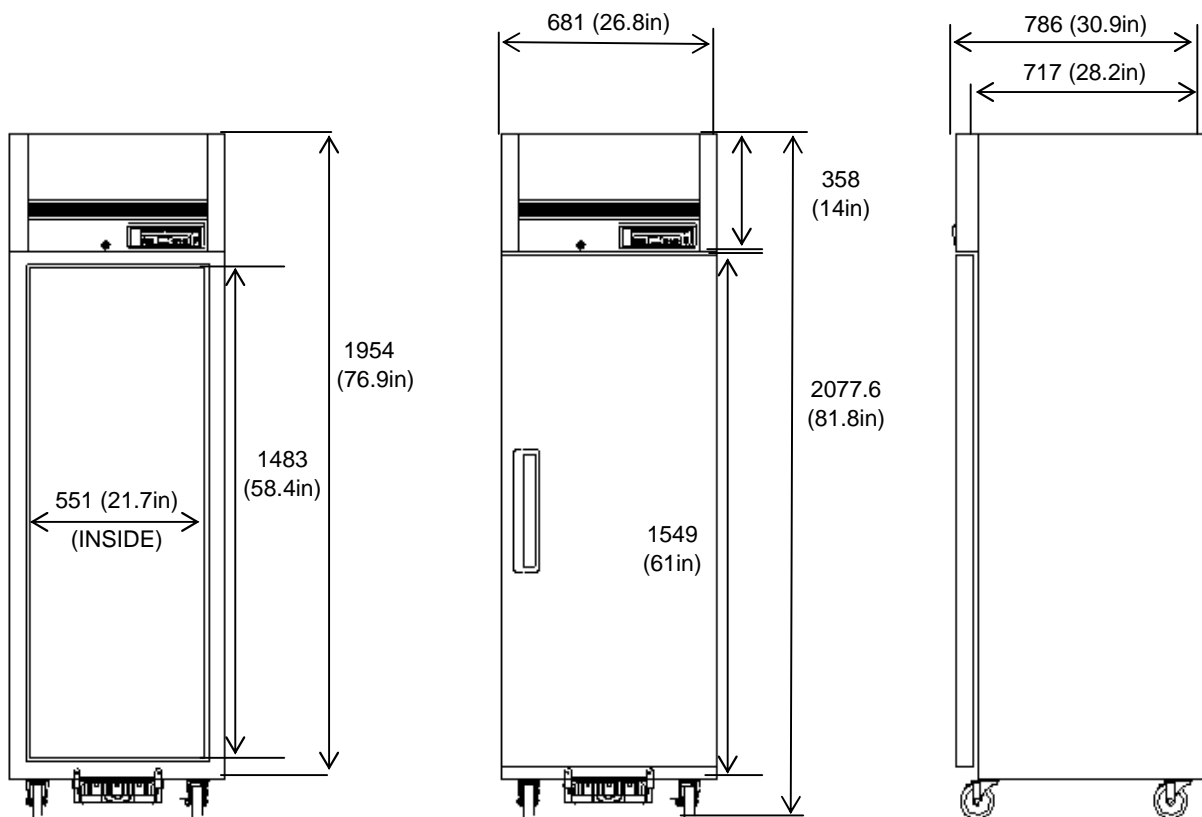
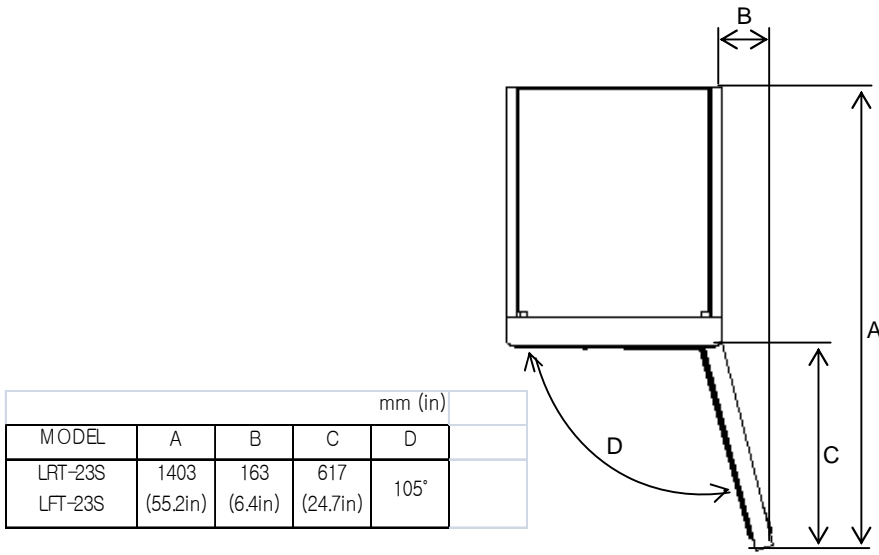


## B. Dimensions

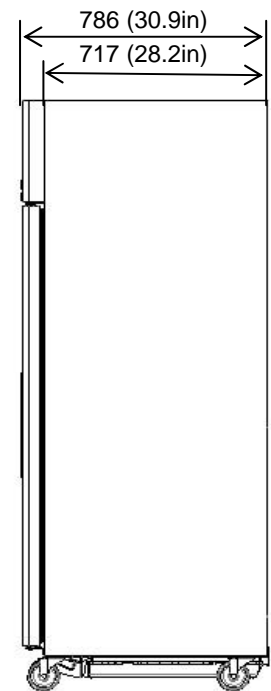
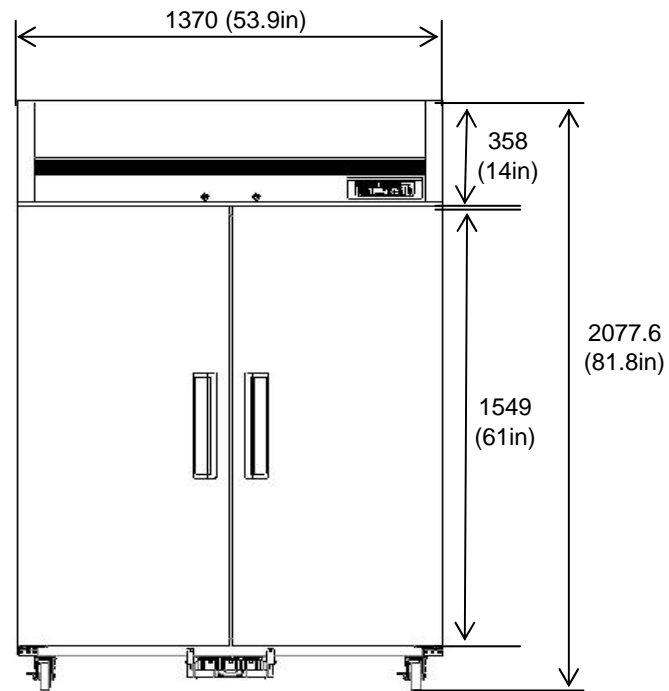
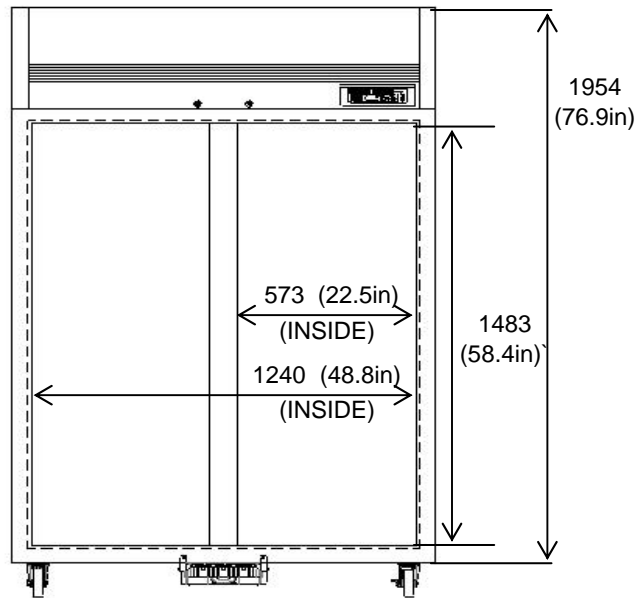
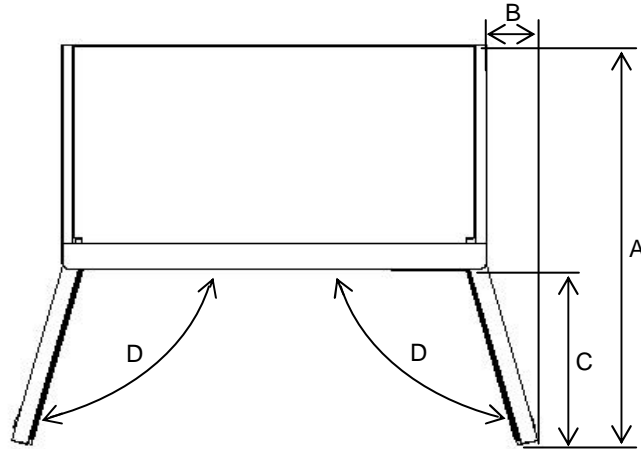
### 1. BSR23T(LRT-23S), BSF23T(LFT-23S)



## B. Dimensions

### 1. BSR49T(LRT-49D), BSF49T(LFT-49D)

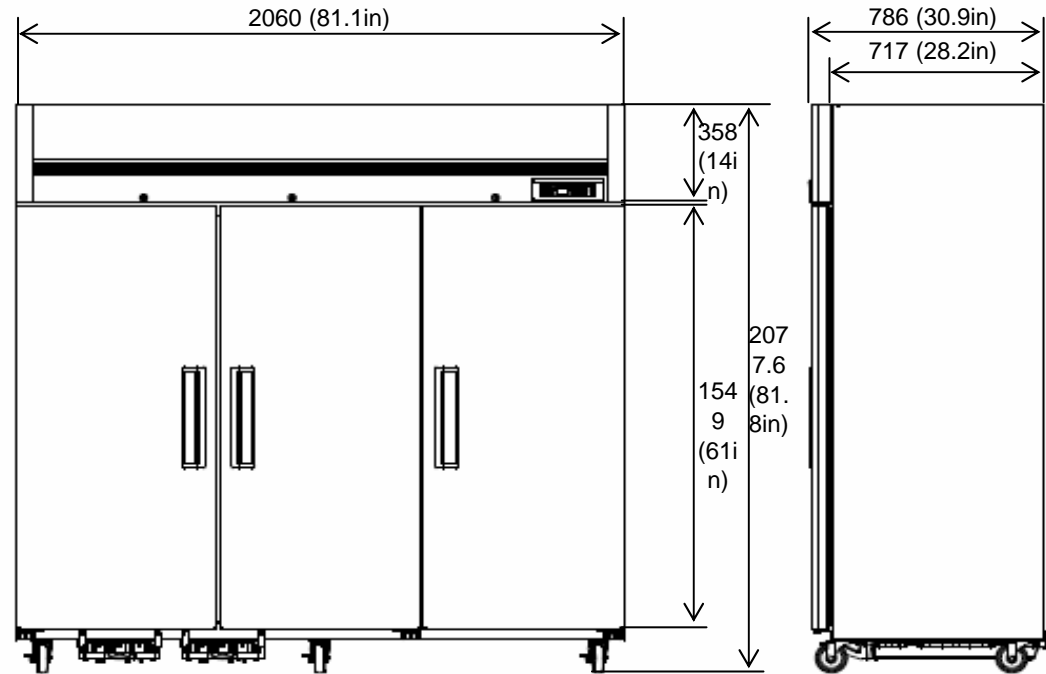
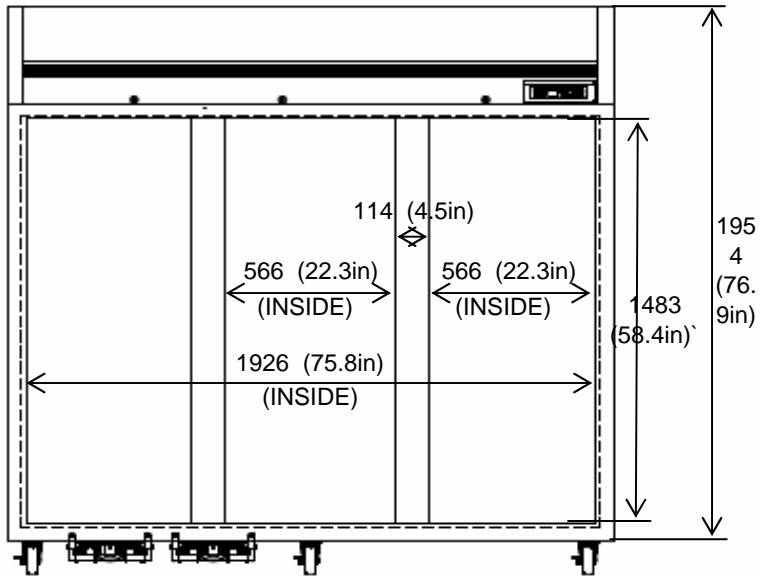
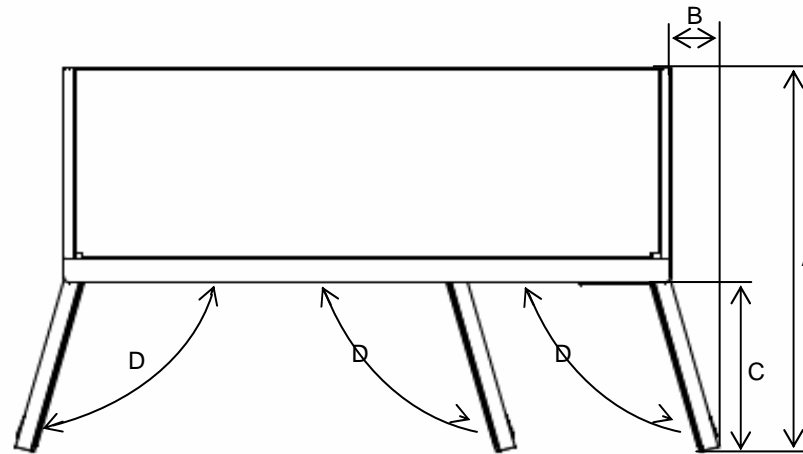
	mm (in)			
MODEL	A	B	C	D
LRT-49D	1403	163	617	105°
LFT-49D	(55.2in)	(6.4in)	(24.7in)	



## B. Dimensions

### 1. BSR72T(LRT-72T), BSF72T(LFT-72T)

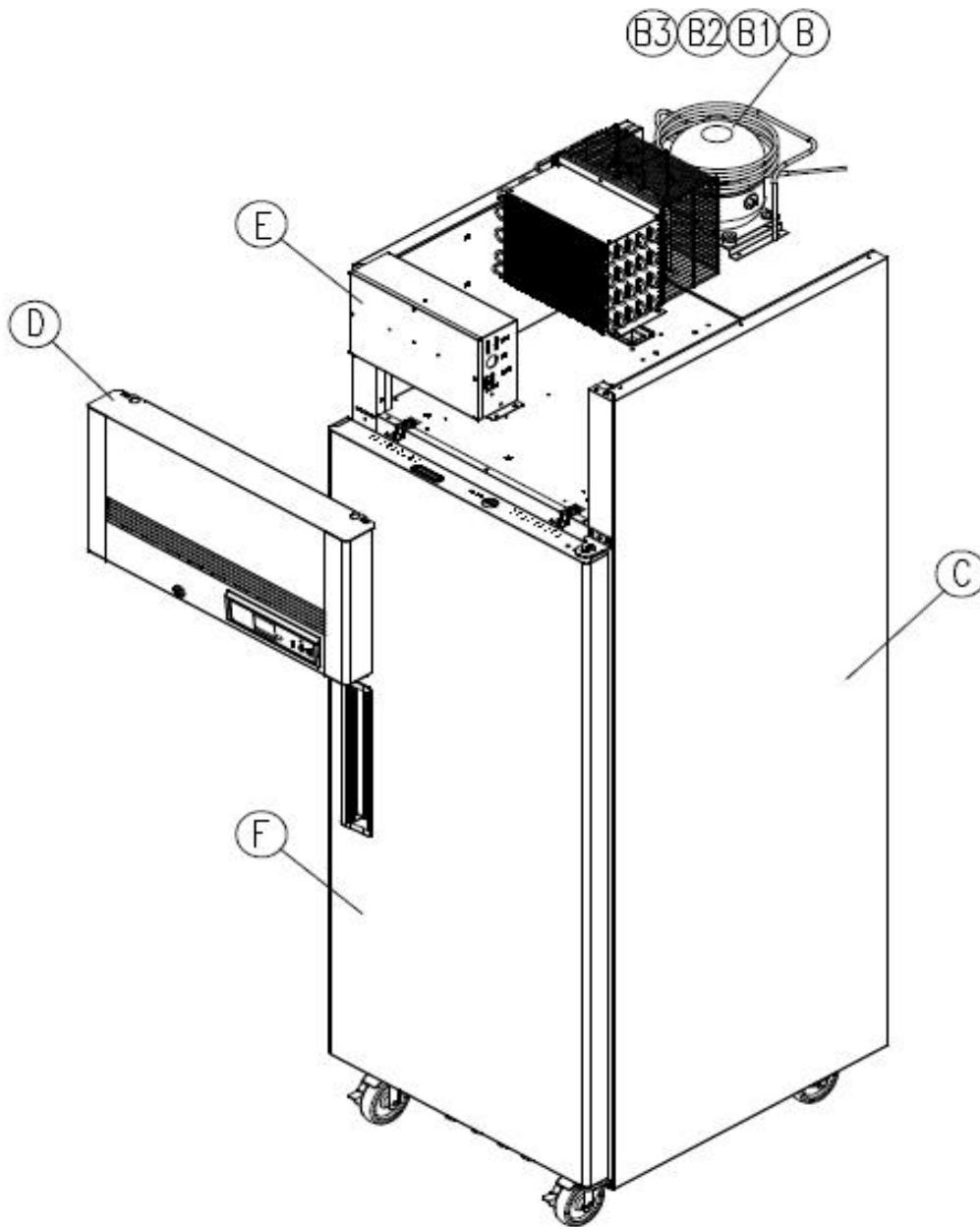
mm (in)				
MODEL	A	B	C	D
LRT-72T	1403	163	617	105°
LFT-72T	(55.2in)	(6.4in)	(24.7in)	



## A. Main Assembly

### 1. BSR23T

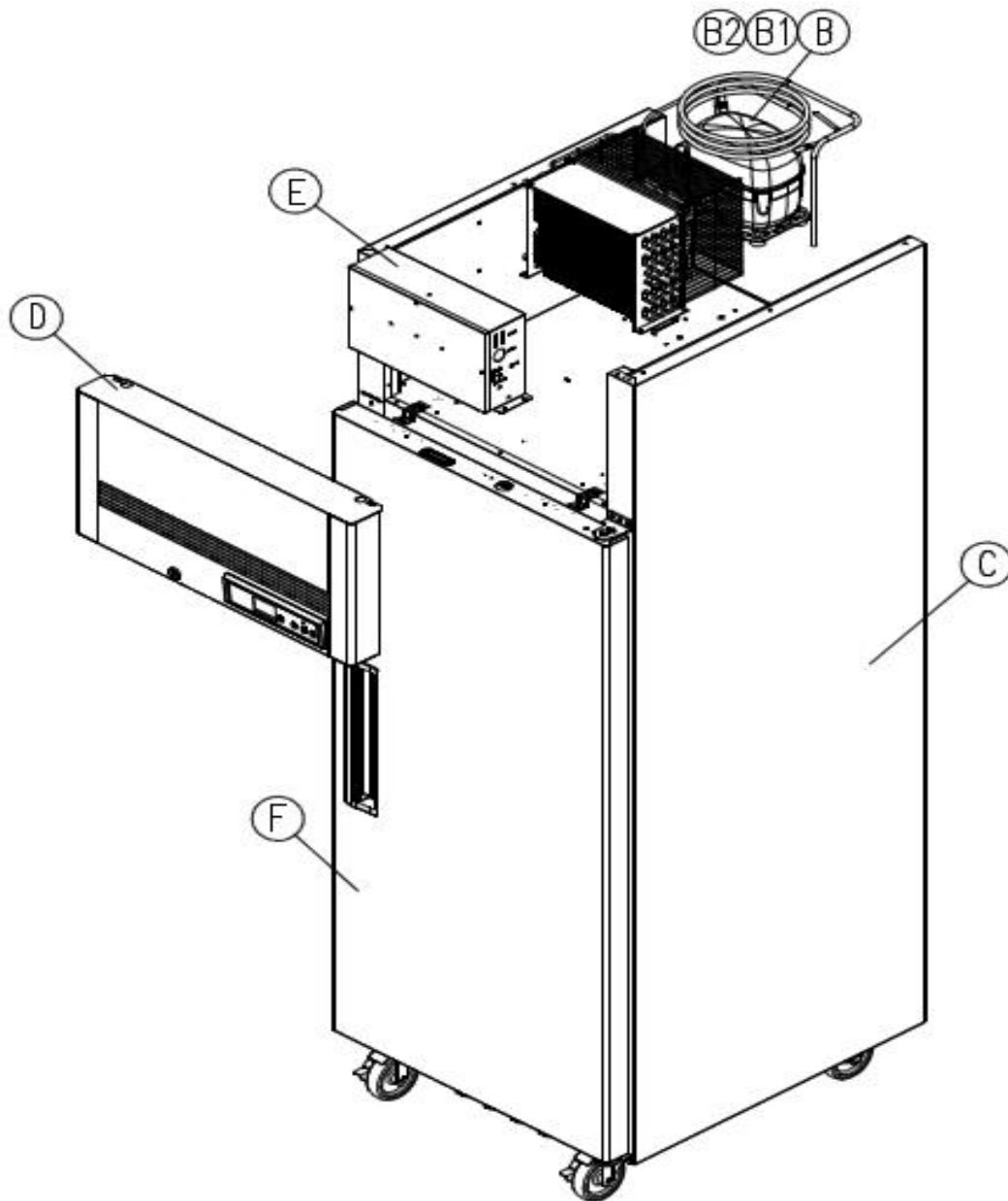
NO.	Model Code	Description	Qty	Material	Spec
B	R7439-110	Compressor	1	-	SK1A1C-L2W,115V/60Hz
B1	R3004-270	Compressor Bolt	4	-	M6x30Y $\phi$ 10
B2	R3884-030	Grommet Comp	4	NR	NR-Rubber, Black
B3	R3243-040	Reinf Comp	1	GI	T1.6x135x236
C	R8582-510	Body Assembly	1	-	-
D	R8249-630	Top Grill Assembly	1	-	-
E	R7103-950	Main PCB Box	1	-	-
F	R817A-050	Ass'y Door RH TM	1	-	-



