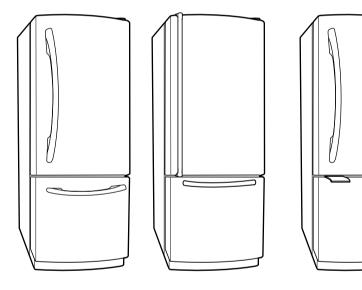


REFRIGERATOR SERVICE MANUAL

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



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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.

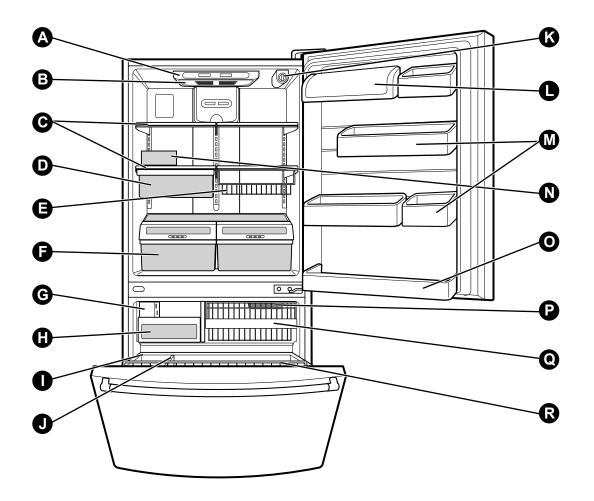
- 8. When tilting the refrigerator, remove any materials on the refrigerator, especially the glass shelves and stored foods.
- 9. When servicing the evaporator, wear cotton gloves. This is to prevent injuries from the sharp evaporator fins.
- 10. Disassembly, repair, and servicing the sealed refrigeration system should be performed only by qualified and certified personnel. Refrigerant should not be vented into the atmosphere; proper recovery equipment should be used.

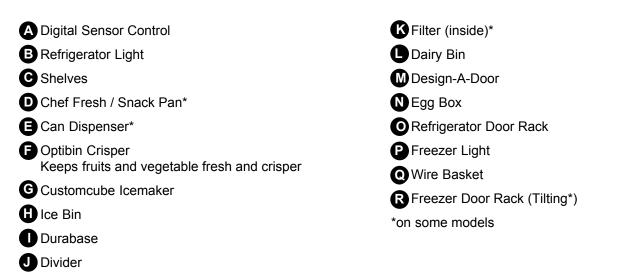
1. SPECIFICATIONS

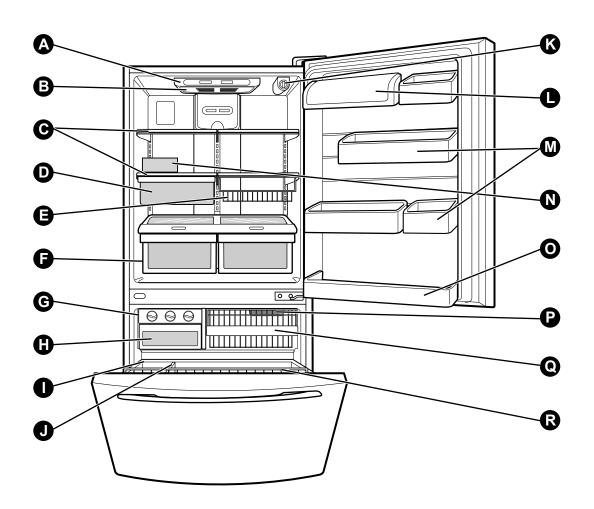
20 cu. ft. / 22 cu. ft.

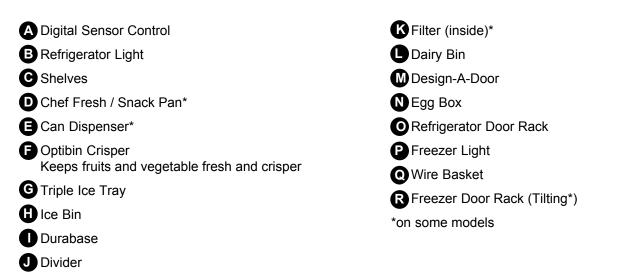
ITEMS	SPECIFICATIONS	ITEMS		SPECIFICATIONS
DOOR DESIGN	Side Rounded	VEGET	ABLE TRAY	Opaque Drawer Type
	29 7/8 x 31 3/4 x 67 7/8 (WxDxH) 20cu.ft	COMPF	RESSOR	PTC Starting Type
DIMENSIONS (inches)	32 7/8 x 31 3/4 x 69 1/2 (WxDxH) 22cu.ft Dispenser	EVAPO	RATOR	Fin Tube Type
	32 7/8 x 31 3/4 x 68 1/2 (WxDxH) 22cu.ft	CONDE	NSER	Wire Condenser
	238.4 (20cu.ft)	REFRIC	BERANT	R-134a (115 g)
NET WEIGHT (pounds)	246.9 (22cu.ft)	LUBRICATING OIL		Freol @ 10G (310 cc)
COOLING SYSTEM	Fan Cooling	DEFROSTING DEVICE		SHEATH HEATER
TEMPERATURE CONTROL	Micom Control		REFRIGERATOR	60 W (2EA)
	Full Automatic	LAMP	FREEZER	60 W (2EA)
DEFROSTING SYSTEM	Heater Defrost			
DOOR FINISH	Embossed Metal, VCM, Stainless			
HANDLE TYPE	Bar, Al			
INNER CASE	ABS Resin			
INSULATION	Polyurethane Foam			

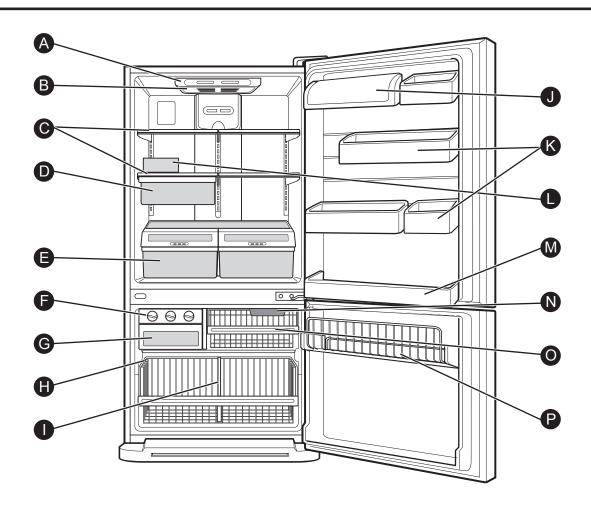
2. PARTS IDENTIFICATION

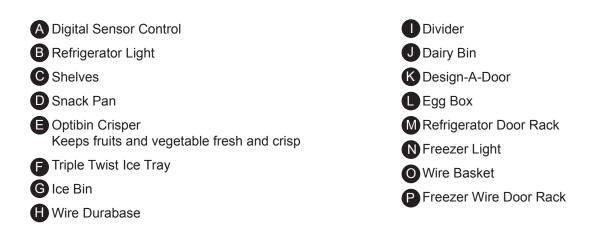


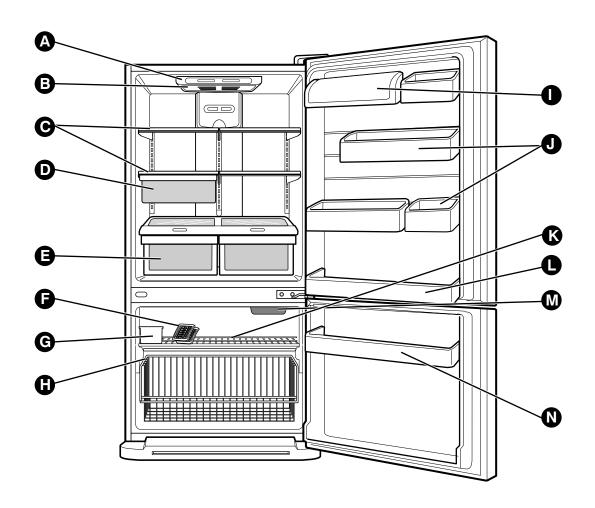


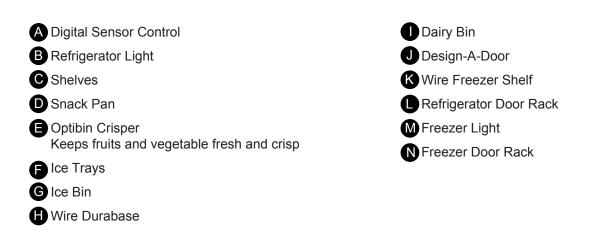










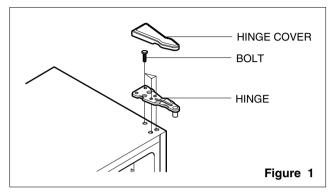


3. DISASSEMBLY

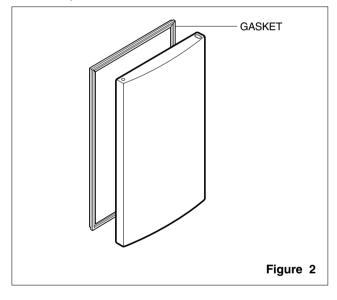
3-1 DOOR

Refrigerator Door

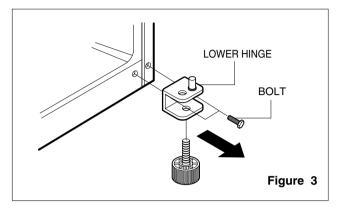
- 1. Remove the hinge cover by pulling it upwards.
- 2. Loosen the hexagonal bolts attaching the upper hinge to the body and lift the freezer door.



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



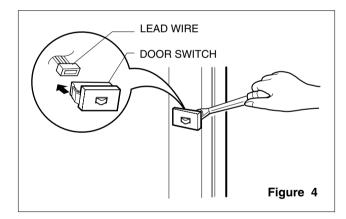
- Freezer Door
- 1. Loosen the hexagonal bolts attaching the lower hinge to the body to remove the refrigerator door only.



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

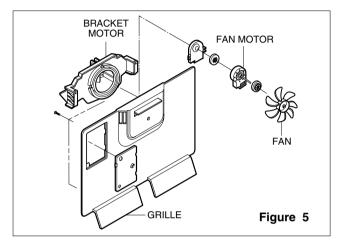
3-2 DOOR SWITCH

- 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)
- 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.

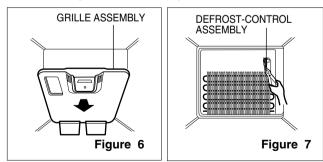


3-4 DEFROST CONTROL ASSEMBLY

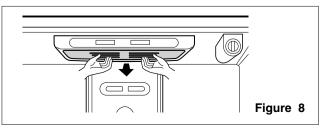
Defrost Control assembly consists of Defrost Sensor and FUSE–M.

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)

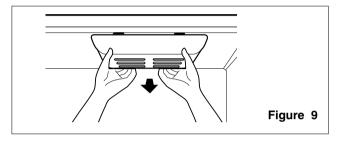


3-5 LAMP



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.
- Assemble in reverse order of disassembly. Replacement bulb must be the same specification as the original (Max. 60 W-2EA).

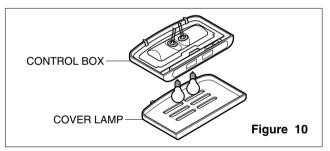


3-5-2 Freezer Compartment Lamp

- 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

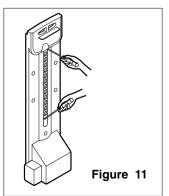
1. First, remove all shelves in the refrigerator, than remove the Refrigerator control Box by loosening 2 screws.



- 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.



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

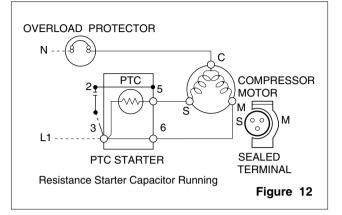
- PTC (Positive Temperature Coefficient) is a no-contact semiconductor starting device which uses ceramic material consisting of BaTiO3.
- (2) The higher the temperature is, the higher the resistance value. These features are used as a starting device for the Motor.

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. Durign 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

- 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.

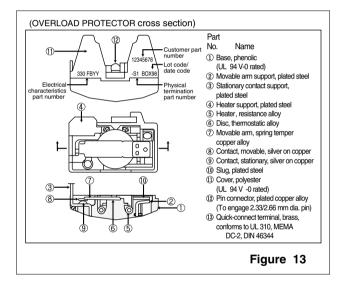
4-3 OLP (OVERLOAD PROTECTOR)

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.



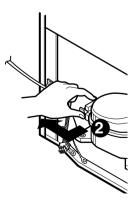
4-4 TO REMOVE THE COVER PTC



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



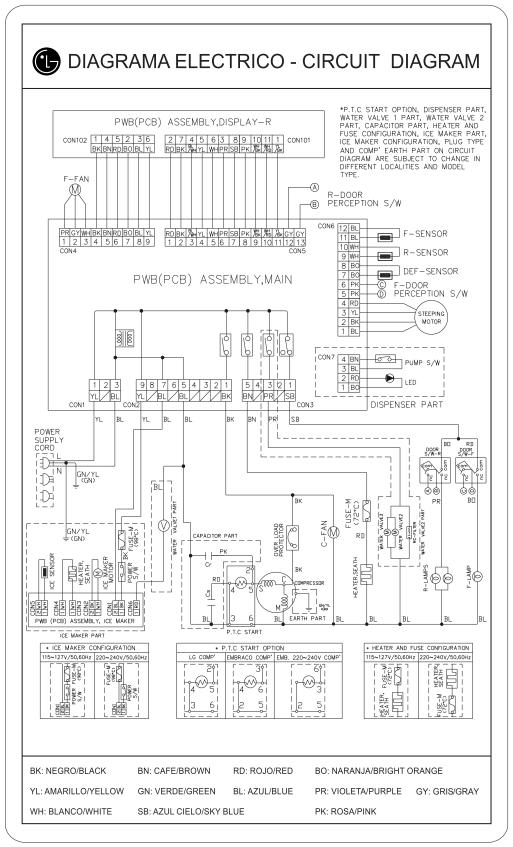
- (3) Remove two Housings on upper part of Cover PTC.
- (4) Take out the cover PTC from upper to lower position like ①.



