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Kenmore 795.75096400 Owner's Manual

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795.75096400](#)



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----- Manual continues below part list -----

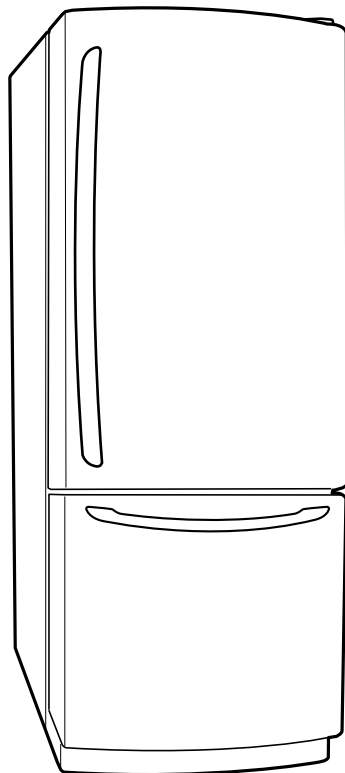
Available Replacement Parts for Kenmore 795.75096400

| | |
|-----------------------------|------------------------------------|
| 5218JJ3001A | Slide Rail |
| 5026JJ2001M | Net Shelf |
| MCK30060901 | Lamp Cover |
| 4984JJ3003A | Bush |
| 6615JB2005C | SENSOR |
| 3034JJ1002B | Lamp Reflector |
| 4930JJ2021A | Holder,cover(lower) |
| 1SZZJA3011B | Customized Screw |
| 4975JJ2002B | Rail Guide Assembly |
| 3550JJ1040A | Use 3550JA1388A Lamp Cover |
| 3110JJ1005A | Use 3110JA1096A Display Case |
| 5989JA0002A | Refrigerator Ice Maker 5989Ja0002n |
| 6912JB2004M | Incandescent Lamp |
| 5006JJ3016D | Handle Cap |
| 6600JB1010A | Push Button Switch |
| 6621JK2003B | Harness Assembly |
| 6500JB2001B | Sensor |
| 6871JB1215J | Main Pcb Assembly |
| 4890JL1002M | Glass Shelf |
| AJU55759303 | Refrigerator Water Inlet Valve |
| ADX73350901 | Door Gasket |



REFRIGERATOR SERVICE MANUAL

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



MODELS:

795.75082.401/402
795.75083.401/402
795.75084.401/402
795.75086.401/402
795.75089.401/402
795.75092.401/402
795.75093.401/402
795.75094.401/402
795.75096.401/402
795.75099.401/402
795.75282.401/402
795.75283.401/402
795.75284.401/402
795.75286.401/402
795.75289.401/402
795.75292.401/402
795.75293.401/402
795.75294.401/402
795.75296.401/402
795.75299.401/402

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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

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

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

1-2 IMPORTANT NOTICE

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

1-3 ELECTRICAL SPECIFICATIONS

| | |
|---|--------------------------------------|
| Temperature Control (Position: MID) | -6°F to +8°F |
| Defrost Control | Automatic |
| Defrost Thermostat | 50°F |
| Electrical Rating: 115VAC, 60Hz | 1 -5A |
| Maximum Current Leakage | 0.5mA |
| Maximum Ground Path Resistance | 0.14Ohms |
| Energy Consumption | 20cuft 482KWh/yr 22cuft 494KWh/yr |

1-4 NO LOAD PERFORMANCE

Control Position: MID/MID

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

1-5 REFRIGERATION SYSTEM

1-6 INSTALLATION

| | | |
|--|-----------------------|--|
| Minimum Compressor Capacity Vacuum | 21 in | Clearance must be provided at top, sides and rear of the refrigerator for air circulation. |
| Minimum Equalized Pressure | | |
| @ 70°F | 49PSIG AT TOP | 1in |
| @ 90°F | 56PSIG AT SIDES | 1/18 in |
| Refrigerant R134a | 4.2 Oz AT REAR | 1in |
| Compressor | 687BTU/hr | |

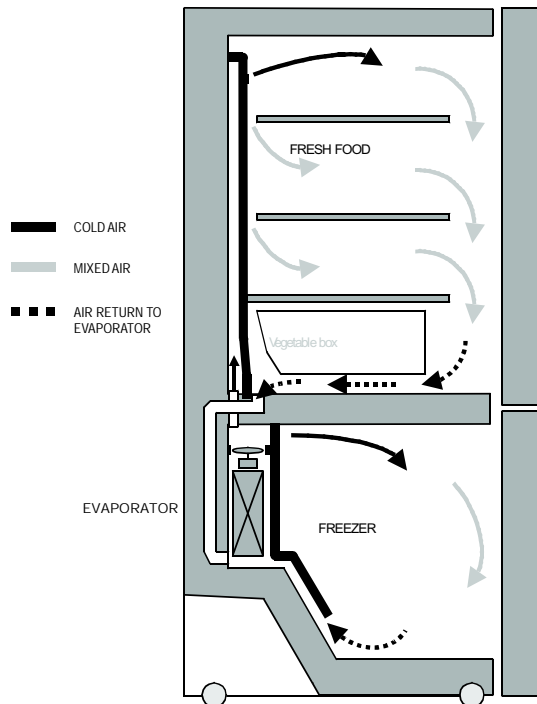
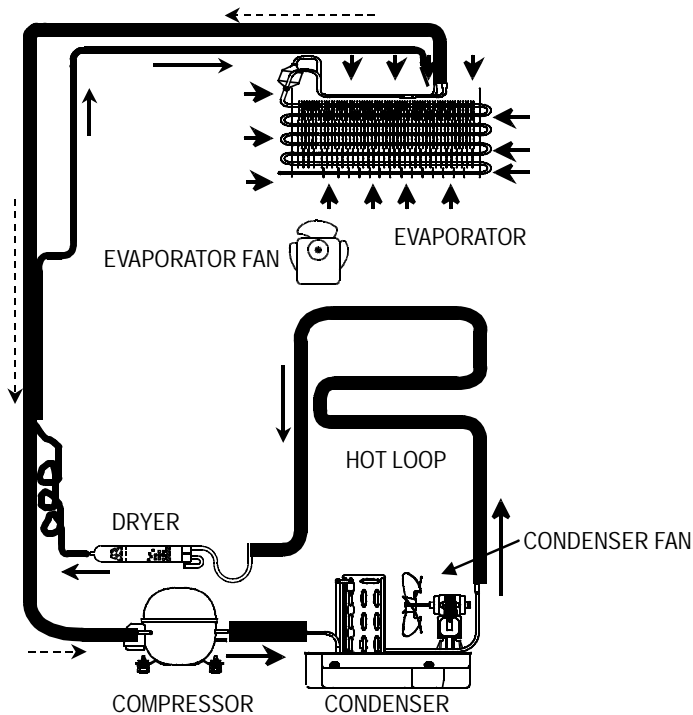
1. SPECIFICATIONS

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

1-7 REPLACEMENT PARTS

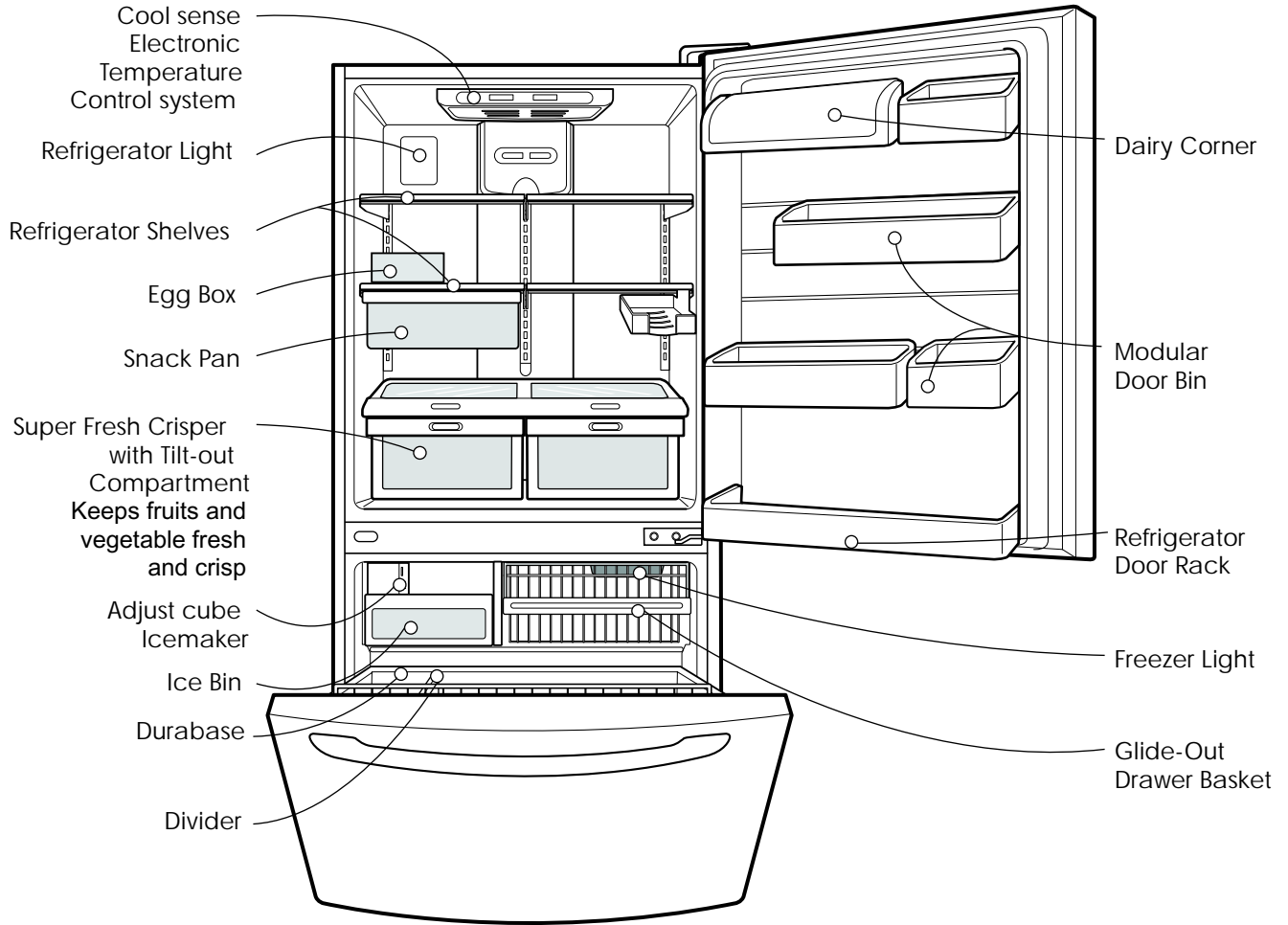
| | |
|--------------------------------|----------------------|
| Relay (PTC) | EBG32606502 |
| Overload Protector (OLP) | 6750C-0004S |
| Defrost Thermostat | 6615JB2005C |
| Defrost Heater | 20cuft - 5300JB1100D |
| | 22cuft - 5300JB1100J |
| Evaporator Fan Motor | 4680JK1001B |
| Capacitor | 0CZZJB2003H |
| Compressor (Hi-Side) | 2521CRA5715 |
| Evaporator (Lo-Side) | 20cuft - 5421JJ1001A |
| | 22cuft - 5421JJ1001B |
| Condenser | 20cuft - 5403JJ1005A |
| | 22cuft - 5403JJ1007A |
| Dryer | 5851JJ2002F |
| Temperature Control | 6871JB2047A |
| Main Control | 6871JB1215J |

1-8 AIR FLOW



2. PARTS IDENTIFICATION

► FREEZER DRAWER MODEL

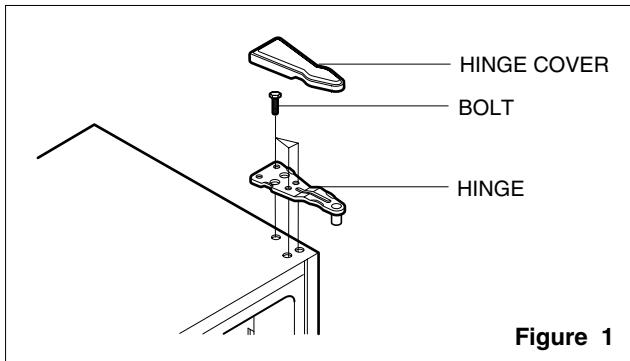


3. DISASSEMBLY

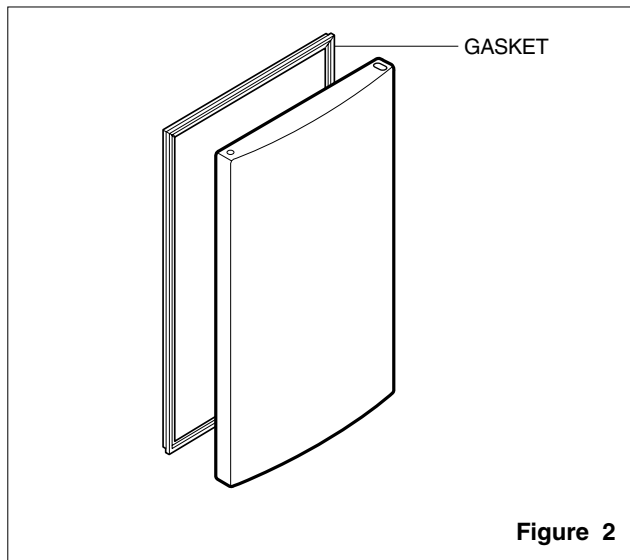
3-1 DOOR

● Refrigerator Door

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

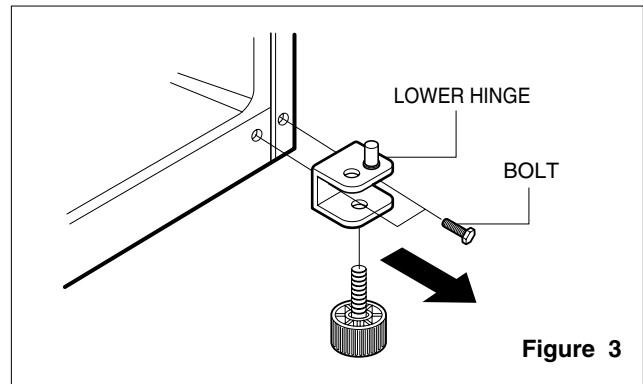


3. Pull out the door gasket to remove from the door foam assembly.



● Freezer Door

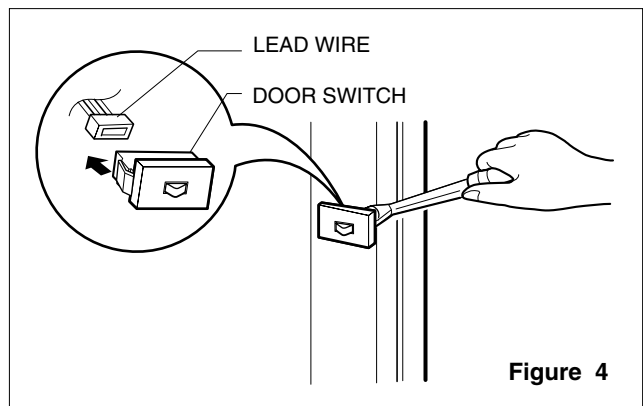
1. Loosen the hexagonal bolts attaching the lower hinge to the body to remove the refrigerator door only.