## A. Main Assembly

### 2. BSF23T

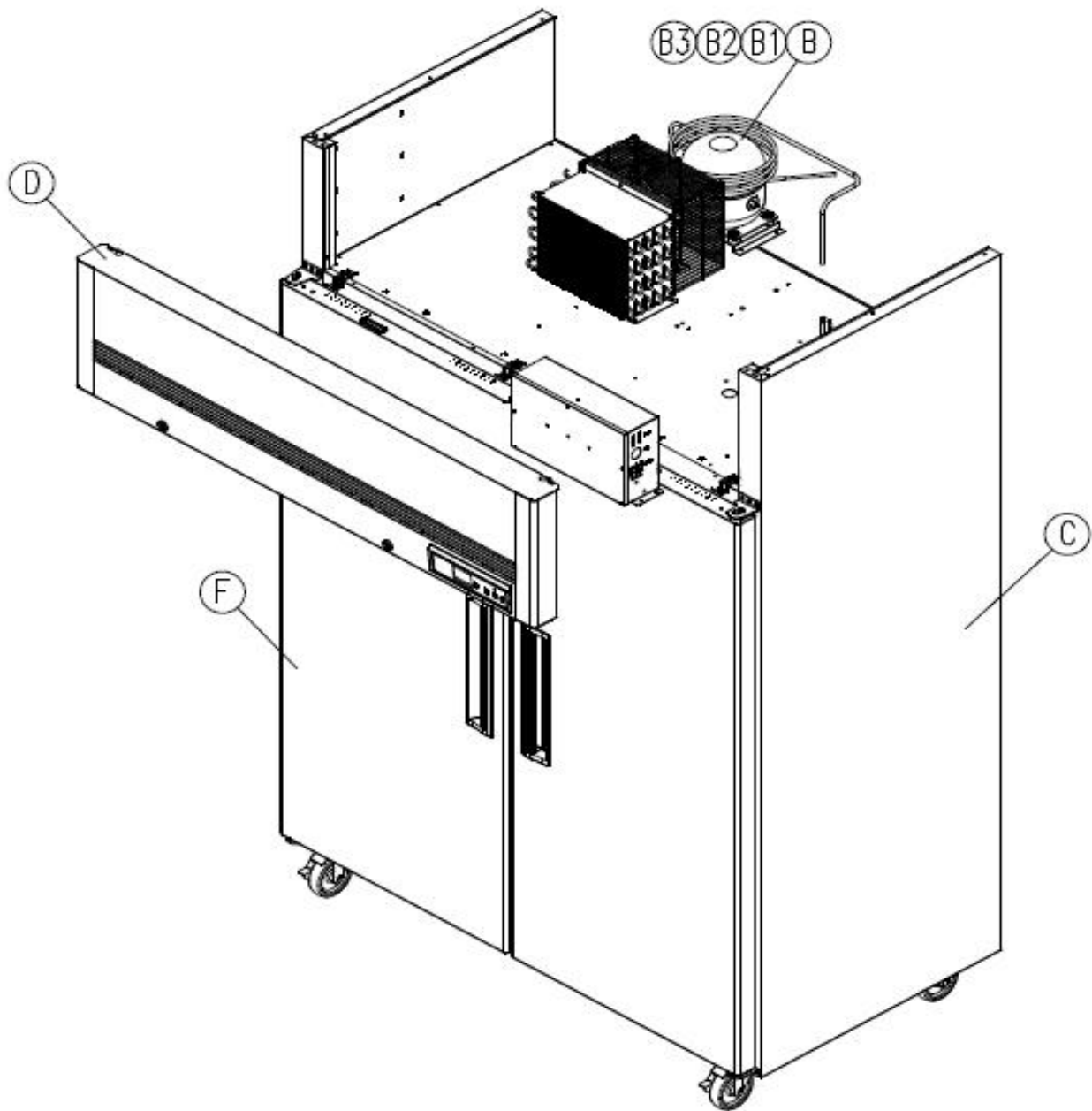
NO.	Model Code	Description	Qty	Material	Spec
B	R7439-640	Compressor	1	-	SC12CLX2,115V/60Hz
B1	R3004-270	Compressor Bolt	4	-	M 6x30Y $\phi$ 0
B2	R3884-030	Grommet Comp	4	NR	NR-Rubber, Black
C	R8582-510	Body Assembly	1	-	-
D	R8249-630	Top Grill Assembly	1	-	-
E	R7103-960	Main PCB Box	1	-	-
F	R817A-050	Assy Door RH TM	1	-	-



# A. Main Assembly

## 3. BSR49T

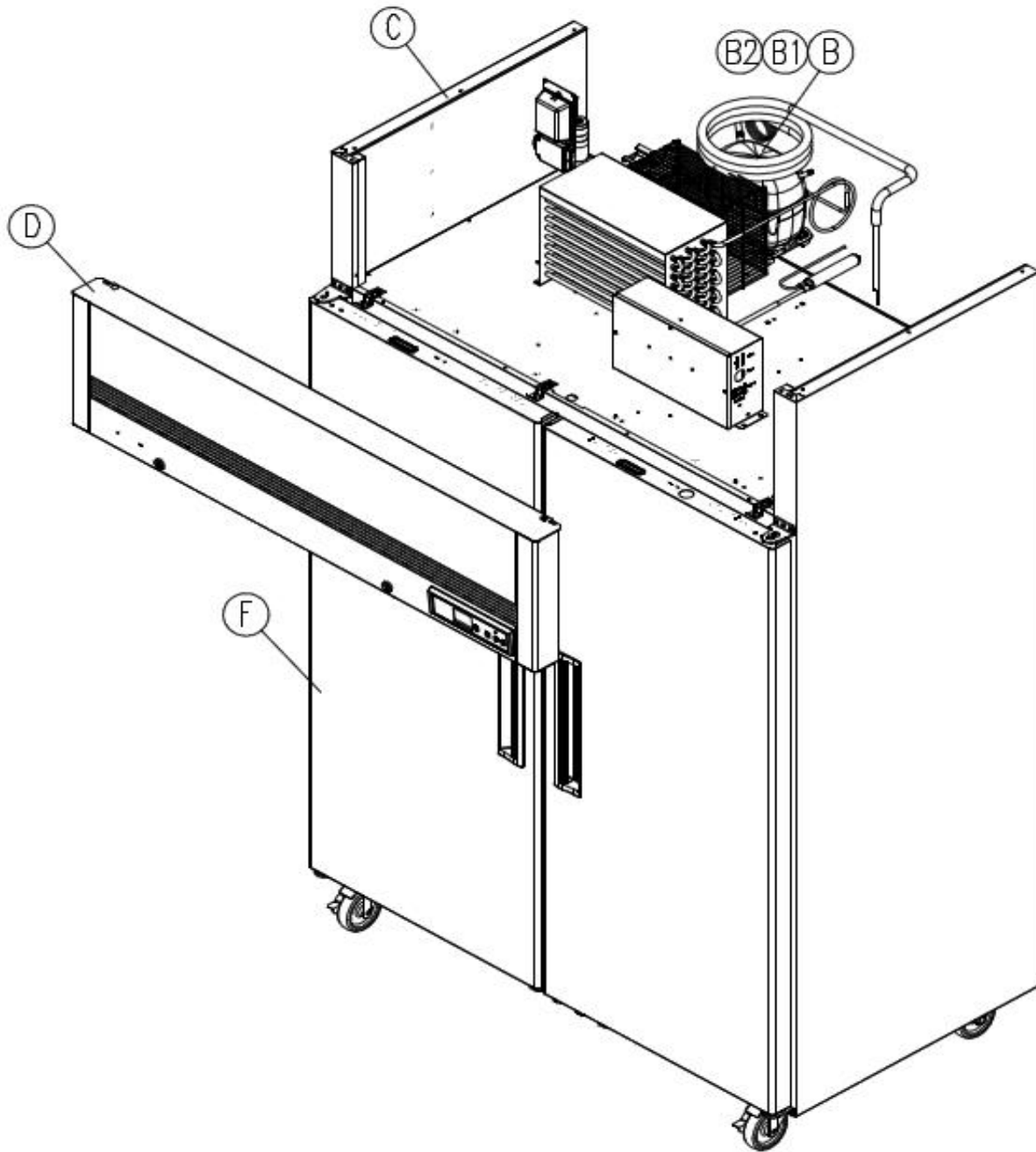
NO.	Model Code	Description	Qty	Material	Spec
B	R7439-110	Compressor	1	-	SK1A1C-L2W,115V/60Hz
B1	R3004-270	Compressor Bolt	4	-	M6x30Y $\phi$ 10
B2	R3884-030	Grommet Comp	4	NR	NR-Rubber, Black
B3	R3243-040	Reinf Comp	1	GI	T1.6x135x236
C	R8582-450	Body Assembly	1	-	-
D	R8249-640	Top Grill Assembly	1	-	-
E	R7103-970	Main PCB Box	1	-	-



## A. Main Assembly

### 4. BSF49T

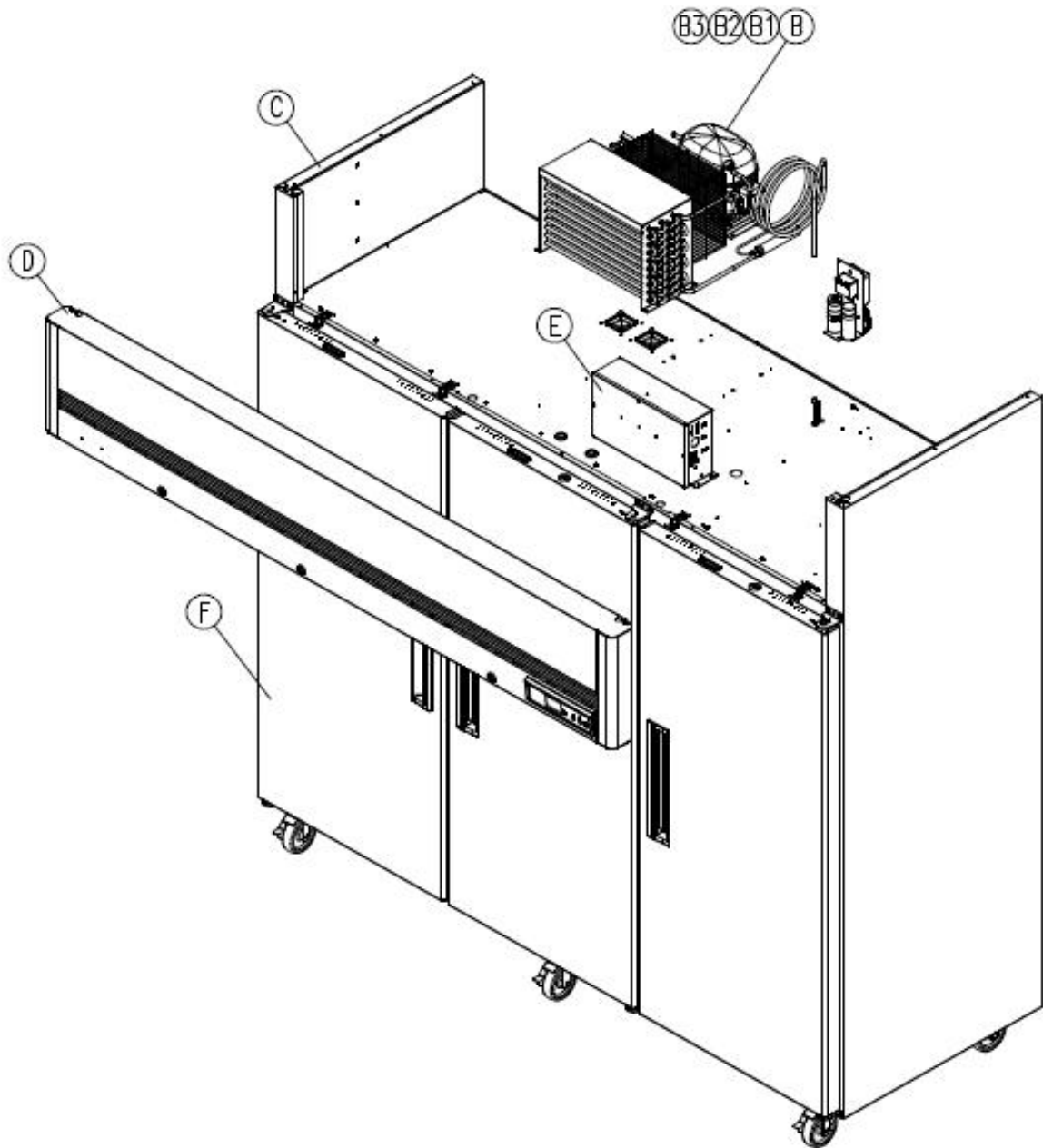
NO.	Model Code	Description	Qty	Material	Spec
B	R7439-600	Compressor	1	-	SC18CLX2, 115V60Hz
B1	R3004-270	Compressor Bolt	4	-	M6x30Y $\phi$ 10
B2	R3884-030	Grommet Comp	4	NR	NR-Rubber, Black
C	R8582-450	Body Assembly	1	-	-
D	R8249-640	Top Grill Assembly	1	-	-
E	R7103-980	Main PCB Box	1	-	-



## A. Main Assembly

### 5. BSR72T

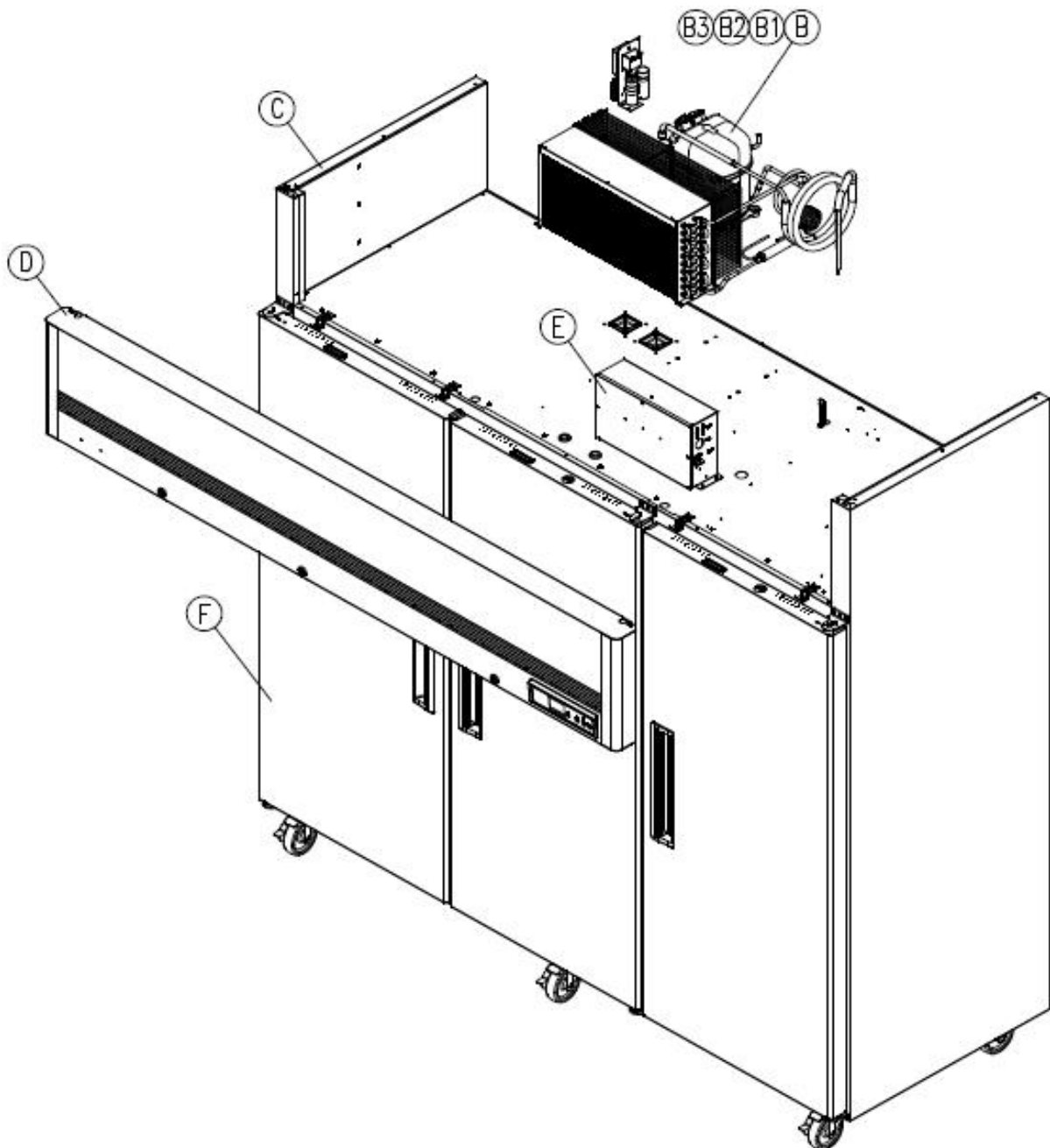
NO.	Model Code	Description	Qty	Material	Spec
B	R7439-600	Compressor	1	-	SC18CLX2, 115V60Hz
B1	R3004-270	Compressor Bolt	4	-	M 6x30Y $\phi$ 10
B2	R3884-030	Grommet Comp	4	NR	NR-Rubber, Black
B3	R3243-040	Reinf Comp	1	GI	T1.6x135x236
C	R844A-080	Body Assembly	1	-	-
D	R818A-030	Top Grill Assembly	1	-	-
E	R829A-020	Assy Control Box T72R	1	-	-



## A. Main Assembly

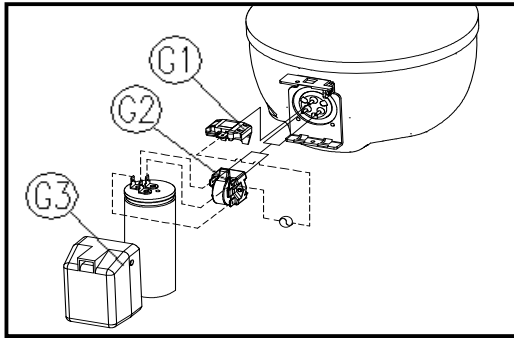
### 6. BSF72T

NO.	Model Code	Description	Qty	Material	Spec
B	R714A-020	Compressor	1	-	GS26CLX
B1	R3004-270	Compressor Bolt	4	-	M6x30Y $\phi$ 10
B2	R3884-030	Grommet Comp	4	NR	NR-Rubber, Black
B3	R3243-040	Reinf Comp	1	GI	T1.6x135x236
C	R844A-070	Body Assembly	1	-	-
D	R818A-030	Top Grill Assembly	1	-	-
E	R829A-010	Ass'y Control Box T72R	1	-	-