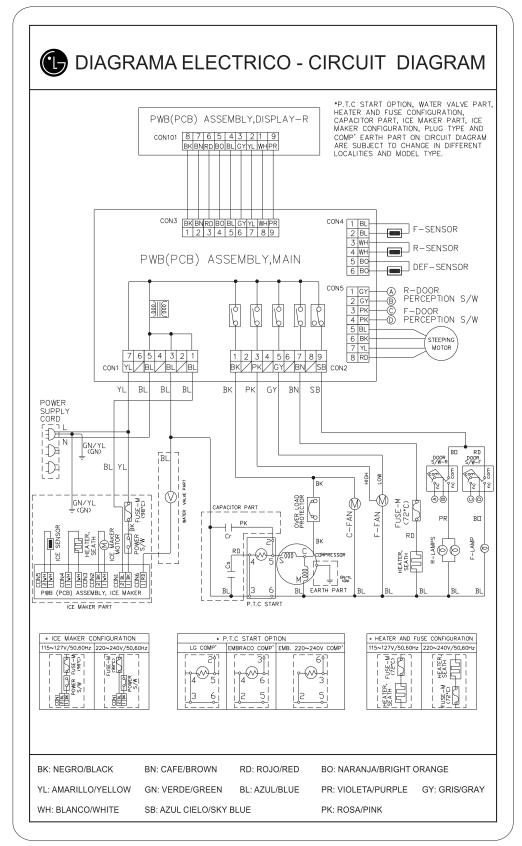
- (5) Turn 45° in the direction of (2) and take it out.
- (6) Assembly in reverse order of disassembly.

5. CIRCUIT DIAGRAM

Best / Best dispenser

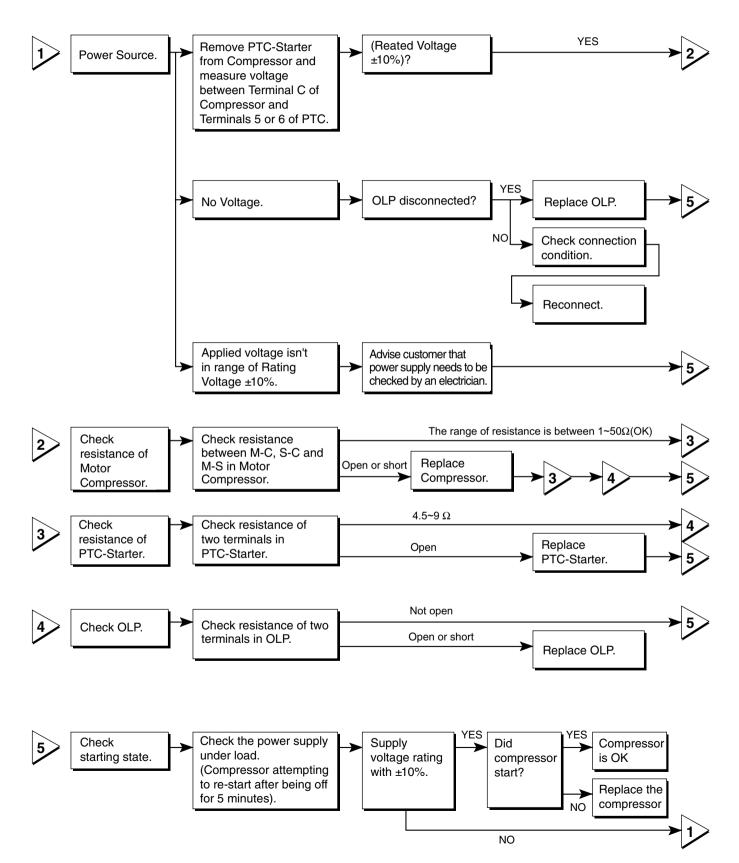


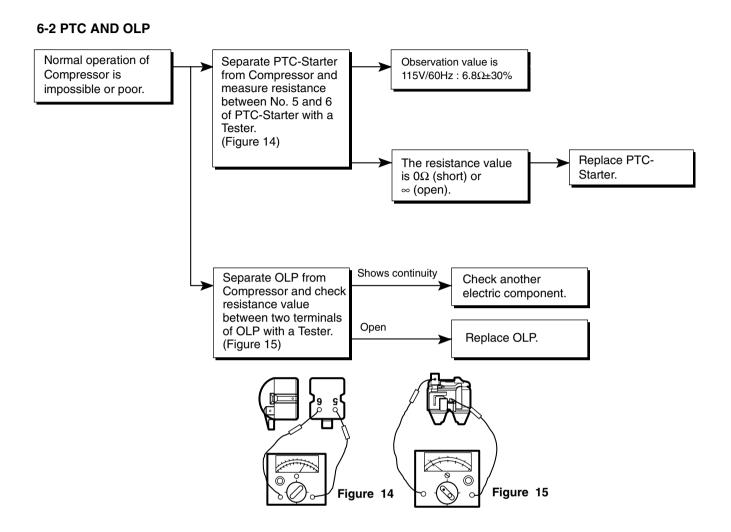
Good / Better



6. TROUBLESHOOTING

6-1 COMPRESSOR AND ELECTRIC COMPONENTS

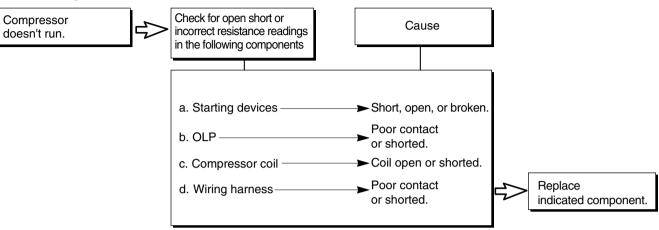




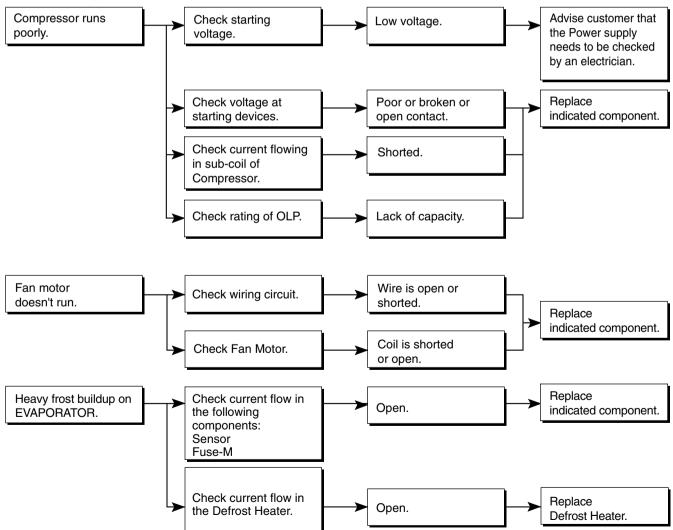
- 15 -

6-3 OTHER ELECTRICAL COMPONENTS

▼ Not cooling at all



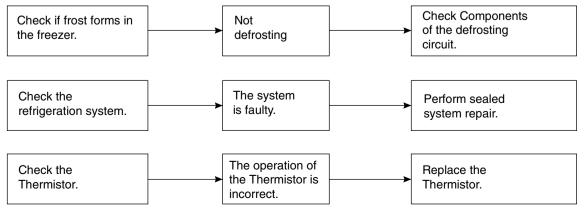
▼ Poor cooling performance



6-4 SERVICE DIAGNOSIS CHART

COMPLAINT	POINTS TO BE CHECKED	REMEDY
No Cooling.	 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. 	 Plug into the outlet. Set the switch to ON. Replace the fuse. If the voltage is low, correct the wiring.
Cools poorly.	 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. 	 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.	 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)? 	 Place foods in the high-temperature section. (front part) Set the control to Recommended position. Set the control to Warm position.
Condensartion or ice forms inside the unit.	 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? 	 Seal liquid foods with wrap. Put in foods after they have cooled down. Don't open the door too often and close it firmly.
Condensartion forms in the Exterior Case.	 Check if the ambient temperature and humidity of the surrounding air are high. Is there a gap in the door gasket? 	 Wipe moisture with a dry cloth. It will disappear in low temperature and humidity. Fill up the gap.
There is abnormal noise.	 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. 	 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.	 Check if the door gasket is dirty with an item like juice. Is the refrigerator level? Is there too much food in the refrigerator? 	 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.	 Check if the inside of the unit is dirty. Are foods with a strong odor unwrapped? The unit smells of plastic. 	 Clean the inside of the unit. Wrap foods that have a strong odor. New products smell of plastic, but this will go away after 1-2 weeks.

• Other possible problems:



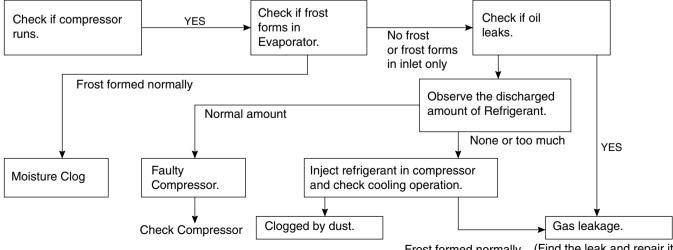
6-5 REFRIGERATION CYCLE

Troubleshooting Chart

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

▼ 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.



(Find the leak and repair it) Frost formed normally

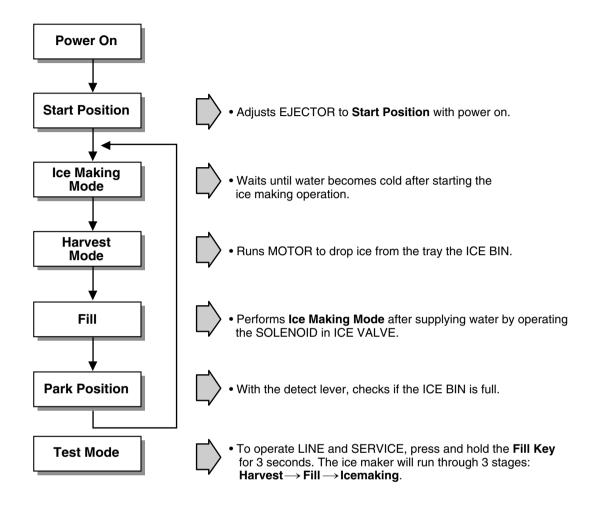
▼ General Control of Refrigerating Cycle

NO.	D. 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	N₂ sea parts	ıled	Confirm N₂ 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 N₂ gas for more than 1 min. and than use the parts. 	
4	Refrige- ration Cycle	Evacuation time	Min.	More than 40 minutes	To remove moisture.		
	Cycle	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 200 <i>l</i> .		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. 	

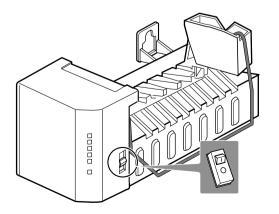
7. OPERATION PRINCIPLE AND REPAIR METHOD OF ICEMAKER

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 CONTROL METHOD ACCORDING TO 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 with the heater on (to control Heater on its OFF condition), it is being initialized. If not, it is not functioning. Repeat Step B with Heater and Motor off.

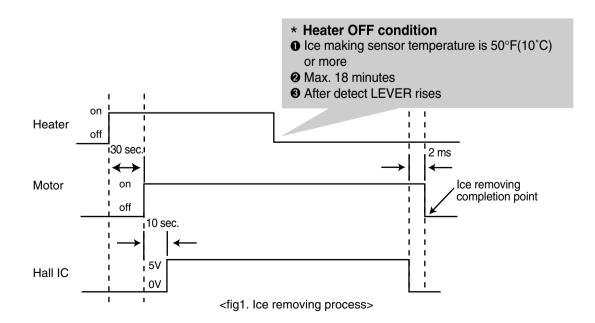
7-2-2 Ice Making Mode

- 1. Ice Making control refers to the freezing of supplied water in the ice trays. Complete ice making operations by measuring the temperature of the Tray with Ice-Making SENSOR.
- 2. Ice Making starts after completing fulfilled ice control and initial control.
- 3. The Ice Making function is completed when the sensor reaches 19°F(-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.

7-2-3 Harvest Mode

- 1. Ice-removing control refers to the operation of dropping cubes into the ice bin from the tray when ice-making has completed.
- 2. Ice removing control mode:
 - (1) Operates Heater for 30 seconds; then operate MOTOR.
 - (2) After performing Step 1 (to control the Heater on its off condition), Ice-Removal control will be back in place within 18 minutes. (Hall SENSOR sign = OV). Ice removal is then complete. Then change the mode to the water supply control. If this control phase 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.)



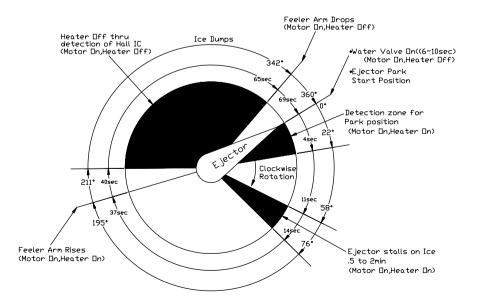
7-2-4 Fill / Park Position

- 1. When Ice-Removing control (Normal Ice-Removing control, Ice-Removing control for test) has completed, and the EJECTOR is in place, this control operates the ICE SOLENOID by time check in the compressor enclosure of the refrigerator. Then it supplies water to the ice making tray.
- 2. Water supply level is adjustable in levels 1-5 by pressing the water supply control Switch and fill time will be determined by the selected level.

STAGE	TIME TO SUPPLY	INDICATIONS	REMARKS
1	6 sec.		
2	7 sec.		
3	8 sec.		The water amount will vary depending on the water control Switch setting, as well as the water pressure of the connected water line.
4	9 sec.		
5	10 sec.		

Water supply amount TABLE

NOTE : Below is an example used by another vendor as an explanation of what is taking place.



7-2-5 Function TEST

- 1. This is a compulsory operation for TEST, SVC, cleaning, etc. It is operated by pressing the water supply control KEY for 3 seconds.
- 2. It operates in the Ice Making mode, but not in the Ice-Removing mode or water supply process. (If there is an ERROR, it can only be checked in the TEST mode.)
- 3. If the water supply control KEY is pressed for 3 seconds in the Ice-Making mode (no matter what condition the Ice-Making tray is in) the Ice-Removing operation starts immediately. Water is not yet frozen, so water is poured instead of ice. 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 \rightarrow Harvest \rightarrow Fill \rightarrow Park Position.
- 5. When Stage 5 is completed in the TEST mode, minimize MICOM in 5 seconds, the time needed to supply water resets to the previous status in the TEST mode.

STAGE	ITEMS	INDICATOR	REMARKS
1	HEATER		Five seconds after heater starts, heater will go off if temperature recorded by sensor is 10°C or lever is in up position.
2	MOTOR		Five seconds after heater starts, you can confirm that motor is moving.
3	HALL IC (detection of position) I		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 (detection of full-filled Ice) II		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	Mark previous status on TEST mode	Five seconds after fifth stage is completed, the icemaker reset at initial status.

