

WARNINGS AND PRECAUTIONS FOR SAFETY

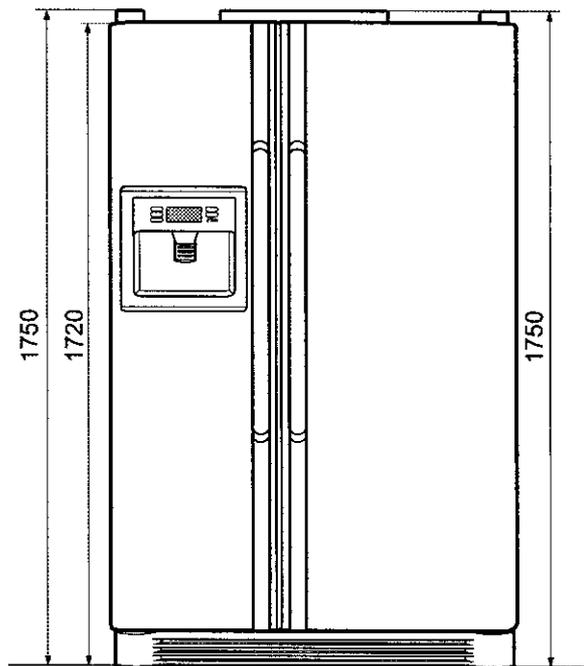
Please observe the following safety precautions in order to use safely and correctly the refrigerator and to prevent accident and danger during repair.

1. Be care of an electric shock. Disconnect power cord from wall outlet and wait for more than three minutes before replacing PWB parts. Shut off the power whenever replacing and repairing electric components.
2. When connecting power cord, please wait for more than five minutes after power cord was disconnected from the wall outlet.
3. Please check if the power plug is pressed down by the refrigerator against the wall. If the power plug was damaged, it may cause fire or electric shock.
4. If the wall outlet is over loaded, it may cause fire. Please use its own individual electrical outlet for the refrigerator.
5. Please make sure the outlet is properly earthed, particularly in wet or damp area.
6. Use standard electrical components when replacing them.
7. Make sure the hook is correctly engaged. Remove dust and foreign materials from the housing and connecting parts.
8. Do not fray, damage, machine, heavily bend, pull out, or twist the power cord.
9. Please check the evidence of moisture intrusion in the electrical components. Replace the parts or mask it with insulation tapes if moisture intrusion was confirmed.
10. Do not touch the icemaker with hands or tools to confirm the operation of geared motor.
11. Do not let the customers repair, disassemble, and reconstruct the refrigerator for themselves. It may cause accident, electric shock, or fire.
12. Do not store flammable materials such as ether, benzene, alcohol, chemicals, gas, or medicine in the refrigerator.
13. Do not put flower vase, cup, cosmetics, chemicals, etc., or container with full of water on the top of the refrigerator.
14. Do not put glass bottles with full of water into the freezer. The contents shall freeze and break the glass bottles.
15. When you scrap the refrigerator, please disconnect the door gasket first and scrap it where children are not accessible.

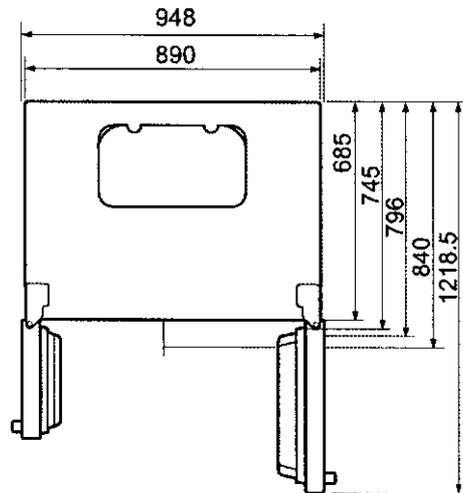
SPECIFICATIONS

3. Ref No. : GR-L247

| ITEMS | SPECIFICATIONS | ITEMS | SPECIFICATIONS |
|---------------------|-----------------------|----------------------|----------------------|
| DIMENSIONS (mm) | 890(W)×840(D)×1750(H) | CAPILLARY TUBE | MOLECULAR SIEVE XH-7 |
| NET WEIGHT (kg) | 125 | FIRST DEFROST | 4 - 5 Hours |
| COOLING SYSTEM | Fan Cooling | DEFROST CYCLE | 13 - 15 Hours |
| TEMPERATURE CONTROL | Micom Control | DEFROSTING DEVICE | Heater, Sheath |
| DEFROSTING SYSTEM | Full Automatic | | Heater, L-Cord |
| | | Heater Defrost | ANTI SWEAT HEATER |
| INSULATION | Cyclo-Pentane | | Dispenser Heater |
| COMPRESSOR | P.T.C. Starting Type | ANTI-FREEZING HEATER | Water Tank Heater |
| EVAPORATOR | Fin Tube Type | | Damper Heater |
| CONDENSER | Wire Condenser | FREEZER LAMP | 40W (1 EA) |
| REFRIGERANT | R134a (185g) | REFRIGERATOR LAMP | 40W (1 EA) |
| LUBRICATING OIL | FREOL @15G (320 cc) | DISPENSER LAMP | 15W (1 EA) |
| DRIER | 1Ø0.83 | | |