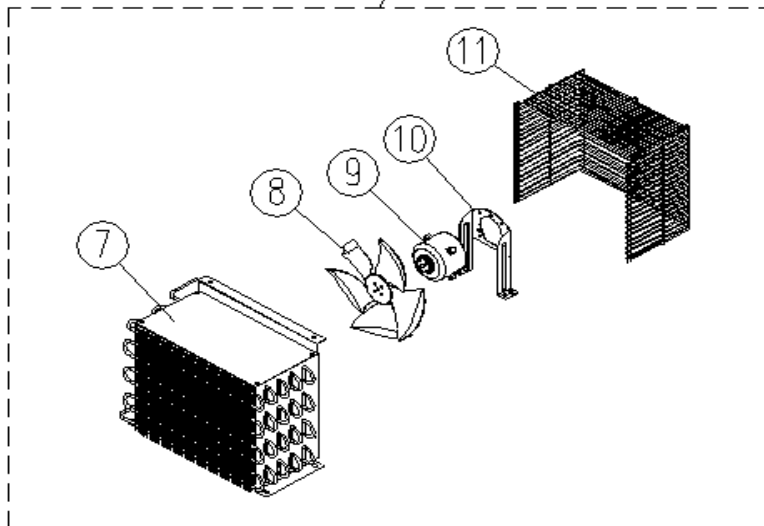
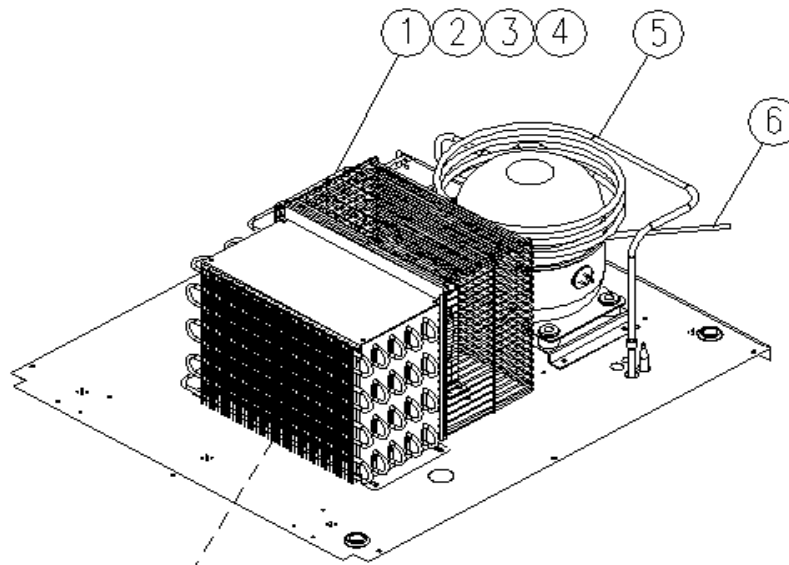


## B. Assembly Unit

### 1. BSR23T, BSR49T



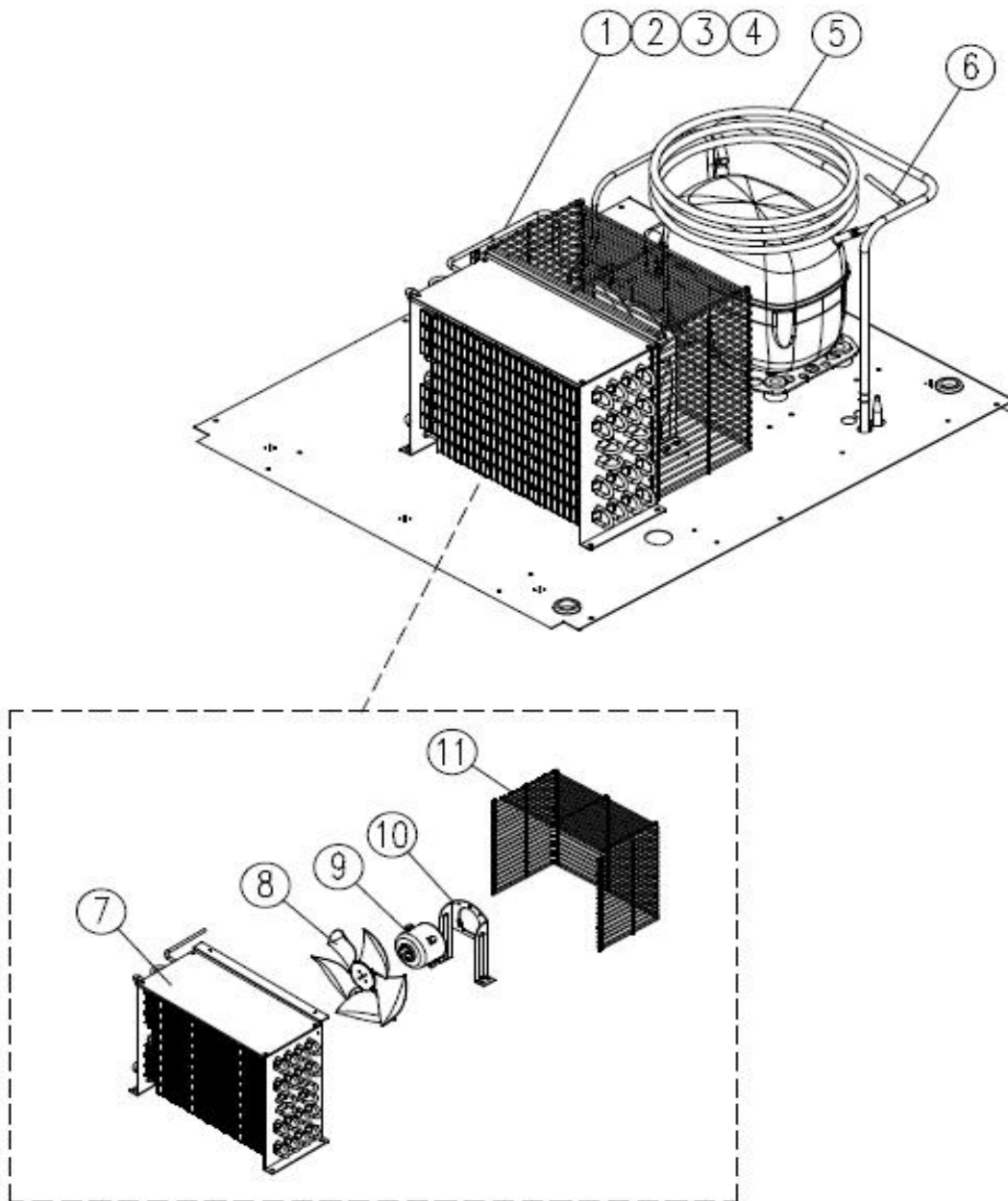
NO.	Model Code	Description	Qty	Material	Spec
1	R2113-970	Pipe Discharge	1	-	-
2	R2113-980	Pipe Connect Dryer	1	-	-
3	R2183-610	Dryer	1	-	R-134a, 36g
4	R2104-981	Pipe Dryer	1	-	-
5	R8603-830	Assy Suction Pipe	1	-	-
6	R2104-610	Tube Vacuum	1	-	-
7	R8633-010	Condenser AS	1	-	-
8	R3723-070	Condenser Fan Blade	1	AL	9° CCW
9	R7423-311	Condenser Fan Motor	1	-	115V60Hz DAI-8204DYCA
10	R3313-260	Condenser Fan Motor B/K	1	-	-
11	R3813-150	Condenser Fan wire	1	MSWR10	∅2.5 275x237
G1	R7519-100	Overload Protector	1	-	4TM412PFBY-53
G2	R7543-180	PTC Relay	1	-	.J31Q35E330M385-3
G3	R3813-900	Cover Relay	1	-	-



## B. Assembly Unit

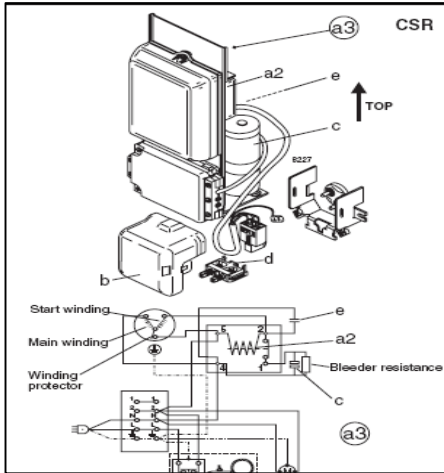
### 2. BSF23T

NO.	Model Code	Description	Qty	Material	Spec
1	R2113-970	Pipe Discharge	1	-	-
2	R2113-980	Pipe Connect Dryer	1	-	-
3	R2183-610	Dryer	1	-	R-134a, 36g
4	R2104-981	Pipe Dryer	1	-	-
5	R8603-830	Assly Suction Pipe	1	-	-
6	R2104-610	Tube Vacuum	1	-	-
7	R8633-010	Condenser AS	1	-	-
8	R3723-070	Condenser Fan Blade	1	AL	9" CCW
9	R7423-311	Condenser Fan Motor	1	-	115V60Hz DAI-8204DYCA
10	R3313-260	Condenser Fan Motor B/K	1	-	-
11	R3813-791	Condenser Fan wire	1	MSWR10	∅.5 275x237

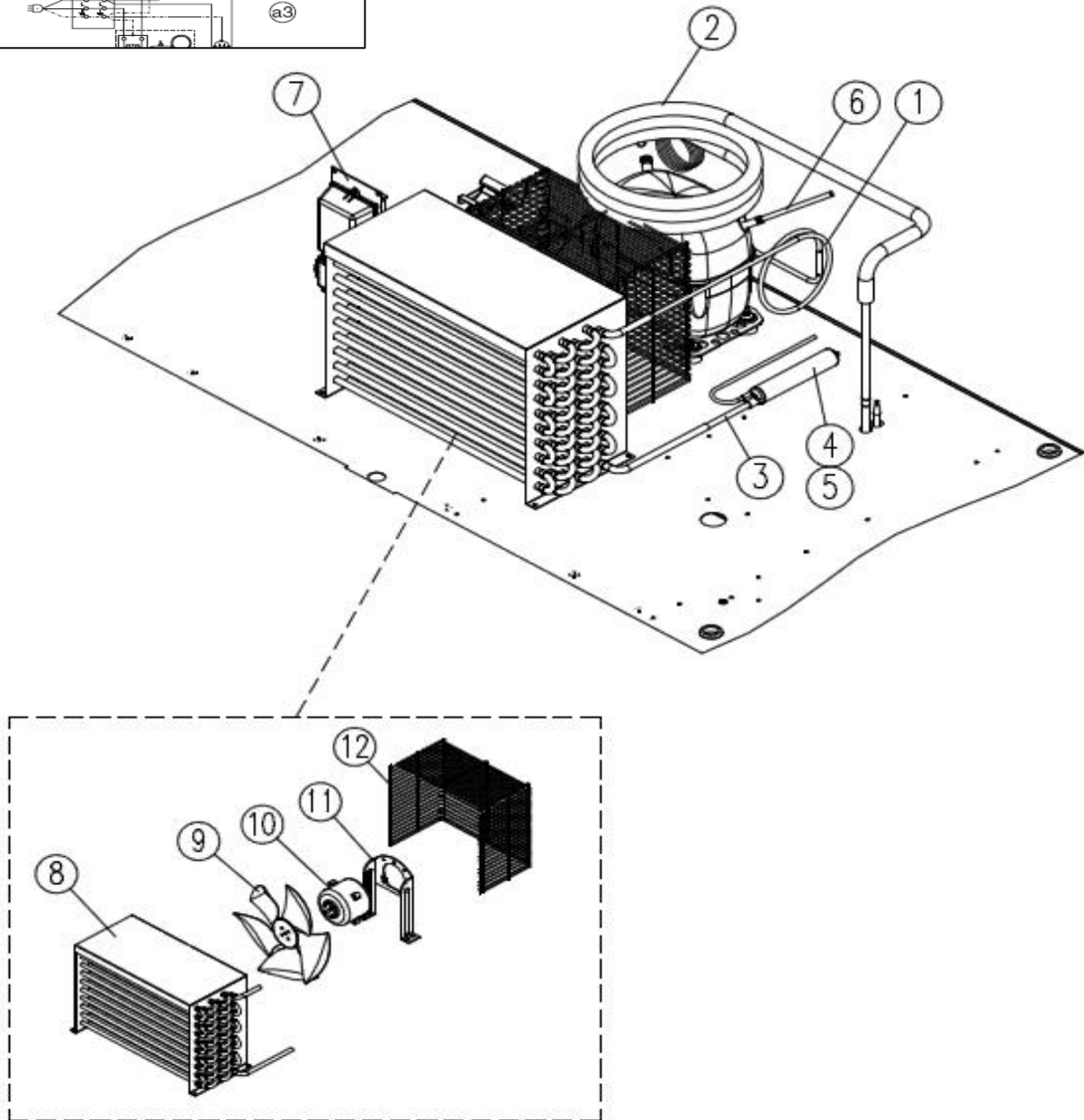


## B. Assembly Unit

### 3. BSF49T

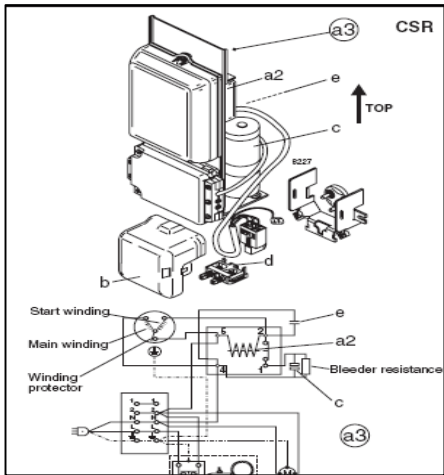


NO.	Model Code	Description	Qty	Material	Spec
1	R2113-570	Discharge Connector	1	CU	-
2	R8603-813	Assy Suction Pipe T49F	1	-	-
3	R2213-210	Pipe Connect Dryer T49	1	-	R-134a, 36g
4	R2183-610	Dryer	1	-	-
5	R2104-982	Pipe Dryer	1	-	-
6	R2103-230	Pipe Comp Charging	1	-	-
7	R7539-200	Starting Device	1	-	Code No : 117-7045
		Starting Capictor		-	410uF
		Running Capictor		-	23.5uF
8	R2272-023	Condensrer AS	1	-	-
9	R3723-070	Condenser Fan Blade	1	AL	9" CCW
10	R7423-311	Condenser Fan Motor	1	-	115V60Hz DAI-8204DYCA
11	R3313-260	Condenser Fan Motor B/K	1	-	-
12	R3813-781	Condenser Fan wire	1	MSWR10	∅2.5

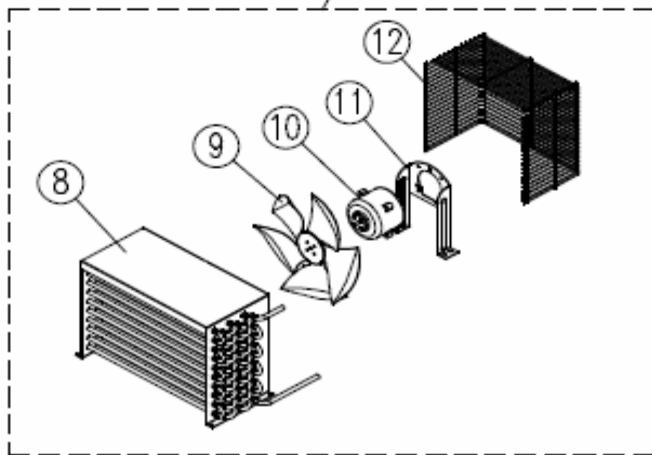
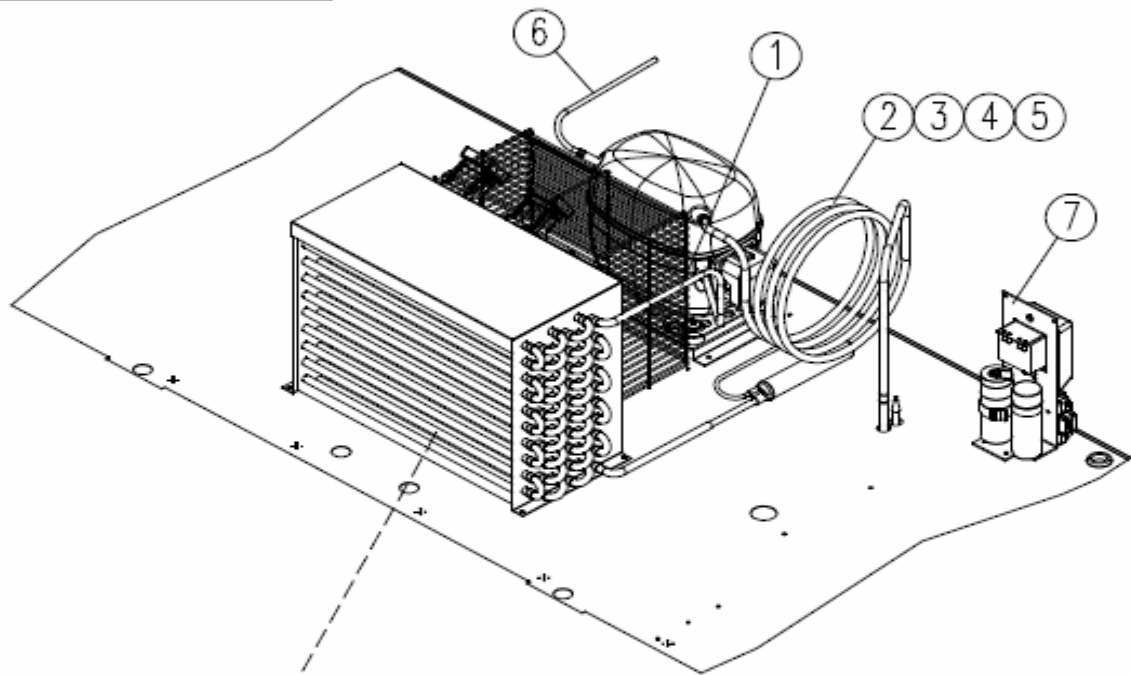


## B. Assembly Unit

### 4. BSR72T

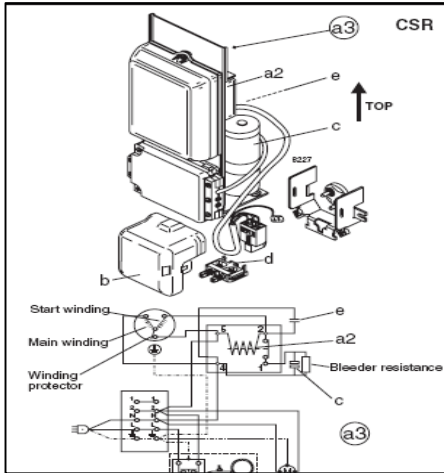


NO.	Model Code	Description	Qty	Material	Spec
1	R2113-960	Pipe Discharge T49F	1	-	-
2	R845A-010	Assy Suction Pipe T72R	1	-	-
3	R2213-200	Pipe Connect Dryer T49	1	-	-
4	R2183-200	Dryer	1	-	-
5	R2104-421	Pipe Dryer	1	-	-
6	R2114-321	Compressor Charging Pipe	1	-	-
7	R7539-200	Starting Device	1	-	Code No : 117-7053
		Starting Capicitor		-	410uF
		Running Capicitor		-	23.5uF
8	R2272-023	Condenser AS	1	-	-
9	R3723-070	Condenser Fan Blade	1	AL	9" CCW
10	R7423-311	Condenser Fan Motor	1	-	115V60Hz DAI-8204DYCA
11	R3313-260	Condenser Fan Motor B/K	1	-	-
12	R3813-150	Condenser Fan wire	1	MSWR10	φ2.5 275x237

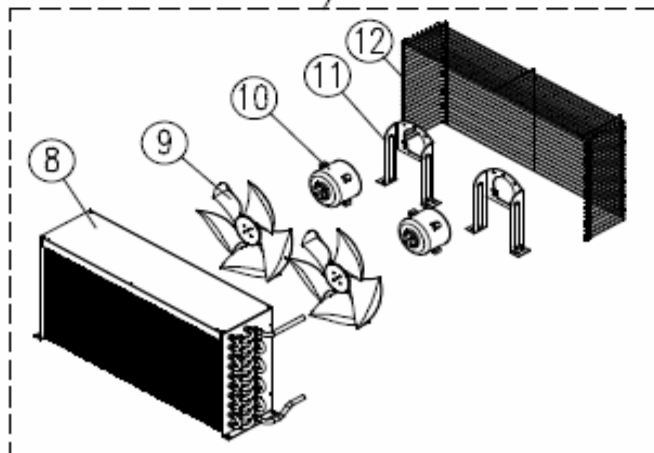
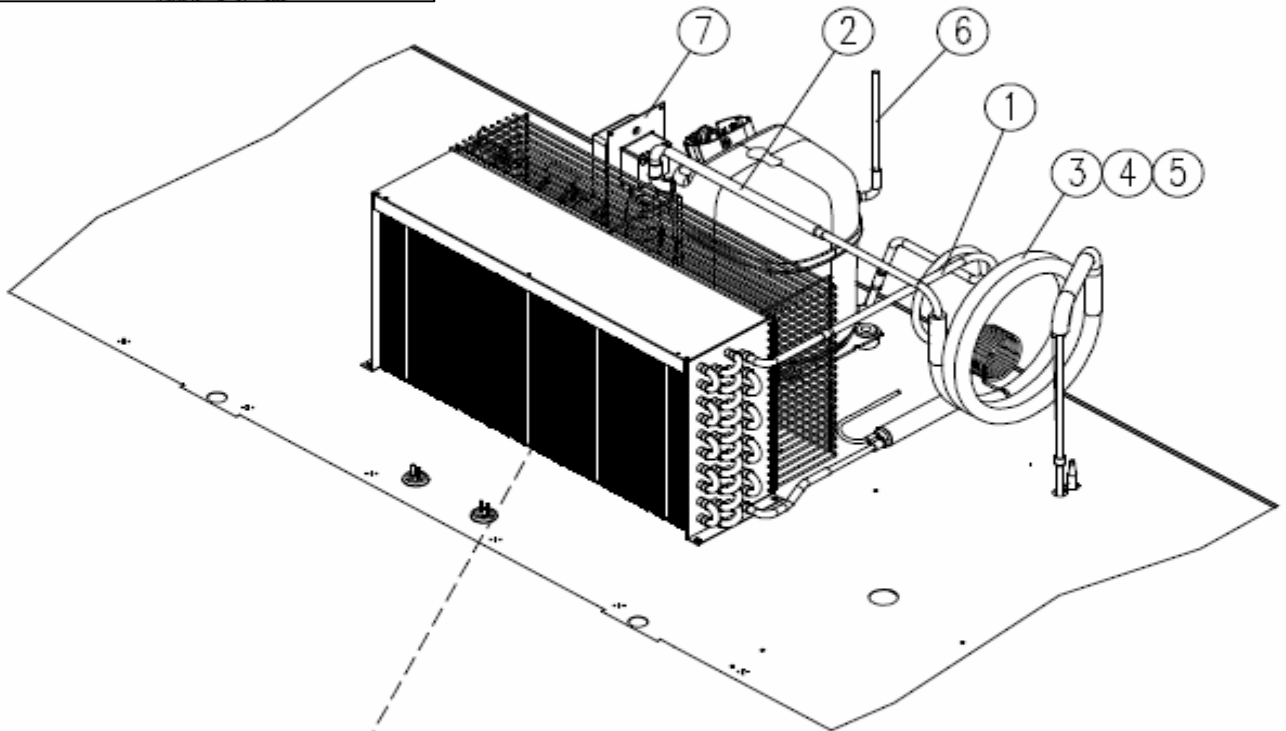


