GE Appliances Service Training

TECHNICIAN SERVICE MANUAL

Refrigerator

MODELS:

PTV15SAMR
PTV16SAMR
PTV19SAMR
PTV20SAMR

PTU427SAMR
PTU463SAMR
PTU527SAMR
PTU565SAMR

PTQ440SAMR
PTQ470SAMR
PTQ530SAMR
PTQ570SAMR

PTG440SAMR
PTG470SAMR
PTG530SAMR
PTG570SAMR

PUB NO. : SPWR1027E
JULY 2001

IMPORTANT SAFETY NOTICE

The information in this service guide 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.

WARNING

To avoid personal injury, disconnect power before servicing this product. If electrical power is required for diagnosis or test purposes, disconnect the power immediately after performing the necessary checks.

RECONNECT ALL GROUNDING DEVICES

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.

THE MANUAL COVERS THE FOLLOWING MODELS

MODEL #	COUNTRY
PTU427SAMR PTU463SAMR PTU527SAMR PTU565SAMR	AUSTRALIA / NEW ZEALAND
N/A	BANGLADESH
N/A	CHINA
N/A	HONG KONG
N/A	INDIA
PTG440SAMR PTG470SAMR PTG530SAMR PTG570SAMR	INDONESIA / THAILAND / VIETNAM
N/A	JAPAN
N/A	KOREA
N/A	MALAYSIA

THE MANUAL COVERS THE FOLLOWING MODELS

MODEL #	COUNTRY
N/A	PAKISTAN
PTV15SAMR PTV16SAMR PTV19SAMR PTV20SAMR	PHILIPPINES
PTQ440SAMR PTQ470SAMR PTQ530SAMR PTQ570SAMR	SINGAPORE
N/A	TAIHITI
N/A	TAIWAN

I. SPECIFICATION

Models			PTV20SAMR PTU565SAMR PTQ570SAMR PTG570SAMR	PTV19SAMR PTU527SAMR PTQ530SAMR PTG530SAMR	PTV16SAMR PTU463SAMR PTQ470SAMR PTG470SAMR	PTV15SAMR PTU427SAMR PTQ440SAMR PTG440SAMR
Common	Type		2-door	2-door	2-door	2-door
	Net dimension (mm)	Height	1803	1703	1774	1674
		Width	754	754	674	674
		Depth	560	733	706	706
	Rated storage volume (liter)		F:139 / R:391	F:139 / R:346		
	Defrosting	System	Heater system			
		Start	Automatic			
		Finish	Automatic			
	Temperature control		Automatic (Adjustable)			
	No frost freezer		√	√	√	√
	Interior lamp		1	1	1	1
	Caster		2	2		
	Evaporating pan		1	1	1	1
Freezer	Ice storage box		1	1	1	1
	Transparent plastic shelf		2	2	1	2
	Twisted ice tray		Twin ice cube maker			
	Transparent door racks		2	2	2	2
Refrigerator	Deodorizing device		√	√	√	√
	Multi air flow		√	√	√	√
	Chilled room		√	√	√	√
	Transparent shelf with steel frame		3	2	3	2
	Vegetable crisper with moisture control		√	√		
	Traditional vegetable crisper		1	1	1	1
	Transparent door racks		4	3	4	3
	Large bottle/beer storage rack		1	1	1	1
	Egg storage bucket		2	2	2	2

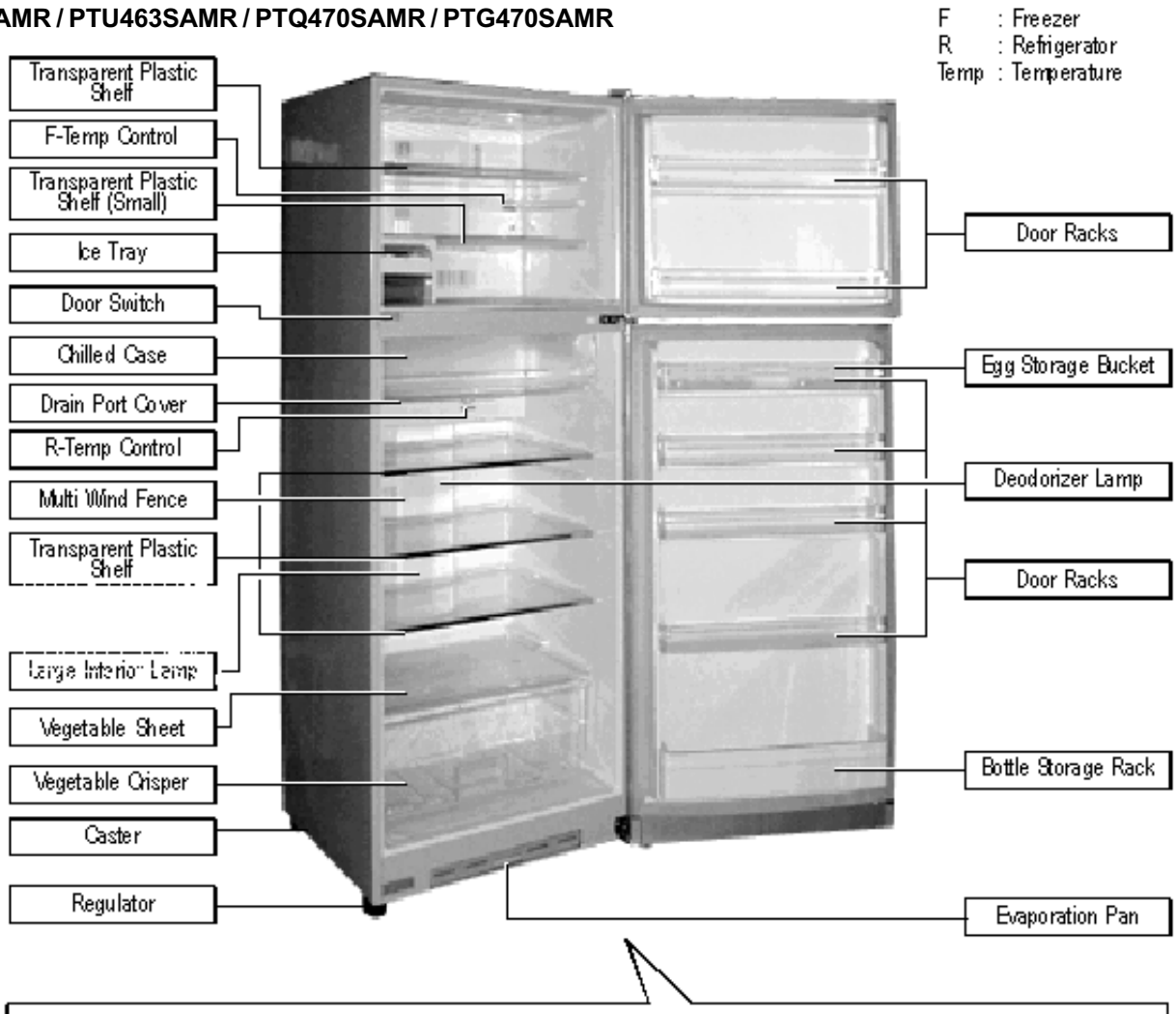
I. SPECIFICATION

Models		PTV20SAMR PTU565SAMR PTQ570SAMR PTG570SAMR	PTV19SAMR PTU527SAMR PTQ530SAMR PTG530SAMR	PTV16SAMR PTU463SAMR PTQ470SAMR PTG470SAMR	PTV15SAMR PTU427SAMR PTQ440SAMR PTG440SAMR
Color	Silver	√	√	√	√
	Black	√	√	√	√
Source, Comp. & Net weight	Rated voltage (V) / Frequency (Hz)	240 VAC / 50 Hz ; 220 VAC / 50 Hz ; 220 VAC / 60 Hz			
	Rated input (W)	180	180	170	170
	Refrigerant (R-134a) charging quantity	175g	165g	155g	155g
	Nte weight (Kg)	83	78	74	63
	Poor material	SS	SS	SS	SS
	Recessed handle	√	√	√	√

II. PARTS IDENTIFICATION

PTV15SAMR / PTU427SAMR / PTQ440SAMR / PTG440SAMR

PTV16SAMR / PTU463SAMR / PTQ470SAMR / PTG470SAMR



Note: 1. Because of ice expansion, containers with water become deformed in the freezer.

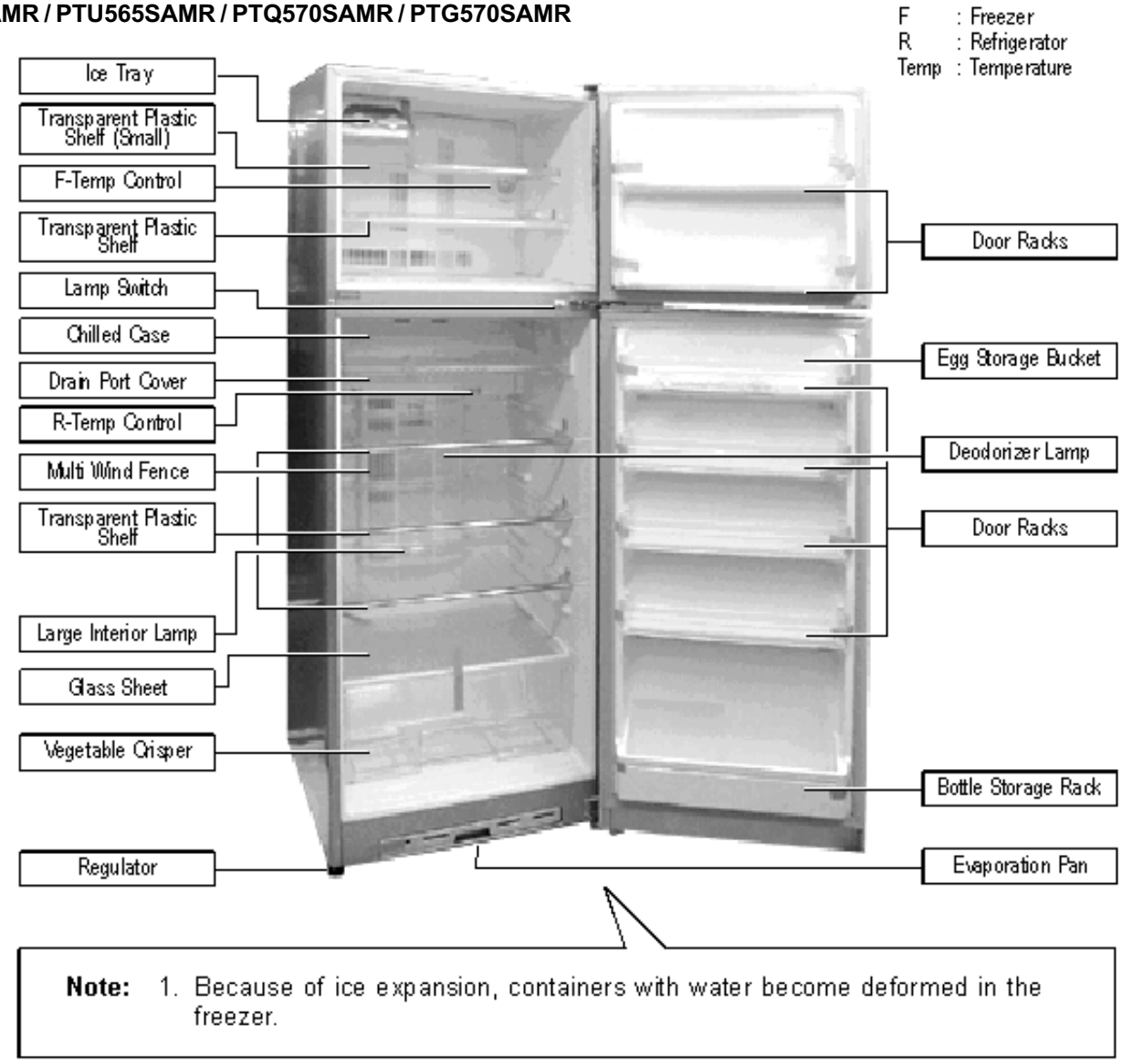
PTV15*SAMR* / PTU427*SAMR* / PTQ440*SAMR* / PTG440*SAMR* has 2 Transparent Plastic Shelves & 3 Door Racks
PTV16*SAMR* / PTU463*SAMR* / PTQ470*SAMR* / PTG470*SAMR* has 3 Transparent Plastic Shelves & 4 Door Racks

Features:

Ice tray	:	Can make and store 1kg of ice cubes.
Chilled Case	:	The fish and meats which will be cooked within 2 days can store here, no thawing is required.
Evaporation Pan	:	Water discharged from the refrigerator is evaporated here.
Door Racks (F)	:	Short-term storage of frozen food.
Egg Storage Basket	:	Can store 16 eggs.
Door Racks (R)	:	Short-term storage of refrigerated food.
Bottle Storage Rack	:	Can store 5 bottles of beer or soda.
Regulator	:	For regulation of the refrigerator.

II. PARTS IDENTIFICATION

PTV19SAMR / PTU527SAMR / PTQ530SAMR / PTG530SAMR
PTV20SAMR / PTU565SAMR / PTQ570SAMR / PTG570SAMR



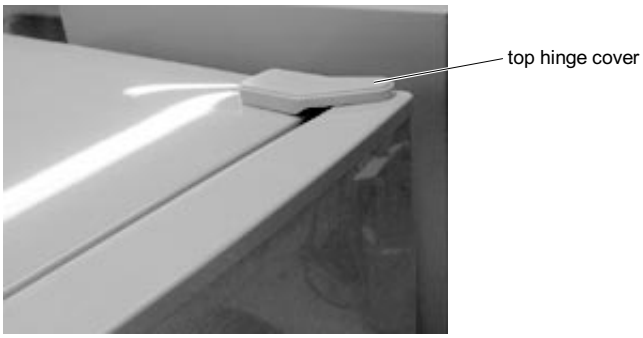
*PTV15*SAMR / *PTU427*SAMR / *PTQ440*SAMR / *PTG440*SAMR *has 2 Transparent Plastic Shelves & 3 Door Racks*
*PTV16*SAMR / *PTU463*SAMR / *PTQ470*SAMR / *PTG470*SAMR *has 3 Transparent Plastic Shelves & 4 Door Racks*

Features:

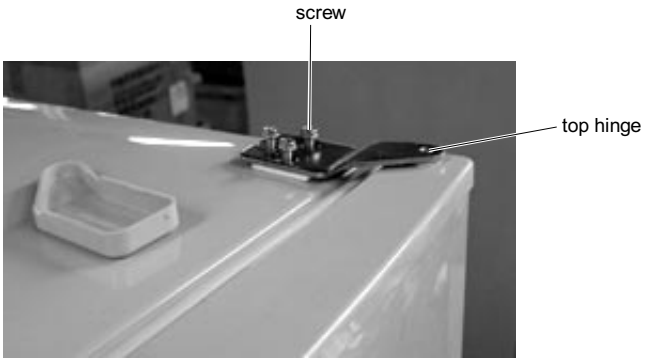
Ice tray	:	Can make and store 1kg of ice cubes.
Chilled Case	:	The fish and meats which will be cooked within 2 days can store here, no thawing is required.
Evaporation Pan	:	Water discharged from the refrigerator is evaporated here.
Door Racks (F)	:	Short-term storage of frozen food.
Egg Storage Basket	:	Can store 20 eggs.
Door Racks (R)	:	Short-term storage of refrigerated food.
Bottle Storage Rack	:	Can store 5 bottles of beer or soda.
Regulator	:	For regulation of the refrigerator.

3.1 REPLACEMENT OF DOOR

3.1.1 Remove the top hinge cover. Twist and remove carefully not to hurt the cover and cabinet with driver.



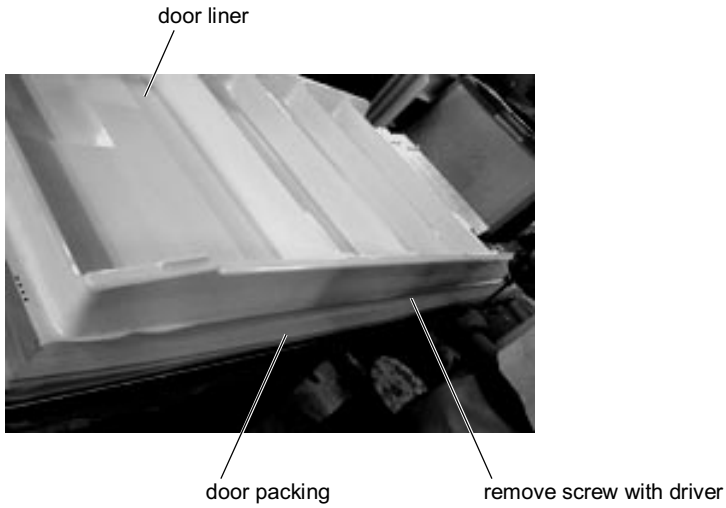
3.1.2 Remove the screw and top hinge assy.



3.1.3 Remove the F door assy slightly and remove it.

3.1.4 Remove the center hingr and remove the R door assy.

3.1.5 Remove the door liner.



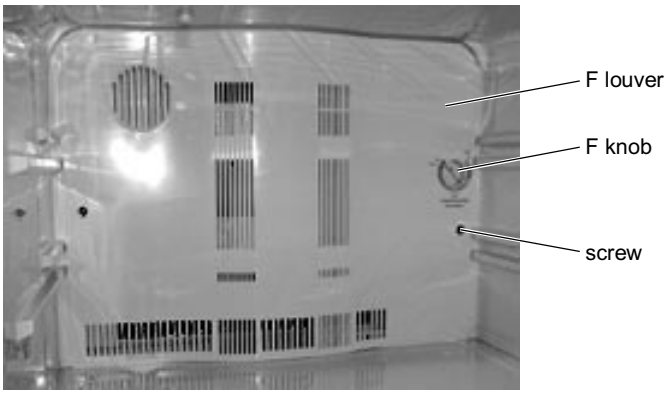
3.2 REPLACEMENT OF HEATER

3.2.1 Draw out the ice storage box.

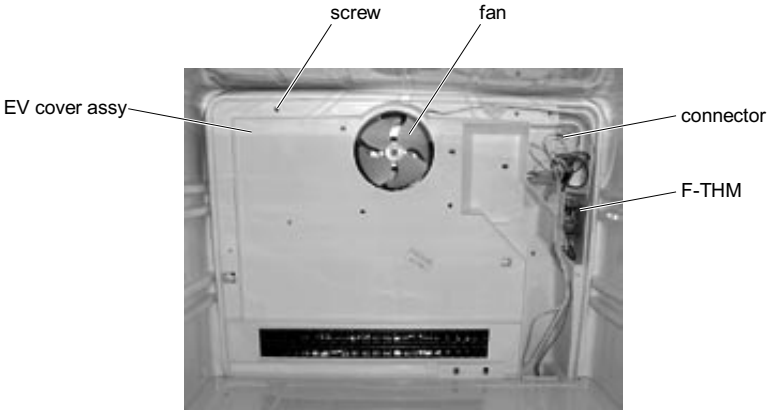
3.2.2 Pull the case holder of ice silder.

3.2.3 Remove screw and F knob.

3.2.4 Remove F louver and pull the connector.



3.2.5 Remove EV cover screw and remove the EV cover.



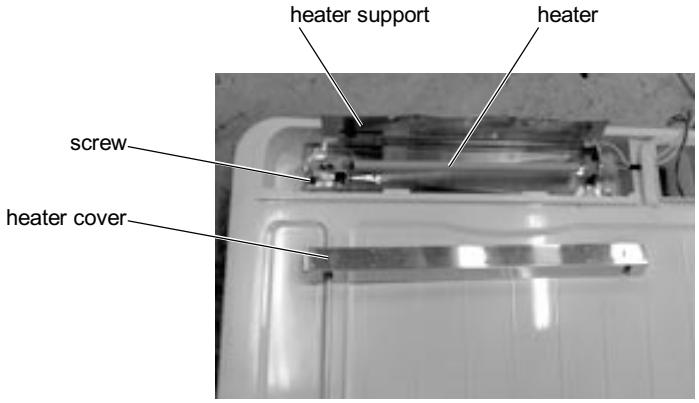
3.2.6 Remove the EV screw and up the EV assy.

3.2.7 Remove the heater cover.

3.2.8 Remove the screws (2 pcs).

3.2.9 Rend the al. foil and remove heater support.

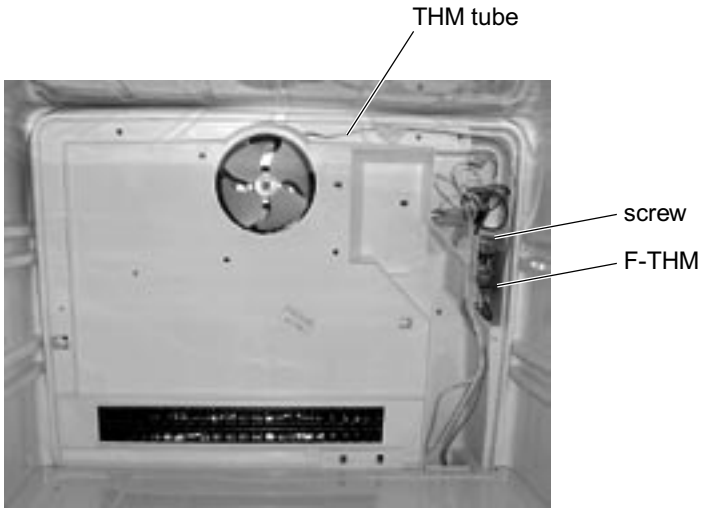
3.2.10 Remove heater.



3.3 REPLACEMENT OF F-THERMO

3.3.1 Remove F-THM screw.

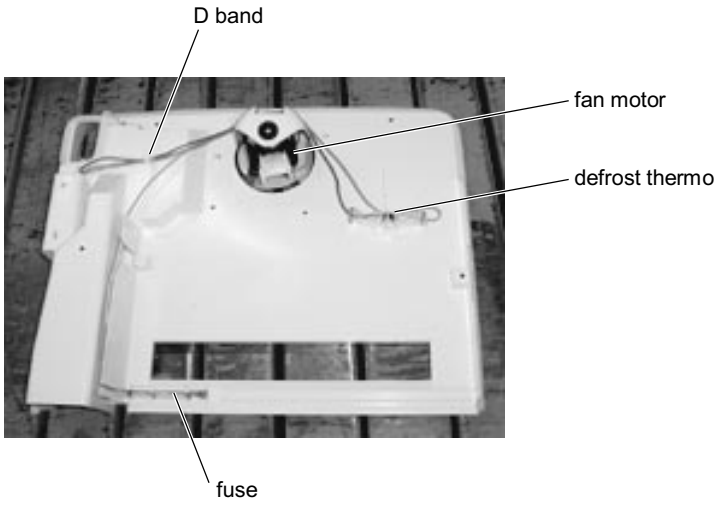
3.3.2 Remove F-THM and replacement.



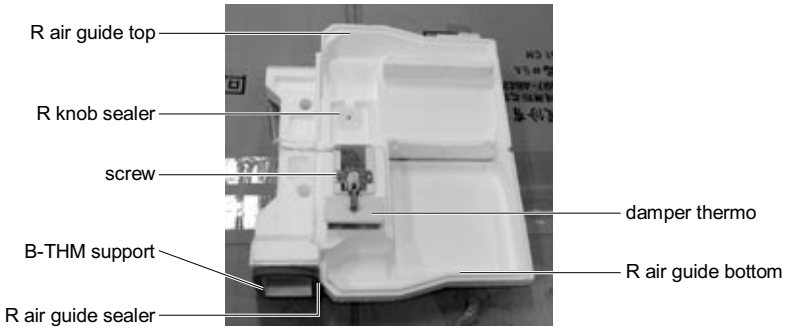
3.4 REPLACEMENT OF DEFROST THERMO

3.4.1 Remove D-band.

3.4.2 Remove D-THM assy and replace it.



3.5 REPLACEMENT OF DAMPER THERMO



3.5.1 Remove the lamp cover.

3.5.2 Remove the multi air louver screw.

3.5.3 Remove the wiring cover.

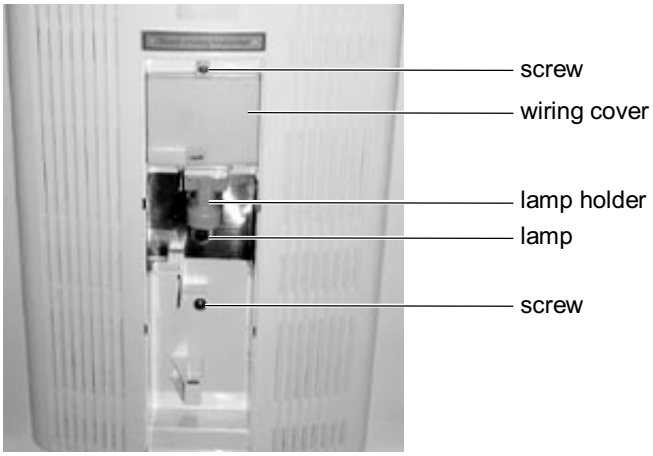
3.5.4 Remove the multi air louver assy.