Diagnosis TABLE

7-3 DEFECT DIAGNOSIS FUNCTION

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

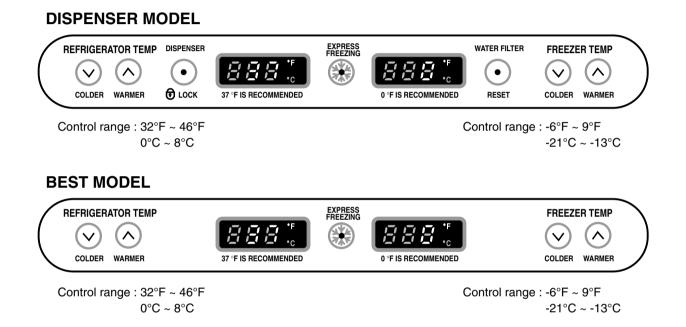
NO	DIVISION	INDICATOR	CONTENTS	REMARKS
1	Normal	Mark time to supply	None	Display switch operates properly
2	Ice-Making Sensor malfunction		Cut or short-circuited wire	Make sure that the wire on each sensor is connected.
3	Ice Maker Kit malfunction		When ejector blades don't reach park position over 18 minutes since Harvest Mode starts.	Defects of HALL IC/MOTOR/ HEATER/RELAY

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

8-1 FUNCTION

8-1-1 Function

- 1. When the appliance is plugged in, it is set to 37 °F for the Refrigerator and 0 °F for the Freezer. You can adjust the Refrigerator and the Freezer control temperature by pressing the COLDER button or the WARMER button.
- 2. When the power is initially applied or restored after a power failure, it is set to the setting temperature as you set before power off. (applied to DISPENSER MODEL)



8-1-2 How to Change the Temperature Mode to °F / °C

- 1. The setting temperature mode can be changed to °F / °C by pressing and holding COLDER key of Freezer and COLDER key of Refrigerator over 1 seconds. at the same time.
- 2. The initial setting is °F. Whenever the mode is changed, the LED lights are changed.

8-1-3 Dispenser Lock

- 1. Press and hold the DISPENSER LOCK button for 3 seconds to lock the dispenser.
- 2. When locked, the LED is off and the dispenser function is turned off.
- 3. Press and hold the DISPENSER LOCK button again for 3 seconds to unlock the dispenser. The LED will be on and the dispenser will function normally.

8-1-4 CONTROL OF FREEZER FAN MOTOR

- 1. Freezer fan motor has high and standard speeds.
- 2. High speed is used at power-up, for express freezing, and when refrigerator is overloaded. Standard speeds is used for general purposes.
- 3. To improve cooling speed, the RPM of the freezer fan motor change from normal speed to high.
- 4. High speed (2700RPM) : Initial power on or load corresponding operation, express freezing. Normal speed (2400RPM) : General working conditions.
- 5. Fan motor stops when refrigerator or freezer door opens.

8-1-5 EXPRESS FREEZING

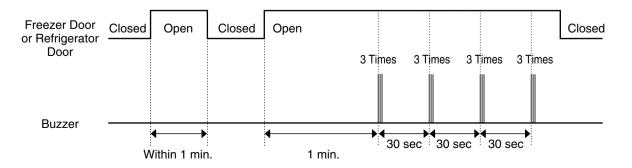
- 1. The purpose of this function is to intensify the cooling speed of freezer and to increase the amount of ice.
- 2. Whenever selection switch is pressed, selection/release, the LED will turn ON or OFF.
- 3. If there is a power cutage and the refrigerator is power on again, EXPRESS FREEZING function will be canceled.
- 4. To activate these function, 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 Freezer Fan 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 LED 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 runs at high speed during EXPRESS FREEZING .
- 6. For the rest of the 21 hours, the freezer will be controlled at the lowest temperature.

8-1-6 REFRIGERATOR LAMP AUTO OFF

1. To avoid heat damage caused by the lamp, it is turned off automatically when the refrigerator door is open for more than 7 minutes.

8-1-7 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.



8-1-8 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)

8-1-9 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, 8-1-13.)
- 4. Defrosting won't function if its sensor is defective (wires are cut or short circuited)

8-1-10 Filter Replacement Indication

- 1. In 6 months after the UNIT (refrigerator) is power on, or after 28,000 seconds of dispenser use, the water filter Indicator LED (red color) will be ON.
- 2. When the water filter indicator LED is illuminated, you should change the water filter. After this, you must press the water filter button for three seconds and you will hear a ding-dong sound.

The LED will be OFF. This operation will indicate that the UNIT is reset to its initial conditions, so this process is restarted.

8-1-11 Power Failure Compensation Function

- 1. When the UNIT is power off, the Fresh Food and Freezer Temperature notches, the filter elapsed time for replacement, the temperature mode (°C or °F) and the dispenser lock mode are saved in the EEPROM.
- 2. When the UNIT is power on, the MICOM will read the specified EEPROM addresses to restore the values indicated in the previous paragraph.

8-1-12 Electrical Parts Are Turned On Sequentially

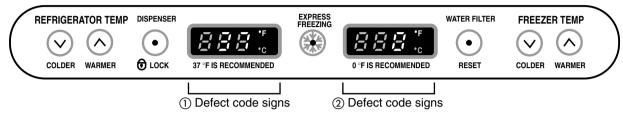
Electrical parts such as COMP, defrosting heater, freezer FAN, etc. are turned on in the following order to prevent noise and parts damage. Several parts are started at the same time at initial power on and are turned off together when TEST is completed.

	OPERATING	ORDERS			
Init	Temperature of Defrosting Sensor is 113°F(45°C) or more (when unit is newly purchased or when moved)	POWER in 1/2 second COMP in 1/2 second Freezer FAN ON → ON → ON			
Initial power on	Temperature of defrosting sensor is lower than 113°F(45°C)	POWER in 1/2 second Defrosting in 10 second Defrosting ON Image: Additional second Image: A			
	(when power cuts, SERVICE)	in 1/2 second COMP in 1/2 second Freezer FAN			
	et to normal operation n TEST MODE	Total load in 7 minute COMP in 1/2 second Freezer FAN OFF → ON → ON			

8-1-13 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.

DISPENSER MODEL



BEST MODEL

REFRIGERATOR TEMP			FREEZER TEMP
	① Defect code signs	2 Defect code signs	

ERROR CODE on display panel

NO	ITEM	ERROR	CODE	CONTENTS	REMARKS
		1	2	CONTENTS	NEMANKS
1	Failure of freezer sensor	Er-	FS	Cut or short circuit wire	
2	Failure of Refrigerator sensor	Er-	-5	Cut or short circuit wire	Inspect Connecting wires on each sensor
3	Failure of defrost sensor	E-	<i>d</i> 5	Cut or short circuit wire	
4	Failure of defrost mode	Er	dН	When defrost sensor doesn't reach 8°C within 2 hours after starting defrost.	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.	Er	FF	If there is no fan motor signal For more than 65sec. in Operation fan motor	Poor motor, hooking to Wires of fan, contact of structures to fan, snapping or short circuit of Lead wire

8-1-14 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 COLDER KEY of Freezer Temp. at the same time over 3 seconds.	 Continuous operation of the COMPRESSOR Continuous operation of the freezer fan STEPPING DAMPER OPEN Defrosting Heater OFF Every DISPLAY LED ON 	
TEST2	Push Express Freezing key and COLDER KEY of Freezer Temp. at the same time over 3 seconds in TEST MODE 1	 COMP OFF Freezer FAN OFF STEPPING DAMPER CLOSE Defrosting heater ON DISPLAY LED shows 222 	Reset if the temperature of the Defrosting sensor is 46°F(8°C) or more.
Reset	Push Express Freezing key and COLDER 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 WARMER button in the refrigerator temperature control and the WARMER button in the freezer temperature control are pushed and held for 1 second or longer, every LED on the display turns on at the same time. When the buttons are released, the previous mode is restored.
- * Freezer Fan RPM Variable Check:

In case the freezer fan is in operation when the WARMER 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.

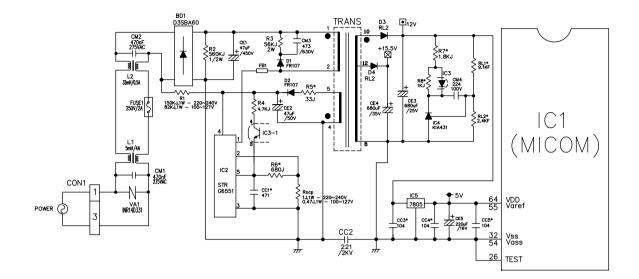
* Demostration MODE:

- 1. When the WARMER KEY of refrigerator Temp. control or of freezer Temp. control in the the warmest temperature's status are pushed and held for 3 seconds or longer, It converts to Demonstration Mode.
- 2. It shows **OFF** on the display panel.
- 3. In this status, all Loads are off (Compressor / Fan / Damper / Heater)

(Even is Demonstration Mode, the refrigerator Lamp automatic off function warks normally and can be demonstrated) 4. Exit the test mode and reset the display by pressing the COLDER and WARMER buttons.

8-2 PCB FUNCTION

8-2-1 Power Circuit



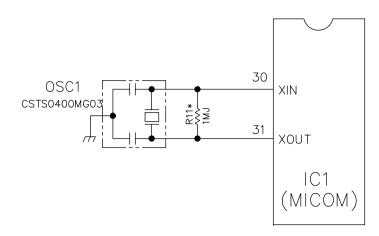
The secondary part of the TRANSFORMER is composed of the power supply for the display, the BLDC FAN Motor drive (15.5 V), the relay drive (12 Vdc) and the MICOM and IC (5 Vdc).

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

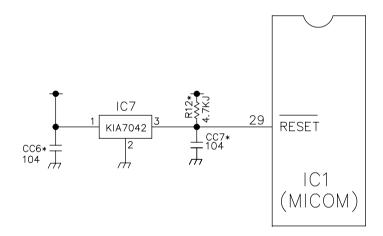
VA1 is a part for preventing over voltage and noise. When 385V or higher power is applied, the inside elements are shortcircuited and broken, resulting in blowout of the fuse in order to protect the elements of the secondary part of the TRANSFORMER.

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.

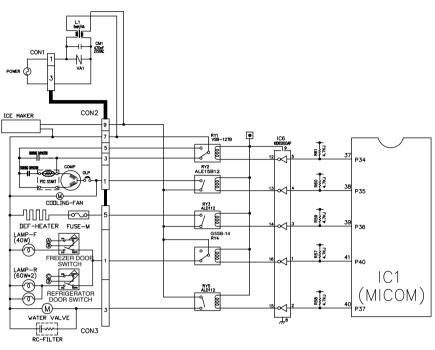
8-2-3 Reset Circuit



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

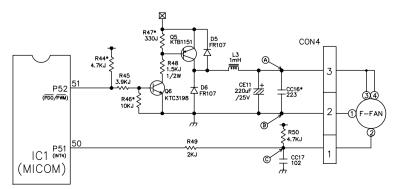


LOAD TYPE		СОМР	DEFROSTING HEATER	LAMP	TCM POWER MODE (OPTIONAL)	VALVE (DISPENSER MDL)				
Measurement Lo	ocation (IC6)	NO.13	NO.14	NO.16	NO.12	NO.15				
Condition	ON	1V or below								
Condition	OFF		12V							

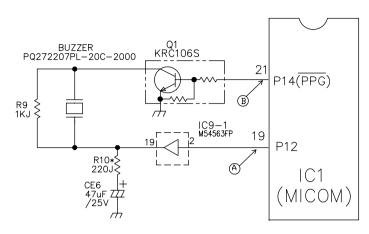
2. Fan motor driving circuit (freezing compartment fan)

- 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.

	a part	b part	© part
MOTOR OFF	2V or less	0V	5V
MOTOR ON	13V~15V	0V	2V~3V

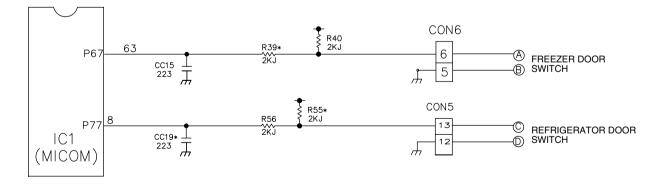


3. Buzzer Drive Condition Check



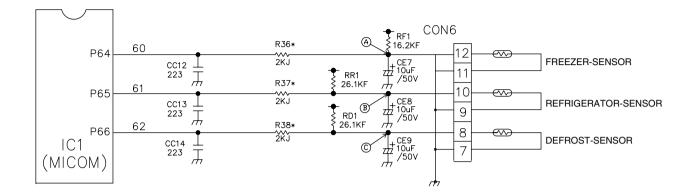
Condition Measure- ment Location	Tone (Ding~Dong~) when the button on the display is pushed.	Alarm for open door (beep-beep-beep)	OFF
IC1 ((A))	5 V 0 V	5 V 0 V	0 V
IC1 (5 V 0 V2.63 kz (Ding~)2.21 kz (Dong~)	5 V 0 V263 kz (Beep_) OFF	0 V

4. Open Door Detection Circuit Check



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

8-2-5 Temperature Sensor Circuit

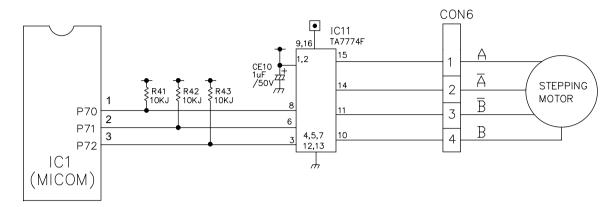


The upper CIRCUIT reads REFRIGERATOR temperature, FREEZER Temperature, and DEFROST-SENSOR temperature for defrosting and the indoor temperature for compensating for the surrounding temperature into MICOM. OPENING or SHORT state of each TEMPERATURE SENSOR are as follows:

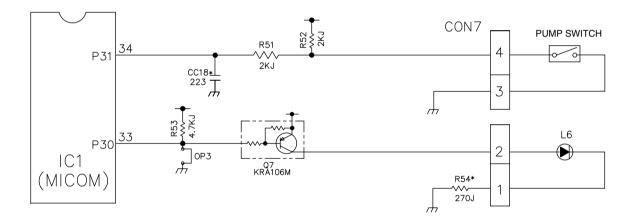
SENSOR	CHECK POINT	NORMAL (-30°C ~ 50°C)	SHORT-CIRCUITED	OPEN
Freezer Sensor	POINT (A) Voltage			5 V
Refrigerator Sensor	POINT B Voltage	0.5 V ~ 4.5 V	0 V	
Defrosting Sensor	POINT ⓒ Voltage			

8-2-6 Refrigeration Compartment Stepping Motor Damper Circuit

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

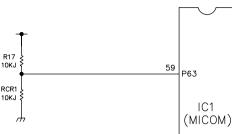


8-2-7 Dispenser Input/LED Output Circuit



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

1. Refrigerator Temperature Compensation



Refriç	gerator				
Resistance	Temperature	Remark			
(RCR)	Compensation				
180 ΚΩ	+2.5°C	Compensation by			
56 KΩ	+2.0°C	raising the temperature			
33 KΩ	+1.5°C				
18 KΩ	+1.0°C	⊺ 1			
12 ΚΩ	+0.5°C				
10 KΩ	0°C	Standard Temperature			
8.2 ΚΩ	-0.5°C	Compensation by			
5.6 ΚΩ	-1.0°C	lowering the temperature			
3.3 ΚΩ	-1.5°C				
2 ΚΩ	-2.0°C	∃ L			
470 Ω	-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).