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

3-2 DOOR SWITCH

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



3-3 FAN AND FAN MOTOR

1. Remove the freezer shelf. (If your refrigerator has an icemaker, remove the icemaker first)
2. Remove the grille by pulling it out and by loosening a screw.
3. Remove the Fan Motor assembly by loosening 2 screws and disassemble the shroud.
4. Pull out the fan and separate the Fan Motor and Bracket.

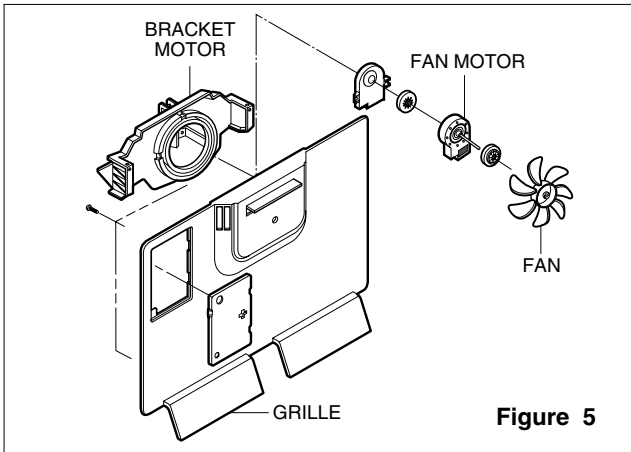


Figure 5

3-4 DEFROST CONTROL ASSEMBLY

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

The Defrost Sensor works to defrost automatically. It is attached to the metal side of the Evaporator and senses its temperature. At 72°C, it turns the Defrost Heater off.

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

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

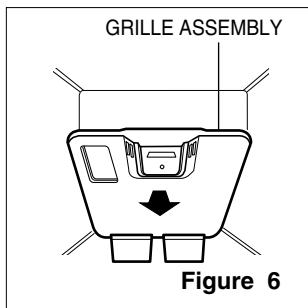


Figure 6

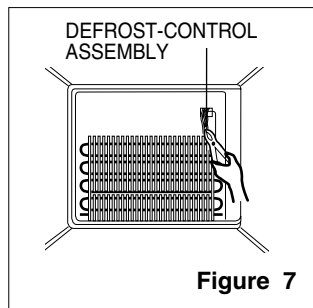


Figure 7

3-5 LAMP

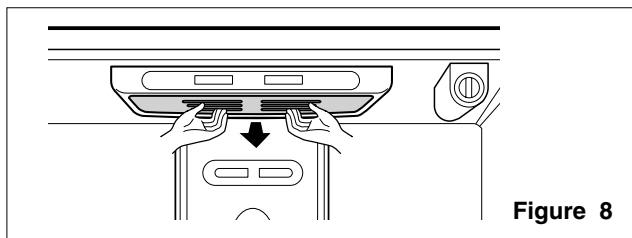


Figure 8

3-5-1 Refrigerator Compartment Lamp

1. Unplug the power cord from the outlet.
2. Remove refrigerator shelves.
3. Release the hooks on both ends of the lamp shield and pull the shield downward to remove it.
4. Turn the lamp counterclockwise.
5. Assemble in reverse order of disassembly. Replacement bulb must be the same specification as the original (Max. 60 W-2EA).

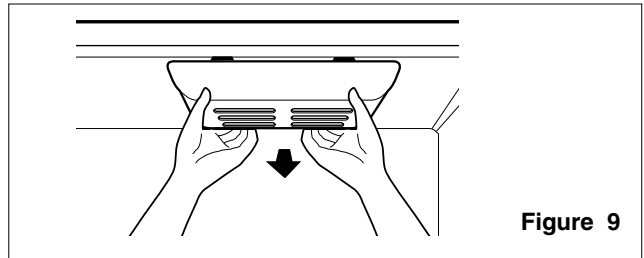


Figure 9

3-5-2 Freezer Compartment Lamp

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

3-6 CONTROL BOX-REFRIGERATOR

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

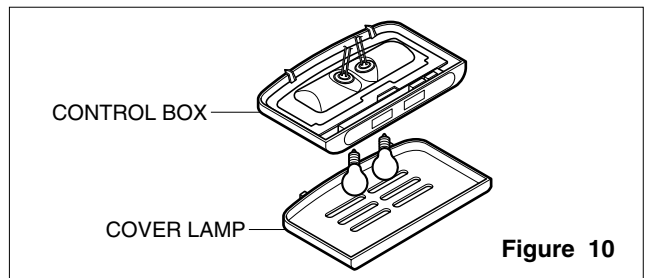


Figure 10

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

3-7 MULTI DUCT

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

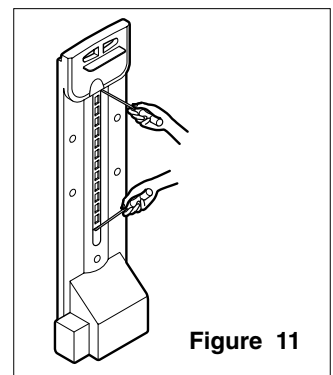


Figure 11

4. ADJUSTMENT

4-1 COMPRESSOR

4-1-1 Role

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

4-1-2 Composition

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

4-1-3 Note for Usage

- (1) Be careful not to allow over-voltage and over-current.
- (2) If compressor is dropped or handled carelessly, poor operation and noise may result.
- (3) Use proper electric components appropriate to the Particular Compressor in your product.
- (4) Keep Compressor dry.
If the Compressor gets wet (in the rain or a damp environment) and rust forms in the pin of the Hermetic Terminal, poor operation and contact may result.
- (5) When replacing the Compressor, be careful that dust, humidity, and soldering flux don't contaminate the inside of the compressor. Dust, humidity, and solder flux contaminate the cylinder and may cause noise, improper operation or even cause it to lock up.

4-2 PTC-STARTER

4-2-1 Composition of PTC-Starter

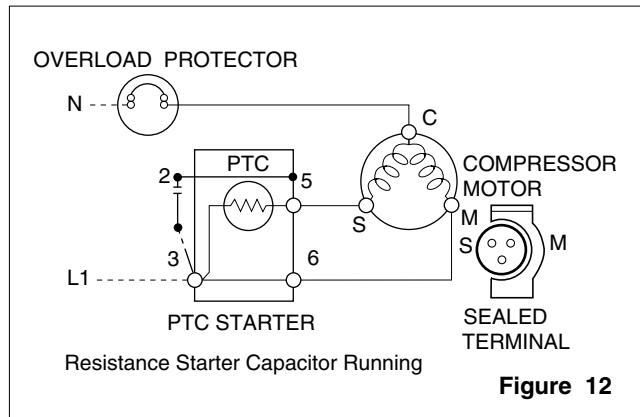
- (1) PTC (Positive Temperature Coefficient) is a no-contact semiconductor starting device which uses ceramic material consisting of BaTiO₃.
- (2) The higher the temperature is, the higher the resistance value. These features are used as a starting device for the Motor.

4-2-2 Role of PTC-Starter

- (1) The PTC is attached to the Sealed Compressor and is used for starting the Motor.
- (2) The compressor is a single-phase induction motor. During the starting operation, the PTC allows current flow to both the start winding and main winding.

4-2-3 PTC-Applied Circuit Diagram

● Starting Method for the Motor



4-2-4 Motor Restarting and PTC Cooling

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

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

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

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

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

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

4-3 OLP (OVERLOAD PROTECTOR)

4-3-1 Definition of OLP

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

4-3-2 Role of the OLP

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



Figure 13

4-4 TO REMOVE THE COVER PTC



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



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

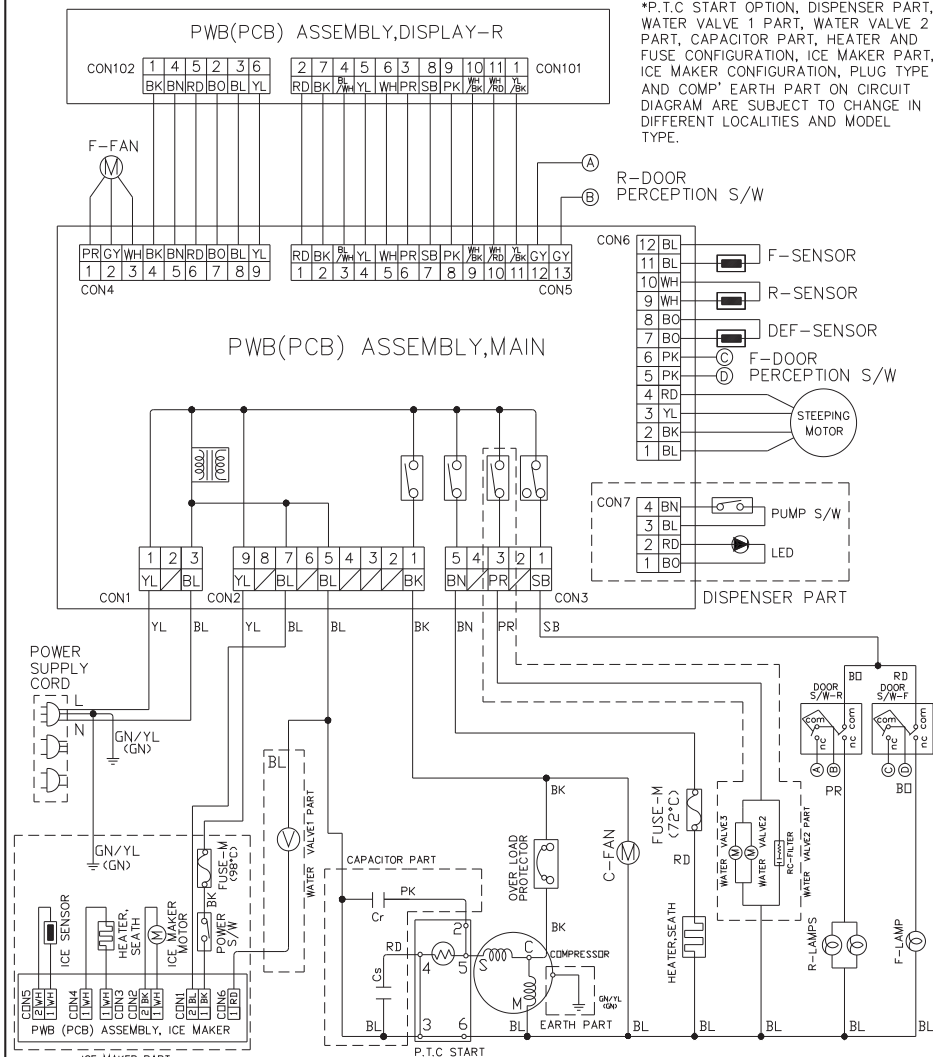


- (5) Turn 45° in the direction of ② and take it out.
- (6) Assembly in reverse order of disassembly.

5. CIRCUIT DIAGRAM

Best / Best dispenser

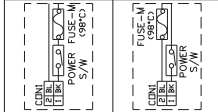
DIAGRAMA ELECTRICO - CIRCUIT DIAGRAM



*P.T.C START OPTION, DISPENSER PART, WATER VALVE 1 PART, WATER VALVE 2 PART, CAPACITOR PART, HEATER AND FUSE CONFIGURATION, ICE MAKER PART, ICE MAKER CONFIGURATION, PLUG TYPE AND COMP EARTH PART ON CIRCUIT DIAGRAM ARE SUBJECT TO CHANGE IN DIFFERENT LOCALITIES AND MODEL TYPE.

