S/M No. : FR540NT010

DAEWOO

Service Manual

Refrigerator

Model:FR-540N
FR-540NT

✔ **Caution**

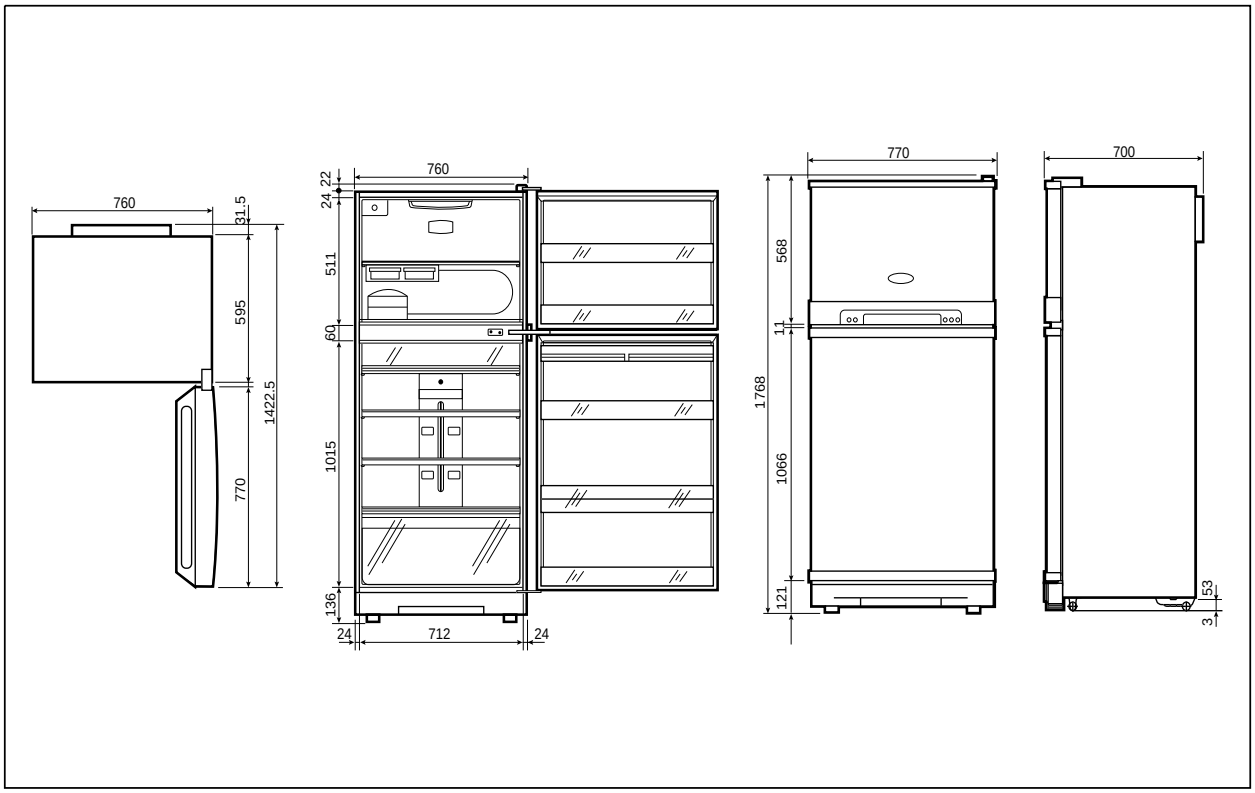
: In this Manual, some parts can be changed for improving, their performance without notice in the parts list. So, if you need the latest parts information,please refer to PPL(Parts Price List) in Service Information Center (http://svc.dwe.co.kr).

DAEWOO ELECTRONICS CO., LTD.

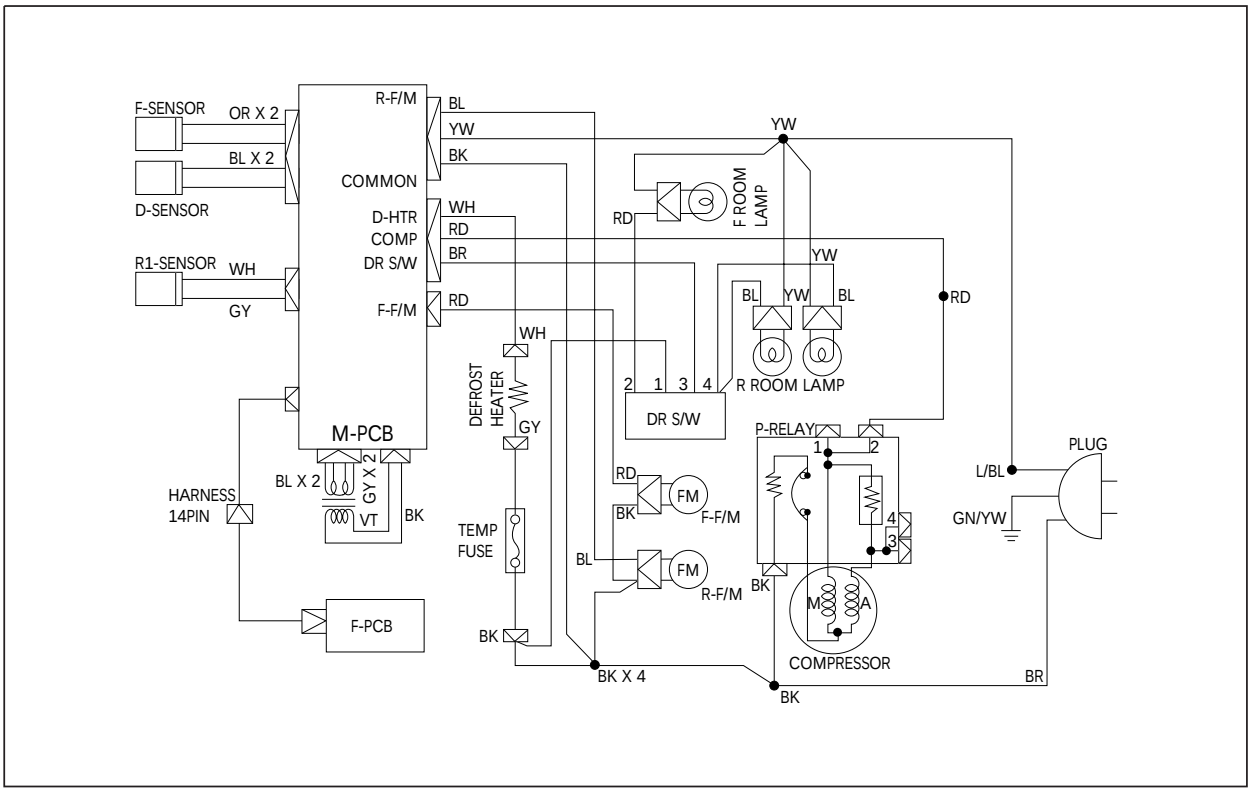
1. SPECIFICATION

MODEL NAME		FR-540N	FR-540NT
Refirgerant	R12	200g	200g
	R134a	170g	170g
Cooling System		Fan Cooling Convection	
Refrigeration System		Air Forced Convection	
Defrost System		Fin Evaporator Forced	
Defrost Operation		Automatic Start & Stop	
Cold Control		Adjustable Button	
Capacity	Freezer	119 ℓ	122 ℓ
	Refrigerator	315 ℓ	332 ℓ
	Total	434 ℓ	454 ℓ
External Dimension	Height	1768mm	1788mm
	Width	770mm	768mm
	Depth	700mm	718mm
Net Weight		89Kg	89Kg

2. EXTERNAL VIEW

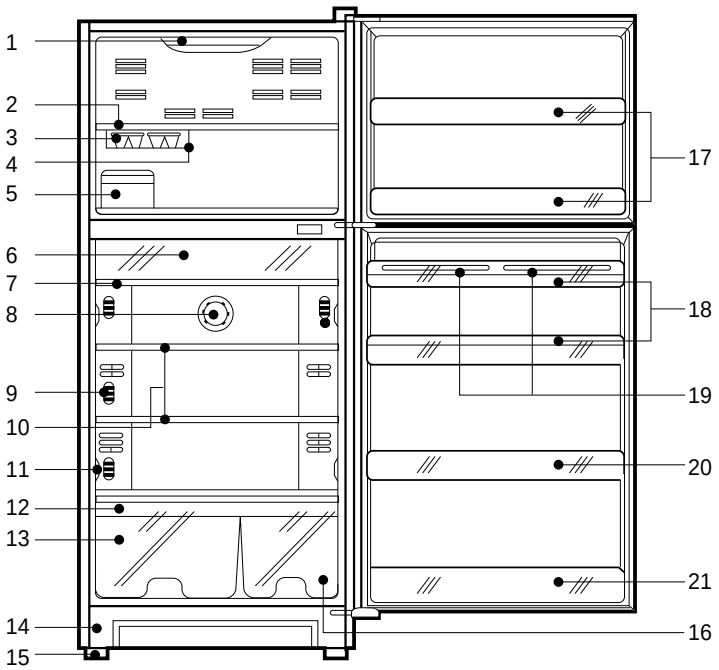


3. WIRE DIAGRAM



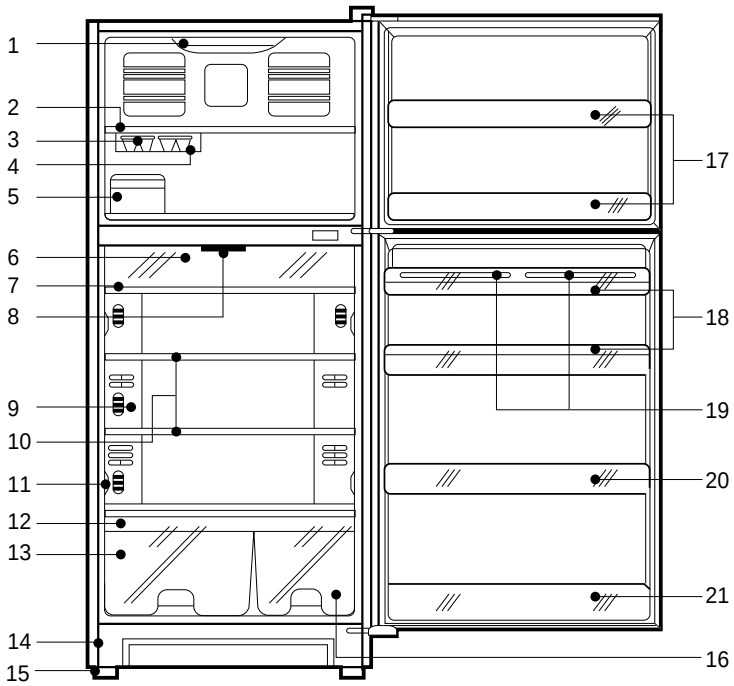
4. NAME OF PARTS

1. FR-540N



1 Freezer Lamp
2 Freezer Shelf
3 Case Icing
4 Guide Icing
5 Ice Box
6 Chilled Door
7 Chilled Case
8 Deodorant
9 Refrigerator Side Louver
10 Refrigerator Shelf
11 Cover Cubic Duct
12 Crisper Cover
13 Box Vegetable *L
14 Front Grille
15 Adjustable Foot
16 Box Vegetable *R
17 Freezer Pocket
18 Pocket(A)
19 Egg Case
20 Multi Pocket
21 Pocket(B)

2. FR-540NT



1 Freezer Lamp
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3 Case Icing
4 Guide Icing
5 Ice Box
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13 Box Vegetable *L
14 Front Grille
15 Adjustable Foot
16 Box Vegetable *R
17 Freezer Pocket
18 Pocket(A)
19 Egg Case
20 Multi Pocket
21 Pocket(B)

5. AIR FLOW DIAGRAM

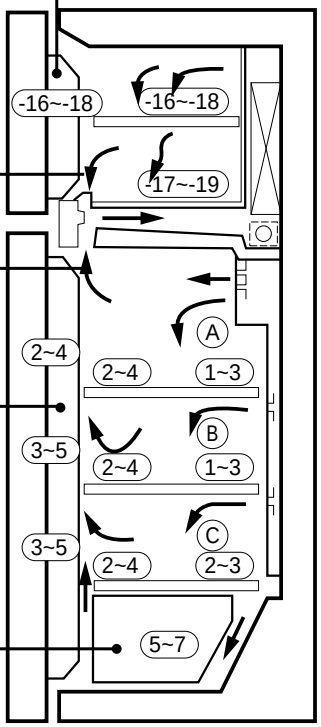
1. FR-540N

Freezer door pocket
Do not put ice cream or frozen food in freezer door pocket to store for a long term. Opening and shutting the door can rise up the temperature.