3.5.5 Remove the R control box scrwe.

3.5.6 Remove the R control box assy.

3.5.7 Remove the R air guide.

3.5.8 Remove the damper thermo and replace.



3.6 REPLACEMENT OF DOOR SWITCH

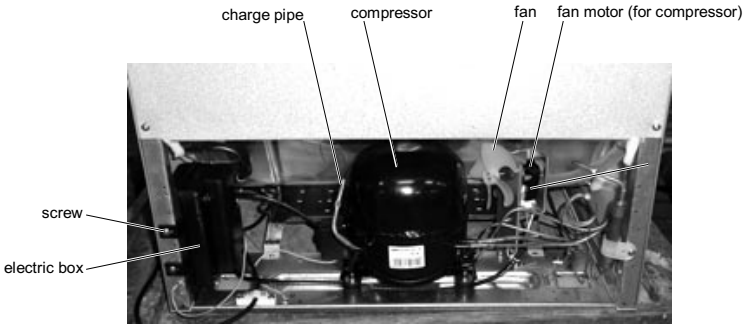
3.6.1 Remove the door switch by using screwdriver, remove the door switch from cabinet, takinf care not to damage the cabinet.

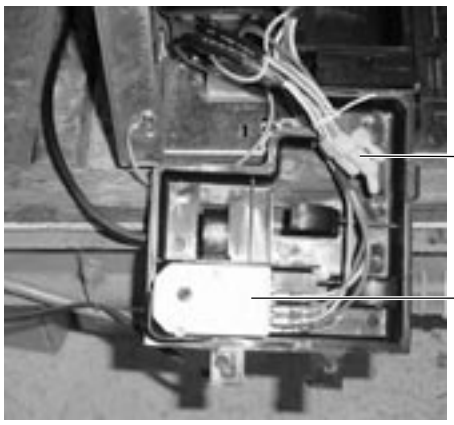
3.7 REPLACEMENT OF D-TIMER

3.7.1 Remove electric box screw.

3.7.2 Remove electric box.

3.7.3 Remove D-timer and replace.





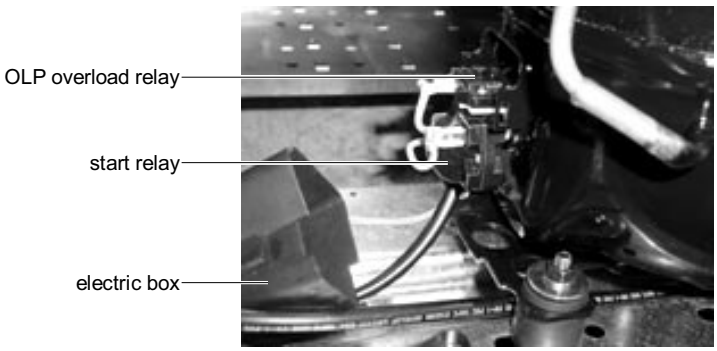
3.8 REPLACEMENT OF PTC & OLP OVERLOAD RELAY

3.8.1 Remove the compressor cover.

3.8.2 Remove electric box clamp.

3.8.3 Remove electric box.

3.8.4 Remove PTC & OLP and replace PTC & OLP.

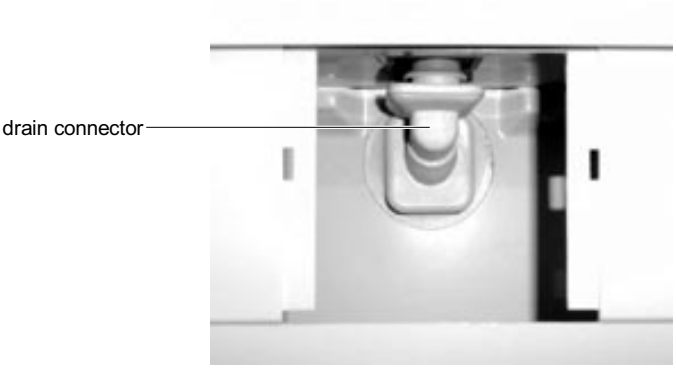


3.9 HOW TO CLEAN DRAIN PIPE

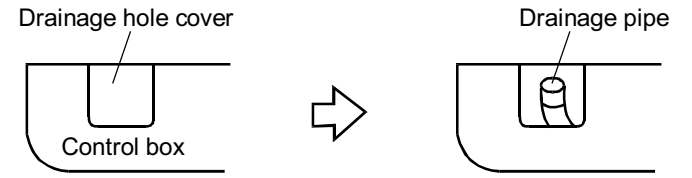
3.9.1 Remove drain hole cover.

3.9.2 Remove drain connector.

3.9.3 Clean connector & drain pipe.



Dismounting and Cleaning of Drainage Pipe



3.9.4 Water Drainage

i. The water drainage adapter in the drawer should be cleaned every 6 months to 1 year to keep it from being obstructed. This avoids poor drainage and refrigeration.

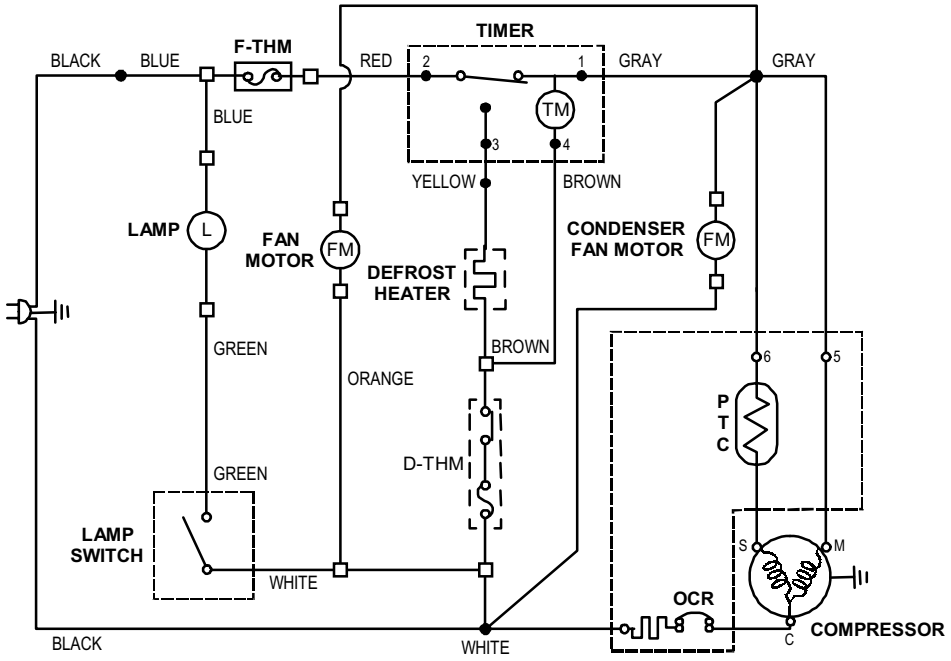
ii. The water drained from the refrigerator is drained into the evaporation pan from the drainage system.

iii. Water in the evaporation pan shall be duly evaporated by the radiator. There is no need to remove it.

iv. After some time, dust or impurity builds up in the evaporation pan and produces odor. This should be cleaned once a month.

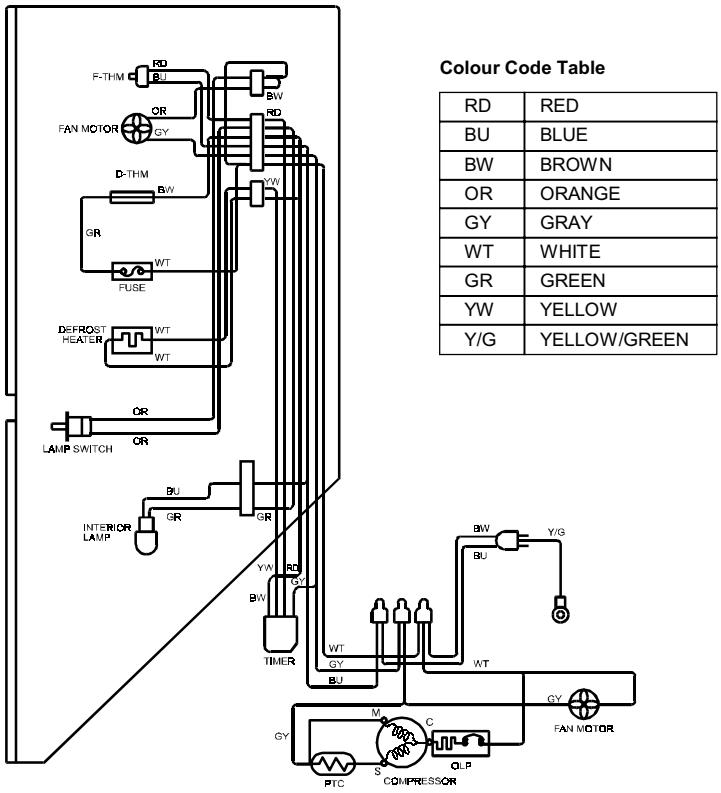
IV. WIRING DIAGRAM

Be sure to replace the electrical parts with specified ones for maintaining the safety and performance of the set. Because these are important for maintaining the safety of the set.



IV. WIRING DIAGRAM

PTV15SAMR / PTU427SAMR / PTQ440SAMR / PTG440SAMR
PTV16SAMR / PTU463SAMR / PTQ470SAMR / PTG470SAMR

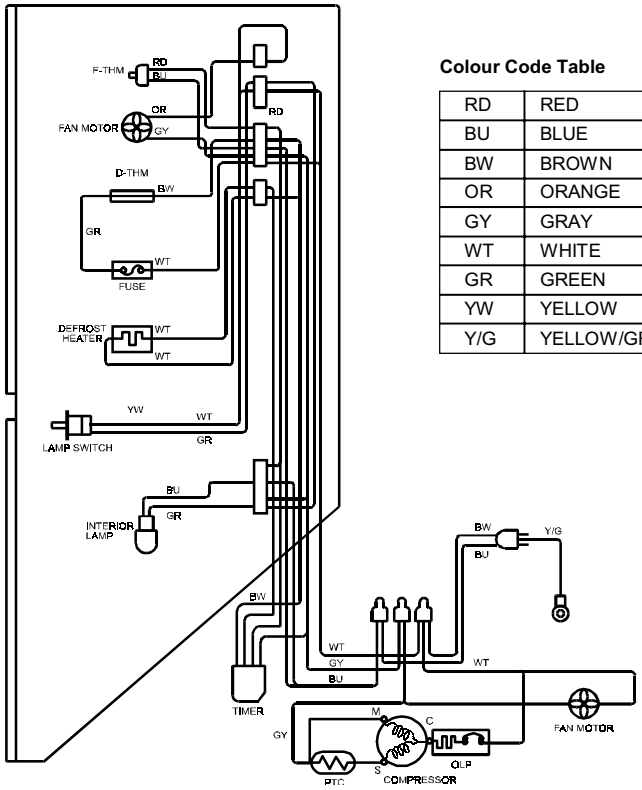


Colour Code Table

RD	RED
BU	BLUE
BW	BROWN
OR	ORANGE
GY	GRAY
WT	WHITE
GR	GREEN
YW	YELLOW
Y/G	YELLOW/GREEN

IV. WIRING DIAGRAM

PTV19SAMR / PTU527SAMR / PTQ530SAMR / PTG530SAMR
PTV20SAMR / PTU565SAMR / PTQ570SAMR / PTG570SAMR



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V. FUNCTIONS

5.1 DEFROSTING

5.1.1 No Defrosting Operation Is Necessary

As this machine is so designed that a built-in evaporator cools air and a fan circulates cooled air, neither the freezer nor the refrigerator is frosted, though the evaporator is frosted.

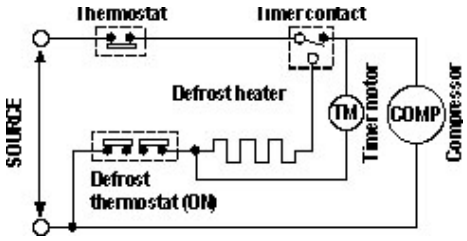
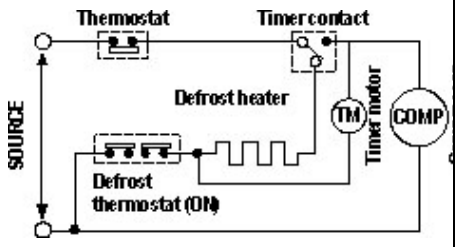
The frosted evaporator is defrosted automatically due to the function of defrosting timer and heater, requiring no defrosting operation.

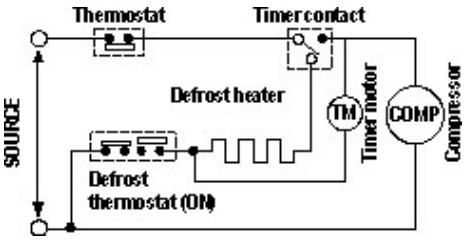
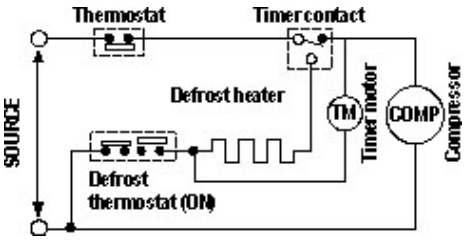
5.1.2 Where is melted ice brought?

i. Melted ice is brought into the evaporating pan at the bottom of the set and is evaporated here by the heat of sub condenser.

ii. Be sure to use the evaporating pan as inserted so as to be level with the outer case.

5.1.3 The following circuit diagrams in the table show automatic defrosting function of the refrigerator with timer and defrost thermostat.

Operation	Electric diagram	Description
1. Cooling (Normal)	• Defrost thermostat ON • Compressor running • Timer motor running  **Figure F-1**	The integration timer integrates running time of the compressor. When it reaches 8 hours 50 min. at 50Hz (10 hours 50 min at 60Hz), the timer contact is changed to start defrosting.
2. Defrosting (Time 20 to 30 min)	• Defrost thermostat ON • Compressor stops • Timer motor stops  **Figure F-2**	• The timer contact is changed to start defrosting, the timer motor stops, and power is supplied to the defrost heater. • It takes about 20 to 30 min. to defrost. When little frosted the defrosting takes little time. When much frosted, the defrosting takes much time.

Operation	Electric diagram	Description
3. Drain (Time approx. 3 min)	• Defrost thermostat OFF • Compressor stops • Timer motor running  **Figure F-3**	When the defrost thermostat becomes OFF, the timer motor at rest starts running. During the operation time (2 min. 48 sec./50Hz; 2 min/ 60Hz) defrosted water is drained outside the refrigerator.
4. Cooling start (Time approx. 5 min)	• Defrost thermostat OFF • Compressor running • Timer motor stops  **Figure F-4**	• Timer contact is changed to cooling operation and the compressor starts running and the timer motor stops. • Defrost thermostat contact becomes ON when it's cooled. (Figure F-1)

5.1.4 As a reference to determine the causes of trouble, malfunction and phenomena are described. Refer to the following when repairing

i. Disconnection

As off-cycle defrosting is performed, the defrosting time is extremely prolonged. Each time defrostihg is started, the freezer temperature rises and a portion of ice and stored foods are melted.

ii. Melted thermo. fuse or opened-circuit due to the defect of defrost thermostat

When the above mentioned trouble occurs in cooling operation, the timer motor does not run, defrosting will not take place, and consequently freezing is caused. In the above mentioned condition, when the timer shaft is turned by hand to defrost, the timer motor runs during the operation time. However, the motor stops from the-time when the contact is changed, and freezing causes.

Note :

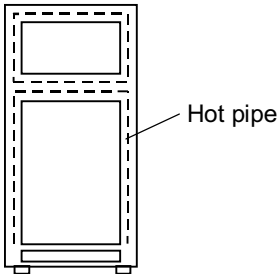
As the thermo. fuse assembly is intended to prevent dangers, do not use it under shorted condition even for a short period.

5.2 DEW PREVENTION

The hot pipe, namely D.P. -condenser, is arranged around the flange part of cabinet and the C-partition plate, preventing dew from being generated on the cabinet.

i. D.P. condenser pipe may be felt hot if touched by hand while the compressor is in operation.

ii. If you are asked about this, please explain that the hot pipe serve to prevent the dew generation.



5.3 INSPECTION OF INITIAL STARTING

5.3.1 Inspection of cooling unit

i. Set the temperature control knob to "MAX" and check that the compressor starts to operate.

ii. Check that cool air is blown out of the cold air outlet of the freezer and the refrigerator.

iii. When the compressor does not work, check that the timer is not set to "defrost"-position.

iv. It takes about an hour and a half or two hours to put food in the refrigerator after starting operation.

Note :

- After return the temperature control knob to "MED" position.

- When the refrigerator is operated initially after installed, the compressor may vibrate excessively for 1 to 2 min. However, vibration becomes normal if it is continuously operated.

5.3.2 Inspection of defrost device

Operate the refrigerator for 20 to 30 min. and then check the defrost device in the following procedures. Allow 5 min. to restart the compressor since immediate starting after stopping will cause unsmooth operation.

i. Turn the timer shaft clockwise with a screw driver. At this time, make certains the timer clinks and the compressor stops.

ii. After more than 5 min., turn the shaft further to operate. Make certain cooling operation is started again.

Note :

- It's not necessary to switch the timer by changing of source frequency (50Hz, 60Hz).

VI. COOLING UNIT

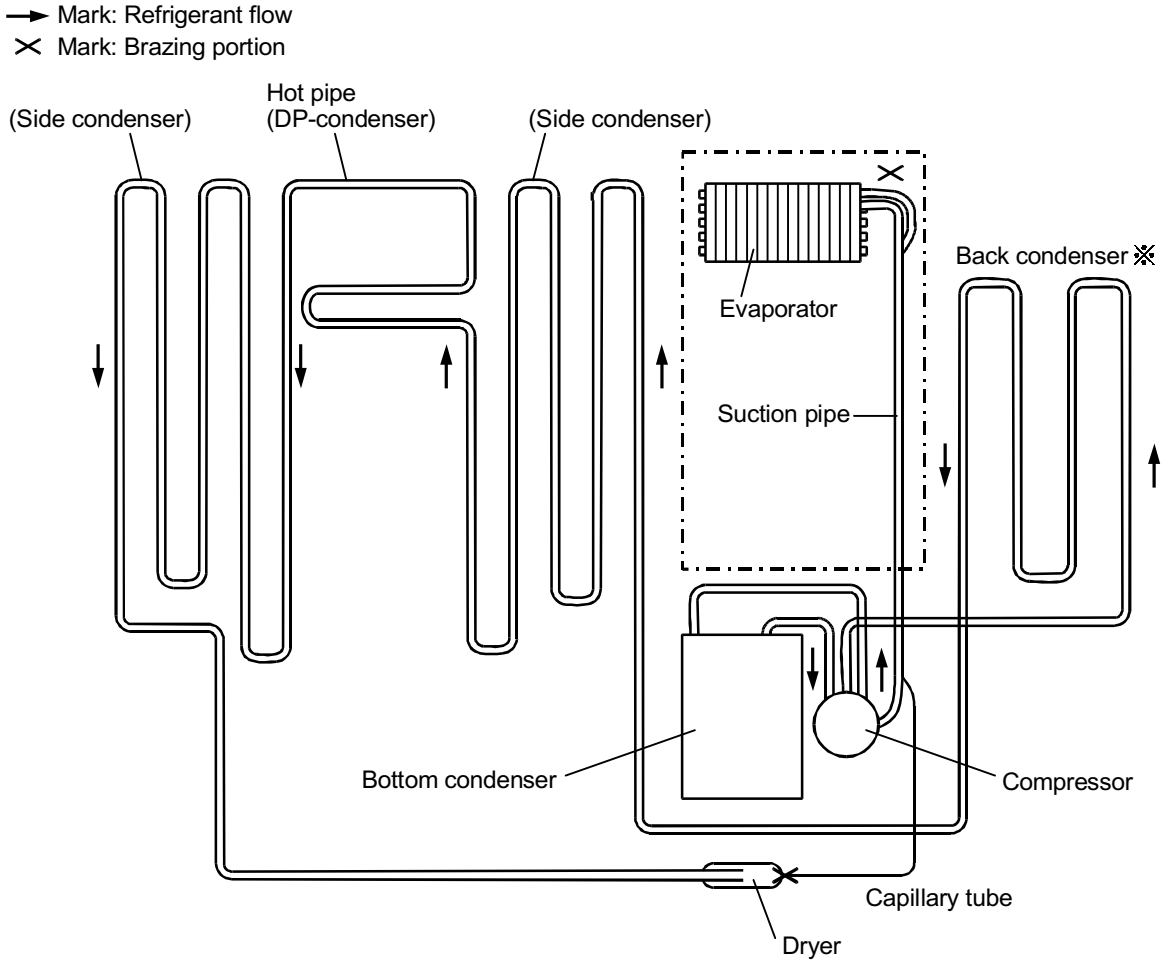


Figure 1 - Cooling Unit

VII. ADJUSTMENT

7.1 COMPRESSOR

7.1.1 Role

The Compressor inhales low temp. and low pressure gas evaporated from Evaporator of the refrigerator, and condenses this gas to high temp. and high pressure gas, and then plays delivering role to Condenser.

7.1.2 Composition

The compressor is composed of Compressor Apparatus compressing gas, Compressor Motor moving Compressor Apparatus and Case protecting Compressor Apparatus and Motor.
There are PTC-Starter, and Over Load Protector in the Compressor outside.
On the other hand, because the Compressor consists of 111000 mm processing precision components and is sealed after producing without dust or humidity, deal and repair with care.

7.1.3 Note to Use

i. Be careful not to allow over voltage and over current.

ii. No Strike:

If applying forcible power or strike (dropping or careless dealing), poor operation and noise may occur.

iii. Use proper electric components appropriate to the compressor.

iv. Note to Keep Compressor:
If Compressor gets wet in the rain and rust in the pin of Hermetic Terminal, poor operation and poor contact may cause.

v. Be careful that dust, humidity, and flux due to welding don't inflow in Compressor inside in replacing Compressor. Dust, humidity, and flux due to welding which inflows to Cylinder may cause lock and noise.

7.2 PTC-STARTER

7.2.1 Composition of PTC-Starter

i. PTC (Positive Temperature Coefficient) is no-contact semiconductor starting device which uses ceramic material and the material consists of $BaTiO_3$.

ii. The higher the temperature is, the higher resistance value becomes. These features are used as starting device of motor.

7.2.2 Role of PTC-Starter

i. PTC is attached to hermetic Compressor used for refrigerator, show case and starts motor.

ii. Compressor for household refrigerator applies singlephase induction motor. For normal operation of singlephase induction motor, in the starting operation flows in both main coil and sub coil. After the starting is over, the current is cut off in sub coil. The proper features of PTC play the above all roles. So, PTC is used as a starting device of motor.

7.2.3 Motor Restarting and PTC Cooling

i. For restarting after power off during normal Compressor Motor operation, plug the power cord after 5 min. for pressure balance of refrigerating cycle and PTC cooling.

ii. During normal operation of Compressor Motor, PTC elements generate heat continuously. Therefore, if PTC isn't cooled for a while after power off, Motor can't operate again.

