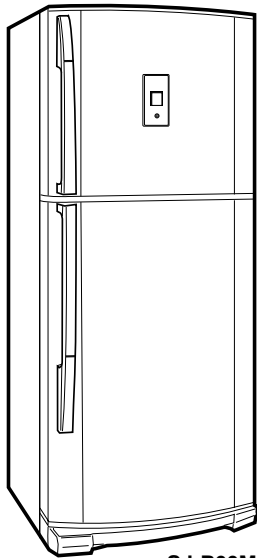
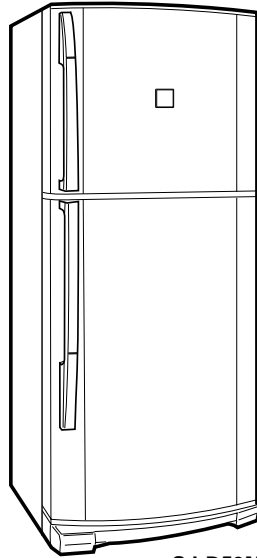


SHARP SERVICE MANUAL

S5311SE68CPUT



**SJ-P60M
 SJ-P65M
 SJ-P70M**



**SJ-D59M
 SJ-D64M
 SJ-D69M**

REFRIGERATOR-FREEZER

MODELS

- SJ-D59M-GL/GY/SLG**
- SJ-P60M-GL/GY/SLG**
- SJ-D64M-GL/GY/SLG**
- SJ-P65M-GL/GY/SLG**
- SJ-D69M-GL/GY/SLG**
- SJ-P70M-GL/GY/SLG**

In the interests of user-safety (Required by safety regulations in some countries) the set should be restored to its original condition and only parts identical to those specified should be used.

DESTINATION T

Refrigerant; HFC-134a

Refer to "HFC-134a COOLING UNIT" Service Manual for handling this refrigerant.

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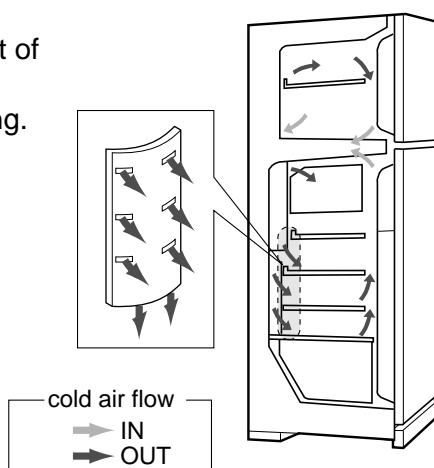
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CAUTIONS AND INFORMATIONS

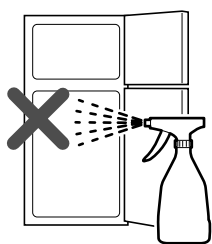
In case of following troubles, the cause is not related with the failure of refrigerator.
Please mention the correct way to the customer for the use of refrigerator when the repairing.

1. Some foods freezed in the refrigerator compartment.

Do not place food directly in front of cold air outlet.
This may lead to the food freezing.



2. Some plastic parts were cracked or splitted.



Some household cleaning chemicals may affect the internal food liner and plastic parts resulting in splitting or cracks occurring.

When cleaning all plastic parts inside this refrigerator, only use diluted dishwashing liquid(soapy water). Make sure that all plastic parts are thoroughly rinsed with water after cleaning.

3. IT IS NORMAL for the refrigerator to produce the following sounds.

Cracking or crunching sound;

Sound produced by expansion and contraction of inner walls and internal parts during cooling.

Squeaking sound;

Sound produced by expansion and contraction of internal parts.

Sound of flowing fluid (gurgling sound, fizzing sound);

Sound of refrigerant flowing in pipes (sound may become louder from time to time).

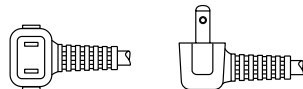
SPECIFICATIONS

Items		SJ-D59M	SJ-P60M	SJ-D64M	SJ-P65M	SJ-D69M	SJ-P70M
Type		2-Door		2-Door		2-Door	
Outer dimensions	Height	1620mm(63.8")		1720mm(67.7")		1820mm(71.6")	
	Width	760mm(29.9")		760mm(29.9")		760mm(29.9")	
	Depth	740mm(29.1")		740mm(29.1")		740mm(29.1")	
Rated storage volume [ISO] (Rated volume)		492 liter (17.7 cu.ft) F: 151 liter (5.3 cu.ft) R: 341 liter(12.1 cu.ft)		535 liter (18.9 cu.ft) F: 151 liter (5.3 cu.ft) R: 384 liter(13.6 cu.ft)		577 liter (20.4 cu.ft) F: 151 liter (5.3 cu.ft) R: 426 liter(15.1 cu.ft)	
Gross volume [ISO]		526 liter (18.6 cu.ft) F: 177 liter (6.3 cu.ft) R: 349 liter(12.3 cu.ft)		566 liter (20.0 cu.ft) F: 177 liter (6.3 cu.ft) R: 389 liter(13.7 cu.ft)		606 liter (21.4 cu.ft) F: 177 liter (6.3 cu.ft) R: 429 liter(15.1 cu.ft)	
Thai standard volume [TIS]		488 liter (17.24 cu.ft) F: 157.5 liter(5.57 cu.ft) R: 330.5 liter(11.67 cu.ft)		528 liter (18.66 cu.ft) F: 157.5 liter(5.57 cu.ft) R: 370.5 liter(13.09 cu.ft)		563 liter (19.89 cu.ft) F: 157.5 liter(5.57 cu.ft) R: 405.5 liter(14.32 cu.ft)	
Defrosting	System	Heater system					
	Start	Automatic					
	Finish	Automatic					
Temperature control		Automatic (Adjustable)					
No-frost freezer		Yes					
Interior lamp		2					
Caster		4					
Evaporating pan		1					
Refrigerator Compartment	R glass shelf ass'y	2				3	
	V glass shelf ass'y	1					
	Vegetable case	1					
	V parting plate	1					
	R door pocket	1				2	
	Egg tray	2					
	Bottle pocket	2					
	Utility case pocket	1					
	Fresh case	1					
	Tube stand	2					
Freezer Compartment	Freezer shelf ass'y	1					
	Ice cube maker	Twin ice cube maker					
	Ice storage box	1					
	F door pocket	2					
Deodorizing unit		2 (Honeycomb type)					
Plasmacluster		No	Yes	No	Yes	No	Yes

RATING

Items		SJ-D59M	SJ-P60M	SJ-D64M	SJ-P65M	SJ-D69M	SJ-P70M
Rated voltage	(V~)	220-240					
Rated frequency	(Hz)	50					
Climate class		T					
Rated current	(A)	1.4-1.5					
Rated input of heating systems	(W)	144-170					
Refrigerant (Charging quantity) [Non-flammable]		HFC-134a(120g)		HFC-134a(125g)		HFC-134a(130g)	
Insulation blowing gas [Flammable]		Cyclo pentane (HC)					
Net Weight	(kg)	83		85		90	

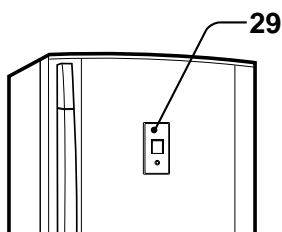
PLUG TYPE

Plug cord	2 pin	Plug type 
Destination mark	T	

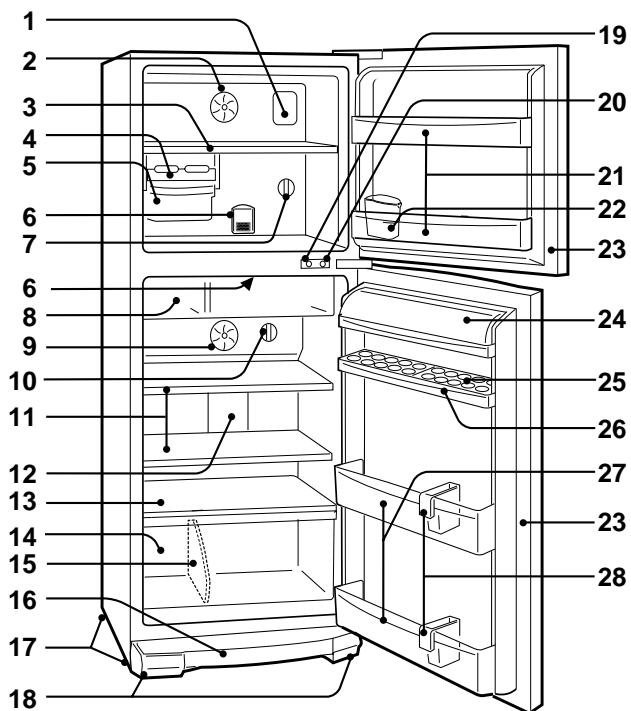
COLOR

Items	-GL	-GY	-SLG
Outside color	Gold	Gray	Silver
Inside color	White		

DESIGNATION OF VARIOUS PARTS

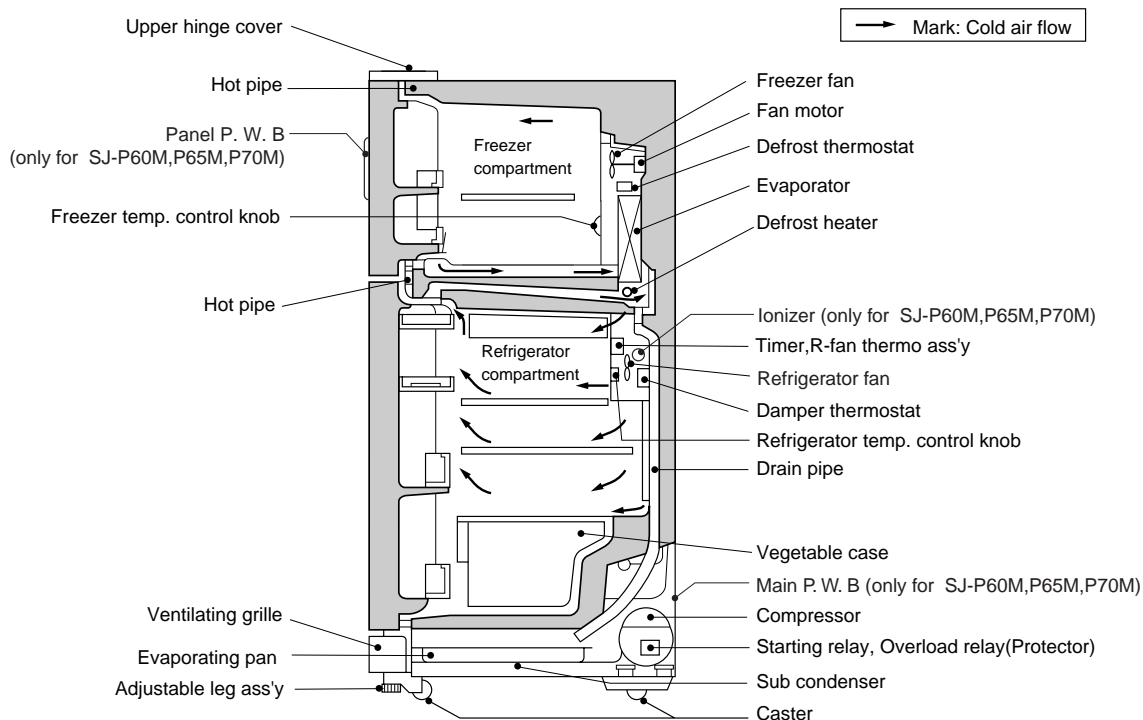


The names in parenthesis " [] " are the denominations used in the REPLACEMENT PARTS LIST.