Cold air absorbing duct
Do not place food in front of the duct because it is the entrance of the cold air.

Refrigerator door pocket
Temperature is high even if the pocket is in the middle.
When storing margarine or cheese for one or two weeks, make use of the refrigerator shelf.

Crisper
Suitable in storing fruits or vegetable.
Wrapping can prevent from dryness.



Freezer room
Do not put any bottle such as beer or beverage because it can be frozen and broken.

Refrigerating room
This model is multi-flow type which flows out cold air from each shelf space. The hot air after making the refrigerator cold, flows into cooling system through the front upper part.

Do not put food having much moisture at the middle part of each shelf space ("A", "B" and "C" part). It can be frozen owing to the low temperature.

2. FR-540NT

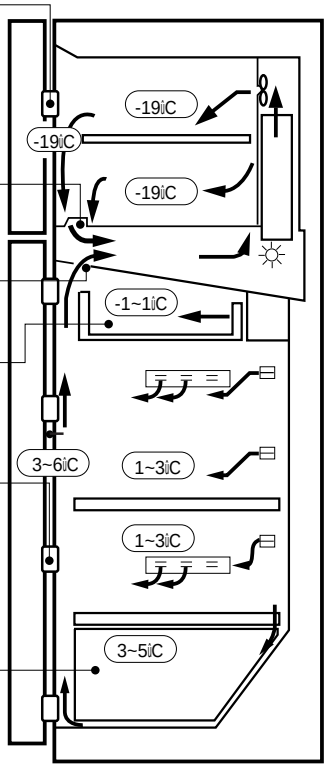
Freezer pocket
Please don't put long term storing items such as ice cream etc.
It might be melted because of opening the door frequently.

Inlet of cooling air
It should not be blocked with food etc. as it is the inlet where cooling air returns.

Chilled room
It is good for the storage of fishes and meats.

Refrigerator pocket
It is good for the storage of beer and beverage etc.

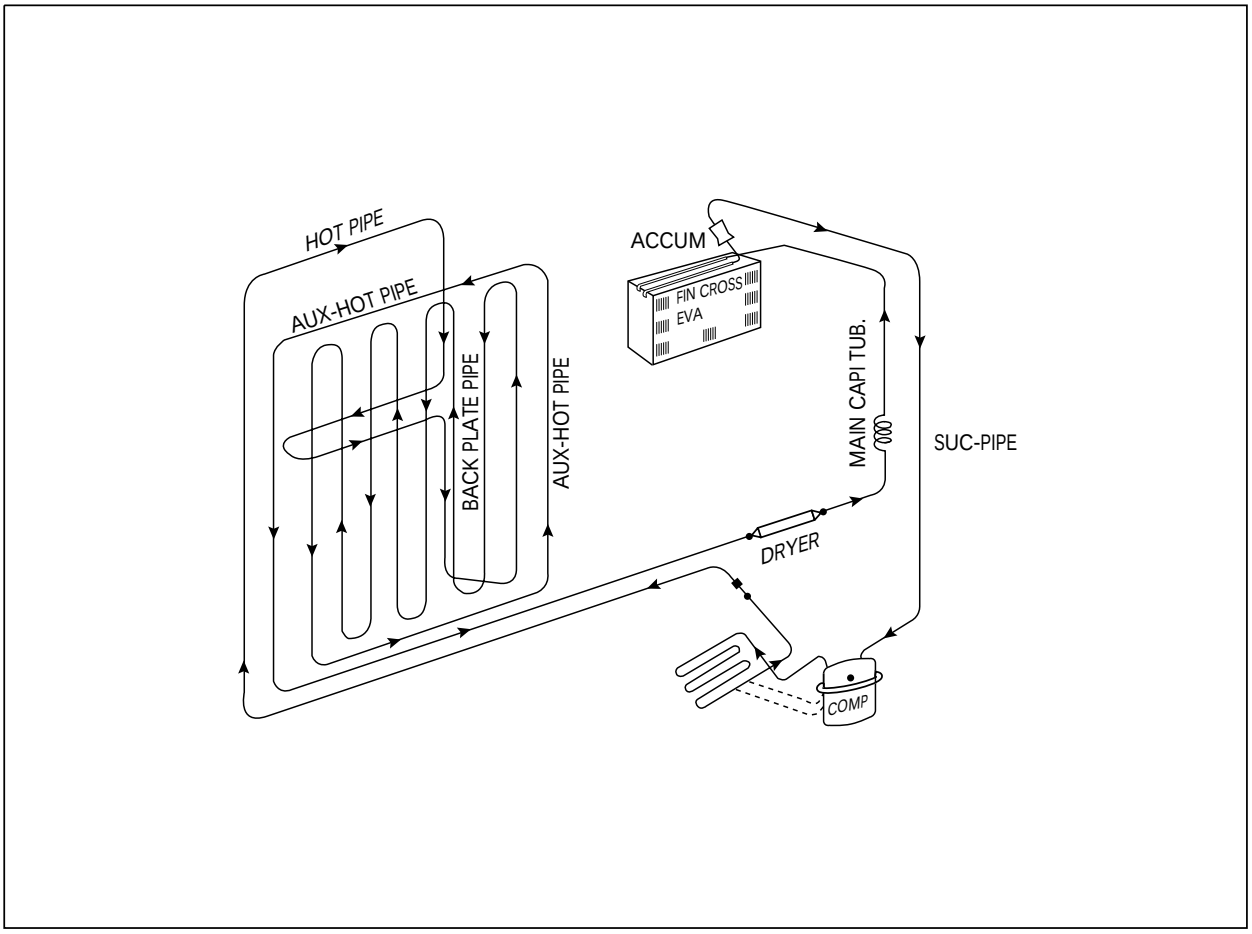
Crisper
It is suitable to store vegetable and fruit.
The moisture panel which is attached to the cover maintains the humidity properly.
Vegetable and fruit would be better to be packed with clean wrap foils.

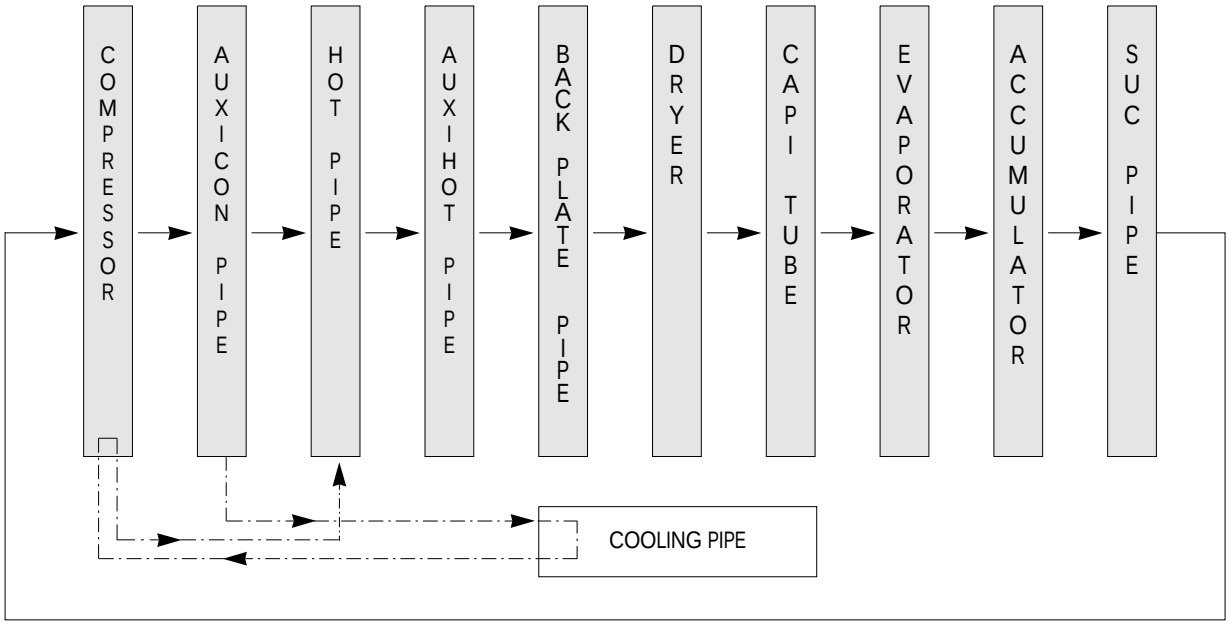


Freezer
Please don't put bottles such as beer, beverage etc.
It might be broken because of freezing.

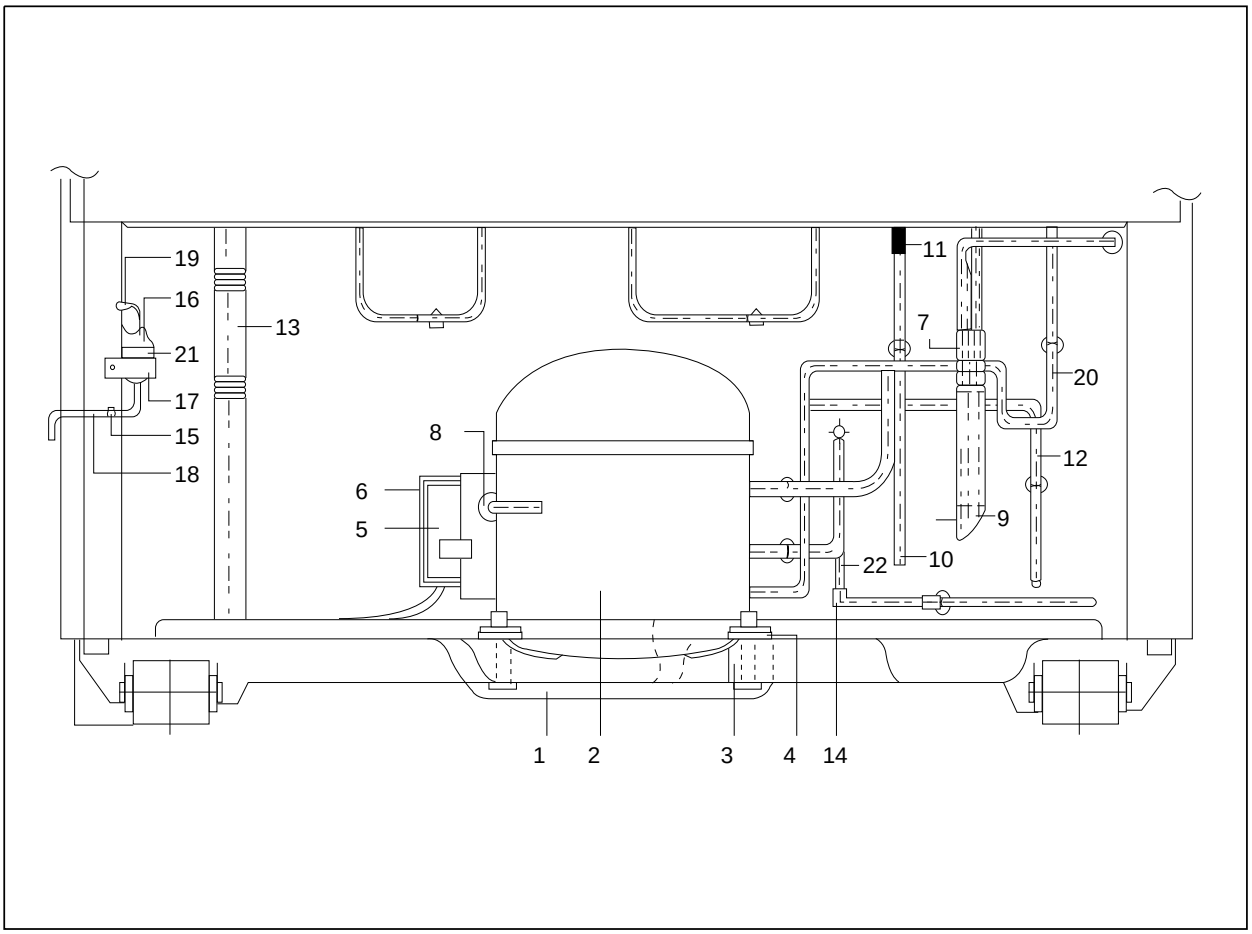
Multiple outlet of cooling air
Please don't put in vegetable etc, which contain moisture.
It might be frozen because of low temperature.

