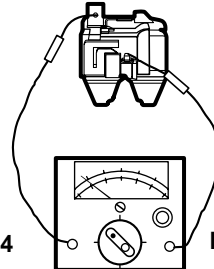
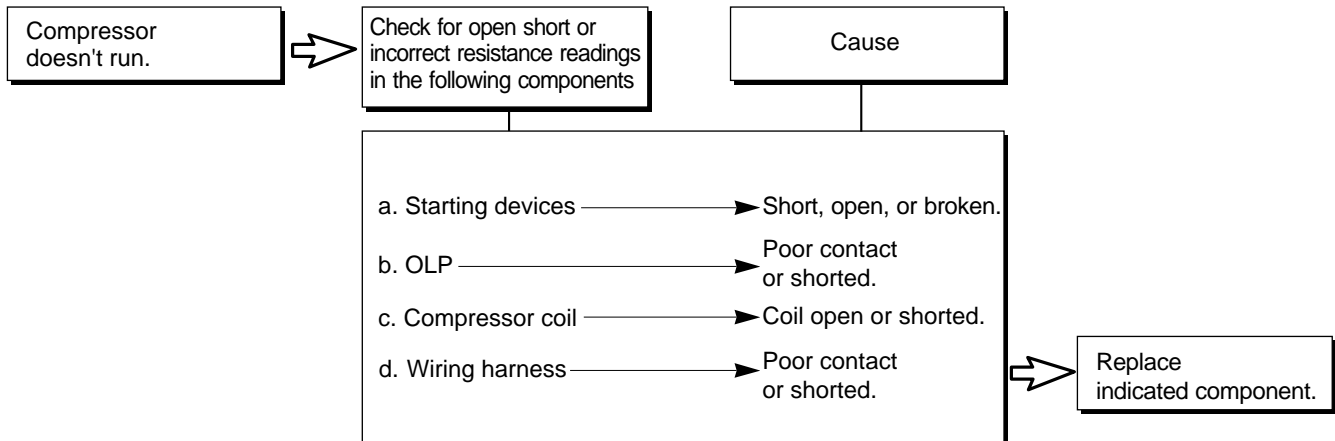


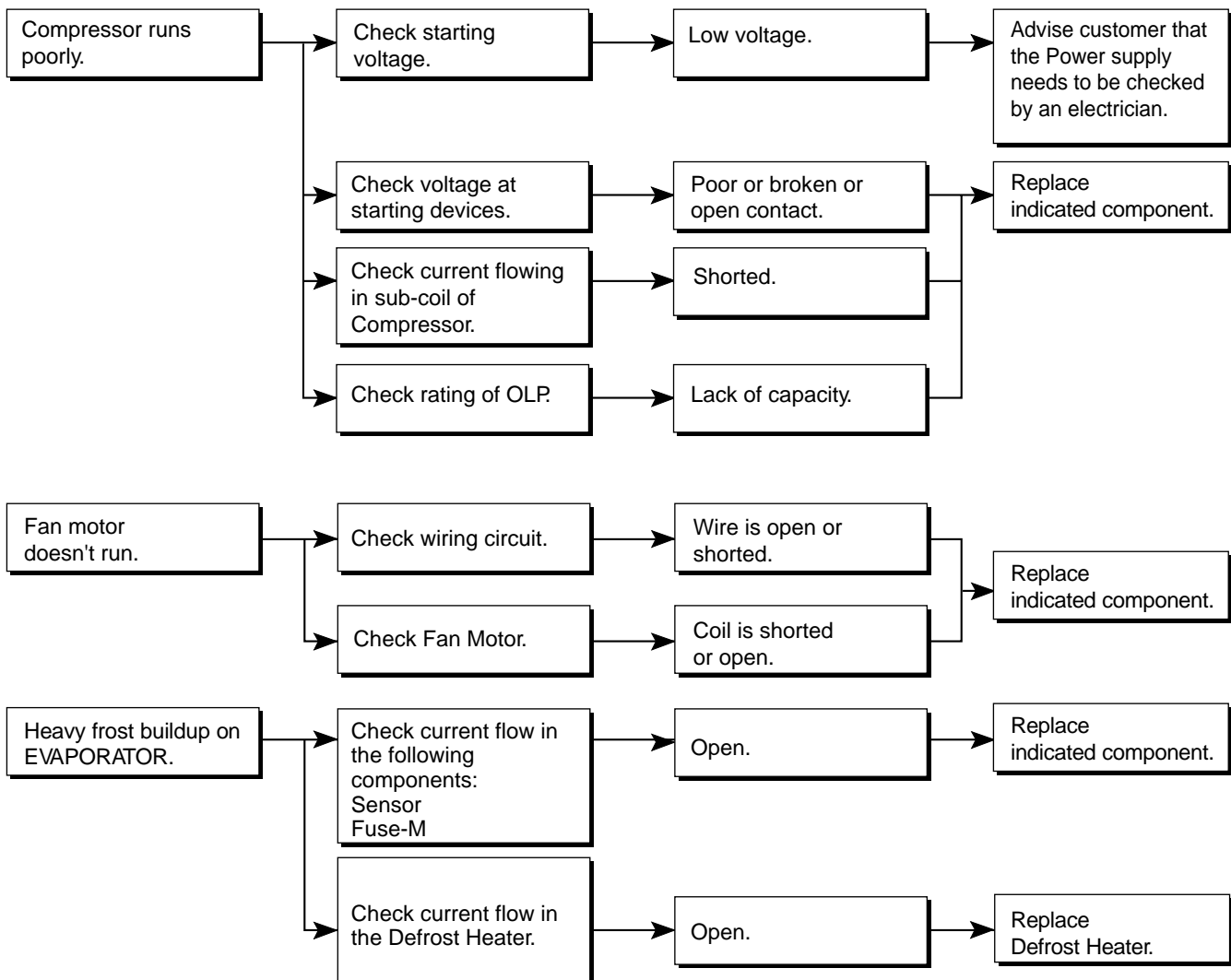
Figure 15

6-3 OTHER ELECTRICAL COMPONENTS

Not cooling at all



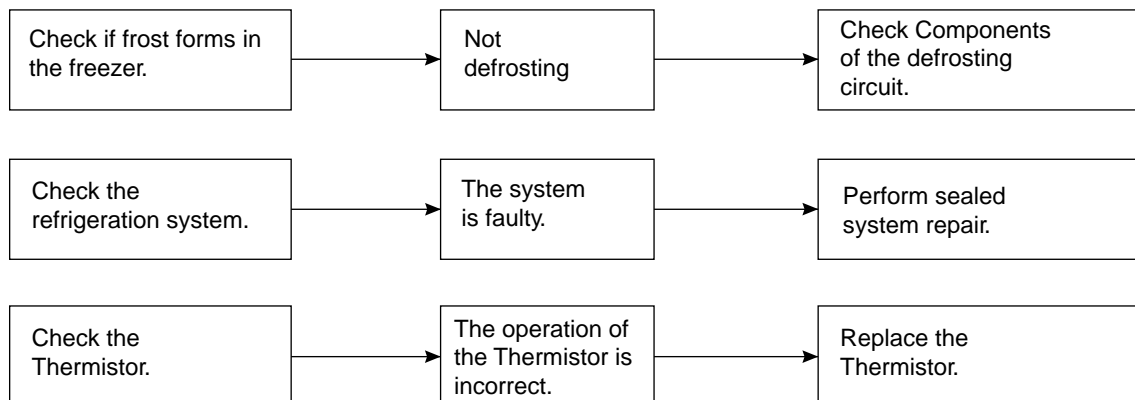
Poor cooling performance



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 Drip Tray is not firmly fixed. Check if the cover of the compressor enclosure in the lower front 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 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 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:



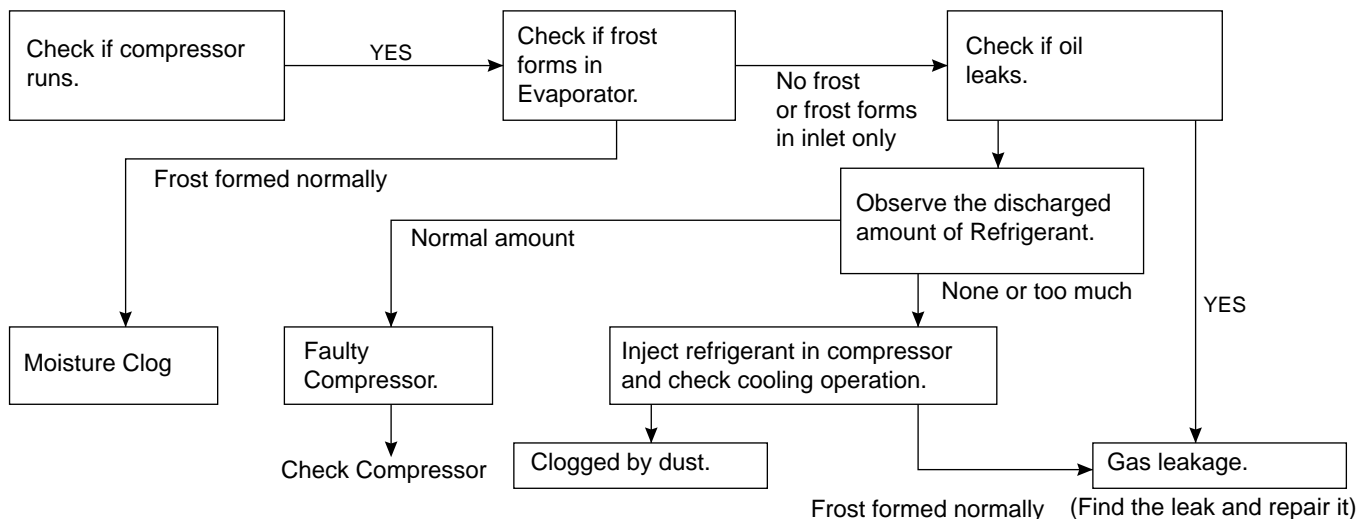
6-5 REFRIGERATION CYCLE

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	COMP-RESSION	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 COMP-RESSION	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.

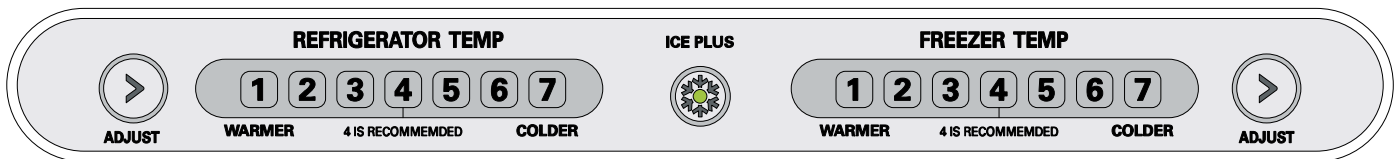


7. DESCRIPTION OF FUNCTION & CIRCUIT OF MICOM

7-1 FUNCTION

7-1-1 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".