1. Freezer light [Lamp]
2. Freezer fan
3. Freezer shelf [F shelf ass'y]
4. Ice cube maker
5. Ice cube box [Ice storage box]
6. Deodorizing unit
7. Freezer temp. control knob
8. Fresh case [Chilled case]
9. Refrigerator fan
10. Refrigerator temp. control knob
11. Refrigerator shelf [R glass shelf ass'y]
(59/60/64/65 type; 2 shelves, 69/70 type; 3 shelves)
12. Refrigerator light [Lamp]
13. Shelf [V glass shelf ass'y]
14. Vegetable crisper [Vegetable case]
15. Separator plate [V parting plate]
16. Evaporating pan & cover
17. Casters
18. Adjustable feet [Adjustable leg ass'y]
19. Fan & light switch for freezer
20. Fan & light switch for refrigerator
21. Freezer pocket [F door pocket]
22. Water supply cup [Water cup]
23. Magnetic door seal [Door packing]
24. Utility case [Utility case pocket]
25. Egg holder [Egg tray]
26. Free pocket [R door pocket]
(59/60/64/65 type; 1 pocket, 69/70 type; 2 pockets)
27. Bottle pocket
28. Bottle guard [Tube stand]
29. Plasmacluster panel
(Only for SJ-P60M,P65M,P70M)

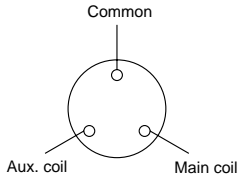
Figure D-1. External Description



• This figure shows SJ-P65M

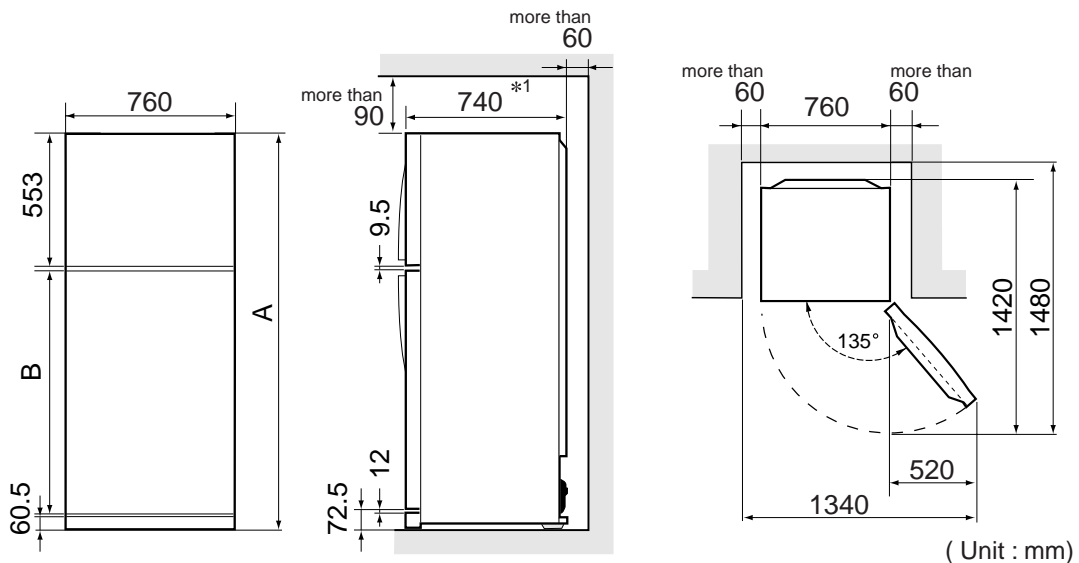
Figure D-2. Constructions

LIST OF ELECTRICAL PARTS

ITEMS	TYPE NAME	RATING	SPECIFICATIONS	
Thermostat	MM1-8123	125V 6A 250V 3A	(At normal notch) ON/OFF : -19/-24°C	
Defrost thermostat	S101	250V 8A	Open/Close : 10/1°C	
Thermo. fuse	SF70E	250V 10A	Working temp. : 70°C	
F-fan motor	3R00044B	220-240V 50/60Hz	Working with ø100 fan	
R-fan motor	3R00122A	220-240V 50/60Hz	Working with ø80 fan	
(R-fan fuse)	123	250V 2A	Cut OFF 130°C	
Defrost heater	MM6-4198	220-240V 353Ω	150W at 230V	
Door switch	DSD-5	250V 0.25A	4 terminals push-button type	
Damper thermostat	MM1-6176	—	Open/ Close : 2/-3°C	
Defrost timer	ND1004M2	220-240V 50/60Hz	Integration type Cycle time : 10.8/9.0 hours(50/60Hz) Delay time : 4.3/3.6 min.(50/60Hz)	
Lamp socket (F/R)	—	250V 1A	E-12(Hard plastic body type)	
F-lamp	—	240V 10W	E-12	
R-lamp	—	240V 15W	E-12	
R-fan thermo. ass'y	R-fan thermo. R-fan thermo.heater	S101 RSS2	250V 8A 350V, 2W, 10kΩ	Open/ Close : 7/15°C 1.1W at 230V
Compressor	FL2088	220-240V/50Hz	Cooling capacity : 245W (50Hz) Main coil : 9.11Ω Aux. coil : 16.6Ω (at 25°C)	
Starting relay	PGT0SAT	—	33Ω (at 25°C)	
Overload relay(Protector)	2.0C36A3	—	Open/ Close : 130/60°C	
Ionizer-K(Plasmacluster unit)	FTRN-A014CBKZ	DC 12V	3.5kV p-p	

DIMENSIONS

OUTER DIMENSIONS AND CLEARANCE

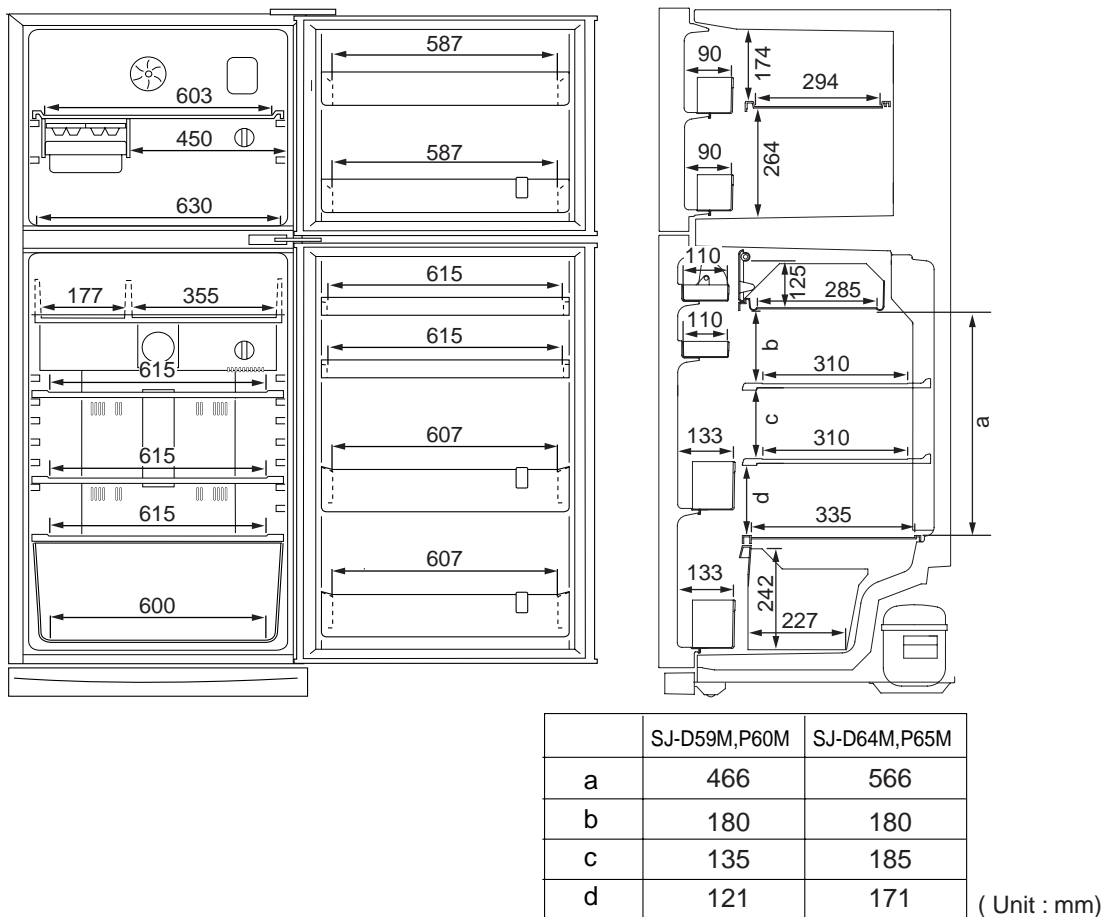


	SJ-D59M,P60M	SJ-D64M,P65M	SJ-D69M,P70M
A	1620	1720	1820
B	979	1079	1179

*1 Include the panel/badge. Not include the handle.

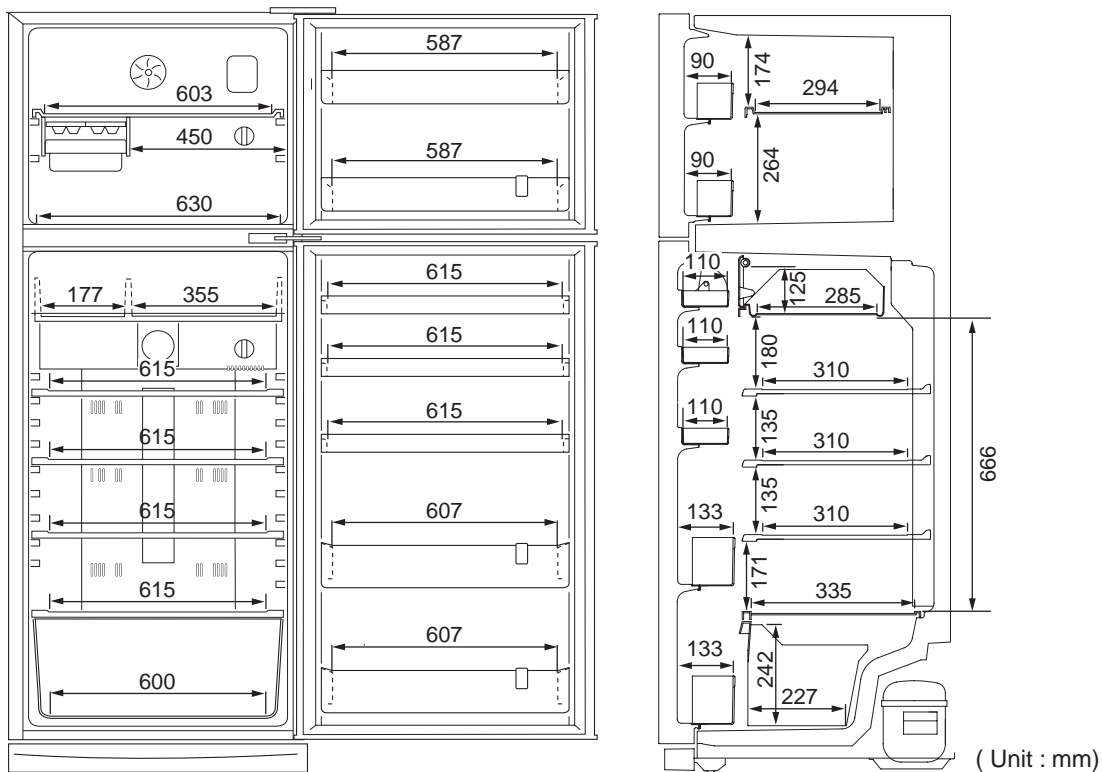
Fig. E-1

INNER DIMENSIONS



The dimensions between shelves can be changed by setting the shelves on the other rails.

Fig. E-2 (SJ-D59M,P60M,D64M,P65M)



The dimensions between shelves can be changed by setting the shelves on the other rails.