6. REFRIGERANT CYCLE DIAGRAM





7. MACHINE ROOM VIEW AND PART LIST



NO	PART NAME	NO	PART NAME	NO	PART NAME
1	BASE COMPRESSOR	9	DRYER	17	BIND WIRE
2	COMPRESSOR	10	PIPE CON (SUC)	18	PLUG POWER AS
3	ABSORBER COMPRESSOR	11	VIBRATIONPROOF GUM	19	SCREW MACHINE
4	WASHER COMP. *T	12	PIPE CON (AUX)	20	PIPE CON (HOT)
5	SWITCH P-RELAY AS	13	HOSE DRAIN (B)	21	TAPE OPP
6	BAND RELAY	14	VIBRATIONPROOF MASS	22	PIPE CON (P.A)
7	TAPE COTTON	15	SCREW TAPPING		
8	PIPE SERVICE	16	COVER CONNECTOR		

8. MAIN COMPONENTS

1. COMPRESSOR

Refrigerant	R12							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Comp. model	X	BL25YE-3	BL25YE-1	X	PL28YE-6	PL25YE-4	PL28YE-6	←
Part code	X	3952125C30	3952125C10	X	3956128C60	3956128C40	3956128C60	←
Strating type	X	CSR	CSR	X	RSCR	RSCR	RSCR	←

Refrigerant	R134a							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Comp. model	X	HBL25YG-3	HBL25YE-1	X	HSL27YE-5	X	HSL27YE-5	←
Part code	X	3952125L3A		X	3954127L50	X		←
Strating type	X	CSR	CSR	X	RSIR	X	RSIR	←

2. RELAY ASSEMBLY

Refrigerant	R12							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Relay model	X	419RHBYY-52	427THBYY-52	X	213THBYY-52	197SHBYY-52	X	213THBYY-52
Part code	X	3018105673	3018105690	X	3018105651	3018104102	X	3018105651

Refrigerant	R134a							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Relay model	X	445RHBZZ-52	445RHBZZ-52	X	276THBYY-52	X	276THBYY-52	←
Part code	X	3018101601	3018101600	X	3018105031	X	3018109901	3018105031

3. RUNNING CAPACITOR

Refrigerant	R12							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Spec.	X	300V/7μF	←	X	350V/5μF	←	X	350V/5μF
Part code	X	3816800400	←	X	400EL15110	←	X	400EL15110

Refrigerant	R134a							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Spec.	X	300V/7μF	←	X	X	X	X	X
Part code	X	3816800400	←	X	X	X	X	X

4. STARTING CAPACITOR

Refrigerant	R12							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Spec.	X	200V/100μF	←	X	X	X	X	X
Part code	X	401RD35050	←	X	X	X	X	X

Refrigerant	R134a							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Spec.	X	200V/100μF	←	X	X	X	290V/50uF	X
Part code	X	401RD35050	←	X	X	X	4124G62052	X

5. F-FAN MOTOR

Refrigerant	R12, R134a							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Spec.	X	3211DWBFN	3211DWBFN	X	3211DWBFR	3211DWBFJ	3211DWBFT	←
Part code	X	3011800840	3010027140	X	3011800930	3015902500	3011801020	←

6. R-FAN MOTOR

Refrigerant	R12, R134a							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Spec.	X	3211DWBFM	3211DWBFU	X	3211DWBFQ	3211DWBFE	3211DWBFS	←
Part code	X	3011800850	3011801000	X	3010027220	3015902600	3011801030	←

7. DEFROST HEATER

1) FR-540N

Refrigerant	R12, R134a							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Spec.	X	148W	←	X	148W	←	←	←
Part code	X	3012801300	←	X	3012801000	←	←	←

2) FR-540NT

Refrigerant	R12, R134a							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Spec.	X	148W	←	X	148W	X	X	148W
Part code	X	3012801300	←	X	3012801600	X	X	3012801600

8. LAMP ASSEMBLY

Refrigerant	R12, R134a							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Spec.	X	15W	X	X	15W	←	←	←
Part code	X	3013600010	X	X	3013600000	←	←	←

9. PCB TRANSFORMER

1) FR-540N

Refrigerant	R12, R134a							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Part code	X	5EPK057700	X	X	5EPK057609	5EPK042000	5EPK057030	5EPK057630

2) FR-540NT

Refrigerant	R12, R134a							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Part code	X	5EPK057613	X	X	5EPK057612	X	X	5EPK048030

10. MAIN PCB ASSEMBLY

1) FR-540N

Refrigerant	R12, R134a							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Spec.	X	N803	X	X	N803	←	←	←
Part code	X	3014303620	X	X	3014302540	←	←	←

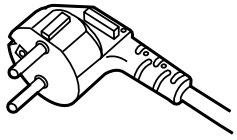
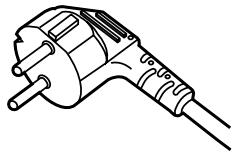
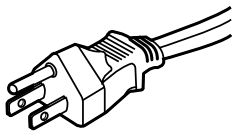
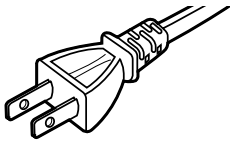
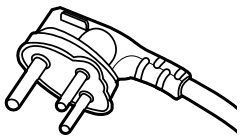
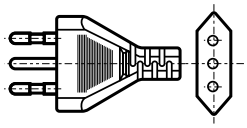
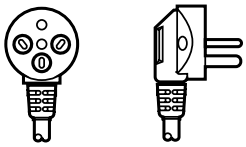
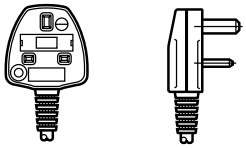
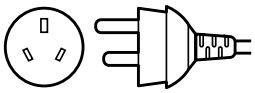
2) FR-540NT

Refrigerant	R12, R134a							
Voltage	**100V/50,60Hz**	**110V/60Hz**	**115, 120V/60Hz**	**127V/60Hz**	**220V/50Hz**	**220V/60Hz**	**230V/50Hz**	**240V/50Hz**
Spec.	X	N804	X	X	N804	X	X	N804
Part code	X	3014304210	X	X	3014304120	X	X	3014304120

11. DRYER

Refrigerant	R12	R134a
Spec.	10 g	15 g
Part code	3016800103	3016801100

POWER CORD SPECIFICATION

NO	SHAPE OF POWER CODE	PART CODE	DESCRIPTION	REMARK
1		3011315000	CP-2PIN	FOR EUROPEAN COUNTRY
2		401RA17200	CP-2PIN	FOR OTHER COUNTRY
3		4006D17101	KP-30	FOR AMERICA
4		401PD17101	KP-211	FOR JAPAN & TAIWAN
5		3011300801	BP-3PIN	
6		3011303010	#267	FOR CHILE
7		3011315310		FOR ISRAEL
8		3011303050	BS-1363A	FOR U.K, MIDDLE ASIA SINGAPORE & MALAYSIA
9		3011301200	KP-551/550	FOR CHINA & AUSTRALIA

* Upper power cord's part code is only for lead wire, without any kinds of terminal or housing.

9. DOOR COLOR SPECIFICATION

1. FR-540N

1. ASSEMBLY URETHAN FREEZER DOOR

Refrigerant	R12				R134a			
Key type	Dull lamina sheet	High glossy lamina sheet	Normal PCM	High glossy bright PCM	Dull lamina sheet	High glossy lamina sheet	Normal PCM	High glossy bright PCM
Part code	X	PFDT1UJ110	X	X	X	PFDT1UJ115	X	X

2. ASSEMBLY URETHAN REFRIGERATOR DOOR

Refrigerant	R12				R134a			
Color type	Dull lamina sheet	High glossy lamina sheet	Normal PCM	High glossy bright PCM	Dull lamina sheet	High glossy lamina sheet	Normal PCM	High glossy bright PCM
Part code	X	PFDU2UJ110	X	X	X	PFDU2UJ115	X	X

2. FR-540NT

1. ASSEMBLY URETHAN FREEZER DOOR

Refrigerant	R12				R134a			
Color type	Dull lamina sheet	High glossy lamina sheet	Normal PCM	High glossy bright PCM	Dull lamina sheet	High glossy lamina sheet	Normal PCM	High glossy bright PCM
Part code	X	PFDT1UJ070	X	X	X	PFDT1UJ075	X	X

2. ASSEMBLY URETHAN REFRIGERATOR DOOR

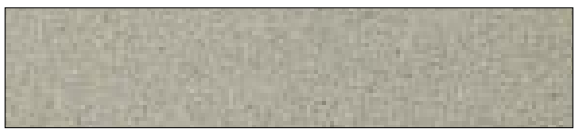
Refrigerant	R12				R134a			
Color type	Dull lamina sheet	High glossy lamina sheet	Normal PCM	High glossy bright PCM	Dull lamina sheet	High glossy lamina sheet	Normal PCM	High glossy bright PCM
Part code	X	PFDU2UJ070	X	X	X	PFDU2UJ075	X	X

COLOR TABLE

1. PCM type

NO	COLOR CHIP	COLOR NAME
1		P/WITH (WH069)
2		'94 L/GRAY (GY158)
3		'95 L/GRAY (GY259)
4		'94 M/GRAY (GY331)
5		'95 M/GRAY (GY335)
6		'97 M/GRAY (GY267)
7		M. D/GRAY (GY750)
8		N/BLUE (BL718)
9		MINT GREEN (GN206)
10		'97 BEIGE (BE215)

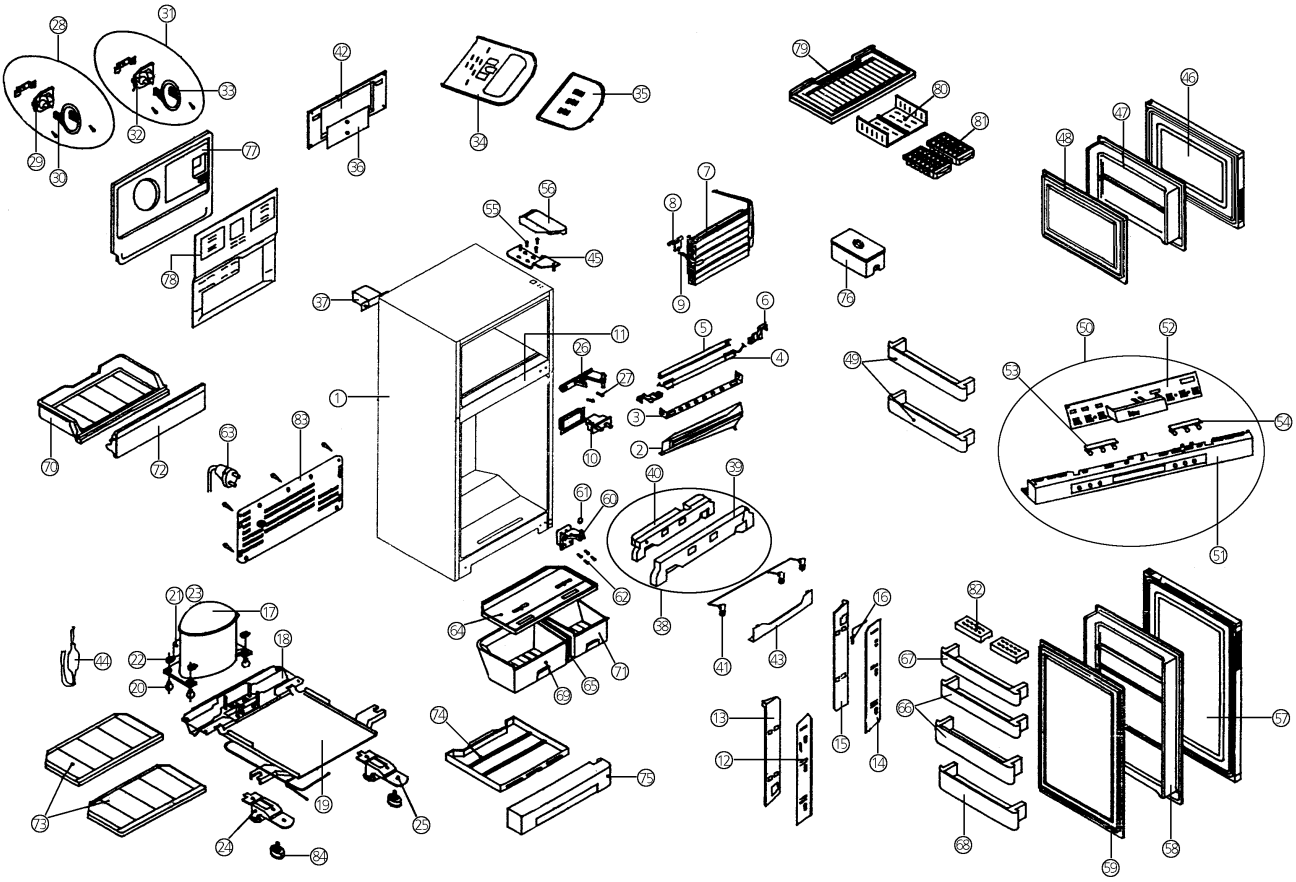
2. Lamina sheet type

NO	COLOR CHIP	COLOR NAME
1		P/WITH (WH069)
2		'94 L/GRAY (GY158)
3		'95 L/GRAY (GY259)
4		'94 M/GRAY (GY331)
5		'95 M/GRAY (GY335)
6		'97 M/GRAY (GY267)
7		M. D/GRAY (GY750)
8		N/BLUE (BL718)
9		MINT GREEN (GN206)
10		S/GOLD
11		G/GREEN