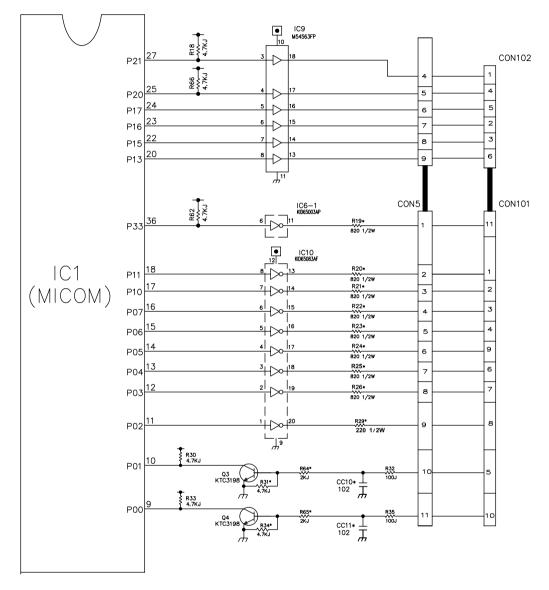
2.	The temperature	compensation	for refrigerator	compartment is i	n the following table:

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

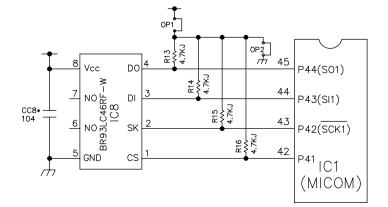
NOTE: This circuit is designed to input the necessary temperature compensation values into the MICOM. This adjusts the refrigerator temperature, which is different in each model.

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 SPECIFICATION OF SENSOR

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

• 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.

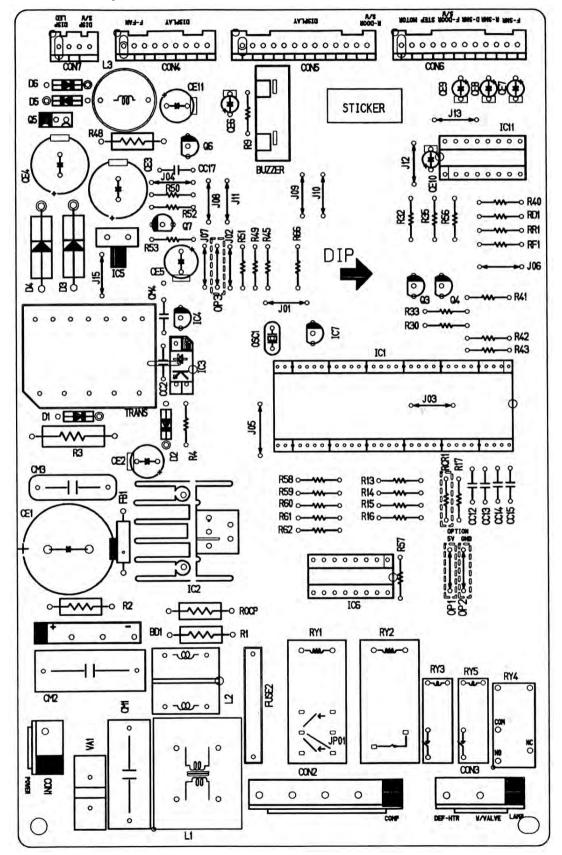
Check the seal when Door liner damaged.
Check the amount of frost sticking on the EVAPORATOR. Check the resistance
(forced COOLING)
USE TEST MODE1
Measure the amount of frost sticking on EVAPORATOR and the surface temperature of the condenser pipe.
If less than 7 minutes pass after compressor shuts off, don't press the KEY and
USE TEST MODE1 (forced COOLING).
Check connection of CONNECTOR.
Check visually.
Check if FREEZER/ REFRIGERATOR DOOR IS OPEN and check display.
CHECKING METHOD

8-4 TROUBLESHOOTING

PROBLEM	INDICATED BY	СНЕСК	CHECKING METHOD	CAUSE	SOLUTION
COOLING is poor.	If REFRIGERATOR	1. If FREEZER TEMPERATURE	Check is FREEZER		Make sure the
	TEMPERATURE	is normal.	TEMPERATURE is too low.		DOOR isattached.
	is too low.	2. If amount of cool air from	Make sure that the amount	FAN MOTOR is poor.	Replace FAN MOTOR.
		FAN MOTOR is	and speed of cool air are	Passage of cool air	Remove impurities.
		sufficient.	sufficient by touching the	is blocked.	
			check supplied on the	EVA frozen.	See DEFROSTING is poor.
			REFRIGERATOR.		
		3. Door Line contact.	Check door seal when door is closed.	Door liner damaged.	Replace Door liner.
DEFROSTING is	NO DEFROSTING.	1. If HEATER emits heat.	USE TEST MODE2	HEATER disconnection.	Replace HEATER.
poor.			(forced DEFROSTING).		
				TEMPERATURE FUSE	Replace TEMPERATURE
				disconnection.	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.
		2. If DRAIN PIPE is	Check DRAIN PIPE.	DRAIN PIPE is blocked.	Remove ice and impurities.
		blocked.			Check HEATER PLATE
					resistance.
		3. If ice remains after	Make sure that DEFROST	Connection is poor.	Reassemble the
		DEFROSTING.	SENSOR is connected.		DEFROST-SENSOR.
			Make sure that FREEZER /	DOOR does not close	Reassemble DOOR.
			REFRIGERATOR DOOR is closed.	properly.	Replace GASKET.