Fig. E-3 (SJ-D69M,P70M)

WIRING DIAGRAM

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

- | | |
|----------------------------|-----------------------------|
| G : GRAY | ● CONNECTED IN TERMINAL BOX |
| BR : BROWN (Live) | □ CONNECTOR |
| OR : ORANGE | |
| Y : YELLOW | |
| R : RED | |
| P : PINK | |
| B : BLUE (Neutral) | |
| BK : BLACK | |
| SB : SKY-BLUE | |
| G-Y : GREEN-YELLOW (Earth) | |
| W : WHITE | |

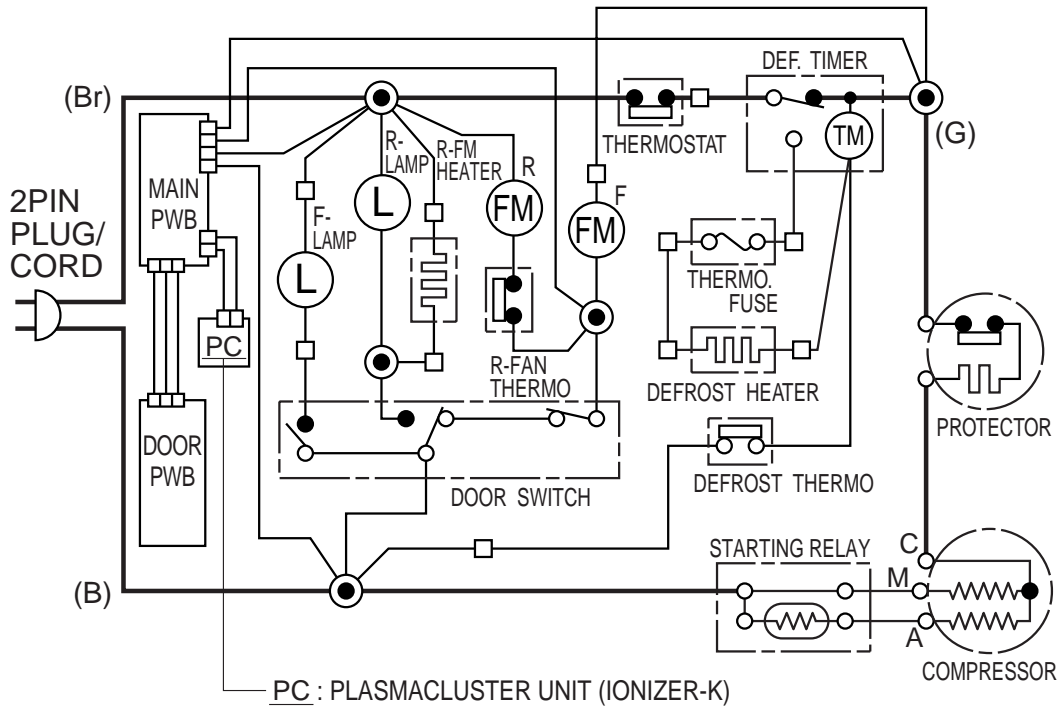


Figure W-1. Wiring Diagram (SJ-P60M,P65M,P70M)

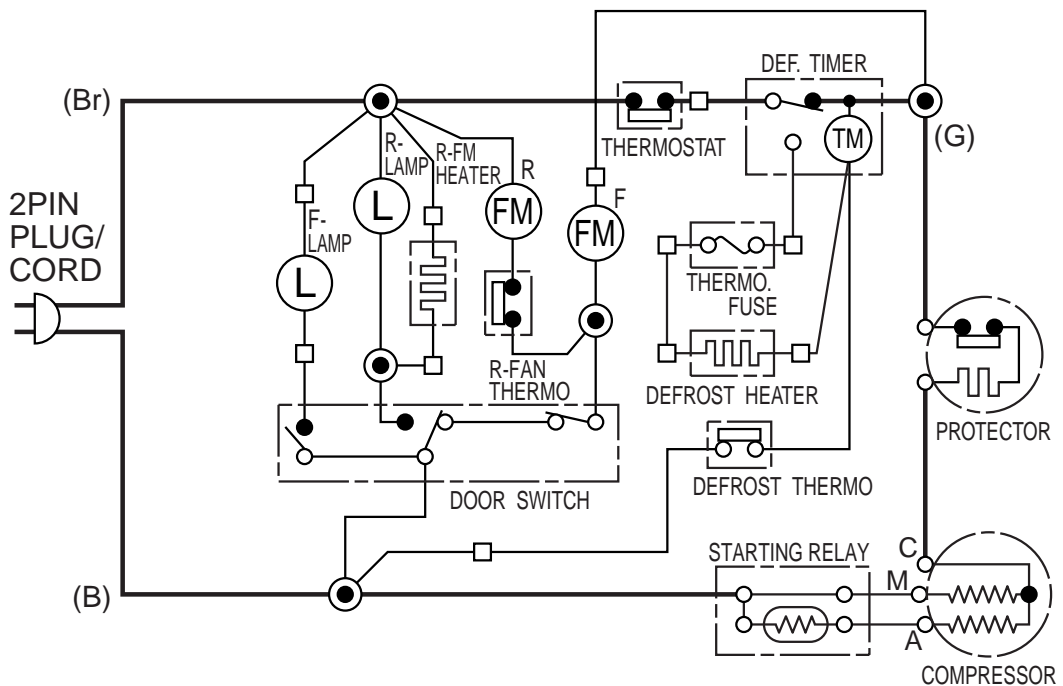
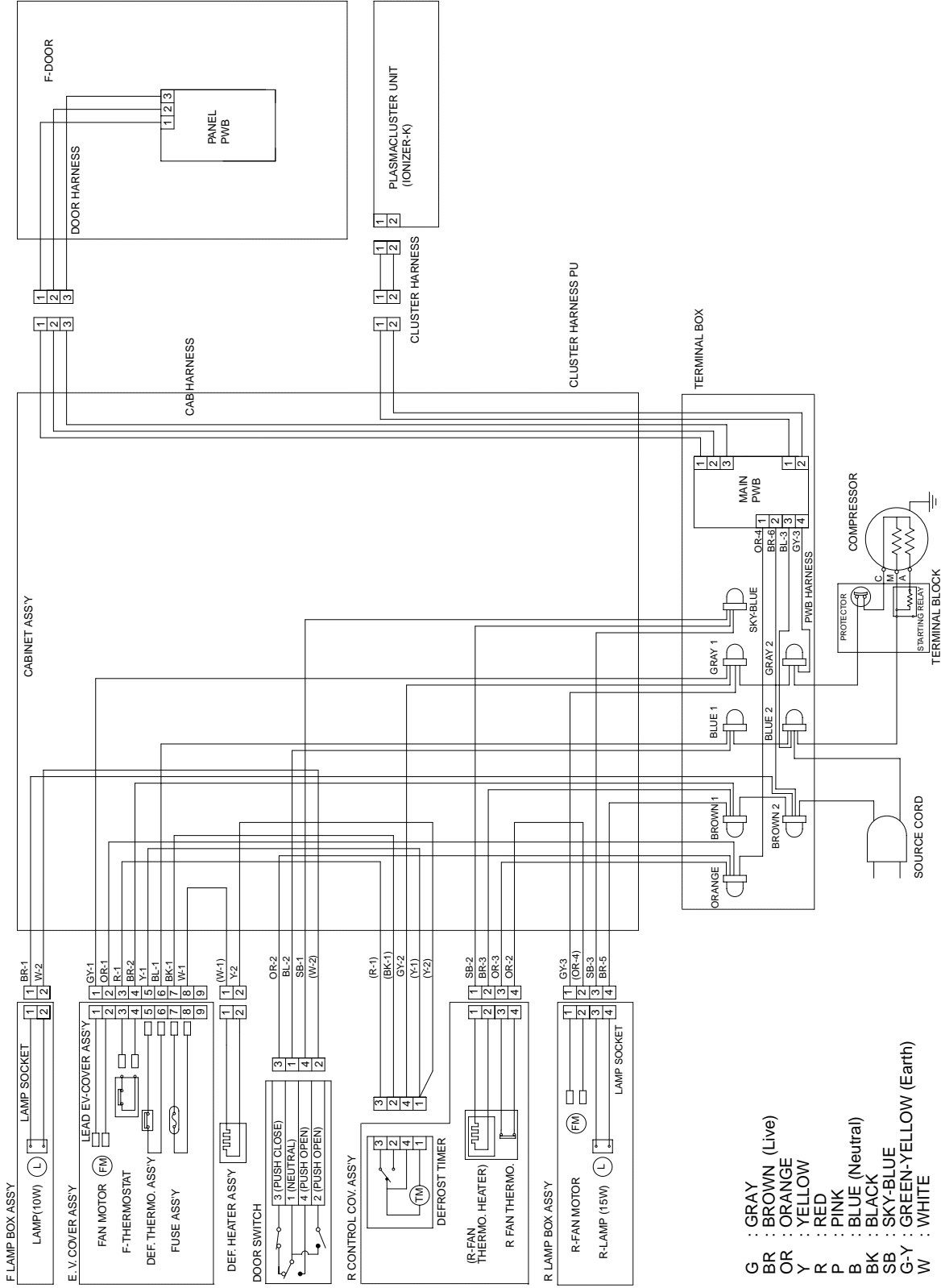


Figure W-2. Wiring Diagram (SJ-D59M,D64M,D69M)



- G : GRAY
- BR : BROWN (Live)
- OR : ORANGE
- Y : YELLOW
- R : RED
- P : PINK
- B : BLUE (Neutral)
- BK : BLACK
- SB : SKY-BLUE
- G-Y : GREEN-YELLOW (Earth)
- W : WHITE

Figure W-3. Electric Accessories Layout (SJ-P60M, P65M, P70M)

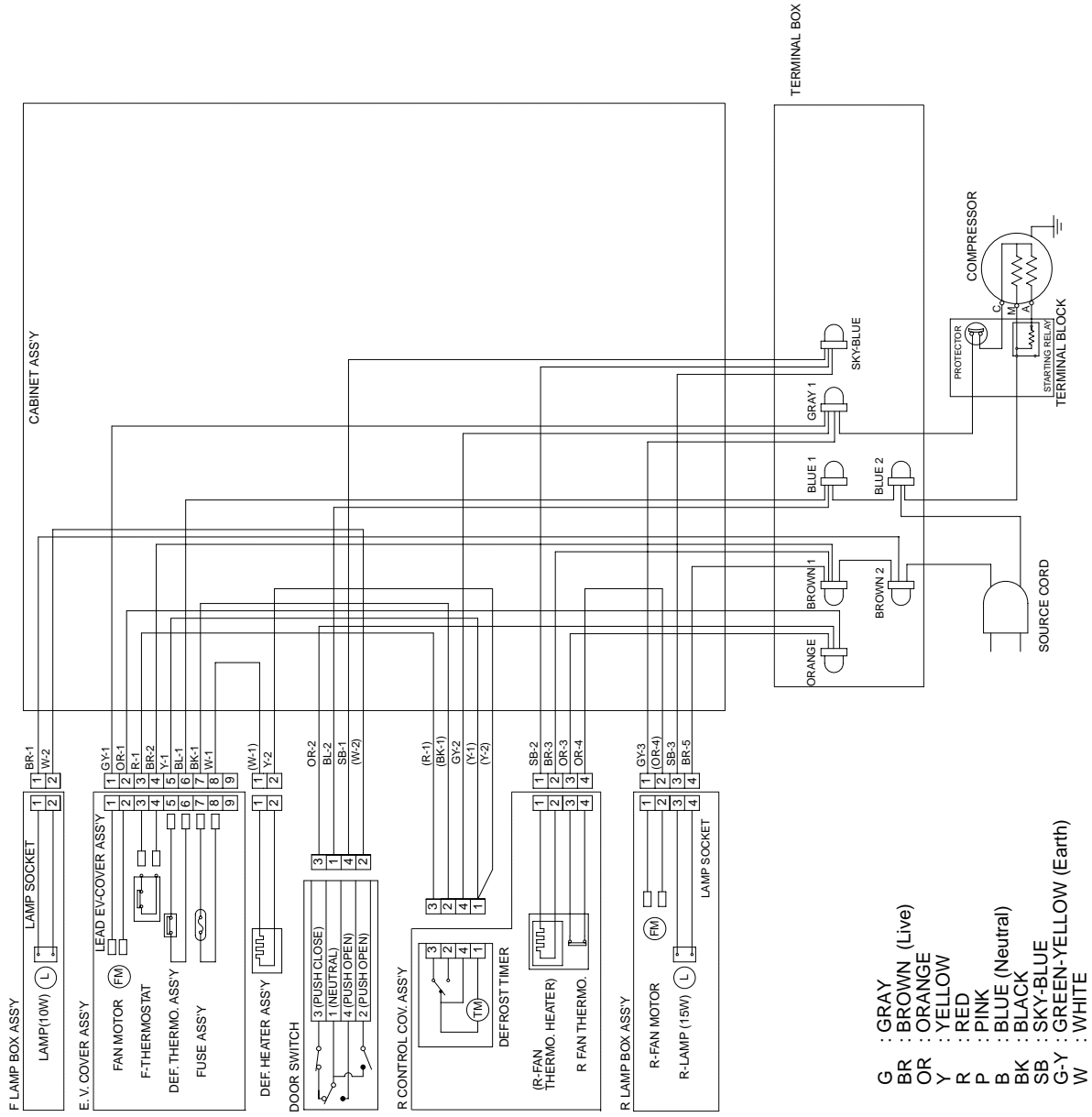


Figure W-4. Electric Accessories Layout (SJ-D59M,D64M,D69M)