<Front View>

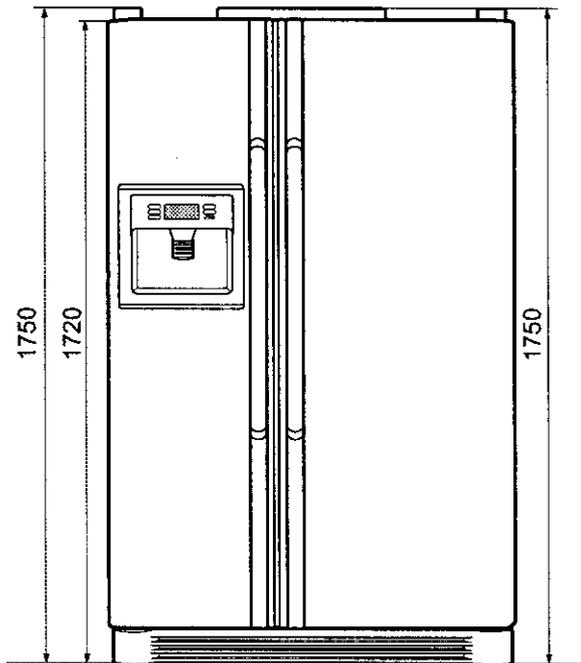


<Plane View>

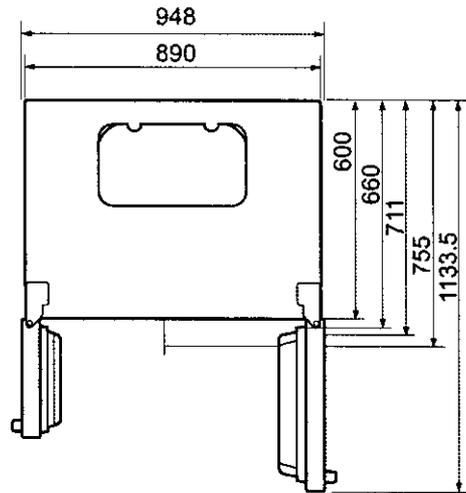
SPECIFICATIONS

4. Ref No. : GR-L207

| ITEMS | SPECIFICATIONS | ITEMS | SPECIFICATIONS |
|---------------------|-----------------------|----------------------|----------------------|
| DIMENSIONS (mm) | 890(W)x755(D)x1750(H) | CAPILLARY TUBE | MOLECULAR SIEVE XH-7 |
| NET WEIGHT (kg) | 120 | FIRST DEFROST | 4 - 5 Hours |
| COOLING SYSTEM | Fan Cooling | DEFROST CYCLE | 13 - 15 Hours |
| TEMPERATURE CONTROL | Micom Control | DEFROSTING DEVICE | Heater, Sheath |
| DEFROSTING SYSTEM | Full Automatic | | Heater, L-Cord |
| | | Heater Defrost | ANTI SWEAT HEATER |
| INSULATION | Cyclo-Pentane | | Dispenser Heater |
| COMPRESSOR | P.T.C. Starting Type | ANTI-FREEZING HEATER | Water Tank Heater |
| EVAPORATOR | Fin Tube Type | | Damper Heater |
| CONDENSER | Wire Condenser | FREEZER LAMP | 40W (1 EA) |
| REFRIGERANT | R134a (185g) | REFRIGERATOR LAMP | 40W (1 EA) |
| LUBRICATING OIL | FREOL @15G (320 cc) | DISPENSER LAMP | 15W (1 EA) |
| DRIER | 1Ø0.83 | | |



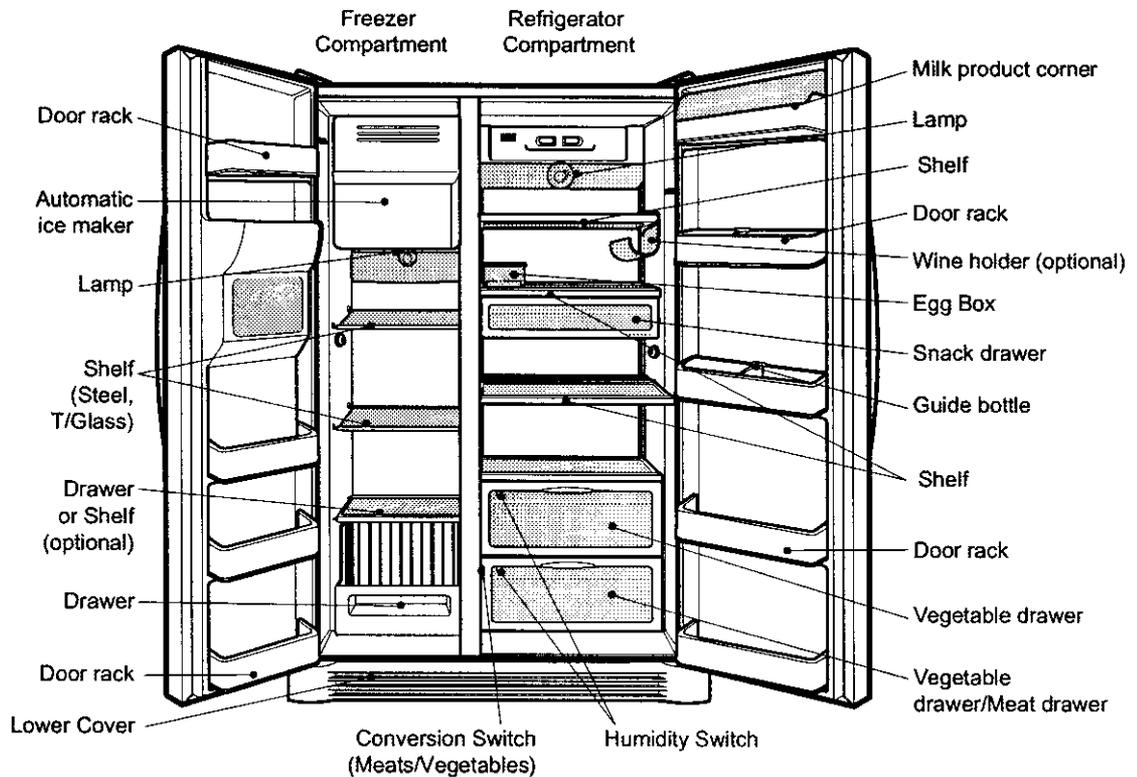
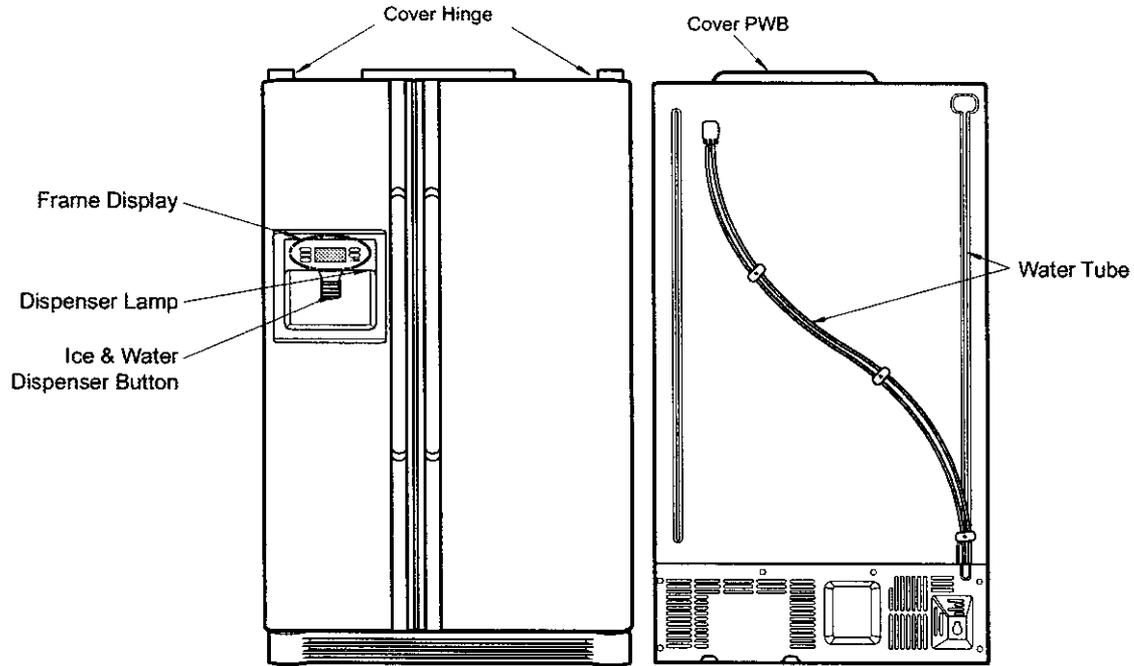
<Front View>