8-5 MAIN PWB ASSEMBLY AND PARTS LIST

8-5-1 Main PWB Assembly

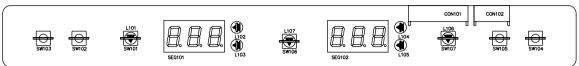


8-5-2 Replacement Parts List

1	•			
No P/NO I 6870JB8087D	DESCRIPTION	SPEC	MAKER	REMARK
2 6170JB2012A	PWB (PCB) TRANSFORMER, SMPSI COIL 1	KS-PJT BEST KS-PJT 220-240V	DOO SAN SAM IL	T=1.6 TRANS
3 6170JB2012B 4 6630A09106A	TRANSFORMER, SMPSI COIL 1 CONNECTOR (CIRC), WAFER	KS-PJT 100-127V YW396-03AV	SAM IL	TRANS
5 6630A09106A	CONNECTOR (CIRC) WAFER	YW396 YEONHO 9P 3.96MM AV	YEON HO YEON HO	CON2
6 6630A091068 7 6630 B8007H	CONNECTOR (CIRC), WAFER	YW396 YEONHO 5P 3.96MM AV	YEON HO	CON3
7 6630JB8007H 8 6630JB80I0A	CONNECTOR (CIRC), WAFER CONNECTOR (CIRC), WAFER CONNECTOR (CIRC), WAFER	YH396 YEONHO 5P 3.96M AV 917787-1 AMP 9P 2.5MA STRAIGHT SN 917791-1 AMP 19P1 2.5MA STRAIGHT SN 917790-1 AMP 12P 2.5MA STRAIGHT SN 017790-1 AMP 12P 2.5MA STRAIGHT SN	AMP	CON4 CON5
9 6630JB8007L	CONNECTOR TURCE, WAFER	917790-1 AMP 12P 2.5MM STRAIGHT SN	AMP	CON6
10 6630JB8007C 11 0ISK655100A	CONNECTOR (CIRC), WAFER IC, SANKEN	917782-1 AMP 4P 2,5MM STRAIGHT SN STR-6551 5PIN BK SMPS 2,4PIN FORM	SANKEN	CON7 IC2
12 01ZZJB20240	IC, DRAWING	TMP87CK40AN 64PIN, SDIP BK KS-PJT[MASK]	TOSHIBA	ICI (=0IZZJB2024R)
13 - 14 OIPMGNEOOIA	IC, TOSHIBA	- TLP72IF 4P BK PHOTO COUPLER	- TOSHIBA	- IC3
15 OIKE43I000A	IC, KEC	KIA43I 3 PIN TP	KEC	IC4
16 OIKE 780500W	IC.KEC IC.KEC	KIA7805PL KID65083AF 2050P LED DRIVER	KEC KEC	
IB 0IKE650030B	IC.KEC IC.STANDARD LOGIC	KID65003AP IGP SDIP_BK_DRIVE M54563FP 20 R/TP CONVERT	KEC	106
19 0ISTLMI00IA 20 0IKE704200A	IC,STANDARD LOGIC	KIA7042P 3P BK RESET -	MITSUBISH	IC9 IC7
21 0IT0777400A	IC, TOSHIBA	TA7774AP 16.SDIP BK DRIVE.IC STEPPING M	TOSHIBA	ICII
22 <u>0IRH934600D</u> 23 692000000IA	IC, TOSHIBA IC, ROHM RELAY	BR93LC46RF-W 8PIN SOP BK EEPROM - ALEI5BIZ MATSUSHITA IZV IGA IS.6V IA	ROHM NAIS	RY2
24 6920ALZ00IA	RELAY	ALZI2BI2 NAIS 250VAC I6A 12VDC IC NO VENTING	NAIS	
25 6920JB2009B 26 6920JB2007A	RELAY RELAY	6558-14 250VAC 5A 12VDC IC VSB-12TB TAKAMISAWA DC12V 60MA 250V IC	OMRON FUJITSU	RY4 RYI
27 6920A90002A	RELAY	ALDIIZ NAIS(THAILAND) 250V- 3A 12V 16.6mA 1A	NAIS	RY3
28 6212JB8001B	RESONATOR, CERAMIC	CSTS0400MG03 MURATA 4MHZ TP	MURATA	RY5 OSCI
29 6102JB8003A	VARISTOR	INRI4D271 ILJIN UL/VDE TP 270V	ILJIN	VAI
30 6102JB8001B 31 0DR107009AA	VARISTOR DIODE,RECTIFIERS	INRI4D621 ILJIN UL/VDE BK 620V FRIO7 TP DELTA DO4I 1000V IA 3	ILJIN DELTA	VAI D1,D2,D5,D6
32 ODRSA00070A	DIODE, RECTIFIERS	RL2 SANKEN BK NON 400V 2A 40A 50NSEC IOUA	SANKEN	D3,D4
33 0DB360000AA 34 6102W5V006A	DIODE, RECTIFIERS VARISTOR	D3SBA60 BK SHINDENGEN 600V 4A	SHINDENGEN	BDI
35 OCE476ZV6E0	CAPACITOR, FIXED ELECTROLYTIC	INRI4D33IK ILJIN UL/CSA/VDE BK 47UF HE 450V 20V BUK SNAP IN(105*)	SAM WHA	CEI
36 0CE4768K638 37 0CE1076H638	CAPACITOR, FIXED ELECTROLYTIC CAPACITOR, FIXED ELECTROLYTIC	47UF KME TYPE 50V 20% FM5 TP 5 (105°) 100UF SMS SG 25V 20% FM5 TP 5	SAM WHA SAM WHA	CE2 CE12
38 OCE687YH6E0	CAPACITOR, FIXED ELECTROLYTIC	1000F SMS, SG 25V 20% FM5 TP 5 6800F RX 25V 20% BULK SNAP IN(105*)	SAM WHA	CE3
39 0CE687YJ6I8 40 0CE2278F638	CAPACITOR, FIXED ELECTROLYTIC CAPACITOR, FIXED ELECTROLYTIC	680UF RX 35V 0.2 TP 5 FL(105°) 220UF KWE TYPE 16V 20% FW5 TP 5(105°)	SAM WHA SAM WHA	CE4 CE5
4I 0CE227BH638	CAPACITOR, FIXED ELECTROLYTIC	220UF RG TYPE 25V 20% FM5 TP 5(105°)	SAM WHA	CEII
42 OCEI05BK638 43 OCE476BH638	CAPACITOR, FIXED ELECTROLYTIC CAPACITOR, FIXED ELECTROLYTIC	UF KME TYPE 50V 20% FM5 TP 5(105°) 47UF KME TYPE 25V 20% FM5 TP 5(105°)	SAM WHA SAM WHA	CEIO CE6
44 OCE106EK638	CAPACITOR, FIXED ELECTROLYTIC	IOUF KMG 50V 20% FM5 TP 5(105°)	SAM WHA	CE7-CE9
45 0CHI47IK562 46 0CK22I0RGIA	CAPACITOR, FIXED CERAMIC (HIGH DIELECTRIC)	470PF 50V K X7R(X) 1608 R/TP	MURATA SAM WHA	
46 <u>OCK22IORGIA</u> 47 OCKIO4DK94A	CAPACITOR, FIXED CERAMIC (HIGH DIELECTRIC) CAPACITOR, FIXED CERAMIC (HIGH DIELECTRIC)	250PF D 250V 10% -10% B(Y5P) R/TP 100NF 2012 50V R/TP (GRM40X7R104K50PE)	MURATA	CC3-CC7
ounio ibris in			MURATA	CC8
49 OCK223DK96A	CAPACITOR, FIXED CERAMIC (HIGH DIELECTRIC) CAPACITOR, FIXED CERAMIC (HIGH DIELECTRIC)	1000PF 50V K B TA52 22NF 2012 50V 80%, 20% R/TP X7R	MURATA	CC17 CC16,CC18,CC19
50 OCK2230K949	CAPACITOR, FIXED CERAMIC (HIGH DIELECTRIC)	22NF 50V Z F TA52	MURATA	CC12-CC15 CC10
5I OCKIO2DK96A	CAPACITOR, FIXED CERAMIC (HIGH DIELECTRIC)	INF 2012 50V 80%, 20% R/TP X7R	MURATA	CCII
52 0C047418670 53 0CF22408670	CAPACITOR, FIXED FILM	0.47UF D 275V M M/PP NI R 220NF D 275V 2012 BULK M/PP NI	PILKOR	CMI, CM2
54 0C04732Y430	CAPACITOR, FIXED FILM CAPACITOR, FIXED FILM CAPACITOR, FIXED FILM	220NF 0 275V 20% BULK M/PP NI 47000PF 5 630V J M/PE NI R	SAM WHA	CM3
55 0C0224IN630	CAPACITOR, FIXED FILM	0.22UF D 100V M M/PE NI R	SAM WHA	CM4
EC 000000000000				
56 0C0223IN409	CAPACITOR, POLYESTER RESISTOR, METAL GLAZED (CHIP)	0.022UF D 100V J PE TP 220.0HM 1/2 W 5% 2012 R/TP	SAM WHA	CM5
56 0C0223IN409 57 0RJ2200H672 58 0R5I503J609	CAPACITOR, POLYESTER RESISTOR, METAL GLAZED (CHIP) RESISTOR, FIXED METAL OXIDE FILM	0.022/F D 100/ J PE TP 220 0HM 1/2 W 5% 2012 R/TP ISOK 0HM 1W 5.00% TA52	SAM WHA SMART,CHOHYANG SMART,CHOHYANG	CM5 R29 Ri
56 0C0223IN409	CAPACITOR, POLYESTER RESISTOR, METAL GLAZED (CHIP)	0.022UF D 100V J PE TP 220 0HM 1/2 W 5% 2012 R/TP	SAM WHA SMART,CHOHYANG	CM5 R29
56 OC0223IN409 57 ORJ2200H672 58 ORSI503J609 59 ORS8202609 60 ORS010IJ609 61 ORS0470J609	CAPACITOR, POLYESTER PESISTOR, PIETAL CAZEDICHIPI RESISTOR, FIXED METAL CXIDE FILM PESISTOR, FIXED METAL OXIDE FILM PESISTOR, FIXED METAL OXIDE FILM	0.0224F D.100V J PE TP 220 OH I/2 W 52 002 R/TP ISOK OH I W 5.000 T A52 B2K OH I W 5.000 T A52 I OH I W 5.000 T A52 I OH I W 5.000 T A52 0.47 OH I W 52 T A52	SAM WHA SMART, CHOHYANG SMART, CHOHYANG SMART, CHOHYANG SMART, CHOHYANG SMART, CHOHYANG	0.6 R29 R1 R1 R0 R0CP R0CP
56 OC0223IN409 57 OR,J2200H672 58 ORSI503J609 59 ORS8202609 60 ORS0101.669 61 ORS0470J609 62 ORS5602K641	CAPACITOR, POLYESTER RESISTOR, METAL CAZEDICHIP) RESISTOR, FIXED METAL OXIDE FILM RESISTOR, FIXED METAL OXIDE FILM	0.0224F D.100V J PE TP 220 OH I/2 W 52 02 R/TP F50K OH I W 5.00X TA52 120K W I W 5.00X TA52 1 OH I W 5.00X TA52 0.47 OH I W 52 X TA52 56K OH I W 55.00X TA52 56K OH I W 55.00X TA52 120 DI J DI	SAM WHA SWART, CHOHYANG SWART, CHOHYANG SWART, CHOHYANG SWART, CHOHYANG SWART, CHOHYANG SWART, CHOHYANG	006 R29 R1 R1 R0CP R0CP R0CP R3
56 0C0223IN409 57 0R,I2200-672 58 0PSI503J609 59 0PS8202609 60 0PS0101J609 61 0PS0470J609 62 0PS1600-72 63 0PJ8200-672 64 0PD5603-603-603	CAPACITOR, POLYESTER PESSTOR, METAL, CLAZEDIOHIPI PESSTOR, FIXED METAL, OXIDE FILM PESSTOR, FIXED ACTAL, CLAZEDIOHIPI PESSTOR, FIXED ACTAL, CLAZEDIOHIPI PESSTOR, FIXED ACTAL, CLAZEDIOHIPI	0.022UF D.100V J PE TP 220 OH IV 2W 55 202 R7TP 150K OH IW 5.007 TA52 182K OH IW 5.007 TA52 1 OH IW 5.007 TA52 0.47 OH IW 55.007 TA52 56K OH IV 2W 55.007 TA52 1820 OH I/2 W 55.007 TA52 1820 OH I/2 W 57.2012 R7TP 560K OH I/2 W 55.2012 R7TP 560K OH I/2 W 55.2012 R7TP	SAN WHA SMART, DOCHYANG SMART, ODCHYANG SMART, ODCHYANG SMART, ODCHYANG SMART, DOCHYANG SMART, ODCHYANG SMART, ODCHYANG SMART, ODCHYANG	0x6 0x6 R29 R1 R1 R1 R1 R1 R2 R1
56 0C02231H409 57 0R.2200H672 58 0R51503.1609 59 0R515012609 60 0R50101.1609 61 0R50470.1609 62 0R556024641 63 0R56201672 64 0R05603+609 65 0R01501H609	CAPACITOR, POLYESTER PESSTOR, FIXED LAZEDIO-HIPI PESSTOR, FIXED METAL, OXIDE FILM PESSTOR, FIXED METAL, CAXDE FILM PESSTOR, FIXED METAL, CAXDE FILM PESSTOR, FIXED METAN FILM PESSTOR, FIXED CARBON FILM	0.022/F D.100/ J.PE TP 120 OH I/2 W.52 02/E R/TP 150K OH IW 5.007/TA52 120K OH IW 5.007/TA52 1 OH IW 5.007/TA52 0.47 OH IW 57/TA52 0.47 OH IW 57/TA52 1 OH I/2 W.50/7/TA52 1 SK OH I/2 W.57/207/TA52 1 J.5K OH I/2 W.5.007/TA52 1 J.5K OH I/2 W.5.007/TA52	SAN WHA SMART, CHCHYANG SMART, CHCHYANG SMART, CHCHYANG SMART, CHCHYANG SMART, CHCHYANG SMART, CHCHYANG SMART, CHCHYANG SMART, CHCHYANG SMART, CHCHYANG	OL6 R29 RI RI ROCP ROCP ROCP ROCP R0SP R3 RI9-R26 R2 R48 R48
56 0022311409 57 0R.22014672 58 0R515031609 59 0R5202609 60 0R50101609 61 0R50101609 62 0R5502661 63 0R56034609 64 0R056034609 65 0R015014609 66 0R010006609	CAPACITOR, POLYESTER PRESTOR, METAL, QAZEDIO'HIPI PRESTOR, FIXED METAL, OXIDE FILM PRESTOR, FIXED ACAD, OXIDE FILM PRESTOR, FIXED ACADON FILM PRESTOR, FIXED CAPBON FILM PRESTOR, FIXED CAPBON FILM	0.022LF D.100V J.PE TP 120 OH IV /2W 55 202 R7/TP ISOK OH IW 5.007 TA52 B2K OH IW 5.007 TA52 1 OH IW 5.007 TA52 0.47 OH IW 50 TA52 56K OH /2 W 50 202 R7/TP 56K OH I/2 W 55 202 R7/TP 56K OH I/2 W 55 202 R452 1.5K OH I/2 W 5.007 TA52 1.5K OH I/2 W 5.007 TA52 100 OH I/2 W 5.007 TA52	SAN WHA SMART, CHOHYANG SMART, CHOHYANG SMART, CHOHYANG SMART, CHOHYANG SMART, CHOHYANG SMART, CHOHYANG SMART, CHOHYANG SMART, CHOHYANG SMART, CHOHYANG	0x6 R29 R1 R1 R0CP R0CP R0CP R0CP R3 R19:P226 R2 R48 R35 R35
56 0.00223IN409 70 0.20201672 98 01451503L607 99 01451503L607 90 01451603L607 61 01451603L607 62 014556024641 63 01L82004672 64 0101000607 67 01420014607 66 04D10000609 67 01422001622	CAPACITOR, POLYESTER RESISTOR, METAL CUZZDICHIP) RESISTOR, FIXED METAL OXIDE FILM RESISTOR, FIXED METAL OXIDE FILM RESISTOR, FIXED METAL OXIDE FILM RESISTOR, FIXED METAL OXIDE FILM RESISTOR, FIXED CAREN FILM RESISTOR, FIXED CARENT FILM	0.0224F D.100V J PE TP 220 OH 1/2 W 52 002 R7/TP ISOK OH IW 5.007 TA52 I OH IW 5.007 TA52 0.47 OH IW 5.007 TA52 0.47 OH IW 5.007 TA52 56K OH 2 W 5.007 TA52 1.5K OH 1/2 W 5.007 TA52 220 OH 1/4 W 5.007 TA52 220 OH 1/4 W 5.007 TA52	SAM WHA SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, CHOHYANG SMART, CHOHYANG ROHM	OV6 0 P29 P1 P1 P1 R0CP R0CP R0CP R0CP R3 R19-R26 R4 R2 R48 R32 R35 R10
56 0.0022311409 70 0.20201672 98 0.45503.609 99 0.45202609 90 0.450101.609 61 0.45202609 62 0.455001.609 63 0.45202609 64 0.45201.622 65 0.45501.609 66 0.4010006609 67 0.42200.622 68 0.444701L622	CAPACITOR, POLYESTER PESSTOR, METAL CAZEDIO-HP) PESSTOR, FIXED METAL OXIDE FILM PESSTOR, FIXED CAPEON FILM	0.022/F D.100/ J PE TP 220 OH 1/2 W 52 UC R/TP PS0K OH W 5.00% TA52 B2K OH W 5.00% TA52 1 OH 1 W 5.00% TA52 0.47 OH I W 5.0% TA52 56K OH 1/2 W 5.0% TA52 55K OH 1/2 W 5/.00% TA52 1.5K OH 1/2 W 5/.00% TA52 1.5K OH 1/2 W 5/.00% TA52 1.5K OH 1/2 W 5/.00% TA52 20 OH 1/4 W 5/.00% TA52 20 OH 1/4 W 5/.00% TA52 20 OH 1/4 W 5/.00% D	SAM WHA SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, CHOHYANG SMART, CHOHYANG ROHM ROHM	OM6 R29 R1 R1 R0CP R0CP R0CP R3 R19-R25 R2 R2 R48 R32 R35 R10 R12, R24, R31, R18 R34 R34
56 0.0022311409 70 0.20201672 78 0.75001672 79 0.75202605 70 0.7202767 70 0.75202605 70 0.75202605 60 0.750101.603 61 0.75001672 62 0.755502641 63 0.78,82004672 64 0.7656034603 65 0.7015014603 66 0.7912001622 67 0.79422001622 68 0.791410021.622 69 0.791410021.622	CAPACITOR, POLYESTER PESSTOR, METAL, CLAZEDIOHIP) PESSTOR, FIXED METAL, OXIDE FILM PESSTOR, FIXED AREAD NILM PESSTOR, FIXED CAPBON FILM PESSTOR, FIXED CAPBON FILM PESSTOR, FIXED CAPBON FILM PESSTOR, FIXED CAPBON FILM PESSTOR, METAL, GLAZEDIOHIP) PESSTOR, METAL, GLAZEDIOHIP) PESSTOR, METAL, GLAZEDIOHIP)	0.0224F D.100V J PE TP 220 OH 1/2 W 52 002 R7/TP ISOK OH IW 5.007 TA52 I OH IW 5.007 TA52 0.47 OH IW 5.007 TA52 0.47 OH IW 5.007 TA52 56K OH 2 W 5.007 TA52 1.5K OH 1/2 W 5.007 TA52 220 OH 1/4 W 5.007 TA52 220 OH 1/4 W 5.007 TA52	SAM WHA SMART, DOHYANG SMART, ODHYANG SMART, ODHYANG SMART, ODHYANG SMART, ODHYANG SMART, ODHYANG SMART, ODHYANG SMART, ODHYANG SMART, ODHYANG SMART, ODHYANG ROHM ROHM ROHM	0x6 R29 R1 R1 R0CP R0CP R0CP R0CP R3 R19-F226 R49 R22 R49 R23 R10 R12, R44, R31, R18
56 0.00223IN409 70 R2.2004672 58 0451503.509 90 045202609 90 045202609 90 045202609 90 045202609 90 045202609 90 045202609 90 045202609 90 04520204672 90 0452004672 90 0452004672 90 045004609 90 04925014609 90 04925014629 90 044700L622 90 044700L622 90 0493026672 90 04910026629 90 0430326672 90 040006609	CAPACITOR, POLYESTER PESSTOR, METAL, CLAZEDIO'HIP) PESSTOR, FIXED METAL, OXIDE FILM PESSTOR, FIXED METAL, OXIDE FILM PESSTOR, FIXED METAL, OXIDE FILM PESSTOR, FIXED METAL, OXIDE FILM PESSTOR, FIXED AREAL, OXIDE FILM PESSTOR, FIXED AREAN FILM PESSTOR, FIXED CAPBON FILM PESSTOR, FIXED CAPBON FILM PESSTOR, FIXED CAPBON FILM PESSTOR, METAL, GLAZEDIO'HIP) PESSTOR, FIXED CAPBON FILM	0.022UF D.100V J PE TP 220 OH IV /2V K5 2012 R7/TP IS0K OH IW 5.00X TA52 B2K OH IW 5.00X TA52 1 OHN 1 W 5.00X TA52 0.47 OHN 1 W 5.00X TA52 0.47 OHN 1 W 5.00X TA52 E82 OHN 1/2 W 5.00X TA52 820 OHN 1/2 W 5.00X TA52 1.5K OHI /2V W 5.00X TA52 1.5K OHI /2V W 5.00X TA52 220 OHN 1/8 W 2012 5.00X D 4.7K OHN 1/8 W 2012 5.00X D 133 OHN 1/8 W 2012 5.00X D 33 OHN 1/8 W 5X 2012 R71P	SAM WHA SMART, OHOFYANG SMART, OHOFYANG SMART, OHOFYANG SMART, OHOFYANG SMART, OHOFYANG SMART, OHOFYANG SMART, OHOFYANG SMART, OHOFYANG ROHM ROHM ROHM SMART, OHOFYANG	OV6 R29 R1 R1 R1 R2 R0CP R0CP R0CP R0CP R0CP R0CP R3 R19-P25 R2 R48 R32 R25 R00 R12, R44, R31, R18 R34 R45 R5 R9
56 0.0022/311409 7 OR,122014672 58 ORS15033.609 9 ORS202609 9 ORS56034609 9 ORS001672 60 ORD10006609 67 OR+2200.622 69 OR+0002.622 90 OR+002.622 90 OR+002.622 91 ORD02.622 92 OR+003.622 92 OR+003.622 92 OR+003.622 91 OR+003.622 92 OR+003.622 93 OR+003.622 94 OR+003.622 94 OR+003.622 97 OR0106609 97 OR0106609	CAPACITOR, POLYESTER RESISTOR, METAL, CUAZEDICHIP) RESISTOR, FIXED, METAL, OXIDE FILM RESISTOR, FIXED, CAREN FILM RESISTOR, FIXED, CAREN FILM RESISTOR, FIXED, CAREN FILM RESISTOR, FIXED, CAREN FILM RESISTOR, METAL, GLAZEDICHIP) RESISTOR, METAL, GLAZEDICHIP) RESISTOR, METAL, GLAZEDICHIP) RESISTOR, METAL, GLAZEDICHIP) RESISTOR, METAL, GLAZEDICHIP) RESISTOR, FIXED, CAREN FILM RESISTOR, METAL, GLAZEDICHIP) RESISTOR, FIXED, CAREN FILM RESISTOR, FIXED, CAREN FILM	0.022LF D.100V J PE TP 22 00+M 1/2 W 52 002 R7/TP ISOK 0+H W 5.000 TA52 I 0+M I W 5.000 TA52 0.47 0+M I W 5.000 TA52 0.47 0+M I W 5.000 TA52 56K 0+M 2 W 5.000 TA52 1.5K 0+M 1/2 W 5.000 TA52 1.5K 0+M 1/2 W 5.000 TA52 1.5K 0+M 1/2 W 5.000 TA52 220 0+M 1/2 W 5.000 TA52 220 0+M 1/4 W 5.000 TA52 220 0+M 1/4 W 5.000 D 4.7K 0+M 1/4 W 2012 5.000 D 33 0+M 1/8 W 2012 5.000 D 33 0+M 1/8 W 2012 5.000 D 33 0+M 1/8 W 2012 5.000 D 15K 0+M 1/8 W 2012 5.000 D	SAM WHA SMART, DODYTANG SMART, DODYTANG SMART, DODYTANG SMART, DODYTANG SMART, DODYTANG SMART, DODYTANG SMART, DODYTANG SMART, DODYTANG SMART, CHOHYTANG ROHM ROHM SMART, CHOHYTANG ROHM ROHM	Ov6 006 R29 R1 R1 R1 R1 R1 R2 R2 R2 R48 R32 R35 R10 R1 R3 R19 R48 R32 R35 R10 R12, R44, R31, R18 R46 R46 R5 R5 R64, R35-R39
56 0.0022/311409 70 RP.2020H672 78 07815033.609 79 078202609 79 078202609 70 078703.809 70 078202609 70 078202609 70 07856024641 70 0782004672 61 07890470.509 70 0782004672 61 07890470.509 62 07815004662 63 0.82004672 64 07826034609 65 07810006609 67 07842001622 68 078410024622 69 078410024622 69 07841001622 70 078410016422 73 07842001622	CAPACITOR, POLYESTER PESSTOR, METAL CUZZDIOCHIP) PESSTOR, FIXED METAL OXIDE FILM PESSTOR, FIXED CAPBON FILM	0.022UF D.100V J PE TP 220 OH 1/2 W 52 UC RVTP PSOK OH IW 5.00X TA52 E82 OH IW 5.00X TA52 1 OH IW 5.00X TA52 0.47 OH IW 5.0X TA52 56K OH 2 W 5.00X TA52 56K OH 2 W 5.00X TA52 56K OH 2/2 W 5.00X TA52 1.5K OH 1/2 W 5.00X TA52 1.5K OH 1/2 W 5.00X TA52 1.5K OH 1/2 W 5.00X TA52 220 OH 1/2 W 5.00X TA52 24 OH 1/2 W 2012 5.00X D 24 OH 1/2 W 2012 5.00X D	SAM WHA SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, DOHYANG SMART, CHOHYANG ROHM ROHM ROHM ROHM ROHM ROHM ROHM	OM6 0.06 R29 R1 R1 R1 R00P 83 R02-P 83 R02-P 83 R03-R25 848 R48 83 R30-R35 83 R10-R25 83 R10-R25 83 R10-R25 83 R10-R12-R12-R12 84 R46 84 R47 R46 R5 83 R48 84 R49 84 R47 84 R48 84 R49 84 R46 84 R47 84 R48 84 R49 84 R47 84 R48 84 R47 84 R48 84 R47 84 R48 84 R47 84 R48 84 R47<
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8-5-3 PWB Assembly, Display, And Parts List