7-1-2 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 ICE PLUS, and when refrigerator is overloaded. But standard RPMs are 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 (2600RPM): initial power on or load corresponding operation, ICE PLUS.
Normal speed (2300RPM): general working conditions.
5. Fan motor stops when refrigerator door opens.
6. Fan motor stops when freezer door opens. (Only if COMP is OFF).

7-1-3 ICE PLUS

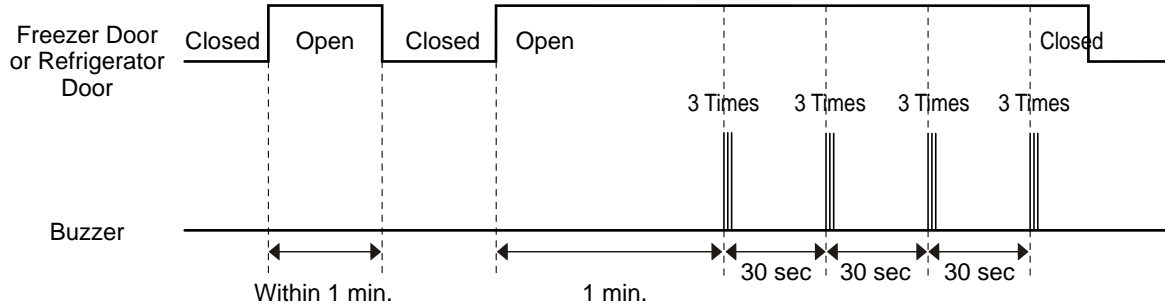
1. The purpose of this function is to intensify the cooling speed of freezer and to increase the amount of ice.
2. Whenever selection switch is pressed, selection/release, the LED will turn ON or OFF.
3. If there is a power cut and the refrigerator is power on again, ICE PLUS function will be canceled.
4. To activate this function you need to press the ICE PLUS key and the LED will turn ON. This function will remain activated for 24 hrs. The first three hours the compressor and ICE PLUS will be ON. The next 21 hours the freezer will be controlled at the lowest temperature. After 24 hours or if the ICE PLUS 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 ICE PLUS, ICE PLUS operates for the rest of time after defrost is completed, when ICE PLUS operation time is less than 90 minutes.
If ICE PLUS operates for more than 90 minutes, the ICE PLUS will operate for two hours after defrost is completed.
 - (3) If ICE PLUS is pressed during defrost, ICE PLUS LED is on but this function will start seven minutes after defrost is completed and it shall operate for three hours.
 - (4) If ICE PLUS 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 ICE PLUS.
6. For the rest of 21 hours, the freezer will be controlled at the lowest temperature.

7-1-4. REFRIGERATOR LAMP AUTO OFF

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

7-1-5 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.



7-1-6 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. 3)

7-1-7 Defrosting (removing frost)

1. Defrosting starts each time the accumulated COMPRESSOR running time is between 7:30 and 40 hours. This time is determined by how often and how long the doors are opened.
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 a hour, the defrost mode is malfunctioning.
4. Defrosting won't function if its sensor is defective (wires are cut or short circuited).

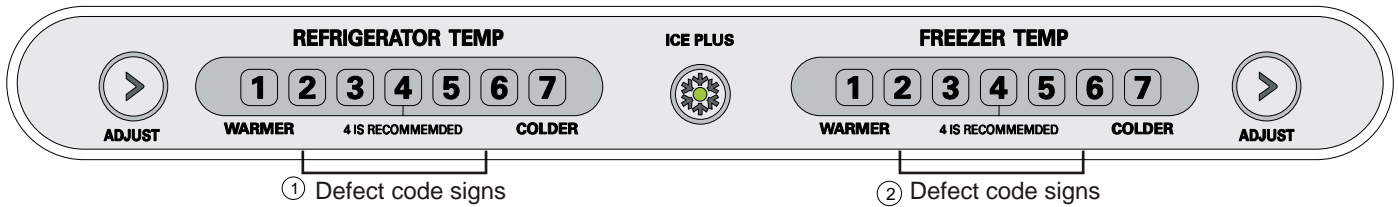
7-1-8 Electrical Parts Are Turned On Sequentially

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 $\xrightarrow{\text{In } \frac{1}{2} \text{ second}}$ COMP ON $\xrightarrow{\text{In } \frac{1}{2} \text{ second}}$ Freezer FAN ON $\xrightarrow{\text{In } \frac{1}{2} \text{ second}}$ Cooling FAN ON $\xrightarrow{\text{In } \frac{1}{2} \text{ second}}$ Door Heater ON					
	Temperature of defrosting sensor is lower than 45°C (when power cuts, SERVICE)	POWER ON $\xrightarrow{\text{In } \frac{1}{2} \text{ second}}$ Defrosting heater ON $\xrightarrow{\text{In } 5 \text{ second}}$ Defrosting heater OFF $\xrightarrow{\text{In } \frac{1}{2} \text{ second}}$ Door Heater ON $\xrightarrow{\text{In } \frac{1}{2} \text{ second}}$ COMP ON $\xrightarrow{\text{In } \frac{1}{2} \text{ second}}$ Freezer FAN ON $\xrightarrow{\text{In } \frac{1}{2} \text{ second}}$ Cooling FAN ON					
Reset to normal operation from TEST MODE		Total load OFF $\xrightarrow{\text{In } 7 \text{ minutes}}$ COMP ON $\xrightarrow{\text{In } \frac{1}{2} \text{ second}}$ Cooling FAN ON $\xrightarrow{\text{In } \frac{1}{2} \text{ second}}$ Door heater ON $\xrightarrow{\text{In } 10 \text{ minutes}}$ Freezer Fan ON					

7-1-9 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 defect is repaired the defect code is removed and refrigerator returns to normal operation (RESET)
4. The defect CODE is shown on the 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	
5	RT-sensor error (LED check mode)	All off	○ ○ ○ ● ○ ○ ○ Visible in LED CHECK MODE	Open or short circuit	
4	Poor of defrost	All off	● ● ● ● ○ ○ ○	1 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 1 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 115sec in operation.	Poor motor, hocking to wires of fan, contact of structures to fan, snapping or short of lead

DISPLAY CHECK MODE: Press at the same time ADJUST REFRIGERATOR TEMP & ADJUST FREZEER TEMP

For more than 1 second. 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

If there is an RT sensor defect it will be indicated in this mode.

7-1-10 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 ICEPLUS key and ADJUST key of Freezer temperature at the same time over 3 seconds. Or press TEST S/W one time in the Main PCB board.	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	Reset after 5 minutes
TEST2	Push ICEPLUS key and ADJUST key of Freezer temperature at the same time over 3 seconds being in TEST MODE1. Or press TEST S/W one time being in TEST MODE 1.	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 ICEPLUS key and ADJUST key of Freezer temperature at the same time over 3 seconds being in TEST MODE2. Or press TEST S/W one time being in TEST MODE 2.	Reset to the previously setting before TEST MODE	The Compressor will start after a 7-minute Delay

* Freezer Fan RPM Variable Check:

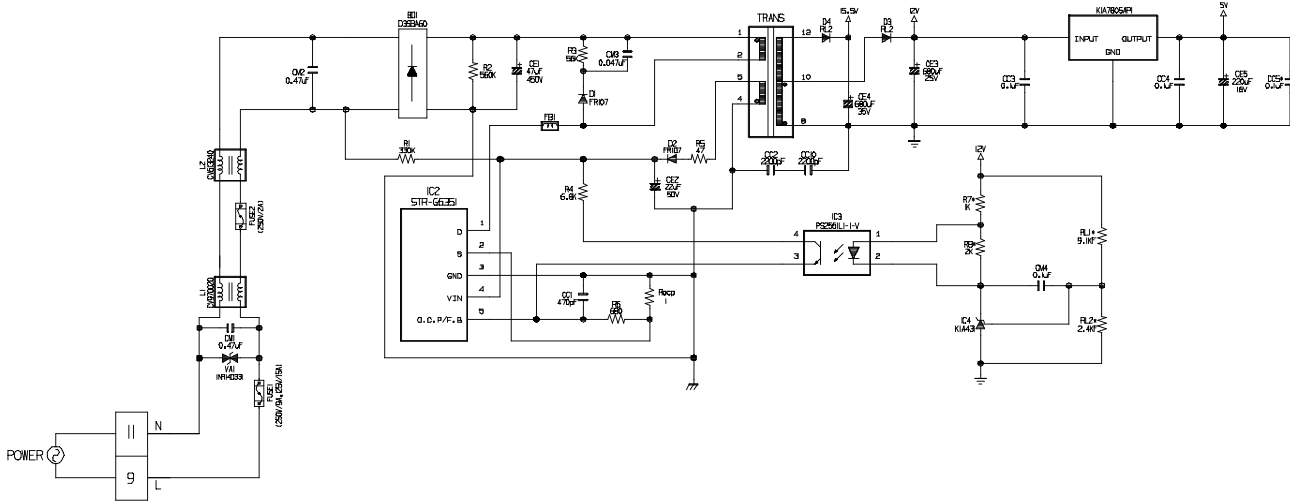
In case the freezer fan is in operation when the ADJUST key in Refrigerator and Freezer Temp. Control are pressed for more than one second at the same time freezer fan RPM changes. (for example if high speed, to normal speed or if normal speed, to high speed for 30 seconds)
After 30 seconds, it turns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

* Demonstration MODE:

1. When the ICE PLUS 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.

7-2 PCB FUNCTION

7-2-1 Power Circuit



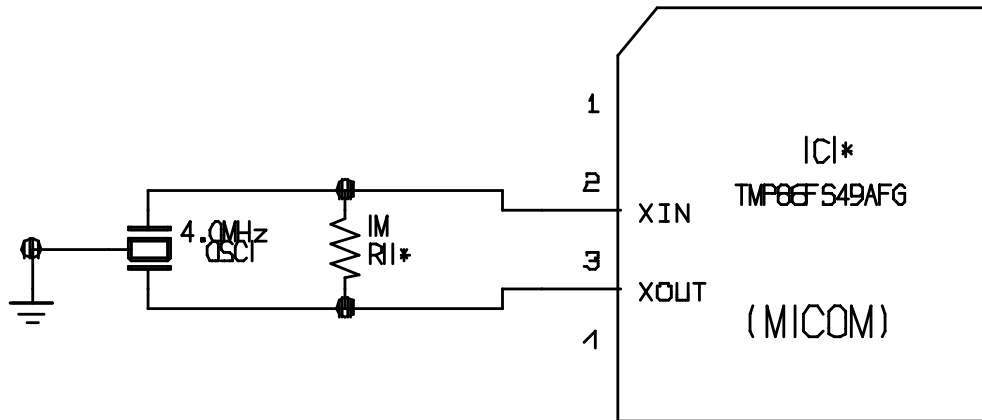
The secondary part of the TRANSFORMER is composed of the power supply for the display, the BLDC FAN Motor drive (15.5 V), the relay drive (12 Vdc) and the MICOM and IC (5 Vdc).