<Plane View>

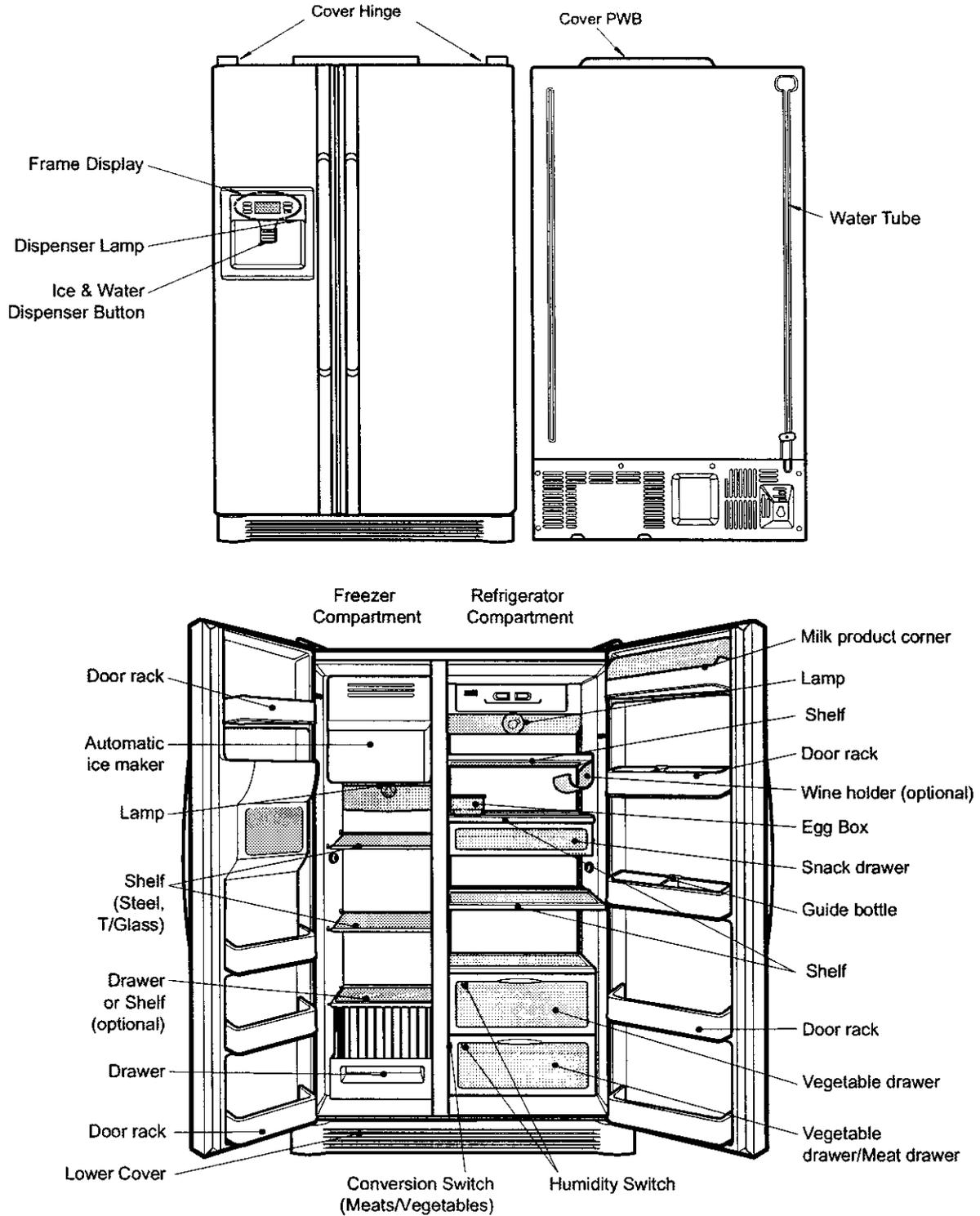
PARTS IDENTIFICATION

3. Ref No. : GR-L247, GR-L207



PARTS IDENTIFICATION

4. Ref No. : GR-L247, GR-L207



TROUBLE DIAGNOSIS

1. TROUBLE SHOOTING

| CLAIMS. | CAUSES AND CHECK POINTS. | HOW TO CHECK |
|------------------------|---|--|
| <p>1. Faulty start</p> | <p>1) No power on outlet.</p> <p>2) No power on cord.</p> <ul style="list-style-type: none"> - Bad connection between adapter and outlet. (faulty adapter) <ul style="list-style-type: none"> - The inner diameter of adapter. - The distance between holes. - The distance between terminals. - The thickness of terminal. - Bad connection between plug and adapter (faulty plug). <ul style="list-style-type: none"> - The distance between pins. - Pin outer diameter. <p>3) Shorted start circuit.</p> <ul style="list-style-type: none"> - No power on power cord. <ul style="list-style-type: none"> - Disconnected copper wire. <ul style="list-style-type: none"> - Power cord is disconnected. - Faulty soldering. - Internal electrical short. - Faulty terminal contact. <ul style="list-style-type: none"> - Loose contact. <ul style="list-style-type: none"> - Large distance between male terminal. - Thin female terminal. - Terminal disconnected. - Bad sleeve assembly. - Disconnected. <ul style="list-style-type: none"> - Weak connection. - Short inserted cord length. - Worn out tool blade. - O.L.P is off. <ul style="list-style-type: none"> - Capacity of O.L.P is small. - Characteristics of O.L.P is bad. - Bad connection. - Power is disconnected. <ul style="list-style-type: none"> - Inner Ni-Cr wire blows out. - Bad internal connection. - Faulty terminal caulking (Cu wire is cut). - Bad soldering. - No electric power on compressor. - Faulty compressor. - Faulty PTC. <ul style="list-style-type: none"> - Power does not conduct. - Damage. - Bad characteristics. - Initial resistance is big. - Bad connection with compressor. <ul style="list-style-type: none"> - Too loose. - Assembly is not possible. - Bad terminal connection. <p>4) During defrost.</p> <ul style="list-style-type: none"> - Start automatic defrost. - Cycle was set at defrost when the refrigerator was produced. | <p>* Measuring instrument : Multi tester</p> <ul style="list-style-type: none"> ■ Check the voltage. If the voltage is within $\pm 85\%$ of the rated voltage, it is OK. ■ Check the terminal movement. ■ Check both terminals of power cord. Power conducts : OK. No power conducts : NG ■ Check both terminals of O.L.P. If power conducts : OK. If not : NG. ■ Check the resistance of both terminals. At normal temperature θ : OK. If disconnected : ∞. |

TROUBLE DIAGNOSIS

| CLAIMS. | CAUSES AND CHECK POINTS. | HOW TO CHECK |
|-----------------------|--|--|
| <p>2. No cooling.</p> | <p>2) Refrigeration system is clogged.</p> <ul style="list-style-type: none"> - Moisture clogged. <ul style="list-style-type: none"> - Residual moisture in the evaporator. <ul style="list-style-type: none"> - Air Blowing. <ul style="list-style-type: none"> - Not performed. - Too short. - Impossible moisture confirmation. - Low air pressure. - Leave it in the air. <ul style="list-style-type: none"> - During rest time. - After work. - Caps are missed. - Residual moisture. <ul style="list-style-type: none"> - Not dried in the compressor. - Elapsed more than 6 months after drying - Caps are missed. - No pressure when it is open. - No electric power on thermostat. <ul style="list-style-type: none"> - Insufficient drier capacity. <ul style="list-style-type: none"> - Dry drier - Drier temperature. - Leave it in the air. <ul style="list-style-type: none"> - Check on package condition. - Good storage after finishing. - Residual moisture in pipes. <ul style="list-style-type: none"> - Caps are missed. <ul style="list-style-type: none"> - During transportation. - During work. - Air blowing. <ul style="list-style-type: none"> - Not performed. - Performed. <ul style="list-style-type: none"> - Too short time. - Low air pressure. - Less dry air. - Moisture penetration - Leave it in the air. - Moisture penetration into the refrigeration oil. - Weld joint clogged. <ul style="list-style-type: none"> - Short pipe insert. - Pipe gaps. <ul style="list-style-type: none"> - Too large. - Damaged pipes. - Too much solder. - Drier cloggeing. <ul style="list-style-type: none"> - The capillary tube inserted depth. - Too much. - Capillary tube melts. - Over heat. - Clogged with foreign materials. <ul style="list-style-type: none"> - Desiccant powder. - Weld oxides. - Drier angle. - Reduced cross section by cutting. - Squeezed. - Foreign material clogging. <ul style="list-style-type: none"> - Compressor cap is disconnected. - Foreign materials are in the pipe. | <ul style="list-style-type: none"> ■ Check the clogged evaporator by heating (as soon as the cracking sound begins, the evaporator start freezing) ■ The evaporator does not cool from the beginning (no evidence of misture attached). The evaporator is the same as before even heat is applied. |