Dispenser Model



No	P/ND	DESCRIPTION	SPEC	MAKER	REMARK
1	6870JB8090A	PWB(PCB)	KS-PJT DISPENSER DISPLAY	DOO SAN	-
2	-	-	-	1	-
3	6630JB8005D	WAFER	SMAW250-11	YEON HO	CDN101
4	6630JB8004U		SMAW250-06		CDN102
5	6600JB8005A	SWITCH,TACT	KPT-1105A	KYUNG IN	SW102~105
6	6600RRT002K		JTP1230A JEIL 12∨ DC 50MA	JEIL	SW102~105
7	6600JB8004A	TACT S/W	KPT-1109R	KYUNG IN	SW101,SW107
8	-	TACT S/W	KPT-1109G	KYUNG IN	SW106
9		DISPLAY LED ASSEMBLY	LN4023-13EWRS GREEN 2.1V 1.7MCD	LEDTECH	SEG1,SEG2
10		LED	LT8323-41-BCN 2.1V D3 TP GREEN		L102~105
11	0DD414809AA	DIDDE,SWITCHING	1N4148 26MM	PYUNG CHANG	D107~113
12	0DD400400A		1N4004	DELTA	D101~106
13	6854B50001A	JUMP WIRE	0.6MM 52MM TP TAPING SN(10MM)	-	J01~06,J08~13
14		SOLDER(ROSIN WIRE) RSO		HEE SUNG	-
15	49111004	SOLDER, SOLDERING	Н6ЗА	-	-
16	59333105	FLUX	SG;0.825-0.830 KOREA F.H-206	KOKI	-

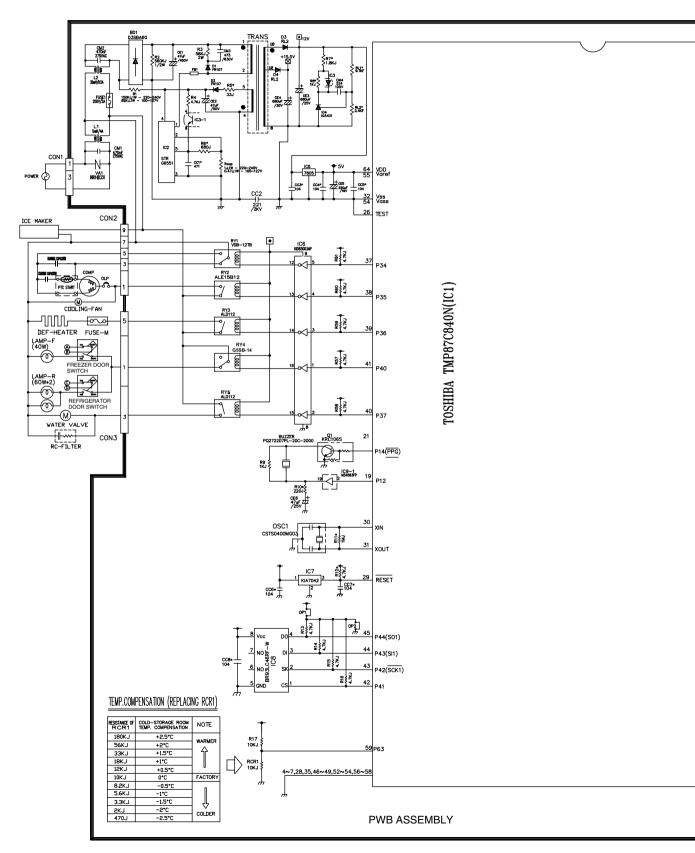
Best Model

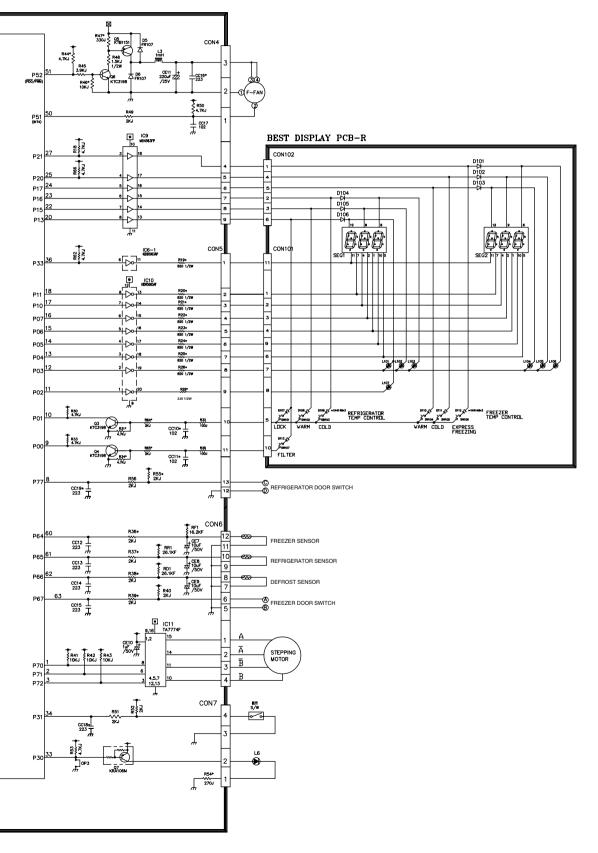
(CON101	CON102	
SWI03 SWI02	L107	d		SW104

r					
No	P/ND	DESCRIPTION	SPEC	MAKER	REMARK
1	6870JB8090A	PWB(PCB)	KS-PJT DISPENSER DISPLAY	DOO SAN	-
2	-	-	-		-
3	6630JB8005D	WAFER	SMAW250-11	YEON HO	C0N101
4	6630JB8004U		SMAW250-06		CDN102
5	6600JB8005A	SWITCH,TACT	KPT-1105A	KYUNG IN	SW102~105
6	6600RRT002K		JTP1230A JEIL 12∨ DC 50MA	JEIL	3 W 102 ~ 103
7	6600JB8004A	TACT S/W	KPT-1109R	KYUNG IN	SW106
8	-	TACT S/W		KYUNG IN	
9	6327JB8001A	DISPLAY LED ASSEMBLY	LN4023-13EWRS GREEN 2.1V 1.7MCD	LEDTECH	SEG1,SEG2
10	0DLLE0059AA	LED	LT8323-41-BCN 2.1∨ D3 TP GREEN		L102~105
11	0DD414809AA	DIDDE,SWITCHING	1N4148 26MM	PYUNG CHANG	D107~113
12	0DD400400A		1N4004	DELTA	D101~106
13	6854B50001A	JUMP WIRE	0.6MM 52MM TP TAPING SN(10MM)	-	J01~06,J08~13
14	9∨WF0120000	SOLDER(ROSIN WIRE) RSO	D1.20	HEE SUNG	-
15	49111004	SOLDER,SOLDERING	Н6ЗА	-	-
16	59333105	FLUX	SG;0.825-0.830 KOREA F.H-206	KOKI	-

8-6 PWB DIAGRAM

8-6-1 PWB Main Assembly





9-1 FUNCTION

9-1-1 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".

BETTER / GOOD MODEL



9-1-2 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 hign speed.
- 4. High speed (2500RPM) : Initial power on or load corresponding operation, express freezing Normal speed (2200RPM) : General working conditions.
- 5. Fan motor stops when refrigerator of freezer door opens.

9-1-3 EXPRESS FREEZING

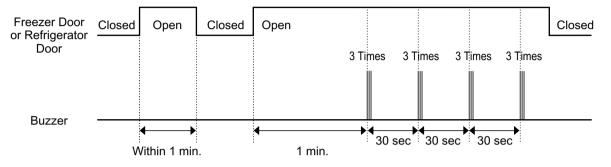
- 1. The purpose of this function is to intensify the cooling speed of freezer and to increase the amount of ice.
- 2. Whenever selection switch is pressed, selection/release, the LED will turn ON or OFF.
- 3. If there is a power cut and the refrigerator is power on again, EXPRESS FREEZING function will be canceled.
- 4. To activate these 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 Freezer Fan will be ON. The next 21hours 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 FREZZING operates for the rest of time after defrost is completed, when EXPRESS FREZZING operation time is less than 90 minutes. If EXPRESS FREZZING operates for more than 90minutes, the EXPRESS FREZZING will operate for two hours after defrost is completed.
 - (3) If EXPRESS FREZZING is pressed during defrost, EXPRESS FREZZING LED is on but this function will start seven minutes after defrost is completed and it shall operate for three hours.
 - (4) If EXPRESS FREZZING 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 FREZZING.
- 6. For the rest of 21 hours, the freezer will be controlled at the lowest temperature.

9-1-4. REFRIGERATOR LAMP AUTO OFF

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

9-1-5 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.



9-1-6 Buzzer Sound

When the button on the front Display is pushed, a Ding~ Dong~ sound is produced. (Refer to the Buzzer Circuit 7-2-4 No. 2)

9-1-7 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)

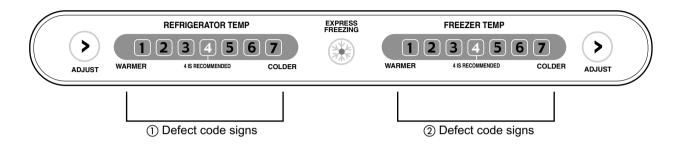
9-1-8 Electrical Parts Are Turned On Sequentially

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

9-1-9 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

O LED ON

NO	ITEM		I	ERRO	OR C	ODE				CONTENTS	REMARKS
NO		1				2				CONTENTS	NEWIANKS
1	Failure of freezer sensor	All off	•	Ø	Ø	Ø	Ø	Ø	O	Cut or short circuit wire	
2	Failure of Refrigerator sensor	All off	O	•	Ø	Ø	Ø	Ø	Ø	Cut or short circuit wire	Inspect Connecting wires on each sensor
3	Failure of defrost sensor	All off	O	Ô	•	Ô	Ô	Ô	Ø	Cut or short circuit wire	
4	Poor of defrost	All off	•	•	•	•	O	0	O	2hours later After starting defrost, lf 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)

9-1-10 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 COLDER KEY of Freezer Temp. at the same time over 3 seconds.	 Continuous operation of the COMPRESSOR Continuous operation of the freezer fan STEPPING DAMPER OPEN Defrosting Heater OFF Every DISPLAY LED ON 	
TEST2	Push Express Freezing key and COLDER KEY of Freezer Temp. at the same time over 3 seconds in TEST MODE 1	 COMP OFF Freezer FAN OFF STEPPING DAMPER CLOSE Defrosting heater ON 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 COLDER 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 relesed, the previous mode is restored.
- * Freezer Fan RPM Variable Check:

In case the freezer fan is in operation when the WARMER 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:

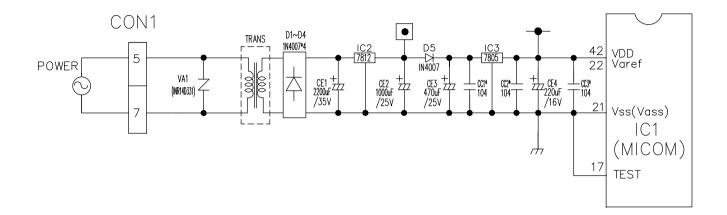
- 1. When the KEY of refrigerator Temp. control or of freezer Temp. control is pushed and held over 5 seconds, warmest temperature's It converts to Demonstration Mode.
- 2. In this status, each LED is rotated with 1 second interval.
- 3. In this status, all Loads are off (Compressor / Fan / Damper / Heater)

(Even is Demonstration Mode, the refrigerator Lamp automatic off function warks normally and can be demonstrated) 4. It reset if you do again as clause.