## B. Assembly Unit

### 5. BSF72T



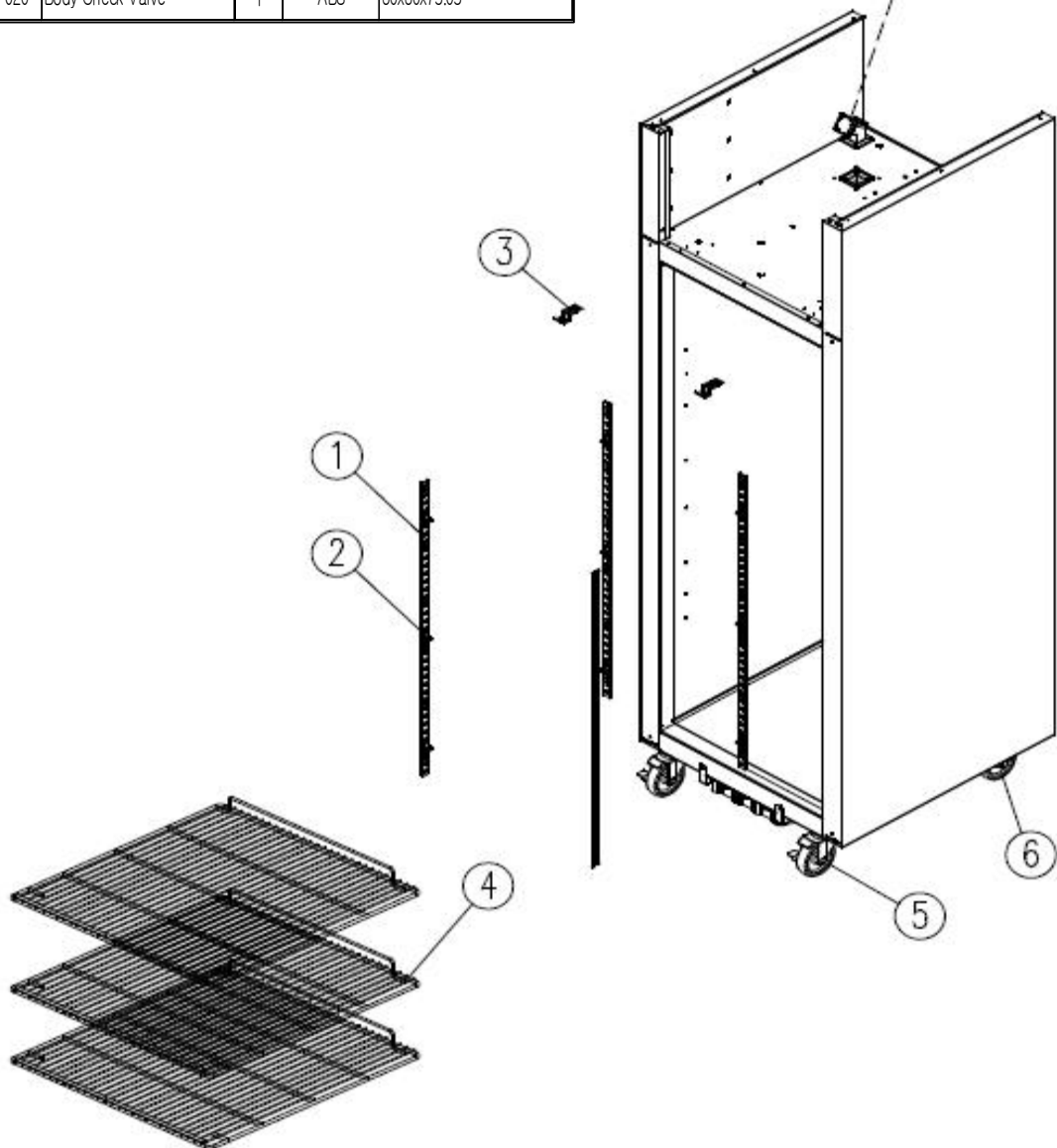
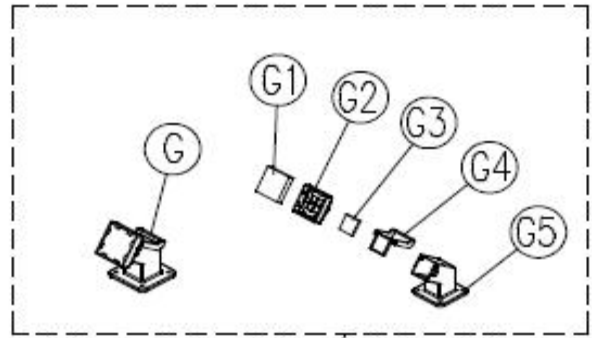
NO.	Model Code	Description	Qty	Material	Spec
1	R2113-311	Condenser Connector	1	-	-
2	R2114-330	Compressor Pull Out, B	1	-	-
3	R845A-020	Ass'y Suction Pipe T72F	1	-	-
4	R2104-421	Condenser Dryer Pipe	1	-	-
5	R2183-200	Dryer Ass'y	1	-	-
6	R2114-321	Compressor Charging Pipe	1	-	-
7	R7539-200	Starting Device	1	-	Code No : 117-7073
		Starting Capicitor		-	100uF
		Running Capicitor		-	20uF
8	R2272-030	Condenser AS	1	-	-
9	R3723-070	Condenser Fan Blade	2	AL	9" CCW
10	R7423-311	Condenser Fan Motor	2	-	115V60Hz DAI-8204DYCA
11	R3313-260	Condenser Fan Motor B/K	2	-	-
12	R3813-770	Condenser Fan wire-B	1	MSWR10	-



## C. Body Assembly

### 1. BSR23T, BSF23T

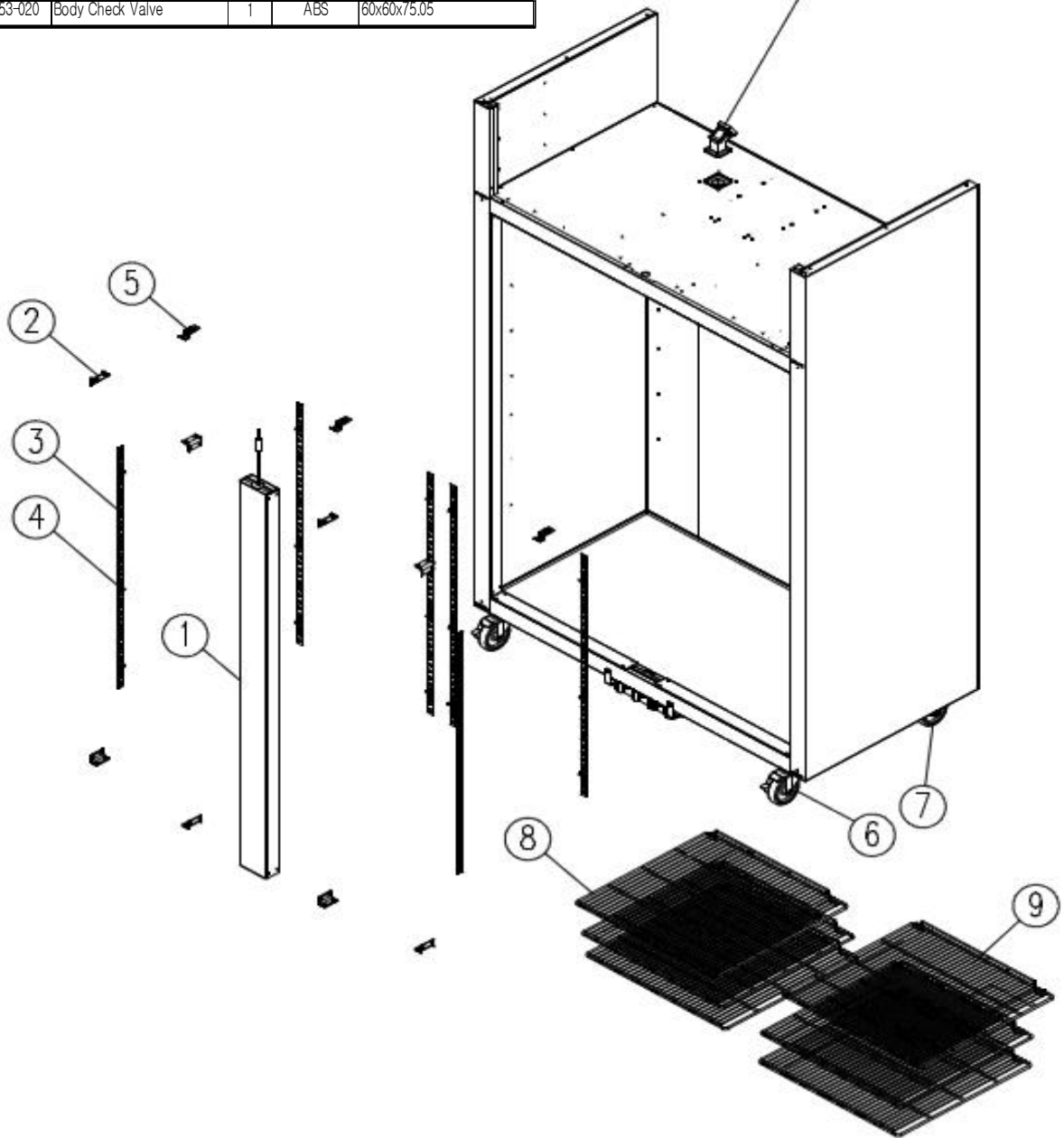
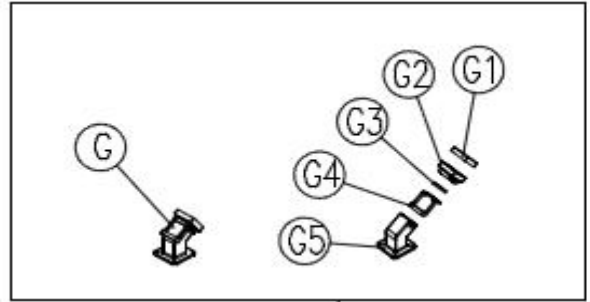
NO.	Model Code	Description	Qty	Material	Spec
1	R3373-630	Shelf Standard L	4	-	T=12, L=930
2	R3313-151	Shelf Clip	12	POM	White
3	R3114-601	U-Cover Bracket A	2	POM	White
4	R3232-450	Assy Packing Shelf	1SET	MSWR10	558x587
5	R3323-200	Caster	2	-	4" Moving / Stopping
6	R3323-190	Caster	2	-	4" Moving
G	R8173-130	Check Valve As	1	-	-
G1	R3253-050	Filter Check Valve	1	Filter Fome	#10, T10, Black
G2	R3253-040	Cap Check Valve	1	ABS	45.5x45.5x23.5
G3	R3253-060	Packing Flap	1	PE	T=4, White
G4	R3253-030	Flap Check Valve	1	ABS	40.5x45x36
G5	R3253-020	Body Check Valve	1	ABS	60x60x75.05



# C. Body Assembly

## 2. BSR49T

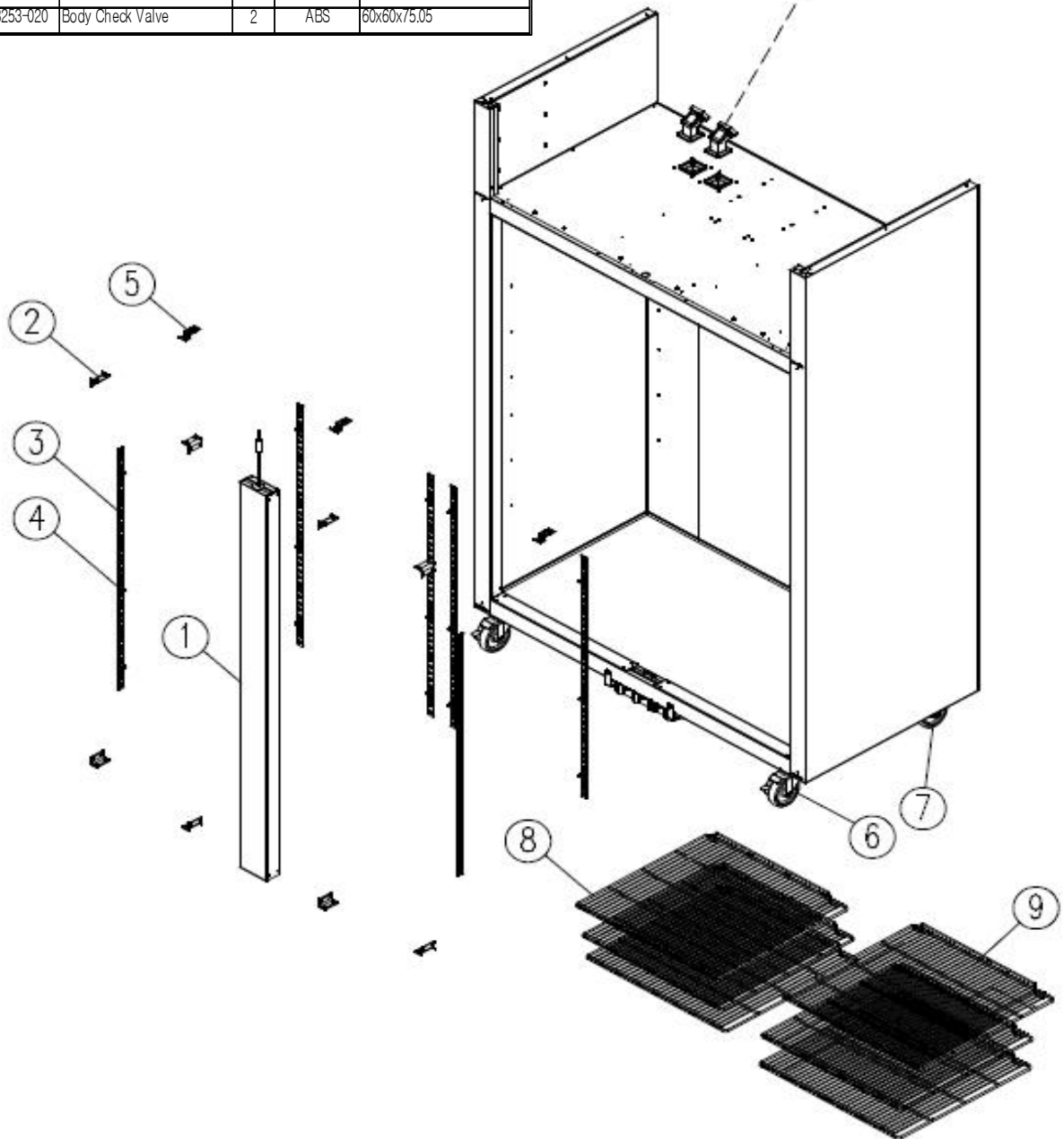
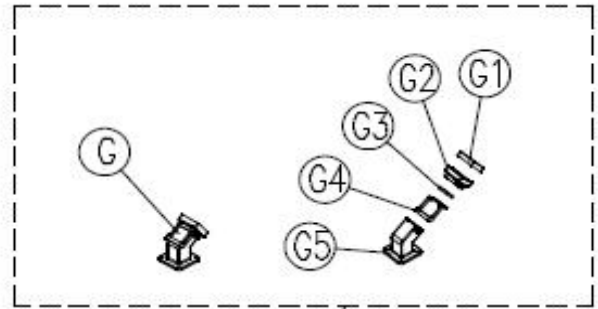
NO.	Model Code	Description	Qty	Material	Spec
1	H816A-040	Cross Bar AS 1/2H	1	-	-
2	R325A-030	Cover Corner	8	ABS	28.5x28.5x53
3	R3373-630	Shelf Standard L	6	-	T=12, L=930
4	R3313-151	Shelf Clip	24	POM	White
5	R3314-601	U-Cover bracket	3	GI	T=12, 61x20
6	R3323-200	Caster	2	-	4" Moving / Stopping
7	R3323-190	Caster	2	-	4" Moving
8	R3233-162	Shelf-LF	3	-	MSWR10+PE
9	R3233-172	Shelf-RH	3	-	MSWR10+PE
G	H8173-130	Check Valve As	1	-	-
G1	R3253-050	Filter Check Valve	1	Filter Fome	#10, T10, Black
G2	R3253-040	Cap Check Valve	1	ABS	45.5x45.5x23.5
G3	R3253-060	Packing Flap	1	PE	T=4, White
G4	R3253-030	Hap Check Valve	1	ABS	40.5x45x36
G5	R3253-020	Body Check Valve	1	ABS	60x60x75.05



# C. Body Assembly

## 3. BSF49T

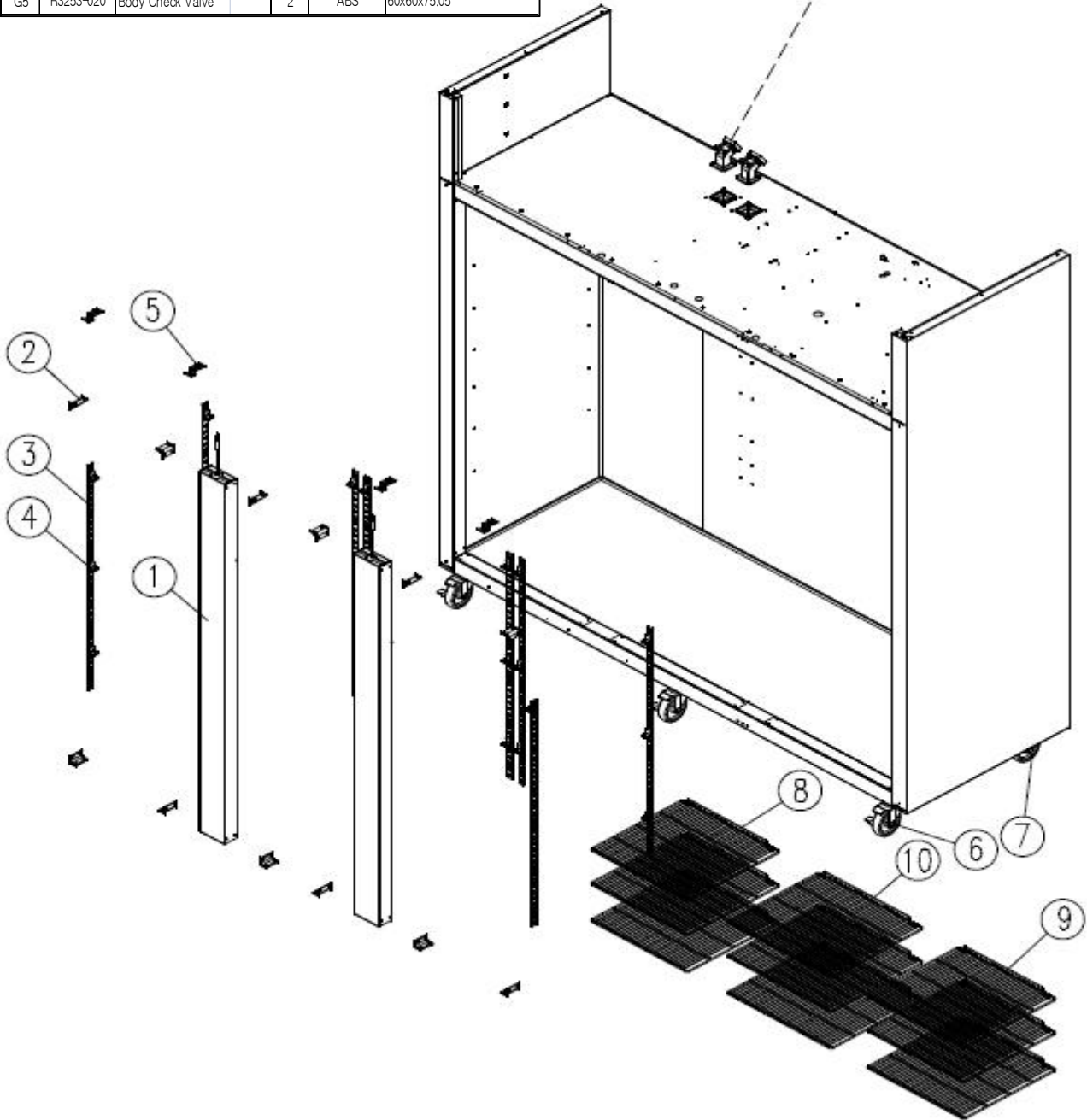
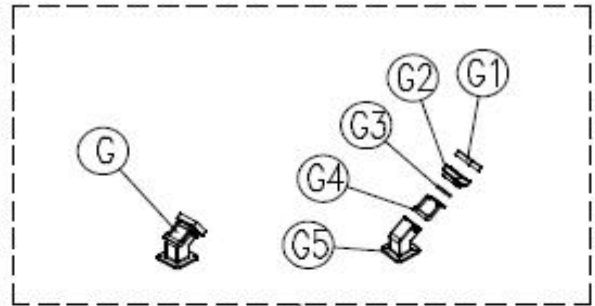
NO.	Model Code	Description	Qty	Material	Spec
1	R816A-030	Cross Bar AS T72F	1	-	-
2	R325A-030	Cover Corner	8	ABS	28.5x28.5x53
3	R3373-630	Shelf Standard L	6	-	T=12, L=930
4	R3313-151	Shelf Clip	24	POM	White
5	R3314-601	U-Cover Bracket	3	GI	T=12, 61x20
6	R3323-200	Caster	2	-	4" Moving / Stopping
7	R3323-190	Caster	2	-	4" Moving
8	R3233-162	Shelf-LF	3	-	MSWR10+PE
9	R3233-172	Shelf-RH	3	-	MSWR10+PE
G	R8173-130	Check Valve As	2	-	-
G1	R3253-050	Filter Check Valve	2	Filter Fome	#10, T10, Black
G2	R3253-040	Cap Check Valve	2	ABS	45.5x45.5x23.5
G3	R3253-060	Packing Flap	2	PE	T=4, White
G4	R3253-030	Hap Check Valve	2	ABS	40.5x45x36
G5	R3253-020	Body Check Valve	2	ABS	60x60x75.05