7.2.4 Relation of PTC-Starter and OLP

i. If power off during operation of Compressor and power on before PTC is cooled, (instant shut-off within 2 min, or reconnect a power plug due to misconnecting), PTC isn't cooled and a resistance value grows. As a result, current can't flow to the sub-coil and motor can't operate and OLP operates by flowing over current in only main-coil.

ii. While the OLP repeats on and off operation about 3-5 times, PTC is cooled and Compressor Motor performs normal operation.

iii. If OLP doesn't operate when PTC is not cooled, compressor motor is worn away and causes circuit-short and fire. Therefore, use a proper fixed OLP without fail.

7.2.5 Note to Use PTC-Starter

i. Be careful to over voltage and over current.

ii. No Strike:

Don't apply a forcible power or strike.

iii. Keep apart from any liquid. If liquid such as oil or water inflows into PTC, PTC materials may break due to insulation breakdown of material itself.

iv. Don't change PTC at your convenience. Don't disassemble PTC and mold. If damaging to outside of PTGStarter, resistance value alters and poor starting of Compressor motor may cause.

v. Use a properly fixed PTG.

7.3 OLP (OVER LOAD PROTECTOR)

7.3.1 Definition of OLP

i. OLP (Over Load Protector) is attached to hermetic Compressor and protects motor by cutting off current in Compressor motor by Bimetal in the OLP in case of overrising temperature.

ii. When over voltage flows to Compressor motor, Bimetal works by heating the heater inside OLP, and OLP protects motor by cutting off current which flows to compressor motor.

7.3.2 Role of OLP

i. OLP is attached to hermetic Compressor used to refrigerator and show case and prevents motor coil from being started in the Compressor.

iii. Do not turn the Adjust Screw of OLP in any way for normal operation of OLP (Composition and Connection Diagram of OLP)

VIII. DEODORIZATION WITH PLATINUM

8.1 DEODORIZATION WITH PLATINUM

8.1.1 This material is used for Deodorization and defrosting because of its high temperature acidification to get rid of odors in the refrigerator.

8.1.2 This is a platinum-based catalyst deodorant evenly coated on the quartz tube. It is a highly active and adhesive metal.

8.1.3 In the refrigerator, the odor passes by the deodorant catalyst and is attracted by the deodorant coated on the quartz tube.

8.1.4 When defrosting, the 250°C-heat produced in the quartz tube dissolves the acidified odor and purifies the cold air in the refrigerator.

8.1.5 After defrosting, the clean and odor-free cold air refrigerates the food. At the next defrosting, it carries out Deodorization and this process is repeated.

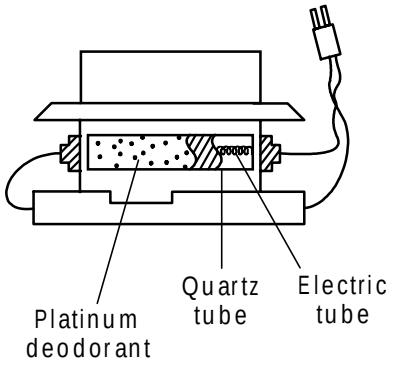


Diagram of defrosting heater

8.2 APPLICATION OF PLATINUM AS DEODORANT

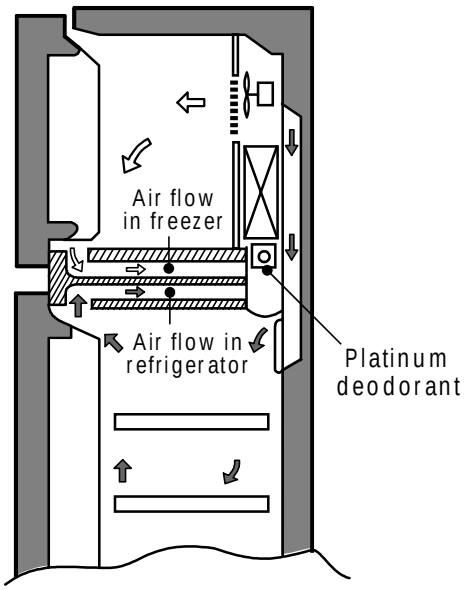
8.2.1 A fan is used in the frost-free refrigerator for refrigeration.

8.2.2 The Platinum deodorizer is installed beneath the cooler at the cold air outlet that cools the freezer compartment. Because the refrigerator is a sealed cabinet, the rotating cool air is forced to rotate by the fan and cause odor to pass through the deodorizer.

8.2.3 When not defrosting, the deodorant is highly activated and odor is absorbed.

8.2.4 After running for a while and during the defrosting stage, the heat produced by the defrosting heater that goes through the quartz tube to the deodorant on the surface at over 250°C, causes odor to attach to the deodorizer where it is acidified into pure gas, free of odor.

8.2.5 At the end of defrosting, the fan resumes work and the high temperature does not go down. The acidified gas causes the deodorant to continue to absorb odor.



⇨ Air flow in freezer

➡ Air flow in refrigerator

IX. FAILURE DIAGNOSIS

1. Not cold at all (freezing storage and cooling chamber are not cold)

Is the plug being inserted? — No → Insert the power plug.

Yes

Is the plug being inserted? — No → Any shutdown? Check the abnormal power cord or switch

Yes

Is the voltage over 99V? — No → Is a special socket used by the refrigerator? — No → Is the socket affected by other electrical wiring?

Yes

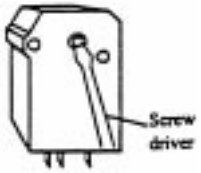
Yes

Is the geographical environment being used a special one?

Is the compressor operating? — No → Short the F thermostat and see if the compressor is operating.

Operating → Change F-THM, then check is it due to the freon leakage of thermo sensor or by prro contacting point?

Not operated



When regulate D meter to cooling operation side, is the compressor operating?

Operating → Is the temperature fuse melted? — No → Replace the temperature switch.

Engaged

Turn D time to right side till hearing two noises

Is the temperature switch engaged? — No → Replace the temperature switch.

Non-operating

Engaged → Replace D meter.

Short theoverload protector and see if the compressor is operating. — Operating → Replace the overload protector

Non-Operating

Is the relay of PTC starter normal? — Abnormal → Replace the relay of PTC starter.

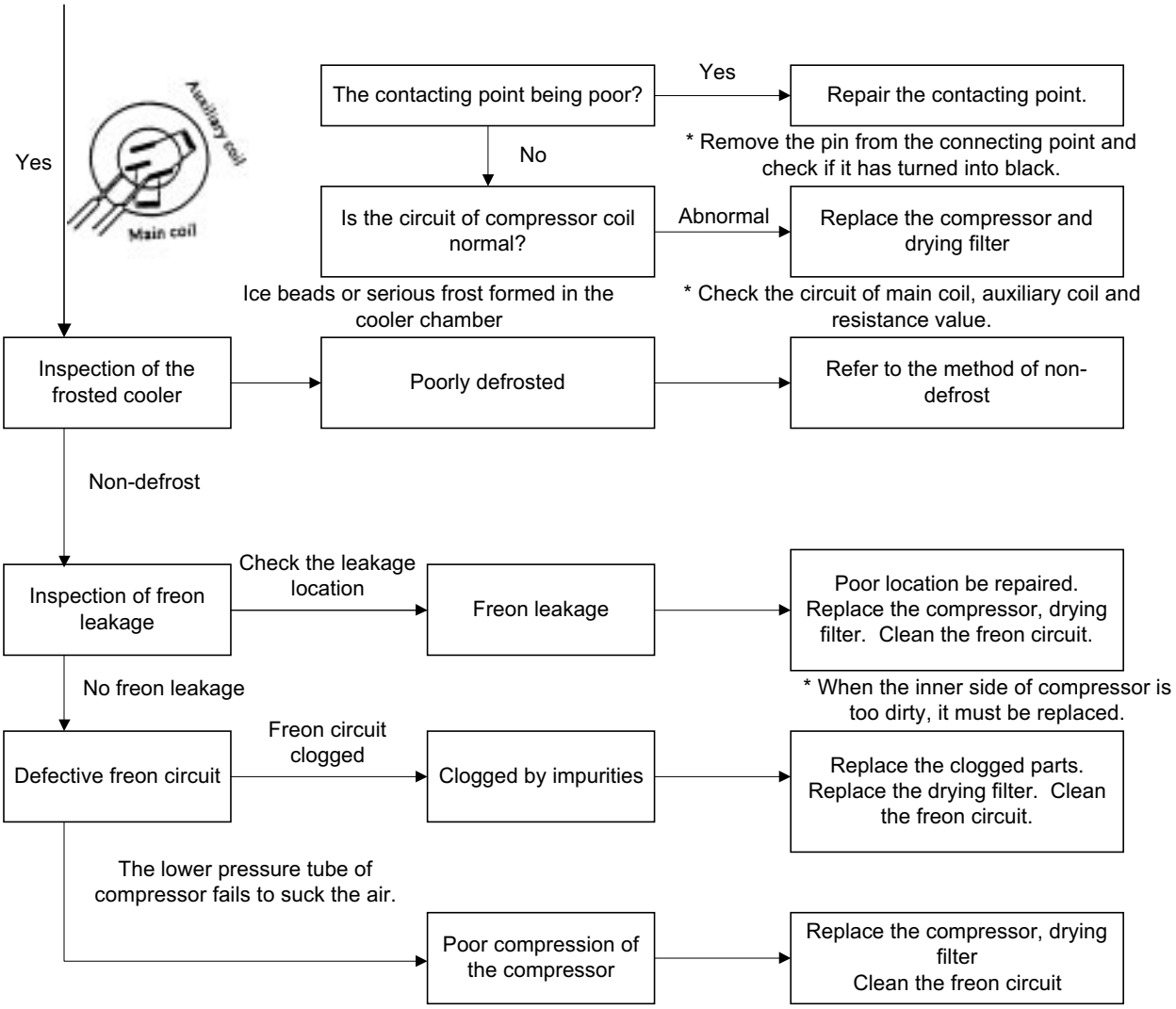
Impedance short and poor circuit

Yes

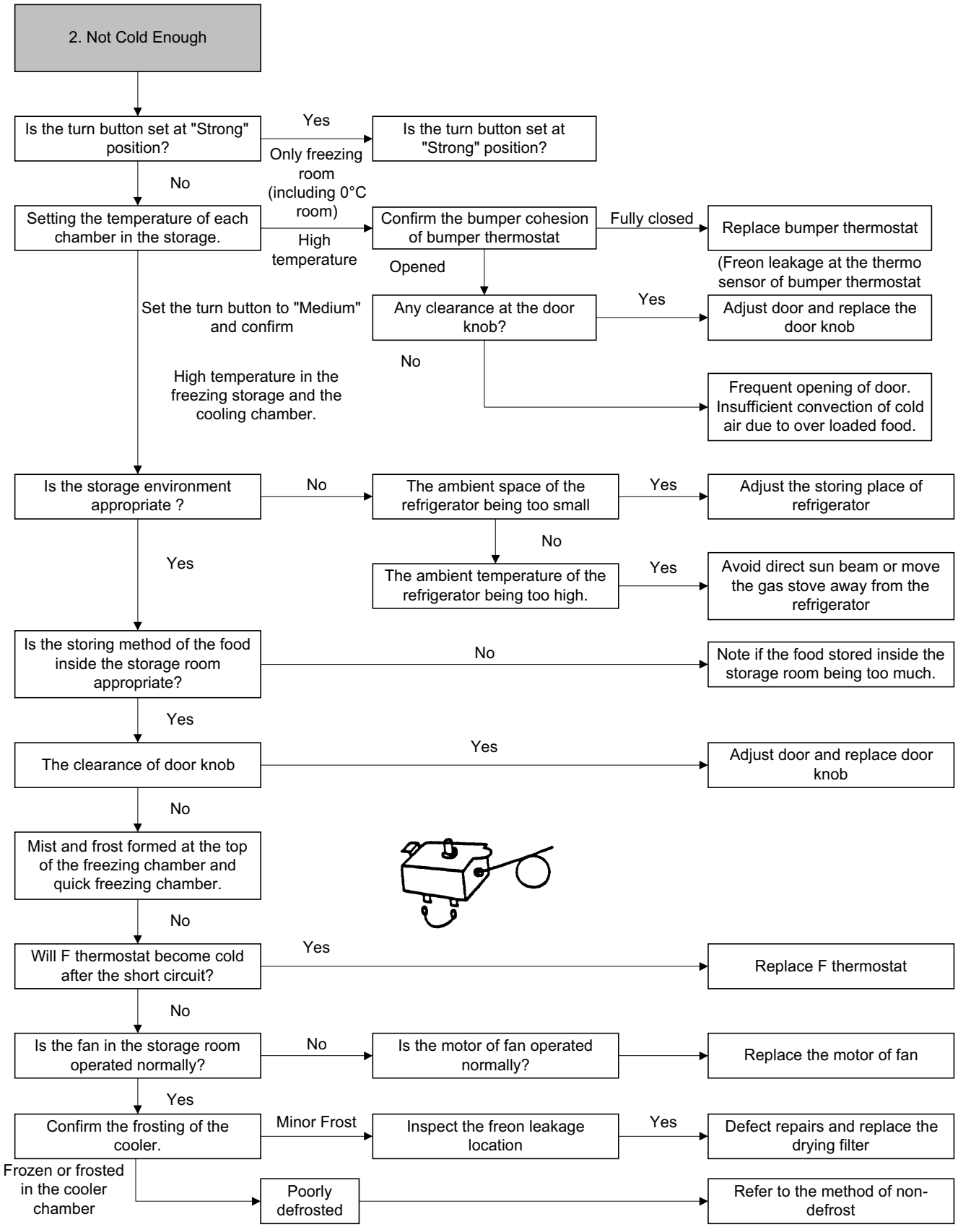
Is the capacitor normal at starting or operating? — Abnormal → Replace the relay of PTC starter.

In case of the normal item, the needle of the panel will become a high ohms after one vibration

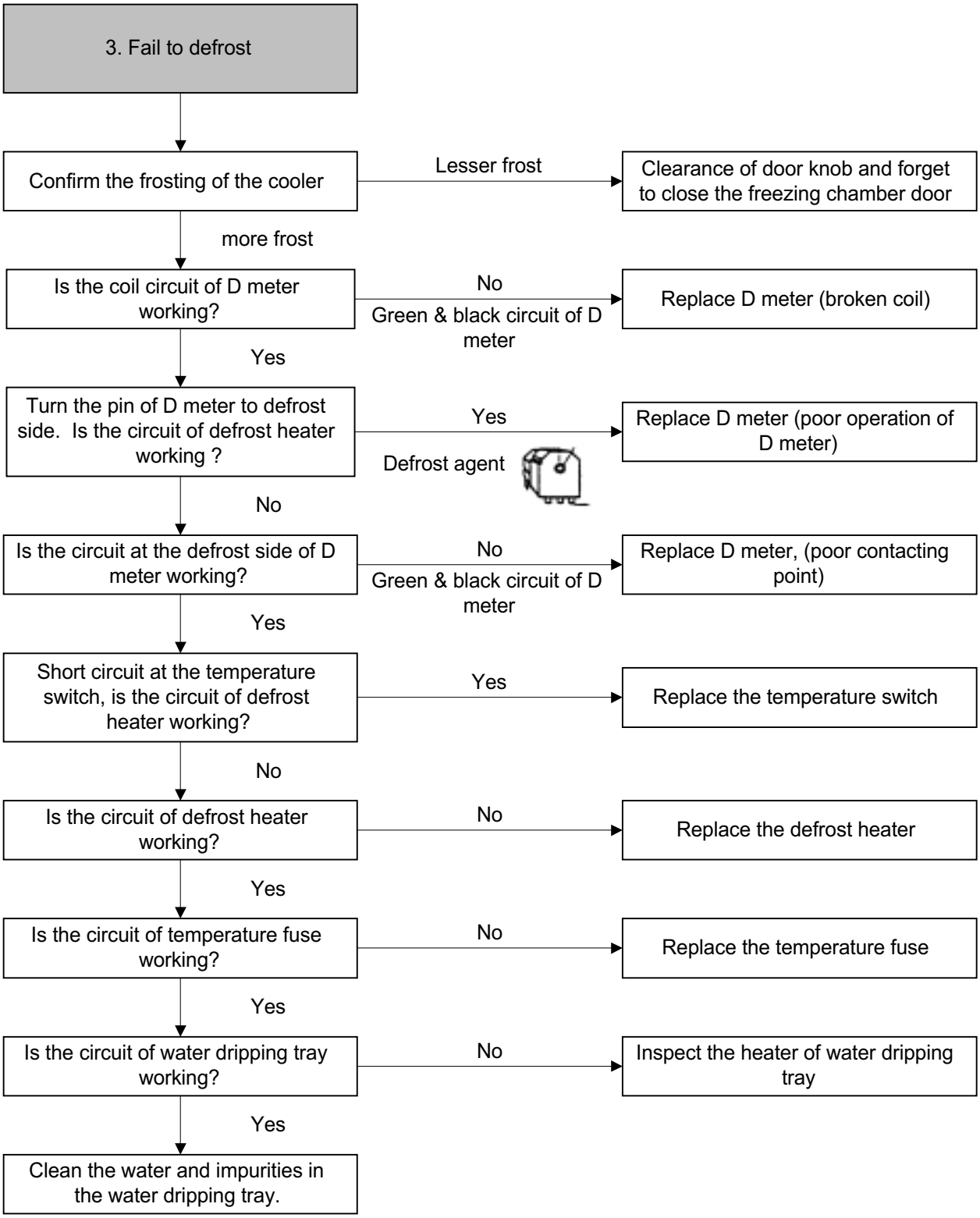
IX. FAILURE DIAGNOSIS



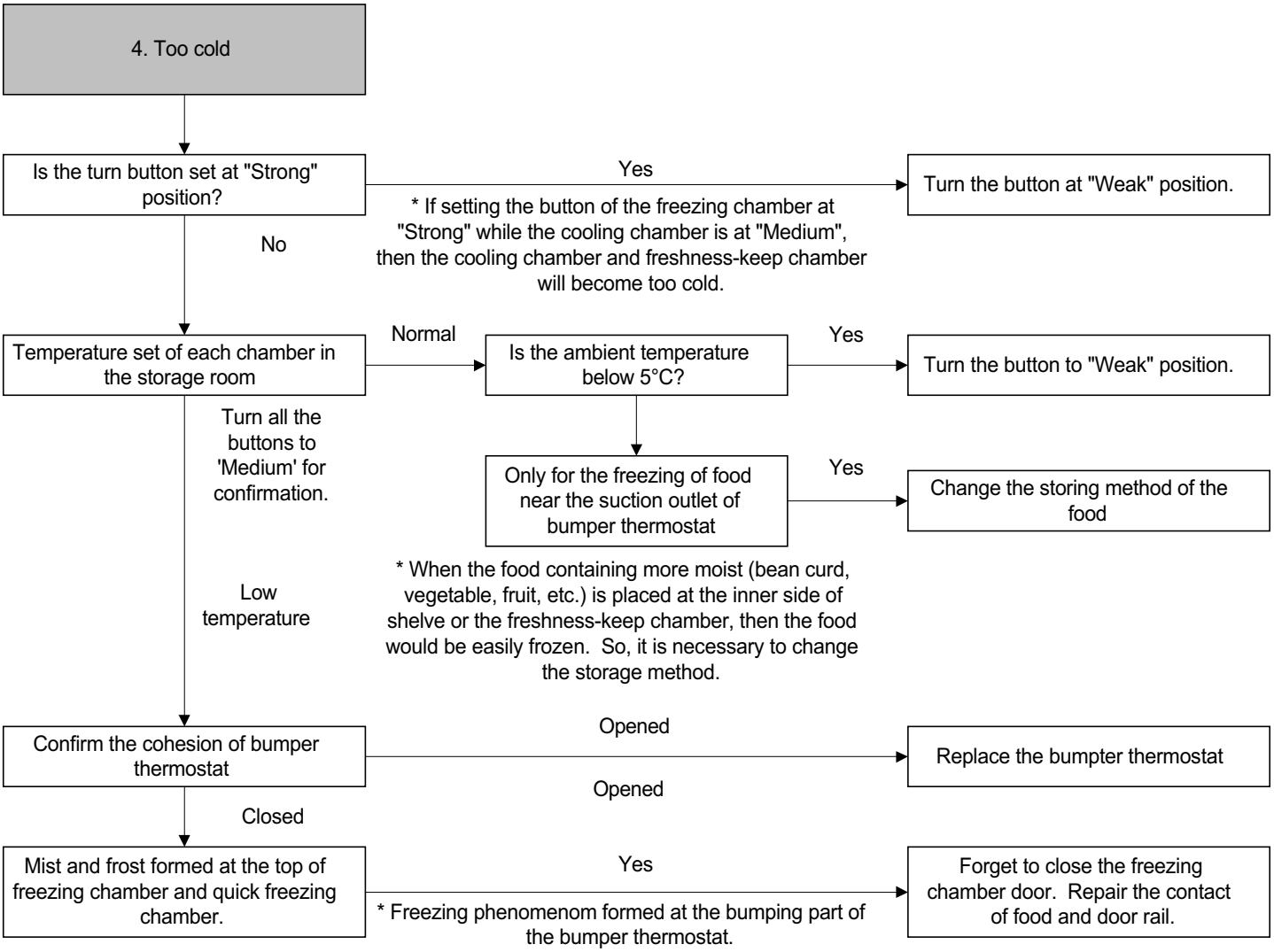
IX. FAILURE DIAGNOSIS



IX. FAILURE DIAGNOSIS



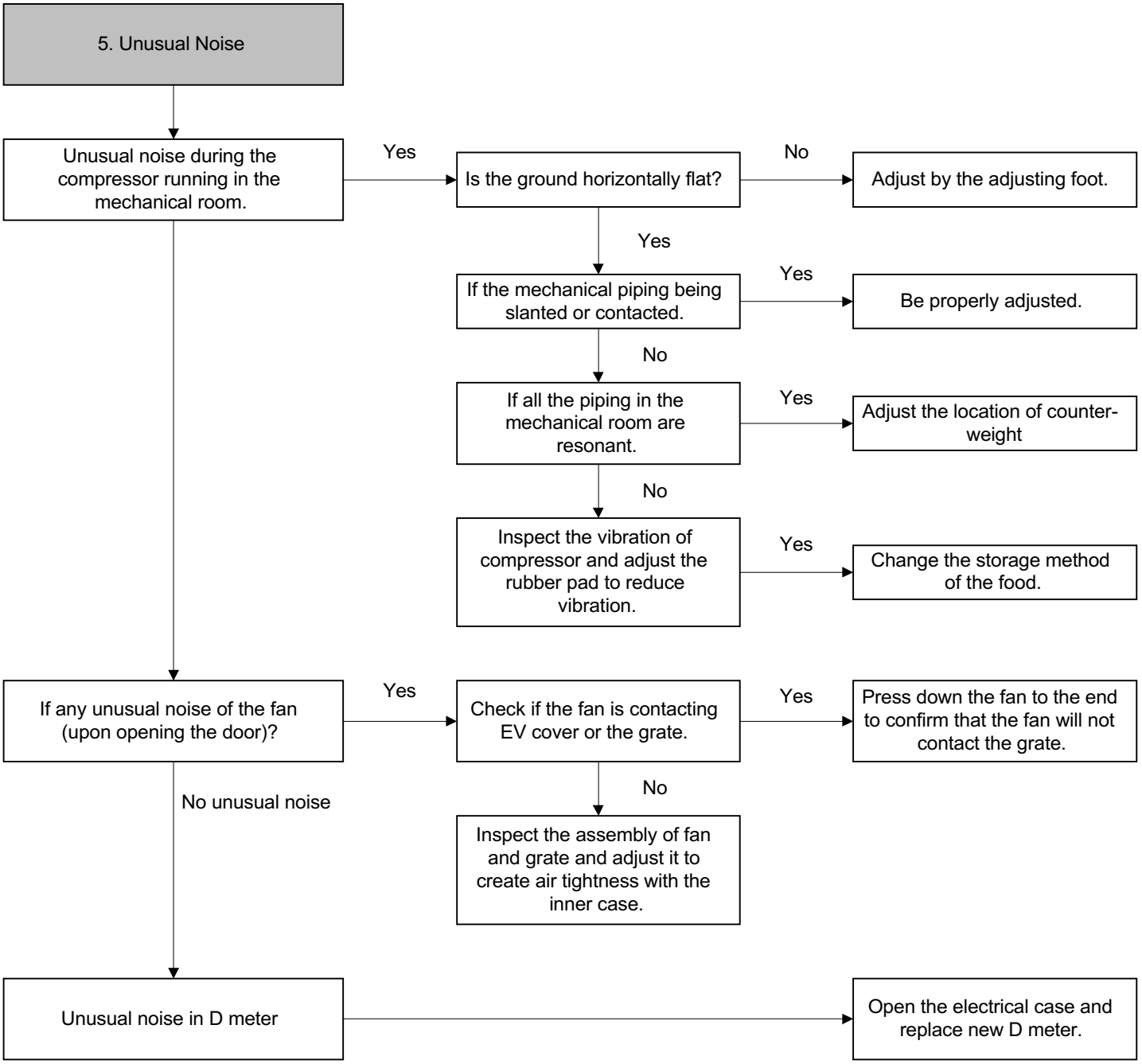
IX. FAILURE DIAGNOSIS



* When the bumper thermostat is replaced due to poor cooling, be sure not to install the cooling chamber bumper correctly and it must be secured on the original leverage.