TROUBLE DIAGNOSIS

| CLAIMS. | CAUSES AND CHECK POINTS. | HOW TO CHECK |
|----------------------------------|--|---|
| <p>3. Refrigeration is weak.</p> | <p>1) Refrigerant Partly leaked. { Weld joint leak. Parts leak.</p> <p>2) Poor defrosting capacity.</p> <p style="margin-left: 20px;">- Drain path (pipe) clogged. { Inject P/U into drain hose. { Inject through the hole. Seal with drain.</p> <p style="margin-left: 40px;">- Foreign materials penetration. { P/U lump input. Screw input. Other foreign materials input.</p> <p style="margin-left: 20px;">- Cap drain is not disconnected.</p> <p style="margin-left: 20px;">- Defrost heater does not generate heat. - Parts disconnected. { Plate heater { Wire is cut. - Heating wire. - Contact point between heating and electric wire. Dent by fin evaporator. Poor terminal contacts.</p> <p style="margin-left: 40px;">- Cord heater { Wire is cut. - Lead wire. - Heating wire. - Contact point between heating and electric wire. Heating wire is corroded - Water penetration. Bad terminal connection.</p> | <p>■ Check visually.</p> <p>■ Check terminal Conduction: OK. No conduction: NG. If wire is not cut, refer to resistance. P=Power V=Voltage R=Resistance</p> $P = \frac{V^2}{R}$ $R = \frac{V^2}{P}$ |

TROUBLE DIAGNOSIS

| CLAIMS. | CAUSES AND CHECK POINTS. | HOW TO CHECK |
|----------------------------------|--|---|
| <p>3. Refrigeration is weak.</p> | <ul style="list-style-type: none"> - Residual frost <ul style="list-style-type: none"> - Weak heat from heater. <ul style="list-style-type: none"> - Sheath Heater - rated. - Heater plate - rated. - Heater cord-L - rated. - Bad heater assembly. <ul style="list-style-type: none"> - Heater plate <ul style="list-style-type: none"> - No contact to drain. - Loosened stopper cord. - Heater cord-L <ul style="list-style-type: none"> - Not contact to the evaporator pipe. - Location of assembly (top and middle). - Too short defrosting time. <ul style="list-style-type: none"> - Defrost Sensor. - Faulty characteristics. - Seat-D(missing, location, thickness). - Structural fault <ul style="list-style-type: none"> - Gasket gap. - Air inflow through the fan motor. - Bad insulation of case door. - No automatic defrosting. - Defrost does not return. <p>3) Cooling air leak.</p> <ul style="list-style-type: none"> - Bad gasket adhesion <ul style="list-style-type: none"> - Gap. - Bad attachment. - Contraction. - Door sag. <ul style="list-style-type: none"> - Bad adhesion. - Weak binding force at hinge. <p>4) No cooling air circulation.</p> <ul style="list-style-type: none"> - Faulty fan motor. <ul style="list-style-type: none"> - Fan motor. <ul style="list-style-type: none"> - Self locked. - Wire is cut. - Bad terminal contact. - Door switch. <ul style="list-style-type: none"> - Faults. <ul style="list-style-type: none"> - Contact distance. - Button pressure. - Melted contact. - Contact. - Refrigerator and freezer switch reversed. - Button is not pressed. <ul style="list-style-type: none"> - Poor door attachment. - Door liner (dimension). - Contraction inner liner. - Misalignment. - Bad terminal connection. - PU liquid leak. | <p>■ Check the fan motor conduction: OK. No conduction: NG.</p> |

TROUBLE DIAGNOSIS

| CLAIMS. | CAUSES AND CHECK POINTS. | HOW TO CHECK |
|----------------------------------|---|---|
| <p>3. Refrigeration is weak.</p> | <p>4) No cooling air circulation.</p> <ul style="list-style-type: none"> Faulty fan motor. — Fan is constrained. <ul style="list-style-type: none"> Fan shroud contact. - Clearance. Damping evaporator contact. Accumulated residual frost. Small cooling air discharge. <ul style="list-style-type: none"> Insufficient motor RPM <ul style="list-style-type: none"> Fan overload. - Fan misuse. Bad low temperature RPM characteristics. Rated power misuse. Low voltage. Faulty fan. <ul style="list-style-type: none"> Fan misuse. Bad shape. Loose connection. - Not tightly connected. Insert depth. Shroud. — Bent. Ice and foreign materials on rotating parts. <p>5) Compressor capacity. <ul style="list-style-type: none"> Rating misuse. Small capacity. Low voltage. </p> <p>6) Refrigerant too much or too little. <ul style="list-style-type: none"> Malfunction of charging cylinder. Wrong setting of refrigerant. Insufficient compressor. - Faulty compressor. </p> <p>7) Continuous operation - No contact of temperature controller. - Foreign materials.</p> <p>8) Damper opens continuously. <ul style="list-style-type: none"> Foreign materials jammed. <ul style="list-style-type: none"> P/U liquid dump. EPS water sediment. Screw. Failed sensor. - Position of sensor. Characteristics of damper. <ul style="list-style-type: none"> Bad characteristics of its own temperature. Parts misuse. Change of temperature - Impact characteristics. </p> <p>9) Food storing place. - Near the outlet of cooling air.</p> | <p>■ Check visually after disassembly.</p> <p>■ Check visually after disassembly.</p> |