# C. Body Assembly

## 4. BSR72T

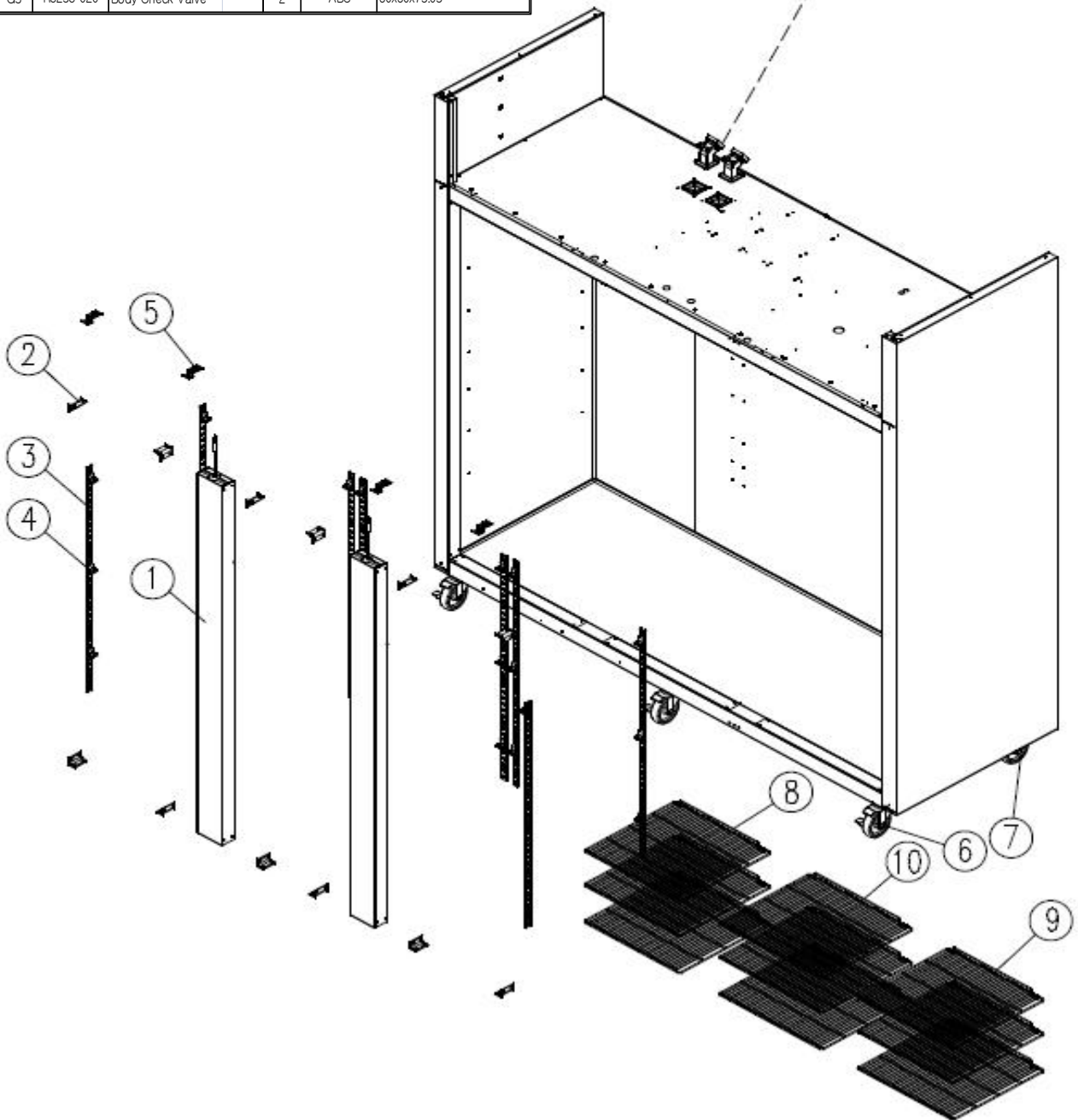
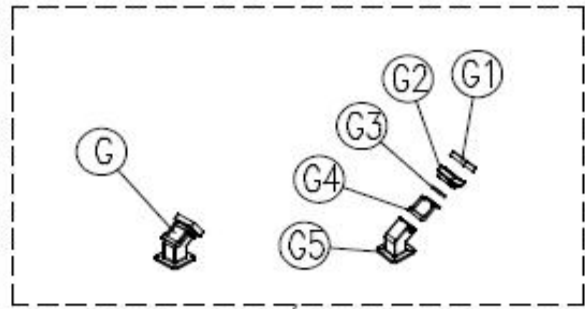
NO.	Model Code	Description	Qty	Material	Spec
1	R816A-040	Ass'y Cross Bar T72R	2	-	-
2	R325A-030	Cover Corner	12	ABS	28.5*28.5*53
3	R3373-630	Shelf Standard L	8	-	T=12, L=930
4	R3313-151	Shelf Clip	36	POM	White
5	R3114-601	U-Cover Bracket A	4	GI	T=12 61x20
6	R3323-200	Caster	3	-	4" Moving / Stopping
7	R3323-190	Caster	3	-	4" Moving
8	R3233-162	Shelf-LF	3	-	MSWR10+PE
9	R3233-172	Shelf-RH	3	-	MSWR10+PE
10	R371A-010	Shelf-T/2	3	-	MSWR10+PE
G	R8173-130	Check Valve As	2	-	-
G1	R3253-050	Filter Check Valve	2	Filter Fome	#10, 110, Black
G2	R3253-040	Cap Check Valve	2	ABS	45.5x45.5x23.5
G3	R3253-060	Packing Flap	2	PE	T=4, White
G4	R3253-030	Flap Check Valve	2 </td <td>ABS</td> <td>40.5x45x36</td>	ABS	40.5x45x36
G5	R3253-020	Body Check Valve	2	ABS	60x60x75.05



# C. Body Assembly

## 5. BSF72T

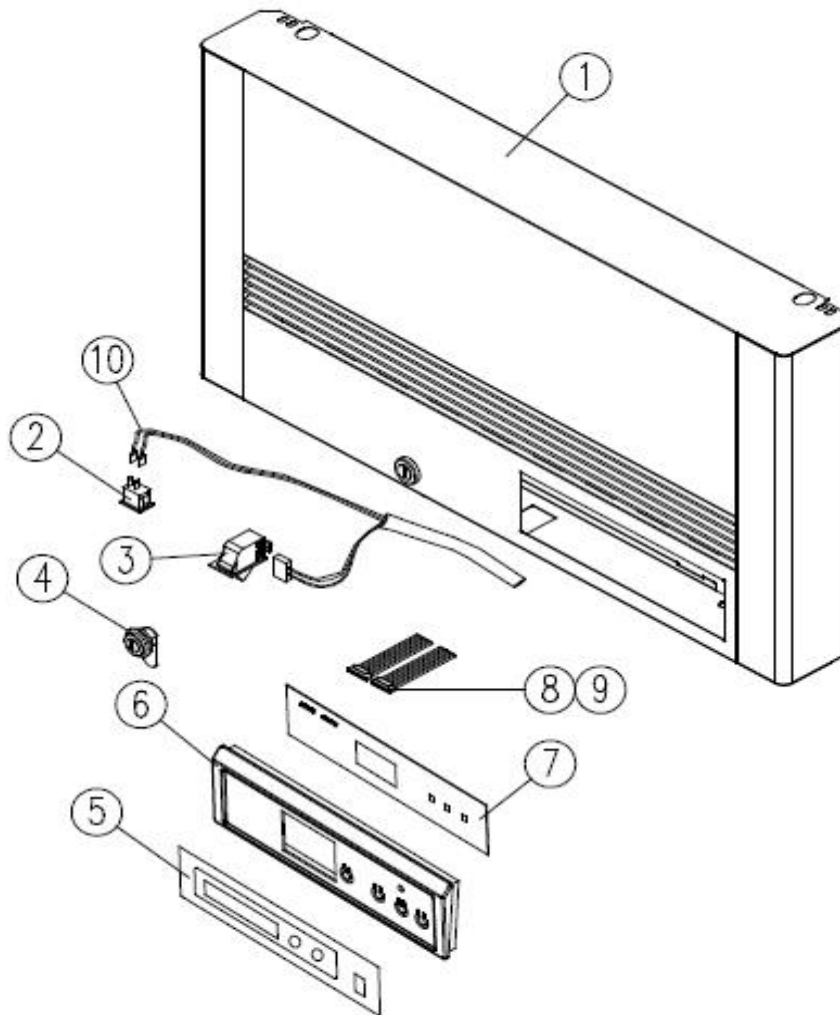
NO.	Model Code	Description	Qty	Material	Spec
1	R816A-030	Assy Cross Bar T72F	2	-	-
2	R325A-030	Cover Corner	12	ABS	28.5*28.5*53
3	R3373-630	Shelf Standard L	8	-	T=12, L=930
4	R3313-151	Shelf Clip	36	POM	White
5	R3114-601	U-Cover bracket A	4	GI	T=12 61x20
6	R3323-200	Caster	3	-	4" Moving / Stopping
7	R3323-190	Caster	3	-	4" Moving
8	R2233-162	Shelf-LF	3	-	MSWR10+PE
9	R3233-172	Shelf-RH	3	-	MSWR10+PE
10	R371A-010	Shelf-T72	3	-	MSWR10+PE
G	R8173-130	Check Valve As	2	-	-
G1	R3253-050	Filter Check Valve	2	Filter Fome	#10, T10, Black
G2	R3253-040	Cap Check Valve	2	ABS	45.5x45.5x23.5
G3	R3253-060	Packing Flap	2	PE	T=4, White
G4	R3253-030	Flap Check Valve	2 </td <td>ABS</td> <td>40.5x45x36</td>	ABS	40.5x45x36
G5	R3253-020	Body Check Valve	2	ABS	60x60x75.05



## D. Top Grill Assembly

### 1. BSR23T, BSF23T

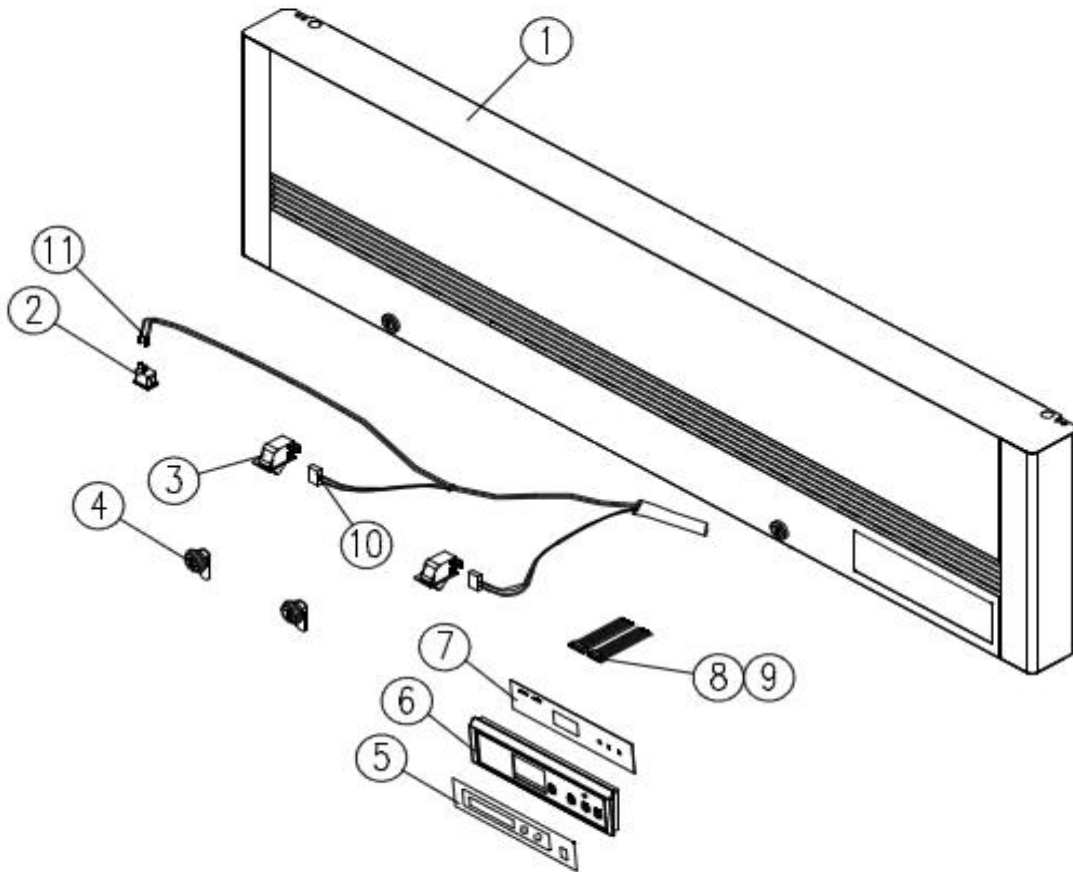
NO.	Model Code	Description	Qty	Material	Spec
1	R8249-630	Top Grill As T23	1	-	-
2	R7204-070	Power Switch	1	-	SL112A, 115V 15A
3	R7203-020	Door Switch	1	-	WHT, SP201R-9D
4	R3734-030	Door Locking Ass'y	1	-	-
5	R4103-680	Inlay Control	1	-	T=0.2, 54x218
6	R4142-122	Control Board	1	ABS	Dark Gray, T2x242x72
7	R7129-550	Front PCB-88 DP1	1	-	88 Display
8	R7613-300	Harness F-PCB 8P B	1	-	AGW24, 8P, 연결 L450
9	R7613-320	Harness F-PCB 10P B	1	-	AGW24, 10P, 연결 L450
10	R7403-080	Ass'y Harness	1	-	



## D. Top Grill Assembly

### 2. BSR49T, BSF49T

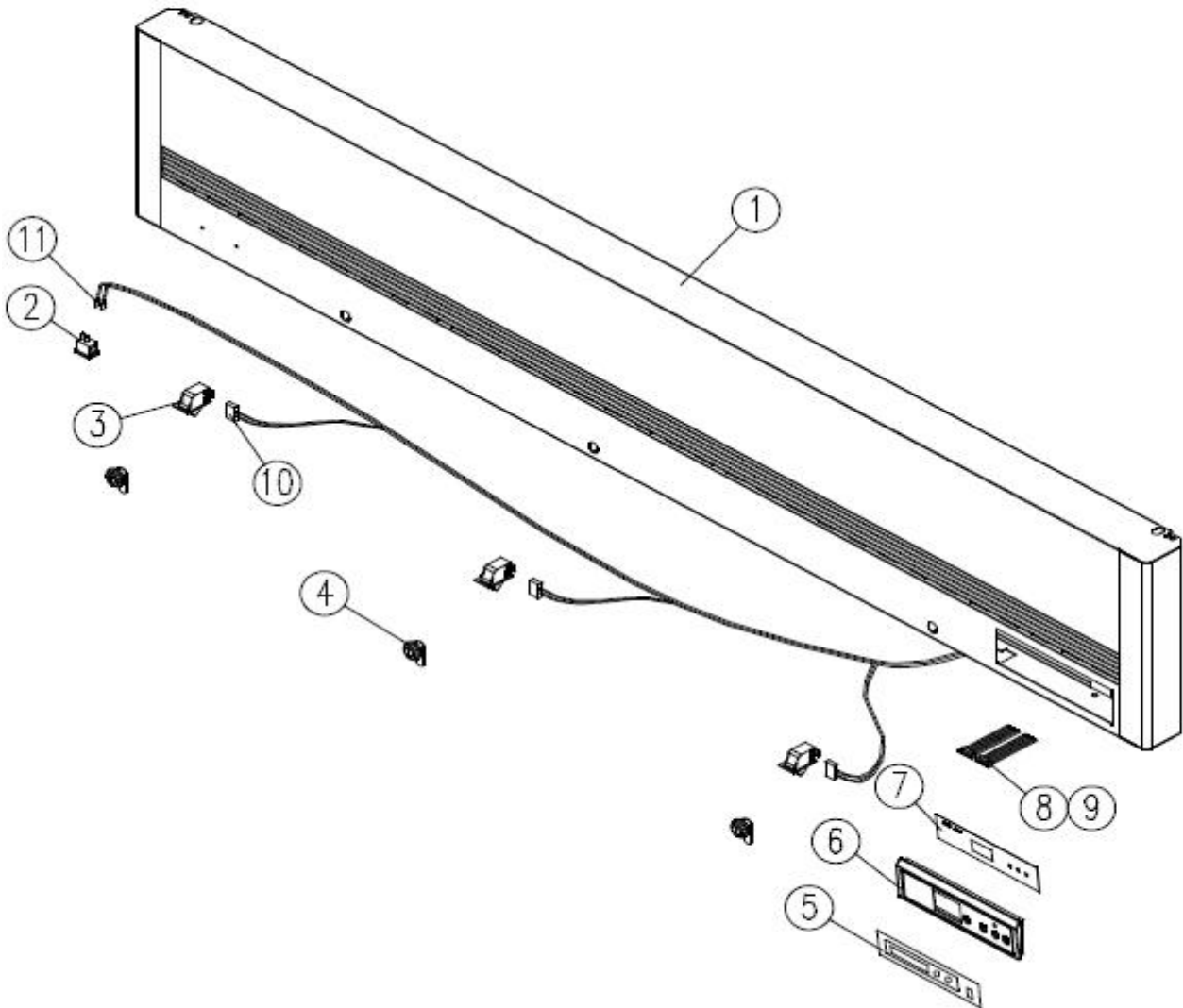
NO.	Model Code	Description	Qty	Material	Spec
1	R8249-640	Top Grill As T49	1	-	-
2	R7204-070	Power Switch	1	-	SL112A, 115V 15A
3	R7203-020	Door Switch	2	-	WHT, SP201R-9D
4	R3734-030	Door Locking Ass'y	2	-	-
5	R4103-680	Inlay Control	1	-	T=0.2, 54x218
6	R4142-122	Control Board	1	ABS	Dark Gray, T2x242x72
7	R7129-550	Front PCB-88 DP1	1	-	88 Display
8	R7613-300	Harness F-PCB 8P B	1	-	AGW24, 8P, 연결 L450
9	R7613-320	Harness F-PCB 10P B	1	-	AGW24, 10P, 연결 L450
10	R7403-080	Harness Switch A	2	-	UL AWG18
11	R7373-990	Ass'y Harness Power S/W D	1	-	115V