* Put iced water in to the cup or placed it into the freezing chamber to cool it down, so as to confirm the action of the bumper.

IX. FAILURE DIAGNOSIS



X. CAUSES & TREATMENT OF REFRIGERATOR FAILURES

Phenomenon	Failure Condition	Inspection Part	Causes	Treatment Actions
Refrigerator fails to operate	Electric current meter remains still	Electric power	Power cord not being engaged.	• Any power shut off or melted fuse?
		Compressor	1. Broken mail coil of the motor.	• Replace the compressor
			2. Broken wiring of the refrigerator.	• Check & repairs.
		Relay	Broken electrical heating wire	• Replace the relay
		Control Switch	1. Button set at “OFF” position.	• Replace the control switch
			2. Poor practice	• Replace the control switch
			3. Air leakage (freon)	• Replace the control switch
		Defrost switch	1. Poor practice	• Replace the defrost switch
	Instant power stop of major motor	Compressor	1. Choking	• Replace the compressor
			2. Short circuit between motors	• Replace the compressor
			3. Broken auxiliary coil of the motor.	• Replace the compressor
		Starter	1. Poor practice	• Replace the starter
			2. Poor contacting point	• Contacting point be polished or replace with a new one.
		Capacitor	Burnt out	• Replace the capacitor
		Power	Abnormal voltage	• Explanation for the customer.
	Defrost switch fails to recover or longer time needed for recovery	Defrost switch	1. Poor practice	• Replace the defrost switch
			2. Low room temperature	• Explanation for the customer.

X. CAUSES & TREATMENT OF REFRIGERATOR FAILURES

Phenomenon	Failure Condition	Inspection Part	Causes	Treatment Actions
Operation time being too long	Compressor fails to control the stop	Control switch	Poor practice	• Replace the control switch
		Door knob	1. Door knob	• Replace the door knob
			2. Poor door clearance	• Be adjusted
		Other	1. Too much food being stored.	• Explanation for the customer.
			2. The food stored being too warm	• Explanation for the customer.
			3. Door opening being too frequent.	• Explanation for the customer.
			4. Improper storage location.	• Explanation for the customer.
	Bigger power consumption	Control switch	Inappropriate position of turn button	• Explanation for the customer
		Electric power	Voltage being too high	• Explanation for the customer
		Others	1. Too much food being stored.	• Explanation for the customer
			2. Improper storage location	• Explanation for the customer
	Temperature being too low	Control Switch	1. Inappropriate position of turn button	• Explanation for the customer
			2. Poor contact between thermo-sensing tube and evaporator	• Be adjusted
			3. Poor practice	• Replace the control switch

X. CAUSES & TREATMENT OF REFRIGERATOR FAILURES

Phenomenon	Failure Condition	Inspection Part	Causes	Treatment Actions
The refrigerator being operated but too cold	Not cold at all	Freezing system	1. Freon leakage	• Replace / repair the freezing system
			2. Clogged by dusts and moisture	• Replace / repair the freezing system
			3. Defective pressure exhaustion	• Replace / repair the freezing system
	Not cold even after longer time of operation	Freezing system	1. Insufficient freon	• Replace / repair the freezing system
			2. Clogged by dusts and oil	• Replace / repair the freezing system
			3. Poor discharge	• Replace / repair the freezing system
		Door knob	1. Poor clearance of door knob	• Be adjusted
			2. Defective door knob	• Replace the door knob
		Evaporator	Too thick of frost	• Explanation for the customer
		Control Switch	Inappropriate position of the turn button	• Explanation for the customer
		Motor of the fan	Fails to turn	• Defrost switch, door opening and wiring be inspected, repaired or replaced
		Condenser	Being dirty or poorly	• Explanation for the customer
		Others	1. Too much food being stored.	• Explanation for the customer
			2. Door opening being too frequent	• Explanation for the customer
			3. Improper storage location	• Explanation for the customer

X. CAUSES & TREATMENT OF REFRIGERATOR FAILURES

Phenomenon	Failure Condition	Inspection Part	Causes	Treatment Actions
Noise	Louder noise during the operation and at start, stop	Compressor	1. Being unusual inside	• Replace the compressor
			2. Poor installation	• Be adjusted
			3. Voltage being too low (below 90V)	• Explanation for the customer
			4. Contracting noise	• Be adjusted
		Contacting vibration of each part	Poor installation and fixed contact	• Be adjusted
		Noise from the evaporating tray	1. Inappropriate position of the evaporating tray	• Explanation for the customer
			2. Poor flatness of base	• Be adjusted
	Vibration during start, stop and operation (noise heard from the stored food and from the articles on the board)	Installation	1. Poor let regulating	• Be adjusted
			2. The floor being too weak	• Explanation for the customer
		Tubing	1. Tubing contact	• Be adjusted
			2. Poor shock absorption of the tubing	• Be adjusted
		Compressor	Screw locking being too tight	• Be adjusted

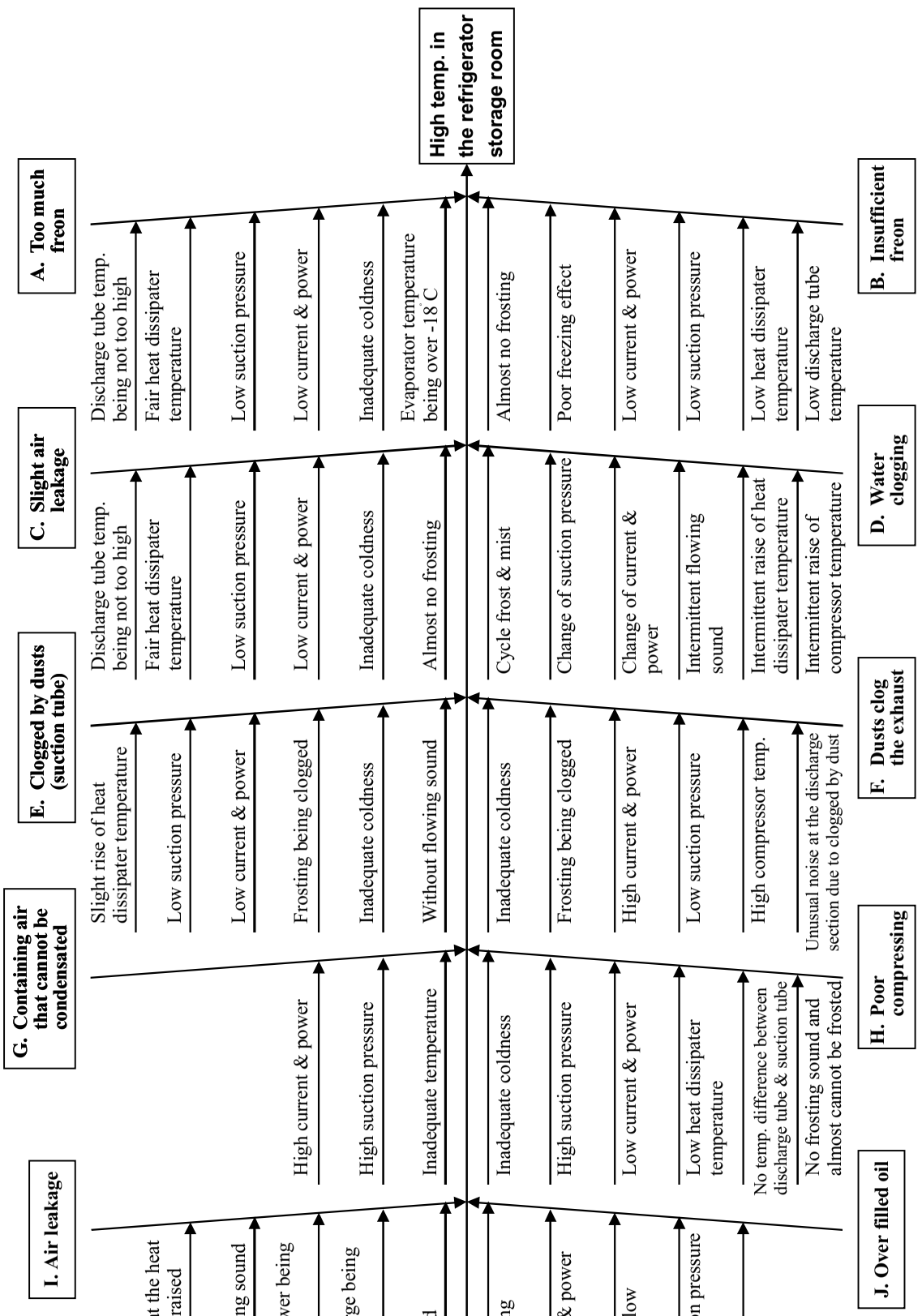
X. CAUSES & TREATMENT OF REFRIGERATOR FAILURES

Phenomenon	Failure Condition	Inspection Part	Causes	Treatment Actions
Sweating	Sweating at the outer surface	Insulator	1. Poor mounting method	• Accurate installation
			2. Poor heat-insulating of the tubing	• Add more insulator
			3. Wet insulator	• Replace the insulator
		Anti-mist electric heater	1. Broken wires	• Replace the anti-mist electric heater
			2. Poor wiring	• Inspection & repairs
		Others	1. Humidity being very high	• Explanation for the customer
			2. Being stored at highly humidified place	• Explanation for the customer
			3. Incorrect using method	• Explanation for the customer
			4. Poor generator being installed	• Improve the installation and replenish the insulation
	Overflow or leakage of internal sweating	Door	1. Poor clearance of door sealing gasket	• Replace the door sealing gasket
			2. Loosen door opening	• Be adjusted
		Drainage device being clogged	1. Poorly sealed drainage valve	• Be adjusted
			2. Clogged drainage tube	• Clear for draining
		Poor method being used	1. Moisturized food being unwrapped	• Explanation for the customer
			2. Frequent opening during summer time	• Explanation for the customer
		Dripping tray being unable to sustain the frosted water	Inappropriate storing location	• Explanation for the customer

X. CAUSES & TREATMENT OF REFRIGERATOR FAILURES

Phenomenon	Failure Condition	Inspection Part	Causes	Treatment Actions
Others	Electricity leakage	Wiring & other electrical appliances	1. Loosening fixed part	• Repair the defective part, and provide explanation for the customer, or use earthing terminal
			2. Static capacity	
	Door opening being not smooth	Door hinges and stop level	1. Loosening fixed part	• Be adjusted
			2. Poor practice	• Be adjusted
			3. Wearing	• Be adjusted
		Door knob	Defective clearance	• Door be adjusted
		Internal	Slanted door	• Be adjusted or replaced.
	Door opening lamp not shown	Lamp inside the refrigerator	1. Broken wires	• Be adjusted
			2. Poor lamp holder	• Be adjusted
			3. Defective wiring	• Be inspected or repaired

X. CAUSES & TREATMENT OF REFRIGERATOR FAILURES



XI. SPECIAL EDITION ON MAINTENANCE OF ENVIRONMENTAL PROTECTION REFRIGERATOR

11.1 SYNOPSIS

Freon is a usable scientific substance being used in the freezing system and heat-insulating material of refrigerator, which is inflammable completely without direct harm to human body. Despite its contribution to modern civilization, however the part being used in the cleanser, aerosol spray, and refrigerator will destroy the ozone layer. Till the end of 1995, the production of such kind of freon was suspended and then it was replaced by the one which brings lesser influence to the ozone layer.

11.2 FEATURES AND CAUTIONS OF HFC-134A SYSTEM

11.2.1 Cautions for changing freon (CFC-12R→HFC-134a)

i. It is absolutely banned to use the freon containing flurochloromethane (freon), including the use for cleaning.

ii. HFC-134a cannot be used together with the dryer using CFC-12. Instead, it must be exclusively used (by changing to smaller freon particles, the drying agent will be different).

iii. It cannot be used together with the existing leakage detector (CFC-12, CFC-22) (because the original leakage detector was operated by using flurochloromethane (freon) to detect, but not the case with HFC-134a)

iv. Repairing tools exclusively for HFC-134a must be used.
In the existing tools, rubber material (sealing material) tends to expand with the result of weaker tension. Please use the special tool based on the instructions (changes existed with the rubber sealing material).

11.2.2 The change of compressor oil

The original Naphten type of mineral oil and Olefines type of synthetic oil have now been changed to Ester oil.

i. Vacuum treatment must be conducted within 15 minutes after opening the sealing plastic membrane of compressor, dryer and capillary tube to avoid the invasion of water. The Ester type of oil has a stronger water absorption power capable of absorbing 200 ppm of saturated moist, which is 40 times more than the original oil. The acid reaction will be produced for water from the Ester oil and this type of acid will display metallic chloride reaction for the metal, which tends to clog the capillary tube. Thus, special care should be drawn to the time duration after opening the sealed compressor and dryer (treatment must be conducted within 15 minutes).

ii. The tool used for HFC-134a freon system must be exclusive and the new parts material must be firstly cleaned before use. The Ester used for HFC-134a contains 10ppm~ 20ppm of solubility which is lower than the original product (the CFC-12 for compressor oil, joint, pressure gauge, anti-rust oil). When mixing with the original oil system, the residues will be separated from the capillary tube that has formed the cause of moist clogging. Therefore, it is prohibited to use the current tools (for R-12, R-22, R50); instead, the new and special tools for HFC-134a are used together with HFC-134a Ester oil as well. (For the freon container, freon filling tank, coupling, pressure gauge, valve, tubes, compound pressure gauge, vacuum pump, tube cutter, fast coupling, etc. the mixing of the original system oil should be avoided).

In addition, the tools for the new product must be cleaned by Alcohol. It should be noted that even the mixture of few grams of oil will deteriorate the function of the freezing system.

iii. The use of flux is prohibited for welding:

Water may seep into the system when the water soluble flux is used for welding, so it is prohibited to use. Basically, the copper tube and iron tube welding will be avoided as much as possible and if necessary, fresh water will be used to dissolve it. To prevent the fluochlorine of tap water from getting into the freezing system, the cleaning flux should be prevented from seeping into the freezing system.

11.2.3 Nitrogen being used in tube welding

During the welding of tubes, the oxidized dirt in the tubes will cause the clogging of capillary tube. So nitrogen must be used to blow (nitrogen welding) the tubes during the welding.

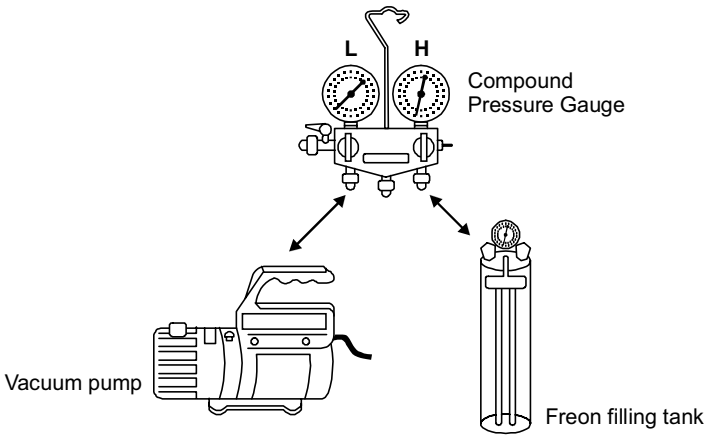
11.2.4 Vacuum degree (enhance the accuracy of vacuum degree)

Operational sequence of below should be based for the vacuum extraction and freon-filling. The air in the freezing system, especially in the case of oxygen, will make ester become an oil-base substance. Chemical reaction will be developed by the oxidized oil and metal in producing fluoride metal which is one of the reasons of capillary tube clogging. For this reason, higher degree of vacuum is required.

11.3 SYNOPSIS OF MAINTENANCE SEQUENCE FOR HFC-134A FREEZING SYSTEM

11.3.1 Reactions for CFC -12

Upon repairing the freezing system, connect the compound pressure gauge, vacuum pump and filling tank as indicated in the following figure. When the repairs of HFC-134a system is required, it is necessary to enhance the vacuum degree and so, different tube connections will be applied (as per figure of below).



11.3.2 Reactions for HFC-134a

i. Upon welding the tube, blow with nitrogen to avoid the capillary tube clogging by the oxidized membrane.

ii. Aiming at the improvement of vacuum degree for the vacuum pump of pressure gauge, install additional valves for the equipment using bolt to keep non-condense air from getting in.

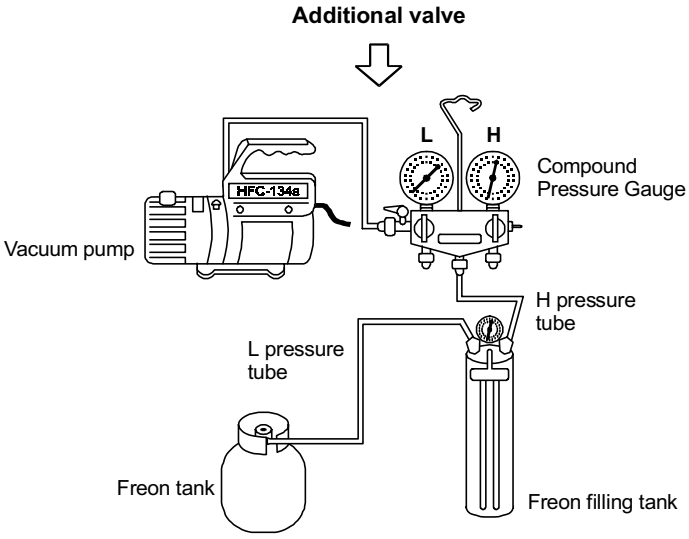
iii. Shorten the service time as indicated in the figure. Operate by the tubing type as shown on the figure below:

1st time vacuum extracting (5 min.)

Fill the freon in (50 gr)

2nd time vacuum extracting (20 min.)

Fill the freon in (req'd amount)



iv. The tool cannot be used together with the existing CFC-12. So the tool must be re-ordered to avoid incorrect use. Each connecting part will be changed from 1/4 inch to 3/8 inch.

XI. SPECIAL EDITION ON MAINTENANCE OF ENVIRONMENTAL PROTECTION REFRIGERATOR

Note :

- The tool used for HFC-134a System must be exclusive, such as the fast coupling, vacuum pump, guide tube of pressure gauge, valve, etc. Use alcohol to clean the new parts and the use of oil is prohibited.

- *Compressor*

  The dryer must be specially used for HFC-134a and the process from unpacking to welding and vacuum extracting must be completed within 15 minutes.

- *Cautions in case of freon leakage of the freezing system:*

  i. In case of freon leakage, the entire set of compressor and dryer must be replaced.

  ii. The lower pressure side and the higher pressure side at the freon leakage must be completed exchanged.

  iii. Sequence of nitrogen welding:

  - Remove the compressor and dryer.

  - Secure the compressor on the base board.

  - Connect all other tubing in addition to the connection part of dryer and capillary tube.

  - Connect the nitrogen tank to the filling tank of compressor at the pressure of 80¡Ñ10^4pa (approx. 8kg/cm^2) and fill in the nitrogen for 3-5 seconds (as indicated in the figure).

  - Weld all other tubing in addition to the connection part of dryer and capillary tube.

  - Weld the tubing connected to the dryer and capillary tube.

  - Engage the filling tank of compressor with the nitrogen tank at the pressure of 100x10^4pa (approx. 10kg/cm^2) and then use soap water to test any leakage.

  iv. In case of leakage, wipe out the soap water being applied on the leakage and reduce the nitrogen pressure to prevent water from getting into the piping.

  v. If the concurrent welding of all the tubing is impossible, then fill the nitrogen in the lower and higher pressure sides respectively. For the flowing direction, please refer to Fig. 2, 3.

  vi. The cleansing flux cannot be used for the welding to avoid water getting into the freezing system and causing defective result.

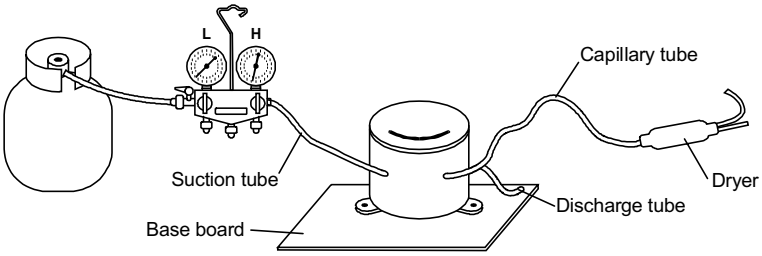
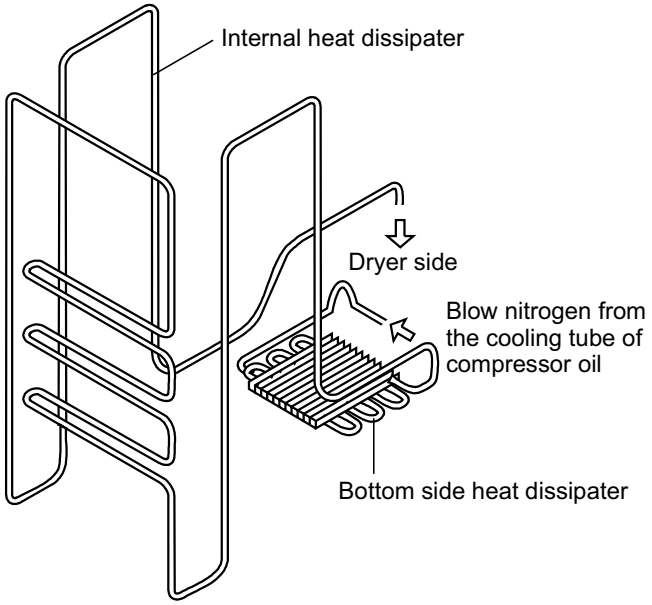


Fig. 1 Various shapes of tubes guided from the compressor

XI. SPECIAL EDITION ON MAINTENANCE OF ENVIRONMENTAL PROTECTION REFRIGERATOR

Circulation of bottom side and internal heat dissipaters



Circulation of backside heat dissipater

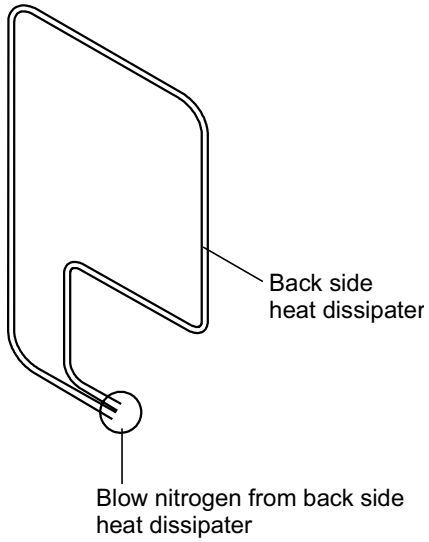
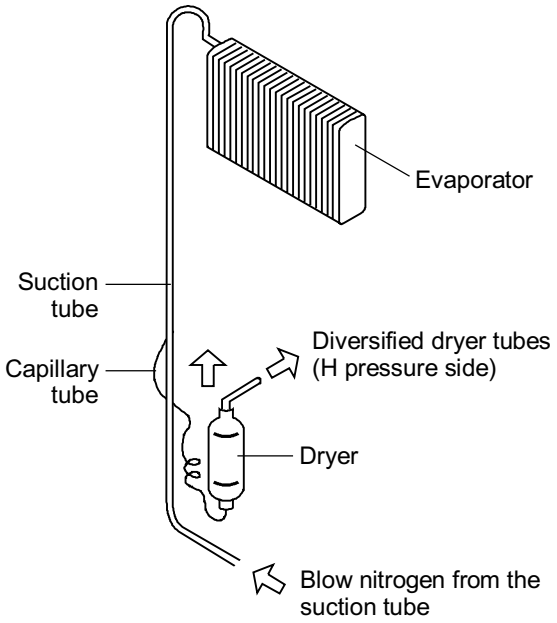


Fig. 2 Nitrogen circulation at the high pressure side

Blow nitrogen at the suction tube and dryer



Low nitrogen at the compressor and filler tube

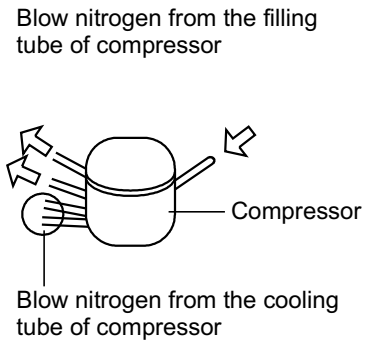


Fig. 3 Nitrogen circulation at the lower pressure side

XI. SPECIAL EDITION ON MAINTENANCE OF ENVIRONMENTAL PROTECTION REFRIGERATOR

11.3.3 Sequence of extracting vacuum and filling nitrogen

i. Vacuum Extraction

❶ Vacuum extraction (5 min.)
❷ Freon filling (50 g)
❸ Vacuum extraction (20 min)
❹ Freon filling (presumed amount).