TROUBLE DIAGNOSIS

| CLAIMS. | CAUSES AND CHECK POINTS. | HOW TO CHECK |
|--|--|---|
| <p>4. Warm refrigerator compartment temperature.</p> | <p>1) Clogged cooling path. [P/U liquid leak. [Foreign materials. — P/U dump liquid.</p> <p>2) Food storage. [Store hot food. [Store too much at once. [Door open. [Packages block air flow.</p> | |
| <p>5. No automatic operation. (faulty contacts.)</p> | <p>1) Faulty temperature sensor in freezer or refrigerator compartment. [Faulty contact. [Faulty temperature characteristics.</p> <p>2) Refrigeration load is too much. [Food. [Too much food. [Hot food. [Frequent opening and closing. [Cool air leak. [Poor door close. — Partly opens.</p> <p>3) Poor insulation.</p> <p>4) Bad radiation. [High ambient temperature. [Space is secluded.</p> <p>5) Refrigerant leak.</p> <p>6) Inadequate of refrigerant.</p> <p>7) Weak compressor discharging power. [Different rating. [Small capacity.</p> <p>8) Fan does not work.</p> <p>9) Button is positioned at "strong."</p> | <p>■ Inspect parts measurements and check visually.</p> |
| <p>6. Dew and ice formation.</p> | <p>1) Ice in freezer compartment. [External air inflow. — Rubber motor assembly direction(reverse). [Door opens but not closes. [Weak door closing power. [Stopper malfunction. [Door sag. [Food hinders door closing.</p> <p>[Gap around gasket. — Contraction, distortion, loose, door twisted, corner not fully inserted. [Food vapor. — Storing hot food. — Unsealed food.</p> <p>2) Condensation in the refrigerator compartment. [Door opens but not closes. [Insufficient closing. [Door sag. [Food hinders door closing. [Gasket gap.</p> <p>3) Condensation on liner foam. [Cool air leak and transmitted. [Not fully filled. [Toop table part. [Out plate R/L part. [Flange gap. — Not sealed. [Gasket gap.</p> | |

TROUBLE DIAGNOSIS

| CLAIMS. | CAUSES AND CHECK POINTS. | HOW TO CHECK |
|----------------------------------|---|--------------|
| <p>6. Dew and ice formation.</p> | <p>4) Dew on door.</p> <ul style="list-style-type: none"> - Dew on the duct door. - Duct door heater is cut. - Dew on the dispense recess. <ul style="list-style-type: none"> - Recess Heater is cut. - Duct door is open. / Foreign material clogging. - Dew on the door surface. <ul style="list-style-type: none"> - Not fully filled. <ul style="list-style-type: none"> - Surface. } Liquid shortage. - Corner. } Liquid leak. - P/U liquid contraction. - Dew on the gasket surface. <ul style="list-style-type: none"> - Bad wing adhesion. <ul style="list-style-type: none"> - Wing sag(lower part). - Door liner shape mismatch. - Corner. <ul style="list-style-type: none"> - Too much notch. - Broken. - Home Bar heater is cut. <p>5) Water on the floor.</p> <ul style="list-style-type: none"> - Dew in the refrigerator compartment. - Defrosted water overflows. — Clogged discharging hose. - Discharging hose — Evaporation tray located at wrong place. location. - Tray drip. <ul style="list-style-type: none"> - Damaged. - Breaks, holes. - Small Capacity. - Position of drain. | |
| <p>7. Sounds</p> | <p>1) Compressor compartment operating sounds.</p> <ul style="list-style-type: none"> - Compressor sound inserted. <ul style="list-style-type: none"> - Sound from machine itself. - Sound from vibration. <ul style="list-style-type: none"> - Restrainer. - Rubber seat. <ul style="list-style-type: none"> - Too hard. - Distorted. - Aged. - Burnt. - Stopper. — Bad Stopper assembly. <ul style="list-style-type: none"> - Not fit (inner diameter of stopper). - Tilted. - Not - Compressor base not connected. - Bad welding compressor stand(fallen). - Foreign materials in the compressor compartment. - O.L.P. sound. — Chattering sound. - Capacitor noise. — Insulation paper vibration. - Pipe sound. <ul style="list-style-type: none"> - Pipe contacts each other. — Narrow interval. - No vibration damper. <ul style="list-style-type: none"> - Damping rubber-Q. - Damping rubber-S. - Capillary tube unattached. | |

TROUBLE DIAGNOSIS

| CLAIMS. | CAUSES AND CHECK POINTS. | HOW TO CHECK |
|-----------|--|--------------|
| 7. Sounds | <p>1) Compressor compartment operating sounds.</p> <ul style="list-style-type: none"> Transformer sound. <ul style="list-style-type: none"> Its own fault. — Core gap. Bad connection. — Correct screw connection. Drip tray vibration sound. <ul style="list-style-type: none"> Bad assembly. Distortion. Foreign materials inside. Back cover machine sound. <ul style="list-style-type: none"> Bad connection. Partly damaged. Condenser drain sound. <ul style="list-style-type: none"> Not connected. Bad pipe caulking. <p>2) Freezer compartment sounds.</p> <ul style="list-style-type: none"> Fan motor sound. <ul style="list-style-type: none"> Normal operating sound. Vibration sound. <ul style="list-style-type: none"> Aged rubber seat. Bad torque for assembling motor bracket. Sounds from fan contact. <ul style="list-style-type: none"> Fan guide contact. Shroud burr contact. Damping evaporator contact. Residual frost contact. <ul style="list-style-type: none"> Poor treatment Cord heater. Narrow evaporator interval. Unbalance fan sounds. <ul style="list-style-type: none"> Unbalance. <ul style="list-style-type: none"> Surface machining conditions. Fan distortion. Misshappen. Burr. Ice on the fan. — Air intake (opposite to motor rubber assembly.) Motor shaft contact sounds. <ul style="list-style-type: none"> Supporter disorted. Tilted during motor assembly. Resonance. Evaporator noise. <ul style="list-style-type: none"> Evaporator pipe contact. — No damping evaporator. Sound from refrigerant. — Stainless steel pipe shape in accumulator. Sound from fin evaporator and pipe during expansion and contraction. <p>3) Bowls and bottles make contact on top shelf.</p> <p>4) Refrigerator roof contact.</p> <p>5) Refrigerator side contact.</p> <p>6) Insufficient Lubricants on door hinge.</p> | |

TROUBLE DIAGNOSIS

| CLAIMS. | CAUSES AND CHECK POINTS. | HOW TO CHECK |
|---|--|---|
| <p>8. Faulty lamp (freezer and refrigerator compartment).</p> | <p>1) Lamp problem. — Filament blows out. — Glass is broken.</p> <p>2) Bad lamp assembly. — Not inserted. — Loosened by vibration.</p> <p>3) Bad lamp socket.</p> <ul style="list-style-type: none"> — Disconnection. — Bad soldering. — Bad rivet contact. — Short. — Water penetration. — Low water level in tray. — Bad elasticity of contact. — Bad contact (corrosion). <p>4) Door switch. — Its own defect. — Refrigerator and freezer switch is reversed. — Travel distance. — Bad connection. — Bad terminal contact. — P/U liquid leak..</p> | |
| <p>9. Faulty internal voltage (short).</p> | <p>1) Lead wire is damaged.</p> <ul style="list-style-type: none"> — Wire damage when assembling P.T.C. Cover. — Outlet burr in the bottom plate. — Pressed by cord heater. lead wire, evaporator pipe. <p>2) Exposed terminal.</p> <ul style="list-style-type: none"> — Compressor Compartment terminal. - Touching other components. — Freezer compartment terminal. - Touching evaporator pipe. <p>3) Faulty parts.</p> <ul style="list-style-type: none"> — Transformer. — Coil contacts cover. — Welded terminal parts contact cover. — Compressor. — Bad coil insulation. — Plate heater. — Melting fuse. — Sealing is broken. — Moisture penetration. — Cord heater. — Pipe damaged. — Moisture penetration. — Bad sealing. — Sheath heater. | <p>■ Connect conduction and non-conduction parts and check with tester. Conduction: NG. Resistance: OK.</p> |