## D. Top Grill Assembly

### 3. BSR72T, BSF72T

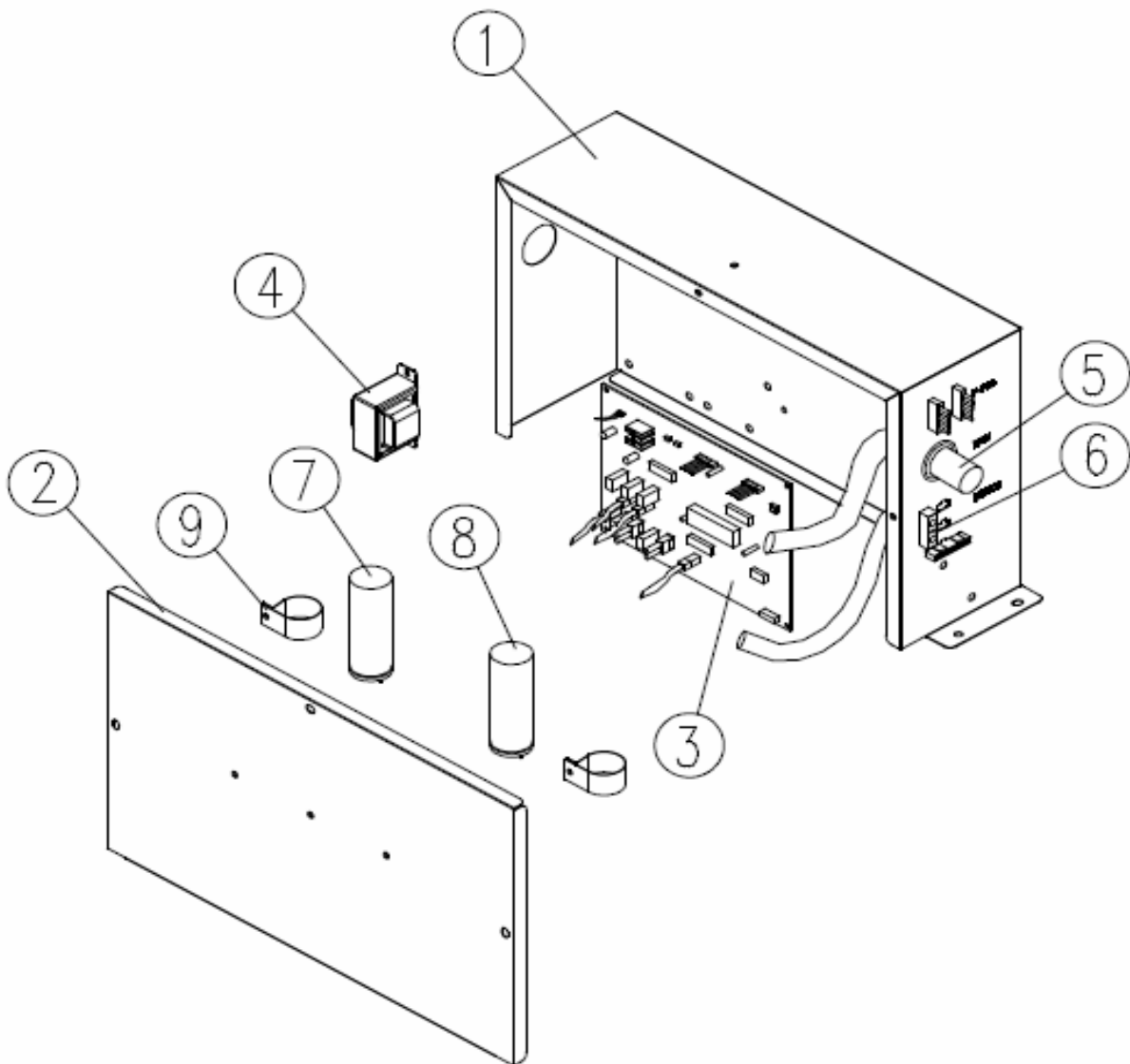
NO.	Model Code	Description	Qty	Material	Spec
1	R818A-030	Ass'y Grill Top T72	1	-	-
2	R7204-070	Power Switch	1	-	SL112A, 115V 15A
3	R7203-020	Door Switch	3	-	WHT, SP201R-9D
4	R3734-030	Door Locking Ass'y	3	-	-
5	R4103-680	Inlay Control	1	-	T=0.2, 54x218
6	R4142-122	Control Board	1	ABS	Dark Gray, T2x242x72
7	R7129-550	Front PCB-88 DP1	1	-	88 Display
8	R7613-300	Harness F-PCB 8P B	1	-	AGW24, 8P, 연결 L450
9	R7613-320	Harness F-PCB 10P B	1	-	AGW24, 10P, 연결 L450
10	R7403-080	Harness Switch A	3	-	UL AWG18
11	R7373-990	Ass'y Harness Power S/W D	1	-	115V



## E. Main PCB Box

### 1. BSR23T, BSR49T

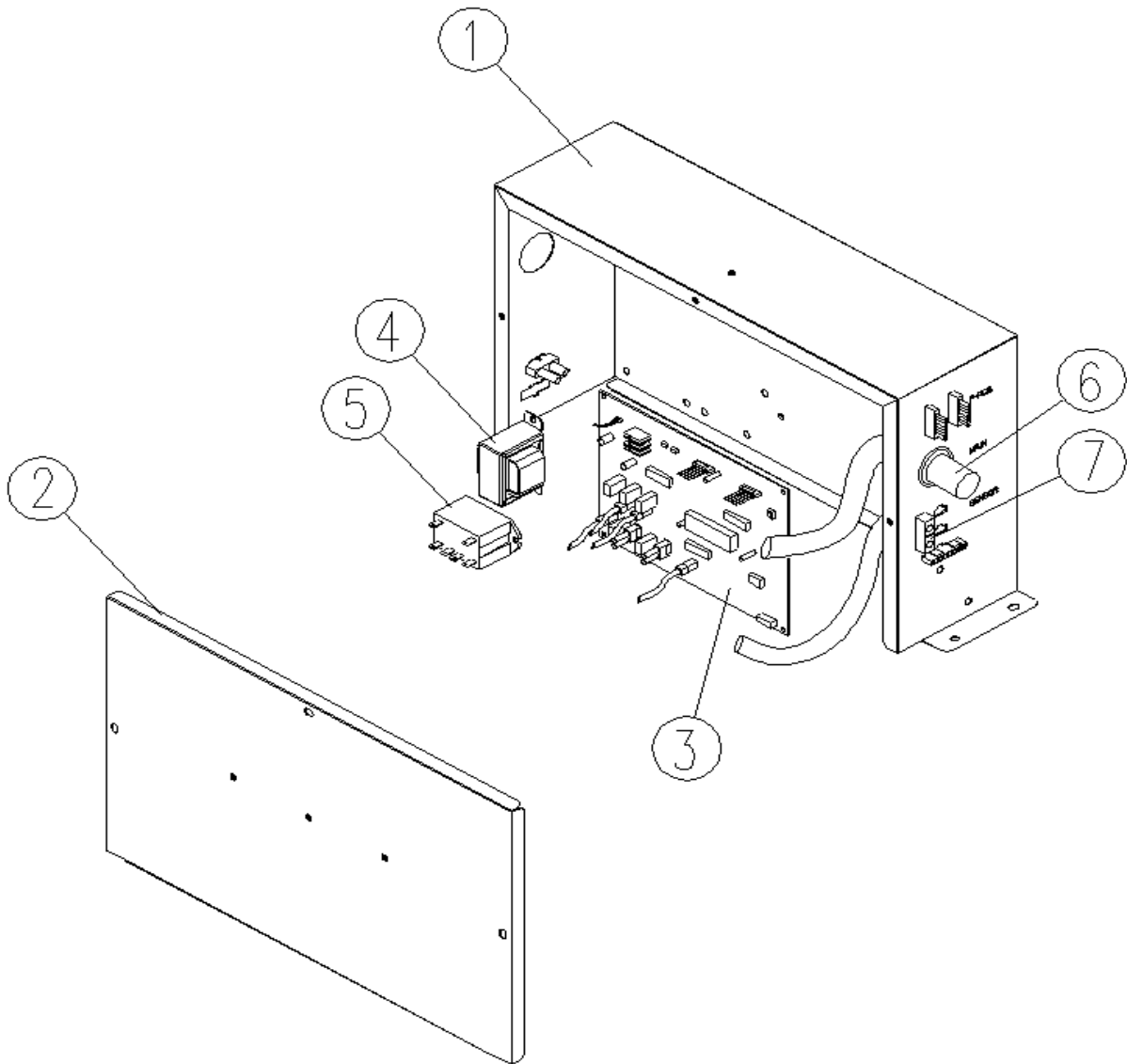
NO.	Model Code	Description	Qty	Material	Spec
1	R7119-870	Box Main PCB	1	GI	T=0.5, 558.34x330.71
2	R7119-880	M-PCB Box Cover	1	GI	T=0.5, 357.07x218.97
3	R7129-700	PCB Main	1	-	FR1, 165x115
4	R7504-060	Power Trans	1	-	120V60Hz, DT-1213
5	R7613-740	Harness Main AC-A 23R	1	-	Ass'y UL
6	R7613-890	Harness Main DC TM-R	1	-	Ass'y UL
7	R7549-160	Capacitor Starting	1	-	200vac 50/60Hz
8	R7549-170	Running Capacitor	1	-	230vac 50/60Hz
9	R3834-130	Cable Clamp	1	Nylon-66	DA-18N



## E. Main PCB Box

### 2. BSF23T, BSF49T

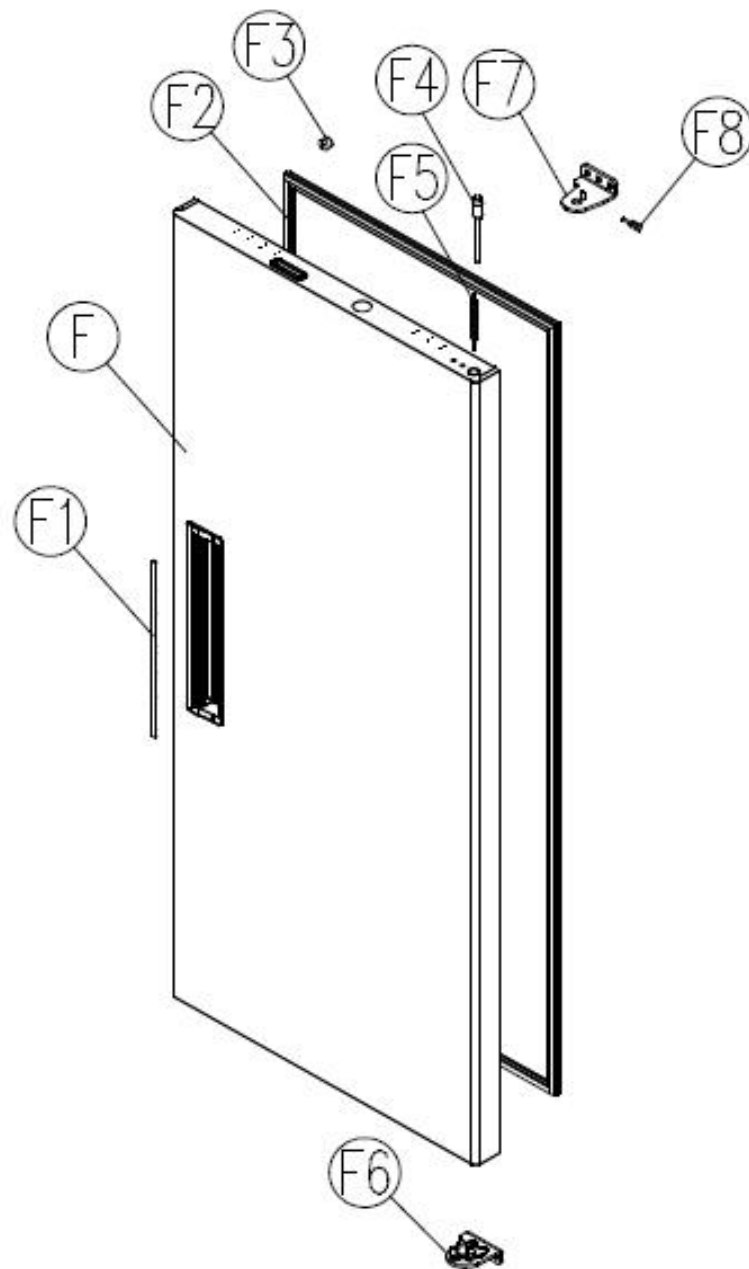
NO.	Model Code	Description	Qty	Material	Spec
1	R7119-870	Box Main PCB	1	GI	T=0.5, 558.34x330.71
2	R7119-880	M-PCB Box Cover	1	GI	T=0.5, 357.07x218.97
3	R7129-710	PCB Main	1	-	FR1, 165x115
4	R7504-060	Power Trans	1	-	120V60Hz, DT-1213
5	R7253-080	Power Relay	1	-	UZ-2A-BT110, 25A/277VAC
6	R7613-750	Harness Main AC-A 23F	1	-	Assy UL
7	R7613-900	Harness Main DC TM-F	1	-	Assy UL



## F. Door Assembly

### 1. BSR23T, BSF23T

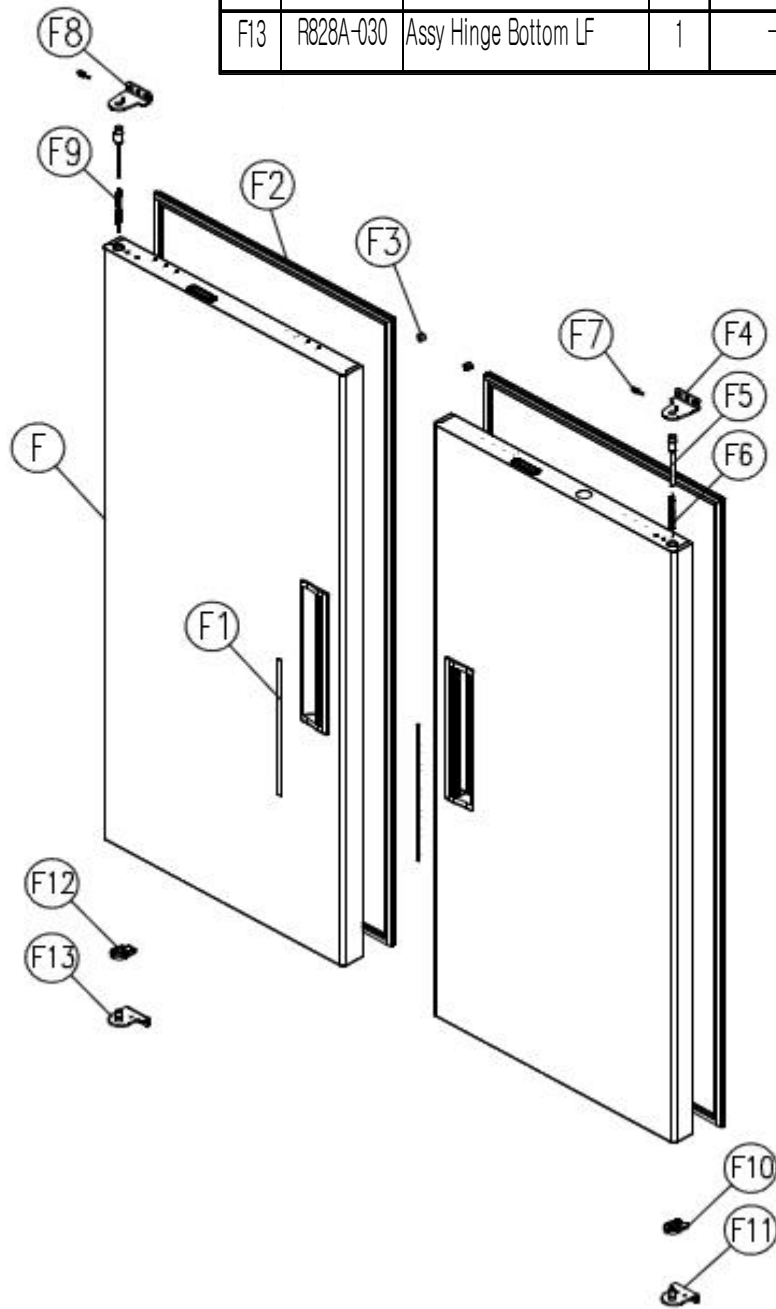
NO.	Model Code	Description	Qty	Material	Spec
F	R817A-050	Ass'y Door RH TM	1	-	-
F1	R4122-281	Handle Cover	1	ABS+CR도금	340.6x6.8
F2	R338A-010	Gasket Door TM	1	난연 PVC	1508x585
F3	R1254-051	Door Rubber Leg	2	Silicon	φ6x12
F4	R858A-410	Shaft Top Hinge AS	1	SUM24L	-
F5	R374A-020	Spring Door RH	1	SW-C	-
F6	R828A-020	Hinge Bottom RH As	1	STS304	T=4.0
F7	R828A-061	Hinge Top RH As	1	STS304	T=4.0
F8	R412A-020	Pin Tension	1	SUM24L	-



## F. Door Assembly

### 2. BSR49T, BSF49T

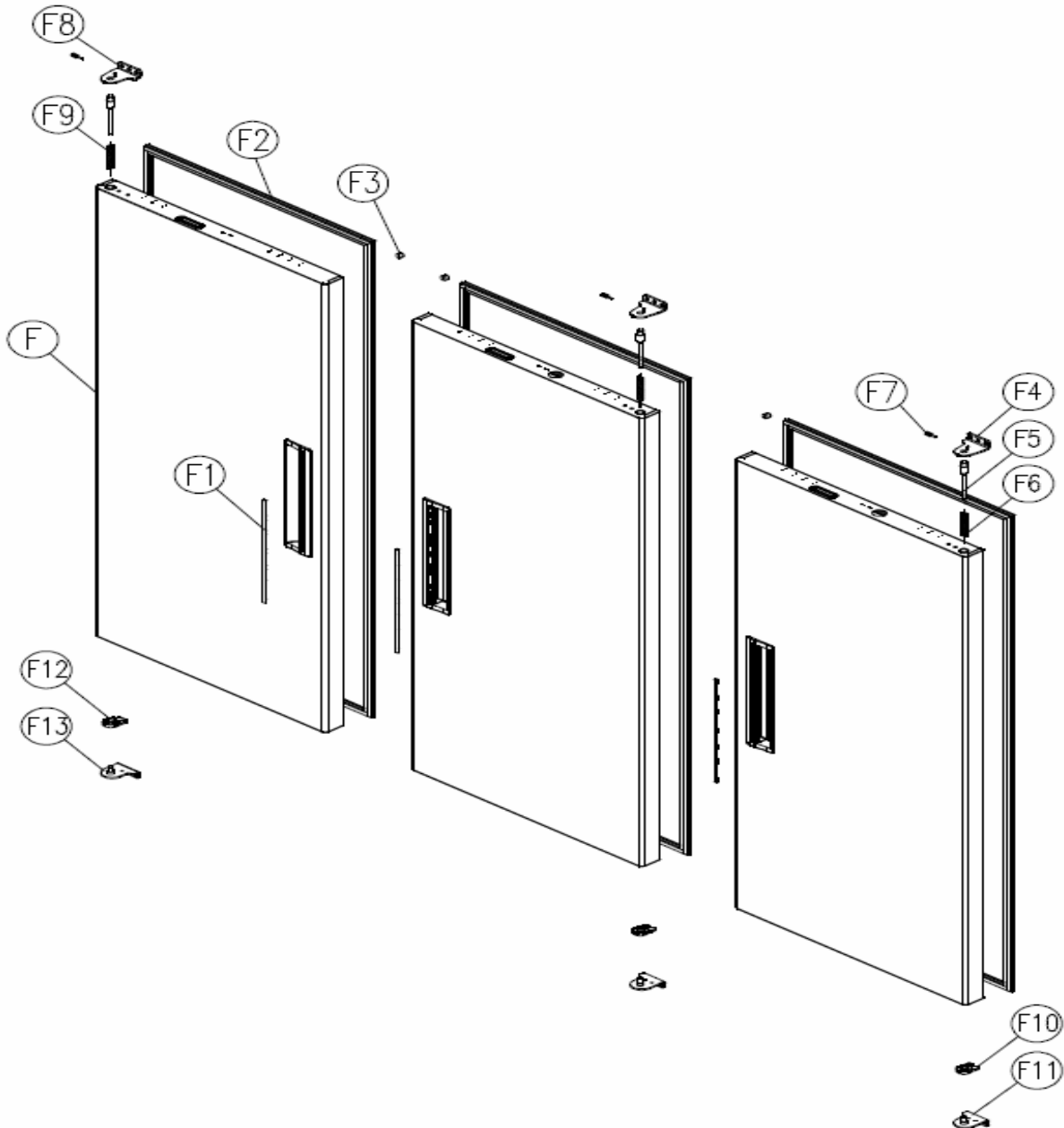
F7	R412A-020	Pin Tension	2	SUM24L	
F8	R828A-050	Assy Hinge Top LF	1	-	-
F9	R374A-010	Spring Door LF	1	SW-C	Ø2.3 백색 도금
F10	R375A-010	Stopper Hinge RH	1	POM(FW700S)	45.5*31*8
F11	R828A-020	Assy Hinge Bottom RH	1	-	-
F12	R375A-020	Stopper Hinge LF	1	POM(FW700S)	45.5*31*8
F13	R828A-030	Assy Hinge Bottom LF	1	-	-