No reverse flow of the vacuum pump oil. The power of vacuum pump cannot be switched off until the operation of the aforesaid ❶~❸ is completed (continuous vacuum extraction without pause).

Please operate by the following sequence

(Compound Pressure Gauge Specially Used for HFC-134a)

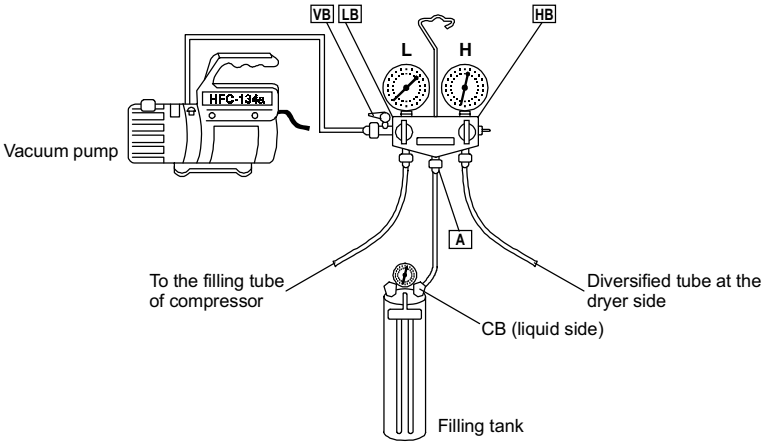


Fig. Sequence of valve operation

Each valve means the operational sequence:
- Means the closed condition of valve
- Means the opened condition of valve

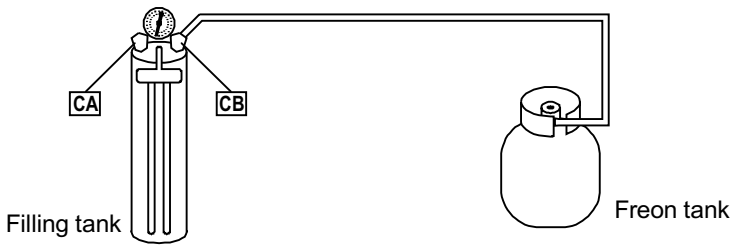
ii. Preparations

a. Fill the freon in the freon filling tank. The required filling amount + 50g + a

Note : The air in the freon filling tank and the connecting tube must be discharged.

b. By the connection method shown on the right side figure, close all the valves.

c. Connect the compressor to the starter and the overload protector, making it operable.

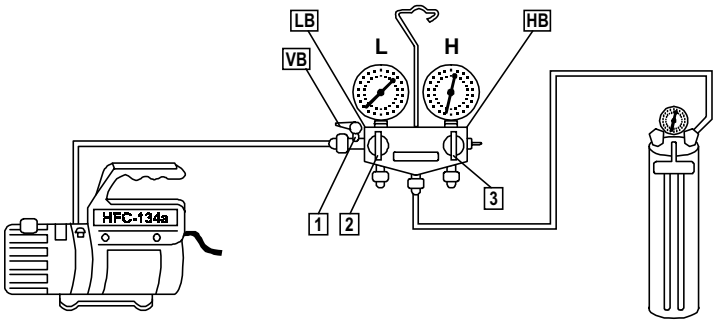


XI. SPECIAL EDITION ON MAINTENANCE OF ENVIRONMENTAL PROTECTION REFRIGERATOR

iii. Operational Sequence

a. Vacuum pump starts to operate (to be stopped until finishing the vacuum extraction till to Point 13).

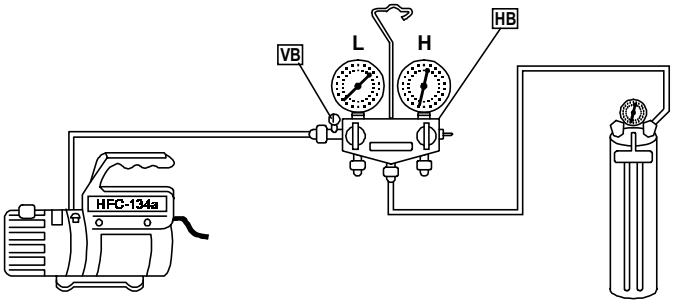
b. Open VB valve first and then open LB, HB valves.



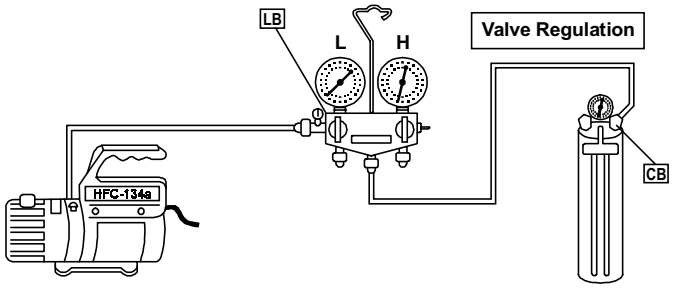
Open the valves by 1-2-3 sequence

c. Vacuum extraction (5 minutes)

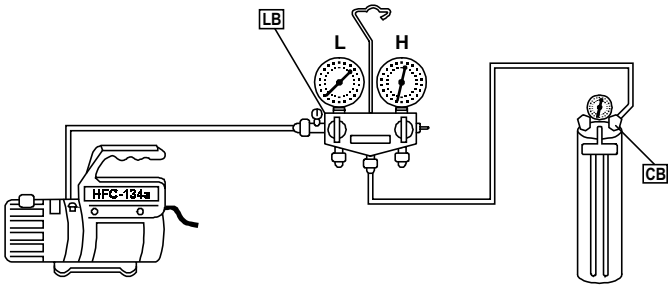
d. After extracting vacuum for 5 minutes, close HB, VB valves and leave LB valve open.



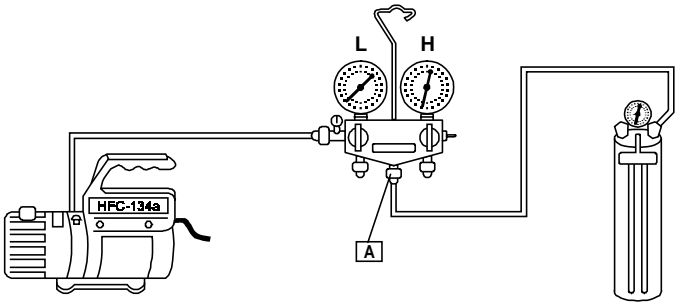
e. Open CB valve and let 50g of freon enter the freezing system from LB side, the low pressure gauge be kept at 3-4 kgf/cm^2 of pressure at this time.



f. Close both CB and LB valves.

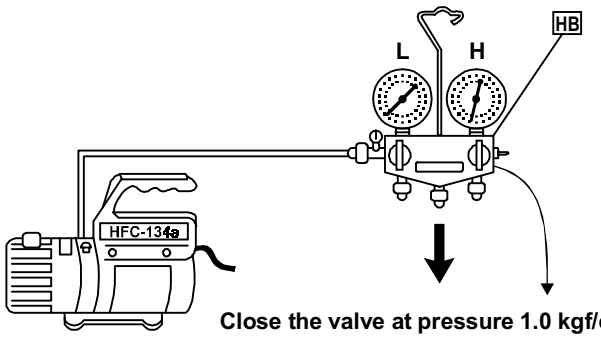


g. Loosen the nut of connection point A to discharge the air. Confirm the balance of high, low pressures.



XI. SPECIAL EDITION ON MAINTENANCE OF ENVIRONMENTAL PROTECTION REFRIGERATOR

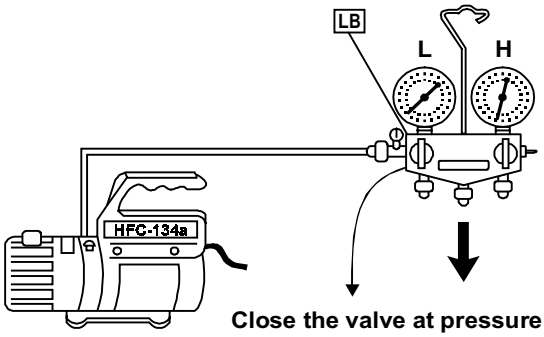
h. Open HB valve to discharge the air until the high pressure gauge reaches 1.0 kgf/cm²G, then close HB valve at this time.



Close the valve at pressure 1.0 kgf/cm²G

i. Open LB valve to discharge the air until the high pressure gauge reaches 1.0 kgf/cm²G, then close HB valve at this time.

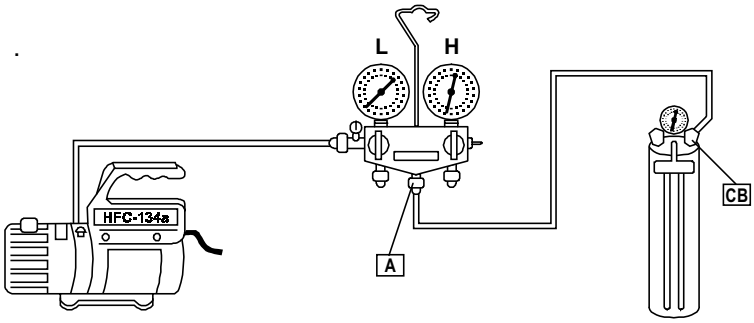
- In operating (8) & (9), be sure to discharge the freon from the system and at this time, do not allow the air get into the system. The pressure must not be lower than 1.0 kgf/cm²G.



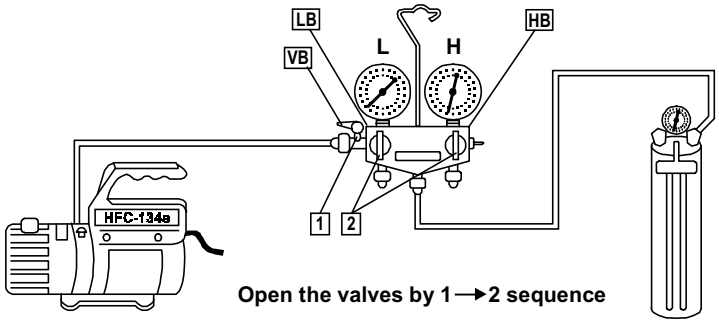
Close the valve at pressure 1.0 kgf/c

j. Lock the nut of connection point A indicated in (7).

- Open CB valve slightly to discharge the freon, then close the purge in the tube A.



k. Open VB valve of the vacuum pump and then open LB and HB valves slowly to extract vacuum in the system (easing the load of vacuum pump).

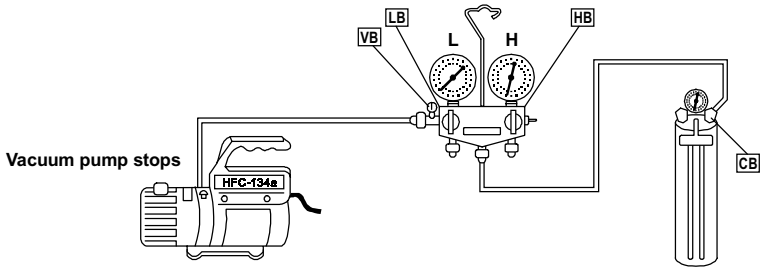


Open the valves by 1→2 sequence

XI. SPECIAL EDITION ON MAINTENANCE OF ENVIRONMENTAL PROTECTION REFRIGERATOR

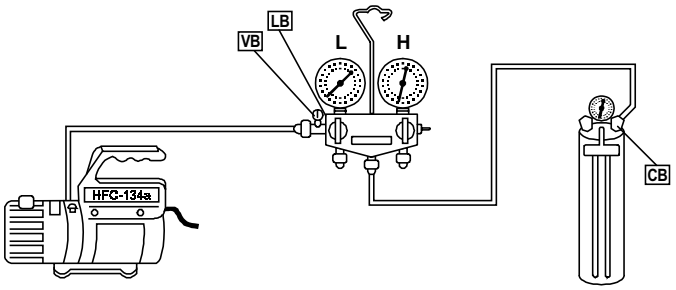
l. Vacuum extraction for 20 minutes till the valve becomes the condition of Fig. (11).

m. After the vacuum extraction, close all the valves.



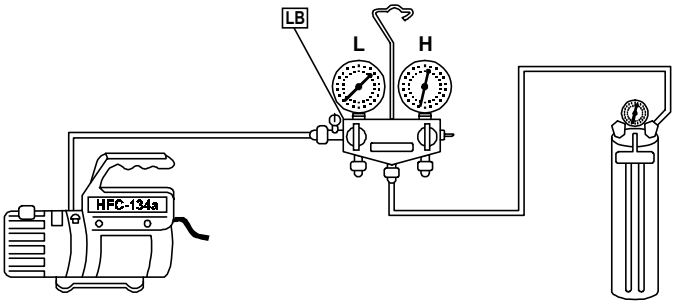
n. Identify the graduation of the filling tube.

o. Open LB valve and seal the required amount of freon through BC valve.



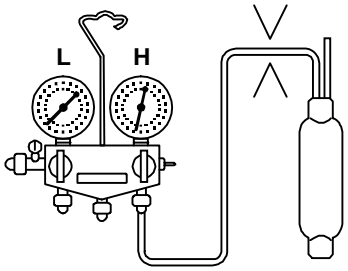
Seal the required amount of freon through CB valve and then adjust by the graduation of the filling tube.

p. The condition of valve after sealing the freon (only LB valve is left open).

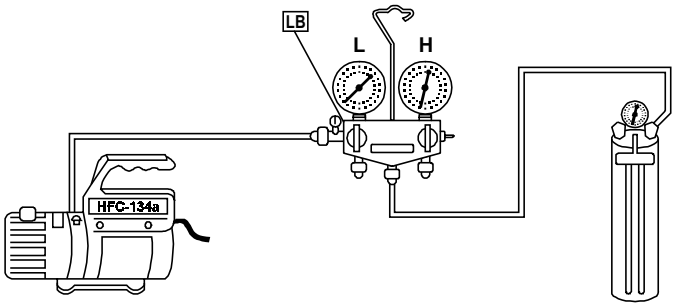


q. The high pressure gauge should be over 1.0 kgf/cm²G and then use the sealing wrench to seal the filling tube from this end. Then remove the compound pressure gauge and seal the front end of the filling tube.

- When sealing the filling tube at pressure below 1.0 kgf/cm²G, the air may be sucked in.



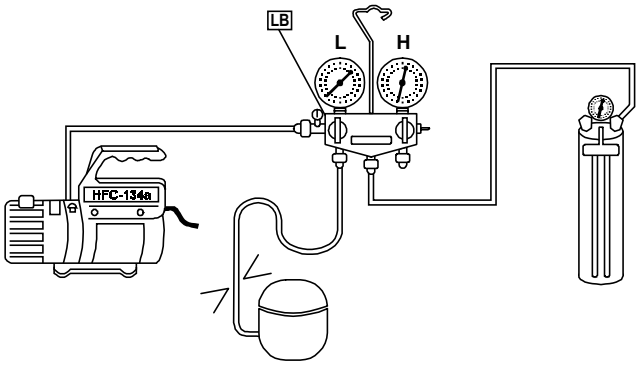
r. Run the refrigerator compressor and push the freon of the filling tube and compound pressure gauge into the system.



- When the low pressure gauge is pointing at 1.0 kgf/cm^{2}G, close LB valve to stop the compressor.

s. Seal the filling tube at the low pressure side and remove the compound pressure gauge, then seal the filling tube.

.



- Confirm the pressure be over 1.0 kgf/cm²G.

t. After running the compressor, confirm the coldness.

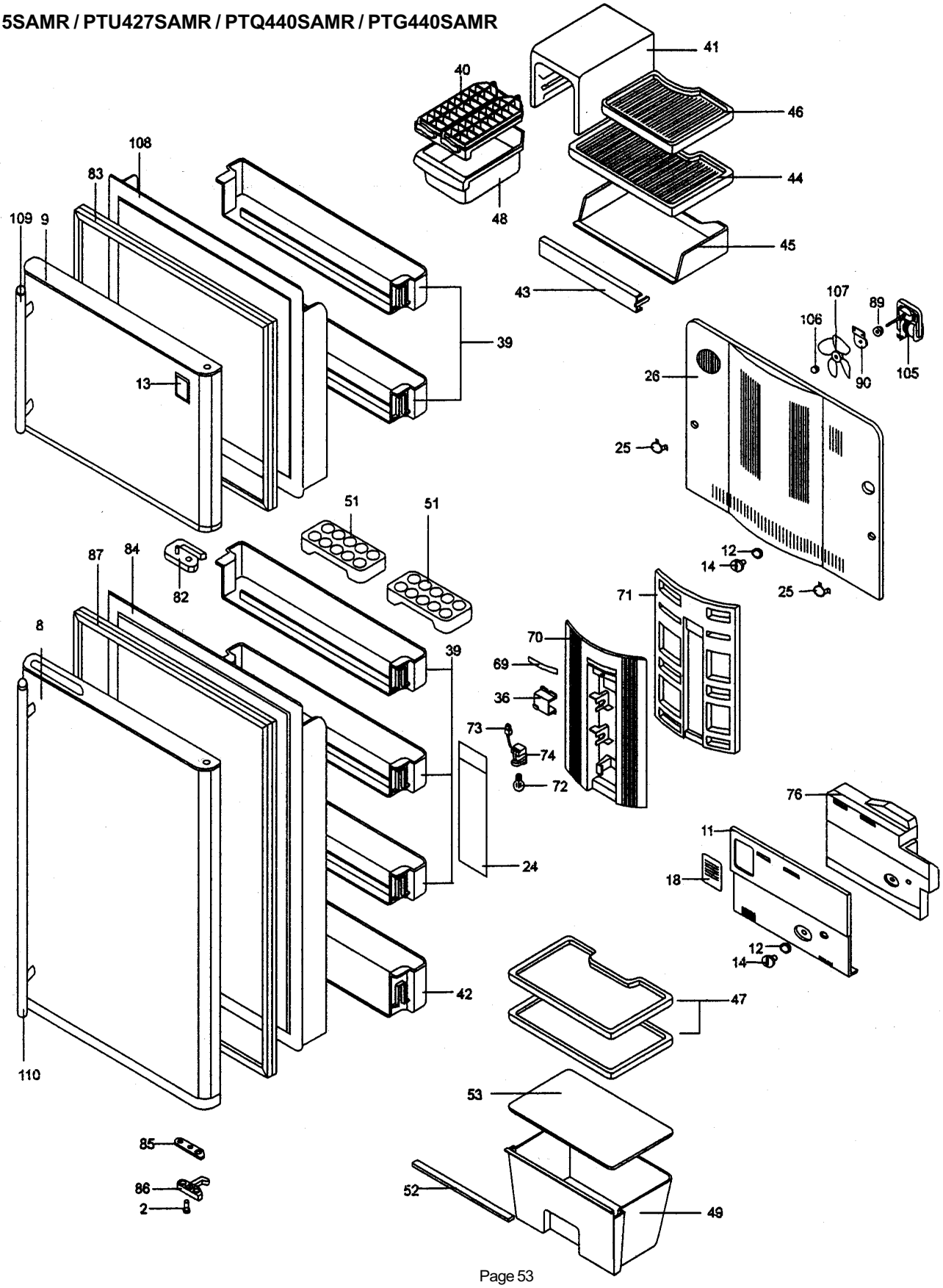
- Confirm the temperature raise of discharge tube and back side heat dissipater.

Note :

- HFC-134a of the aforesaid operation aims to reach high degree of vacuum and prevent the reverse flow of vacuum pump oil into the system.
- The repairing tools used for the service of aforesiad HFC-134a must be exclusive, and it is prohibited to substitute with the repairing tools used for the original CFC-12 service.