TROUBLE DIAGNOSIS

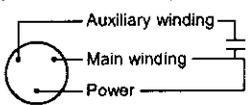
| CLAIMS. | CAUSES AND CHECK POINTS. | HOW TO CHECK |
|--|--|--------------|
| <p>10. Structure, appearance and others.</p> | <p>1) Door foam.</p> <ul style="list-style-type: none"> Sag. <ul style="list-style-type: none"> Weak torque of hinge connection. <ul style="list-style-type: none"> Bolt is loosened during transportation. Not tightly fastened. Screw worn out. Weak gasket adhesion. <ul style="list-style-type: none"> Adhesion surface. Fixed tape. <ul style="list-style-type: none"> Not well fixed. Noise during operation. <ul style="list-style-type: none"> Hinge interference. <ul style="list-style-type: none"> Bigger door foam. Hinge-Pin tilted-Poor flatness. No washer. No grease and not enough quantity. Malfunction. <ul style="list-style-type: none"> Not closed Interference between door liner and inner liner. Refrigerator compartment is opened when freezer compartment is closed (faulty stopper). <ul style="list-style-type: none"> Stopper worn out. Bad freezer compartment door assembly. No stopper. <p>2) Odor.</p> <ul style="list-style-type: none"> Temperature of refrigerator compartment. <ul style="list-style-type: none"> High. <ul style="list-style-type: none"> Faulty damper control. Button is set at "weak". Door is open (interference by food). Deodorizer. <ul style="list-style-type: none"> No deodorizer. Poor capacity. Food Storage. <ul style="list-style-type: none"> Seal condition. Store special odorous food. Long term storage. Others. <ul style="list-style-type: none"> Odors from chemical products. | |

2. Faults

2-1. Power

| Problems | Causes | Checks | Measures | Remarks |
|---------------------|---|---|---|--|
| No power on outlet. | <ul style="list-style-type: none"> - Power cord cut. - Faulty connector insertion. - Faulty connection between plug and adapter. | <ul style="list-style-type: none"> - Check the voltage with tester. - Check visually. - Check visually. | <ul style="list-style-type: none"> - Replace the components. - Reconnect the connecting parts. - Reconnect the connecting parts. | |
| Fuse blows out. | <ul style="list-style-type: none"> - Short circuit by wrong connection. - Low voltage products are connected to high voltage. - Short circuit by insects. - Electricity leakage. - High voltage. - Short circuit of components (tracking due to moisture and dust penetration). | <ul style="list-style-type: none"> - Check the fuse with tester or visually. - Check the input volt are with tester (between power cord and products). - Check the resistance of power cord with testerf (if it is 0Ω, it is shorted). | <ul style="list-style-type: none"> - Find and remove the cause of problem(ex. short, high voltage, low voltage). - Replace with rated fuse. | <ul style="list-style-type: none"> - Replace with rated fuse after confirming its specification. ■ If fuse blowns out frequently, reconfirm the cause and prevent. |

2-2. Compressor

| Problems | Causes | Checks | Measures | Remarks |
|------------------------------|-------------------------|--|--|---------|
| Compressor does not operate. | - Faulty PTC. | <ul style="list-style-type: none"> - Check the resistance. Viave:∞ is defective. | <ul style="list-style-type: none"> - If resistance is infinite, replace it with new one. - If it is not infinite, it is normal. - Check other parts. | |
| | - Compressor is frozen. | <ul style="list-style-type: none"> - If compressor assembly parts are normal(capacitor, PTC, OLP), apply power directly to the compressor to force operation.  <p>OLP It starts as soon as it is contacted.</p> | <ul style="list-style-type: none"> - During forced operation: - Operates: Check other parts. - Not operate: Replace the frozen compressor with new one, weld, evacuate, and recharge refrigerant. • Refer to weld repair procedures. | |

2-3. Temperature

| Problems | Causes | Checks | Measures | Remarks |
|--|---|---|--|--|
| High temperature in the freezer compartment. | Poor cool air circulation due to faulty fan motor. | <ul style="list-style-type: none"> - Lock — Check resistance with a tester. 0Ω: short. ∞Ω: cut. - Rotate rotor manually and check rotation. - Wire is cut. - Bad terminal contact: Check terminal visually. - Fan constraint. — Fan shroud contact: Confirm visually. — Fan icing: Confirm visually. | <ul style="list-style-type: none"> - Replace fan motor. - Reconnect and reinsert. - Maintain clearance and remove ice (Repair and/or replace shroud if fan is constrained by shroud deformation). | |
| | Faulty fan motor due to faulty door switch operation. | <ul style="list-style-type: none"> - Iced button (faulty) operation: Press button to check - Faulty button pressure and contact: Press button to check operation. - Door cannot press door switch button: Check visually. | <ul style="list-style-type: none"> - Confirm icing causes and repair. - Replace door switch. - Door sag: fix door. - Door liner bent: replace door or attach sheets. | |
| | Bad radiation conditions in compressor compartment. | <ul style="list-style-type: none"> - Check the clearance between the refrigerator and wall (50 mm in minimum). - Check dust on the grill in compressor compartment. - Check dust on the coils condenser. | <ul style="list-style-type: none"> - Keep clearance between refrigerator and walls (minimum 50mm). - Remove dust and contaminants from grill for easy heat radiation. - Remove the dust with vacuum cleaner from the coils condenser while the refrigerator is off. | <ul style="list-style-type: none"> - The fan may be broken if cleaning performs while the refrigerator is on. |

2-4. Cooling

| Problems | Causes | Checks | Measures | Remarks |
|--|--------------------------|---|---|-------------------------|
| High temperature in the freezer compartment. | Refrigerant leak. | <p><u>Check sequence</u></p> <ol style="list-style-type: none"> 1. Check the welded parts of the drier inlet and outlet and drier auxiliary in the compressor compartment (high pressure side). 2. Check the end of compressor sealing pipe (low pressure side). 3. Check silver soldered parts. (Cu + Fe / Fe + Fe). 4. Check bending area of wire condenser pipe in compressor compartment (cracks can happen during bending). 5. Check other parts (compressor compartment and evaporators in freezer compartment). | Weld the leaking part, recharge the refrigerant. | Drier must be replaced. |
| | Shortage of refrigerant. | <p>Check frost formation on the surface of evaporator in the freezer compartment.</p> <ul style="list-style-type: none"> - If the frost forms evenly on the surface, it is OK. - If it does not, it is not good. | <ul style="list-style-type: none"> - Find out the leaking area, repair, evacuate, and recharge the refrigerant. - No leaking, remove the remaining refrigerant, and recharge new refrigerant. | Drier must be replaced. |

TROUBLE DIAGNOSIS

| Problems | Causes | Checks | Measures | Remarks |
|--|---|---|---|-------------------------|
| High temperature in the freezer compartment. | Cycle pipe is clogged. | <p>Check sequence.</p> <p>1. Check temperature of condenser manually. If it is warm, it is OK. If it is not, compressor discharging joints might be clogged.</p> <p>2. Manually check whether hot line pipe is warm. If it is warm, it's OK. If it is not, condenser outlet weld joints might be clogged.</p> | <p>- Heat up compressor discharging weld joints with touch, disconnect the pipes, and check the clogging. Remove the causes of clogging, weld, evacuate, and recharge the refrigerant.</p> <p>- If it's warm, it's OK. If it's not, condenser discharging line weld joints might be clogged. Disconnect with torch, remove the causes, evacuate, and recharge seal refrigerant.</p> | Drier must be replaced. |
| | Leak at loop pipe weld joint (discharge) in compressor. | <p>Check sequence.</p> <p>1. Manually check whether condenser is warm, it is not warm and the frost forms partly on the evaporator in the freezer compartment.</p> | Replace the compressor, weld, evacuate, and recharge refrigerant. | Drier must be replaced. |
| | Faulty cooling fan in the compressor compartment. | <p>Check sequence.</p> <p>1. Check cooling fan operation.</p> <p>2. Check that cooling fan is disconnected from the motor.</p> | <p>- Replace if motor does not operate.</p> <p>- If fan is disconnected, check fan damage and reassemble it.</p> <p>■ Refer to fan motor disassembly and assembly sequence.</p> | |