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9-2 PCB FUNCTION

9-2-1 Power Circuit



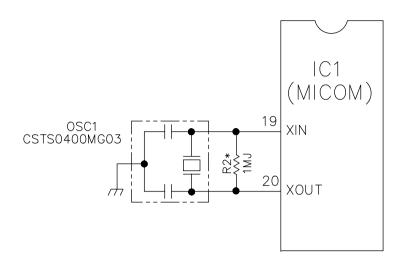
The secondary part of the TRANSFORMER is composed of the power supply for the display, the BLDC FAN Motor drive (15.5 V), the relay drive (12 Vdc) and the MICOM and IC (5 Vdc).

The voltage for each part is as follows:

PART	VA 1	CE 2	CE 1	CE 4
VOLTAGE	115 Vac	12 Vdc	15.5 Vdc	5 V

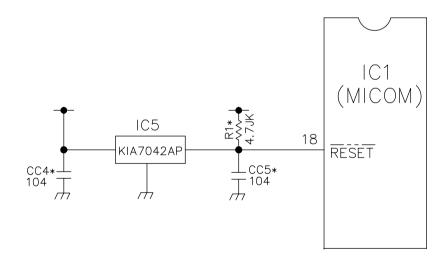
VA1 is a part for preventing over voltage and noise. When 385V or higher power is applied, the inside elements are shortcircuited and broken, resulting in blowout of the fuse in order to protect the elements of the secondary part of the TRANSFORMER.

9-2-2 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.

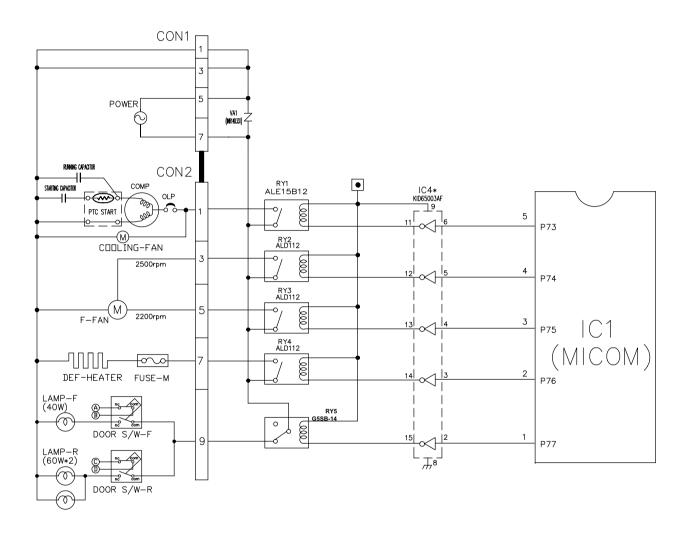
9-2-3 Reset Circuit



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.)

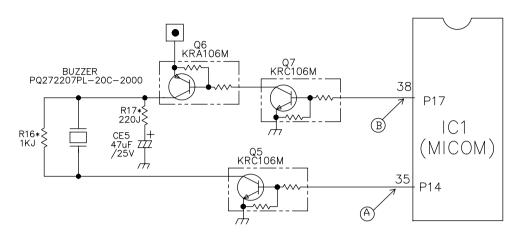
9-2-4 Load / Buzzer Drive & Open Door Detection Circuit

1. Load Drive Condition Check



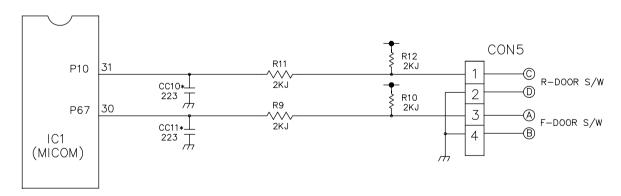
LOAD T	YPE	СОМР	DEFROSTING HEATER	LAMP	FREEZER FAN MOTOR (HIG RPM)	FREEZER FAN MOTOR (LOW RPM)	
Measurement Lo	ocation (IC4)	NO.11	NO.14	NO.15	NO.12	NO.13	
Condition	ON	1V or below					
Condition	OFF			12V			

2. Buzzer Drive Condition Check



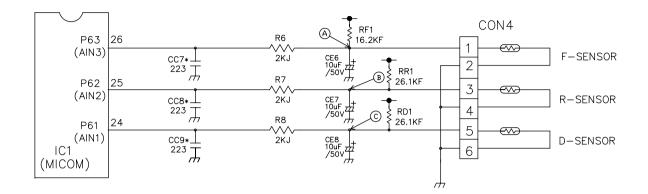
Condition Measure- ment Location	Tone (Ding~Dong~) when the button on the display is pushed.	Alarm for open door (beep-beep-beep)	OFF
IC1 ((A))	5 V 0 V	5 V 0 V	0 V
IC1 ()	5 V 0 V2.63 kz (Ding~)2.21 kz (Dong~)	5 V 0 VOFF	0 V

3. Open Door Detection Circuit Check



Measurement Freezer/ Location Refrigerator Door	(PIN NO.31 & PIN NO.30)
Closed	5 V
Open	0 V

9-2-5 Temperature Sensor Circuit

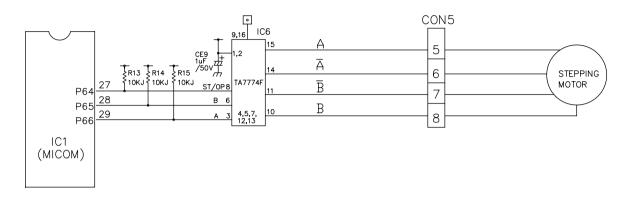


The upper CIRCUIT reads REFRIGERATOR temperature, FREEZER Temperature, and DEFROST-SENSOR temperature for defrosting and the indoor temperature for compensating for the surrounding temperature into MICOM. OPENING or SHORT state of each TEMPERATURE SENSOR are as follows:

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

9-2-6 Refrigeration Compartment Stepping Motor Damper Circuit

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



9-2-7 Temperature Compensation & Overcooling/Undercooling Compensation Circuit

1. Refrigerator Temperature Compensation

Refri	gerator	
Resistance	Temperature	Remark
(RCR)	Compensation	
180 ΚΩ	+2.5°C	Compensation by
56 KΩ	+2.0°C	raising the temperature
33 KΩ	+1.5°C	
18 KΩ	+1.0°C	⊺ 1
12 ΚΩ	+0.5°C	
10 KΩ	0°C	Standard Temperature
8.2 ΚΩ	-0.5°C	Compensation by
5.6 ΚΩ	-1.0°C	lowering the temperature
3.3 ΚΩ	-1.5°C	
2 ΚΩ	-2.0°C	∃ L
470 Ω	-2.5°C	

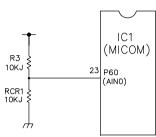


Table of Temperature Compensation by adjusting the resistance (difference from the current temperature) e.g., If the refrigerator compensation resistance (RCR) is changed from 10K (the current resistance) to 18K (the adjustment resistance), the temperature of the refrigerator rises 33.8°F(+1°C).

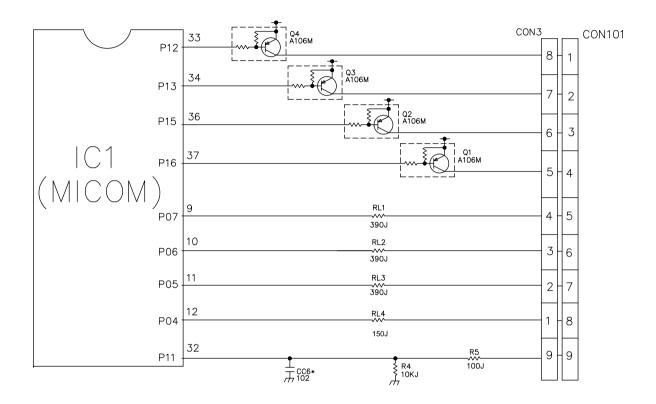
2.	The temperature	compensation	for refrigerator	compartment is in	the following table:

	Revised resistance Present resistance	470Ω	2kΩ	3.3kΩ	5.6kΩ	8.2kΩ	10kΩ	12kΩ	18kΩ	33kΩ	56k Ω	180kΩ
	470Ω	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
	2kΩ	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
	3.3kΩ	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
	5.6kΩ	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
	8.2kΩ	2°C Down	1.5°C Down	1°C Down	0.5° Down	No Change	0.5°C Up	1°C Up	1.5°C Up	2°C Up	2.5°C Up	3°C Up
Refrigerator (RCR)	10kΩ	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
	12kΩ	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
	18kΩ	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
	33kΩ	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
	56kΩ	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
	180kΩ	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.

9-2-8 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 DISPLAY. The drive type is the scan type.



9-3 RESISTANCE SPECIFICATION OF SENSOR

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

• 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.

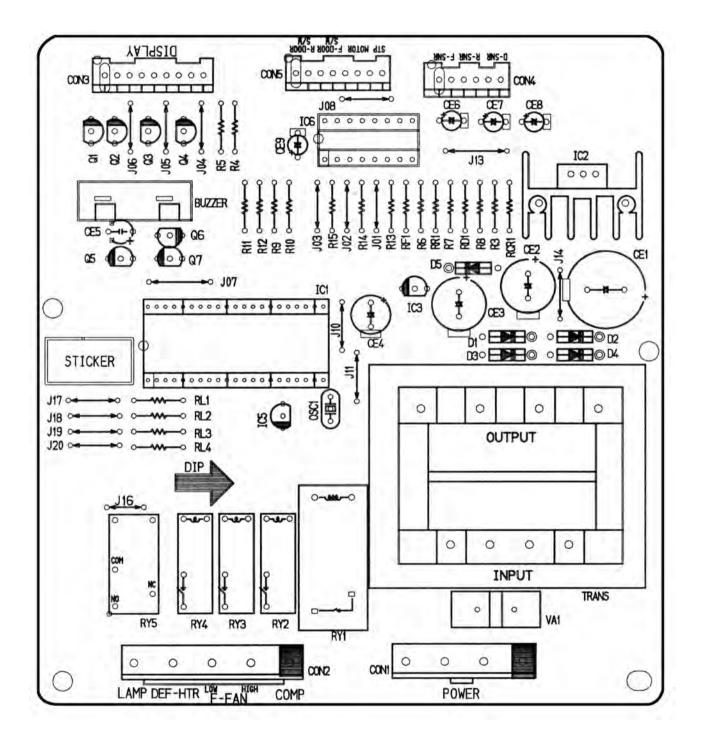
PROBLEM	INDICATED BY	CHECK	CHECKING METHOD	CAUSE	SOLUTION
POWER SOURCE is poor.	1. The whole DISPLAY LED/SEVEN SEGMENT DISPLAY is off.	1. FREEZER/ REFRIGERATOR.	Check if FREEZER/ REFRIGERATOR DOOR IS OPEN and check display.	POWER SOURCE is poor.	Check outlet Voltage.
	2. DISPLAY LED/	2. If LAMP is dim.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

9-4 TROUBLESHOOTING

PROBLEM	INDICATED BY	СНЕСК	CHECKING METHOD	CAUSE	SOLUTION
COOLING is poor.	If REFRIGERATOR	1. IFFREEZER TEMPERATURE	Check is FREEZER		Make sure the
	TEMPERATURE	is normal.	TEMPERATURE is too low.		DOOR isattached.
	is too low.	2. If amount of cool air from	Make sure that the amount	FAN MOTOR is poor.	Replace FAN MOTOR.
		FAN MOTOR is	and speed of cool air are	Passage of cool air	Remove impurities.
		sufficient.	sufficient by touching the	is blocked.	
			check supplied on the	EVA frozen.	See DEFROSTING is poor.
			REFRIGERATOR.		
		3. Door Line contact.	Check door seal when door is closed.	Door liner damaged.	Replace Door liner.
DEFROSTING is	NO DEFROSTING.	1. If HEATER emits heat.	USE TEST MODE2	HEATER disconnection.	Replace HEATER.
poor.			(forced DEFROSTING).		
				TEMPERATURE FUSE	Replace TEMPERATURE
				disconnection.	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.
		2. If DRAIN PIPE is	Check DRAIN PIPE.	DRAIN PIPE is blocked.	Remove ice and impurities.
		blocked.			Check HEATER PLATE
					resistance.
		3. If ice remains after	Make sure that DEFROST	Connection is poor.	Reassemble the
		DEFROSTING.	SENSOR is connected.		DEFROST-SENSOR.
			Make sure that FREEZER /	DOOR does not close	Reassemble DOOR.
			REFRIGERATOR DOOR is closed.	properly.	Replace GASKET.