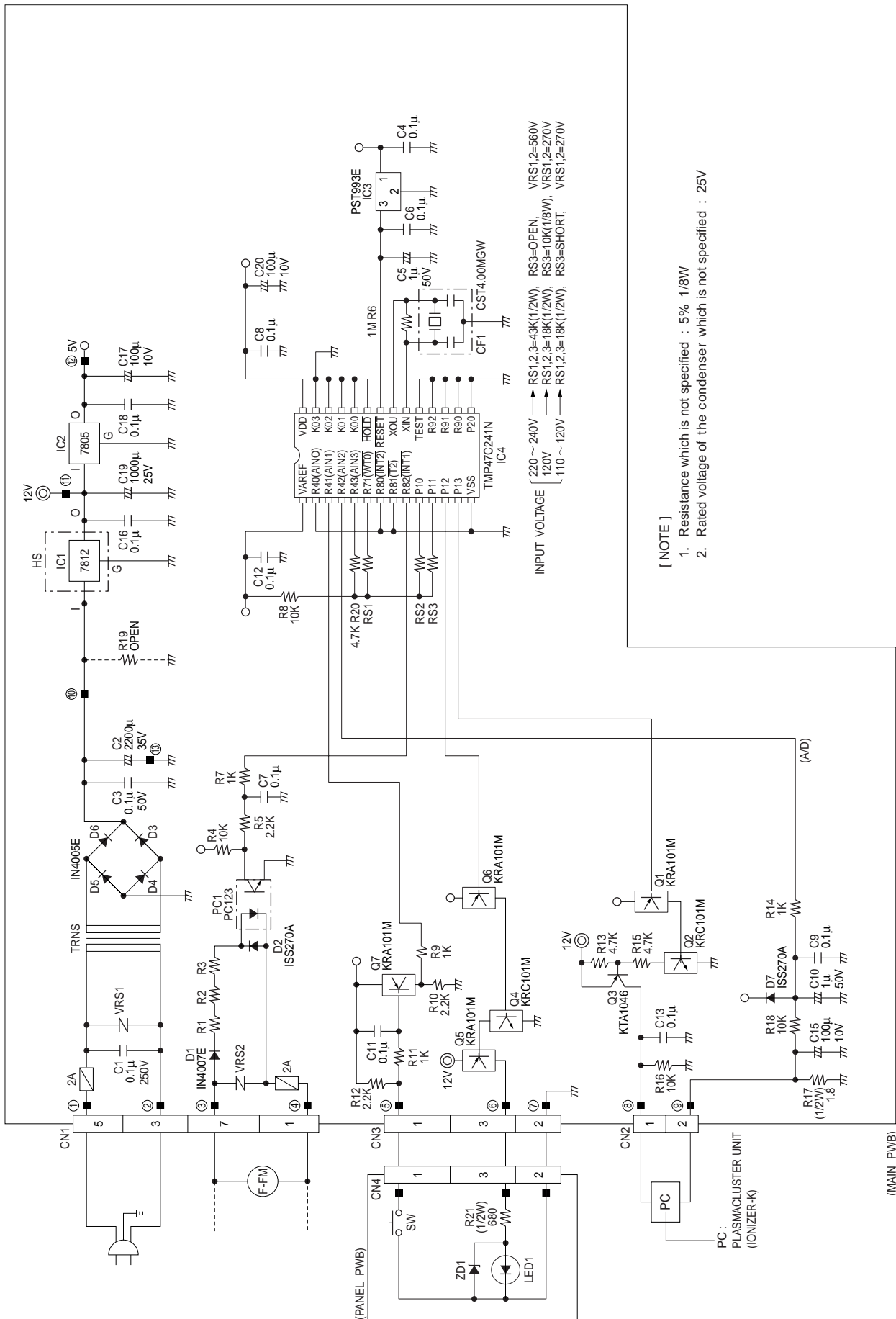


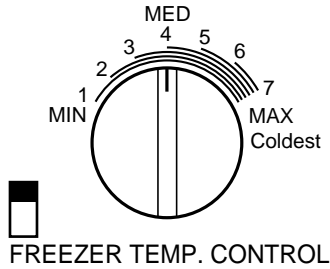
Figure W-5. Circuit Diagram (Only for SJ-P60M,P65M,P70M)

FUNCTIONS

1. ADJUSTABLE TEMPERATURE CONTROL

(1) Temperature control of freezer

- Thermostat (senses freezer temperature) operates on ON/OFF switchover to control the compressor and cool air circulating fan (F-fan motor), and allows the freezer temperature to keep at a suitable temperature.
- However adjust the freezer temp. control knob as follows depending upon the storing condition of foods.



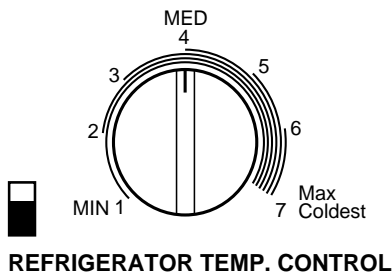
FREEZER TEMP. CONTROL

Figure F-1.

KNOB SETTING	PURPOSE
MAX(Coldest)	● For making ice rapidly or fast freezing.
▲	● When restocking with fresh food.
MED	● For normal freezing.
▼	● For storing frozen food for a short period (up to one month).
MIN	● When frozen food or ice cream is not stored.

(2) Temperature control of refrigerator

- Damper-thermostat senses temperature of the refrigerator and changes the opening angle of the damper automatically. However, as the Damper-thermostat has no function to switch on or off the compressor and F-fan motor, the freezer temperature control causes temperature in the refrigerator to vary to some extent.
- However, adjust the refrigerator temp. control knob as follows depending upon the cooling condition.



REFRIGERATOR TEMP. CONTROL

Figure F-2.

KNOB SETTING	PURPOSE
MAX (Coldest)	● For keeping freshness of food longer.
▲	● When the refrigerator does not provide sufficient cooling.
MED	● For normal operation.
▼	● When the refrigerator provides excessive cooling.
MIN	

- When the temperature of the refrigerator is higher, R-fan thermo. senses the temperature and the refrigerator is cooled efficiently by running of R-fan motor. R-fan thermo. heater energizes when the door is opened intend to promote to running of R-fan motor.

- NOTE:
- The refrigerator temperature is affected also by the freezer temperature. If the freezer temp. control knob is set at the position "MAX", the temperature tends to be lower than the following values, and if set at near the position "MIN", temperature tends to be higher.
 - If the refrigerator is operated for a long time with the freezer temperature control sets the "MAX" position, foods stored in the refrigerator compartment may also freeze.
 - When refrigerator temperature control sets to the "MAX", some foods stored may freeze. In this case adjust control set back to the "MED" position.
 - When refrigerator temperature control sets to the "MAX", some foods stored in Fresh case may also become frozen.

(3) Reference value of temperature

SETTING OF FREEZER TEMP. CONTROL KNOB	MAX (Coldest)	MED	MIN
Freezer temperature	Approx. -21°C	Approx. -18°C	Approx. -15°C

SETTING OF REFRIGERATOR TEMP. CONTROL KNOB	MAX (Coldest)	MED	MIN
Refrigerator temperature	Approx. 0°C	Approx. 3°C	Approx. 6°C
Fresh case temperature	Approx. -3°C	Approx. 1°C	Approx. 4°C

The values shown above refer to the case where the freezer temp. control knob is set at "MED".

The values shown above refer to the measurement carried out center area and 1/3 of overall height from the bottom at each of the refrigerator and the freezer after machine has been operated at an ambient temperature of 30°C with no food stored and the door closed until the temperature is stabilized.

The values vary depending upon frequency of opening and closing the door, ambient temperature, amount of stored foods and manner of storing foods.

2. DEFROSTING

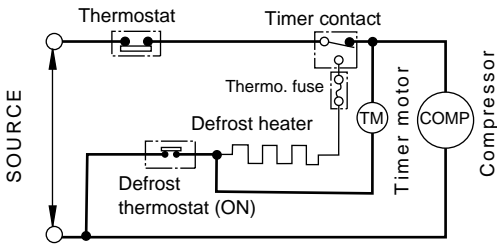
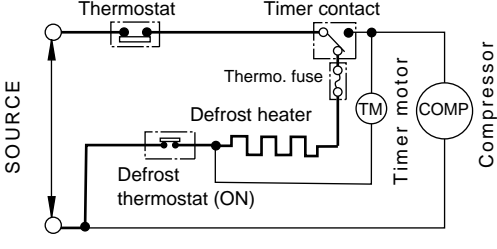
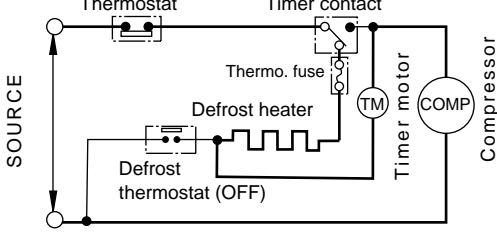
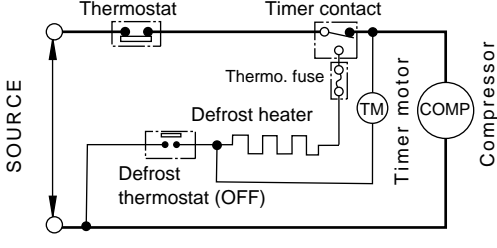
(1) No defrosting operation is necessary

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.

(2) Where is melted frost brought

1. Melted frost is brought into the evaporating pan at the bottom of the set and is evaporated here by the heat of sub condenser.
2. Be sure that the evaporating pan is inserted correctly and is level.

(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)	<ul style="list-style-type: none"> ● Defrost thermostat ON ● Compressor running ● Timer motor running  <p style="text-align: center;">Figure F-3.</p>	<p>The integration timer integrates running time of the compressor. When it reaches cycle time of defrost timer, the timer contact is changed to start defrosting.</p>
2. Defrosting (Time 20 to 30 min.)	<ul style="list-style-type: none"> ● Defrost thermostat ON ● Compressor stops ● Timer motor stops  <p style="text-align: center;">Figure F-4 .</p>	<ul style="list-style-type: none"> ● 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.
3. Drain (Time approx. 5 min.)	<ul style="list-style-type: none"> ● Defrost thermostat OFF ● Compressor stops ● Timer motor running  <p style="text-align: center;">Figure F-5.</p>	<p>When the defrost thermostat becomes OFF, the timer motor starts running. During the operation time (delay time of defrost time) defrosted water is drained outside the refrigerator.</p>
4. Restart (Time approx. 5 min.)	<ul style="list-style-type: none"> ● Defrost thermostat OFF ● Compressor running ● Timer motor stops  <p style="text-align: center;">Figure F-6.</p>	<ul style="list-style-type: none"> ● 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. And the timer motor starts running. (Figure F-3.)

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

1. Disconnection of defrost heater

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

2. 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.

3. 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.

NOTE:

- D.P.-condenser pipe may be felt hot if touched by hand while the compressor is in operation.
- If you are asked about this, please explain that the hot pipe serve to prevent the dew generation.

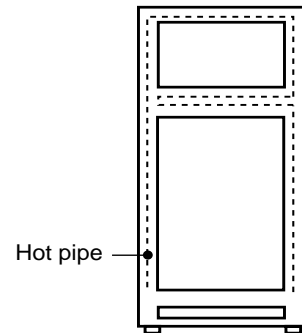


Figure F-7

4. INSPECTION OF INITIAL STARTING

(1) Inspection of cooling unit

1. Set the temperature control knob to "MAX" and check that the compressor starts to operate.
2. Depress the door switch to run the fan and check that cool air is blown out of the cold air outlet of the freezer and the refrigerator.
3. When the compressor does not work, check that the timer is not set to "defrost" position.
4. 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.

(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.

1. Turn the timer shaft clockwise with a screw driver.
At this time, make certain the timer clicks and the compressor stops.
2. After more than 5 min., turn the shaft further to operate.
Make certain cooling operation is started again.

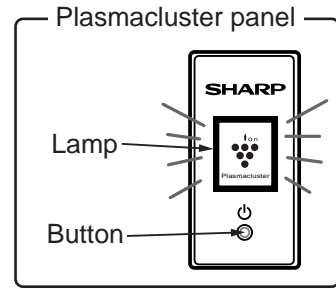
5. PLASMACLUSTER (Only for SJ-P60M,P65M,P70M)

(1) Plasmacluster is what thing.

The ionizer inside the refrigerator will release cluster ions, which are collective mass of positive and negative ions, into the the freezer and refrigerant compartments. The cluster ions reduce airborne fungus.