2-5. Defrosting failure

| Problems | Causes | Checks | Measures | Remarks |
|----------------|---|---|--|--|
| No defrosting. | <p>Heater does not generate heat as the heating wire is cut or the circuit is shorted.</p> <p>1) Heating wire is damaged when inserting into the evaporator.</p> <p>2) Lead wire of heater is cut.</p> <p>3) Heating wire at lead wire contacts is cut.</p> | <p>1. Check the resistance of heater. 0Ω: Short. ∞Ω: Cut. Tens to thousands Ω: OK.</p> <p>2. Check the resistance between housing terminal and heater surface. 0Ω: Short. ∞Ω: Cut. Tens to thousands Ω: Short.</p> | <p>Heating wire is short and wire is cut.</p> <p>• Parts replacement: Refer to parts explanations.</p> | <p>Seal the lead wire with insulation tape and heat contraction tube if the cut lead wire is accessible to repair.</p> |
| | <p>Sucking duct and discharging hole are clogged:</p> <p>1. Impurities.</p> <p>2. Ice.</p> | <p>1. Confirm foreign materials. In case of ice, insert the copper line through the hole to check.</p> <p>2. Put hot water into the drain (check drains outside).</p> | <p>1) Push out impurities by inserting copper wire. (Turn off more than 3hours and pour in hot water if frost is severe.)</p> <p>2) Put in hot water to melt down frost.</p> <p>3) Check the water outlet.</p> <p>4) Push the heater plate to sucking duct manually and assemble the disconnected parts.</p> | |
| | <p>Gap between Sucking duct and Heater plate(Ice in the gap).</p> | <p>1. Confirm in the Sucking duct.</p> | <p>1) Turn off the power, confirm impurities and ice in the gap, and supply hot water until the ice in the gap melts down.</p> <p>2) Push the Heater plate to drain bottom with hand and assemble the disconnected parts.</p> | |
| | <p>Wrong heater rating (or wrong assembly).</p> | <p>1. Check heater label.</p> <p>2. Confirm the capacity after substituting the resistance value into the formula.</p> $P = \frac{V^2}{R}$ <p>(V: Rated voltage of user country) (R: Resistance of heater(Ω))</p> <p>Compare P and level capacity. Tolerance: ±7%</p> | <p>Faults:replace.</p> <p>- How to replace: Refer to main parts.</p> | |

TROUBLE DIAGNOSIS

| Problems | Causes | Checks | Measures | Remarks |
|---------------|--|--|--|---------|
| No defrosting | Melting fuse blows out. 1) Lead wire is cut. 2) Bad soldering. | - Check melting fuse with tester. - If 0Ω : OK. If $\infty\Omega$: wire is cut. | Faulty parts: parts replacement. - Check wire color when measuring resistance with a tester. | |
| | Ice in the Sucking duct. 1) Icing by foreign materials in the duct. 2) Icing by cool air inflow through the gap of heater plate. 3) Icing by the gap of heater plate. | 1. Check the inner duct with mirror. 2. Check by inserting soft copper wire into the duct (soft and thin copper not to impair heating wire). | 1) Turn power off. 2) Raise the front side(door side), support the front side legs, and let the ice melt naturally. (If power is on, melt the frost by forced defrosting.) 3) Reassemble the heater plate. | |
| | Bad cool air inflow and discharge, and bad defrosting due to faulty contact and insertion (bad connector insertion into housing of heater, melting, fuse and motor fan). | 1. Turn on power, open or close the door, check that motor fan operates (If it operates, motor fan is OK). 2. Disconnect parts in the refrigerator compartment, check the connection around the housing visually, defrost, and confirm heat generation on the heater. Do not put hands on the sheath heater. 3. Check the parts which have faults described in 1, 2 (mechanical model: disconnect thermostat from the assembly). | 1) Check the faulty connector of housing and reassemble wrongly assembled parts. 2) If the parts are very damaged, remove the parts and replace it with a new one. | |

2-6. Icing

| Problems | Causes | Checks | Measures | Remarks |
|---|---|--|--|--|
| Icing in the refrigerator compartment. - Damper icing. - Pipe icing. - Discharging pipe icing. | 1) Bad circulation of cool air. - Clogged intake port in the refrigerator compartment. - Sealing is not good. - Too much food is stored and clogs the discharge port. - Bad defrosting. | - Check the food is stored properly (check discharge and intake port are clogged). - Check icing on the surface of baffle and cool air path (pipe) after disassembling the container box. - Check icing at intake ports of freezer and refrigerator compartment. | - Be acquainted with how to use. - Sealing on connecting parts. - Check the damper and replace it if it has defects. - Check defrost. (After forced defrosting, check ice in the evaporator and pipes.) | - Check the defrost related parts if problem is caused by faulty defrosting. |
| | 2) Faulty door or refrigerator compartment. - Faulty gasket. - Faulty assembly. | - Check gasket attached conditions. - Check door assembly conditions. | - Correct the gasket attachment conditions and replace it. - Door assembly and replacement. | - Replacement should be done when it cannot be repaired. |
| | 3) Overcooling in the refrigerator compartment. - Faulty damper in the refrigerator compartment. - Faulty MICOM (faulty sensor) | - Check refrigerator compartment is overcooled (when button pressed on "weak"). - Check parts are faulty. | - Replace faulty parts. | |
| | 4) Bad defrosting - Heater wire is cut. - Defective defrost sensor. - Defrosting cycle. | - Check frost on the evaporator after disassembling shroud and fan grille. - Check ice on intake port of freezer and refrigerator compartment. | - Check parts related to defrosting. - Check defrosting. (Check ice on the evaporator and pipe.) | - Moisture cannot frost on the evaporator but can be sucked into the refrigerator, being condensed and iced, interferes with cool air circulation, and suppresses sublimation. |
| | 5) Customers are not familiar with this machine. - Door opens. - High temperature, high moisture, and high load. | - Check food interferes with door closing. - Check ice on the ceilings. | - Be acquainted with how to use. | |