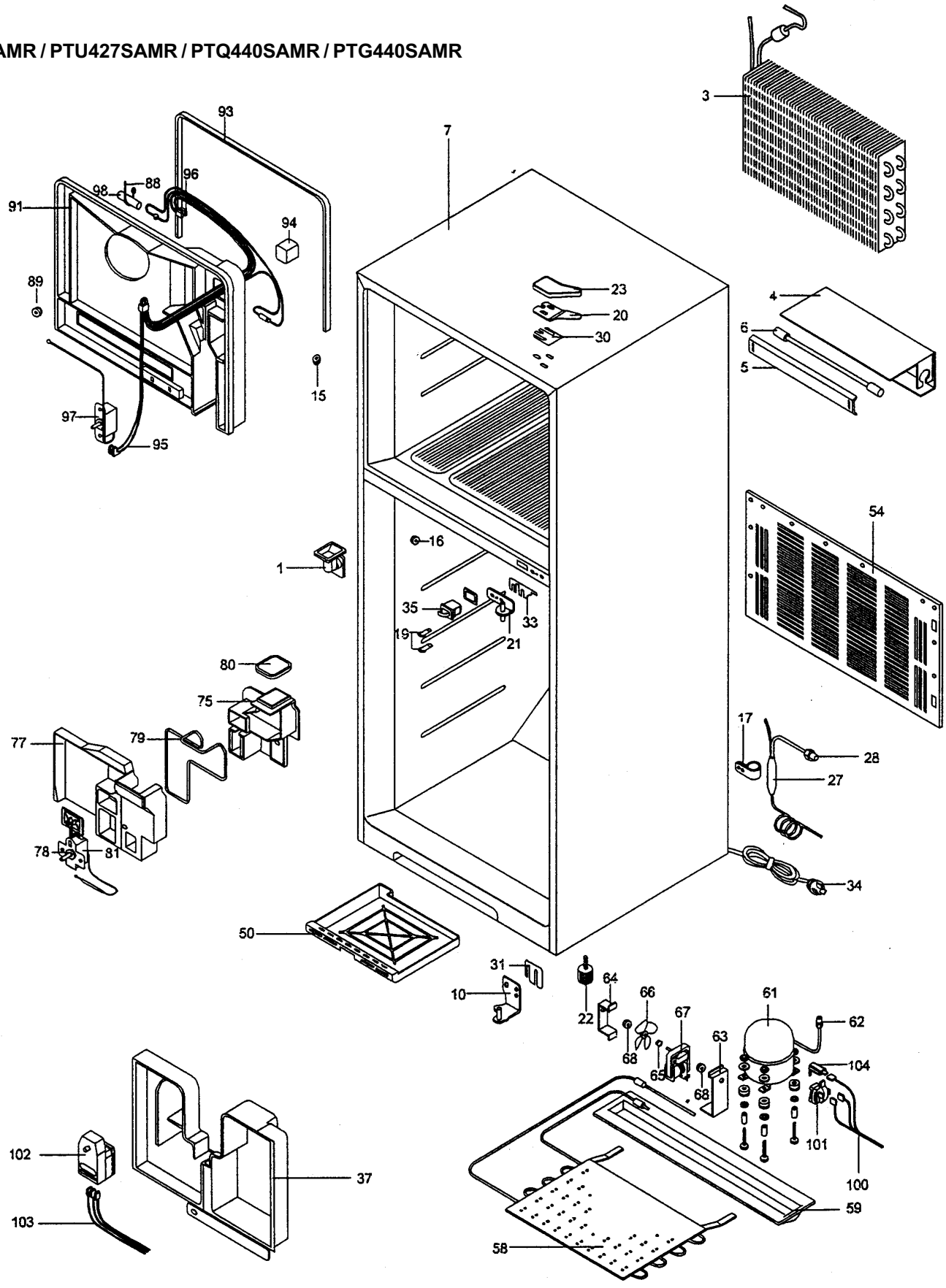
XII. PART LIST AND EXPLODED VIEW

PTV15SAMR / PTU427SAMR / PTQ440SAMR / PTG440SAMR



XII. PART LIST AND EXPLODED VIEW

PTV15SAMR / PTU427SAMR / PTQ440SAMR / PTG440SAMR



XII. PART LIST AND EXPLODED VIEW

PTV15SAMR / PTU427SAMR / PTQ440SAMR / PTG440SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
1	13 LHLD-0227K2FS--	DRAIN CONNECTOR	Q	1
1	13 LHLD-0227K2FS--	DRAIN CONNECTOR	E	1
2	14 NBRGP0003K2F0-1	HINGE BOSS		1
3	41 FEVA-0324K2K0-2	EVA ASS'Y		1
4	87 LHLD-0235K2P0-1	DEFROST HEATER SUPPORT		1
5	77 LHLD-0445K2P0--	DEFROST HEATER COVER		1
* 6	20 RHET-0183K2E0--	DEODER DEFROST HEATER		1
7	29 DCAB-0721K2KQ--	CABIENT ASS'Y	E	1
7	54 DCAB-0721K2KY--	CABIENT ASS'Y	Q	1
8	36 DDOR-0622K2KQ--	R DOOR PU ASS'Y	E	1
8	61 DDOR-0622K2KY--	R DOOR PU ASS'Y	Q	1
9	75 DDOR-0620K2KQ--	F DOOR PU ASS'Y	E	1
9	11 DDOR-0620K2KY--	F DOOR PU ASS'Y	Q	1
* 10	39 FHNG-0017K2M0--	BOTTOM HINGE ASS'Y		1
11	71 GCOVH0057K2FS--	R CONTROL BOX	Q	1
11	71 GCOVH0057K2FS--	R CONTROL BOX	E	1
12	02 MSPR-0119K2E0--	KNOB SPRING		2
13	26 NSTNP0063K2KQ--	BRADGE ASS'Y	Q	1
13	26 NSTNP0063K2KQ--	BRADGE ASS'Y	E	1
14	24 JKNB-0082K2FS--	F KNOB	Q	2
14	24 JKNB-0082K2FS--	F KNOB	E	2
15	33 LHLD-0204K2FS--	MEAT CASE HOLDER	Q	3
15	33 LHLD-0204K2FS--	MEAT CASE HOLDER	E	3

XII. PART LIST AND EXPLODED VIEW

PTV15SAMR / PTU427SAMR / PTQ440SAMR / PTG440SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
16	73 LPIN-0053K2FS--	STOPPER	Q	2
16	73 LPIN-0053K2FS--	STOPPER	E	2
17	78 LPLTM0811K2F0--	DRYER CLAMPER		1
18	49 LPLTP0176K2FS--	DRAIN HOLE COVER	Q	1
18	49 LPLTP0176K2FS--	DRAIN HOLE COVER	E	1
19	51 LX-XZ0064K2E0--	FIX SCREW		5
* 20	84 MHNG-0002K2M0--	TOP HINGE		1
* 21	57 MHNG-0064K2M0--	CENTER HINGE		1
22	11 PAJS-0002K2FD--	ADJ. LEG	Q	2
22	11 PAJS-0002K2FD--	ADJ. LEG	E	2
23	14 PCOV-0002K2FQ-1	TOP HINGE COVER	E	1
23	71 PCOV-0613K2FY--	TOP HINGE COVER	Q	1
24	01 PCOV-0118K2FA--	LIGHT COVER	Q	1
24	01 PCOV-0118K2FA--	LIGHT COVER	E	1
25	15 PCOV-0155K2FS--	EV SCREW COVER	Q	2
25	15 PCOV-0155K2FS--	EV SCREW COVER	E	2
26	77 PCOV-0590K2FS--	F LOUVER	Q	1
26	77 PCOV-0590K2FS--	F LOUVER	E	1
* 27	73 PDRY-0046K2E0-2	DRYER		1
28	50 PPIPC0003K2E0-1	CHARGE PIPE		1
30	46 PSPAP0006K2E0-1	TOP HINGE SPACER		1

XII. PART LIST AND EXPLODED VIEW

PTV15SAMR / PTU427SAMR / PTQ440SAMR / PTG440SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
31	25 PSPAP0026K2E0--	BOTTOM HINGE SPACER		2
33	67 PSPAP0049K2E0--	CENTER HINGE SPACER		2
34	34 QACC-1139K2E0--	POWER PLUG(PTU427,PTQ,PTG440SAMR)		1
34	01 QACC-1145K2E0--	POWER PLUG(PTV15,PTV440SAMR)		1
* 35	03 QSW-P0105K2E0-1	DOOR SWITCH		1
36	53 PCOV-0220K2F0--	WIRING COVER		1
37	11 PCOV-0106K2F0--	ELECTRIC BOX		1
39	19 FCAG-0191K2F0--	DOOR RACKS		5
40	67 FPAN-0052K2ES--	ICE CUBE ASS'Y	Q	1
40	67 FPAN-0052K2ES--	ICE CUBE ASS'Y	E	1
41	22 LFRM-0087K2FS-1	ICE SLIDER	Q	1
41	22 LFRM-0087K2FS-1	ICE SLIDER	E	1
42	01 FCAG-0192K2FS--	BOTTLE STORAGE RACK	Q	1
42	01 FCAG-0192K2FS--	BOTTLE STORAGE RACK	E	1
43	32 UCOVP0077K2F0-1	CHILL.ROOM COVER		1
44	35 UPAN-0071K2F0--	F TRANSPARENT SHELF LARG	E	1
45	88 UPAN-0073K2F0--	CHILL ROOM		1
46	70 UPAN-0074K2F0--	F TRANSPARENT SHELF SMALL		1
47	32 UPAN-0096K2KS--	GLASS SHELF	Q	3
47	32 UPAN-0096K2KS--	GLASS SHELF	E	3
48	39 URCV-0075K2F0--	ICE STORAGE BOX		1
49	43 URCV-0112K2F0--	VAGETABLE CRISPER		1
50	57 USRA-0014K2FB-2	EVAPORATION PAN	Q	1
50	15 USRA-0014K2FQ-2	EVAPORATION PAN	E	1

XII. PART LIST AND EXPLODED VIEW

PTV15SAMR / PTU427SAMR / PTQ440SAMR / PTG440SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
* 51	06 UTNA-0018K2FA--	EGG STORAGE BUCKET	Q	2
* 51	06 UTNA-0018K2FA--	EGG STORAGE BUCKET	E	2
52	45 HDECQ0463K21S--	GLASS TRIM	Q	1
52	45 HDECQ0463K21S--	GLASS TRIM	E	1
53	35 UTNA-0170K210--	GLASS PANEL		1
54	37 HGRL-0014K2F0--	COMPRESSOR COVER		1
58	66 FCONS0102K2S0--	SUB CONDENSER ASS'Y		1
59	35 FFRM-0023K2K0-1	BASE PLATE ASS'Y		1
* 61	22 PCMPL0145K2K0-1	COMPRESSOR(PTU427,PTQ,PTG440SAMR)		1
* 61	59 PCMPL0157K2K0-1	COMPRESSOR(PTV15,PTV440SANR)		1
62	50 PPIPC0003K2E0-1	CHARGE PIPE		1
63	22 LHLD-0261K2P0-1	MOTOR FIXED LARGE		1
64	20 LHLD-0263K2P0--	MOTER FIXED SMALL		1
65	20 MSPR-0118K2E0--	FAN SPRING		1
* 66	14 NFANP0066K2F0--	FAN		1
* 67	30 FMOTR0070K2E0--	FAN MOTOR		1
68	87 LHLD-0232K2F0--	MOTOR FIXING RUBBER		2
69	32 HPNL-0463K2RS--	DECORATION PANEL	Q	1
69	32 HPNL-0463K2RS--	DECORATION PANEL	E	1
70	89 PCOV-0592K2FS--	MULTI AIR LOUVER	Q	1
70	89 PCOV-0592K2FS--	MULTI AIR LOUVER	E	1

XII. PART LIST AND EXPLODED VIEW

PTV15SAMR / PTU427SAMR / PTQ440SAMR / PTG440SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
71	45 PGID-0054K2F0--	MULTI AIR GUIDE		1
* 72	27 RLMP-0035K2E0--	LAMP		1
73	46 QW-VZ0857K2E0--	LAMP HOLDER WIRING		1
74	01 QSOC-0065K2E0--	LAMP HOLDER		1
75	51 LHLD-0203K2FS--	B-THM SUPPORT	Q	1
75	51 LHLD-0203K2FS--	B-THM SUPPORT	E	1
76	60 PGID-0049K2F0--	R AIR GUIDE TOP		1
77	31 PGID-0050K2F0--	R AIR GUIDE BOTTOM		1
78	76 PSEL-0221K2E0--	R KNOB SEALER		1
79	20 PSEL-0397K2E0--	SEALER		1
80	62 PSEL-0746K2E0--	R AIR GUIDE SEALER		1
* 81	65 RTHM-0171K2E0--	DAMPER THERMISTOR		1
82	87 LSTP-0019K2FB-1	F DOOR STOPPER	Q	1
82	45 LSTP-0019K2FQ-1	F DOOR STOPPER	E	1
* 83	64 PPACG0394K2EB--	F DOOR PACKING	Q	1
* 83	22 PPACG0394K2EQ--	F DOOR PACKING	E	1
84	29 GLIN-0356K2P0--	R DOOR LINER		1
85	01 LPLTM0716K2P0--	R DOOR STOPPER PLATE		1
86	53 LSTP-0011K2FB-1	R DOOR STOPPER	Q	1
86	11 LSTP-0011K2FQ-1	R DOOR STOPPER	E	1
* 87	46 PPACG0395K2EB--	R DOOR PACKING	Q	1
* 87	04 PPACG0395K2EQ--	R DOOR PACKING	E	1
88	48 LBND-0012K2E0--	D BAND		3
89	87 LHLD-0232K2F0--	MOTOR FIXING RUBBER		2
90	04 LHLD-0250K2P0--	MOTOR HOLDER		1

XII. PART LIST AND EXPLODED VIEW

PTV15SAMR / PTU427SAMR / PTQ440SAMR / PTG440SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
91	23 PCOV-0199K2FS-1	EVAPORTOR COVER	Q	1
91	23 PCOV-0199K2FS-1	EVAPORTOR COVER	E	1
93	43 PSEL-0702K2E0--	EV COVER SEALER		1
94	58 PSEL-0728K2E0--	EV COVER HOLE SEALER		1
95	41 QW-VZ0733K2E0-1	F-THM WIRING		1
96	47 QW-VZ0779K2E0-1	MOTOR WIRING		1
* 97	10 RTHM-0179K2E0--	F-THM		1
* 98	70 RTHM-0180K2E0--	D-THM ASS'Y		1
100	69 QW-VZ0877K2E0-1	COMP.WIRING		1
* 101	87 RSTT-0058K2E0--	STARTING RELAY		1
* 102	78 QSWTD0066K2E0--	DEFROST TIMER		1
103	50 QW-VZ0754K2E0-2	DEFROST TIMER WIRING		1
* 104	21 RGAD-0151K2E0--	OVERLOAD RELAY		1
* 105	09 FMOTR0071K2E0--	FAN MOTOR		1
106	20 MSPR-0118K2E0--	FAN SPRING		1
107	03 NFANP0028K2FE--	FAN	Q	1
107	03 NFANP0028K2FE--	FAN	E	1
108	44 GLIN-0413K2P0--	F DOOR LINER		1
109	46 JHNDM0014K2GA-1	F DOOR HANDLE	Q	1
109	46 JHNDM0014K2GA-1	F DOOR HANDLE	E	1
110	81 JHNDM0017K2GA-1	R DOOR HANDLE	Q	1
110	81 JHNDM0017K2GA-1	R DOOR HANDLE	E	1

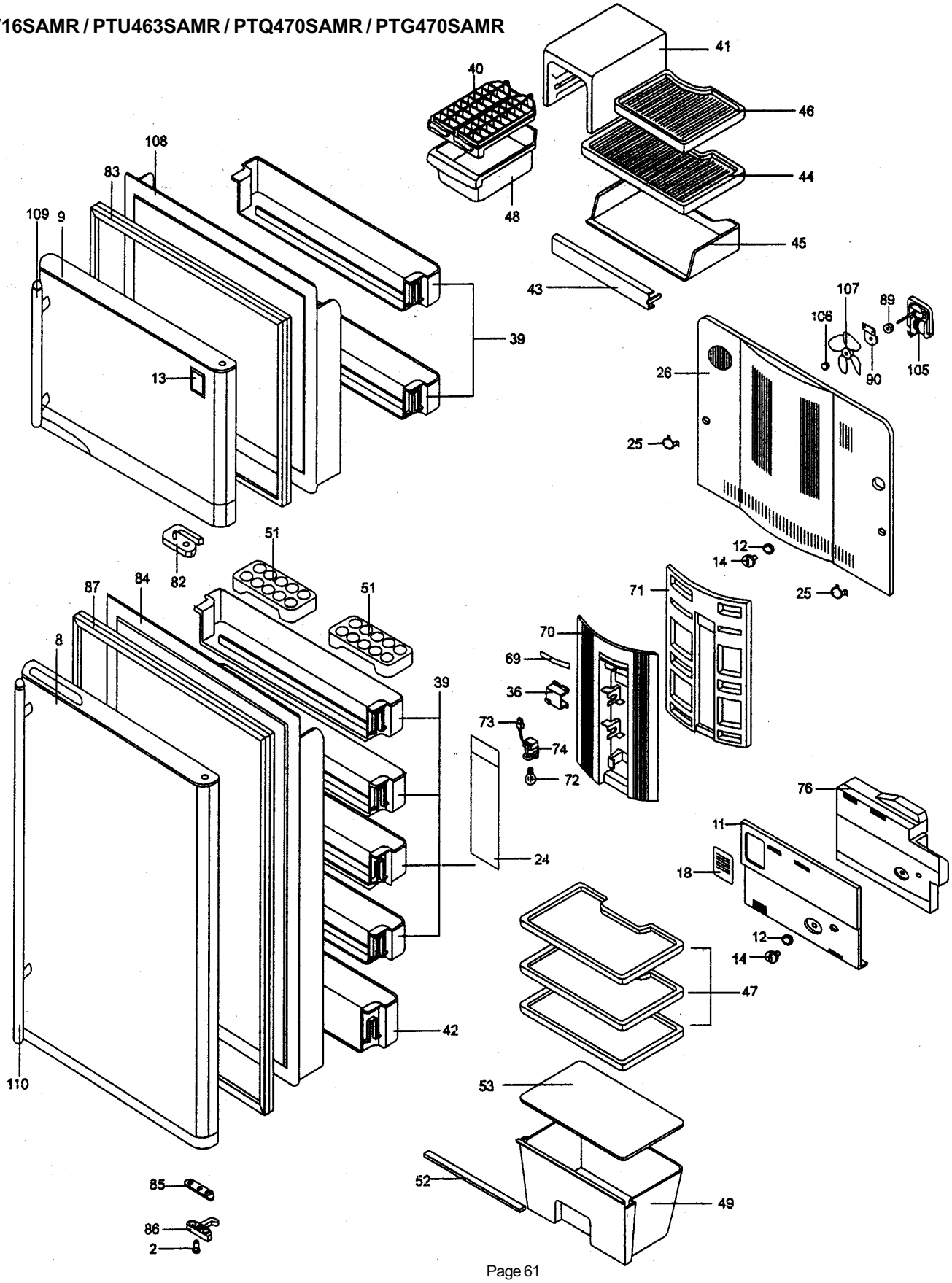
Remarks :

i. MOD COL (Model Color) : E (Black) / Q (Silver)

ii. "*" Recommended Spare Parts

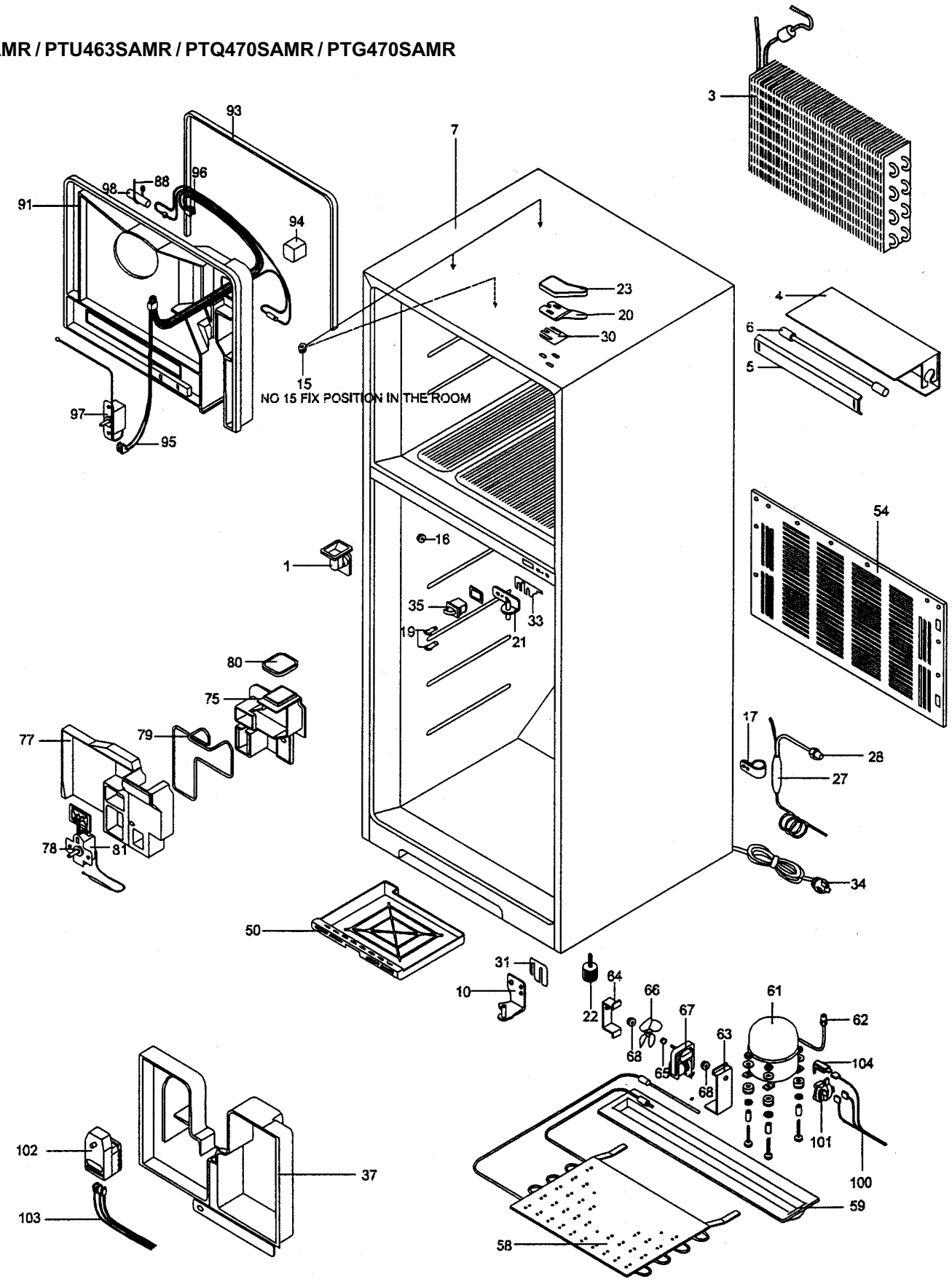
XII. PART LIST AND EXPLODED VIEW

PTV16SAMR / PTU463SAMR / PTQ470SAMR / PTG470SAMR



XII. PART LIST AND EXPLODED VIEW

PTV16SAMR / PTU463SAMR / PTQ470SAMR / PTG470SAMR



XII. PART LIST AND EXPLODED VIEW

PTV16SAMR / PTU463SAMR / PTQ470SAMR / PTG470SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
1	13 LHLD-0227K2FS--	DRAIN CONNECTOR	E	1
1	13 LHLD-0227K2FS--	DRAIN CONNECTOR	Q	1
2	14 NBRGP0003K2F0-1	HINGE BOSS		1
3	41 FEVA-0324K2K0-2	EVA ASS'Y		1
4	87 LHLD-0235K2P0-1	DEFROST HEATER SUPPORT		1
5	77 LHLD-0445K2P0--	DEFROST HEATER COVER		1
* 6	20 RHET-0183K2E0--	DEODER DEFROST HEATER		1
7	11 DCAB-0722K2KQ--	CABIENT ASS'Y	E	1
7	36 DCAB-0722K2KY--	CABIENT ASS'Y	Q	1
8	18 DDOR-0623K2KQ--	R DOOR PU ASS'Y	E	1
8	43 DDOR-0623K2KY--	R DOOR PU ASS'Y	Q	1
9	75 DDOR-0620K2KQ--	F DOOR PU ASS'Y	E	1
9	11 DDOR-0620K2KY--	F DOOR PU ASS'Y	Q	1
* 10	39 FHNG-0017K2M0--	BOTTOM HINGE ASS'Y		1
11	71 GCOVH0057K2FS--	R CONTROL BOX	E	1
11	71 GCOVH0057K2FS--	R CONTROL BOX	Q	1
12	02 MSPR-0119K2E0--	KNOB SPRING		2
13	26 NSTNP0063K2KQ--	BRADGE ASS'Y	E	1
13	26 NSTNP0063K2KQ--	BRADGE ASS'Y	Q	1
14	24 JKNB-0082K2FS--	F KNOB	E	2
14	24 JKNB-0082K2FS--	F KNOB	Q	2
15	33 LHLD-0204K2FS--	MEAT CASE HOLDER	E	3
15	33 LHLD-0204K2FS--	MEAT CASE HOLDER	Q	3

XII. PART LIST AND EXPLODED VIEW

PTV16SAMR / PTU463SAMR / PTQ470SAMR / PTG470SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
16	73 LPIN-0053K2FS--	STOPPER	E	2
16	73 LPIN-0053K2FS--	STOPPER	Q	2
17	78 LPLTM0811K2F0--	DRYER CLAMPER		1
18	49 LPLTP0176K2FS--	DRAIN HOLE COVER	E	1
18	49 LPLTP0176K2FS--	DRAIN HOLE COVER	Q	1
19	51 LX-XZ0064K2E0--	FIX SCREW		5
* 20	84 MHNG-0002K2M0--	TOP HINGE		1
* 21	57 MHNG-0064K2M0--	CENTER HINGE		1
22	11 PAJS-0002K2FD--	ADJ. LEG	E	2
22	11 PAJS-0002K2FD--	ADJ. LEG	Q	2
23	14 PCOV-0002K2FQ-1	TOP HINGE COVER	E	1
23	39 PCOV-0002K2FY-1	TOP HINGE COVER	Q	1
24	32 PCOV-0118K2FA--	LIGHT COVER	E	1
24	32 PCOV-0118K2FA--	LIGHT COVER	Q	1
25	15 PCOV-0155K2FS--	EV SCREW COVER	E	2
25	15 PCOV-0155K2FS--	EV SCREW COVER	Q	2
26	77 PCOV-0590K2FS--	F LOUVER	E	1
26	77 PCOV-0590K2FS--	F LOUVER	Q	1
* 27	73 PDRY-0046K2E0-2	DRYER		1
28	50 PPIPC0003K2E0-1	CHARGE PIPE		1
30	46 PSPAP0006K2E0-1	TOP HINGE SPACER		1