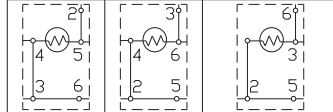
★ ICE MAKER CONFIGURATION

115~127V/50,60Hz 220~240V/50,60Hz



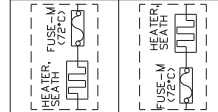
★ P.T.C START OPTION

LG COMP* EMBRACO COMP* EMB. 220~240V COMP*



★ HEATER AND FUSE CONFIGURATION

115~127V/50,60Hz 220~240V/50,60Hz

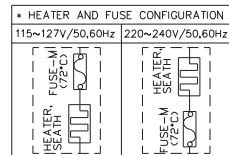
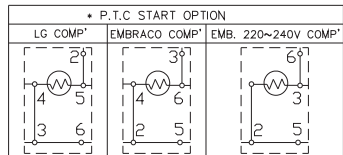
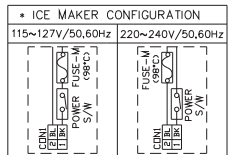
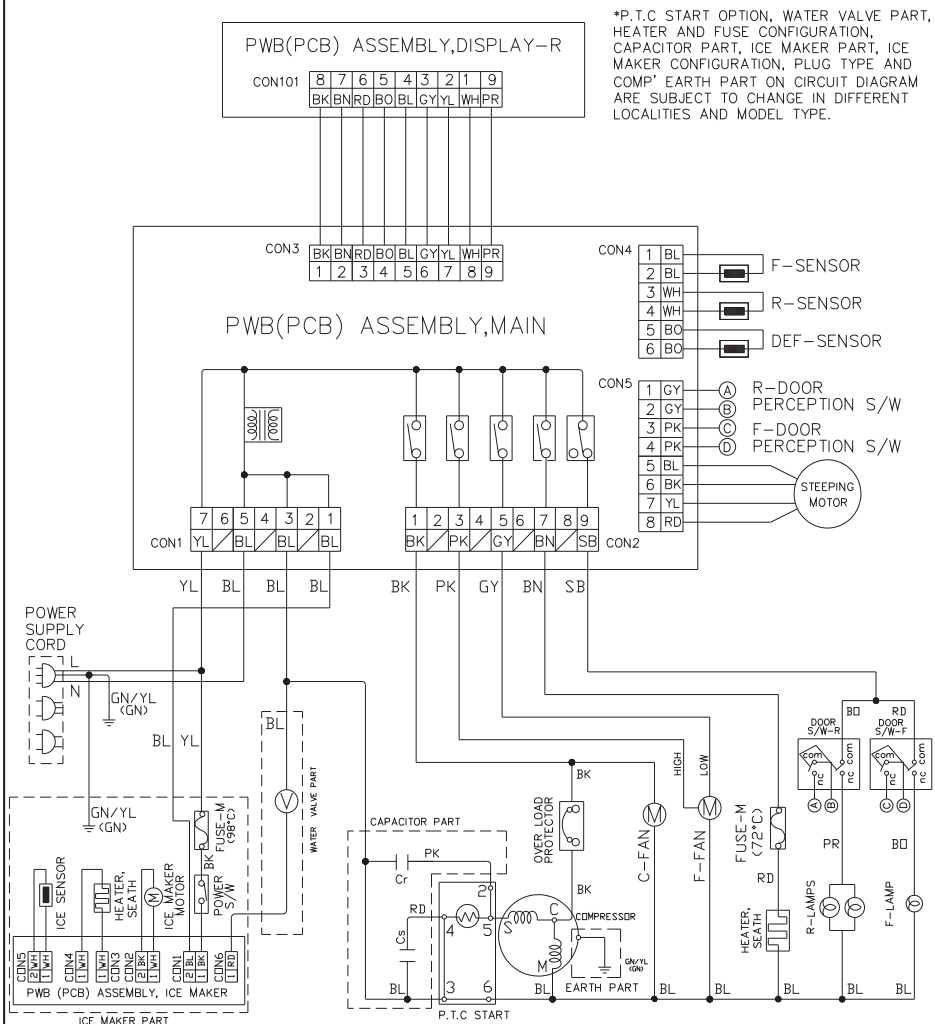


| | | | |
|---------------------|-------------------------|---------------|----------------------------------|
| BK: NEGRO/BLACK | BN: CAFE/BROWN | RD: ROJO/RED | BO: NARANJA/BRIGHT ORANGE |
| YL: AMARILLO/YELLOW | GN: VERDE/GREEN | BL: AZUL/BLUE | PR: VIOLETA/PURPLE GY: GRIS/GRAY |
| WH: BLANCO/WHITE | SB: AZUL CIELO/SKY BLUE | PK: ROSA/PINK | |

Good / Better



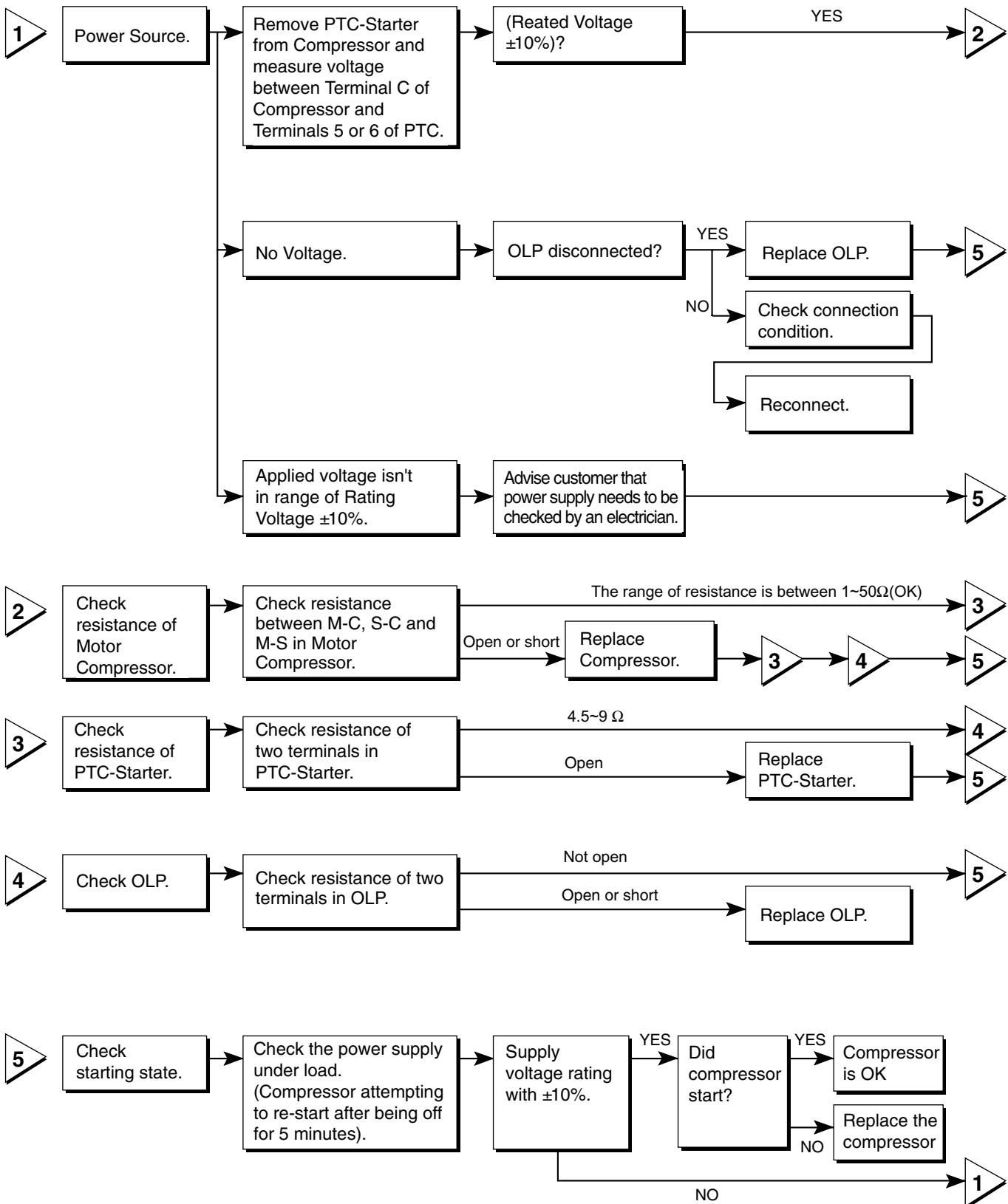
DIAGRAMA ELECTRICO - CIRCUIT DIAGRAM



| | | | |
|---------------------|-------------------------|---------------|---------------------------|
| BK: NEGRO/BLACK | BN: CAFE/BROWN | RD: ROJO/RED | BO: NARANJA/BRIGHT ORANGE |
| YL: AMARILLO/YELLOW | GN: VERDE/GREEN | BL: AZUL/BLUE | PR: VIOLETA/PURPLE |
| WH: BLANCO/WHITE | SB: AZUL CIELO/SKY BLUE | PK: ROSA/PINK | GY: GRIS/GRAY |

6. TROUBLESHOOTING

6-1 COMPRESSOR AND ELECTRIC COMPONENTS



6-2 PTC AND OLP

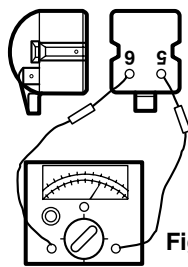


Figure 14

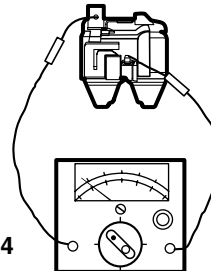


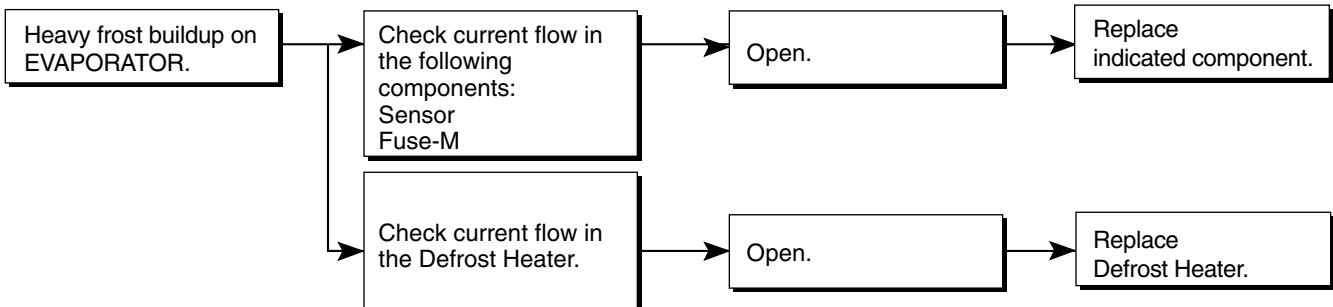
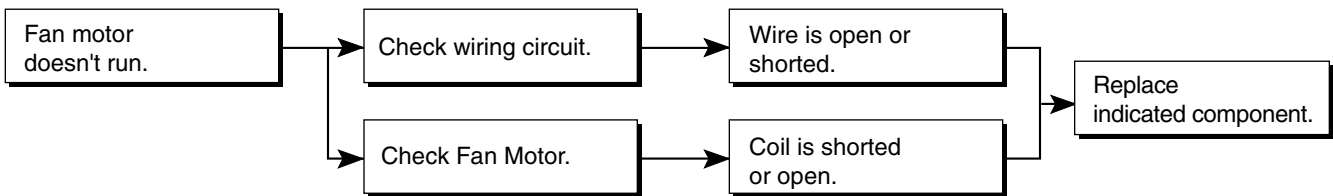
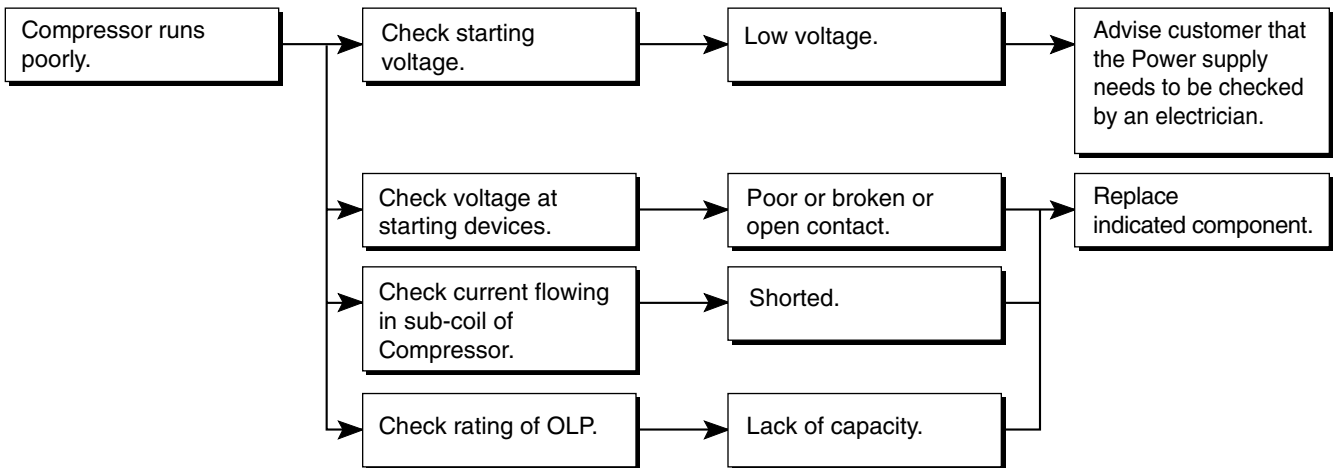
Figure 15

6-3 OTHER ELECTRICAL COMPONENTS

▼ Not cooling at all



▼ Poor cooling performance



6-4 SERVICE DIAGNOSIS CHART

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

● Other possible problems:



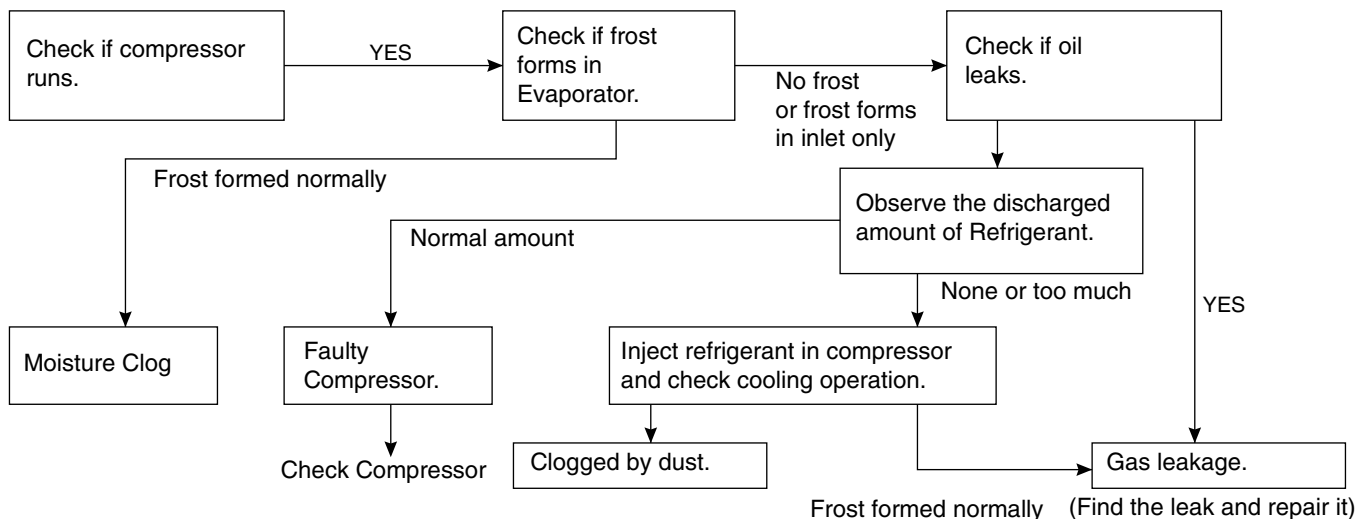
6-5 REFRIGERATION CYCLE

▼ Troubleshooting Chart

| CAUSE | | STATE OF THE UNIT | STATE OF THE EVAPORATOR | TEMPERATURE OF THE COMPRESSOR | REMARKS |
|-----------------------|------------------|---|--|---|---|
| LEAKAGE | PARTIAL LEAKAGE | Freezer compartment and Refrigerator don't cool normally. | Low flowing sound of Refrigerant is heard and frost forms in inlet only. | A little higher than ambient temperature. | <ul style="list-style-type: none"> Refrigerant level is low due to a leak. Normal cooling is possible by restoring the normal amount of refrigerant and repairing the leak. |
| | COMPLETE LEAKAGE | Freezer compartment and Refrigerator don't cool normally. | Flowing sound of refrigerant is not heard and frost isn't formed. | Equal to ambient temperature. | <ul style="list-style-type: none"> No discharging of Refrigerant. Normal cooling is possible by restoring the normal amount of refrigerant and repairing the leak. |
| CLOGGED BY DUST | PARTIAL CLOG | Freezer compartment and Refrigerator don't cool normally. | Flowing sound of refrigerant is heard and frost forms in inlet only. | A little higher than ambient temperature. | <ul style="list-style-type: none"> Normal discharging of the refrigerant. The capillary tube is faulty. |
| | WHOLE CLOG | Freezer compartment and Refrigerator don't cool. | Flowing sound of refrigerant is not heard and frost isn't formed. | Equal to ambient temperature. | <ul style="list-style-type: none"> Normal discharging of the Refrigerant. |
| MOISTURE CLOG | | Cooling operation stops periodically. | Flowing sound of refrigerant is not heard and frost melts. | Lower than ambient temperature. | <ul style="list-style-type: none"> Cooling operation restarts when heating the inlet of the capillary tube. |
| DEFECTIVE COMPRESSION | COMP-RESSION | Freezer and Refrigerator don't cool. | Low flowing sound of refrigerant is heard and frost forms in inlet only. | A little higher ambient temperature. | <ul style="list-style-type: none"> Low pressure at high side of compressor due to low refrigerant level. |
| | NO COMP-RESSION | No compressing operation. | Flowing sound of refrigerant is not heard and there is no frost. | Equal to ambient temperature. | <ul style="list-style-type: none"> No pressure in the high pressure part of the compressor. |

▼ Leakage Detection

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



▼ General Control of Refrigerating Cycle

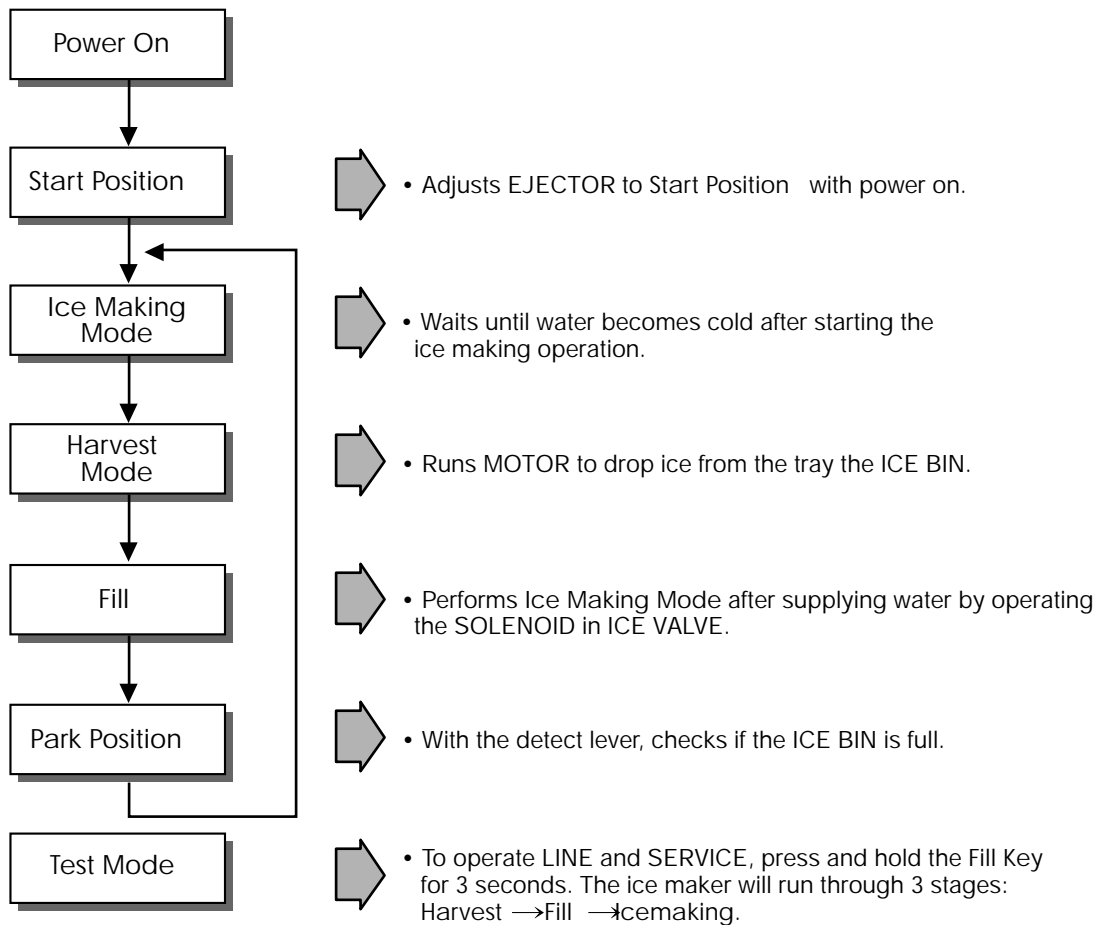
| NO. | ITEMS | UNIT | STANDARDS | PURPOSES | REMARKS | |
|-----|-------------------------------------|-----------------------------|--|--|--|--|
| 1 | Pipe and piping system opening time | Min. | Pipe: within 1 hour. Comp: within 10 minutes. Drier: within 20 minutes. | To protect moisture penetration. | The opening time should be reduced to a half of the standards during rain and rainy seasons (the penetration of water into the pipe is dangerous). | |
| 2 | Welding | Nitrogen pressure | Weld under Nitrogen atmosphere. (N ₂ pressure: 0.1~0.2 kg/cm ²) | To protect oxide scale formation. | - Refer to repair note in each part. - R-134a refrigerant is more susceptible to leaks than R-12 and requires more care during welding. - Do not apply force to pipes before and after welding to protect pipe from cracking. | |
| 3 | N ₂ sealed parts | Confirm N ₂ leak | Confirm the sound of pressure relief when removing the rubber cap. Sound: usable No sound: not usable | To protect moisture penetration. | - In case of evaporator parts, if it doesn't make sound when removing rubber cap, blow dry air or N ₂ gas for more than 1 min. and then use the parts. | |
| 4 | Refrigeration Cycle | Evacuation time | Min. | More than 40 minutes | To remove moisture. | Note: Only applicable to the model equipped with reverse flow protect plate. Vacuum efficiency can be improved by operating compressor during evacuation. The rubber pipes for R-12 refrigerant will be melted when they are used for R-134a refrigerant (causes of leak.) |
| | | Vacuum degree | Torr | Below 0.03 (ref) | | |
| | | Vacuum | EA | High and low pressure sides are evacuated at the same time for models above 200 l. | | |
| | | Vacuum piping | EA | Use R-134a manifold exclusively. | To protect mixing of mineral and ester oils. | |
| | | 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

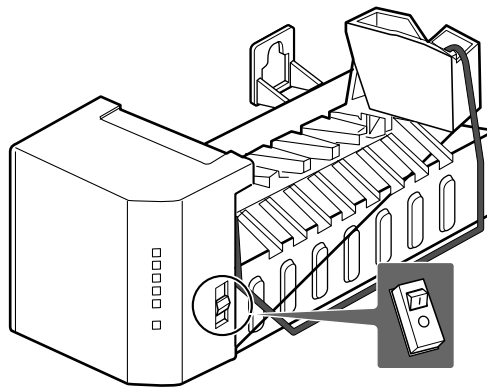
Ice Maker 5 Steps

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.)



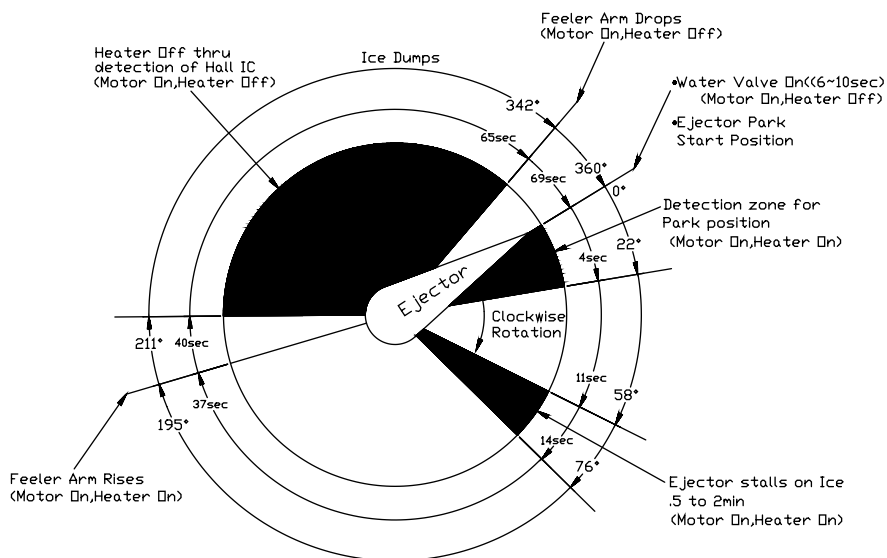
7-2-4 Fill / Park Position

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.

Water supply amount TABLE

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

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 Harvest Fill 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.