10. EXPLODED VIEW AND PARTS LIST

1. FR-540N

1. Exploded view



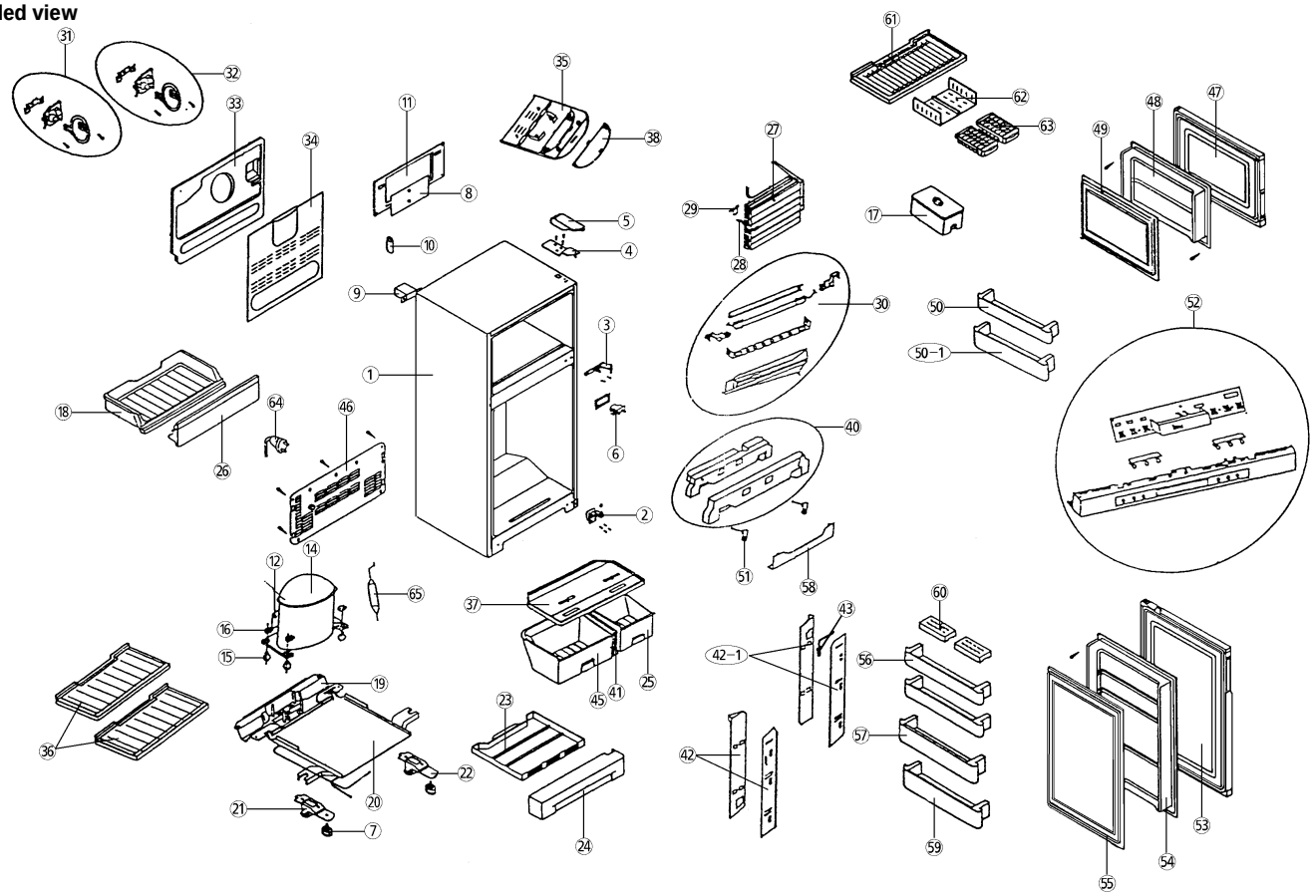
2. Parts list

NO	PART CODE	PART NAME	DESCRIPTION	QUANTITY	REMARK
1		ASSY URT CAB		1	
2	4018G57110	GUIDE DRN *O		1	
3	3011408100	COVER HTR *U		1	
4		HEATER GLAS TUBE AS		1	REFER TO # 10
5	3011408200	COVER HTR *T		1	
6	4010G19010	FIXTURE DEFR HTR		2	
7	3017000701	EVAPORATOR SAS		1	
8	3014801201	SENSOR F D AS	PTC-KD38-FD6 ABS TYPE	1	
9	3017200010	FUSE TEMP AS		1	
10	3018100010	SWITCH DR	DSD-5	1	
11	3014502101	PLATE DV AS		1	
12	3018901902	LOUVER R *S *L	ABS+CERAMIC	1	
13	3013312400	INSULATOR R *S *L	F-PS	1	
14	3018901911	LOUVER R *S *R	ABS +CERMIC	1	
15	3013312410	INSULATOR R *S *R	F-PS	1	
16	3014801001	SENSOR R1 AS		1	
17		COMPRESSOR		1	REFER TO # 9
18	3010302512	BASE COMP SAS		1	
19	3014502304	PLATE AXCON AS		1	
20	3010100201	ABSORBER COMP	NR H=40	4	
21		SWITCH P RELAY AS		1	REFER TO # 9
22	4019H09030	SPECIAL WASHER	SWRH	4	
23	3816100100	RELAY BAND	SK-5 0.7T ZN-3-A	1	
24	3010604802	BRACKET ADJ FT *L AS		1	
25	3010604902	BRACKET ADJ FT *R AS		1	
26	3012900620	HINGE *M AS	D/C	1	
27	3016000220	SPECIAL SCREW	M6 x 16 SWCH22A	2	
28		MOTOR F AS		1	
29		MOTOR F		1	REFER TO # 10
30	3018500100	MOUTH BELL	HIPS	1	
31		MOTOR R AS		1	
32		MOTOR R		1	REFER TO # 10
33	3018500100	MOUTH BELL	HIPS	1	
34	3011406600	COVER F M/F DUCT A	ABS	1	
35	3015500400	WINDOW F	G.E, PC-121R	1	
36		PCB MAIN AS		1	REFER TO # 11
37		TRANS POWER		1	REFER TO # 11
38	3010029791	ASSY CHILD/D		1	
39	3011417901	COVER CHILD/D	HIPS	1	
40	3013312600	INSULATOR CHILD/D		1	
41	3017901311 x	SOCKET R LAMP AS		1	

NO	PART CODE	PART NAME	DESCRIPTION	QUANTITY	REMARK
42	3011410000	COVER M/PCB BOX AS		1	
43	3015501200	WINDOW R	SAN	1	
44		DRYER AS		1	REFER TO # 11
45	3012901400	HINGE *T AS		1	
46		ASSY URT *T DOOR		1	REFER TO # 13
47	3017402202	LINER F DR	ABS 1.4 x 785 x 1140	1	
48	3012300600	GASKET F DR AS	PVC-S	1	
49	3019002100	POCKET F *T	GPPS T3.0	2	
50	3010032020	ASSY FCP		1	
51	3014202610	PANEL F CONTL	ABS T2.3	1	
52	3014303720	PCB *F AS		1	
53	3016300040	BUTTON FCP A	ABS+AL COATING	1	
54	3016300080	BUTTON FCP B	ABS+AL COATING	1	
55	3016001800	SPECIAL BOLT	M6 x L16	4	
56	3011408700	COVER *T HI	PP	1	
57		ASSY URT *U DOOR		1	REFER TO # 13
58	3017402501	LINER R DR	ABS 1.4 x 785 x 1085	1	
59	3012300500	GASKET R DR AS	PVC-S	1	
60	3012900401	HINGE *U AS	MF-ZN5-C	1	
61	7400108511	WASHER PLAIN	PW-1.5T 8.5/20 MFZN	1	
62	3016000600	SPECIAL SCREW	M6 x 20	4	
63		CORD POWER AS		1	REFER TO # 12
64	3011420010	COVER V/CASE AS		1	
65	3014504600	PLATE VEGETB BOX DV	GPPS	1	
66	3019002000	POCKET MULT	GPPS T3.0	2	
67	3019004100	POCKET BOTL A	GPPS	1	
68	3019002600	POCKET BOTL B	GPPS T3.0	1	
69	3010507400	CASE VEGETB *L	GPPS	1	
70	3011102300	CASE CHILD	GPPS T3.5	1	
71	3010507410	CASE VEGETB *R	GPPS	1	
72	3011705620	DOOR CHILD	GPPS	1	
73	3017806800	SHELF R	SAN T3.5	2	
74	4010G30661	BOILD	PP T1.3	1	
75	3011408501	COVER CAB BRKT	ASB	1	
76	3010508401	BOX ICE AS	SAN	1	
77	3013312910	INSULATOR F LUVR AS		1	
78	3018904000	LOUVER F AS		1	
79	3017804700	SHELF F	GPPS	1	
80	3012500510	GUIDE ICING CASE	GPPS	1	
81	3011102100	CASE ICING	PP	2	
82	3011103900	CASE EGG	GP	2	
83	3012400502	GRILLE	PP	1	
84	3010010900	ASSY ADJ FT PAKG		1	

2. FR-540NT

1.Exploded view



2. Parts list

✔ **Caution :** In this Service Manual, some parts can be changed for improving, their performance without notice in the parts list. So, if you need the latest parts information, please refer to PPL (Parts Price List) in Service Information Center (http://svc.dwe.co.kr)