(2) Plasmacluster Panel

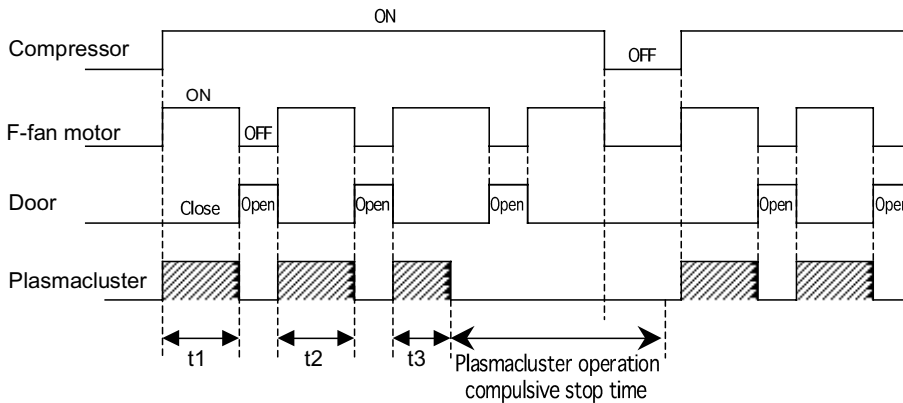
1. When the refrigerator will be operated, the Plasmacluster lamp of the panel will light up.
2. By pushing the button, the lamp gose out or lights up.
3. Under the lamp is lighting, Plasmacluster operation is controlled as follows.



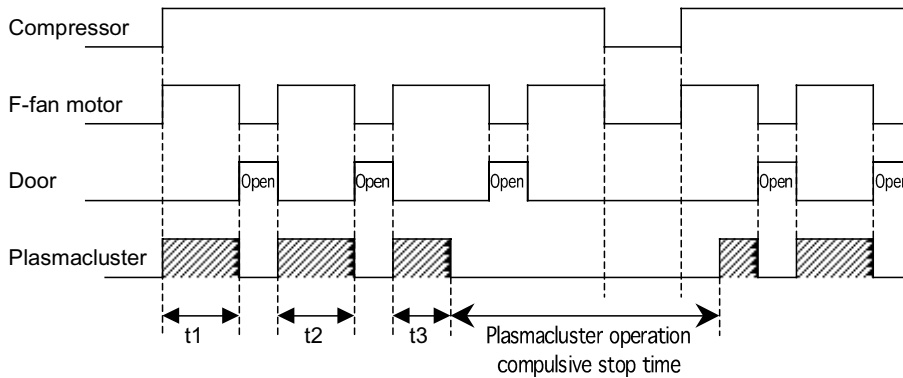
(3) Plasmacluster Control.

1. Plasmacluster operation will be performed when the following conditions gather.
 - 1) Lamp : Under lighting
 - 2) Compressor : Under operation
 - 3) Door : Closed
 - 4) Within "The Plasmacluster operation time".
2. If the sum total of Plasmacluster operation time will reach at the set time ("The Plasmacluster operation Time") , Plasmacluster operation will stop.
3. After an operation stop, the Plasmacluster will be not operated during the set time ("The Plasmacluster operation compulsive stop time") .

Time chart A



Time chart B



● The Plasmacluster operation time = t1 + t2 + t3

ASSEMBLING PROCEDURES OF MAIN PARTS AND CAUTIONS

CAUTION: DISCONNECT THE UNIT FROM THE POWER SUPPLY BEFORE ANY REPAIRING.

1. R-CONTROL COV. ASSEMBLY

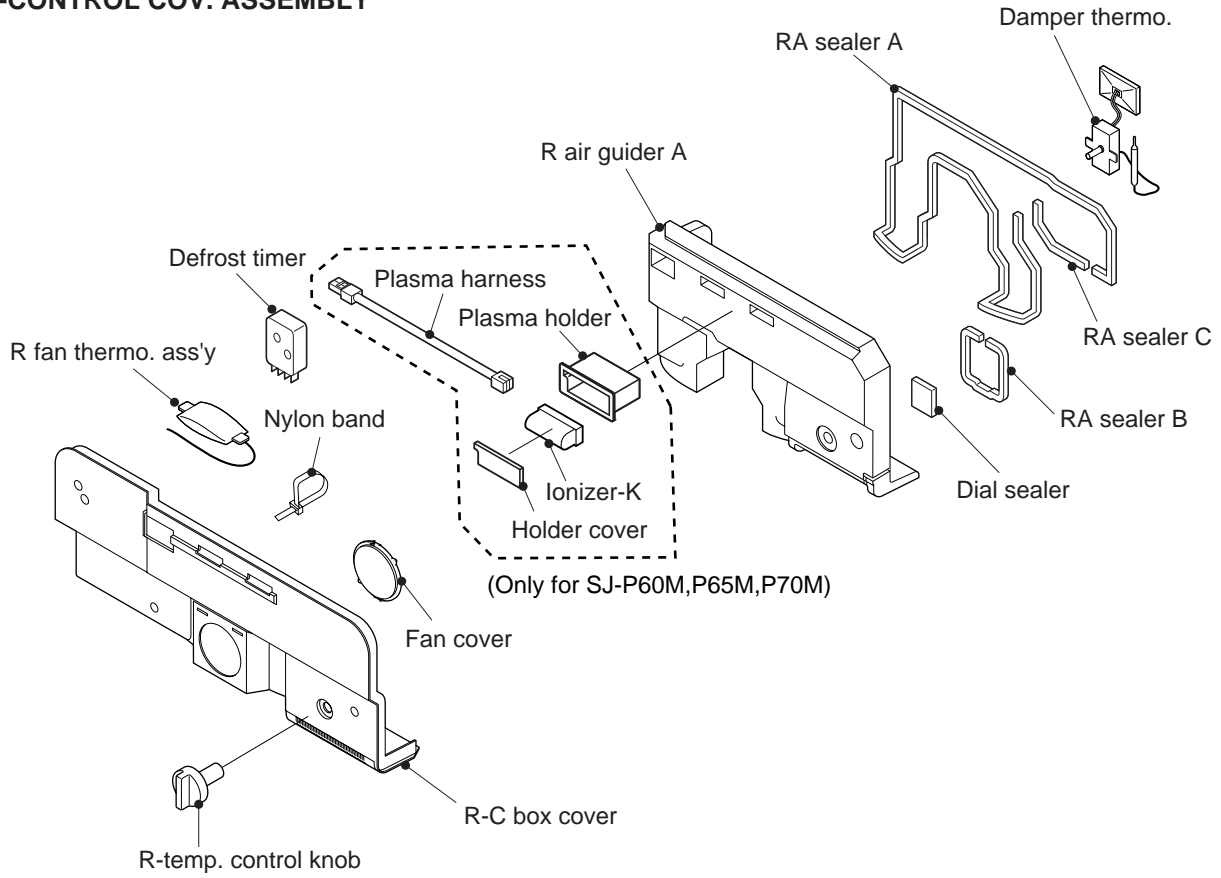


Figure A-1

(1) Forming sensor of Damper thermo.

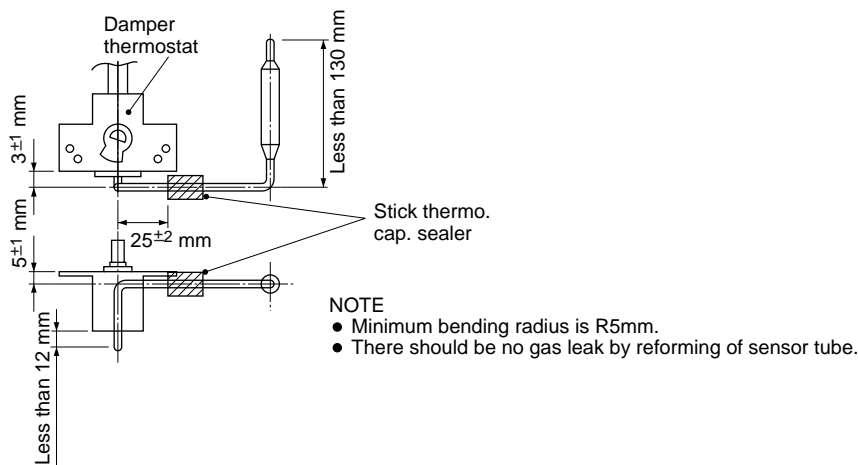


Figure A-2

After forming, fix it to the refrigerator.

(2) Sticking of sealers to R air guider A.

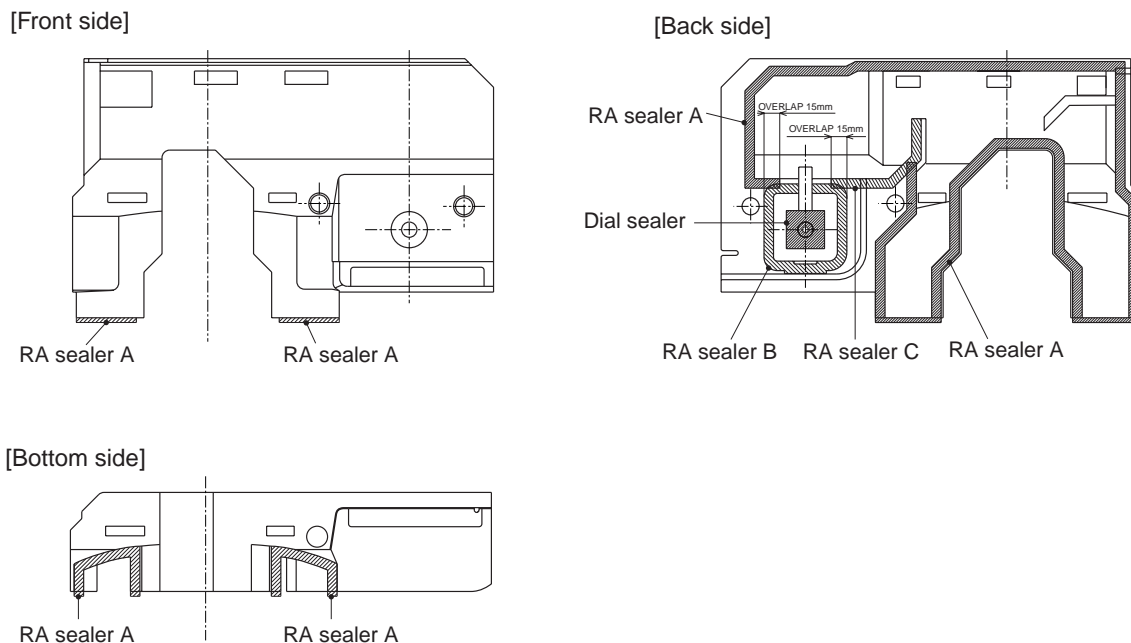


Figure A-3

(3) Fixing of the Ionizer-K.(Only for SJ-P60M, P65M, P70M)

- (3)-1 Connect Ionizer-K and connector of the lead wire.
- (3)-2 Insert Ionizer-K to Plasma holder.
- (3)-3 Insert the (3)-2 assembly to R air guider A.
- (3)-4 Insert Holder cover to (3)-3 assembly and fix by the paper tepe.