Diagnosis TABLE

| STAGE | ITEMS | INDICATOR | REMARKS |
|-------|---|-----------------------------------|--|
| 1 | HEATER | | Five seconds after heater starts, heater will go off if temperature recorded by sensor is 10°C 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. |

7-3 DEFECT DIAGNOSIS FUNCTION

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

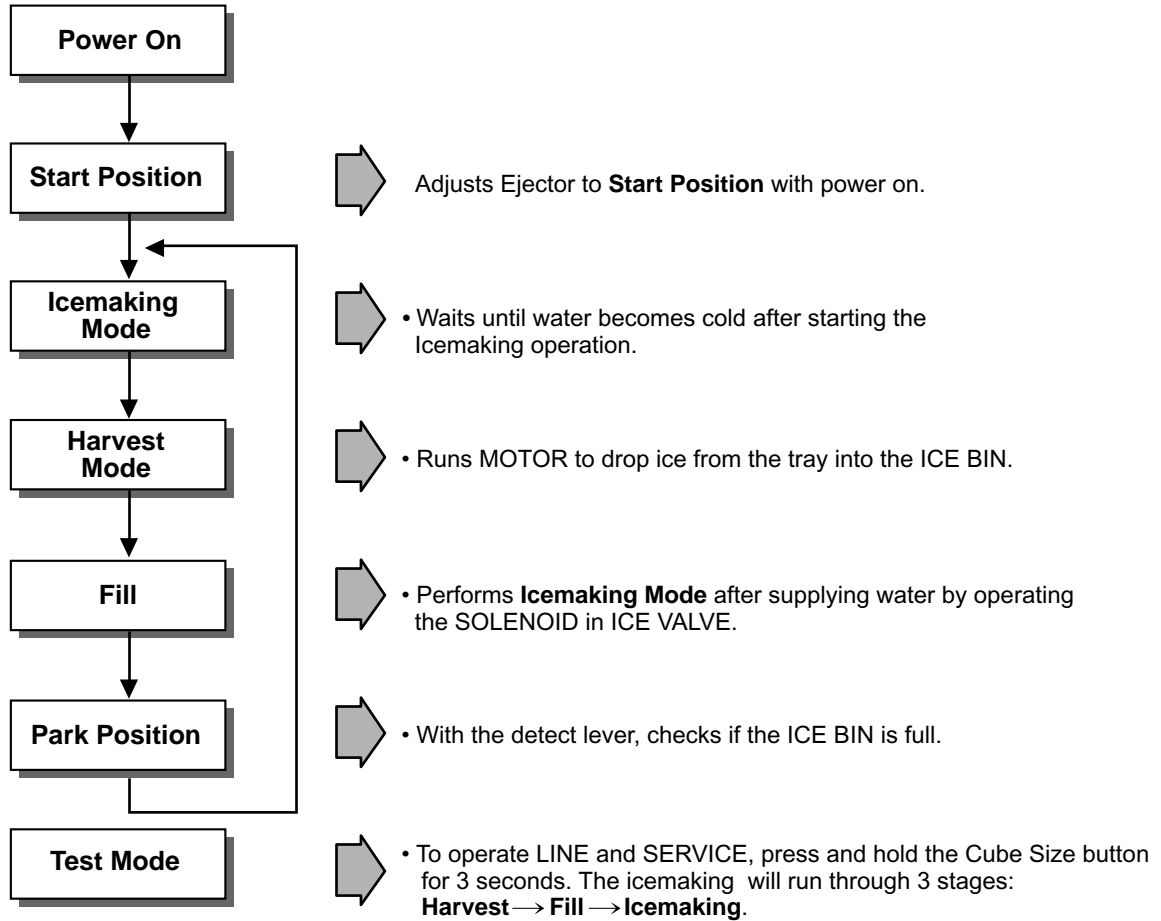
| NO | DIVISION | INDICATOR | CONTENTS | REMARKS |
|----|-------------------------------|---------------------|---|--|
| 1 | Normal | Mark time to supply | None | Display switch operates properly |
| 2 | Ice-Making Sensor malfunction | | Cut or short-circuited wire | Make sure that the wire on each sensor is connected. |
| 3 | Ice Maker Kit malfunction | | When ejector blades do not 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.

Ice Maker 3 Steps

7-4 OPERATION PRINCIPLE

7-4-1 Operation Principle of Icemaker



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



7-5 ICE MAKER FUNCTIONS

7-5-1 Ice Making Mode

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

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

7-5-2 Harvest Mode




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

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

7-5-3 Fill/Park Position

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






Water supply amount table

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

7-5-5 Function TEST



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

Diagnosis TABLE

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

7-6 DEFECT DIAGNOSIS FUNCTION

7-6-1 ERROR CODES shown on Ice Maker water supply control panel

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

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

8. DESCRIPTION OF FUNCTION & CIRCUIT OF MICOM

8-1 FUNCTION

8-1-1 Function

1. When the appliance is plugged in, it is set to "4" for Refrigerator and "4" for freezer.
You can adjust the Refrigerator and the Freezer control temperature by pressing the ADJUST button.
2. When the power is initially applied or restored after a power failure, it is automatically set to "4" & "4".



8-1-2 Control of freezer fan motor

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

8-1-3 EXPRESS FREEZE

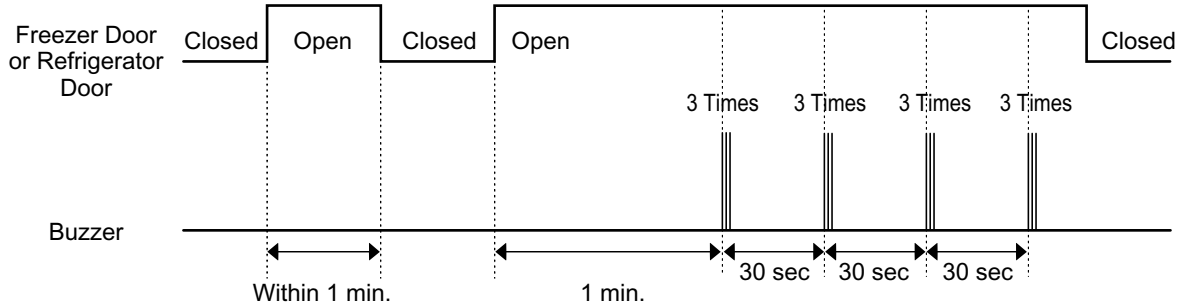
1. The purpose of this function is to intensify the cooling speed of freezer and to increase the amount of ice.
2. Whenever selection switch is pressed, selection/release, the LED will turn ON or OFF.
3. If there is a power cut and the refrigerator is power on again, EXPRESS FREEZE function will be canceled.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

8-1-4. REFRIGERATOR LAMP AUTO OFF

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

8-1-5 Alarm for Open Door

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



8-1-6 Buzzer Sound

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

8-1-7 Defrosting (removing frost)

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

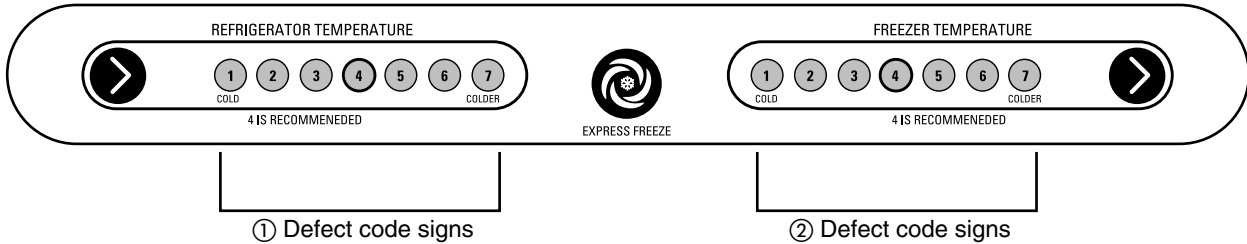
8-1-8 Electrical Parts Are Turned On Sequentially

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

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

8-1-8 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

| NO | ITEM | ERROR CODE | | CONTENTS | REMARKS |
|----|--------------------------------|------------|-----------------|---|--|
| | | ① | ② | | |
| 1 | Failure of freezer sensor | All off | ● ○ ○ ○ ○ ○ ○ ○ | Cut or short circuit wire | Inspect Connecting wires on each sensor |
| 2 | Failure of Refrigerator sensor | All off | ○ ● ○ ○ ○ ○ ○ ○ | Cut or short circuit wire | |
| 3 | Failure of defrost sensor | All off | ○ ○ ● ○ ○ ○ ○ ○ | Cut or short circuit wire | |
| 4 | Poor of defrost | All off | ● ● ● ● ○ ○ ○ | 2hours later After starting defrost, If sensor doesn't be over 46°F (8°C) | Snapping of defrost heater or Temperature fuse, pull-out of Connector (indicated minimum 2 Hours after failure occurs) |

8-1-10 TEST Mode

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

| MODE | MANIPULATION | CONTENTS | REMARKS |
|-------|---|---|--|
| TEST1 | Push Express Freeze key and COLDER KEY of Freezer Temp. at the same time over 3 seconds. | <ol style="list-style-type: none"> 1. Continuous operation of the COMPRESSOR 2. Continuous operation of the freezer fan 3. STEPPING DAMPER OPEN 4. Defrosting Heater OFF 5. Every DISPLAY LED ON | |
| TEST2 | Push Express Freeze key and COLDER KEY of Freezer Temp. at the same time over 3 seconds in TEST MODE 1 | <ol style="list-style-type: none"> 1. COMP OFF 2. Freezer FAN OFF 3. STEPPING DAMPER CLOSE 4. Defrosting heater ON 5. DISPLAY LED 1, 3, 5, 7 ON | Reset if the temperature of the Defrosting sensor is 46°F (8°C) or more. |
| Reset | Push Express Freeze 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 released, the previous mode is restored.

* Freezer Fan RPM Variable Check:

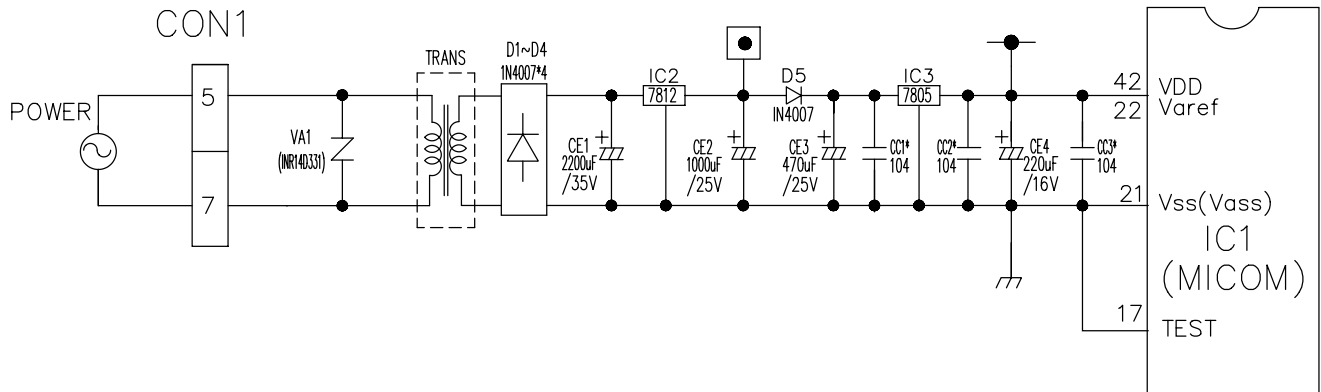
In case the freezer fan is in operation when the COLD KEY in Refrigerator and Freezer Temp. Control are pressed for more than one second at the same time freezer fan RPM changes. (for example if high speed, to normal speed or if normal speed, to high speed for 30 seconds)
After 30 seconds, it turns to 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 works normally and can be demonstrated)
4. It reset if you do again as clause.

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 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 short-circuited 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.

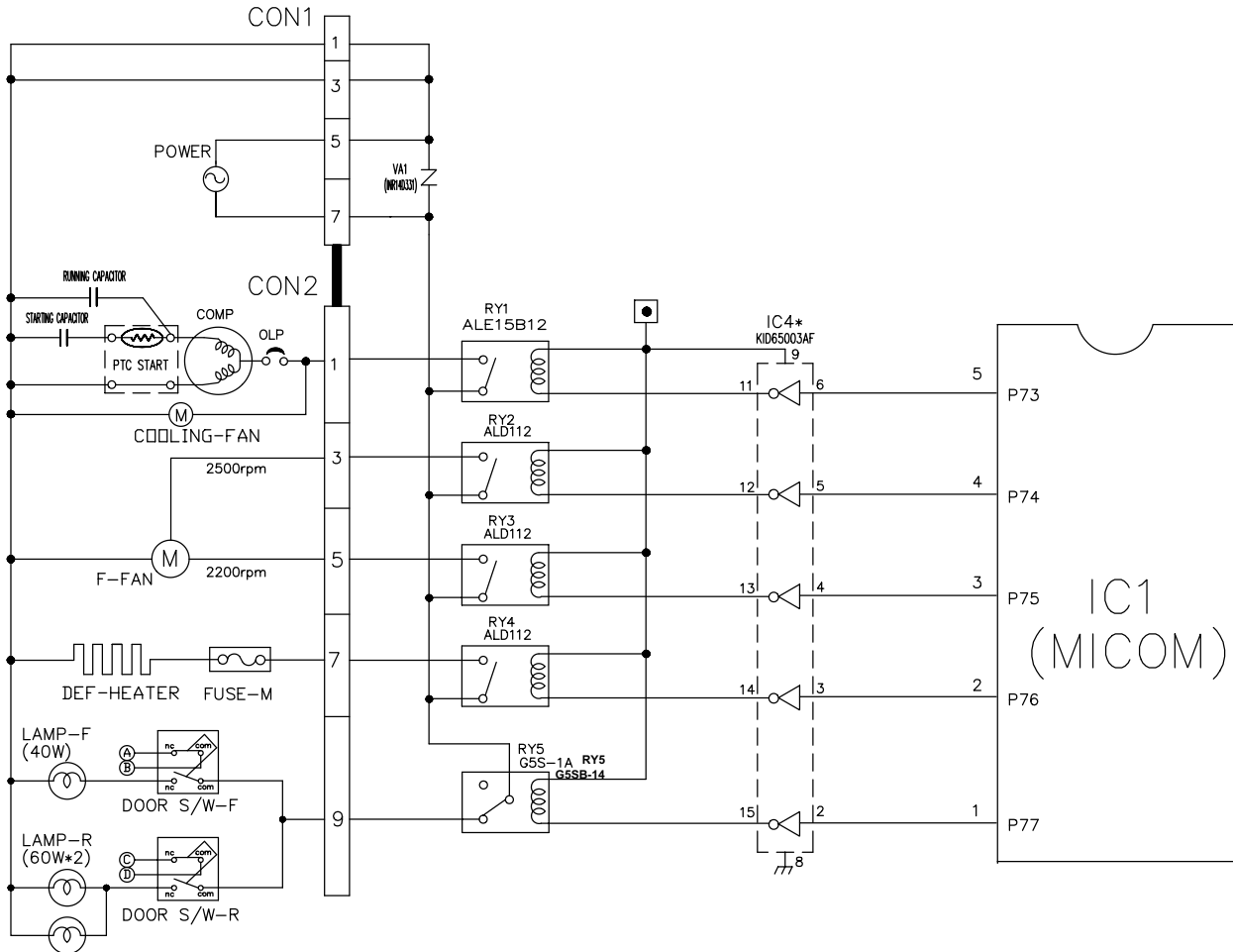
8-2-3 Reset Circuit



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.)