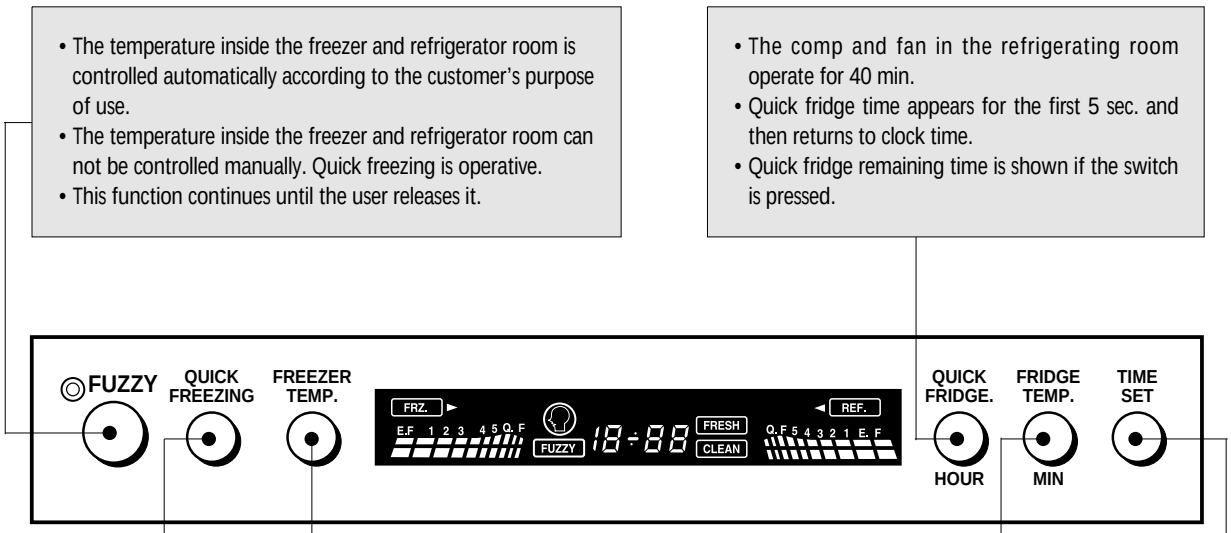
NO	PART CODE	PART NAME	DESCRIPTION	QUANTITY	REMARK
1		CAB URT AS		1	
2	3012900600	HINGE *U AS		1	
3	3012900620	HINGE *M AS	D/C	1	
4	3012900500	HINGE *T AS		1	
5	3011405400	COVER HINGE *T	PP	1	
6	3018100010	DOOR S/W	2 BUTTON 4PIN	1	
7	3010010900	FOOT ADJ AS		2	
8		M-PCB AS		1	REFER TO # 11
9		DOWN TRANS		1	REFER TO # 11
10		CAPACITOR		1	REFER TO # 9
11	3010504200	BOX M-PCB AS		1	
11-1	3011410000	COVER M-PCB BOX AS		1	
12		P-RELAY AS		1	REFER TO # 9
14		COMPRESSOR		1	REFER TO # 9
15	3010100201	ABSORBER COMP	NR H=40	4	
16	4019H09030	WASHER SPECL	SWRH	4	
17	3010508400	ICE BOX AS		1	
18	3011102300	CASE CHILD	GPPS T3.5	1	
19	3010302512	BASE COMP AS		1	
20	3014502304	PLATE AUX CON AS		1	
21	3010604802	BRACKT ADJFT *L		1	
22	3010604902	BRACKT ADJFT *R		1	
23	4010G30661	BOILD	PP T1.3	1	
24	3011400600	COVER CAB-BRAK		1	
25	3010507410	BOX VEGTB *R	GPPS	1	
26	3011705620	CHILD DR	SAN	1	
27	3017000701	EVAPORATIOR AS		1	
28	3017200010	FUSE TEMP AS	SW-103T 77˚C 10A	1	
29	3014801201	SENSOR F-D AS	PTC-KB38-FD6 AB TYPE	1	
30		GLASS TUBE HTR AS		1	REFER TO # 10
31		F FAN MOTOR AS		1	
31-1		MOTOR FAN F		1	REFER TO # 10
31-2	3011800400	FAN	ABS Ø 110	1	
32		R FAN MOTOR AS		1	
32-1	3011800400	MOTOR FAN R		1	REFER TO # 10
32-2	3011800400	FAN	ABS Ø 110	1	
33	3013312910	INSU F LOUVER AS	F-PS	1	
34	3018904000	LOUVER F AS		1	
35	3011406600	ASSY F M/F DUCT		1	
35-1		LAMP AS		1	REFER TO # 10
36	3017806800	SHELF R	SAN	2	

NO	PART CODE	PART NAME	DESCRIPTION	QUANTITY	REMARK
37	3011420010	COVER VEGTB BOX AS	CV+F+KNOB+NAMP	1	
38	3017804700	SHADE F		1	
40	3010029791	CHILD DUCT AS		1	
41	3014504600	PLT VEGTB BOX-DV		1	
42	3018901902	LOUVER R SIDE *L AS	ABS+CERAMIC	1	
42-1	3018901911	LOUVER R SIDE *R AS	ABS+CERAMIC	1	
43	3014801001	R1 SENSOR AS	NBM-K43-D12 PBN-43	1	
45	3010507400	BOX VEGTB *L	GPPS	1	
46	3012400502	GRILLE	PP	1	
47		F DOOR URT AS		1	REFER TO # 13
48	3017404300	LINER *F DOOR	ABS 1.4T	1	
49	3012303000	GASKET F DOOR	PVC-S	1	
50	3019002100	POCKET F *T	GPPS T3.0	1	
50-1	3019002200	POCKET F*U	GPPS T3.0	1	
51	3017901311	SOCKET R LAMP AS	AC 250V 1A	2	
51-1		LAMP AS		2	REFER TO # 10
52	3014201420	CONTROL PANEL *F AS		1	
52-1	3014304220	F-PCB AS		1	
53		R DOOR URT AS		1	REFER TO # 13
54	3017404400	LINER R DOOR	ABS 1.4T	1	
55	3012303100	GASKET R DOOR	PVC-S	1	
56	3019002000	POCKET MULTI	GPPS T3.0	2	
57	3019000200	POCKET R L	SAN	1	
58	3015501200	R WINDOW	SAN	1	
59	3019002600	POCKET BOTTLE *B	GPPS T3.0	1	
60	3011103900	CASE EGG	GP	2	
61	3017804700	F SHELF		1	
62	3012500510	GUIDE ICING CASE	SAN HF-5661	1	
63	3011102100	CASE ICING	PP	2	
64		CORD POWER AS		1	REFER TO # 12
65		DRYER ASS		1	REFER TO # 11

11. ELECTRONIC FUNCTION

1. FR-540N

1) How to use the panel



- The temperature inside the freezer and refrigerator room is controlled automatically according to the customer's purpose of use.
- The temperature inside the freezer and refrigerator room can not be controlled manually. Quick freezing is operative.
- This function continues until the user releases it.

- The comp and fan in the refrigerating room operate for 40 min.
- Quick fridge time appears for the first 5 sec. and then returns to clock time.
- Quick fridge remaining time is shown if the switch is pressed.

- Freezer Temp. can be controlled by the user.
- Not controllable during "FUZZY" mode.
- Initial mode is "3" and pressing the button changes the temp. range as follows:

→ 3 → 4 → 5 → E.F → 1 → 2 ┐

- Fridge Temp. can be controlled easily from outside.
- Not controllable during 'FUZZY' mode.
- Initial mode is "3" and pressing the button changes the temp. range as follows:

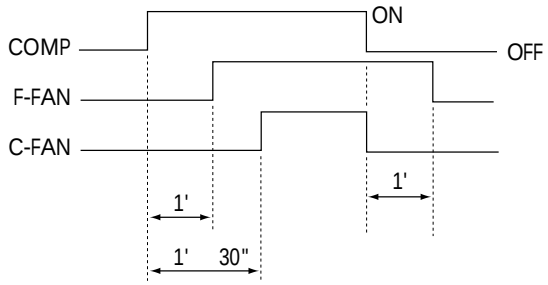
→ 3 → 4 → 5 → E.F → 1 → 2 ┐

- The comp operates continuously for 150 min. during quick freezing.
- Quick freezing time appears for the first 5 sec and then returns to clock time.
- Quick freezing remaining time is shown if the switch is pressed.

- This button is for setting clock time. "HOUR"and "MIN." can be adjusted at the same time.
- Adjust the time by pressing "HOUR" and "MIN." button.

2) Function table

NO.	Control Function	Control Objects	Contents	Remark
1	Initial operation	Time Temperature control	1. In the initial operation, the temperature of FRZ. and REF. automatically set at 3/3. 2. The clock is set at 12:00. 	
2	Clock function	LED	1. The time is set at 12:00 in initial operation. 2. Time setting 1) When the time set button is pressed, the hour/min. indicator blinks with 0.5 sec. interval. 2) Adjust the time with hour button and min. button. 3) If the clock is set to desired time, press the time set button again. 4) If the hour and min. button are not used in 5 sec. during the blink, and then the clock setting function is canceled automatically. 	
3	Freezer temperature control	COMP. F-fan C-fan LED	1. The temperature can be controled by 6 steps with the freezer temperature button. 3 → 4 → 5 → E.F → 1 → 2 → 3  2. The bar LED will indicate according to the freezer temperature button. The bar LED is fully illuminated once and then illuminated up to the each temperature level. 3. A single upper bar LED on/off according to the COMP. off/on. COMP ON ▶  COMP OFF ▶ 	

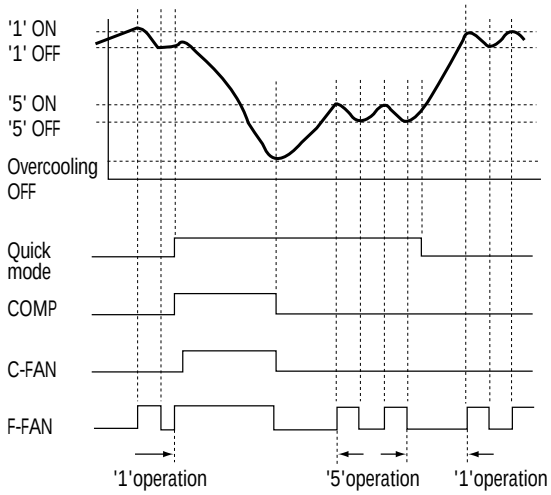
<table>
<tr><th>NO.</th><th>Control Function</th><th>Control Objects</th><th>Contents</th><th>Remark</th></tr>
<tr><td></td><td></td><td></td><td>
4. Time chart of each device.


5. COMP. on/off temperature (Temperature ˚C/Resistance kΩ)
<table>
<tr><th></th><th>E.F</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr>
<tr><td>COMP. OFF</td><td>-21/23.6</td><td>-21/23.6</td><td>-22/25.0</td><td>-23/26.4</td><td>-24/27.9</td><td>-25/29.6</td></tr>
<tr><td>COMP.ON</td><td>-16/17.9</td><td>-16/17.9</td><td>-17/18.9</td><td>-18/20.0</td><td>-19/21.1</td><td>-20/22.3</td></tr>
</table>
</td><td></td></tr>
<tr><td>4</td><td>Refrigerator temperature control</td><td>R-fan LED</td><td>
1. The temperature can be controled by 6 steps with the fridge temperature button.
3 → 4 → 5 → E.F → 1 → 2 → 3

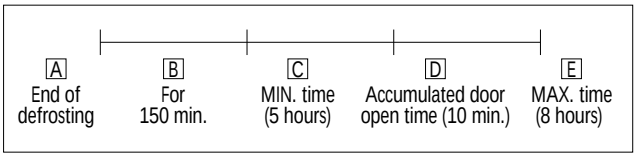

2. The bar LED will indicate according to the fridge temperature button. The bar LED is fully illuminated once and then illuminated up to the each temperature level.
3. A single upper bar LED on/off according to the R-fan off/on.
R-FAN ON ▶


R-FAN OFF ▶

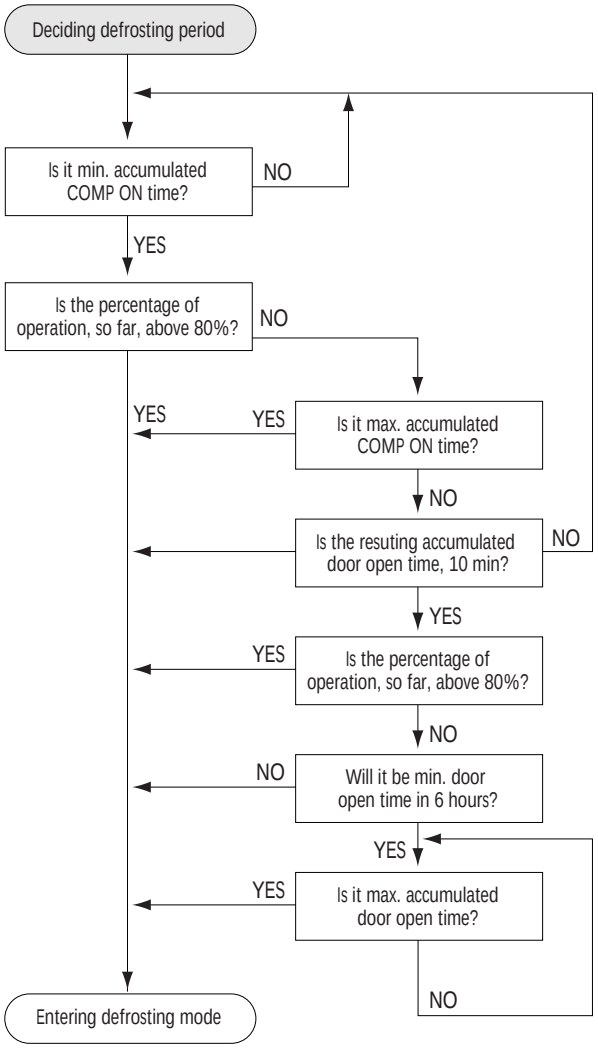

4. Range of R-fan on/off
(Temperature ˚C/Resistance kΩ)
<table>
<tr><th></th><th>E.F</th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th></tr>
<tr><td>R-fan off</td><td>0.7/29.1</td><td>0.7/29.1</td><td>-0.3/30.3</td><td>-1.3/31.6</td><td>-2.3/33.2</td><td>-3.3/34.8</td></tr>
<tr><td>R-fan on</td><td>2.05/27.4</td><td>1.05/28.7</td><td>0.05/30.0</td><td>-0.95/31.1</td><td>-1.95/32.7</td><td>-2.95/34.2</td></tr>
</table>
5. In case of D-sensor error, R-fan operation is connected with the COMP.
6. When the COMP. is off and the temperature of the D-sensor is above -3˚C, the R-fan turns off regardless of the R-sensor.
7. The R2-sensor is only used in detecting low cooling.
</td><td></td></tr>
</table>

NO.	Control Function	Control Objects	Contents	Remark
5	Quick freezing	COMP. F-fan C-fan LED	1. If quick freezing button is pressed, the clock mode is changed to quick freezing time mode.  2. The bar LED is illuminated 3 times in a row.  Quick mode ON  After 30 min.  After 60 min.  After 90 min. 3. The COMP., F-fan operate continuously for 150 min. 4. If the quick freezing button is pressed during quick freezing mode, the remaining time is indicated on the clock indicator for 5 sec. (After 5 sec. it returns to the current time) 5. If press the quick freezing button twice in 5 sec., then quick freezing mode is canceled.	
6	Quick fridge	COMP. F-fan C-fan R-fan LED	1. If press the quick fridge button, the clock mode is changed to quick fridge time mode. (Quick fridge mode is worked for 40 min.)  2. Time chart of the quick fridge mode. 	: ON : OFF

<table>
<tr><th>NO.</th><th>Control Function</th><th>Control Objects</th><th>Contents</th><th>Remark</th></tr>
<tr><td></td><td></td><td></td><td>3. The bar LED is illuminated 3 times in a row.
 