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 V

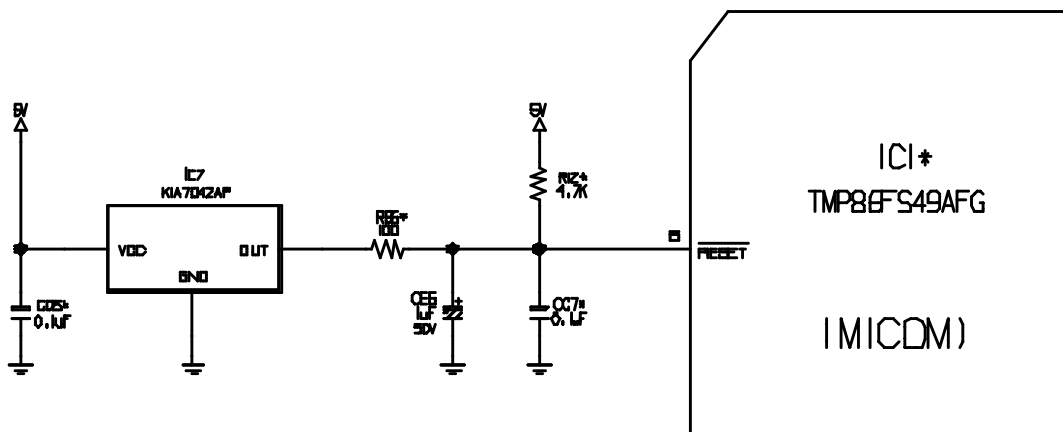
VA1 is a part for preventing over voltage and noise. When high voltage is applied, the inside elements are short-circuited and broken, resulting in blowout of the fuse in order to protect the elements of the secondary part of the TRANSFORMER.

7-2-2 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 specified replacement parts, since calculating time by the IC1 may be changed. If changed, the OSC1 SPEC will not work.

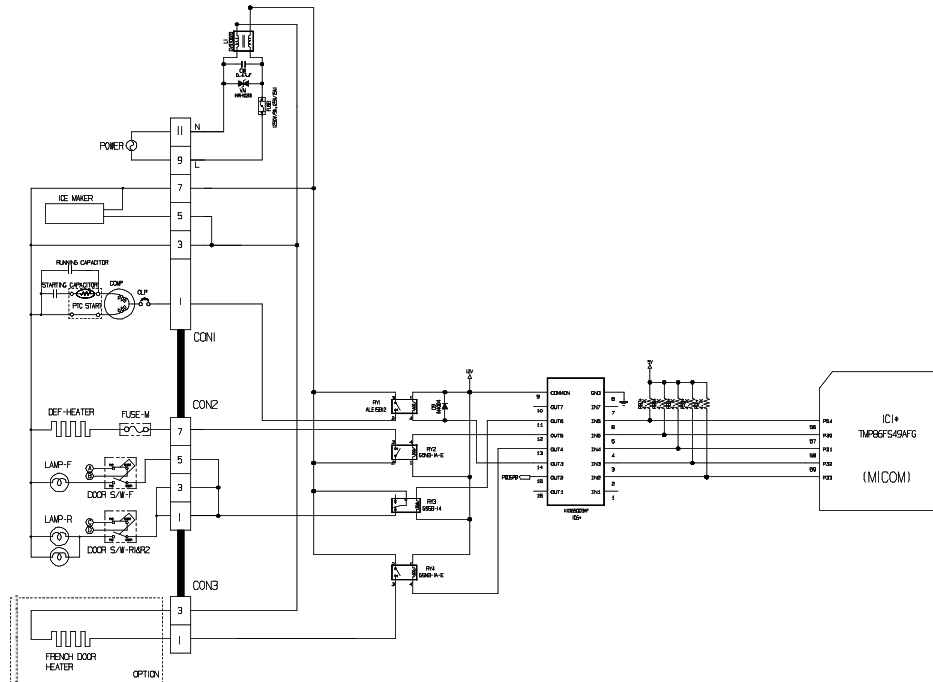
7-2-3 Reset Circuit



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.)

7-2-4 Load / Buzzer Drive & Open Door Detection Circuit

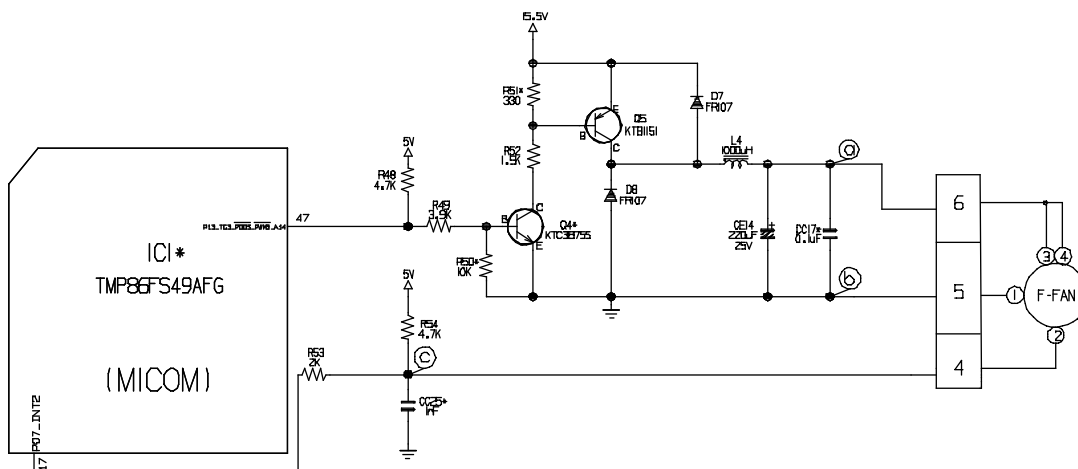
1. Load Drive Condition Check



LOAD TYPE		COMP	DEFROSTING HEATER	LAMP	FRENCH DOOR HEATER 1, 2 / DEW HEATER
Measurement Location (IC6)		NO.14	NO.12	NO.11	NO.13
Condition	ON	1V or below			
	OFF	12V			

2. Motors driving circuit (freezing compartment fan)

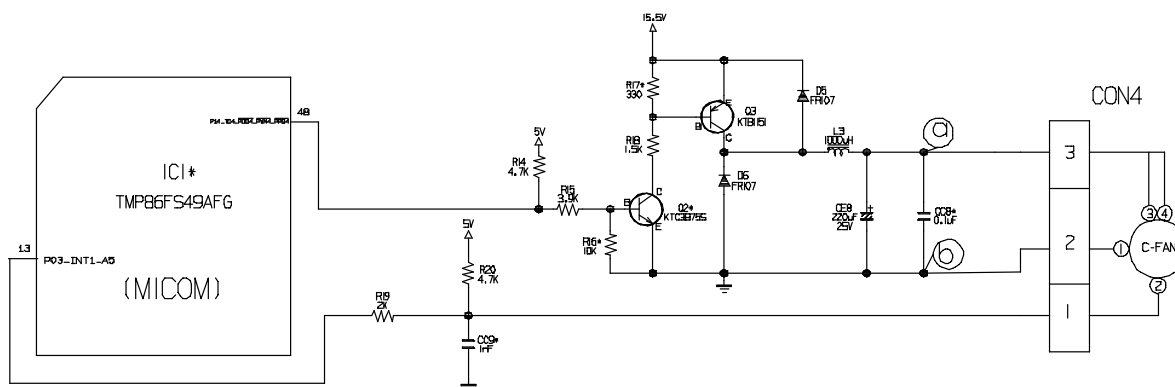
1. The circuit makes the Motor Fan OFF by cutting Off the power supplied to driver inside the Fan Motor when the is necessary.
2. This is a circuit to perform a temporary change of speed for the fan motor and applies DC voltage up to 7.5V ~ 16V to motor .
3. This circuit prevents over-driving the fan 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.



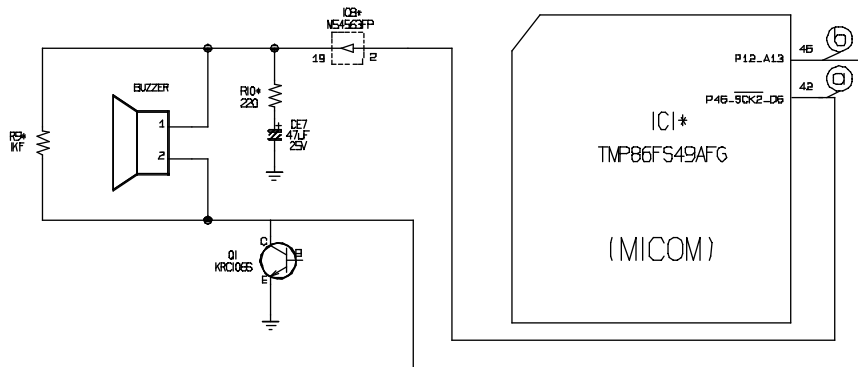
3. Cooling motor driving circuit (machine room)

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 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
MOTOR OFF	2V or less	0V
MOTOR ON	13V~15V	0V

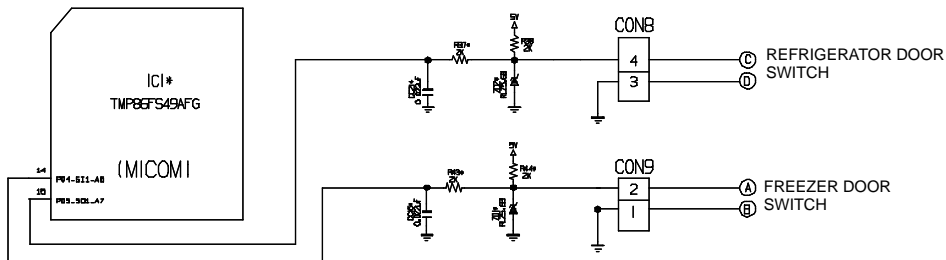


3. Buzzer Drive Condition Check



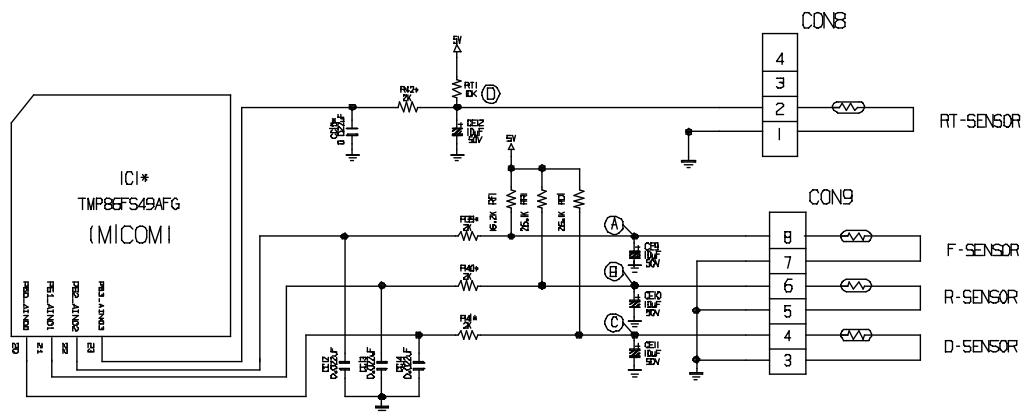
Condition Measurement Location	Tone (Ding~Dong~) when the button on the display is pushed.	Alarm for open door (beep-beep-beep)	OFF
IC1 (A)			0 V
IC1 (B)			0 V

4. Open Door Detection Circuit Check



Measurement Location Freezer/ Refrigerator Door	Pin No. 15 (Freezer Door) Pin No. 14 (Refrigerator Door)
Closed	5 V
Open	0 V

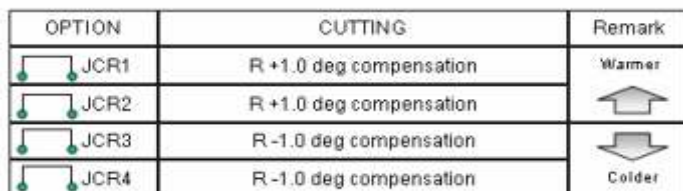
7-2-5 Temperature Sensor Circuit



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 (A) Voltage	0.5 V ~ 4.5 V	0 V	5 V
Refrigerator Sensor	POINT (B) Voltage			
Defrosting Sensor	POINT (C) Voltage			
Room Temperature sensor	POINT (D) Voltage			

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



Example 1) CUTTING JCR1 and JCR2: R +2 deg compensation
 Example 2) CUTTING JCR1 and JCR3: no compensation in R compartment.
 Example 3) CUTTING JCR1, JCR2 and JCR3: compensation of temp +1deg+1deg=+1deg.