XII. PART LIST AND EXPLODED VIEW

PTV16SAMR / PTU463SAMR / PTQ470SAMR / PTG470SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
31	25 PSPAP0026K2E0--	BOTTOM HINGE SPACER		2
33	67 PSPAP0049K2E0--	CENTER HINGE SPACER		2
34	34 QACC-1139K2E0--	POWER PLUG(PTU463,PTQ,PTG470SAMR)		1
34	01 QACC-1145K2E0--	POWER PLUG(PTV15,PTV470SAMR)		1
* 35	03 QSW-P0105K2E0-1	DOOR SWITCH		1
36	53 PCOV-0220K2F0--	WIRING COVER		1
37	11 PCOV-0106K2F0--	ELECTRIC BOX		1
39	19 FCAG-0191K2F0--	DOOR RACKS		6
40	67 FPAN-0052K2ES--	ICE CUBE ASS'Y	Q	1
40	67 FPAN-0052K2ES--	ICE CUBE ASS'Y	E	1
41	22 LFRM-0087K2FS-1	ICE SLIDER	Q	1
41	22 LFRM-0087K2FS-1	ICE SLIDER	E	1
42	01 FCAG-0192K2FS--	BOTTLE STORAGE RACK	Q	1
42	01 FCAG-0192K2FS--	BOTTLE STORAGE RACK	E	1
43	32 UCOVP0077K2F0-1	CHILL.ROOM COVER		1
44	35 UPAN-0071K2F0--	F TRANSPARENT SHELF LARGE		1
45	88 UPAN-0073K2F0--	CHILL ROOM		1
46	70 UPAN-0074K2F0--	F TRANSPARENT SHELF SMALL		1
47	32 UPAN-0096K2KS--	GLASS SHELF	Q	3
47	32 UPAN-0096K2KS--	GLASS SHELF	E	3
48	39 URCV-0075K2F0--	ICE STORAGE BOX		1
49	43 URCV-0112K2F0--	VAGETABLE CRISPER		1

XII. PART LIST AND EXPLODED VIEW

PTV16SAMR / PTU463SAMR / PTQ470SAMR / PTG470SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
50	57 USRA-0014K2FB-2	EVAPORATION PAN	Q	1
50	15 USRA-0014K2FQ-2	EVAPORATION PAN	E	1
* 51	06 UTNA-0018K2FA--	EGG STORAGE BUCKET	Q	2
* 51	06 UTNA-0018K2FA--	EGG STORAGE BUCKET	E	2
52	45 HDECQ0463K21S--	GLASS TRIM	Q	1
52	45 HDECQ0463K21S--	GLASS TRIM	E	1
53	35 UTNA-0170K2E0--	GLASS PANEL		1
54	37 HGRL-0014K2F0--	COMPRESSOR COVER		1
58	66 FCONS0102K2S0--	SUB CONDENSER ASS'Y		1
59	35 FFRM-0023K2K0-1	BASE PLATE ASS'Y		1
* 61	22 PCMPL0145K2K0-1	COMPRESSOR(PTU463,PTQ,PTG470SAMR)		1
* 61	59 PCMPL0157K2K0-1	COMPRESSOR(PTV16,PTV470SAMR)		1
62	50 PPIPC0003K2E0-1	CHARGE PIPE		1
63	22 LHLD-0261K2P0-1	MOTOR FIXED LARGE		1
64	20 LHLD-0263K2P0--	MOTER FIXED SMALL		1
65	20 MSPR-0118K2E0--	FAN SPRING		1
* 66	14 NFANP0066K2F0--	FAN		1
* 67	30 FMOTR0070K2E0--	FAN MOTOR		1
68	87 LHLD-0232K2F0--	MOTOR FIXING RUBBER		2
69	32 HPNL-0463K2RS--	DECORATION PANEL	Q	1
69	32 HPNL-0463K2RS--	DECORATION PANEL	E	1

XII. PART LIST AND EXPLODED VIEW

PTV16SAMR / PTU463SAMR / PTQ470SAMR / PTG470SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
70	89 PCOV-0592K2FS--	MULTI AIR LOUVER	Q	1
70	89 PCOV-0592K2FS--	MULTI AIR LOUVER	E	1
71	45 PGID-0054K2F0--	MULTI AIR GUIDE		1
* 72	27 RLMP-0035K2E0--	LAMP		1
73	46 QW-VZ0857K2E0--	LAMP HOLDER WIRING		1
74	01 QSOC-0065K2E0--	LAMP HOLDER		1
75	51 LHLD-0203K2FS--	B-THM SUPPORT	Q	1
75	51 LHLD-0203K2FS--	B-THM SUPPORT	E	1
76	60 PGID-0049K2F0--	R AIR GUIDE TOP		1
77	31 PGID-0050K2F0--	R AIR GUIDE BOTTOM		1
78	76 PSEL-0221K2E0--	R KNOB SEALER		1
79	20 PSEL-0397K2E0--	SEALER		1
80	62 PSEL-0746K2E0--	R AIR GUIDE SEALER		1
* 81	36 RTHM-0113K2E0--	DAMPER THERMISTOR		1
82	87 LSTP-0019K2FB-1	F DOOR STOPPER	Q	1
82	45 LSTP-0019K2FQ-1	F DOOR STOPPER	E	1
* 83	64 PPACG0394K2EB--	F DOOR PACKING	Q	1
* 83	22 PPACG0394K2EQ--	F DOOR PACKING	E	1
83	17 PPACG0337K2EQ--	FF GASKET (FOR PTU463SAMR)		1
84	80 GLIN-0349K2P0--	R DOOR LINER		1

PTV16SAMR / PTU463SAMR / PTQ470SAMR / PTG470SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
85	01 LPLTM0716K2P0--	R DOOR STOPPER PLATE		1
86	53 LSTP-0011K2FB-1	R DOOR STOPPER	Q	1
86	11 LSTP-0011K2FQ-1	R DOOR STOPPER	E	1
* 87	28 PPACG0396K2EB--	R DOOR PACKING	Q	1
* 87	75 PPACG0396K2EQ--	R DOOR PACKING	E	1
88	48 LBND-0012K2E0--	D BAND		3
89	87 LHLD-0232K2F0--	MOTOR FIXING RUBBER		2
90	04 LHLD-0250K2P0--	MOTOR HOLDER		1
91	23 PCOV-0199K2FS-1	EVAPORTOR COVER	Q	1
91	23 PCOV-0199K2FS-1	EVAPORTOR COVER	E	1
93	43 PSEL-0702K2E0--	EV COVER SEALER		1
94	58 PSEL-0728K2E0--	EV COVER HOLE SEALER		1
95	41 QW-VZ0733K2E0-1	F-THM WIRING		1
96	47 QW-VZ0779K2E0-1	MOTOR WIRING		1
* 97	10 RTHM-0179K2E0--	F-THM		1
* 98	70 RTHM-0180K2E0--	D-THM ASS'Y		1
100	69 QW-VZ0877K2E0-1	COMP.WIRING		1

XII. PART LIST AND EXPLODED VIEW

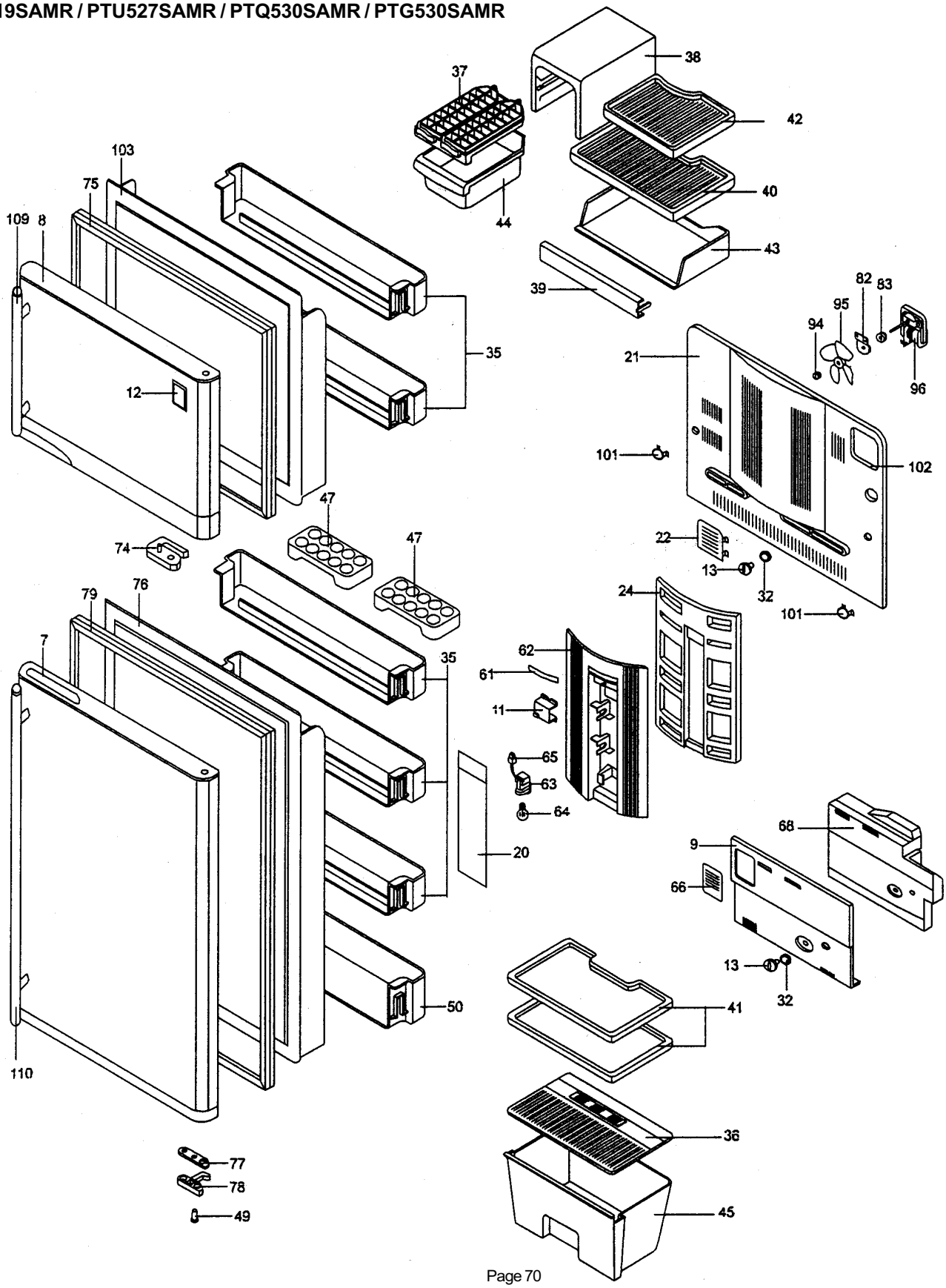
PTV16SAMR / PTU463SAMR / PTQ470SAMR / PTG470SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
* 101	87 RSTT-0058K2E0--	STARTING RELAY		1
* 102	78 QSWTD0066K2E0--	DEFROST TIMER		1
103	50 QW-VZ0754K2E0-2	DEFROST TIMER WIRING		1
* 104	21 RGAD-0151K2E0--	OVERLOAD RELAY		1
* 105	09 FMOTR0071K2E0--	FAN MOTOR		1
106	20 MSPR-0118K2E0--	FAN SPRING		1
107	03 NFANP0028K2FE--	FAN	Q	1
107	03 NFANP0028K2FE--	FAN	E	1
108	44 GLIN-0413K2P0--	F DOOR LINER		1
109	46 JHNDM0014K2GA-1	F DOOR HANDLE	Q	1
109	46 JHNDM0014K2GA-1	F DOOR HANDLE	E	1
110	10 JHNDM0016K2GA-1	R DOOR HANDLE	Q	1
110	10 JHNDM0016K2GA-1	R DOOR HANDLE	E	1

Remarks :
i. MOD COL (Model Color) : E (Black) / Q (Silver)
ii. “*” Recommended Spare Parts

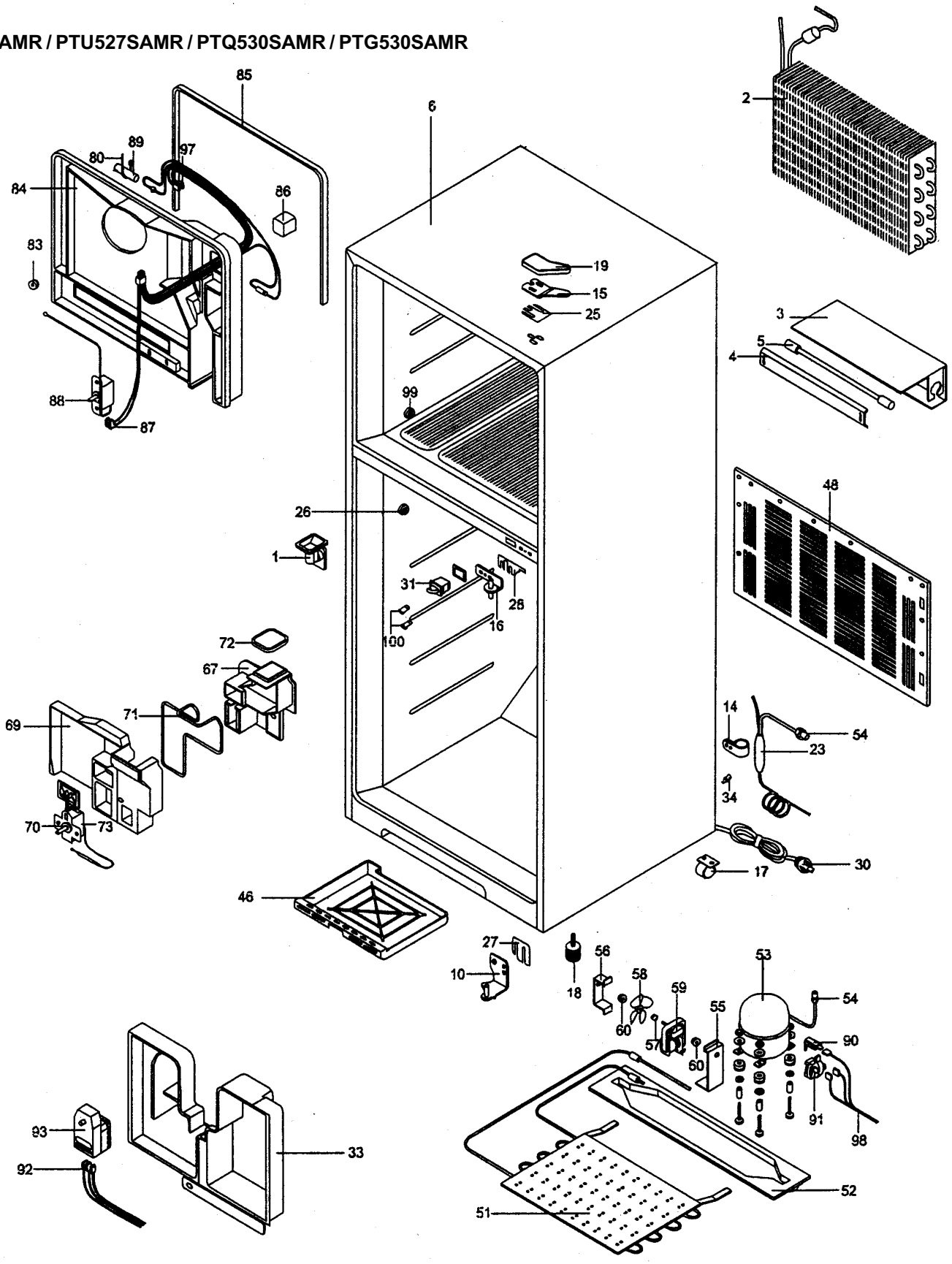
XII. PART LIST AND EXPLODED VIEW

PTV19SAMR / PTU527SAMR / PTQ530SAMR / PTG530SAMR



XII. PART LIST AND EXPLODED VIEW

PTV19SAMR / PTU527SAMR / PTQ530SAMR / PTG530SAMR



XII. PART LIST AND EXPLODED VIEW

PTV19SAMR / PTU527SAMR / PTQ530SAMR / PTG530SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
01	13 LHLD-0227K2FS--	DRAIN CONNECTOR	Q	1
01	13 LHLD-0227K2FS--	DRAIN CONNECTOR	E	1
02	14 FEVA-0295K2K0-2	EVAPORATOR		1
03	49 LHLD-0208K2P0--	DEFROST HEATER SUPPORT		1
04	25 LHLD-0446K2P0-1	DEFROST HEATER COVER		1
* 05	02 RHET-0184K2E0--	DEODER DEFROST HEATER		1
06	82 DCAB-0723K2KQ--	CABIENT ASS'Y	E	1
06	18 DCAB-0723K2KY--	CABIENT ASS'Y	Q	1
07	89 DDOR-0624K2KQ--	R DOOR PU ASS'Y	E	1
07	25 DDOR-0624K2KY--	R DOOR PU ASS'Y – WITH 19MM HANDLE	Q	1
07	71 DDOR-1117K2KY--	R DOOR PU ASS'Y – WITH 22MM HANDLE	Q	1
08	54 DDOR-0621K2KQ--	F DOOR PU ASS'Y	E	1
08	79 DDOR-0621K2KY--	F DOOR PU ASS'Y WITH 19MM HANDLE	Q	1
08	53 DDOR-1118K2KY--	F DOOR PU ASS'Y WITH 22MM HANDLE	Q	1
09	53 GCOVH0058K2FS--	R CONTROL BOX	Q	1
09	53 GCOVH0058K2FS--	R CONTROL BOX	E	1
* 10	21 FHNG-0018K2M0--	BOTTOM HINGE ASS'Y		1
11	53 PCOV-0220K2F0--	WIRING COVER		1
12	26 NSTNP0063K2KQ--	BRADGE ASS'Y	Q	1
12	26 NSTNP0063K2KQ--	BRADGE ASS'Y	E	1
13	24 JKNB-0082K2FS--	F KNOB	Q	2
13	24 JKNB-0082K2FS--	F KNOB	E	2
14	78 LPLTM0811K2F0--	DRYER CLAMPER		1
* 15	84 MHNG-0002K2M0--	TOP HINGE		1
* 16	57 MHNG-0064K2M0--	CENTER HINGE		1
17	38 NPLYM0034K2E0--	CASTER		2
18	11 PAJS-0002K2FD--	ADJ. LEG	Q	2
18	11 PAJS-0002K2FD--	ADJ. LEG	E	2
19	14 PCOV-0002K2FQ-1	TOP HINGE COVER	E	1
19	71 PCOV-0631K2FY--	TOP HINGE COVER	Q	1
20	32 PCOV-0118K2FA--	LIGHT COVER	Q	1
20	32 PCOV-0118K2FA--	LIGHT COVER	E	1

XII. PART LIST AND EXPLODED VIEW

PTV19SAMR / PTU527SAMR / PTQ530SAMR / PTG530SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
21	17PCOV-0589K2FS--	F LOUVER	Q	1
21	17PCOV-0589K2FS--	F LOUVER	E	1
22	51PCOV-0223K2FS-1	TERMINAL COVER	Q	1
22	51PCOV-0223K2FS-1	TERMINAL COVER	E	1
* 23	73PDRY-0046K2E0-2	DRYER		1
24	13PGID-0040K2F0-1	MULTI AIR GUIDE		1
25	46PSPAP0006K2E0-1	TOP HINGE SPACER		1
26	73LPIN-0053K2FS--	STOPPER	E	2
26	73LPIN-0053K2FS--	STOPPER	Q	2
27	25PSPAP0026K2E0--	BOTTOM HINGE SPACER		2
28	67PSPAP0049K2E0--	CENTER HINGE SPACER		2
30	34QACC-1139K2E0--	POWER PLUG(PTU527, PTQ, PTG530SAMR)		1
30	01QACC-1145K2E0--	POWER PLUG(PTV19,PTV530SAMR)		1
* 31	03QSW-P0105K2E0-1	DOOR SWITCH		1
32	02MSPR-0119K2E0--	KNOB SPRING		2
33	11PCOV-0106K2F0--	ELECTRIC BOX		1
34	23NROLP0014K2FS--	V CASE ROLLER	Q	2
34	23NROLP0014K2FS--	V CASE ROLLER	E	2
35	58FCAG-0111K2F0--	DOOR RACKS		5
36	12FCOVP0004K2K0--	CRISPER COVER		1
37	07FPAN-0060K2KS--	ICE CUBE ASS'Y	Q	1
37	07FPAN-0060K2KS--	ICE CUBE ASS'Y	E	1
38	80LFRM-0090K2FS--	ICE SLIDER	Q	1
38	80LFRM-0090K2FS--	ICE SLIDER	E	1
39	65UCOVP0040K2F0--	CHILL COVER		1
40	65UPAN-0042K2F0--	F TRANSPARENT SHELF LARGE		1

XII. PART LIST AND EXPLODED VIEW

PTV19SAMR / PTU527SAMR / PTQ530SAMR / PTG530SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
41	14UPAN-0097K2KS--	GLASS SHELF	Q	2
41	14UPAN-0097K2KS--	GLASS SHELF	E	2
42	84UPAN-0055K2F0--	F TRANSPARENT SHELF SMALL		1
43	01URCV-0068K2F0--	CHILL ROOM		1
44	56URCV-0079K2F0--	ICE STORAGE BOX		1
45	78URCV-0096K2F0--	VEGETABLE CRISPER		1
46	57USRA-0014K2FB-2	EVAPORATION PAN	Q	1
46	15USRA-0014K2FQ-2	EVAPORATION PAN	E	1
* 47	06UTNA-0018K2FA--	EGG STORAGE BUCKET	Q	2
* 47	06UTNA-0018K2FA--	EGG STORAGE BUCKET	E	2
48	21HGRL-0013K2F0-1	COMPRESSOR COVER		1
49	14NBRGP0003K2F0-1	HINGE BOSS		2
50	06FCAG-0112K2FS-1	BOTTLE STORAGE RACKS	Q	1
50	06FCAG-0112K2FS-1	BOTTLE STORAGE RACKS	E	1
51	29FCONS0109K2S0--	SUB CONDENSER ASS'Y		1
52	32FFRM-0020K2K0-3	CHASSIS ASSEMBLY		1
* 53	57PCMPL0159K2K0--	COMPRESSOR (PTU527,PTQ, PTG530SAMR)		1
* 53	41PCMPL0158K2K0-1	COMPRESSOR (PTV19,PTV530SAMR)		1
54	50PPIPC0003K2E0-1	CHARGE PIPE		2
55	22LHLD-0261K2P0-1	MOTOR FIXED LARGE		1
56	20LHLD-0263K2P0--	MOTER FIXED SMALL		1
57	20MSPR-0118K2E0--	FAN SPRING		1
* 58	14NFANP0066K2F0--	FAN		1
* 59	30FMOTR0070K2E0--	FAN MOTOR		1
60	87LHLD-0232K2F0--	MOTOR FIXING RUBBER		2