9-5 MAIN PWB ASSEMBLY AND PARTS LIST

9-5-1 Main PWB Assembly



9-5-2 Replacement Parts List

No	P/N0	DESCRIPTION	SPEC	MAKER	REMARK
1	6870JB8089A = C	PWB(PCB)	KS-PJT GOOD WDL	DOO SAN	T=1.6
2	-			-	-
3	6170JB2002H 6170JB2002M	TRANSFORMER,LOW VOLTAGE	240V ISV YES GR-MICOM ONE TAB 260V ISV YES GR-MICOM ONE TAB	TAE SUNG TAE SUNG	TRANS
5	6170JB2002R	TRANSFORMER, LOW VOLTAGE	140V I5V YES GR-MICOM ONE TAB	TAE SUNG	TRANS
6	6170JB2002W	TRANSFORMER, LOW VOLTAGE	115V 15V YES GR-MICOM ONE TAB	TAE SUNG	TRANS
7	-		YW396-07AV YEONHO 7PIN 3.96MM STRAIGHT SN	- YEON HO	- CONII
9	6630A09106C 6630A09106D	CONNECTOR (CIRC), WAFER CONNECTOR (CIRC), WAFER	TN/396-09AV	YEON HO	CONI CON2
10	6630A09106B	CONNECTOR (CIRC), WAFER	YW396-05AV	YEON HO	-
Ш	6630JB8007G	CONNECTOR (CIRC), WAFER	917786-1 AMP 8PIN 2.5MM STRAIGHT SN	AMP	CON5
12	6630JB8007H	CONNECTOR (CIRC), WAFER	917787-1 AMP 9PIN 2.5MM STRAIGHT SN	AMP	CON3 CON4
13 14	6630JB8007E	CONNECTOR (CIRC), WAFER	917784-1 AMP 6PIN 2.55MM STRAIGHT SN	- AMP	-
15	01ZZJB2023L	IC, DRAWING	TMP87C846N 42 SDIP BK KS-BETTER/GOOD(MASK)	TOSHIBA	ICI (01ZZJB2022M)
16	01ZZJB2022	IC, DRAWING	•	TOSHIBA	ICI (01ZZJB2022)
17 18	01ZZJB2022	IC, DRAWING	•	TOSHIBA	ICI (01ZZJB2022)
19	0IKE78I200B	IC,KEC	KIA7812PI 12V 1A,KEC	KEC	IC2
20	01KE781200M	IC,KEC	KIA7812PI 3DIP BK 12V IA REFORM	KEC	-
21	0IKE780500A	IC,KEC	KIA78505P, 3PIN, DIP. KEC	KEC	IC3
22 23	OISTLMIODIA OITO777400A	IC, STANDARD LOGIC	M54563FP MITSUBISHI 20 R/TP CONVERT TA7774AP 16 SDIP BK STEPPING MOTOR	MITSUBISH TOSHIBA	-
24	0IKE650030C	IC,KEC	KID65003AF I6SOP BK 7CH DRIVER	KEC	1C4
25	0IKE704200A	IC,KEC	KIA7042P 3P BK RESET	KEC	105
26	01RH934600D	IC,ROHM	BR93LC46RF-W 8PIN SOP BK EEPROW -	ROHM	-
27 28	- 6920000001A	- RELAY	- ALEI5BI2 MATSUSHITA 250VAC IGA 12VDC IA NO VENTING	- NAIS	- RYI
29	6920\(RD010A	RELAY	USII-12S YUYU 250VAC 3A 12VDC 1A	YUYU	-
30	6920JB2003B	RELAY	ALDII2 MATSUSHITA 250VAC 3A 12VDC 1A	OMRON	RY2-RY4
31 32	6920JB2009A = B	RELAY	G558-14 250VAC 5A 12VDC IC	OMRON	RY5
33	-	•	•		-
34	6212JB8001B	RESONATOR, CERAMIC	CSTS0400 MURATA 4MHZ +/- 0.5% ISPF TP NONE	MURATA	05CI (J570-00012B)
35 36	6102\#5V006A 6102JB8003A	VARISTOR VARISTOR	INRI4D33I ILJIN UL/CSA/VDE BK INRI4D27I ILJIN UL/VDE TP 270V	ILJIN	VAI
30	6102JB8003A	VARISTOR	INRI40271 ILJIN UL/VDE BK 620V	ILJIN	VÁL
38	0DD400709AA	DIODE, RECTIFIERS	IN4007 TP MOTOROLA IA	DELTA	DI-D5
39	-	•	•	-	-
40 41	- 0CE2286J6I0	CAPACITOR, AL, ELECTROLYTIC	- 2200 UF SMS,SG 35V M FL BULK	SAM HWA	CEI
42	0CE1086J610	CAPACITOR, FIXED ELECTROLYTIC	1000UF SWS,SG 35V 20% FL BULK	SAM HWA	-
43	0CE1086H618	CAPACITOR, AL.ELECTROLYTIC	1000 UF SWS,SG 25V M FL TP 5	SAM HWA	CE2
44 45	0CE4776H6I8 0CE2276F638	CAPACITOR, FIXED ELECTROLYTIC CAPACITOR, FIXED ELECTROLYTIC	470UF SWS,SG 25V 20% FL TP 5 220UF SWS,SG IGV 20% FW5 TP 5	SAM HWA SAM HWA	CE3 CE4
46	0CE1076H638	CAPACITOR, FIXED ELECTROLITIC	100UF SMS, SG 25V 20% FW5 TP 5	SAM HWA	-
47	0CE1066K638	CAPACITOR, FIXED ELECTROLYTIC	10UF SWS,SG 50V 20% FW5 TP 5	SAM HWA	CE6-CE8
48 49	0CE1056K638 0CE476IH638	CAPACITOR, FIXED ELECTROLYTIC CAPACITOR, FIXED ELECTROLYTIC	IUF SWS,SG 50V 20% FW5 TP 5	SAM HWA SAM HWA	CE9 CE5
50	002231N409	CAPACITOR, FILED ELECTROLITIC	47UF SMS,SG 25V 20% FW5 TP 5 0.022 UF D 100V J PE TP	SAM HWA	-
51	OCKIO2DK96A	CAPACITOR, FIXED CERAMIC (HIGH DIELECTRIC)	INF 2012 50V 80%, 20% R/TP X7R		CC6
52	OCK223DK96A	CAPACITOR, FIXED CERAMIC (HIGH DIELECTRIC)	22NF 2012 50V 80%,-20% R/TP X7R	MURATA	CC7-CCII
53 54	- 0CK104DK94A	CAPACITOR, FIXED CERAMIC (HIGH DIELECTRIC)	- 100NF 2012 50V R/TP (GRW40X7R104K50PE)	MURATA	- CCI-CC5
55	-		-	-	-
56	OCK1040K949	CAPACITOR, FIXED CERAMIC (HIGH DIELECTRIC)	0.IUF D 50V 80%,-20% F(Y5V) TA52	MURATA	-
57 58		· · · · · · · · · · · · · · · · · · ·	•	MURATA	-
59	0RDI500G609	RESISTOR, FIXED CARBON FILM	150 OHW 1/4W 5.00% TA52	SMART	RL4
60	0RD3900G609	RESISTOR, FIXED CARBON FILM	390 OHM 1/4 W 5.00% TA52	SMART	RLI-RL3
61 62	0RDI000G609 0RJI00IE672	RESISTOR, FIXED CARBON FILM RESISTOR, METAL GLAZED (CHIP)	100 OHM 1/4 W 5.00% TA52 IK OHM 1/8 W 5% 2012 B/TP	SMART ROHM	R5 RI6
63	0RJ200IE672	RESISTOR, METAL GLAZED (CHIP)	2K OHN 1/8 W 5% 2012 R/TP	ROHM	-
64	0RD2001G609	RESISTOR, FIXED CARBON FILM	2K OHM 1/4 W 5.00% TA52	SMART	R6-RI2
65 66	0RH2200L622 0RJ220IE672	RESISTOR, METAL GLAZED (CHIP) RESISTOR, METAL GLAZED (CHIP)	220 OHM 1/8 W 2012 5.00% D 2.2K OHM 1/8 W 5% 2012 R/TP	ROHM	RI7
67		RESISTOR, METAL GLAZED (CHIP)	4.7K OHM 1/8 W 5% 2012 R/TP	ROHM	RI
68	ORJ470IE672	RESISTOR, METAL GLAZED (CHIP)	4.7K OHM 1/8 W 5% 2012 R/TP	ROHM	-
69 70	0RD470IG609 0RJI002E672	RESISTOR, FIXED CARBON FILM RESISTOR, METAL GLAZED (CHIP)	4.7K OHM 1/4 W 5.00% TA52 10K OHM 1/8 W 5% 2012 R/TP	SMART	•
70	0RJ1002E672	RESISTOR, METAL GLAZEDIUHIP)	IOK OHM 1/8 W 5% 2012 R/TP	ROHM	
72	0RD1002G609	RESISTOR, FIXED CARBON FILM	IOK OHM 1/4 W 5.00% TA52	SMART	R3,R4,RCRI,RI3-RI5
73 74	0RJ2702E672	RESISTOR, METAL GLAZEDICHIP)	27K OHM 1/8 W 5% 2012 R/TP	ROHM	-
75	0RJI004E672 0RJ26I2E472	RESISTOR,METAL GLAZED(CHIP) RESISTOR,FIXED METAL FILM	IM 0HM 1/8 W 5% 2012 R/TP 26.IK 0HM 1/4 W 1.00% TA52	ROHM SMART	R2 RRI,RDI
76	0RJI622E472	RESISTOR, FIXED METAL FILM	16.2K OHM 1/4 W 1.00% TA52	SMART	RFI
77			-	-	
78 79	- 3J03565D	- FUSE, DRAWING	94 2500	SAM JU	-
80	0TRI06009AC	TRANSISTOR	KRAIOGWIKRA2206) TP KEC	KEC	01-04
					06
81 82	0TRI06009AF 0TR3I9809AA	TRANSISTOR TRANSISTOR	KRC 106M KEC KTC3198-TP-Y (KTC18151KEC	KEC KEC	05,07
83	6908JB3002F	BUZZER	CBE2220BP DAE YOUNG PIEZO 2KHZ 750B(CHINA)	DAE YOUNG	BUZZER
84	6600RRT00IZ	SWITCH, TACT	JTPI280A6 JEIL I2V DC 50MA	JEIL	-
85 86	6854B50001A 6854B50001A	JUMP WIRE	0.6MM 52MM TP TAPING SN(8MM) 0.6MM 52MM TP TAPING SN(10MM)	-	JI6 JI-J6,J8,JI0,JI4,JI7-J20
80	6854850001A	JUMP WIRE	0.6M/ 52M/ TP TAPING SN(12.5M/)	-	JI3
88	6854B50001A	JUMP WIRE	0.6MM 52MM TP TAPING SN(12.5MM)	-	J07
89	6854850001A	JUMP WIRE	0.6M 52M TP TAPING SN	-	-
90 91	6854850001A 4920JB3003A	JUMP WIRE HEAT SINK	0.6MM 52MM TP TAPING SN 30+25+30 IC-12V R-B50,51,52,53,54,55,56 2PIN I-SCREW 3	-	- (IC2)
92	ISBF0302418	SCREW TAP TITE(S), BINDING HEAD	+ D3.0 L8.0 MSWR3/FZY		(IC2)
93	9V#F0120000	SOLDER (ROSIN WIRE) RSO	DI.20	HEE SUNG	•
94	49111004 59333105	SOLDER, SOLDERING FLUX	H63A SG;0.825-0.830 KOREA F.H-206	- KOKI	-
95			100,010L0 01000 (01L) 1 11 L00		

9-5-3 PWB Assembly, Display, And Parts List

	F S	WTO2 RI	 (1) (1)	L101 		- Grand Switch
Qty	No	P/ND	DESCRIPTION	SPEC	MAKER	REMARK
1	1	6870JB8091A	PWB(PCB)	KS-PJT GOOD/BETTER DISPLAY	DOO SAN	t=1.6
1	2	6630AQ9159H	WAFER	SMAW250-09	YEON HO	
	4	0000110710711				
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	DIDDE,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	-
0.01	13	49111004	SOLDER, SOLDERING	Н6ЗА	-	-
0.0005	14	59333105	FLUX	SG;0.825-0.830 KOREA F.H-206	KOKI	-

9-6 PWB DIAGRAM

9-6-1 PWB Main Assembly

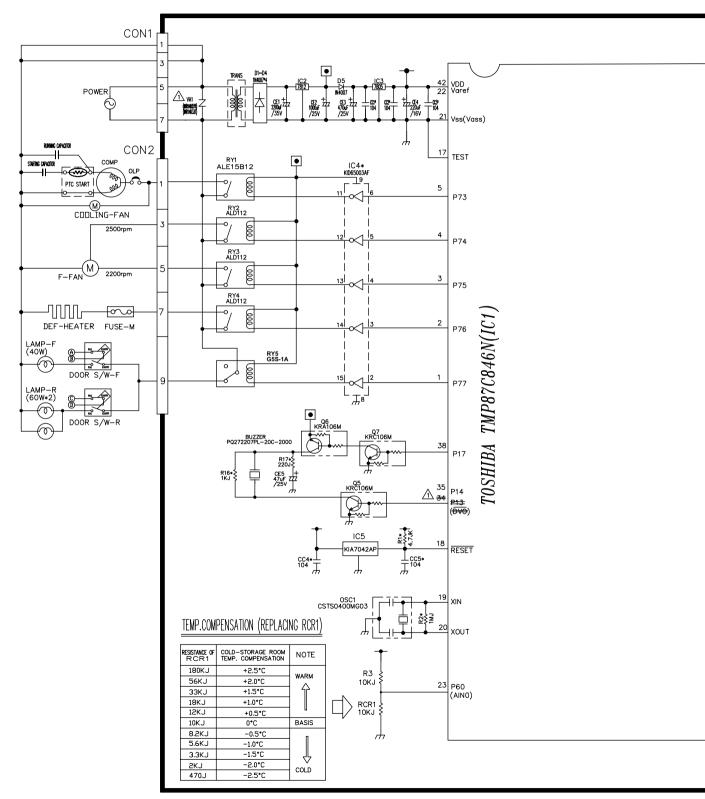
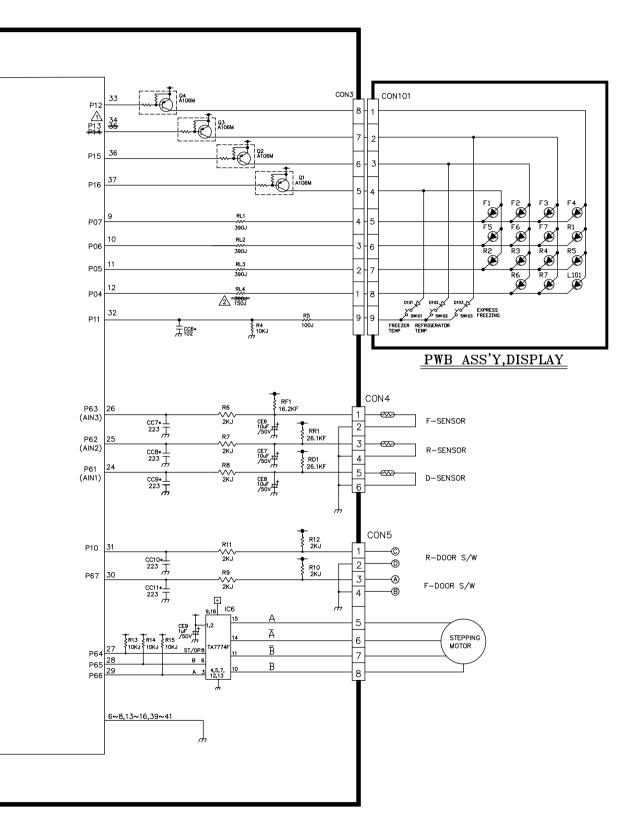


FIG.1 CIRCUIT DIAGRAM





P/No. 3828JL8071A

April 09, 2005