# F. Door Assembly

## 3. BSR72T, BSF72T

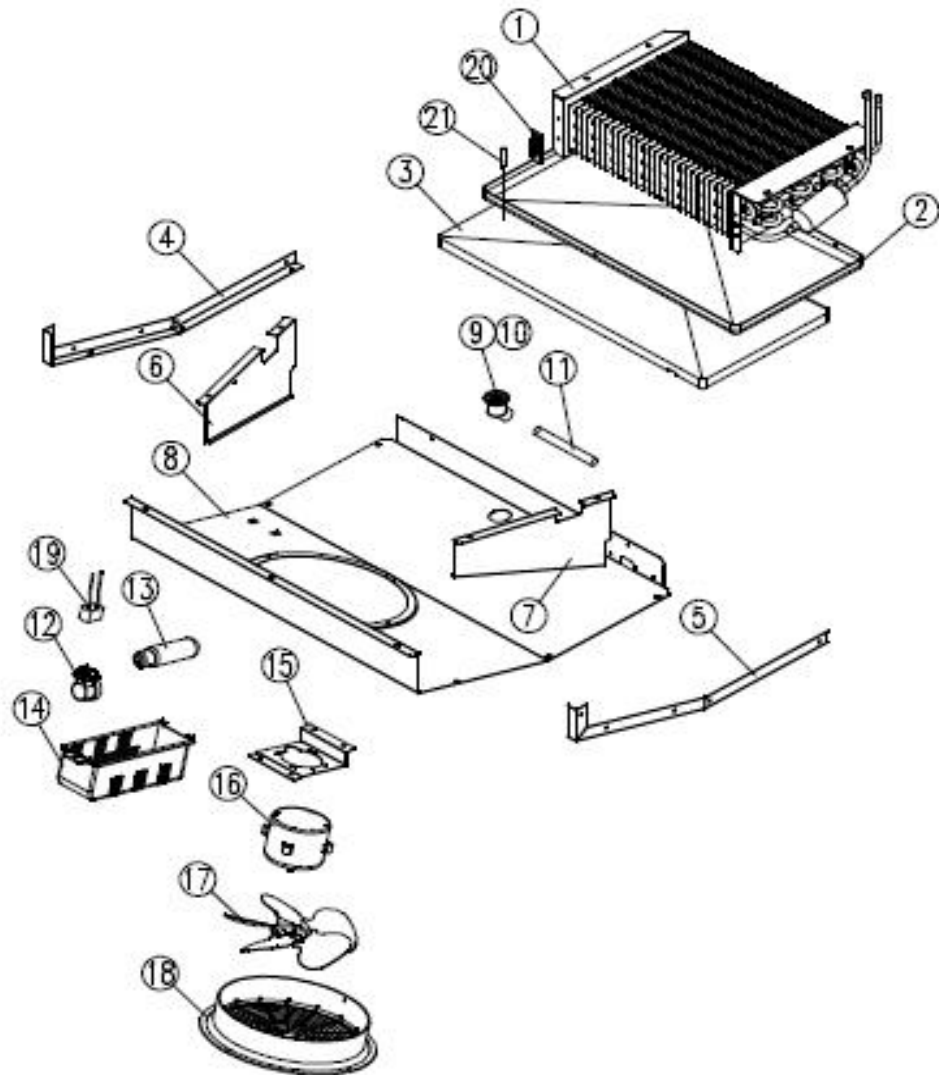
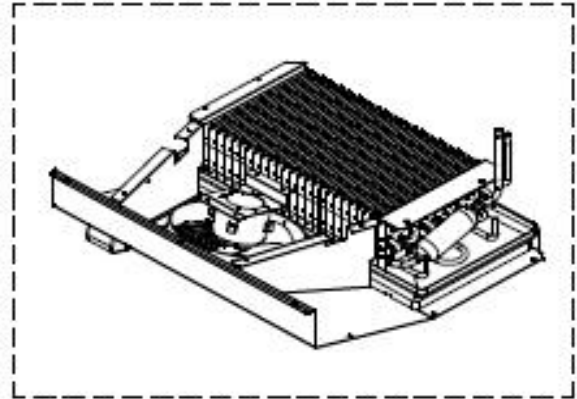
NO.	Model Code	Description	Qty	Material	Spec
F	R817A-040	Ass'y Door LF TM	1	-	-
	R817A-050	Ass'y Door RH TM	2	-	-
F1	R4122-281	Handle Cover	3	ABS+CR도금	340.6x6.8
F2	R338A-010	Gasket Door TM	3	단연 PVC	1508x585
F3	R1254-051	Door Rubber Leg	6	Silicon	φ6x12
F4	R828A-060	Assy Hinge Top RH	2	-	-
F5	R858A-410	Shaft Top Hinge AS	3	-	-
F6	R374A-020	Spring Door RH	2	SW-C	φ2.3 천연색 도금
F7	R412A-020	Pin Tension	3	SUM 24L	-
F8	R828A-050	Assy Hinge Top LF	1	-	-
F9	R374A-010	Spring Door LF	1	SW-C	φ2.3 백색 도금
F10	R375A-010	Stopper Hinge RH	2	POM (FW700S)	45.5*31*8
F11	R828A-020	Assy Hinge Bottom RH	2	-	-
F12	R375A-020	Stopper Hinge LF	1	POM (FW700S)	45.5*31*8
F13	R828A-030	Assy Hinge Bottom LF	1	-	-



# G. Evaporator Assembly

## 1. BSR23T

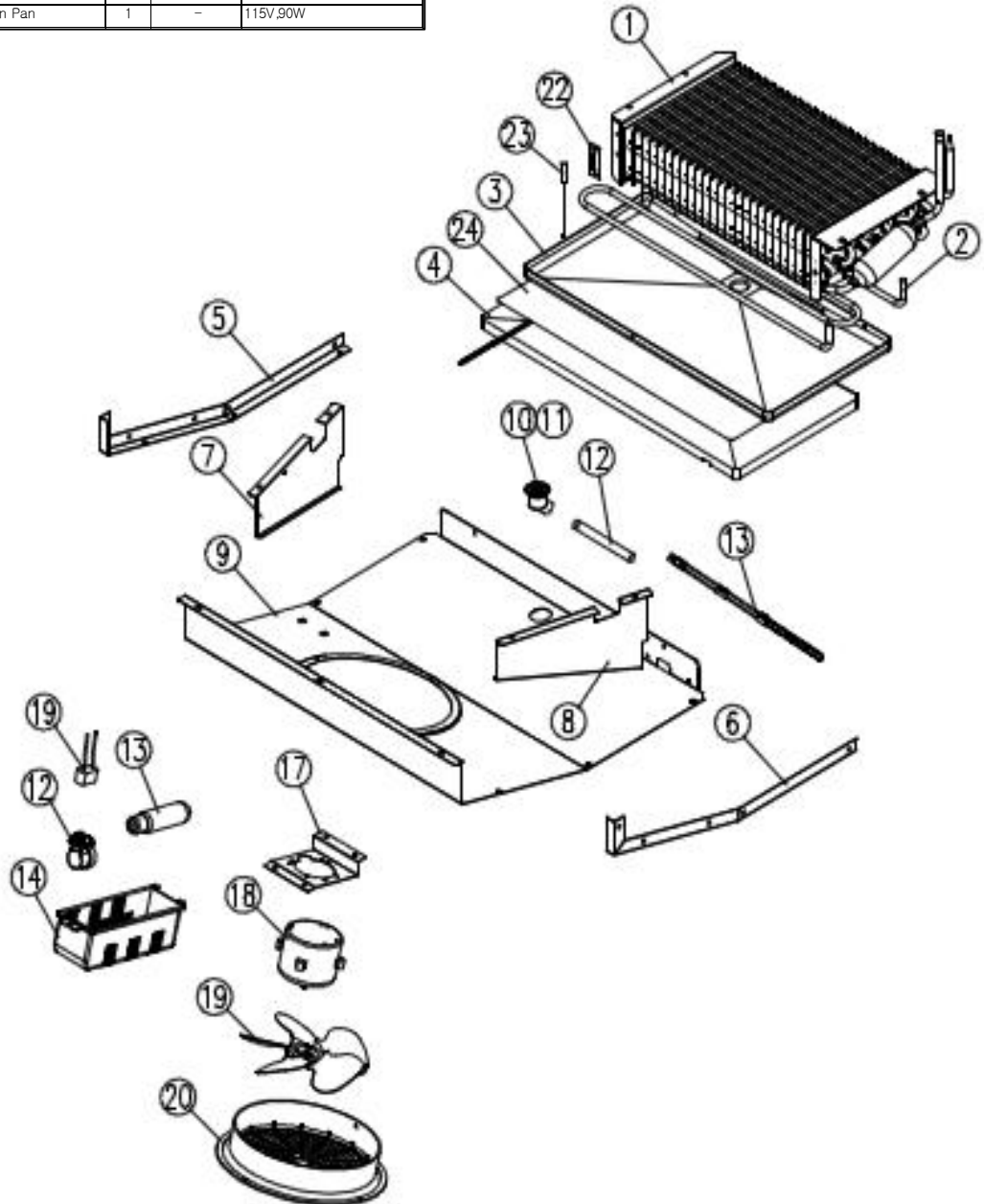
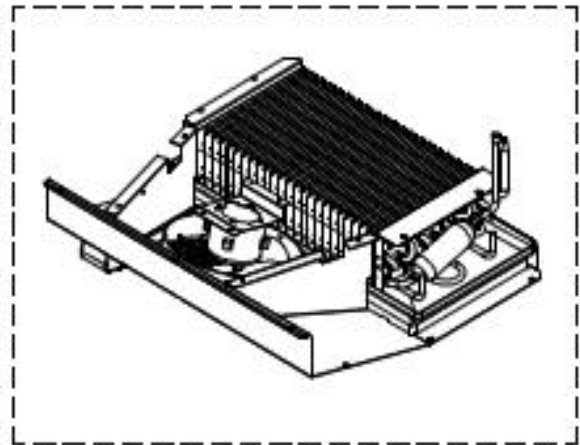
NO.	Model Code	Description	Qty	Material	Spec
1	R2263-072	Evaporator Assy	1	-	-
2	R3743-220	Evap Drain Pan Small	1	AL	-
3	R1143-202	Evap Drain Insul-S	1	Foam-PS	T= 17, 256x530
4	R3853-580	Evap Air Guide Left	1	STS443CT-2B	T= 0.5, 255.3x155.6
5	R3853-570	Evap Air Guide Right	1	STS443CT-2B	T= 0.5, 255.3x155.6
6	R3813-610	Evap Cover Bracket LF	1	STS430-2B	T= 1.0, 565x34.8
7	R3813-602	Evap Cover Bracket RH	1	STS430-2B	T= 1.0, 565x34.8
8	R3813-600	Eva Cover T23	1	AL3003	T= 0.5, 654.6x573
9	R3744-090	Evap Drain Elbow-Upp	1	PP	White
10	R3744-100	Evap Drain Elbow-Low	1	PP	White
11	R2124-021	Evaporator Drain Hose-A	1	Silicon	∅6x12, L=213
12	R7393-020	Lamp Soket	1	-	L-125B 660W 250V
13	R7394-010	Lamp Bulb	1	-	25T10/120V 25W
14	R3813-990	Lamp Cover	1	-	Mips White
15	R3203-482	Motor Fix Bracket	1	STS430-2B	T= 1.0, 90x146
16	R7423-300	Evaporator Fan Motor	1	CCW	AC115V 60Hz DAI-E204DYCA-1
17	R3729-010	Evap Fan Blade	1	CCW	8"
18	R3812-141	Evaporator Fan Motor Guard	1	HIPS	VH-1800EX
19	R7403-110	Harness Lamp L	1	-	UL AWG 18
20	R3314-191	Sensor Bracket	1	PP	White
21	R7213-112	Temp Display Sensor	1	-	White, L= 200



# G. Evaporator Assembly

## 2. BSF23T

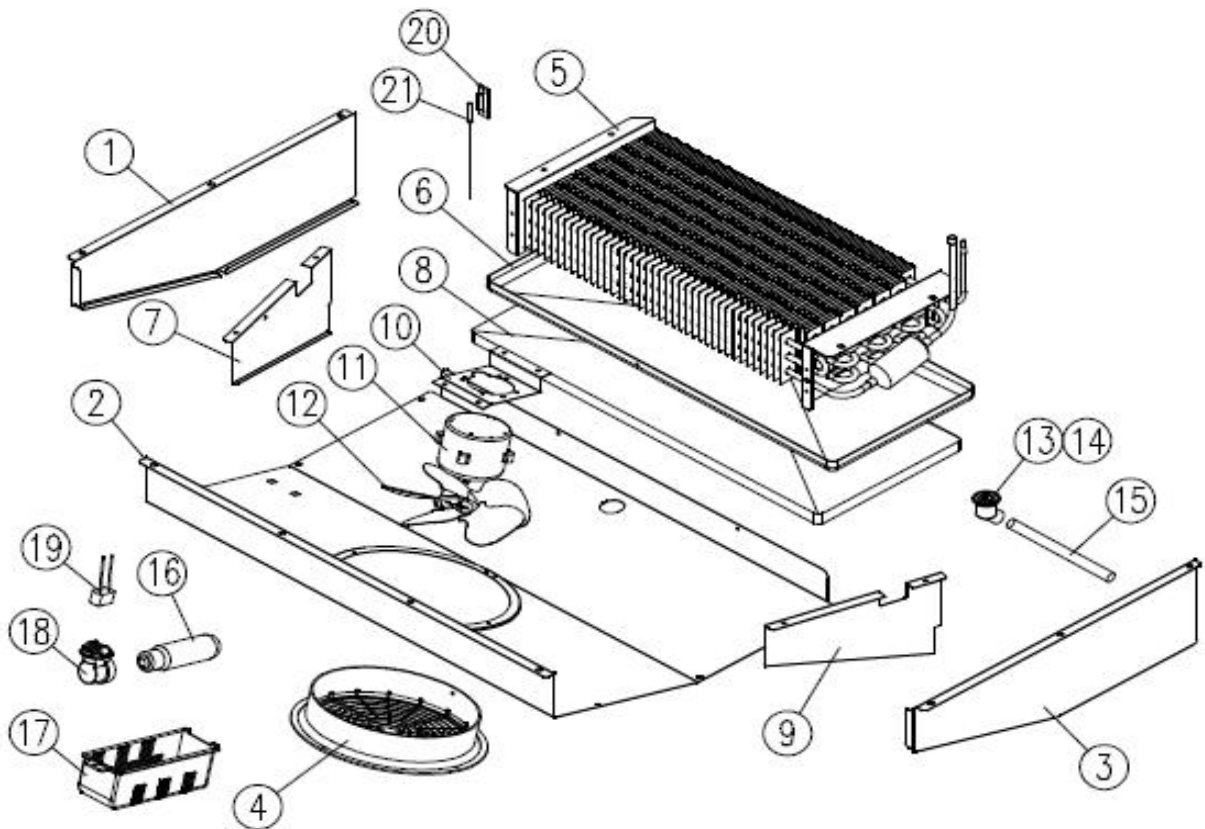
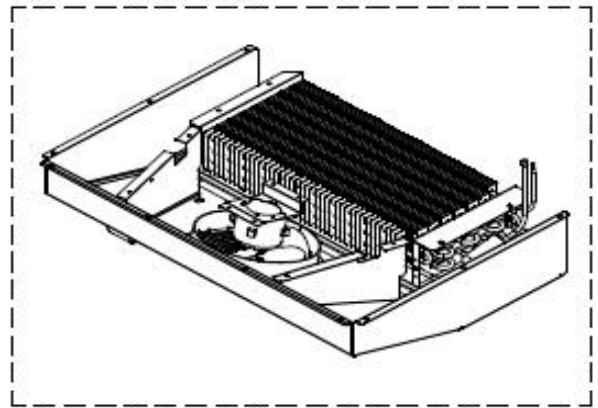
NO.	Model Code	Description	Qty	Material	Spec
1	R2263-051	Evaporator Assy	1	-	-
2	R7313-331	Defrost Heater	1	-	115V/445W
3	R3743-220	Evap Drain Pan Small	1	AL	-
4	R1143-202	Evap Drain Insul-S	1	Foam-PS	T= 17, 256x530
5	R3853-590	Evap Air Guide Left	1	STS443CT-2B	T=0.5, 255.3x155.6
6	R3853-570	Evap Air Guide Right	1	STS443CT-2B	T=0.5, 255.3x155.6
7	R3813-810	Evap Cover Bracket LF	1	STS430-2B	T=1.0, 565x34.8
8	R3813-802	Evap Cover Bracket RH	1	STS430-2B	T=1.0, 565x34.8
9	R3813-604	Eva Cover T23	1	AL3003	T=0.5, 654.6x573
10	R3744-090	Evap Drain Elbow-Upp	1	PP	White
11	R3744-100	Evap Drain Elbow-Low	1	PP	White
12	R2124-021	Evaporator Drain Hose-A	1	Silicon	∅6x12, L= 213
13	R8393-030	Heater Cord Drain Hose	1	-	115V 10W
14	R7393-020	Lamp Scket	1	-	L-125B 660W 250V
15	R7394-010	Lamp Bulb	1	-	25T10/120V 25W
16	R3813-990	Lamp Cover	1	-	Mips White
17	R3203-482	Motor Fix Bracket	1	STS430-2B	T=1.0, 90x146
18	R7423-300	Evaporator Fan Motor	1	CCW	AC115V 60Hz DAI-8204DYCA-1
19	R3729-010	Evap Fan Blade	1	CCW	8"
20	R3812-141	Evaporator Fan Motor Guard	1	HIPS	VH-1800EX
21	R7403-110	Harness Lamp L	1	-	UL AWG 18
22	R3314-191	Sensor Bracket	1	PP	White
23	R7213-082	Temp Thermisor, FRE	1	-	Yellow
24	R7303-174	Heater Drain Pan	1	-	115V,90W



# G. Evaporator Assembly

## 3. BSR49T

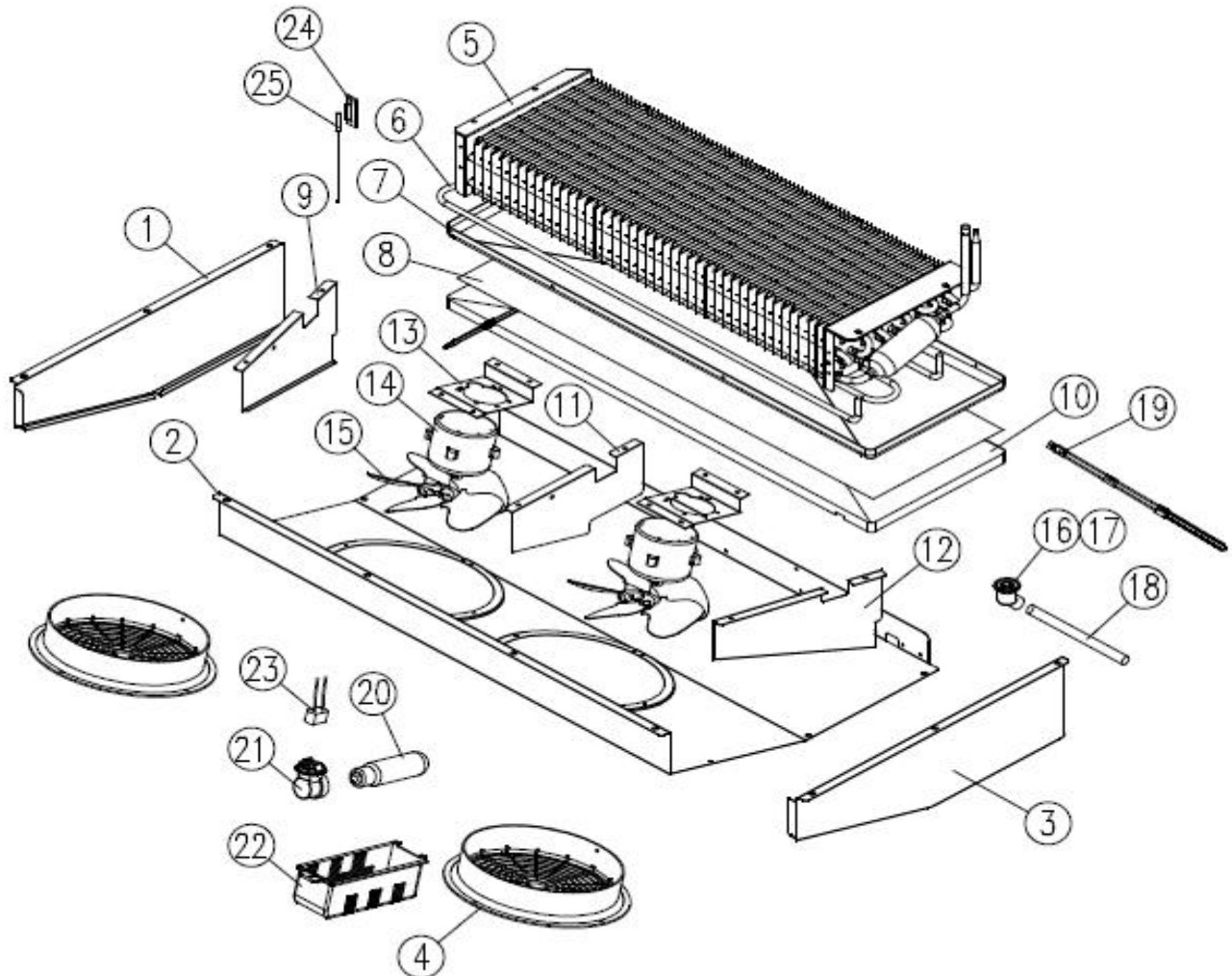
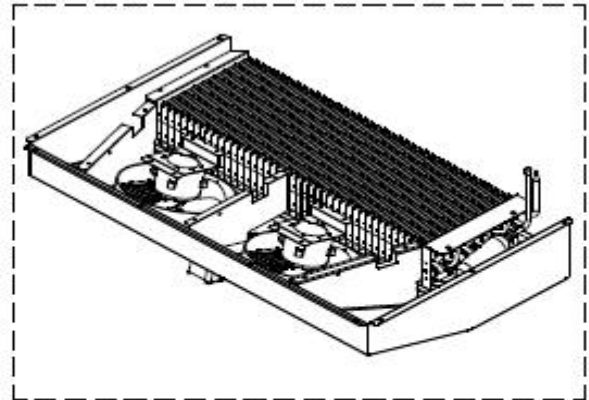
NO.	Model Code	Description	Qty	Material	Spec
1	R3853-800	Evap Cover Support LF	1	STS443CT-2B	T=0.5, 519.4x176.7
2	R3813-554	Eva Cover T49R	1	STS443CT-2B	T=0.5, 727x522
3	R3853-790	Evap Cover Support RH	1	STS443CT-2B	T=0.5, 519.4x176.7
4	R3812-141	Evaporator Fan Motor Guard	1	HIPS	VH-1800EX
5	R2263-082	Evaporator Assy	1	-	-
6	R3743-041	Evaporator Drain Fan-Mid	1	AL	-
7	R3853-050	Evap Air Guide Left	1	AL	T=0.5, 255.3x155.6
8	R1143-222	Evaporator Drain Insul-M	1	Foam-PS	T=17, 256x622
9	R3853-040	Evap Air Guide Right	1	AL	T=0.5, 255.3x155.6
10	R3203-482	Motor Fix Bracket	1	STS430-2B	T=1.0, 90x146
11	R7423-300	Evaporator Fan Motor	1	CCW	AC115V 60Hz DAI-8204DYCA-1
12	R3729-010	Evap Fan Blade	1	CCW	8"
13	R3744-090	Evap Drain Elbow-Upp	1	PP	White
14	R3744-100	Evap Drain Elbow-Low	1	PP	White
15	R2124-021	Evaporator Drain Hose-A	1	Silicon	φ16x12, L=213
16	R7393-020	Lamp Soket	1	-	L-125B 660W 250V
17	R7394-010	Lamp Bulb	1	-	25T10/120V 25W
18	R3813-990	Lamp Cover	1	-	Mips White
19	R7403-110	Harness Lamp L	1	-	ULAWG 18
20	R3314-191	Sensor Bracket	1	PP	White
21	R7213-082	Temp Display Sensor	1	-	White, L=200