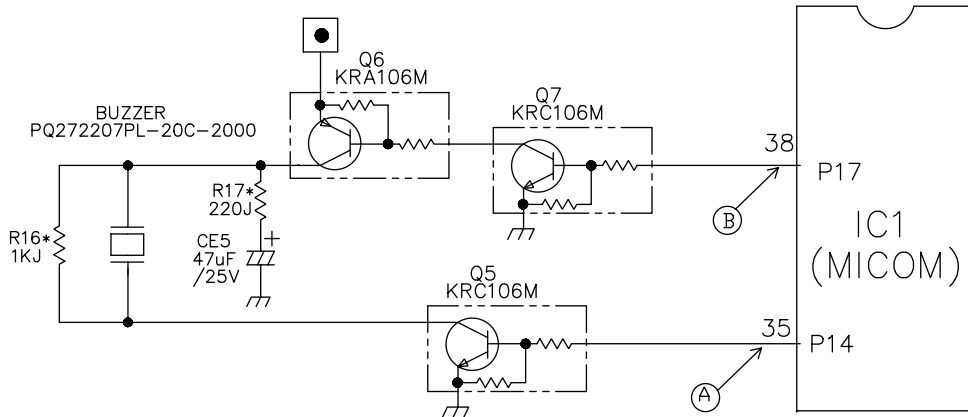
8-2-4 Load / Buzzer Drive & Open Door Detection Circuit

1. Load Drive Condition Check



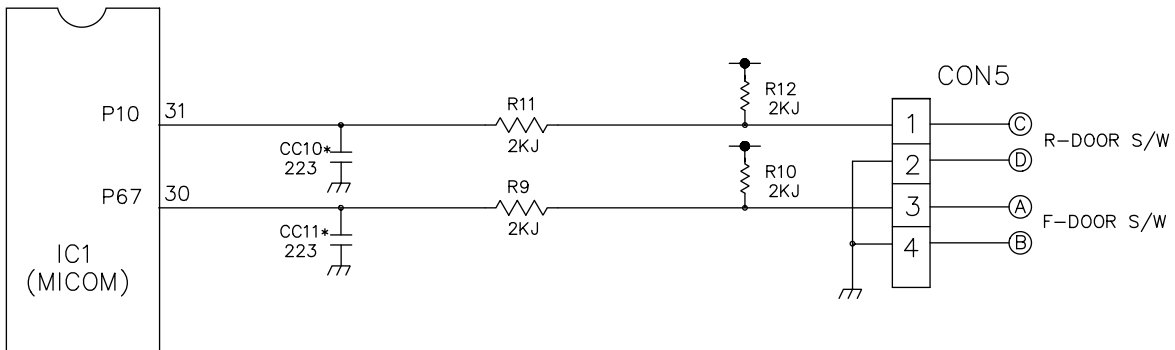
| LOAD TYPE | | COMP | DEFROSTING HEATER | LAMP | FREEZER FAN MOTOR (HIG RPM) | FREEZER FAN MOTOR (LOW RPM) |
|----------------------------|-----|-------------|-------------------|-------|-----------------------------|-----------------------------|
| Measurement Location (IC4) | | NO.11 | NO.14 | NO.15 | NO.12 | NO.13 |
| Condition | ON | 1V or below | | | | |
| | OFF | 12V | | | | |

2. Buzzer Drive Condition Check



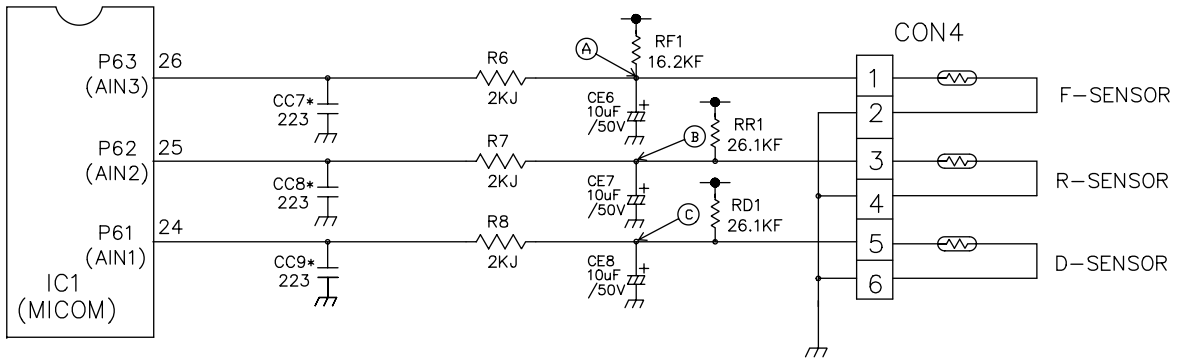
| Condition Measurement Location | Tone (Ding~Dong~) when the button on the display is pushed. | Alarm for open door (beep-beep-beep) | OFF |
|-----------------------------------|---|--------------------------------------|-----|
| IC1 (A) | | | 0 V |
| IC1 (B) | | | 0 V |

3. Open Door Detection Circuit Check



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

8-2-5 Temperature Sensor Circuit

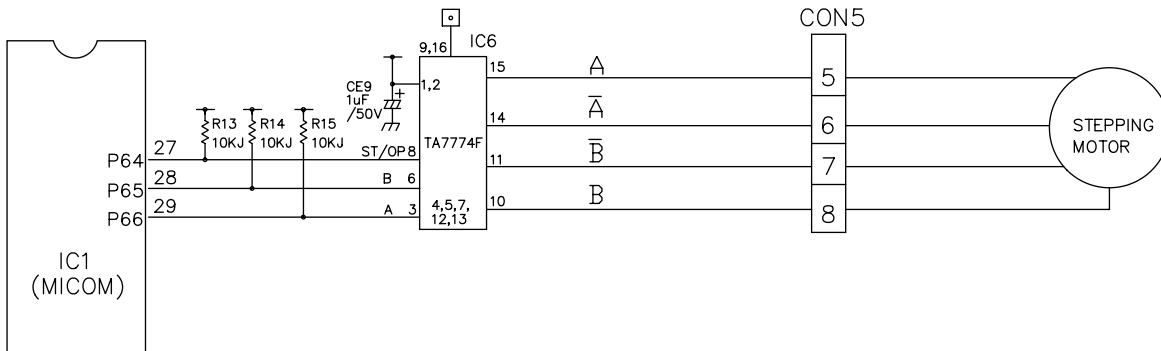


The upper CIRCUIT reads REFRIGERATOR temperature, FREEZER Temperature, and DEFROST-SENSOR temperature for defrosting and the indoor temperature for compensating for the surrounding temperature into MICOM. OPENING or SHORT state of each TEMPERATURE SENSOR are as follows:

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

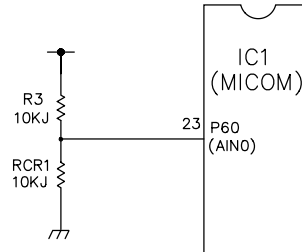
8-2-6 Refrigeration Compartment Stepping Motor Damper Circuit

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



8-2-7 Temperature Compensation & Overcooling/Undercooling Compensation Circuit

1. Refrigerator Temperature Compensation



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

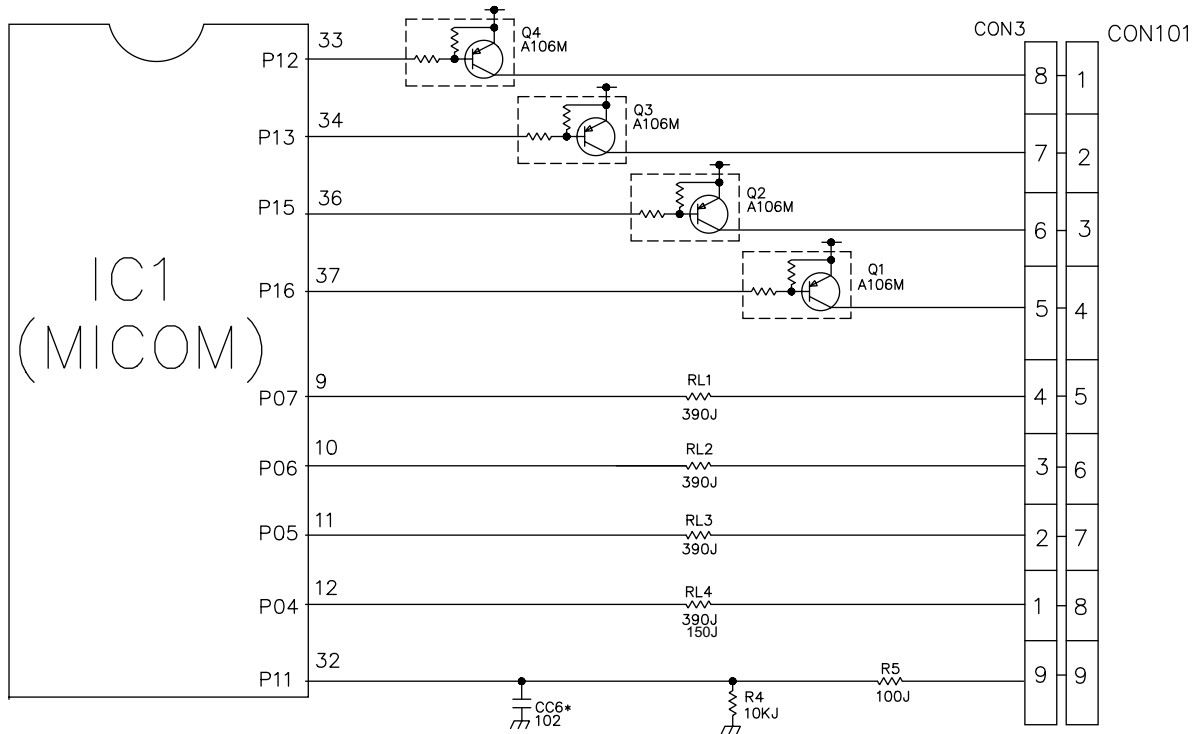
2. The temperature compensation for refrigerator compartment is in the following table:

| | Revised resistance | 470Ω | 2kΩ | 3.3kΩ | 5.6kΩ | 8.2kΩ | 10kΩ | 12kΩ | 18kΩ | 33kΩ | 56kΩ | 180kΩ |
|--------------------|--------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|-----------|----------|
| | Present resistance | | | | | | | | | | | |
| Refrigerator (RCR) | 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°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 |
| | 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.

8-2-8 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.



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 KΩ | 77 KΩ |
| - 15 °C | 16.9 KΩ | 60 KΩ |
| - 10 °C | 13.0 KΩ | 47.3 KΩ |
| - 5 °C | 10.1 KΩ | 38.4 KΩ |
| 0 °C | 7.8 KΩ | 30 KΩ |
| + 5 °C | 6.2 KΩ | 24.1 KΩ |
| + 10 °C | 4.9 KΩ | 19.5 KΩ |
| + 15 °C | 3.9 KΩ | 15.9 KΩ |
| + 20 °C | 3.1 KΩ | 13 KΩ |
| + 25 °C | 2.5 KΩ | 11 KΩ |
| + 30 °C | 2.0 KΩ | 8.9 KΩ |
| + 40 °C | 1.4 KΩ | 6.2 KΩ |
| + 50 °C | 0.8 KΩ | 4.3 KΩ |

- The resistance of the SENSOR has a $\pm 5\%$ common difference.
- Measure the resistance of the SENSOR after leaving it for over 3 minutes in the measuring temperature. This delay is necessary due to sensor response speed.

8-4 TROUBLESHOOTING

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

| PROBLEM | INDICATED BY | CHECK | CHECKING METHOD | CAUSE | SOLUTION |
|---------------------|---|--|--|--|---|
| COOLING is poor. | If REFRIGERATOR TEMPERATURE is too low. | 1. If FREEZER TEMPERATURE is normal. | Check is FREEZER TEMPERATURE is too low. | | Make sure the DOOR is attached. Replace FAN MOTOR. |
| | | 2. If amount of cool air from FAN MOTOR is sufficient. | Make sure that the amount and speed of cool air are sufficient by touching the check supplied on the REFRIGERATOR. | FAN MOTOR is poor. Passage of cool air is blocked. EVA frozen. | Remove impurities. See DEFROSTING is poor. |
| | | 3. Door Line contact. | Check door seal when door is closed. | Door liner damaged. | Replace Door liner. |
| DEFROSTING is poor. | NO DEFROSTING. | 1. If HEATER emits heat. | USE TEST MODE2 (forced DEFROSTING). | HEATER disconnection. | Replace HEATER. |
| | | | | TEMPERATURE FUSE disconnection. | Replace TEMPERATURE FUSE. |
| | | | | Connection is poor. | Check EVAPORATOR connection and wire of MAIN PWB CONNECTOR. |
| | | | | DEFROST-SENSOR is poor. | Replace DEFROST-SENSOR. |
| | | | | HEATER RELAY is poor. | Replace RY3 of MAIN PWB. |
| | | 2. If DRAIN PIPE is blocked. | Check DRAIN PIPE. | DRAIN PIPE is blocked. | Remove ice and impurities. Check HEATER PLATE resistance. |
| | | 3. If ice remains after DEFROSTING. | Make sure that DEFROST SENSOR is connected. Make sure that FREEZER/REFRIGERATOR DOOR is closed. | Connection is poor. DOOR does not close properly. | Reassemble the DEFROST-SENSOR. Reassemble DOOR. Replace GASKET. |