TROUBLE DIAGNOSIS

| Problems | Causes | Checks | Measures | Remarks |
|---|--|--|---|--|
| Ice in the freezer compartment. - Surface of fan grille. - Wall of freezer compartment. - Cool air discharging port. - Basket(rack) area. - Food surface. - Icing in the shute. | 1) Bad cooling air circulation. - Intake port is colgged in the freezer compartment. - Discharging port is Clogged. - Too much food is stored. - Bad defrosting. | - Check food storage conditions visually.(Check clogging at intake and discharging port of cooling air.) - Check food occupation ratio in volume(Less than 75%). - Check frost on the evaporator after dissembling shroud and fan grille. - Check icing at intake port of refrigerator compartment. | - Be acquainted with how to use. - Check defrost (Check ice on the evaporator and pipes after forced defrosting). | - Check the parts related to defrosting if the problem is caused by the faulty defrosting. |
| | 2) Bad freezer compartment door - Faulty gasket - Faulty assembly | - Check gasket attachment conditions. - Check door assembly conditions. | - Correct the gasket attachment conditions and replace it. - Door assembly and replacement. | - Replace when it can not be repaired. |
| | 3) Over freezing in the freezer compartment. - Faulty MICOM. | - Refrigerator operates pull down. (Check if it is operated intermittently) - The Temperature of freezer compartment is satisfactory, but over freezing happens in the refrigerator compartment even though the notch is set at "weak". | -Replace defective parts. | |
| | 4) Bad defrosting. - Heater wire is cut. - Faulty defrost sensor. - Defrosting cycle | - Check frost on the evaporator after dissembling shroud and grille. - Check ice on the intake port in the refrigerator compartment. | - Check parts related to defrosting. - Check defrosting.(Check ice on the evaporator and pipes after forced defrosting.) | |
| | 5) User is not familiar with how to use. - Door opens. - High moisture food(water) is stored. | - Check food holds door open. - Check ice on the ice tray. | - Be acquainted with how to use. | |

2-7. Sound

| Problems | Causes | Checks | Measures | Remarks |
|---------------|--|--|--|---------|
| "Whizz" sound | 1. Loud sound of compressor operation. | 1.1 Check the level of the refrigerator. 1.2 Check the rubber seat conditions (sagging and aging). | 1) Maintain horizontal level. 2) Replace rubber and seat if they are sagged and aged. 3) Insert rubber where hand contact reduces noise in the pipe. 4) Avoid pipe interference. 5) Replace defective fan and fan motor. 6) Adjust fan to be in the center of bell mouth of the fan guide. 7) Leave a clearance between interfering parts and seal gaps in the structures. 8) Reassemble the parts which make sound. 9) Leave a clearance if evaporator pipes and suction pipe touch freezer shroud. | |
| | 2. Pipes resonat sound which is connected to the compressor. | 2.1 Check the level of pipes connected to the compressor and their interference. 2.2 Check rubber inserting conditions in pipes. 2.3 Touch pipes with hands or screw-driver (check the change of sound). | | |
| | 3. Fan operation sound in the freezer compartment. | 3.1 Check fan insertion depth and blade damage. 3.2 Check the interference with structures. 3.3 Check fan motor. 3.4 Check fan motor rubber insertion and aging conditions. | | |
| | 4. Fan operation sound in the compressor compartment. | 4.1 Same as fan confirmation in the refrigerator. 4.2 Check drip tray leg insertion. 4.3 Check the screw fastening conditions at condenser and drip tray. | | |

TROUBLE DIAGNOSIS

TROUBLE DIAGNOSIS

| Problems | Causes | Checks | Measures | Remarks |
|--------------------------------|---|--|--|---------|
| Vibration sound. ("Cluck") | <ol style="list-style-type: none"> 1. Vibration of shelves and foods in the refrigerator. 2. Pipes interference and capillary tube touching in the compressor compartment. 3. Compressor stopper vibration. 4. Moving wheel vibration. 5. Other structure and parts vibration. | <ol style="list-style-type: none"> 1-1. Remove and replace the shelves in the refrigerator 1-2. Check light food and container on the shelves. 2-1. Touch pipes in the compressor compartment with hands. 2-2 Check capillary tube touches cover back. 3-1 Check compressor stopper vibration. 4-1 Check vibration of front and rear moving wheels. 5-1 Touch other structures and parts. | <ol style="list-style-type: none"> 1) Reassemble the vibrating parts and insert foam or cushion where vibration is severe. 2) Leave a clearance where parts interfere with each other. 3) Reduce vibration with rubber and restrainer if it is severe. (especially, compressor and pipe). 4) Replace compressor stopper if it vibrates severely. | |
| Irregular sound. ("Click"). | <ol style="list-style-type: none"> 1. It is caused by heat expansion and contraction of evaporator, shelves, and pipes in the refrigerator. | <ol style="list-style-type: none"> 1-1 Check time and place of sound sources. | <ol style="list-style-type: none"> 1) Explain the principles of refrigeration and that the temperature difference between operation and defrosting can make sounds. 2) If evaporator pipe contacts with other structures, leave a clearance between them (freezer shroud or inner case). | |

TROUBLE DIAGNOSIS

| Problems | Causes | Checks | Measures | Remarks |
|--|---|--|---|---------|
| Sound "Burping" (almost the same as animals crying sound). | It happens when refrigerant expands at the end of capillary tube. | <ul style="list-style-type: none"> - Check the sound of refrigerant at the initial installation. - Check the sound when the refrigerator starts operation after forced defrosting. - Check the restrainer attachment conditions on the evaporator and capillary tube weld joints. | <ul style="list-style-type: none"> - Check the restrainer attached on the evaporator and capillary tube weld joints and attach another restrainer. - If it is continuous and severe, insert capillary tube again (depth: 15±3mm) - Fasten the capillary tube to suction pipes or detach in the compressor compartment. - Explain the principles of freezing cycles. | |
| Water boiling or flowing sound. | It happens when refrigerant passes orifice in accumulator internal pipes by the pressure difference between condenser and evaporator. | <ul style="list-style-type: none"> - Check the sound when compressor is turned on. - Check the sound when compressor is turned off. | <ul style="list-style-type: none"> - Explain the principles of freezing cycles and refrigerant flowing phenomenon by internal pressure difference. - If sound is severe, wrap the accumulator with foam and restrainer. | |
| Sound of whistle when door closes. | When door closes, the internal pressure of the refrigerator decreases sharply below atmosphere and sucks air into the refrigerator, making the whistle sound. | <ul style="list-style-type: none"> - Check the sound by opening and closing the refrigerator or freezer doors. | <ul style="list-style-type: none"> - Broaden the cap of discharge hose for defrosting in the compressor compartment. - Seal the gap with sealant between out and inner cases of hinge in door. | |

2-8. Odor

| Problems | Causes | Checks | Measures | Remarks |
|---------------------------|--|---|--|----------------------|
| Food Odor. | Food (garlic, kimchi, etc) | <ul style="list-style-type: none"> - Check the food is not wrapped. - Check the shelves or inner wall are stained with food juice. - Check the food in the vinyl wraps. - Check food cleanliness. | <ul style="list-style-type: none"> - Dry deodorizer in the shiny and windy place. - Store the food in the closed container instead of vinyl wraps. - Clean the refrigerator and set button at "strong". | |
| Plastic Odor. | Odors of mixed food and plastic odors. | <ul style="list-style-type: none"> - Check wet food is wrapped with plastic bowl and bag. - It happens in the new refrigerator. | <ul style="list-style-type: none"> - Clean the refrigerator. - Persuade customers not to use plastic bag or wraps with wet food or odorous foods. | |
| Odor from the deodorizer. | Odor from the old deodorizer. | <ul style="list-style-type: none"> - Check the deodorizer odors. | <ul style="list-style-type: none"> - Dry the deodorizer with dryer and then in the shiny and windy place. - Remove and replace the deodorants. | *Deodorizer : option |