? 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



7-3 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.

7-4 TROUBLESHOOTING

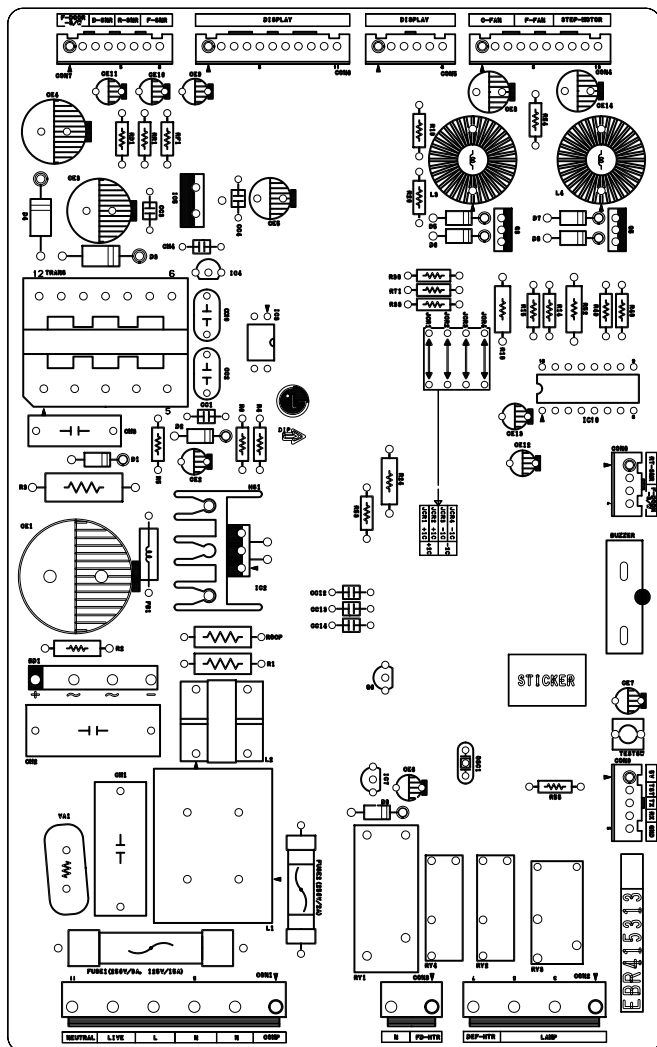
PROBLEM	INDICATED BY	CHECK	CHECKING METHOD	CAUSE	SOLUTION
POWER SOURCE is poor.	1. The whole DISPLAY LED/SEVEN SEGMENT DISPLAY's off. 2. DISPLAY LED/SEVEN SEGMENT DISPLAY operates abnormally	1. FREEZER/REFRIGERATOR.	Check if FREEZER/REFRIGERATOR DOOR IS OPEN and check display.	POWER SOURCE is poor.	Check outlet Voltage.
		2. If LAMP is dim.	Check visually.	Applied voltage error.	Use boosting TRANS.
		3. The connection of the MAIN PWB CONNECTOR.	Check connection of CONNECTOR.	CONNECTOR connection is poor.	Reconnect CONNECTOR.
				TRANS FUSE is open.	Replace TRANS.
COOLING is poor.	NO COOLING.	1. If the COMPRESSOR operate.	USE TEST MODE1 (forced COOLING). If less than 7 minutes pass after compressor shuts off, don't press the KEY and wait.	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).
FREEZER TEMPERATURE is incorrect		2. If refrigerant is leaking.	Measure the amount of frost sticking on EVAPORATOR and the surface temperature of the condenser pipe.	Refrigerant leakage.	Replace the leaking part and replace any lost refrigerant.
		1. If FANMOTOR operates.	USE TEST MODE1 (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.
		3. If SENSOR is normal.	Check the resistance of the Refrigerator SENSOR.	SENSOR RESISTANCE is poor.	Replace SENSOR.
		4. Door Line contact.	Check the seal when the door is closed.	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 isn't normal.	Check if FREEZER TEMPERATURE is too low.		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.	FAN MOTOR is poor. Passage of cool air is blocked. EVA frozen.	Replace FAN MOTOR. Remove impurities.
		3. Door Line contact.	Check door seal when door is closed.	Door liner damaged.	Replace Door liner.
DEFROSTING is poor.	NO DEFROSTING.	1. If HEATER emits heat.	USE TEST MODE3 (forced DEFROSTING).	HEATER disconnection.	Replace HEATER.
				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 RY2 of MAIN PWB.
				DRAIN PIPE is blocked.	Remove ice and impurities.
		2. If DRAIN PIPE is blocked.	Check DRAIN PIPE.		Check HEATER PLATE resistance.
		3. If ice remains after DEFROSTING.	Make sure that DEFROST SENSOR is connected.	Connection is poor.	Reassemble the DEFROST-SENSOR.
			Make sure that FREEZER / REFRIGERATOR DOOR is closed.	DOOR does not close properly.	Reassemble DOOR. Replace GASKET.