Quick mode ON
 
After 30 min.
 
After 60 min.
 
After 90 min.
4. If the quick fridge button is pressed during the quick fridge mode, then remaining time is indicated on the clock indicator for 5 sec. (After 5sec., it returns to the current time.)
5. If press the quick fridge button twice in 5 sec. then quick fridge mode is canceled.</td><td></td></tr>
<tr><td>7</td><td>Fuzzy</td><td>COMP.
Fan
C-fan
R-fan
LED</td><td>1. If the fuzzy button is pressed, the fuzzy indicator is illuminated and the FRZ. and REF. indicator is turned off.
 
2. The bar LED is fully illuminated twice in a row, and then it is illuminated according to the temperature range.
3. If the fuzzy button is pressed again, the fuzzy function is canceled. At the same time, the freezer and fridge temperature level is set 3/3.
4. Control the freezer and fridge temperature during the fuzzy function.
1) After the power is loaded, accumulated door (freezer and fridge door) open time is recorded every 2 hours for 24 hours.
➧ The data are recorded until the power is off.
2) Averaged data are classified according to following table.
<table>
<tr><th>Accumulated door open time</th><th>Data classification</th><th>Remark</th></tr>
<tr><td>Below 30 sec.</td><td>MIN. unit(good condition)</td><td>Rarely opened</td></tr>
<tr><td>30 sec.~3 min.</td><td>MID. unit</td><td></td></tr>
<tr><td>Above 3 min.</td><td>MAX. unit (bad condition)</td><td>Frequently opened</td></tr>
</table>
3) In fuzzy function, it operates by predicting the condition in 2 hours with above data.
<table>
<tr><th>Data classification</th><th>Freezer/Fridge temperature</th><th>Remark</th></tr>
<tr><td>MIN. unit</td><td>2/3</td><td>‘3’ when outside temperature is above 26˚C</td></tr>
<tr><td>MID. unit</td><td>3</td><td></td></tr>
<tr><td>MAX. unit</td><td>3/5</td><td>‘3’ when outside temperature is below 14˚C</td></tr>
</table></td><td>In fuzzy mode, quick mode is operative.</td></tr>
</table>

<table>
<tr><th>NO.</th><th>Control Function</th><th>Control Objects</th><th>Contents</th><th>Remark</th></tr>
<tr><td>8</td><td>Determination of defrost</td><td></td><td>
1. Defrost function is started by the following 4 conditions.
Condition 1 : Accumulated COMP. on time (MAX. and MIN. time)
Condition 2 : Accumulated door open time (different from the accumulated door open time in fuzzy function)
Condition 3 : COMP. operation ratio (calculated by the time divided by 150 min. after defrost)
Condition 4 : The door open data every 2 hours interval same as fuzzy function
2. Method of determination defrost


¢..Order of judgement
1) In C, it goes directly to defrost mode if the COMP. operation ratio from B to C is over 80%.
2) In D, it goes directly to defrost mode if the COMP. operation ratio from B to D is over 80%.
3) In E, it enters to defrost mode unconditionally.
</td><td></td></tr>
<tr><td>9</td><td>Defrost function</td><td>COMP.
F-fan
C-fan
R-fan
Heater</td><td>
1. Defrost step
<table>
<tr><th></th><th>Pre-cool</th><th>R-fan defrost</th><th>D-heater defrost</th><th>Pause</th><th>Fan delay</th></tr>
<tr><td>COMP.</td><td>on</td><td>off</td><td>off</td><td>off</td><td>on</td></tr>
<tr><td>F-fan</td><td>on</td><td>off</td><td>off</td><td>off</td><td>off</td></tr>
<tr><td>R-fan</td><td>on</td><td>on</td><td>off</td><td>off</td><td>off</td></tr>
<tr><td>D-heater</td><td>off</td><td>off</td><td>on</td><td>off</td><td>off</td></tr>
<tr><td></td><td>◗Time : 30 min.
◗Quick mode is prior</td><td>◗Time : 10 min.
◗Regardless of door open
◗If D-sensor temperature is over 10°C, R-fan goes off and it skips to pause step.
◗Defrost is prior</td><td>◗Time : 90 min.
◗If D-sensor temperature is over 10°C, D-heater goes off.
◗If D-sensor is in error, it is on for 45 min. unconditionally
◗Defrost is prior</td><td>◗Time : 7 min.
◗Defrost is prior</td><td>◗Time : 5 min.
◗Defrost is prior</td></tr>
</table>
</td><td></td></tr>
</table>

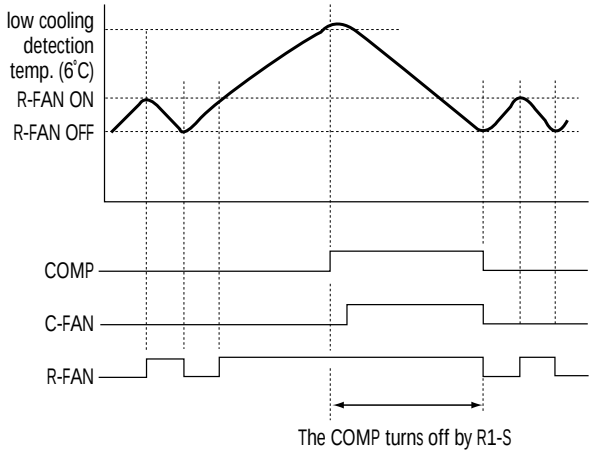
NO.	Control Function	Control Objects	Contents	Remark
				
10	Forced defrost	COMP. F-fan R-fan C-fan Heater	1. When press freezer temperature button, press quick freezing button 5 times. Then start forced defrost function.  2. Forced defrost function starts from the D-heater step without Pre-cool and R-fan defrost step. 3. Control method of each device is same as in defrosing mode. 4. After forced defrost, the normal defrost is enabled in 14 hours of accumulated COMP. on time.	

<table>
<tr><th>NO.</th><th>Control Function</th><th>Control Objects</th><th>Contents</th><th>Remark</th></tr>
<tr><td>11</td><td>Device test function</td><td>COMP.
F-fan
R-fan
Heater</td><td>1. Pressing the SW01 on M-PCB enables device test function.
2. Pressing the SW01 proceeds the operation of device as follows.
COMP. → D-heater → break → F-fan → R-fan → return
3. Each device is on for 1 min. and returns to be off.
4. During device test function, all custom LED of F-PCB is illuminated.
◗ Custom LED check function</td><td></td></tr>
<tr><td>12</td><td>Demo function</td><td>F-fan
R-fan
LED</td><td>1. If the CN10 of M-PCB is shorted, it changes to demo function.
2. F-PCB indicates the normal status and fuzzy status alternately in 15 sec. intervals.
 

Normal status
 

Fuzzy status
3. F-fan and R-fan operation is same as below
<table><tr><th></th><th>Normal status</th><th>Demo status</th></tr><tr><td>Door open</td><td>OFF
F-fan and R-fan is off at the same time.</td><td>ON
F-fan and R-fan is on at the same time</td></tr><tr><td>Door close</td><td>ON
F-fan : ON after 2 sec.
R-fan : ON after 1 sec.</td><td>OFF
F-fan : OFF after 2 sec.
R-fan : OFF after 1 sec.</td></tr></table></td><td></td></tr>
<tr><td>13</td><td>Delivery function</td><td>COMP.
F-fan
R-fan
LED</td><td>1. This function operates when fridge temperature and quick fridge button are pressed, and plug the power code.
 

2. At this time, the custom LED is normal and all devices are off.
3. After 10 min., all devices operate normally.</td><td></td></tr>
</table>

NO.	Control Function	Control Objects	Contents	Remark
14	Low cooling prevent function	COMP. R-fan	1. The low cooling prevention function will be operating if the temperature of R1-sensor or R2-sensor goes above 6˚C. 2. Time chart  3. R1 and R2-sensor detects the low cooling prevention function, but only R1-sensor returns the normal function.	: ON : OFF
15	COMP. restart prevent	COMP.	1. The COMP. can not be on within 6 min. after COMP. off. 2. During Pre-cool step in defrost mode. 6 min. delay is unavailable.	
16	Error display	LED	1. Press the quick freezing button 3 times when press the quick fridge and fridge temperature button.  2. If press the freezer temperature button, then stage changed like follow. R1-sensor temperature → D-sensor temperature → F-sensor temperature → Error code 3. Auto return to the normal time is 8 min. without pressing the freezer temperature button.	

NO.	Control Function	Control Objects	Contents	Remark
			4. Sensor's temperature indication is as follow. 1) R-sensor (when 1˚C)  2) D-sensor (when -23˚C)  3) F-sensor (when -18˚C)  5. Error code is refered to **3) Self-diagnosis table**	
17	Alarm function	Buzzer	1. Alarm buzzes 1 sec. after 3 sec. of initial power on. 2. Alarm buzzes whenever each switch in F-PCB is pressed. 3. If the door is opened for more than 1 min., chirpy sound alarm buzzes.	