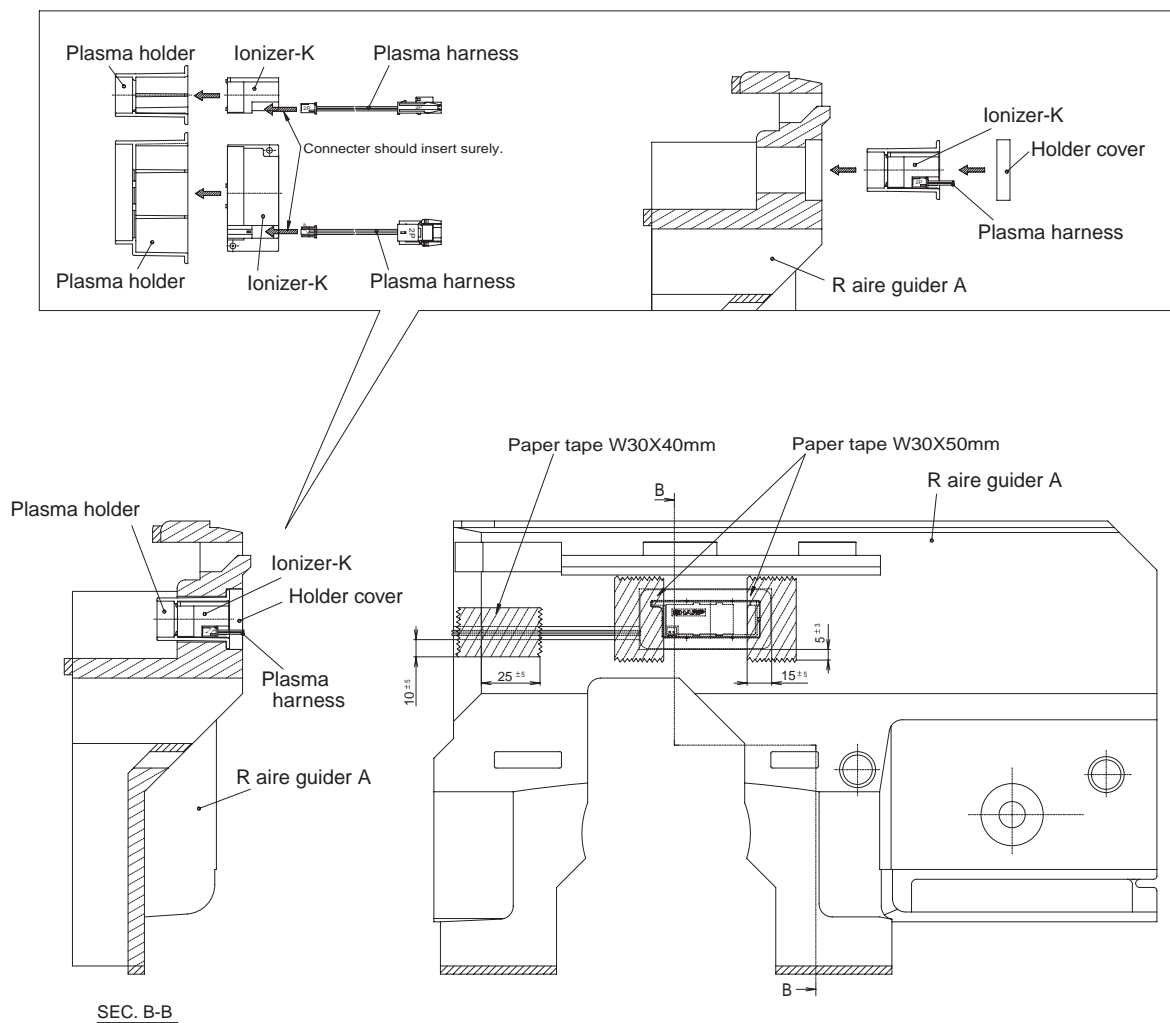


Figure A-4

(4) Fixing of Defrost timer, R fan thermo. ass'y cover to R-C box cover.

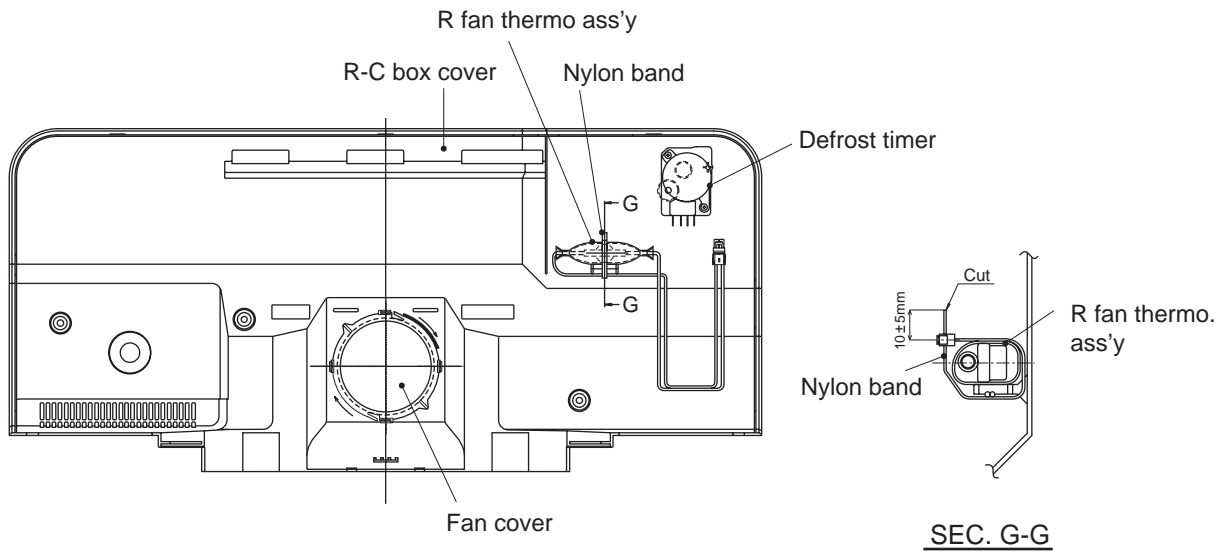


Figure A-5

2. R LAMP BOX ASSEMBLY

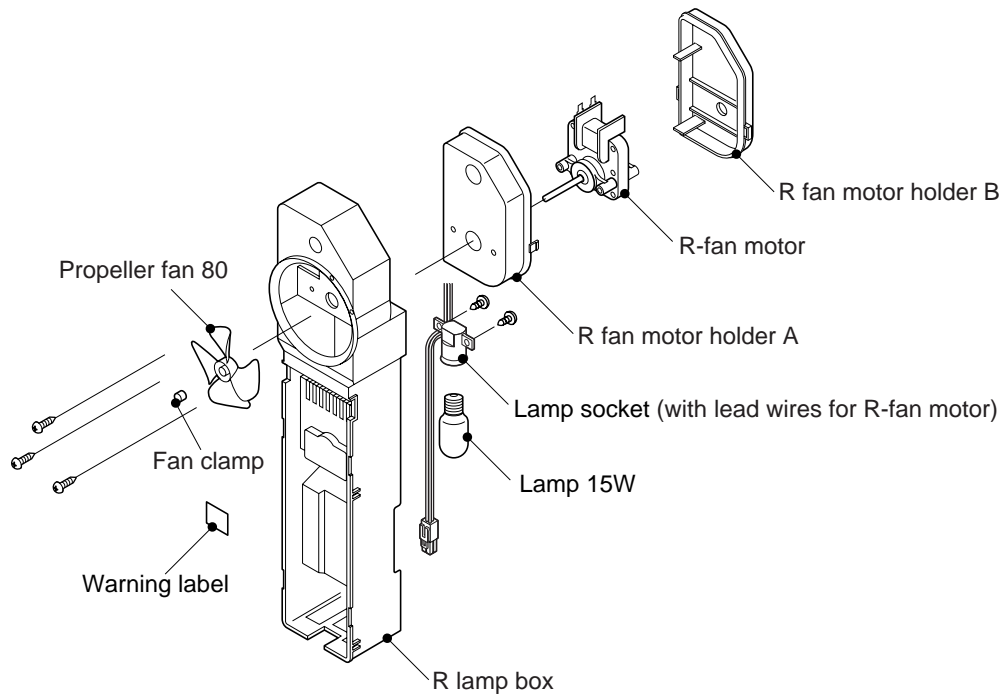


Figure A-6

- (1) Fixing of Lamp and Lamp socket.
 (1)-1 Screw Lamp 15W into Lamp socket.
 (1)-2 Fix Lamp socket on R lamp box by tapping screws.

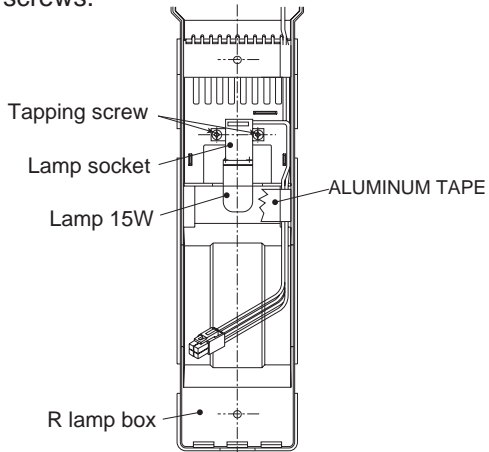


Figure A-7

- (1)-3 Insert the terminal of Lamp socket to R-fan motor.

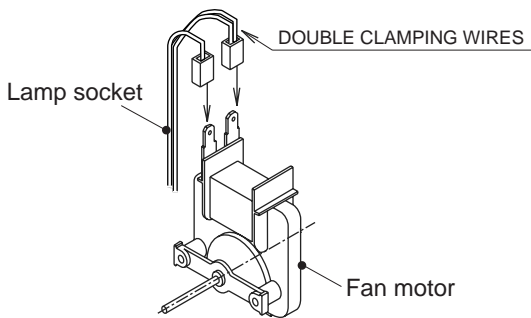


Figure A-8

- (2) Fixing of R-fan motor and Fan
 (2)-1 Set R-fan motor holder A to R lamp box by tapping screw.
 (2)-2 Set R-fan motor to R fan motor holder A by machine screw.
 (2)-3 Set R fan motor holder B to A.

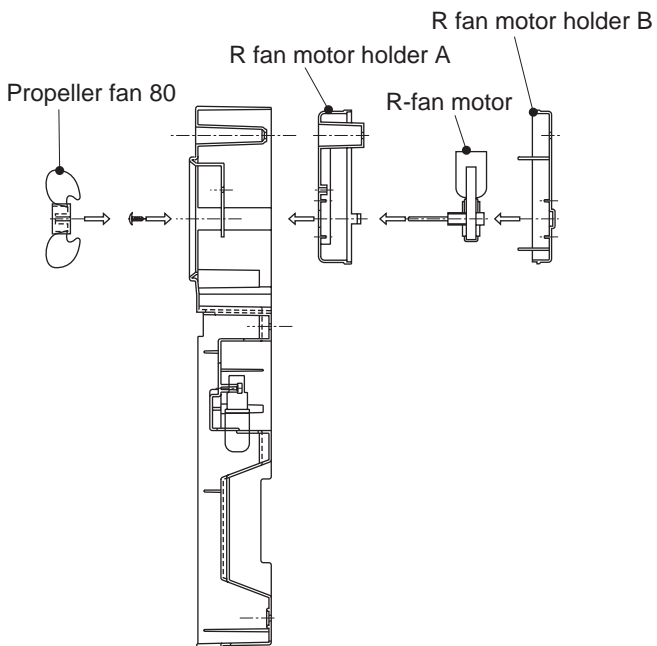


Figure A-9

- (2)-4 Set Fan clamp to Propeller fan 80 and insert it to the shaft of R-fan motor.

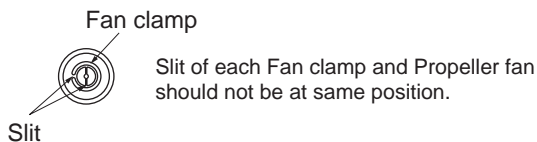
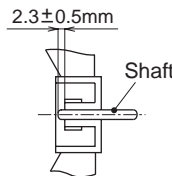
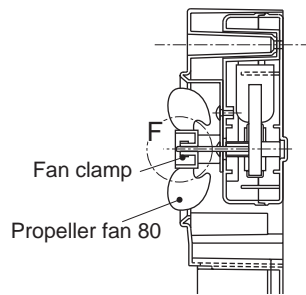


Figure A-10

- (3) Sticking Warning label.