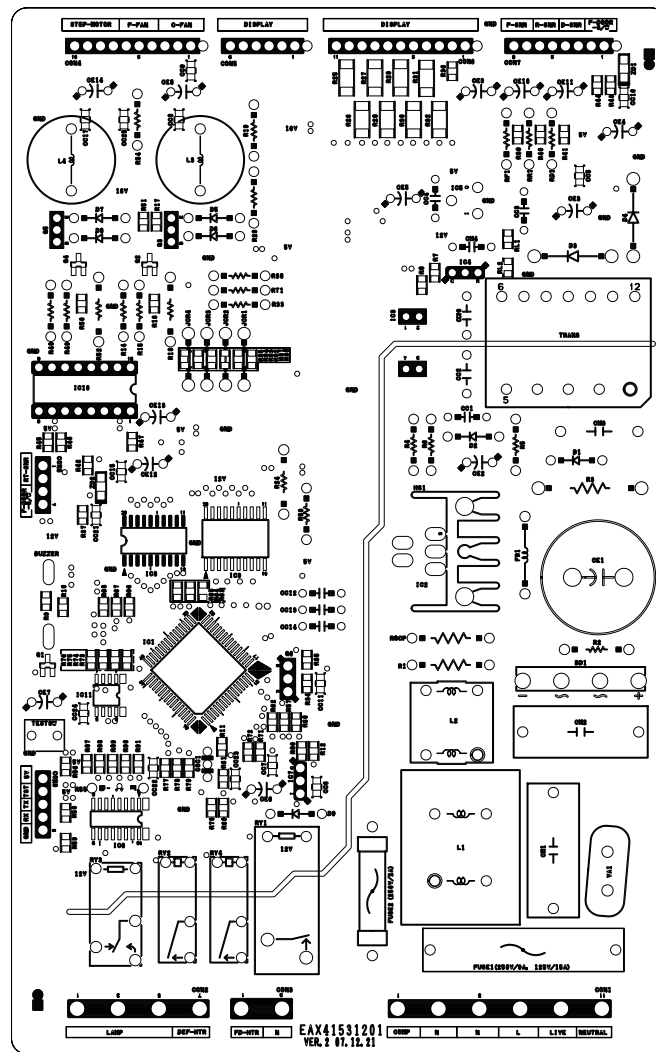
7-5 MAIN PWB ASSEMBLY AND PARTS LIST

7-5-1 Main PWB Assembly

TOP VIEW



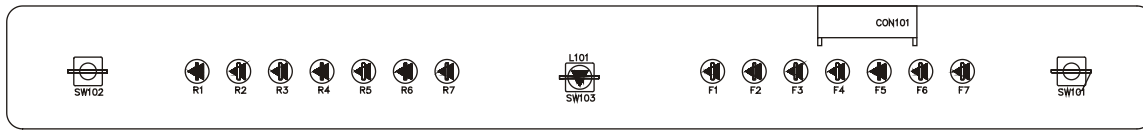
BOTTOM VIEW



7-5-2 Replacement Parts List

No	P/N	DESCRIPTION	SPEC	MAKER	REMARK
1	EAX4R3201	PIB(IPCB)	BRV030 PUT, 28LDC VER. 2	DOO SAN	T-1,6
2	6170.B2012A	TRANSFORMER,SMPS COIL 1	DL-PUT 2.9MM/20W	SAM IL,SAC	TRANS
3	6170.B2012B	TRANSFORMER,SMPS COIL 1	GR-207,BLDC 100V-127V	SAM IL,SAC	
4	6170.B2012C				
5	EAF363890	PROTECT DEVICE,FUSE	50W GLASS 250V 5A KS AXIAL BK	ORISEL	FUSE1
6	EAF363890	PROTECT DEVICE,FUSE	50W GLASS 250V 5A KS AXIAL BK	ORISEL	
7	OFZ7.B3001A	PROTECT DEVICE,FUSE	250V 12A 52520H(SLOW-BLOW) LITTELFUSE TRIAD	ORISEL	FUSE2
8					
9	6630.M0111	CONNECTOR (CIRC),WAFER	YH36 YEONHO 1P 3.95MM YH36-11AY (1P:2,4,6,8,10)	YEON HO	CON1
10	6630.M0108	CONNECTOR (CIRC),WAFER	YH36-07AY YEONHO 7PIN 3.95MM STRAIGHT SN	YEON HO	CON2
11	6630.M0106A	CONNECTOR (CIRC),WAFER	YH36-03AY 3P 3.95MM IR STRAIGHT	YEON HO	CON3
12	6630.BB004J	CONNECTOR (CIRC),WAFER	SMC250-10P 10P 2.50MM IR STRAIGHT	YEON HO	CON4
13	6630.BB004E	CONNECTOR (CIRC),WAFER	SMC250-06P 6P 2.50MM IR STRAIGHT	YEON HO	CON5
14	6630.BB004K	CONNECTOR (CIRC),WAFER	SMC250-11P 1P 2.50MM IR STRAIGHT	YEON HO	CON6
15	6630.BB004G	CONNECTOR (CIRC),WAFER	SMC250-08P 8P 2.50MM IR STRAIGHT	YEON HO	CON7
16	6630.BB004C	CONNECTOR (CIRC),WAFER	SMC250-04P 4P 2.50MM IR STRAIGHT	YEON HO	CON8
17	6630.BB004D	CONNECTOR (CIRC),WAFER	SMC250-05P 5P 2.50MM IR STRAIGHT	YEON HO	CON9
18					
19	6102W5007A	VARIATOR	NR14033K 330V 10Z UL/CSA-VDE BK ILJIN	IL_JIN	VA1
20			SV330-14A	SAMHWA	
21	6102.BB001B	VARIATOR	SV3210-14A SAMHWA UL/VDE BK 620V	SAMHWA, IL_JIN	
22	692000001A	RELAY	ALFEB12 MATSUSHITA 250VAC 16A 12VDC 1A NO VENTING,POLE	MATSUSHITA	RY1
23	6920.B2003B	RELAY	6S-6-1A-NT-12VDC AC250V DC12V 16A IA UL/CSA-VDE LEAD	OMRON	
24	6920.B2003C	RELAY	OHU II AC250V DC12V 16A IA UL/CSA/TUV/SEMO LEAD	IEC	
25	6920.B2003D	RELAY	OMH-5S-112LM DEG AC240V DC12V 16A IA UL/CSA-VDE/SEMO DIP DEG	TYCO	
26	6920.B2003E	RELAY	G9B-1A-E 5VDC AC250V DCSV 5A IA UL/CSA-VDE 20.5*7.2*15.3 DIP	OMRON	RY2,RY4
27	6920.B2003F	RELAY	G9B-1A-E 12VDC 1A-NT AC250V DC30V DC12V 5A IA UL/CSA-VDE	OMRON	
28	6920.B2003G	RELAY	G9B-1A-E 12VDC 1A-NT AC250V DC30V DC12V 5A IA UL/CSA-VDE	OMRON	
29	6212B43041A	OSCILLATOR, RESONATOR, CERAMIC	G59B-1A OMRON 250VAC 5A 12VDC 1C NO VENTING,POLE	OMRON	RY3
30			CSL5AM0053-A0 MURATA 4MHz +/-0.5% TA 15PF	MURATA	OSC1
31	EAM4005901	IC,MICROCONTROLLERS	TPH86F549AFG TOSHIBA 64P BULK FLASH BRAVO30 ENERGY STAR 10B	TOSHIBA	IC1
32	EAM4005902	IC,MICROCONTROLLERS	TPH86F549AFG TOSHIBA 64P BULK FLASH BRAVO33 BETTER ENERGY STAR 10B	TOSHIBA	
33	EAM4005903	IC,MICROCONTROLLERS	TPH86F549AFG TOSHIBA 64P BULK FLASH INNER2 GOOD/BETTER ENERGY STAR 10B	TOSHIBA	
34	EAM4005904	IC,MICROCONTROLLERS	TPH86F549AFG TOSHIBA 64P BULK FLASH INNER2 BEST ENERGY STAR 10B	TOSHIBA	
35	EAM4005905	IC,MICROCONTROLLERS	TPH86F549AFG TOSHIBA 64P BULK FLASH BRAVO33 BASIC	TOSHIBA	
36	OIPM63001A	IC,HC	STR-66351 15,81019,4V 9,10111,1V SWITCHING REGULATOR ZIF ST 5P	SANKEN	IC2
37	OIPM63001A	IC,HC	PS24611-1-V NEC 4P,DIP BK : TLP72F	NEC	IC3
38	OKE650030A	IC,VOLTAGE REGULATOR	KIA433 30V 361 400NM 1092 1P 3P	KEC	IC4
39	OKE650030B	IC,VOLTAGE REGULATOR	KIA7805APL 71020V 5V 2N 102205 ST 3P	KEC	IC5
40	OKE650030C	IC,LED DRIVER	KID65003AF 16 50P BK 70H DRIVE	KEC	IC6
41	OKE650030D	IC,VOLTAGE DETECTOR	KIA7042P -0.37015V 4,2V 400NM 1092 TP RESET 3P	KEC	IC7
42	OKE650030E	IC,LOGIC IC	M54563P MITSUBISHI 20 R/TIP CONVERT	MITSUBISHI	IC8
43	EAN3419001	IC,LED DRIVER	KID65003AF -0.51010V -0.51010V 350NM DIP ST 20P	KEC	IC9
44	O1T0777400A	IC,MOTOR DRIVER	ULN2803AF OV 10 30V -0.5V 10 30V 480NM SOL R/TIP 16P	TOSHIBA	
45	O1R6934600D	IC,EPRPM	TA7774AP 16,50P BK DRIVE,IC STEPPING MOTOR	TOSHIBA	IC10
46			BF93LC49FF-III BFIN 50P BK EPRPM,1KBIT	ROHM	IC11
47	O1TLM0005A	TRANSISTOR,BIPOLAR	KRC1065 KEC 50T-23 TP TRANSISTOR	KEC	IC12
48	O1TRK60052A	TRANSISTOR,BIPOLAR	KTC3975 NPN 5V 60V 50V 150MA 100NA 7010700 150NM 50123 R/TIP 3P	KEC	IC13
49	O1TRK60053A	TRANSISTOR,BIPOLAR	KTC3975 NPN 5V 60V 50V 150MA 100NA 7010700 150NM 50123 R/TIP 3P	KEC	IC14
50	O1TRK60054A	TRANSISTOR,BIPOLAR	KTC3981KTC3981 NPN 5V 60V 50V 150MA 100NA 7010700	KEC	IC15
51	O0C6300004A	DIODE, BRIDGE	D39B40 600V 1.05V 10A 80A SIP ST 4P 4	SHINDENGEN	BD1
52	O0C6300004B	DIODE, ZENER	RL25-6B 5.6V 5.45105.73V 130HM 500NM LL34 R/TIP 2P 1	ROHM	ZD1,ZD2
53	O0C6300004C	DIODE, RECTIFIER	FR107 TP RECTRON D041 1000V 1A 30A 500SEC 5A	DELTA	DL02,DL03,DL04
54	O0C6300004D	DIODE, RECTIFIER	RL2 BK SANKEN D041 400V 2.0A 40A 0.6SEC 10A	SANKEN	DL03,DL04
55	O0C6300004E	DIODE, RECTIFIER	IN4004150MM TP D02040L 400V 1A 30A 30A	DELTA	DL05
56	6210.BB001A	FILTER, BEAD	BFS3510AL 1500-H 3,5X10MM AXIAL TP	SAM IHA	FBI
57	6200.B3004A	FILTER, LINE NOISE	CV970020 1A 2H	TNC	LI1
58	EAM6020201	FILTER, LINE NOISE	CV63240 TNC BK 1,3A 24H	TNC	LI2
59	00R0040F0	INDUCTOR, WIRE WOUND, RADIAL	M510040 1M1 20Z 1,5KV 1A 10HM 60HZ 1 NON SHIELD 18,5MM x11MM 12MM TR	TNC	L3,L4
60	00C4748670	CAPACITOR, FILM BOX	0.47UF 20% 275V MPP -40T0+85C NON-IND 25X11,5X21MM 22,5MM BK	PILKOR	CMV,CM2
61	00C4748670	CAPACITOR, FILM BOX	0.47UF 20% 0.05PF 630V PP -10T0+85C IND 12,5X5X10MM 12,5MM BK	PILKOR	CM3
62	00C4040949	CAPACITOR, CERAMIC, AXIAL	100HF -20T0+80Z 50V Y5V -25T0+85C 3,5X1,9MM 1,5MM T4S2	SAM IHA	CM4
63	00C4762V6E0	CAPACITOR, AL, RADIAL	47UF 20% 450V 550MA -25T0+105C INT 2000HR 22X25MM 10MM SNAP IN BK	SAM IHA, SAM YOUNG	CE1
64	00C2226K638	CAPACITOR, AL, RADIAL	22UF 20% 50V 75MA -55T0+105C INT 1000HR 5X11MM 5MM FORMING TP	SAM IHA, SAM YOUNG	CE2
65	00C6971H620	CAPACITOR, AL, RADIAL	680UF 20% 25V 780A -25T0+80C RD 2000HR 10X12,5MM 10MM DIP BK	SAM IHA, SAM YOUNG	CE3
66	00C6971H618	CAPACITOR, AL, RADIAL	680UF 20% 35V 740MA -55T0+105C INT 2000HR 12,5X15MM 5,08MM STRAIGHT TP	SAM IHA, SAM YOUNG	CE4
67	00C2276K638	CAPACITOR, AL, RADIAL	22UF 20% 16V 25MA -55T0+105C LP 1000HR 8X11,5MM 5MM FORMING TP	SAM IHA, SAM YOUNG	CE5
68	00C106K638	CAPACITOR, AL, RADIAL	1UF 20% 50V 13MA -55T0+105C INT 5X11MM 5MM FORMING TP	SAM IHA, SAM YOUNG	CE6,CE13
69	00C4763K638	CAPACITOR, AL, RADIAL	47UF 20% 50V 13MA -55T0+105C INT 5X11MM 5MM FORMING TP	SAM IHA, SAM YOUNG	CE7
70	00C2276K638	CAPACITOR, AL, RADIAL	22UF 20% 25V 277MA -55T0+105C LP 1000HR 8X11,5MM 5MM FORMING TP	SAM IHA, SAM YOUNG	CE8,CE14
71	00C106K638	CAPACITOR, AL, RADIAL	1UF 20% 50V 54MA -55T0+105C INT 5X11MM 5MM FORMING TP	SAM IHA, SAM YOUNG	CE9,CE12
72					
73	EAE34823301	CAPACITOR, CERAMIC, RADIAL	2,2HF 20% 250V 50 -25T0+85C 9X11MM 5MM BK	SAM IHA	CC2,CC10
74	00C470K619	CAPACITOR, CERAMIC, AXIAL	470PF -20T0+80Z 50V Y5P -20T0+85C 2,3X2,0MM 10MM T4S2	SAM IHA	CC1
75	00C1040K949	CAPACITOR, CERAMIC, AXIAL	0,1UF -20T0+80Z 50V Y5V -25T0+85C 3,5X1,9MM 1,5MM T4S2	SAM IHA	CC3,CC4
76	00C2230K949	CAPACITOR, CERAMIC, AXIAL	22HF -20T0+80Z 50V Y5V -25T0+85C 3,5X1,9MM NONE T4S2	SAM IHA	CC2,CC14
77					
78	00C1040K94A	CAPACITOR, CERAMIC, CHIP	0,1UF -20T0+80Z 50V 80V -20T0+115V 1,1R/TIP	MURATA	CC5-CC7,CC23,CC24
79	00C2230K96A	CAPACITOR, CERAMIC, CHIP	22NF -20T0+80Z 50V X7R -55T0+125C 2012 TP	MURATA	CC8,CC15-CC17,CC21,CC22
80	00C1020K96A	CAPACITOR, CERAMIC, CHIP	1HF -20T0+80Z 50V X7R -55T0+125C 2012 TP	MURATA	CC9,CC11,CC25
81	EB-20066401	RESISTOR, SURGE	PRC 03 330KH 5% 1/2W 10X4MM 26MM AXIAL T4S2	SMART	R1
82	EB-31763101	RESISTOR, SURGE	PRC 550KH 5% 1/2W 10X4MM 26MM AXIAL BK	SMART	R2
83	EB-32066001	RESISTOR, SURGE	PRC 04 560KH 5% 2H 15X05,9MM 12,5MM AXIAL BK	SMART	R3
84	OR09016609	RESISTOR, CARBON FILM	5,6KH 5% 1/4W 6,5X2,3MM NONE AXIAL T4S2	SMART	R4
85	OR04100669	RESISTOR, CARBON FILM	47 0HM 1/4W 5% T4S2	SMART	R5
86	OR09016609	RESISTOR, CARBON FILM	5800HM 5% 1/4W 6,5X2,3MM NONE AXIAL T4S2	SMART	R6
87	OR05016609	RESISTOR, METAL OXIDE FILM	10HM 5% 1/4W 9,0X3,0MM - AXIAL T4S2	SMART	ROCP
88	OR05016609	RESISTOR, METAL OXIDE FILM	1,20HM 5% 1/4W 9,0X3,0MM NONE AXIAL T4S2	SMART	ROCP
89	OR09016609	RESISTOR, CARBON FILM	3,9KH 5% 1/4W 6,5X2,3MM - AXIAL T4S2	SMART	R16,R49
90	OR09016609	RESISTOR, CARBON FILM	1,8KH 5% 1/2W 9,0X3,0MM - AXIAL T4S2	SMART	R17,R50
91	OR09016609	RESISTOR, CARBON FILM	20KH 5% 1/4W 6,5X2,3MM NONE AXIAL T4S2	SMART	R18,R51
92	OR09016609	RESISTOR, CARBON FILM	240KH 5% 1/2W 9,0X3,0MM 26,0MM AXIAL T4S2	SMART	R19,R52
93	OR09016609	RESISTOR, CARBON FILM	4,7KH 5% 1/4W 6,5X2,3MM NONE AXIAL T4S2	SMART	R20
94	OR09016609	RESISTOR, CARBON FILM	26,1KH 5% 1/4W 12,5X2,3MM T4S2	SMART	R21,R22
95	OR09016609	RESISTOR, CARBON FILM	10KH 5% 1/4W 6,5X2,3MM NONE AXIAL T4S2	SMART	R23,R24
96	OR09016609	RESISTOR, CARBON FILM	16,2KH 5% 1/4W 6,5X2,3MM NONE AXIAL T4S2	SMART	R25,R26
97	OR09016609	RESISTOR, METAL FILM	16,2KH 5% 1/4W 6,5X2,3MM NONE AXIAL T4S2	SMART	R27
98	OR09016609	RESISTOR, METAL FILM	16,2KH 5% 1/4W 6,5X2,3MM NONE AXIAL T4S2	SMART	R28
99	OR09016609	RESISTOR, CHIP	10KH 5% 1/8W 2012 R/TIP	ROHM	R7,R9
100	OR09016609	RESISTOR, CHIP	9,0KH 5% 1/8W 2012 R/TIP	ROHM	R10
101	OR09016609	RESISTOR, CHIP	2,4KH 5% 1/8W 2012 R/TIP	ROHM	R12
102	OR09016609	RESISTOR, CHIP	20KH 5% 1/8W 2012 R/TIP	ROHM	R13,R35,R37,R39-R44
103	OR09016609	RESISTOR, CHIP	10KH 5% 1/8W 2012 R/TIP	ROHM	R16,R45,R47,R50,R53-R72,R77-R85
104	OR09016609	RESISTOR, CHIP	1,8KH 5% 1/8W 2012 R/TIP	ROHM	R12,R34,R56-R59,R73-R76,R87-R91
105	OR09016609	RESISTOR, CHIP	240KH 5% 1/8W 2012 R/TIP	ROHM	R18,R52
106	OR09016609	RESISTOR, CHIP	10KH 5% 1/8W 2012 R/TIP	ROHM	R19
107	OR09016609	RESISTOR, CHIP	10KH 5% 1/8W 2012 R/TIP	ROHM	R17,R51
108	OR09016609	RESISTOR, CHIP	10KH 5% 1/8W 2012 R/TIP	ROHM	R36,R86
109	OR09016609	RESISTOR, CHIP	10KH 5% 1/8W 2012 R/TIP	ROHM	R60,R62
110	OR09016609	RESISTOR, CHIP	10KH 5% 1/8W 2012 R/TIP	ROHM	
111	OR09016609	RESISTOR, CHIP	10KH 5% 1/8W 2012 R/TIP	ROHM	
112					
113	ISF030241B	SCREW, TAPITE	BH * 5 3MM 5MM MSIR FZY	HAENG SUNG	-
114	AS00.B3007A	HEAT SINK	23,1X17,25 DRIVE IC STR R-564,65,73 2PIN 1-SCREW 3MM -	LC21	-
115	6901.B3003F	BULZER, PIEZO	BLZER 30V 24H 22205 5MM PIN	DAE YOUNG	BULZER
116	6954B50001A	JUMP WIRE	0,5MM 52MM TP TAPING SN	JCR1-JCR4, FB11-FB11	-
117	6600R00000B	SWITCH, TACT	1P1212B JEIL 12VDC 50MA	NAMAE	TEST S/W
118	SS0000008AA	SOLDER (ROSN WIRE) RSO	SR-34 PB-FREE, LFW-48	-	-
119	SS020.L056A	SOLDER, SOLDERING	LFW-36, 9N 3,04G -0,50X 3,0MM	HUSUNG	-
120	7245280004A	FLUX	SV-PB* 06 KSK 12,5 WTX 0,615* 0,003	ROHM	-