8-5 MAIN PWB ASSEMBLY AND PARTS LIST

8-5-1 Main PWB Assembly



8-5-2 Replacement Parts List

| No | P/NO | DESCRIPTION | SPEC | MAKER | REMARK |
|----|-----------------|--|--|------------|--------------------------|
| 1 | 6870_BB089A = C | PWB(PCB) | KS-PJT GOOD MDL | DOO SAN | T-1.6 |
| 2 | - | - | - | - | - |
| 3 | 6170_B2002H | TRANSFORMER,LOW VOLTAGE | 240V 15V YES GR-MICOM ONE TAB | TAE SUNG | TRANS |
| 4 | 6170_B2002M | TRANSFORMER,LOW VOLTAGE | 260V 15V YES GR-MICOM ONE TAB | TAE SUNG | TRANS |
| 5 | 6170_B2002R | TRANSFORMER,LOW VOLTAGE | 140V 15V YES GR-MICOM ONE TAB | TAE SUNG | TRANS |
| 6 | 6170_B2002W | TRANSFORMER,LOW VOLTAGE | 115V 15V YES GR-MICOM ONE TAB | TAE SUNG | TRANS |
| 7 | - | - | - | - | - |
| 8 | 6630A09105C | CONNECTOR (CIRC),WAFER | YW396-07AV YEONHO 7PIN 3.96MM STRAIGHT SN | YEON HO | CON1 |
| 9 | 6630A09105D | CONNECTOR (CIRC),WAFER | YW396-09AV | YEON HO | CON2 |
| 10 | 6630A09105B | CONNECTOR (CIRC),WAFER | YW396-05AV | YEON HO | - |
| 11 | 6630_BB0076 | CONNECTOR (CIRC),WAFER | 917786-1 AMP 8PIN 2.5MM STRAIGHT SN | AMP | CON5 |
| 12 | 6630_BB007H | CONNECTOR (CIRC),WAFER | 917787-1 AMP 9PIN 2.5MM STRAIGHT SN | AMP | CON3 |
| 13 | 6630_BB007E | CONNECTOR (CIRC),WAFER | 917784-1 AMP 6PIN 2.5MM STRAIGHT SN | AMP | CON4 |
| 14 | - | - | - | - | - |
| 15 | 01ZZ_B2023L | IC,DRAWING | TM97C846N 42 SDIP BK KS-BETTER/GOOD(MASK) | TOSHIBA | IC1(01ZZ_B2022M) |
| 16 | 01ZZ_B2022 | IC,DRAWING | - | TOSHIBA | IC1(01ZZ_B2022) |
| 17 | 01ZZ_B2022 | IC,DRAWING | - | TOSHIBA | IC1(01ZZ_B2022) |
| 18 | - | - | - | - | - |
| 19 | 01KE781200B | IC,KEC | K1A7812P1 12V 1A,KEC - - - - | KEC | IC2 |
| 20 | 01KE781200M | IC,KEC | K1A7812P1 3DIP BK 12V 1A REFORM | KEC | - |
| 21 | 01KE780500A | IC,KEC | K1A7805SP,3PIN,DIP, KEC | KEC | IC3 |
| 22 | 01STLM1001A | IC,STANDARD LOGIC | M54563FP MITSUBISHI 20 R/TIP CONVERT | MITSUBISHI | - |
| 23 | 01T0777400A | IC,TOSHIBA | T17774AP 16 SDIP BK STEPPING MOTOR | TOSHIBA | IC6 |
| 24 | 01KE650030C | IC,KEC | K1D65003AF 16SOP BK 7OH DRIVER | KEC | IC4 |
| 25 | 01KE704200A | IC,KEC | K1A7042P 3P BK RESET | KEC | IC5 |
| 26 | 01RH-934600D | IC,ROHM | BR93LC46FF-W 8PIN SOP BK EEPROM - | ROHM | - |
| 27 | - | - | - | - | - |
| 28 | 6920000001A | RELAY | ALE15B12 MATSUSHITA 250VAC 16A 12VDC IA NO VENTING | NAIS | RY1 |
| 29 | 6920WF0010A | RELAY | US11-12S YUYU 250VAC 3A 12VDC IA | YUYU | - |
| 30 | 6920_B2003B | RELAY | ALD112 MATSUSHITA 250VAC 3A 12VDC IA | OMRON | RY2-RY4 |
| 31 | 6920_B2009A = B | RELAY | 655B-14 250VAC 5A 12VDC IC | OMRON | RY5 |
| 32 | - | - | - | - | - |
| 33 | - | - | - | - | - |
| 34 | 6212_BB001B | RESONATOR,CERAMIC | CST50400 MURATA 4MHZ +/- 0.5% 15PF TP NONE | MURATA | OSC1(LJ570-0001ZB) |
| 35 | 6102W5V006A | VARIATOR | 1NR14D331 ILJIN UL/CSA/VDE BK | ILJIN | VAI |
| 36 | 6102_BB003A | VARIATOR | 1NR14D271 ILJIN UL/VDE TP 270V | ILJIN | VAI |
| 37 | 6102_BB001B | VARIATOR | 1NR14D621 ILJIN UL/VDE BK 620V | ILJIN | VAI |
| 38 | 0DD400709AA | DIODE,RECTIFIERS | 1N4007 TP MOTOROLA - - IA - - - | DELTA | DI-05 |
| 39 | - | - | - | - | - |
| 40 | - | - | - | - | - |
| 41 | 0CE2286J610 | CAPACITOR,AL-ELECTROLYTIC | 2200 UF SWS,S6 35V M FL BULK | SAM HWA | CE1 |
| 42 | 0CE1086J610 | CAPACITOR,AL-ELECTROLYTIC | 1000UF SWS,S6 35V 20% FL BULK | SAM HWA | - |
| 43 | 0CE1086H61B | CAPACITOR,AL-ELECTROLYTIC | 1000 UF SWS,S6 25V M FL TP 5 | SAM HWA | CE2 |
| 44 | 0CE4776H61B | CAPACITOR,FIXED ELECTROLYTIC | 470UF SWS,S6 25V 20% FL TP 5 | SAM HWA | CE3 |
| 45 | 0CE2276F638 | CAPACITOR,FIXED ELECTROLYTIC | 220UF SWS,S6 16V 20% FM5 TP 5 | SAM HWA | CE4 |
| 46 | 0CE1076H638 | CAPACITOR,FIXED ELECTROLYTIC | 100UF SWS,S6 25V 20% FM5 TP 5 | SAM HWA | - |
| 47 | 0CE1066K638 | CAPACITOR,FIXED ELECTROLYTIC | 10UF SWS,S6 50V 20% FM5 TP 5 | SAM HWA | CE6-CE8 |
| 48 | 0CE1056K638 | CAPACITOR,FIXED ELECTROLYTIC | 1UF SWS,S6 50V 20% FM5 TP 5 | SAM HWA | CE9 |
| 49 | 0CE4761H638 | CAPACITOR,FIXED ELECTROLYTIC | 47UF SWS,S6 25V 20% FM5 TP 5 | SAM HWA | CE5 |
| 50 | 0C02231N409 | CAPACITOR,POLYESTER | 0.022 UF D 100V J PE TP | SAM HWA | - |
| 51 | 0CK1020K96A | CAPACITOR,FIXED CERAMIC(HIGH DIELECTRIC) | 1NF 2012 50V 80%, -20% R/TP X7R | - | CC6 |
| 52 | 0CK2230K96A | CAPACITOR,FIXED CERAMIC(HIGH DIELECTRIC) | 22NF 2012 50V 80%, -20% R/TP X7R | MURATA | CC7-CC11 |
| 53 | - | - | - | - | - |
| 54 | 0CK1040K94A | CAPACITOR,FIXED CERAMIC(HIGH DIELECTRIC) | 100NF 2012 50V R/TP (GRM40X7R104K50PE) | MURATA | CC1-CC5 |
| 55 | - | - | - | - | - |
| 56 | 0CK1040K949 | CAPACITOR,FIXED CERAMIC(HIGH DIELECTRIC) | 0.1UF D 50V 80%, -20% F(Y5V) TA52 | - | - |
| 57 | - | - | - | MURATA | - |
| 58 | - | - | - | - | - |
| 59 | 0RD1500G609 | RESISTOR,FIXED CARBON FILM | 150 OHM 1/4W 5.00% TA52 | SMART | RL4 |
| 60 | 0RD3900G609 | RESISTOR,FIXED CARBON FILM | 390 OHM 1/4 W 5.00% TA52 | SMART | RL1-RL3 |
| 61 | 0RD1000G609 | RESISTOR,FIXED CARBON FILM | 100 OHM 1/4 W 5.00% TA52 | SMART | R5 |
| 62 | 0RJ001E672 | RESISTOR,METAL GLAZED(CHIP) | 1K OHM 1/8 W 5% 2012 R/TP | ROHM | RI6 |
| 63 | 0RJ2001E672 | RESISTOR,METAL GLAZED(CHIP) | 2K OHM 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 | 0RH2200L622 | RESISTOR,METAL GLAZED(CHIP) | 220 OHM 1/8 W 2012 5.00% D | ROHM | RI7 |
| 66 | 0RJ2201E672 | RESISTOR,METAL GLAZED(CHIP) | 2.2K OHM 1/8 W 5% 2012 R/TP | ROHM | RI1 |
| 67 | 0RJ4701E672 | RESISTOR,METAL GLAZED(CHIP) | 4.7K OHM 1/8 W 5% 2012 R/TP | ROHM | RI |
| 68 | 0RJ4701E672 | RESISTOR,METAL GLAZED(CHIP) | 4.7K OHM 1/8 W 5% 2012 R/TP | ROHM | - |
| 69 | 0RD4701G609 | RESISTOR,FIXED CARBON FILM | 4.7K OHM 1/4 W 5.00% TA52 | SMART | - |
| 70 | 0RJ1002E672 | RESISTOR,METAL GLAZED(CHIP) | 10K OHM 1/8 W 5% 2012 R/TP | ROHM | - |
| 71 | 0RJ1002E672 | RESISTOR,METAL GLAZED(CHIP) | 10K OHM 1/8 W 5% 2012 R/TP | ROHM | - |
| 72 | 0RD1002G609 | RESISTOR,FIXED CARBON FILM | 10K OHM 1/4 W 5.00% TA52 | SMART | R3,R4,RCR1,RI3-RI5 |
| 73 | 0RJ2702E672 | RESISTOR,METAL GLAZED(CHIP) | 27K OHM 1/8 W 5% 2012 R/TP | ROHM | - |
| 74 | 0RJ004E672 | RESISTOR,METAL GLAZED(CHIP) | 1M OHM 1/8 W 5% 2012 R/TP | ROHM | R2 |
| 75 | 0RJ2612E472 | RESISTOR,FIXED METAL FILM | 26.1K OHM 1/4 W 1.00% TA52 | SMART | RF1,RF1 |
| 76 | 0RJ1622E472 | RESISTOR,FIXED METAL FILM | 16.2K OHM 1/4 W 1.00% TA52 | SMART | RF1 |
| 77 | - | - | - | - | - |
| 78 | - | - | - | - | - |
| 79 | 3J03565D | FUSE,,DRAWING | 9A 250V - - | SAM JU | - |
| 80 | 0TR106009AC | TRANSISTOR | KRA106M1KRA2206) TP KEC | KEC | Q1-Q4 |
| 81 | 0TR106009AF | TRANSISTOR | KRC 106M KEC | KEC | Q5,Q7 |
| 82 | 0TR319809AA | TRANSISTOR | KTC3198-TP-Y (KTC1815)KEC | KEC | - |
| 83 | 6908_B3002F | BUZZER | CR622208P DAE YOUNG P1E20 2KHZ 750B(CHINA) | DAE YOUNG | BUZZER |
| 84 | 6600RR1001Z | SWITCH,TACT | JTP1280A6 JEIL 12V DC 50MA | JEIL | - |
| 85 | 6854B50001A | JUMP WIRE | 0.6MM 52MM TP TAPING 5N(8MM) | - | J16 |
| 86 | 6854B50001A | JUMP WIRE | 0.6MM 52MM TP TAPING 5N(10MM) | - | J1-J6,J8,J10,J14,J17-J20 |
| 87 | 6854B50001A | JUMP WIRE | 0.6MM 52MM TP TAPING 5N(12.5MM) | - | J13 |
| 88 | 6854B50001A | JUMP WIRE | 0.6MM 52MM TP TAPING 5N(12.5MM) | - | J07 |
| 89 | 6854B50001A | JUMP WIRE | 0.6MM 52MM TP TAPING 5N | - | - |
| 90 | 6854B50001A | JUMP WIRE | 0.6MM 52MM TP TAPING 5N | - | - |
| 91 | 4920_B3003A | HEAT SINK | 30*25*30 IC-12V R-850,51,52,53,54,55,56 2PIN 1-SCREW 3 | - | (IC2) |
| 92 | 15BF030241B | SCREW TAP TITE(S),BINDING HEAD | + D3.0 L8.0 MSWR3/FZY | - | (IC2) |
| 93 | 9VWF012000D | SOLDER(ROSIN WIRE) R50 | DI,20 | HEE SUNG | - |
| 94 | 49111004 | SOLDER,SOLDERING | H63A | - | - |
| 95 | 59333105 | FLUX | SG10.825-0.830 KOREA F.H-206 | KOKI | - |

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



| Qty | No | P/NO | DESCRIPTION | SPEC | MAKER | REMARK |
|--------|----|----------------------------|------------------------|--|----------------------|--------------|
| 1 | 1 | 6870JB8091A | PWB(PCB) | KS-PJT GOOD/BETTER DISPLAY | DOO SAN | t=1.6 |
| | 2 | | | | | |
| 1 | 3 | 6630AQ9159H | WAFER | SMAW250-09 | YEON HO | CON101 |
| | 4 | | | | | |
| 2 | 5 | 6600RRT002K 6600JB8005A | SWITCH,TACT | JTP1230A JEIL 12V DC 50MA KPT-1105A | JEIL KYUNG IN | SW101,102 |
| 1 | 6 | - | TACT S/W | KPT-1109G | KYUNG IN | SW103 |
| 14 | 7 | 0DLLE0019AA | LED | LT1824-81-BCM TP GREEN 2 | | R1~R7,F1~F7 |
| 3 | 8 | 0DD414809AA | DIODE,SWITCHING | 1N4148 26MM | PYUNG CHANG DELTA | D101,102,103 |
| 12 | 10 | 6854B50001A | JUMP WIRE | 0.6MM 52MM TP TAPING SN (10MM) | - | J101~J112 |
| | 11 | | | | | |
| - | 12 | 9VWF0120000 | SOLDER(RDSIN WIRE) RSO | D1.20 | HEE SUNG | - |
| 0.001 | 13 | 49111004 | SOLDER,SOLDERING | H63A | - | - |
| 0.0005 | 14 | 59333105 | FLUX | SG;0.825-0.830 KOREA F.H-206 | KOKI | - |