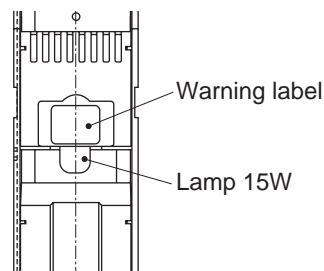


Figure A-11

3. E.V COVER ASSEMBLY

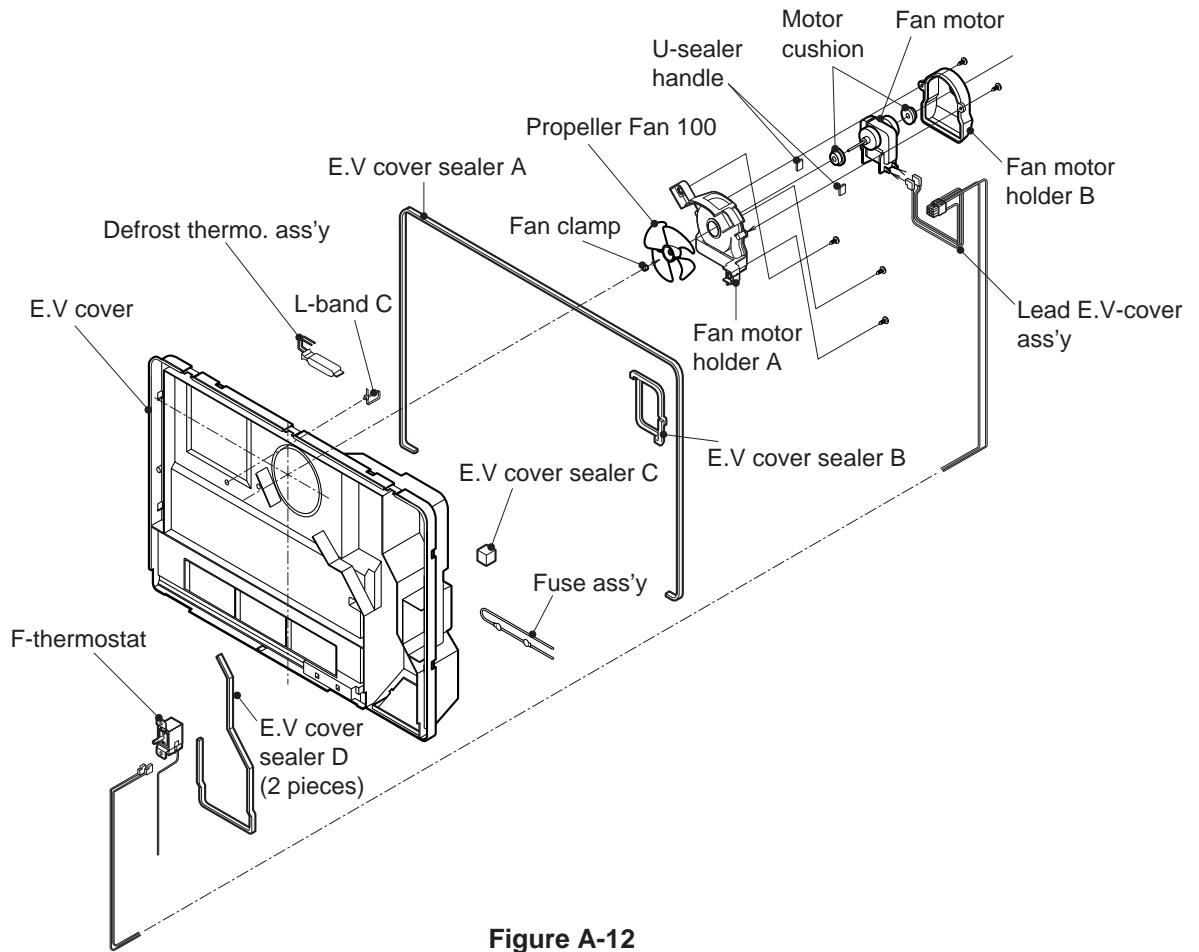


Figure A-12

(1) Sticking of Sealers to E.V cover

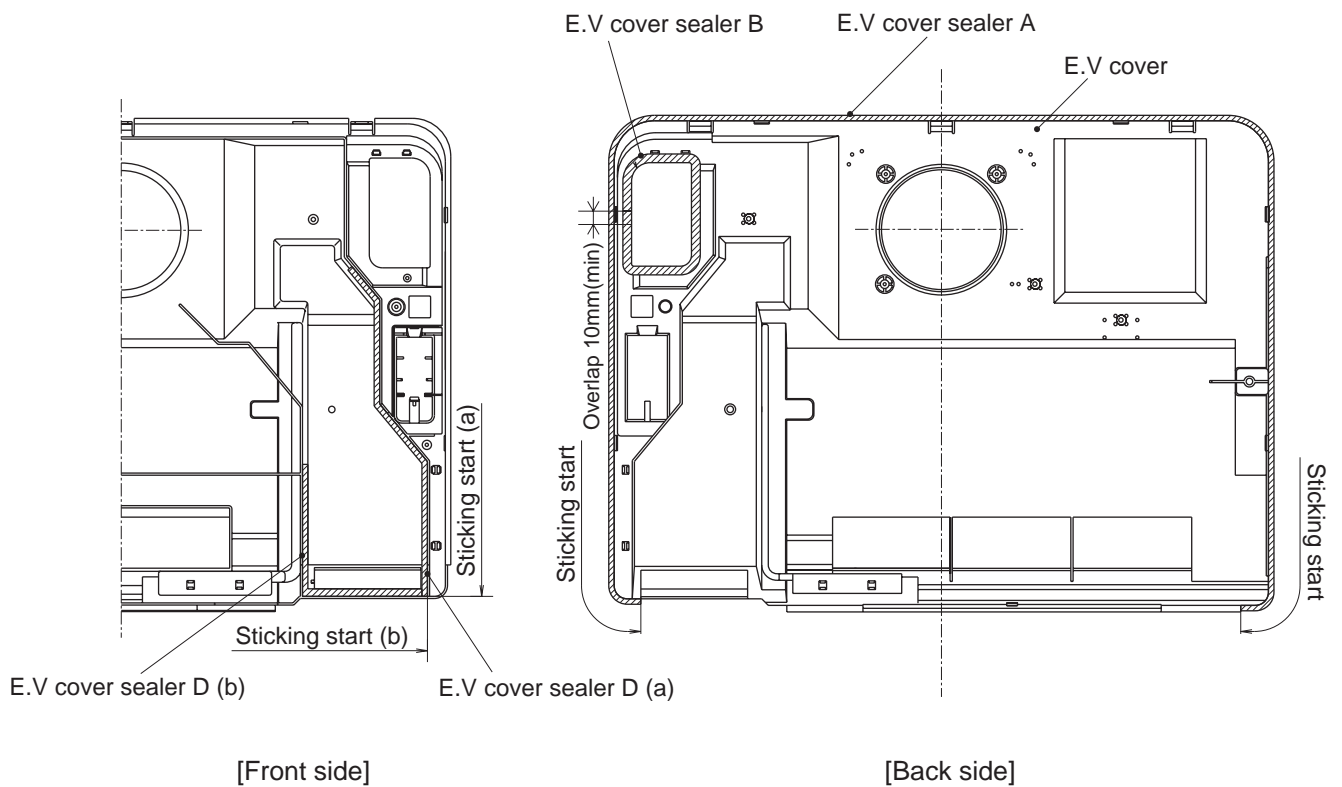


Figure A-13

(2) Fixing of Fan motor and Fan

(2)-1 Stick U-sealer handle to Fan motor holder A.

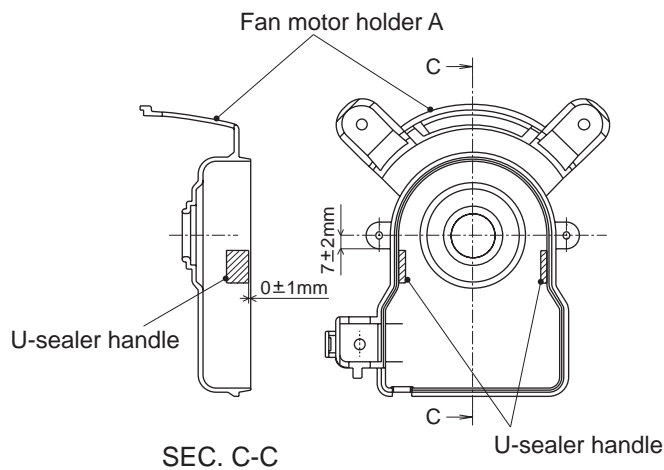


Figure A-14

- (2)-2 Insert the terminals of Lead EV-cover ass'y to R-fan motor.
- (2)-3 Fix two Motor cushions to R-fan motor, and set it at Fan motor holder A and B. Then fix with Tapping screw.

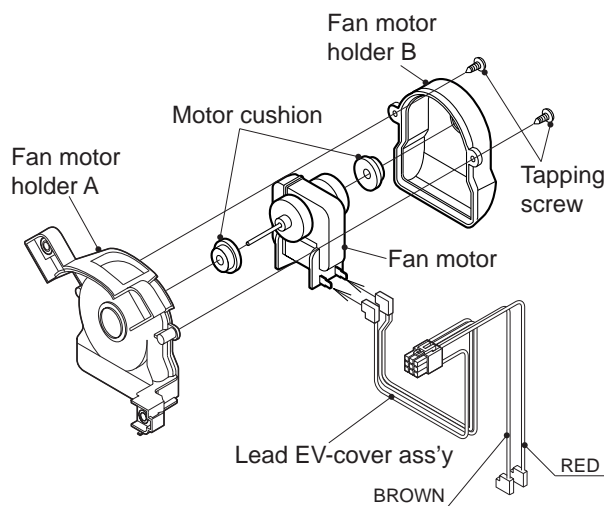


Figure A-15

(2)-4 Set Fan clamp to Propeller fan 100 and insert it to the shaft of Fan motor.

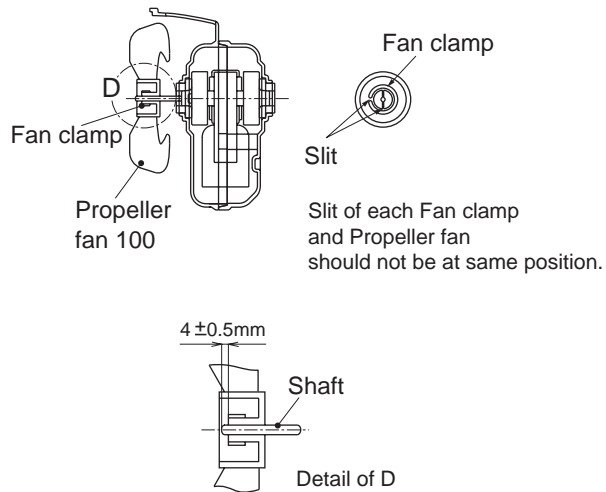


Figure A-16

(3) Setting of Fan motor ass'y , Defrost thermo. ass'y and Fuse ass'y

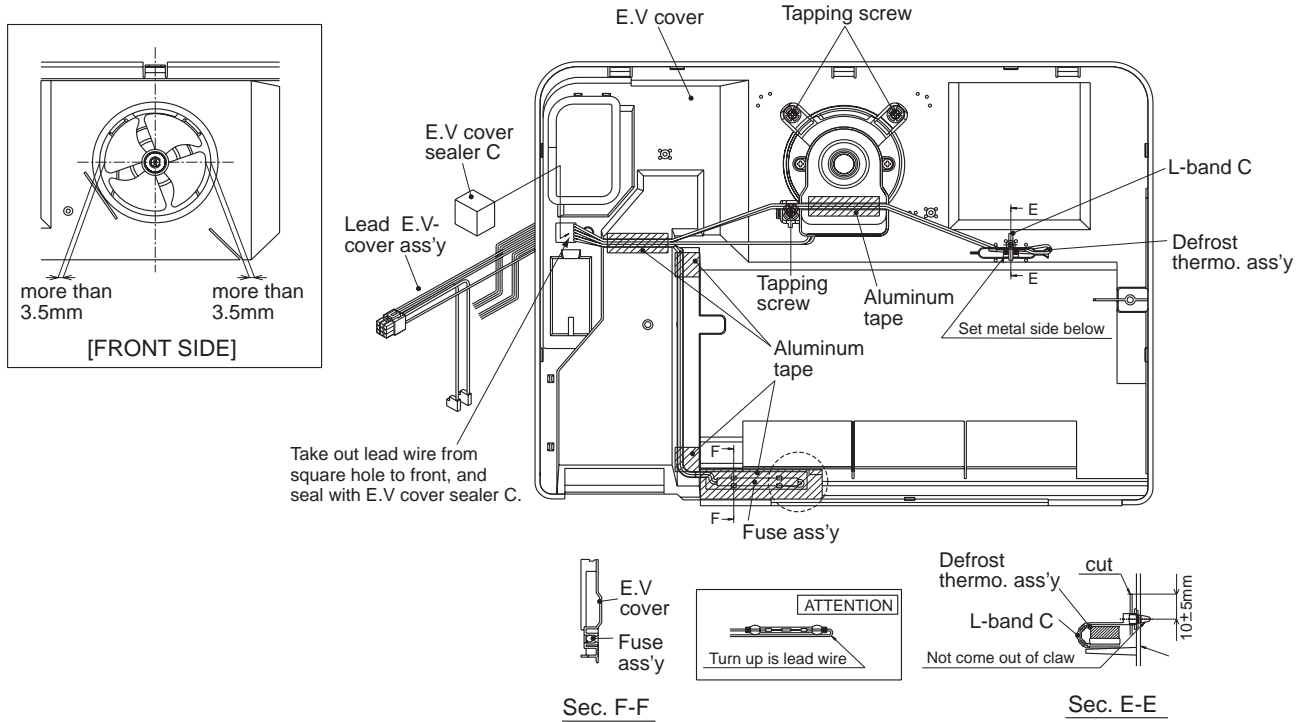
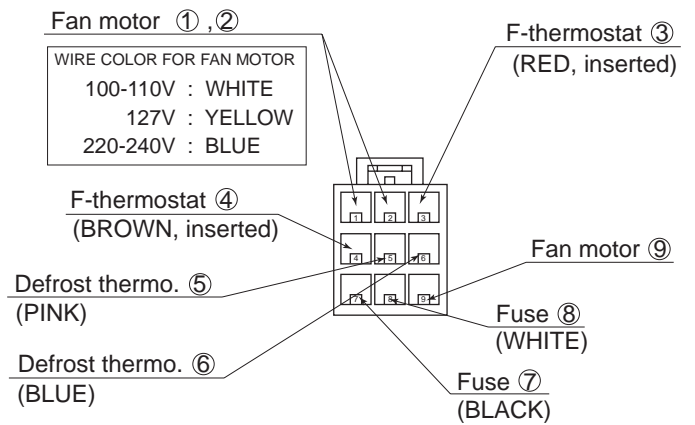


Figure A-17

(4) Inserting of pins



Note • Pins should be inserted surely, and check by pulling it.