7-5-3 PWB Assembly, Display and parts list

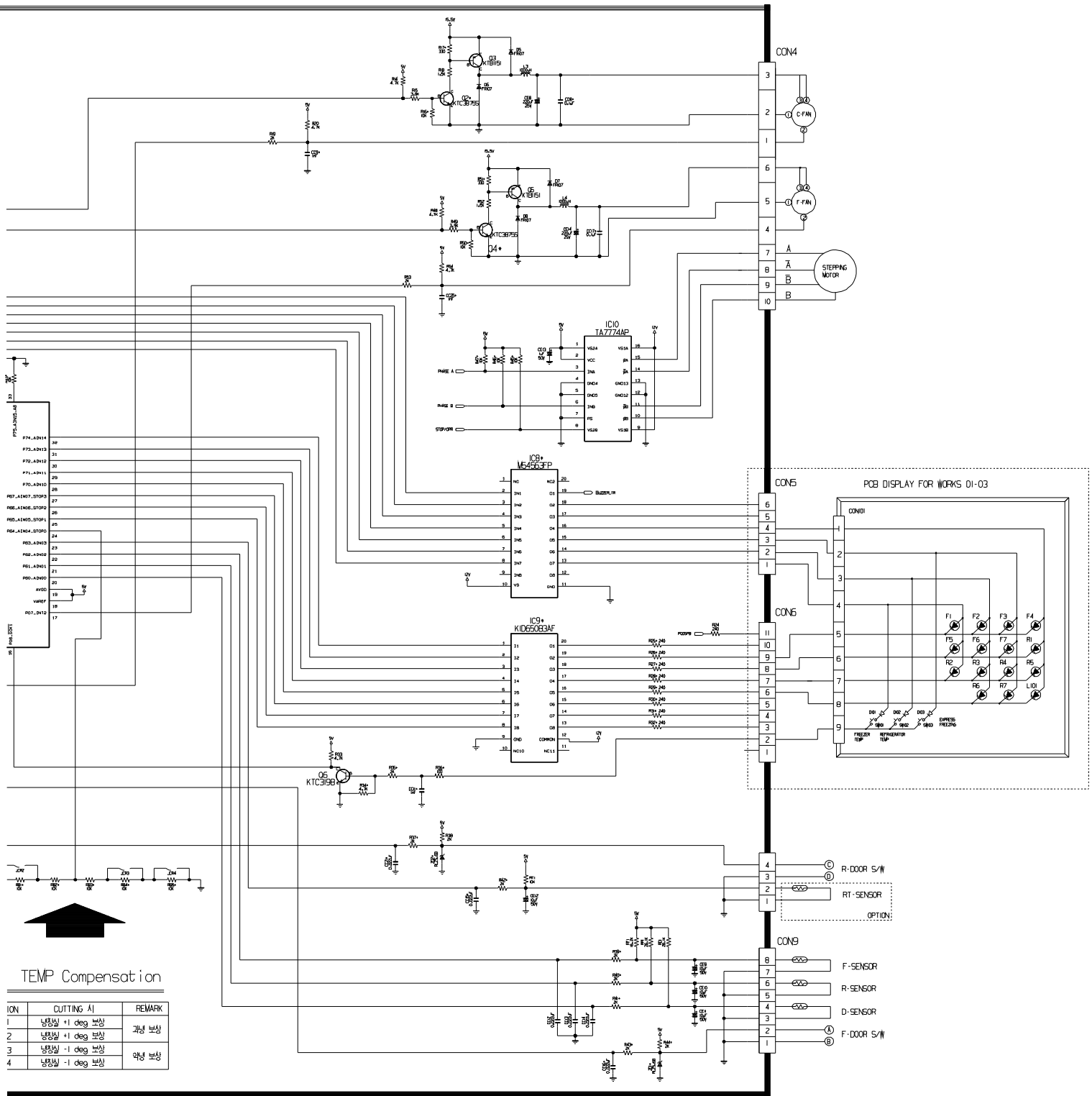


Qty	No	P/NO	DESCRIPTION	SPEC	MAKER	REMARK
1	1	6870JB8091A	PWB(PCB)	KS-PJT GOOD/BETTER DISPLAY	DOO SAN	t=1.6
	2					
1	3	6630AQ9159H	WAFER	SMAW250-09	YEON HO	CON101
	4					
2	5	6600RRT002K 6600JB8005A	SWITCH,TACT	JTP1230A JEIL 12V DC 50MA KPT-1105A	JEIL KYUNG IN	SW101,102
1	6	-	TACT S/W	KPT-1109G	KYUNG 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(ROSN WIRE) RSO	D1.20	HEE SUNG	-
0.01	13	49111004	SOLDER,SOLDERING	H63A	-	-
0.0005	14	59333105	FLUX	SG;0.825-0.830 KOREA F.H-206	KOKI	-