8-6 PWB DIAGRAM

8-6-1 PWB Main Assembly

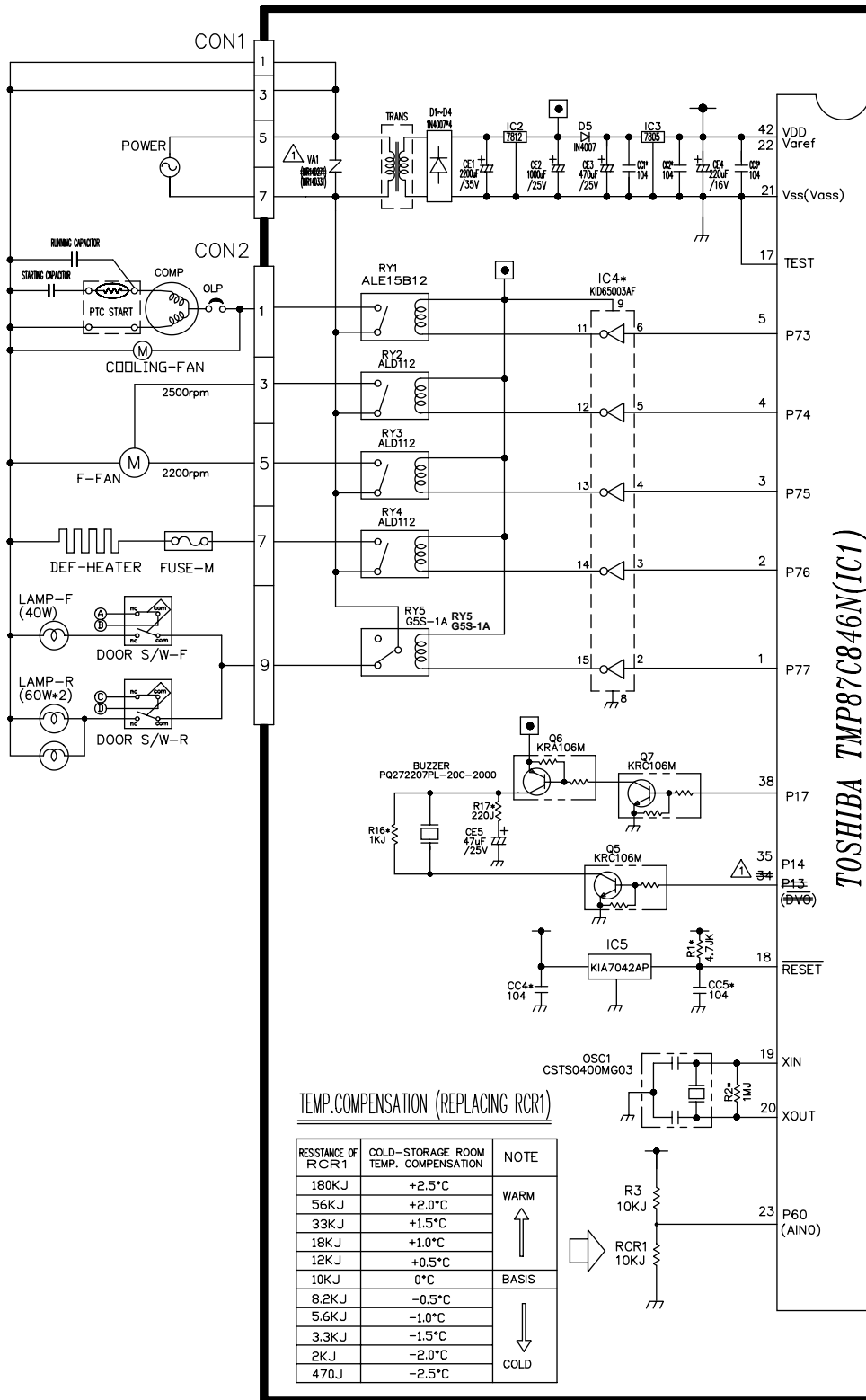


FIG.1 CIRCUIT DIAGRAM

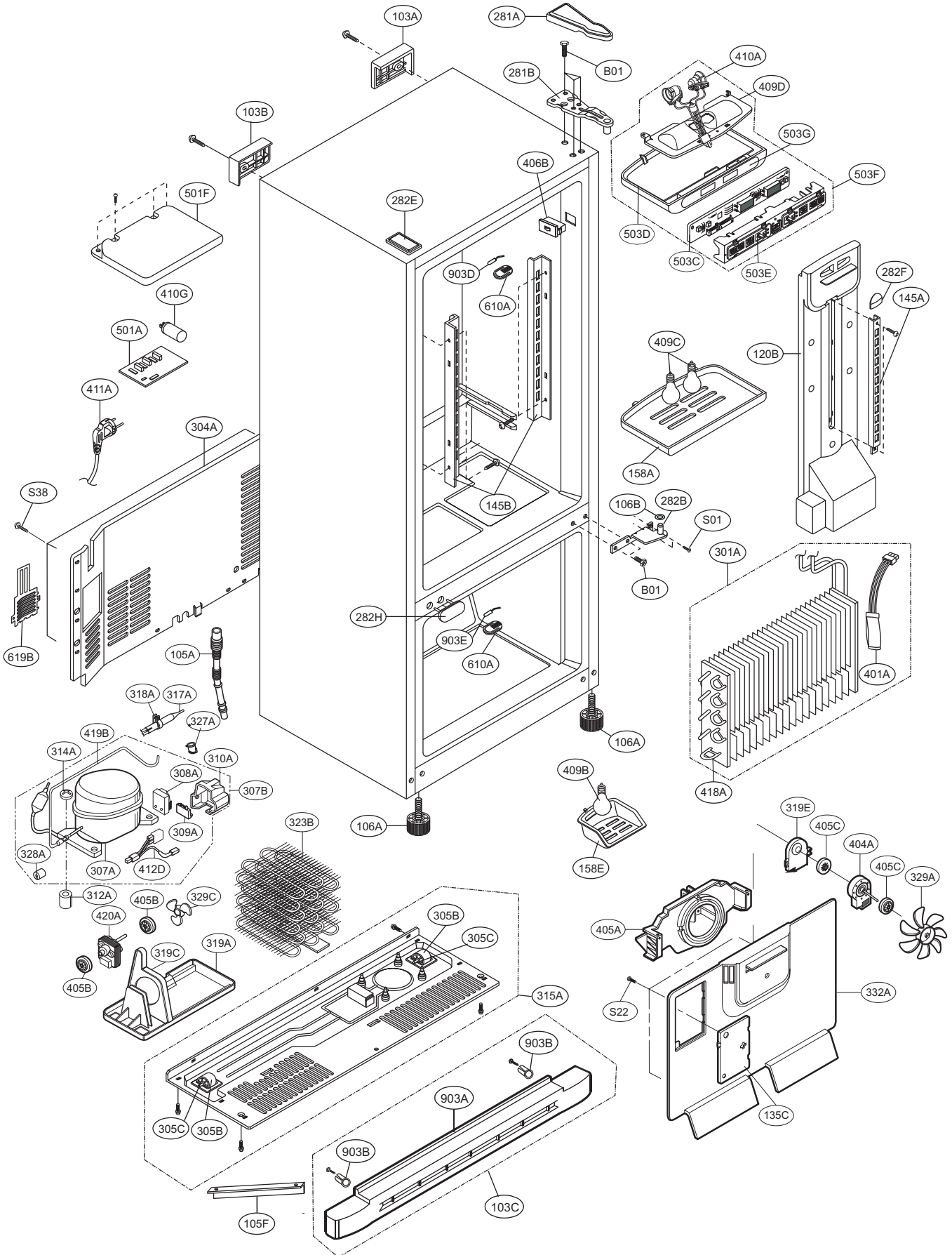


PWB ASS'Y, DISPLAY

11. EXPLODED VIEW

CASE PARTS

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



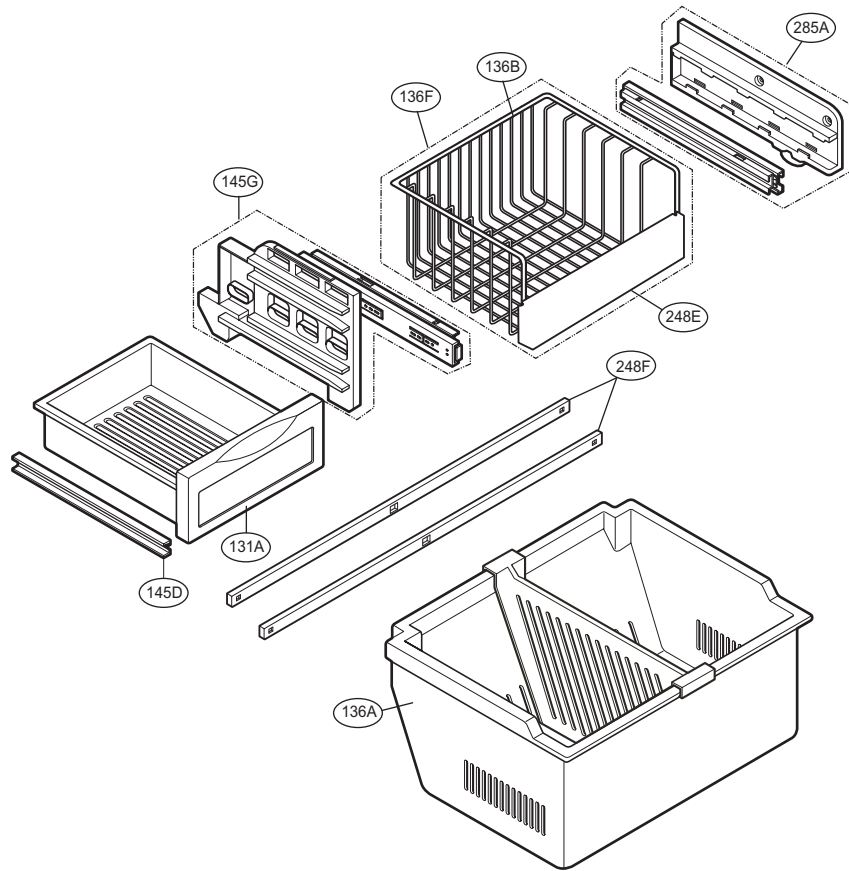
REFRIGERATOR DRAWER PARTS

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



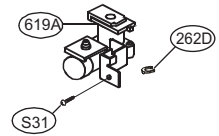
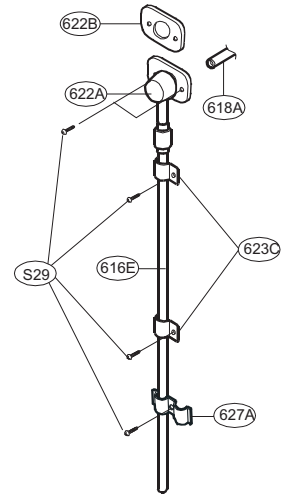
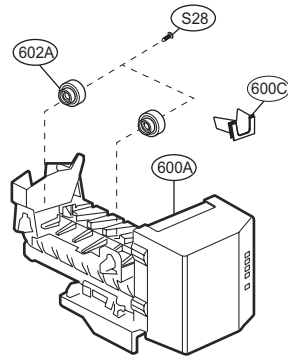
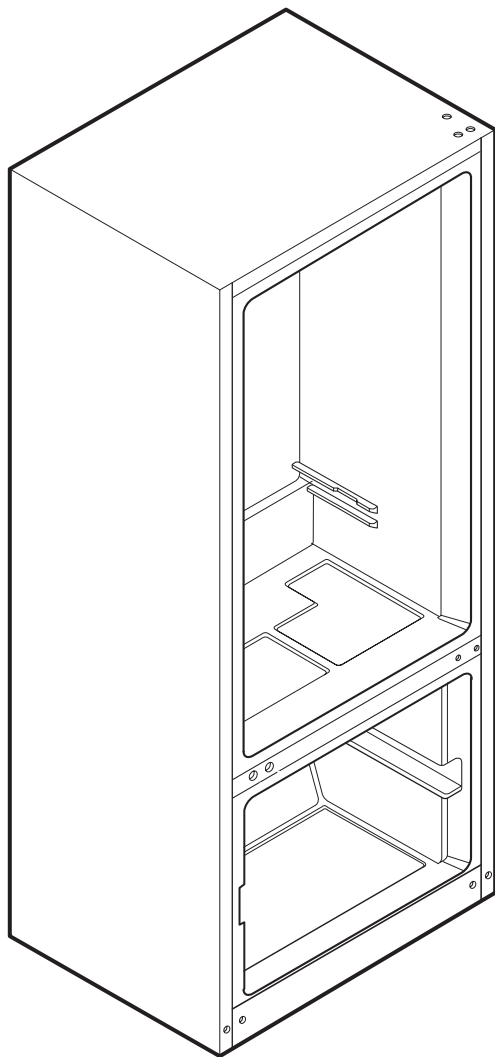
FREEZER DRAWER PARTS

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



ICE MAKER PARTS

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





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