XII. PART LIST AND EXPLODED VIEW

PTV19SAMR / PTU527SAMR / PTQ530SAMR / PTG530SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
61	32HPNL-0463K2RS--	DECORATION PANEL	Q	1
61	32HPNL-0463K2RS--	DECORATION PANEL	E	1
62	89PCOV-0592K2FS--	MULTI AIR LOUVER	Q	1
62	89PCOV-0592K2FS--	MULTI AIR LOUVER	E	1
63	01QSOC-0065K2E0--	LAMP HOLDER		1
* 64	27RLMP-0035K2E0--	LAMP		1
65	46QW-VZ0857K2E0--	LAMP HOLDER WIRING		1
66	49LPLTP0176K2FS--	DRAIN HOLE COVER	Q	1
66	49LPLTP0176K2FS--	DRAIN HOLE COVER	E	1
67	51LHLD-0203K2FS--	B-THM SUPPORT	Q	1
67	51LHLD-0203K2FS--	B-THM SUPPORT	E	1
68	05PGID-0038K2F0--	R AIR GUIDE TOP		1
69	76PGID-0039K2F0--	R AIR GUIDE B		1
70	76PSEL-0221K2E0--	R KNOB SEALER		1
71	75PSEL-0397K2E0-1	SEALER		1
72	62PSEL-0746K2E0--	R AIR GUIDE SEALER		1
* 73	77RTHM-0120K2E0--	DAMPER THERM OS TAT		1
74	87LSTP-0019K2FB-1	F DOOR STOPPER	Q	1
74	45LSTP-0019K2FQ-1	F DOOR STOPPER	E	1
* 75	81PPACG0398K2EB--	F DOOR PACKING	Q	1
* 75	39PPACG0398K2EQ--	F DOOR PACKING	E	1
76	61GLIN-0255K2P0--	R DOOR LINER		1
77	01LPLTM0716K2P0--	R DOOR STOPPER PLATE		1
78	53LSTP-0011K2FB-1	R DOOR STOPPER	Q	1
78	11LSTP-0011K2FQ-1	R DOOR STOPPER	E	1
* 79	63PPACG0399K2EB--	R DOOR PACKING	Q	1
* 79	21PPACG0399K2EQ--	F DOOR PACKING	E	1
80	48LBND-0012K2E0--	D BAND		4

XII. PART LIST AND EXPLODED VIEW

PTV19SAMR / PTU527SAMR / PTQ530SAMR / PTG530SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
82	04LHLD-0006K2F0-2	MOTOR FIXING PLATE		1
83	87LHLD-0232K2F0--	MOTOR FIXING RUBBER		2
84	02PCOV-0148K2FS-2	EVAPORTOR COVER	Q	1
84	02PCOV-0148K2FS-2	EVAPORTOR COVER	E	1
85	43PSEL-0702K2E0--	EV COVER SEALER		1
86	58PSEL-0728K2E0--	EV COVER HOLE SEALER		1
87	41QW-VZ0733K2E0-1	F-THM WIRING		1
* 88	10RTHM-0179K2E0--	F-THM		1
* 89	28RTHM-0178K2E0--	D-THM ASS'Y		1
* 90	05RGAD-0161K2E0--	OVERLOAD RELAY		1
* 91	53RSTT-0069K2E0--	START RELAY		1
92	50QW-VZ0754K2E0-2	DEFROST TIMER WIRING		1
* 93	78QSWTD0066K2E0--	DEFROST TIMER		1
94	20MSPR-0118K2E0--	FAN SPRING		1
95	03NFANP0028K2FE--	FAN	Q	1
95	03NFANP0028K2FE--	FAN	E	1
* 96	30FMOTR0070K2E0--	FAN MOTOR		1
97	47QW-VZ0779K2E0-1	MOTOR WIRING		1
98	69QW-VZ0877K2E0-1	COMP.WIRING		1
99	33LHLD-0204K2FS--	MEAT CASE HOLDER	Q	1
99	33LHLD-0204K2FS--	MEAT CASE HOLDER	E	1
100	51LX-XZ0064K2E0--	FIX SCREW		5

XII. PART LIST AND EXPLODED VIEW

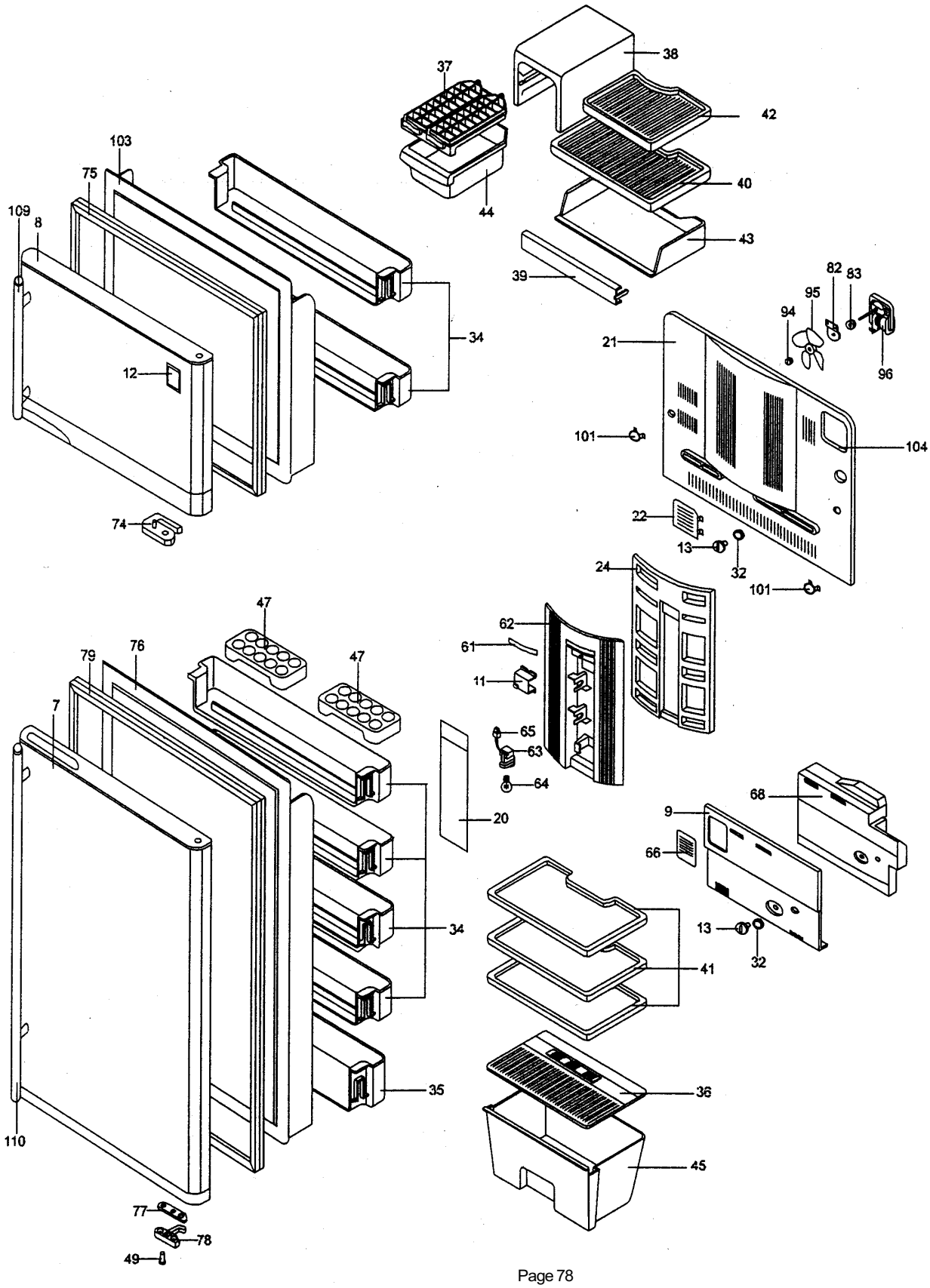
PTV19SAMR / PTU527SAMR / PTQ530SAMR / PTG530SAMR

REF	PART NO.	DESCRIPTION	COL	QTY
101	15 PCOV-0155K2FS--	EV SCREW COVER	Q	2
101	15 PCOV-0155K2FS--	EV SCREW COVER	E	2
102	56 PSEL-0213K2E0--	SEAL		1
103	26 GLIN-0414K2P0--	F DOOR LINER		1
109	41 JHNDM0012K2GA-1	F DOOR HANDLE – 22MM OLD	Q	1
109	07 JHNDM0081K2GA--	F DOOR HANDLE – 19MM NEW	Q	1
110	42 JHNDM0015K2GA-1	R DOOR HANDLE – 22MM OLD	Q	1
110	89 JHNDM0083K2GA--	R DOOR HANDLE – 19MM NEW	Q	1

Remarks :
i. MOD COL (Model Color) : E (Black) / Q (Silver)
ii. "*" Recommended Spare Parts

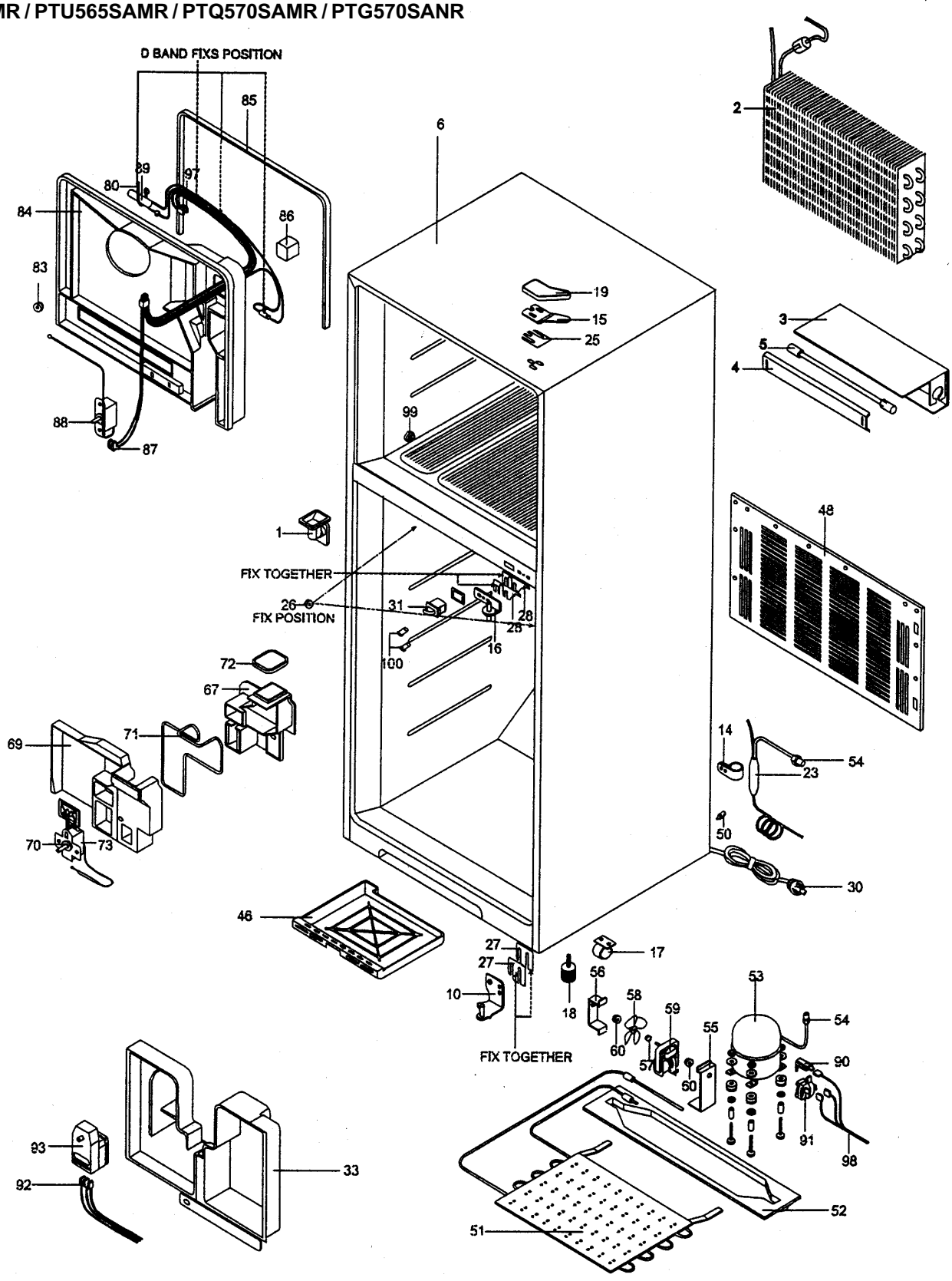
XII. PART LIST AND EXPLODED VIEW

PTV20SAMR / PTU565SAMR / PTQ570SAMR / PTG570SANR



XII. PART LIST AND EXPLODED VIEW

PTV20SAMR / PTU565SAMR / PTQ570SAMR / PTG570SANR



XII. PART LIST AND EXPLODED VIEW

PTV20SAMR / PTU565SAMR / PTQ570SAMR / PTG570SANR

REF	PART NO.	DESCRIPTION	COL	QTY
01	13 LHLD-0227K2FS--	DRAIN CONNECTOR	Q	1
01	13 LHLD-0227K2FS--	DRAIN CONNECTOR	E	1
02	14 FEVA-0295K2K0-2	EVAPORATOR		1
03	49 LHLD-0208K2P0--	DEFROST HEATER SUPPORT		1
04	25 LHLD-0446K2P0-1	DEFROST HEATER COVER		1
* 05	02 RHET-0184K2E0--	DEODER DEFROST HEATER		1
06	64 DCAB-0724K2KQ--	CABIENT ASS'Y	E	1
06	89 DCAB-0724K2KY--	CABIENT ASS'Y	Q	1
07	71 DDOR-0625K2KQ--	R DOOR PU ASS'Y	E	1
07	07 DDOR-0625K2KY--	R DOOR PU ASS'Y - WITH 19MM HANDLE	Q	1
07	35 DDOR-1119K2KY--	R DOOR PU ASS'Y - WITH 22MM HANDLE	Q	1
08	54 DDOR-0621K2KQ--	F DOOR PU ASS'Y	E	1
08	79 DDOR-0621K2KY--	F DOOR PU ASS'Y - WITH 19MM HANDLE	Q	1
08	53 DDOR-1118K2KY--	F DOOR PU ASS'Y - WITH 22MM HANDLE	Q	1
09	53 GCOVH0058K2FS--	R CONTROL BOX	Q	1
09	53 GCOVH0058K2FS--	R CONTROL BOX	E	1
* 10	21 FHNG-0018K2M0--	BOTTOM HINGE ASS'Y		1
11	53 PCOV-0220K2F0--	WIRING COVER		1
12	26 NSTNP0063K2KQ--	BRADGE ASS'Y	Q	1
12	26 NSTNP0063K2KQ--	BRADGE ASS'Y	E	1
13	24 JKNB-0082K2FS--	F KNOB	Q	2
13	24 JKNB-0082K2FS--	F KNOB	E	2
14	78 LPLTM0811K2F0--	DRYER CLAMPER		1
* 15	84 MHNG-0002K2M0--	TOP HINGE		1
* 16	57 MHNG-0064K2M0--	CENTER HINGE		1
17	38 NPLYM0034K2E0--	CASTER		2
18	11 PAJS-0002K2FD--	ADJ. LEG	Q	2
18	11 PAJS-0002K2FD--	ADJ. LEG	E	2
19	14 PCOV-0002K2FQ-1	TOP HINGE COVER	E	1
19	39 PCOV-0002K2FY-1	TOP HINGE COVER	Q	1
20	32 PCOV-0118K2FA--	LIGHT COVER	Q	1
20	32 PCOV-0118K2FA--	LIGHT COVER	E	1

XII. PART LIST AND EXPLODED VIEW

PTV20SAMR / PTU565SAMR / PTQ570SAMR / PTG570SANR

REF	PART NO.	DESCRIPTION	COL	QTY
21	17PCOV-0589K2FS--	F LOUVER	Q	1
21	17PCOV-0589K2FS--	F LOUVER	E	1
22	51PCOV-0223K2FS-1	TERMINAL COVER	Q	1
22	51PCOV-0223K2FS-1	TERMINAL COVER	E	1
* 23	73PDRY-0046K2E0-2	DRYER		1
24	13PGID-0040K2F0-1	MULTI AIR GUIDE		1
25	46PSPAP0006K2E0-1	TOP HINGE SPACER		1
26	73LPIN-0053K2FS--	STOPPER	E	2
26	73LPIN-0053K2FS--	STOPPER	Q	2
27	25PSPAP0026K2E0--	BOTTOM HINGE SPACER		2
28	67PSPAP0049K2E0--	CENTER HINGE SPACER		2
30	34QACC-1139K2E0--	POWER PLUG(PTU565,PTQ,PTG570SAMR)	1	
30	01QACC-1145K2E0--	POWER PLUG(PTV20,PTV570SAMR)		1
* 31	03QSW-P0105K2E0-1	DOOR SWITCH		1
32	02MSPR-0119K2E0--	KNOB SPRING		2
33	11PCOV-0106K2F0--	ELECTRIC BOX		1
34	58FCAG-0111K2F0--	DOOR RACKS		6
35	06FCAG-0112K2FS-1	BOTTLE STORAGE RACKS	Q	1
35	06FCAG-0112K2FS-1	BOTTLE STORAGE RACKS	E	1
36	12FCOVP0004K2K0--	CRISPER COVER		1
37	07FPAN-0060K2KS--	ICE CUBE ASS'Y	Q	1
37	07FPAN-0060K2KS--	ICE CUBE ASS'Y	E	1
38	80LFRM-0090K2FS--	ICE SLIDER	Q	1
38	80LFRM-0090K2FS--	ICE SLIDER	E	1
39	65UCOVP0040K2F0--	CHILL COVER		1
40	65UPAN-0042K2F0--	F TRANSPARENT SHELF LARGE		1

XII. PART LIST AND EXPLODED VIEW

PTV20SAMR / PTU565SAMR / PTQ570SAMR / PTG570SANR

REF	PART NO.	DESCRIPTION	COL	QTY
41	14 UPAN-0097K2KS-1	GLASS SHELF	Q	3
41	14 UPAN-0097K2KS-1	GLASS SHELF	E	3
42	84 UPAN-0055K2F0--	F TRANSPARENT SHELF SMALL		1
43	01 URCV-0068K2F0--	CHILL ROOM		1
44	56 URCV-0079K2F0--	ICE STORAGE BOX		1
45	78 URCV-0096K2F0--	VAGETABLE CRISPER		1
46	57 USRA-0014K2FB-2	2 EVAPORATION PAN	Q	1
46	15 USRA-0014K2FQ-2	EVAPORATION PAN	E	1
* 47	06 UTNA-0018K2FA--	EGG STORAGE BUCKET	Q	2
* 47	06 UTNA-0018K2FA--	EGG STORAGE BUCKET	E	2
48	21 HGRL-0013K2F0-1	COMPRESSOR COVER		1
49	14 NBRGP0003K2F0-1	HINGE BOSS		2
50	23 NROLP0014K2FS--	V CASE ROLLER	Q	2
50	23 NROLP0014K2FS--	V CASE ROLLER	E	2
51	29 FCONS0109K2S0--	SUB CONDENSER ASS'Y		1
52	32 FFRM-0020K2K0-3	CHASSIS ASSEMBLY		1
* 53	57 PCMPL0159K2K0--	COMPRESSOR (PTU565, PTQ, PTG570SAMR)	1	
* 53	57 PCMPL0159K2K0--	COMPRESSOR (PTV20, PTV570SAMR)		1
54	50 PPIPC0003K2E0-1	CHARGE PIPE		2
55	22 LHLD-0261K2P0-1	MOTOR FIXED LARGE		1
56	20 LHLD-0263K2P0--	MOTER FIXED SMALL		1
57	20 MSPR-0118K2E0--	FAN SPRING		1
* 58	14 NFANP0066K2F0--	FAN		1
* 59	30 FMOTR0070K2E0--	FAN MOTOR		1
60	87 LHLD-0232K2F0--	MOTOR FIXING RUBBER		2

XII. PART LIST AND EXPLODED VIEW

PTV20SAMR / PTU565SAMR / PTQ570SAMR / PTG570SANR

REF	PART NO.	DESCRIPTION	COL	QTY
61	32HPNL-0463K2RS--	DECORATION PANEL	Q	1
61	32HPNL-0463K2RS--	DECORATION PANEL	E	1
62	49PCOV-0592K2FS--	MULTI AIR LOUVER	Q	1
62	49PCOV-0592K2FS--	MULTI AIR LOUVER	E	1
63	01QSOC-0065K2E0--	LAMP HOLDER		1
* 64	27RLMP-0035K2E0--	LAMP		1
65	46QW-VZ0857K2E0--	LAMP HOLDER WIRING		1
66	49LPLTP0176K2FS--	DRAIN HOLE COVER	Q	1
66	49LPLTP0176K2FS--	DRAIN HOLE COVER	E	1
67	51LHLD-0203K2FS--	B-THM SUPPORT	Q	1
67	51LHLD-0203K2FS--	B-THM SUPPORT	E	1
68	05PGID-0038K2F0--	R AIR GUIDE TOP		1
69	76PGID-0039K2F0--	R AIR GUIDE B		1
70	76PSEL-0221K2E0--	R KNOB SEALER		1
71	75PSEL-0397K2E0-1	SEALER		1
72	62PSEL-0746K2E0--	R AIR GUIDE SEALER		1
* 73	19RTHM-0128K2E0--	DAMPER THERMISTOR		1
74	87LSTP-0019K2FB-1	F DOOR STOPPER	Q	1
74	45LSTP-0019K2FQ-1	F DOOR STOPPER	E	1
* 75	81PPACG0398K2EB--	DOOR PACKING	Q	1
* 75	39PPACG0398K2EQ--	F DOOR PACKING	E	1
76	79GLIN-0254K2P0--	R DOOR LINER		1
77	01LPLTM0716K2P0--	R DOOR STOPPER PLATE		1
78	53LSTP-0011K2FB-1	R DOOR STOPPER	Q	1
78	11LSTP-0011K2FQ-1	R DOOR STOPPER	E	1
* 79	25PPACG0400K2EB--	R DOOR PACKING		
* 79	72PPACG0400K2EQ--	R DOOR PACKING	E	1
80	48LBND-0012K2E0--	D BAND		4

XII. PART LIST AND EXPLODED VIEW

PTV20SAMR / PTU565SAMR / PTQ570SAMR / PTG570SANR

REF	PART NO.	DESCRIPTION	COL	QTY
82	04LHLD-0006K2F0-2	MOTOR FIXING PLATE		1
83	87LHLD-0232K2F0--	MOTOR FIXING RUBBER		2
84	02PCOV-0148K2FS-2	EVAPORTOR COVER	Q	1
84	02PCOV-0148K2FS-2	EVAPORTOR COVER	E	1
85	43PSEL-0702K2E0--	EV COVER SEALER		1
86	58PSEL-0728K2E0--	EV COVER HOLE SEALER		1
87	41QW-VZ0733K2E0-1	F-THM WIRING		1
* 88	10RTHM-0179K2E0--	F-THM		1
* 89	28RTHM-0178K2E0--	D-THM ASS'Y		1
* 90	05RGAD-0161K2E0--	OVERLOAD RELAY		1
* 91	53RSTT-0069K2E0--	START RELAY		1
92	50QW-VZ0754K2E0-2	DEFROST TIMER WIRING		1
* 93	78QSWTD0066K2E0--	DEFROST TIMER		1
94	20MSPR-0118K2E0--	FAN SPRING		1
95	03NFANP0028K2FE--	FAN	Q	1
95	03NFANP0028K2FE--	FAN	E	1
* 96	30FMOTR0070K2E0--	FAN MOTOR		1
97	47 QW-VZ0779K2E0-1	MOTOR WIRING		1
98	69QW-VZ0877K2E0-1	COMP.WIRING		1
99	33LHLD-0204K2FS--	MEAT CASE HOLDER	Q	1
99	33LHLD-0204K2FS--	MEAT CASE HOLDER	E	1
100	51LX-XZ0064K2E0--	FIX SCREW		5

XII. PART LIST AND EXPLODED VIEW

PTV20SAMR / PTU565SAMR / PTQ570SAMR / PTG570SANR

REF	PART NO.	DESCRIPTION	COL	QTY
101	15 PCOV-0155K2FS--	EV SCREW COVER	Q	2
101	15 PCOV-0155K2FS--	EV SCREW COVER	E	2
103	26 GLIN-0414K2P0--	F DOOR LINER		1
104	56 PSEL-0213K2E0--	SEAL		1
109	07 JHNDM0012K2GA-1	F DOOR WITH 22MM HANDLE	Q	1
109	36 JHNDM0081K2GA--	F DOOR WITH 19MM HANDLE	Q	1
110	78 JHNDM0013K2GA-1	R DOOR WITH 22MM HANDLE	Q	1
110	18 JHNDM0082K2GA--	R DOOR WITH 19MM HANDLE	Q	1

Remarks :
i. MOD COL (Model Color) : E (Black) / Q (Silver)
ii. "*" Recommended Spare Parts