Figure A-18

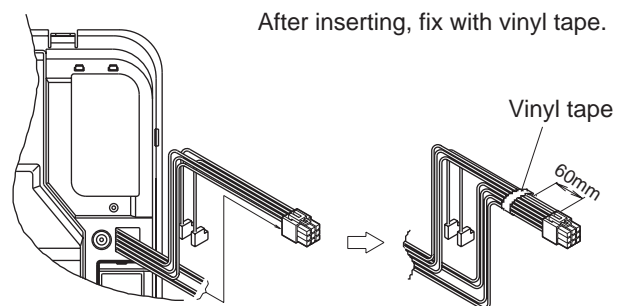


Figure A-19

(5) Setting of F-thermostat

(5)-1 Form capillary tube of F-thermostat.

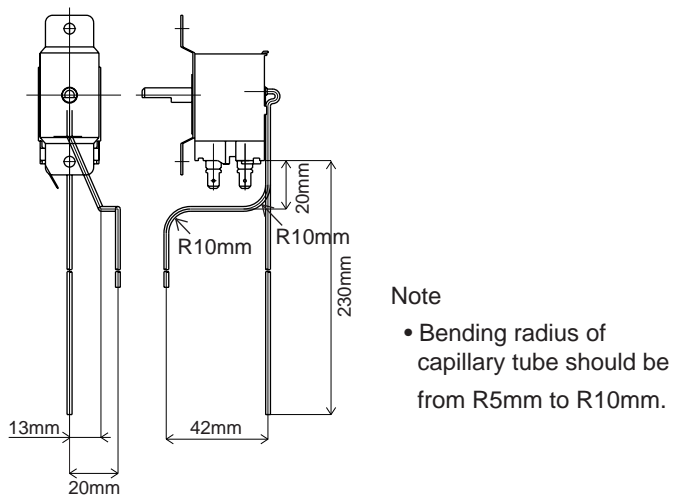


Figure A-20

(5)-2 Insert terminal of Lead EV-cover ass'y.

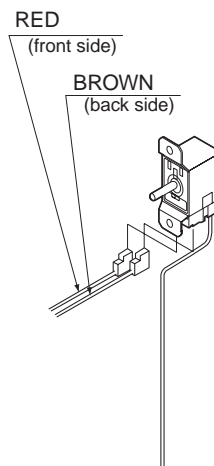


Figure A-21

(5)-3 Set to E.V cover.

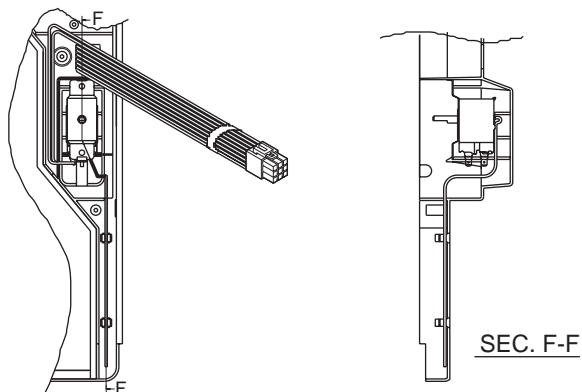


Figure A-22

COOLING UNIT

- Mark: Refrigerant flow
- × Mark: Brazing portion

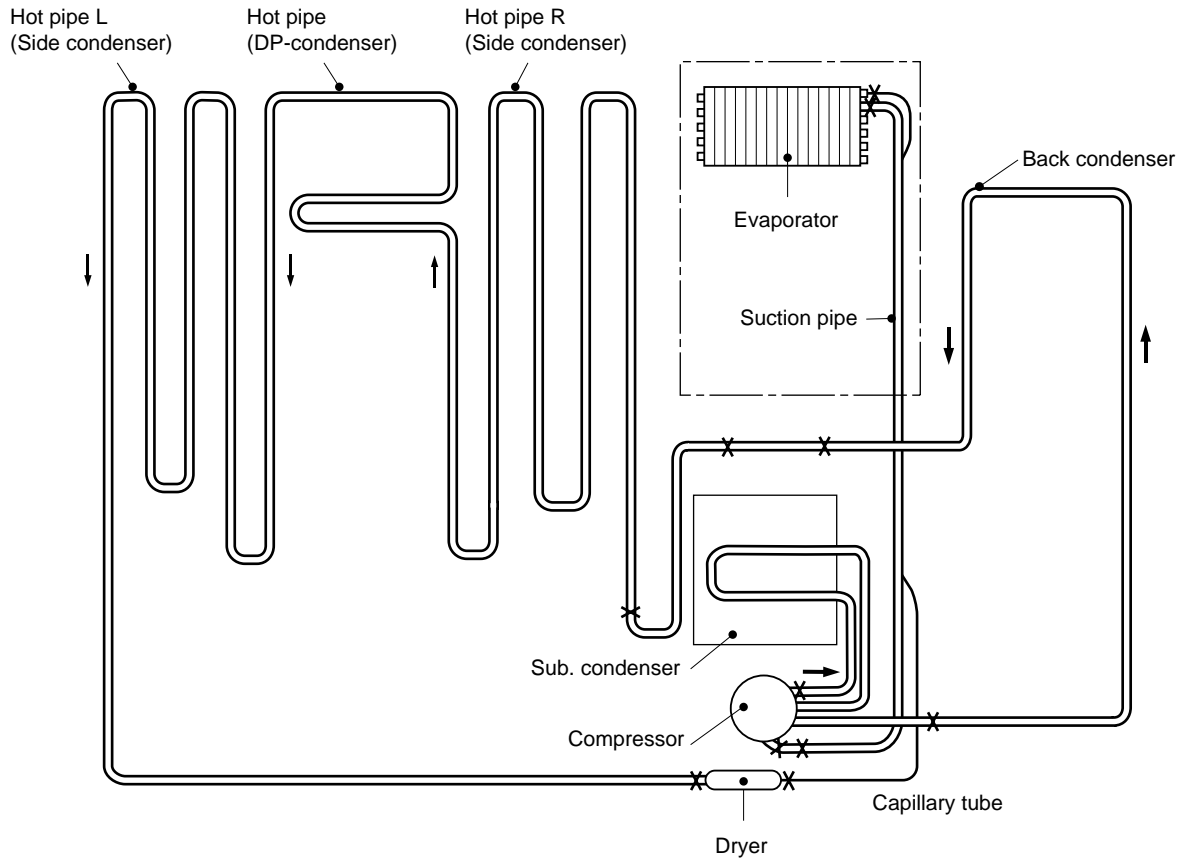


Figure C-1. Cooling unit

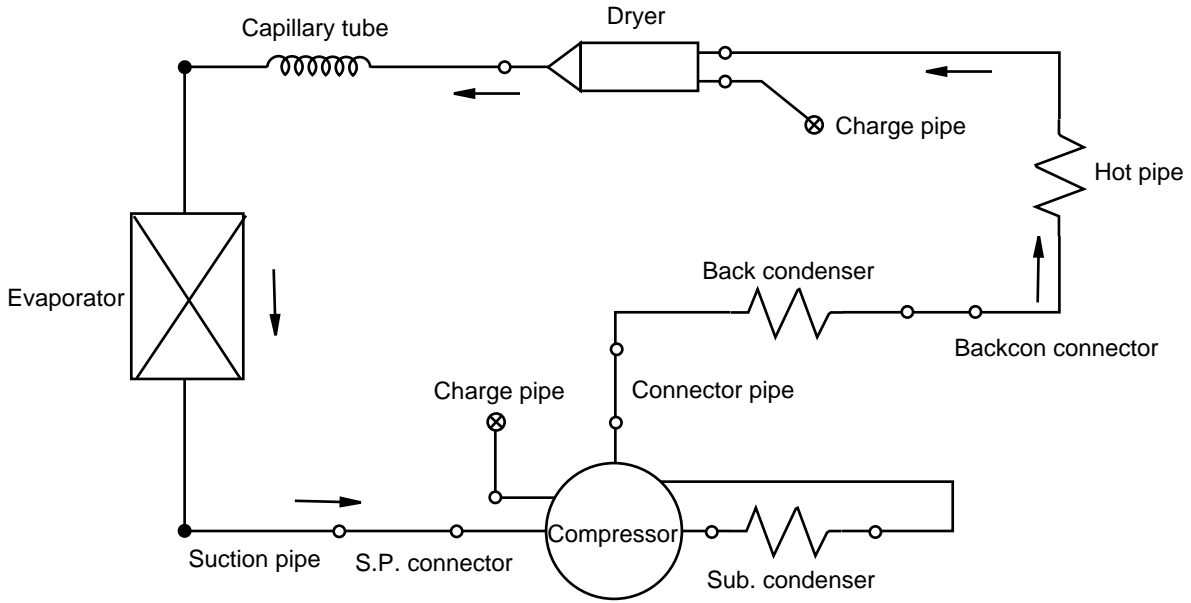


Figure C-2. Location

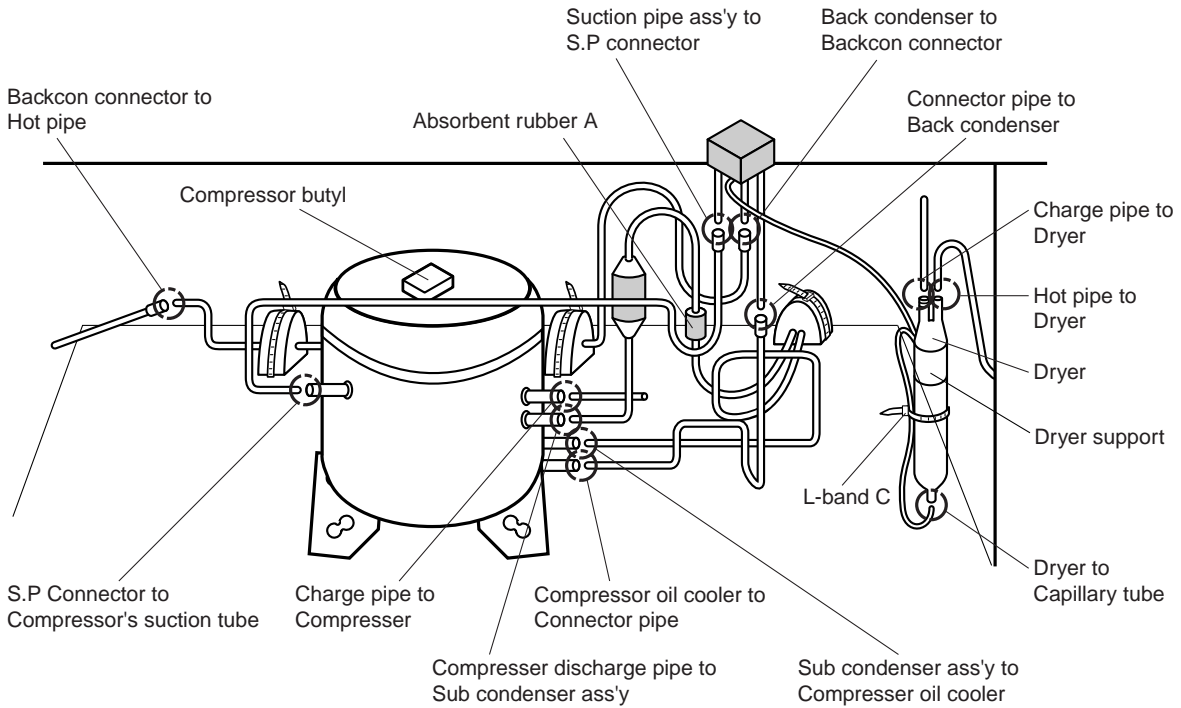


Figure C-3. Location