7-6-1 PWB Main Assembly



OPTION	CUTTING
JCR1	냉각시간 +1 d 응응률 +1 d
JCR2	냉각시간 +1 d 응응률 +1 d
JCR3	냉각시간 -1 d 응응률 -1 d
JCR4	냉각시간 -1 d 응응률 -1 d

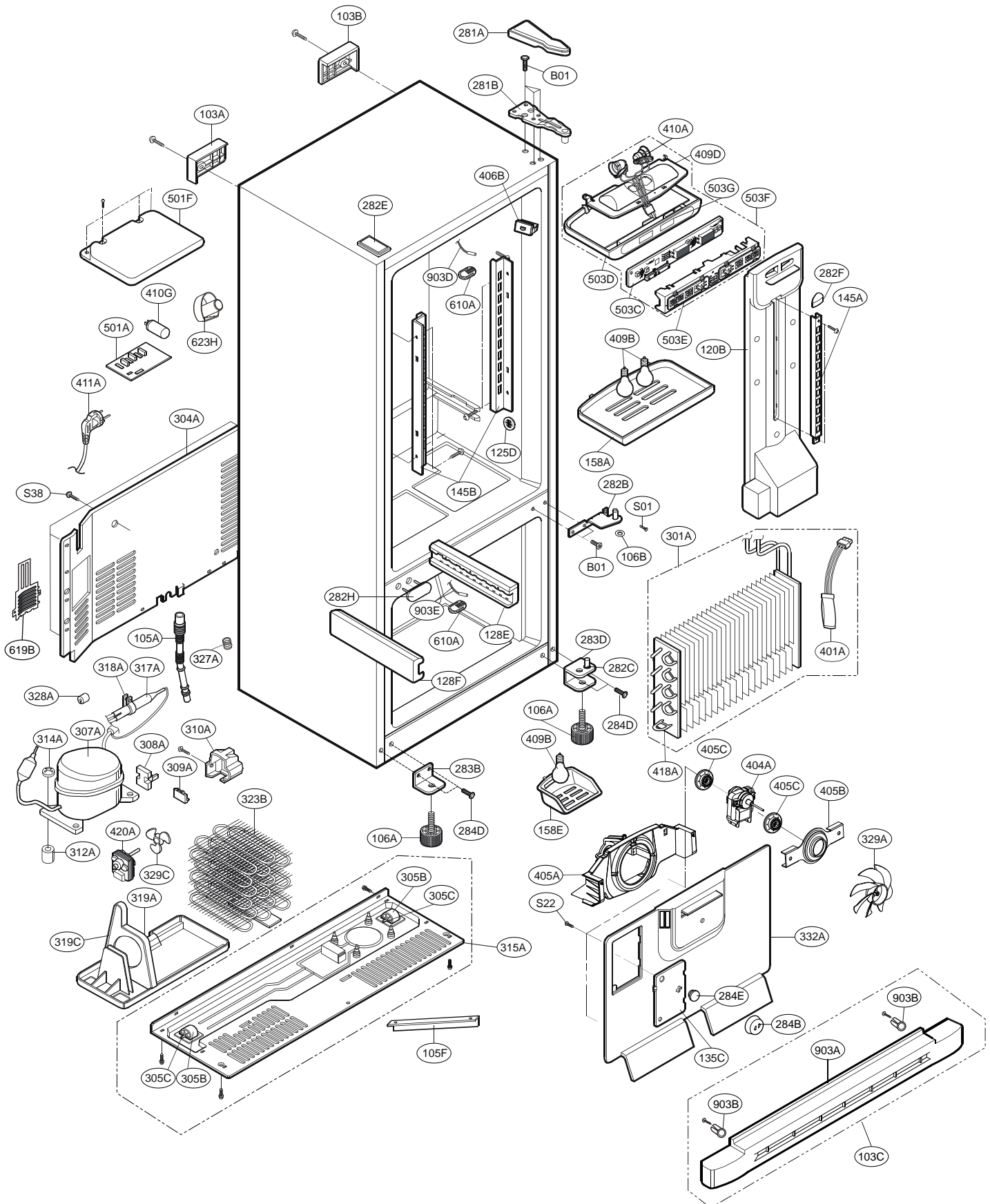


TEMP Compensation

ION	CUTTING 시	REMARK
1	냉장실 +1 deg 보상	과냉 보상
2	냉장실 +1 deg 보상	과냉 보상
3	냉장실 -1 deg 보상	과냉 보상
4	냉장실 -1 deg 보상	과냉 보상