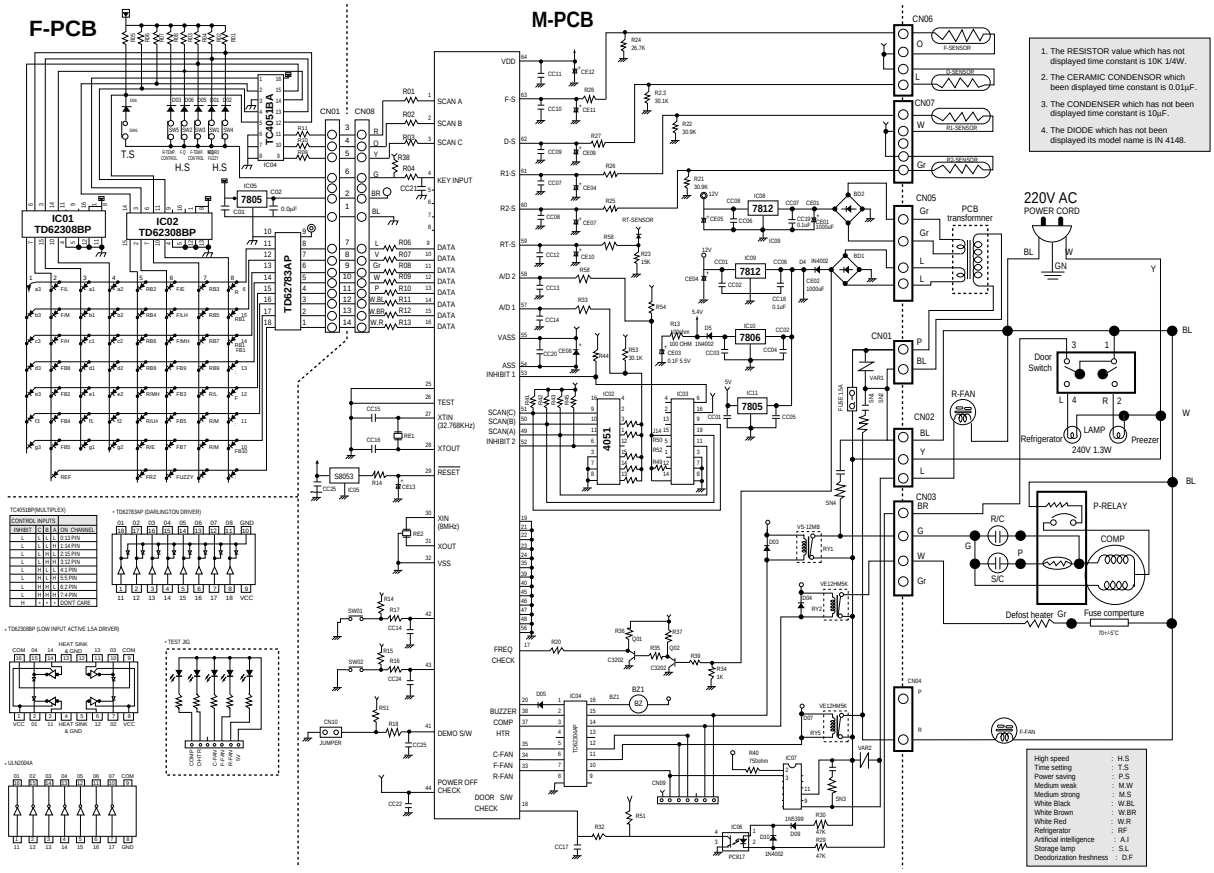
3) Self-diagnosis table

Code	Content	Perception method	Refrigerator operation state
F 1	F-sensor malfunction	- Short circuit - Wire disconnection	- The refrigerator is run at 60% power with a 40 minute period. - When the refrigerator compartment is over frosted, the operation is forcibly stopped, then returns to a 40 minute period operation.
R T	RT-sensor malfunction	- Short circuit - Wire disconnection	- In fuzzy mode, control temperature according to the outside temperature is disable.
R 1	R1-sensor malfunction	- Short circuit - Wire disconnection	- Operated by R2-sensor
R 2	R2-sensor malfunction	- Short circuit - Wire disconnection	- Low cooling prevention function by R2-sensor is disable.
D 1	D-sensor malfunction	- Short circuit - Wire disconnection - When the D-sensor temperature is over -5˚C while the compressor is off.	- Heater turns on for 45 minutes irrespective of D-sensor - R-fan can be on/off by R1-sensor only when compressor on.
D 0	Door switch malfunction	- When the door switch is left open continually for an hour.	- The R-fan and F-fan operates irrespective of the door switch when the compressor is on.
F 3	Defrost malfunction	- When the D-sensor turns off not by 13˚C but by a 90 minutes period while the heater is on.	- Normal operation.
C 1	Cycle malfunction Compressor malfunction	- When the temperature of the D-sensor is over -5˚C although the compressor has been running for 3 hours non-stop.	- Normal operation.

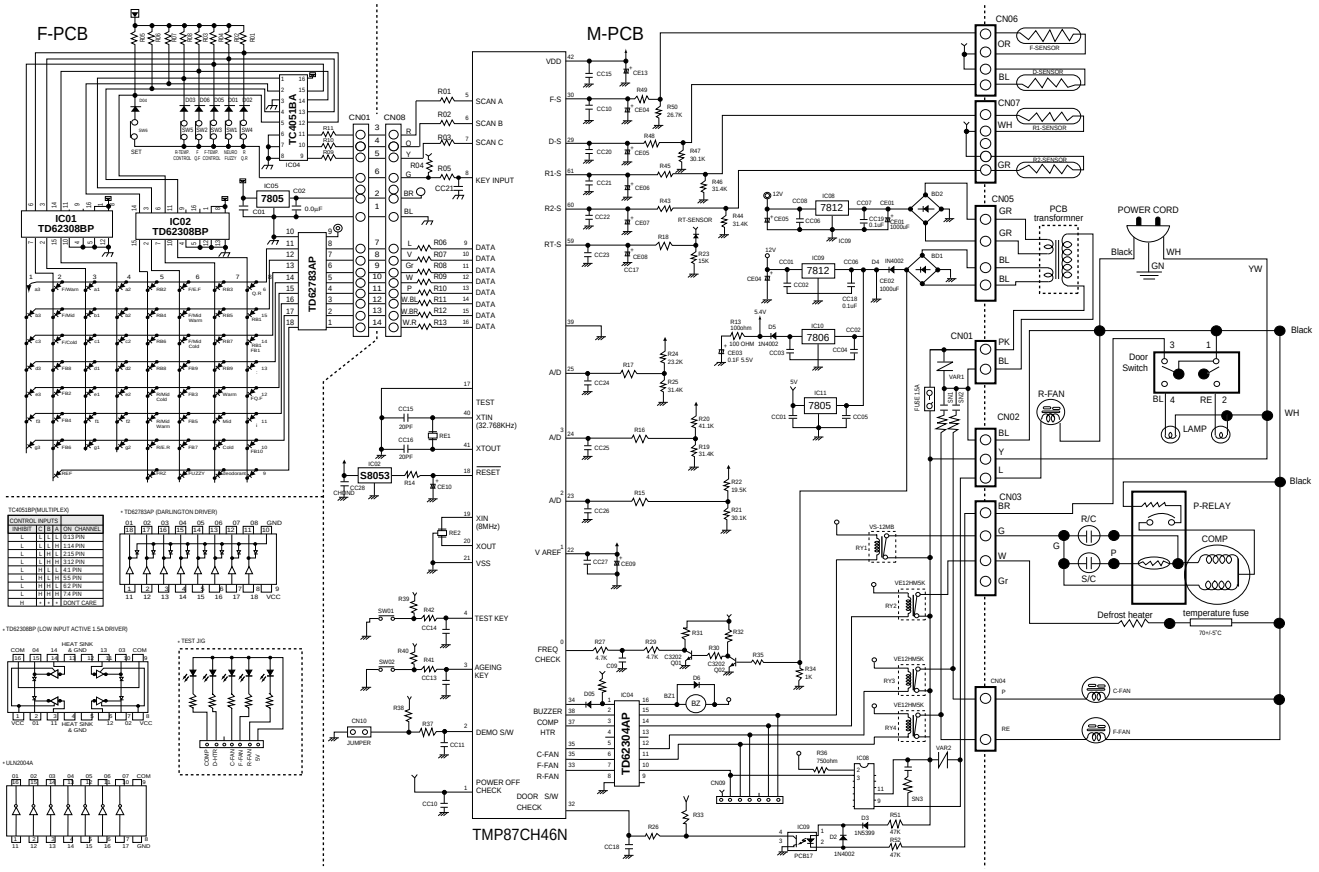
◗ All error code will be reset, if they become normal.

4) Circuit and Wiring Diagram

N802



N803



2. FR-540NT

1) How to use the panel

- When the FUZZY button is pressed, both "BAR LED" are blinking in a row
- "FUZZY" LED comes "ON".
- When the FUZZY button is pressed again, FUZZY function is canceled.
- LED of freezing and refrigerating go "OFF".

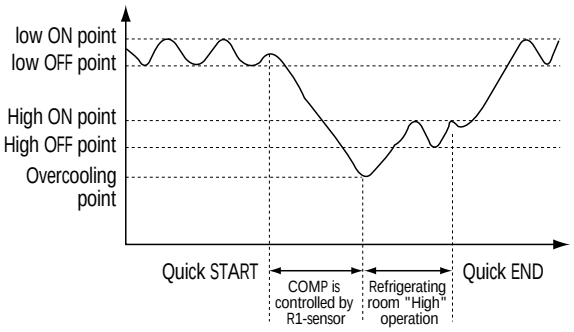
- When the quick freezing button is pressed, BAR LED of freezing is blinked 3 times in a row.
- LED of freezing goes off.
- "Quick" LED comes "ON".

1. One time
   1) Freezer room temperature control function.
   2) Adjust temperature with ▼, ▲
2. Two times
   1) Refrigerature room temperature control function
   2) Adjust temperature with ▼, ▲
3. Three times
   1) HOUR control function.
   2) Adjust hour with ▼, ▲
4. Four times
   1) MINUTE control function.
   2) Adjust minute with ▼, ▲
5. Five times
   1) Adjust finished.
   2) Retrun to normal status.

- When the quick refrigeration button is pressed, BAR LED of freezing is blinked 3 times in a row.
- LED of freezing goes off.
- "Quick" LED comes "ON".

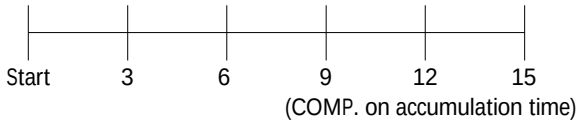
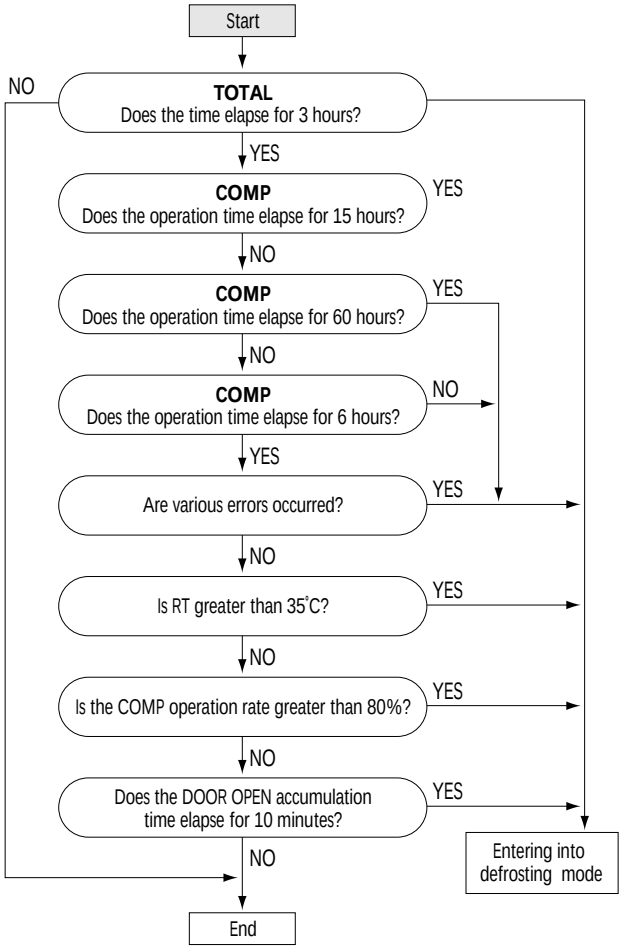
2) Function table

<table>
<tr><th>NO.</th><th>Control Function</th><th>Control Objects</th><th>Contents</th><th>Remark</th></tr>
<tr><td>1</td><td>Clook function</td><td>LED</td><td>1. The time is set at 12:00 in initial operation
 
2. Time setting
1) When the temperature/time set button is pressed 3 times, Hour blinks.
2) Adjust HOUR with ▼,▲ button.
3) When the temperature/time set button is pressed 4 times, MIN blinks
4) Adjust MIN with ▼,▲ button.</td><td></td></tr>
<tr><td>2</td><td>Freezer temperature control</td><td>COMP.
F-fan
LED</td><td>1. When press the temperature/time control button, freezer temperature range blinks. Then can control freezer temperture with ▼,▲ button.
 
2. COMP. on/off temperature
(Tempterature ℃/Resistance k?)
<table><tr><th></th><th>E.F</th><th>1 (low)</th><th>2 (mid)</th><th>3 (high)</th></tr><tr><td>COMP. on</td><td>-17.5/19.4</td><td>-18.5/20.6</td><td>-19.5/21.7</td><td>-21.5/24.3</td></tr><tr><td>COMP. off</td><td>-22.5/25.7</td><td>-23.5/27.2</td><td>-24.5/28.8</td><td>-26.5/32.3</td></tr></table>3. Bar LED is not related with on/off point.
4. If push the temperature/time control button in fuzzy mode, then fuzzy mode is canceled.</td><td></td></tr>
<tr><td>3</td><td>fridge temperature control</td><td>COMP.
R-fan
LED</td><td>1. When press the temperature/time control button, fridge temperature range blinks. Then can control fridge temperature with ▼,▲ button.
 