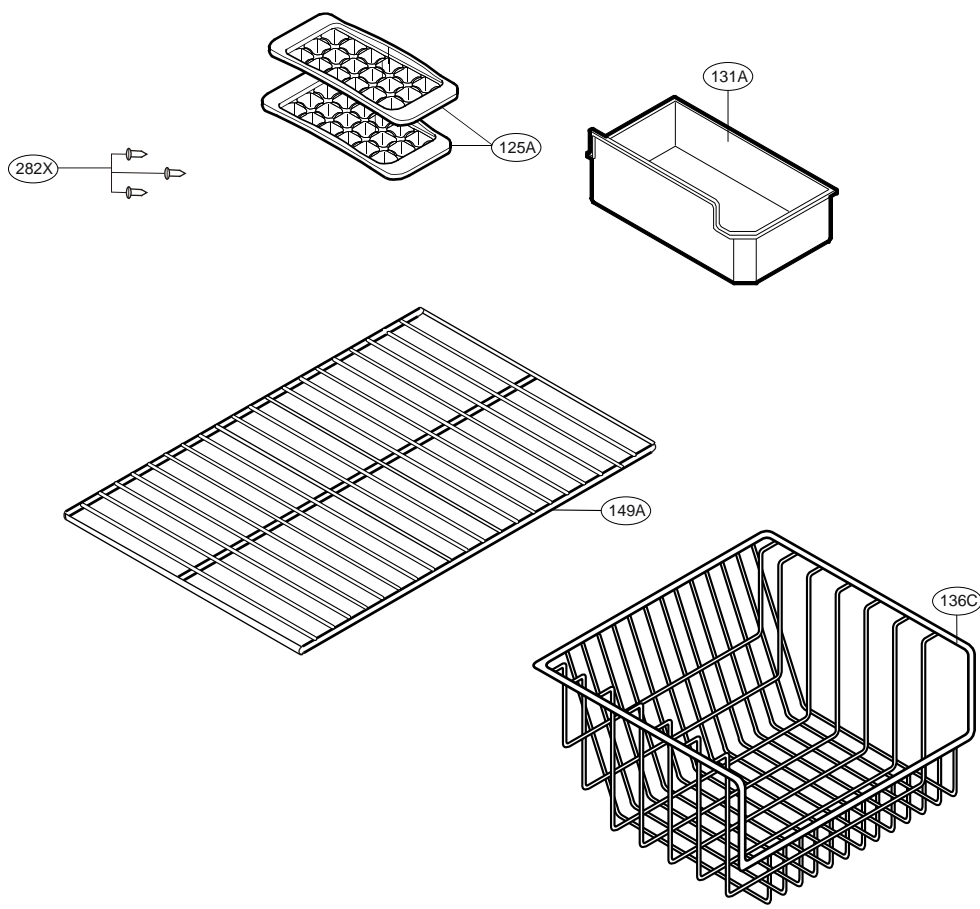
CASE PARTS

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



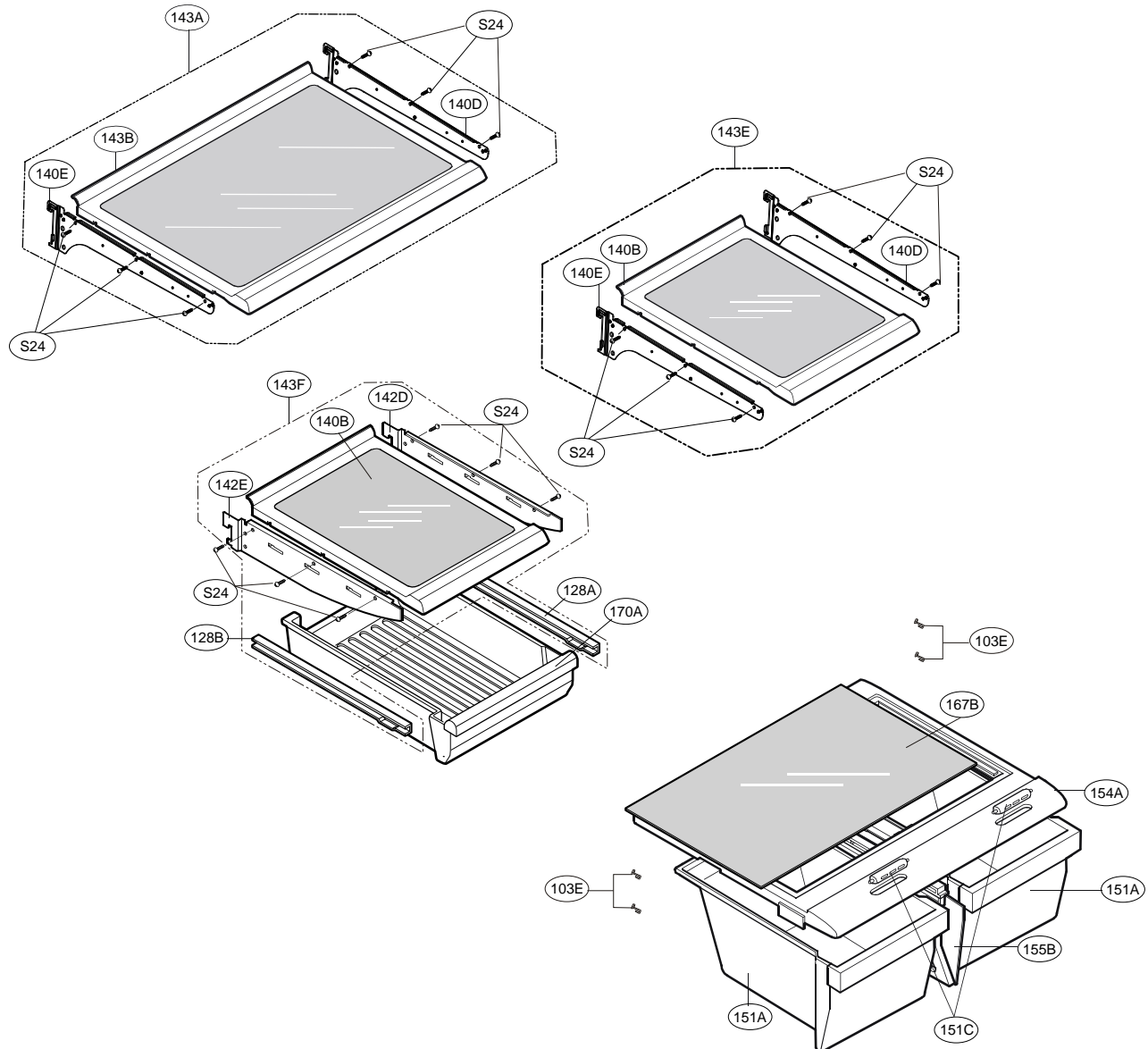
FREEZER PARTS

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



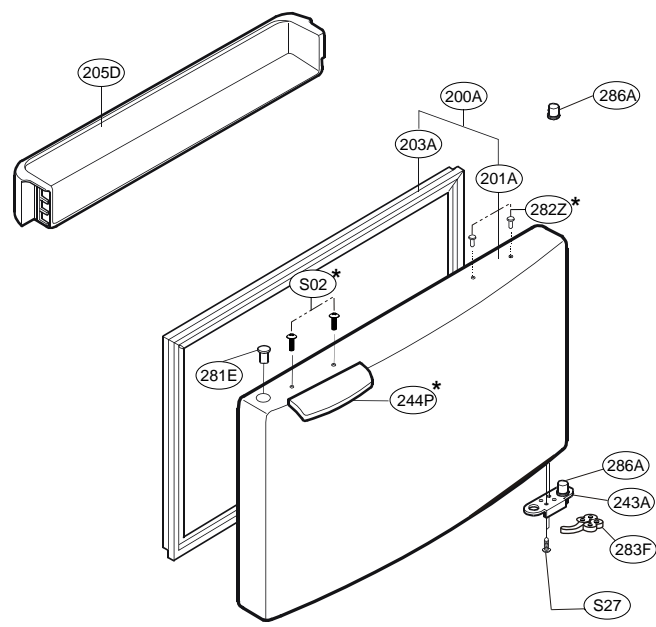
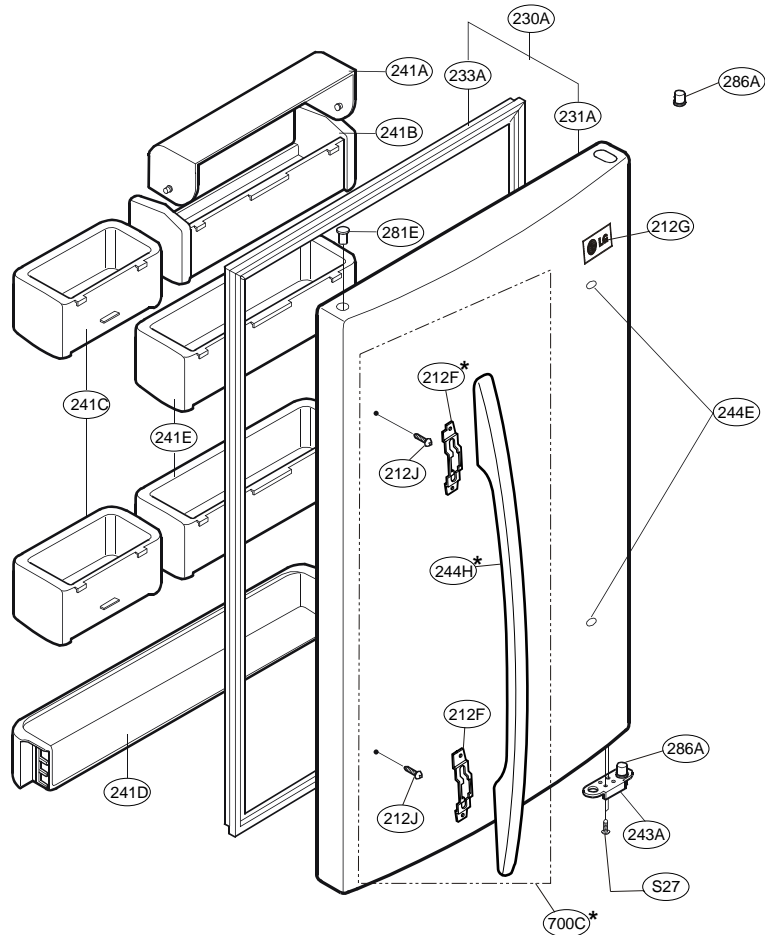
REFRIGERATOR PARTS

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.



Loc No.	Part No.	Description	Loc No.	Part No.	Description
103A	3650JJ2003E	Handle,Rear	282Z	5006JJ3010A	Cap,Handle
103B	3650JJ2003A	Handle,Rear	283B	4775JJ2007B	Hinge Assembly,Lower
103C	3551JJ1015A	Cover Assembly,Lower	283D	4774JJ2002A	Hinge,Lower
103E	5218JJ3001A	Rail,Slide	283F	MJB36873201	Stopper,Door
105A	5251JA3003B	Tube Assembly,Drain	284B	3550JA3120A	Cover,Connector
105F	5070JJ3002A	Skirt,Lower	284D	1STZJA3004K	Screw,Customized
106A	4779JA2003A	Leg Assembly,Adjust	284E	3550JJ3001A	Cover,Tube
106B	4J00382C	Washer,Common	286A	4984JJ3003A	BUSH
120B	5209JJ1002A	Duct Assembly,Multi	286A	4984JJ3003A	BUSH
125A	3390JJ1023A	Tray,Ice	301A	5421JJ1001A	Evaporator Assembly
125D	4930JJ3007A	Holder,Bracket	304A	3551JJ2008A	Cover Assembly,Machinery(Rear)
128A	4975JJ2002A	Guide Assembly,Rail	305B	4580JJ3001A	Roller
128B	4975JJ2002B	Guide Assembly,Rail	305C	4J04238A	Pin,Common
128E	4930JJ1012A	Holder,Rail	307A	2521CRA5715	Compressor,Set Assembly
128F	4930JJ1012B	Holder,Rail	308A	EBG32606502	Thermistor Assembly,PTC
131A	5074JJ1017A	Bucket,Ice	309A	6750C-0004S	Overload Protect
135C	3550JJ2030A	Cover,Grille Fan	310A	3550JA2059A	Cover,PTC
136C	3390JJ1058A	Tray,Drawer	312A	5040JA3031A	Damper,Compressor
140B	5027JJ2007A	Shelf Assembly,Refrigerator	314A	4620JA3009A	Stopper,Compressor
140D	MHL38615403	Shelf,Net	315A	3103JJ1001K	Base Assembly,Compressor
140E	MHL38615404	Shelf,Net	317A	5851JJ2002F	Drier Assembly
142D	5026JJ2001L	Shelf,Net	318A	4930JA3034A	Holder,Drier
142E	5026JJ2001M	Shelf,Net	319A	3390JJ0003A	Tray,Drip
143A	5027JJ1028E	Shelf Assembly,Refrigerator	319C	4974JJ1009A	Guide,Fan
143B	5027JJ1015A	Shelf Assembly,Refrigerator	323B	5403JJ1008A	Condenser Assembly,Wire
143E	5027JJ1008J	Shelf Assembly,Refrigerator	327A	5006JA3034A	Cap,Drain Tube
143F	5027JJ1008C	Shelf Assembly,Refrigerator	328A	4J03020A	Damper,Pipe
145A	4930JJ2003A	Holder,Shelf	329A	5901JJ1005A	Fan Assembly
145B	4930JJ2004A	Holder,Shelf	329C	5901JJ1004B	Fan Assembly
149A	5026JJ1058A	SHELF,FREEZER	332A	3531JJ1004B	Grille Assembly,Fan
151A	3390JJ1032A	Tray,Vegetable	401A	6615JB2005C	Controller Assembly
151C	4940JJ2003B	Knob,Shutter	404A	4680JK1002B	Motor, AC Freezing
154A	3550JL1006D	Cover,TV	405A	4811JJ2002B	Bracket Assembly,Motor
155B	4981JJ2001B	Supporter Assembly,Cover TV	405B	4810JA3007A	Bracket,Motor
158A	3550JJ1040A	Cover,Lamp	405C	J756-00008B	Damper,Motor Support
158E	MCK30060901	Cover,Lamp	406B	6600JB1010A	Switch,Push Button
167B	4890JL1002G	Shelf,Glass	409B	6912JB2004M	Lamp,Incandescent
170A	3391JJ2004G	Tray Assembly,Meat	409D	3034JJ1002B	Reflector,Lamp
200A	3581JJ8023A	Door Assembly,Freezer	410A	6621JK2002D	Drawing,Assembly
201A	5433JJ0017E	Door Foam Assembly,Freezer	410G	0CZZJB2012J	Capacitor,Electric Appliance Film,Box
203A	4987JJ1004C	Gasket Assembly,Door	411A	6411JK1006A	Power Cord Assembly
205D	5004JJ1041A	Basket,Door	418A	5300JB1100D	Heater,Sheath
212F	4810JJ3015A	Bracket,Handle	420A	4680JK1001B	Motor,AC
212G	3846JD1007F	Name Plate	501A	6871JB1215J	PCB Assembly,Main
212J	4620JJ3007E	Stopper,Handle	501F	3551JJ1020A	Cover Assembly,PCB
230A	3581JJ8046F	Door Assembly,Refrigerator	501F	3551JJ1020A	Cover Assembly,PCB
231A	5433JJ0123F	Door Foam Assembly,Refrigerator	503C	6871JB2047A	PCB Assembly,Display
233A	4987JJ1004D	Gasket Assembly,Door	503D	3110JJ1005A	Case,Display
241A	3550JL2003G	Cover,Tray	503E	3550JJ2031A	Cover,Display
241B	5004JJ1035A	Basket,Door	503F	ABQ33905312	Case Assembly,Display
241C	5004JJ1030A	Basket,Door	503G	3806JL1049A	Decor,Control
241D	5004JJ0002A	Basket,Door	610A	3550JJ2020A	Cover,Sensor
241E	5004JJ1028A	Basket,Door	619B	3550JJ2024A	Cover,Valve
243A	4620JJ3006A	Stopper,Door	623H	3550JJ2036A	Cover,Tube
244E	5006JJ3016A	Cap,Handle	700C	3651JJ2015D	Handle Assembly,Refrigerator
244H	3650JJ0020A	Handle,Refrigerator	903A	3550JJ0005A	Cover,Lower
244P	3650JJ2012A	Handle,Freezer	903B	4930JJ2021A	Holder,Cover(Lower)
281A	3550JJ2013A	Cover,Hinge	903D	6500JK1003A	Sensor
281B	4775JJ2003B	Hinge Assembly,Upper	903E	6500JK1004A	Sensor
281E	5006JJ3014A	Cap,Hinge	B01	1STZJA3004F	Screw,Customized
282B	4775JJ8002F	Hinge Assembly,Center	S01	1SZZJJ3010A	Screw,Customized
282C	1PZZJJ3002F	Pin,Common	S02	1SZZJJ3010B	Screw,Customized
282E	5006JJ2001A	Cap,Hinge	S22	J471-00001J	Screw,Customized
282F	3806JL2006E	Decor,Duct	S24	1SZZJA3011B	Screw,Customized
282H	5006JJ3004A	Cap,Hinge	S27	4J01424C	Screw,Customized
282X	5006JJ3010A	Cap,Handle	S38	4J00415D	Screw,Customized



P/No. 3828JL8089C

Junio, 2008