2. Main sensor of fridge room is R1-sensor.
3. R2-sensor is used for preventing low cooling.
4. R-fan on/off temperature
(Temperature ℃Resistance k?)
<table><tr><th></th><th>E.R</th><th>1 (low)</th><th>2 (mid)</th><th>3 (high)</th></tr><tr><td>R-fan on</td><td>1.35/28.4</td><td>0.35/29.7</td><td>-0.65/30.9</td><td>-2.65/33.8</td></tr><tr><td>R-fan off</td><td>1.0/28.7</td><td>0.0/30.0</td><td>-1.0/31.4</td><td>-3.0/34.3</td></tr></table></td><td></td></tr>
</table>

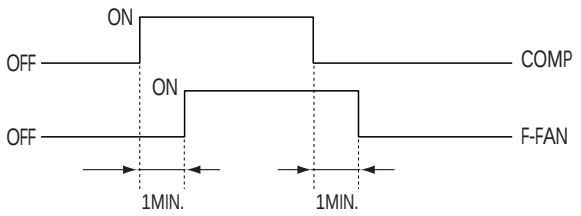
NO.	Control Function	Control Objects	Contents	Remark
			5. When the low cooling is detected, COMP. goes on regardless of F-sensor. 6. When the fridge temperature goes R-fan off point, COMP. is controlled by F-sensor and R-fan goes off. 7. Low cooling is detected by R1-sensor or R2-sensor, its cancellation can be done by R1-sensor only. 8. Bar LED is not related with on/off point. 9. If push the temperature/time control button in fuzzy mode, then fuzzy mode is canceled.	
4	Quick freezing	COMP. F-fan LED	1. When the quick freezing button is pressed, it becomes quick freezing mode.  2. The quick freezing mode works for 150 min. 3. The quick freezing time shows for 5 sec. 4. COMP. and F-fan go on regardless of F-sensor during the quick freezing mode. 5. The quick freezing mode is operative even in fuzzy mode.	
5	Quick fidge	COMP. R-fan LED	1. When the quick fridge button is pressed, it becomes quick fridge mode.  2. The quick fridge mode works for 40 min. 3. The quick fridge time shows for 5 sec.  4. COMP. and R-fan are on until R1-sensor detects over cooling temperature (-7°C). 5. The quick fridge mode is operative even in fuzzy mode.	

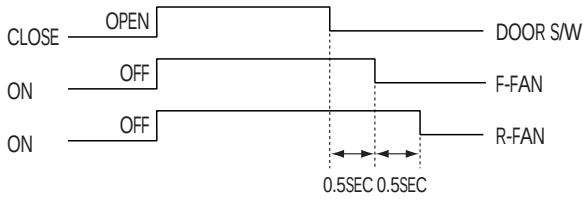
<table>
<tr><th>NO.</th><th>Control Function</th><th>Control Objects</th><th>Contents</th><th>Remark</th></tr>
<tr><td>6</td><td>Fuzzy</td><td>COMP.
R-fan
F-fan
LED</td><td>
1. When press the fuzzy button, predictable cooling of freezer and fridge room is started.


2. How to predict freezer and fridge room temperature.
1) Checking accumulated door open time every 2 hours.
2) Decision of open door frequency is as follow
• Above 30 sec. : Door is opened frequently. (1)
• Below 30 sec. : Door is not opened frequently. (0)
3) Decision of data is for 8 days.
• If the accumulated open door time of 30 sec. is more than 6 times for 8 days, then data decision will be high.
• If RT-sensor<14˚C, it is operated mid instead of high.
4) Example
<table>
<tr><th>Hour / Date</th><th>2</th><th>4</th><th>6</th><th>8</th><th>10</th><th>12</th><th>14</th><th>16</th><th>18</th><th>20</th><th>22</th><th>24</th></tr>
<tr><td>1</td><td>1</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>1</td></tr>
<tr><td>2</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td><td>1</td></tr>
<tr><td>3</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>1</td><td>0</td></tr>
<tr><td>4</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td></tr>
<tr><td>5</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td></tr>
<tr><td>6</td><td>1</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td></tr>
<tr><td>7</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>1</td><td>0</td></tr>
<tr><td>8</td><td>1</td><td>0</td><td>1</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>Frequency</td><td>3</td><td>2</td><td>7</td><td>7</td><td>5</td><td>1</td><td>2</td><td>6</td><td>6</td><td>6</td><td>4</td><td>4</td></tr>
<tr><td>Data decision</td><td>M</td><td>M</td><td>H</td><td>H</td><td>M</td><td>M</td><td>M</td><td>H</td><td>H</td><td>H</td><td>M</td><td>M</td></tr>
</table>
</td><td></td></tr>
<tr><td>7</td><td>Determination defrost</td><td></td><td>
1. Necessary condition of determination defrost
1) COMP. operation accumulation time (6, 9, 12, 15 hours)
2) COMP. operation ratio (COMP. accumulation time is divided by 3 hours)
3) Door open accumulation time.
4) Total time (COMP. on time+COMP. off time) is 60 hours.
5) Outside temperature is above 35˚C.
6) Various error
• D-sensor error
• F-sensor error
• RT-sensor error
• Door switch error
</td><td></td></tr>
</table>

NO.	Control Function	Control Objects	Contents	Remark
			2. Description  1) It enters into the defrost mode at 15 hours unconditionally. 2) It enters into the defrost mode at 6, 9, 12 hours conditionally. 3) Flow chart of determination defrost mode.  	
8	Defrost mode	COMP. F-fan R-fan Heater	1. Pre-cool step 1) Time : 50 min. 2) COMP. and F-fan are on. 3) R-fan controls normally with temperature 1˚C higher than the off point which controlles R-fan in normal status.	

<table>
<tr><th>NO.</th><th>Control Function</th><th>Control Objects</th><th>Contents</th><th>Remark</th></tr>
<tr><td></td><td></td><td></td><td>
4) If the F-sensor ≤ -27°C even the time elapsed is less than 50 min., the Pre-cool step goes off.
2. D-heater+R-fan defrost
1) D-heater and R-fan are on.
2) When D-sensor is higher than 2°C, R-fan goes off, and D-heater stays on contionously.
3) When D-sensor is higher than 10°C, D-heater goes off.
4) Total limit time is 88 min.
5) If D-sensor is error, R-fan goes off and D-heater is on for 35 min.
3. Pause
1) Time : 4 min.
2) All devices are off.
4. F-fan delay
1) Time : 8 min.
2) Only COMP. and R-fan are on.
5. R-fan delay
1) Time : 10 min.
2) Only COMP. and F-fan are on.
6. Output control of each step and time limit.
<table>
<tr><th></th><th>Pre-cool</th><th>Heater +R-fan defrost</th><th>Heater defrost</th><th>pause</th><th>F-fan delay</th><th>R-fan delay</th></tr>
<tr><td>COMP.</td><td>on</td><td>off</td><td>off</td><td>off</td><td>on</td><td>on</td></tr>
<tr><td>F-fan</td><td>on</td><td>off</td><td>off</td><td>off</td><td>off</td><td>on</td></tr>
<tr><td>R-fan</td><td>controlled</td><td>on</td><td>off</td><td>off</td><td>on</td><td>off</td></tr>
<tr><td>Heater</td><td>off</td><td>on</td><td>on</td><td>off</td><td>off</td><td>off</td></tr>
<tr><td>Time limit</td><td>50 min.</td><td colspan="2">1) 80 min.
2) 35 min. in case of D-sensor error</td><td>4 min.</td><td>8 min.</td><td>10 min.</td></tr>
</table>
</td><td></td></tr>
<tr><td>9</td><td>Testing device</td><td>COMP.
F-fan
R-fan
Heater
LED</td><td>
1. If press SW01 on M-PCB, the electric devices become on in order as follows.
COMP. → Heater → Pause → F-fan → R-fan → COMP.
2. At this time, all the custom LED become on.
3. Automatic return time is 1 min.
</td><td></td></tr>
</table>

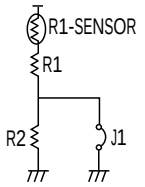
<table>
<tr><th>NO.</th><th>Control Function</th><th>Control Objects</th><th>Contents</th><th>Remark</th></tr>
<tr><td>10</td><td>Electric device delay</td><td>Door S/W
COMP.
F-fan
R-fan</td><td>1. F-fan on or off time is delayed, when COMP. is on or off.
 

2. F-fan and R-fan on or off time is delayed, when door switch is on or off.
 
</td><td></td></tr>
<tr><td>11</td><td>Demo function</td><td>COMP.
R-fan
F-fan
Door S/W</td><td>1. If CN10 terminal on M-PCB is shorted, all electric devices go off except F-fan, R-fan.
2. Fan control
<table><tr><th></th><th>Normal status</th><th>Demo status</th></tr><tr><td>Door open</td><td>F-fan : off
R-fan : off</td><td>F-fan : on
R-fan : on</td></tr><tr><td>Door close</td><td>F-fan : on
R-fan : on</td><td>F-fan : off
R-fan : off</td></tr></table>3. F-PCB indicates the normal status and fuzzy status alternately in 15 sec. intervals.
 

Normal status
 

Fuzzy status</td><td></td></tr>
<tr><td>12</td><td>Delivery function</td><td>COMP.
F-fan
R-fan
LED</td><td>1. If press the quick freezing and quick refrigerating button for 3 sec. after power on, then delivery function will start.
 
</td><td></td></tr>
</table>

NO.	Control Function	Control Objects	Contents	Remark
			2. The electric devices are off for 2 hours in delivery function. 3. The custom LED is on normally.	
13	Power failure back-up function	COMP. Clock	1. M-PCB reserves all functions for 3 hours after power failure. 2. Time running in power failure is as follow. 1) Clock 2) Preventing COMP. restarting 3) Pause time during defrosting	
14	COMP. restart prevent	COMP.	1. After COMP. is off, the COMP. is not on even though the F-sensor is at on point for 6 min.	
15	Buzzer function	Buzzer	1. Alarm buzzes 3 sec. after initial power on. 2. Alarm buzzes whenever each switch in F-PCB is pressed. 3. If the door is opened for more than 1 min., chirpy sound alarm buzzes. 4. If adjust temperature, the fuzzy button will be not operative and the buzzer will be off.	
16	First defrost	COMP. F-fan R-fan Heater	1. When power is loaded for the first time, it enters into defrost mode if D-sensor $\leq 3.5^{\circ}C$. (Defrost mode starts from Pre-cool step.)	
17	Forced defrost	COMP. F-fan R-fan Heater	1. Press the fuzzy button 5 times, when press temperature/time control button. After that can enter the forced defrost mode.  2. Forced defrost mode. 1) The Pre-cool step is omitted. 2) Start from heater+R-fan defrost. 3. After forced defrost, the normal defrost is enabled in 15 hours of accumulated COMP. on time.	
18	Adjust R1-sensor off point		1. When the temperature in fridge room is low (Low temperature even though R-fan and COMP. are operating properly), following functions are operating for easy after service.	

<table>
<tr><th>NO.</th><th>Control Function</th><th>Control Objects</th><th>Contents</th><th>Remark</th></tr>
<tr><td></td><td></td><td></td><td>1)
 

R1 : Off point determination in normal operation
R2 : Decreases off point determination
J1 : If remove J1, the off point will be decreased.
2) Resistance value
R1 : 31. 4 kΩ
R2 : 2.15 kΩ
3) Off point temperature
<table>
<tr><th></th><th>Off point temperature</th></tr>
<tr><td>J1 shorted</td><td>-1.0˚C</td></tr>
<tr><td>J1 opened</td><td>-2.5˚C</td></tr>
</table></td><td></td></tr>
<tr><td>19</td><td>Error display</td><td>LED
R-fan</td><td>1. Press the fuzzy button 3 times, when press the quick freezing and the quick refrigerating button. After that error mode.
 

2. If press the temperature/time control button, then will change the status on custom LED.
R1-sensor temperature → F-sensor temperature → D-sensor temperature → Error code (If there is no error, then error code will not occur.)
3. All error code will be reset, if they become normal.
4. Error code is refered to 3) Self-diagnosis table.</td><td></td></tr>
</table>

3) Self-diagnosis table

Error mode	Defect function	Check method
F 1	F-sensor	- Compressor & F-fan is on for 24 minutes. - Compressor & F-fan is off for 16 minutes.
R 1	R1-sensor	- Regarded by R2-sensor.
R 2	R2-sensor	- Detecting weak cooling is impossible.
D 1	D-sensor	- Heater is on only for 35 minutes.
RT	RT-sensor	
D 0	Door switch	
C 1	Cooling cycle (check after first defrost mode)	
F 3	Heater	- Natural defrost for 80 minutes.

◗ If both R1 and R2-sensor are out of order, then RT-sensor control R-fan.
- Room temperature ≤ 14˚C : R-fan is off
- Room temperature ≥ 26˚C : R-fan is on for 15 minutes, R-fan is off for 5 minutes
- 14˚C < Room temperature < 26˚C : R-fan is on for 2 minutes, R-fan is off for 18 minutes

4) Circuit and wiring diagram