# G. Evaporator Assembly

## 4. BSF49T

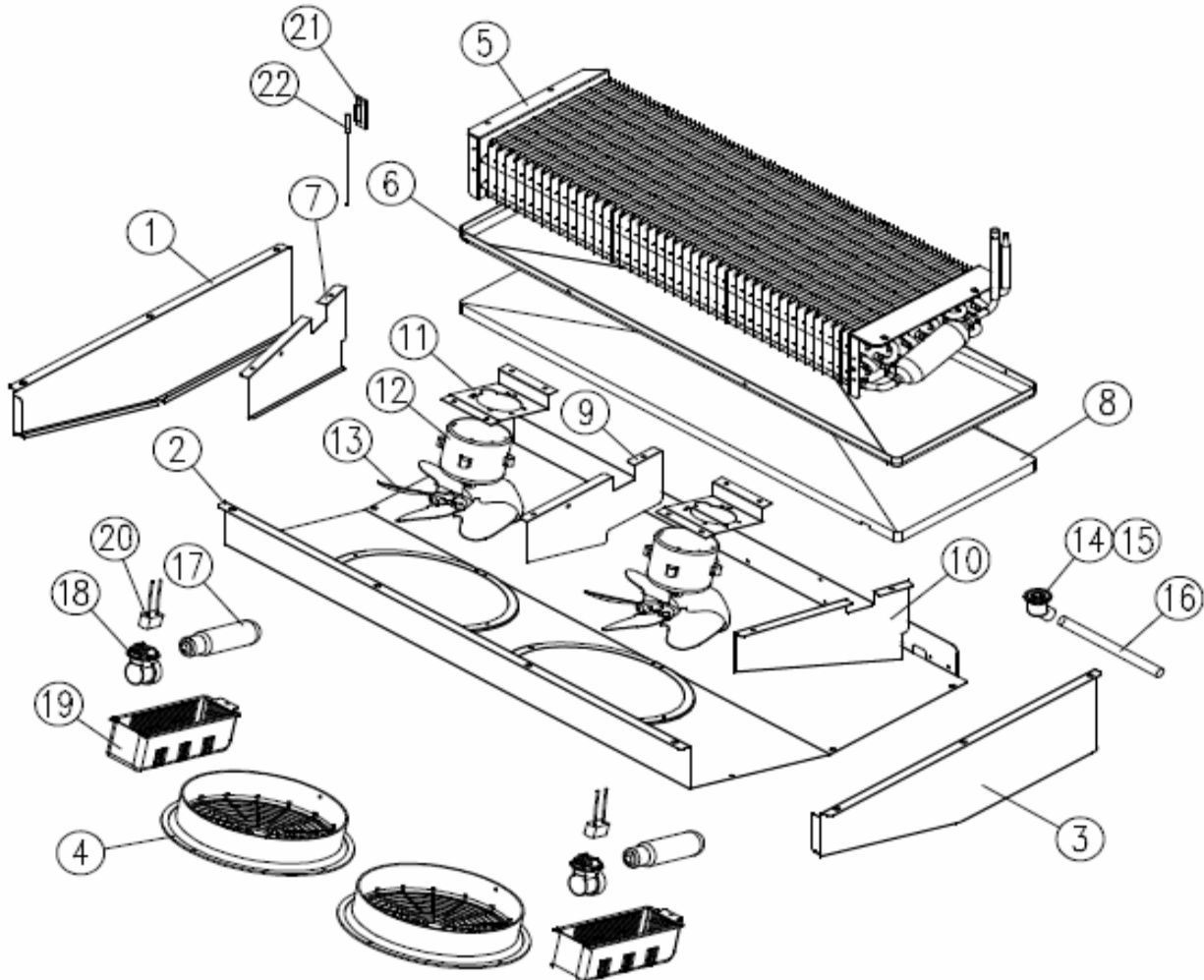
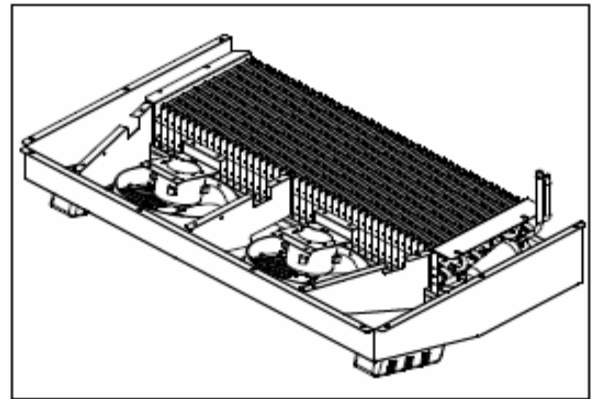
NO.	Model Code	Description	Qty	Material	Spec
1	R3853-800	Evap Cover Support LF	1	STS443CT-2B	T=0.5, 519.4x176.7
2	R3813-564	Eva Cover T49F	1	STS443CT-2B	T=0.5, 727x522
3	R3853-790	Evap Cover Support RH	1	STS443CT-2B	T=0.5, 519.4x176.7
4	R3812-141	Evaporator Fan Motor Guard	2	HIPS	VH-1800EX
5	R2263-062	Evaporator Assy	1	-	-
6	R7313-440	Defrost Heater 60	1	-	-
7	R3743-041	Evaporator Drain Fan-Large	1	AL	-
8	R7313-431	Heater Drain Pan	1	-	115V90W
9	R3853-050	Evap Air Guide Left	1	AL	T=0.5, 255.3x155.6
10	R1143-212	Evaporator Drain Insul-L	1	Foam-PS	T=17, 256x800
11	R3853-060	Evap Air Guide Mid	1	AL	T=0.5, 245x127
12	R3853-040	Evap Air Guide Right	1	AL	T=0.5, 255.3x155.6
13	R3203-482	Motor Fix Bracket	2	STS430-2B	T=1.0, 90x146
14	R7423-300	Evaporator Fan Motor	2	CCW	AC115V 60Hz DAI-E204DYCA-1
15	R3729-010	Evap Fan Blade	2	CCW	8"
16	R3744-090	Evap Drain Elbow-Upp	1	PP	White
17	R3744-100	Evap Drain Elbow-Low	1	PP	White
18	R2124-021	Evaporator Drain Hose-A	1	Silicon	φ6x12, L=213
19	R7313-490	Heater Cord Drain Hose	1	-	115V10W
20	R7393-020	Lamp Soket	1	-	L-125B 660W 250V
21	R7394-010	Lamp Bulb	1	-	25T10/120V 25W
22	R3813-990	Lamp Cover	1	-	Mips White
23	R7403-110	Harness Lamp L	1	-	UL AWG 18
24	R3314-191	Sensor Bracket	1	PP	White
25	R7213-082	Temp Display Sensor	1	-	White, L=200



# G. Evaporator Assembly

## 5. BSR72T

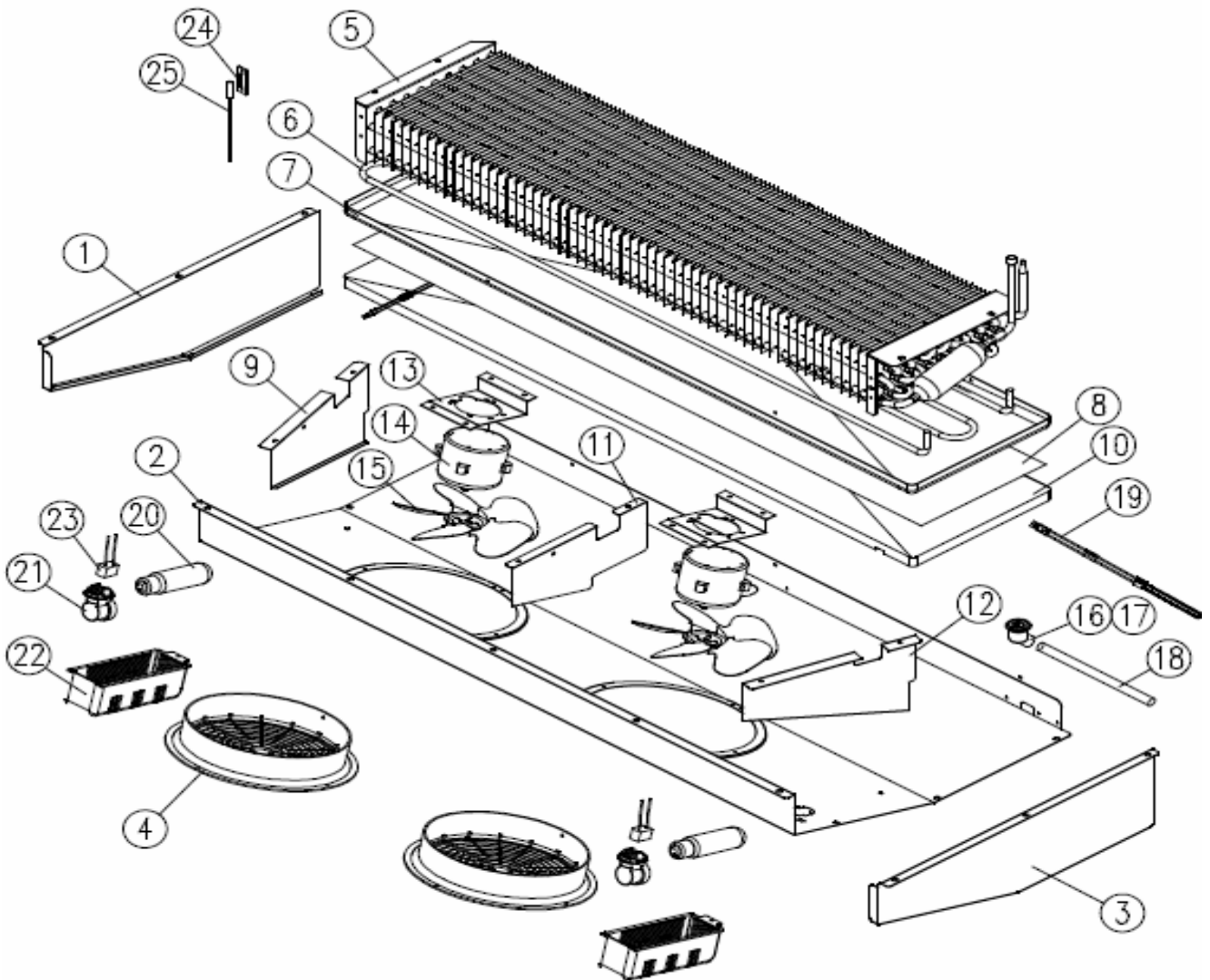
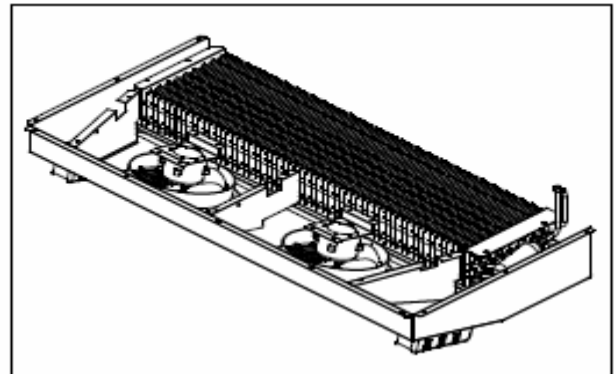
NO.	Model Code	Description	Qty	Material	Spec
1	R3853-800	Evap Cover Support LF	1	STS443CT-2B	T=0.5, 519.4x176.7
2	R325A-010	Cover Eva T72R	1	STS443CT-2B	T=0.5, 845x653.5
3	R3853-790	Evap Cover Support RH	1	STS443CT-2B	T=0.5, 519.4x176.7
4	R3812-141	Evaporator Fan Motor Guard	2	HIPS	VH-1800EX
5	R840A-010	Ass'y Evaporator T72R	1	AL	-
6	R3743-031	Evaporator Drain Fan-Large	1	AL(Coating)	-
7	R3853-050	Evap Air Guide Left	1	AL	T=0.5, 255.3x155.6
8	R1143-212	Evaporator Drain Insul-L	1	Foam-PS	T=17, 256x800
9	R3853-060	Evap Air Guide Mid	1	AL	T=0.5, 245x127
10	R3853-040	Evap Air Guide Right	1	AL	T=0.5, 255.3x155.6
11	R3203-482	Motor Fix Bracket	1	STS430-2B	T=1.0, 90x146
12	R7423-300	Evaporator Fan Motor	1	CCW	AC115V 60Hz DAI-6204DYCA-1
13	R3729-010	Evap Fan Blade	1	CCW	8"
14	R3744-090	Evap Drain Elbow-Upp	1	PP	White
15	R3744-100	Evap Drain Elbow-Low	1	PP	White
16	R2124-021	Evaporator Drain Hose-A	1	Silicon	φ6x12, L=213
17	R7394-010	Lamp Bulb	2	-	25T10/120V 25W
18	R7393-021	Lamp Soket	2	-	L-125B 660W 20V
19	R3813-991	Lamp Cover	2	-	Mips White
20	R7403-111	Harness Lamp L	2	-	UL AWG 18
21	R3314-191	Sensor Bracket	1	PP	White
22	R7213-082	Temp Display Sensor	1	-	White, L=200



# G. Evaporator Assembly

## 5. BSF72T

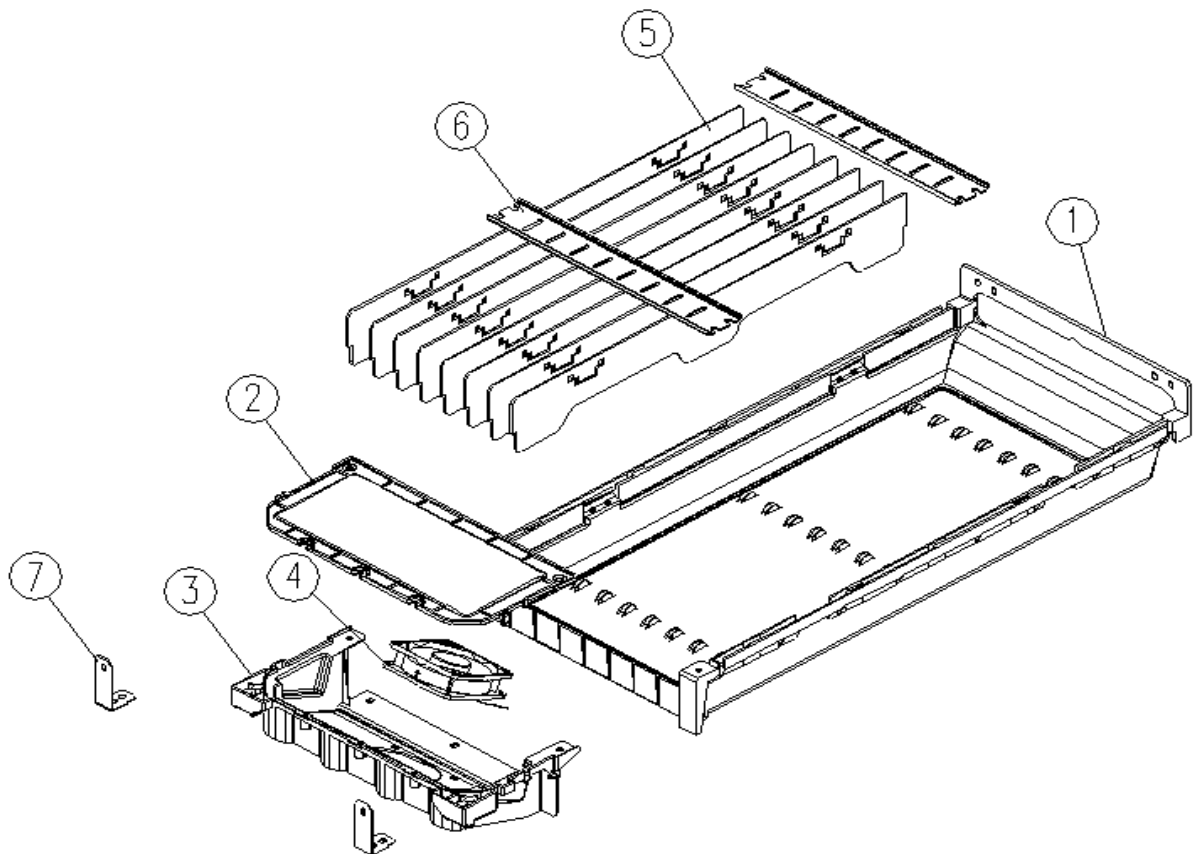
NO.	Model Code	Description	Qty	Material	Spec
1	R3853-800	Evap Cover Support LF	1	STS443CT-2B	T=0.5, 519.4x176.7
2	R325A-020	Cover Eva T72F	1	STS443CT-2B	T=0.5, 1082x654
3	R3853-790	Evap Cover Support RH	1	STS443CT-2B	T=0.5, 519.4x176.7
4	R3812-141	Evaporator Fan Motor Guard	2	HIPS	VH-1800EX
5	R2263-100	Assy Evaporator T72F	1	CU+AL	-
6	R7313-440	Defrost Heater 60	1	-	115V 900W 14.7Ω
7	R3743-240	Evaporator Drain Fan-Large	1	AL(Coating)	-
8	R7313-431	Heater Drain Pan	1	-	115V 90W
9	R3853-050	Evap Air Guide Left	1	AL	T=0.5, 255.3x155.6
10	R1143-212	Evaporator Drain Insul-L	1	Foam-PS	T=17, 256x800
11	R3853-060	Evap Air Guide Mid	1	AL	T=0.5, 245x127
12	R3853-040	Evap Air Guide Right	1	AL	T=0.5, 255.3x155.6
13	R3203-482	Motor Fix Bracket	2	STS430-2B	T=1.0, 90x146
14	R7423-300	Evaporator Fan Motor	2	CCW	AC115V 60Hz DAI-6204DYCA-1
15	R3729-010	Evap Fan Blade	2	CCW	8"
16	R3744-090	Evap Drain Elbow-Upp	1	PP	White
17	R3744-100	Evap Drain Elbow-Low	1	PP	White
18	R2124-021	Evaporator Drain Hose-A	1	Silicon	∅16x12, L=213
19	R7313-490	Heater Cord Drain Hose	1	-	115V10W
20	R7394-010	Lamp Bulb	2	-	25T10/120V 25W
21	R7393-021	Lamp Soket	2	-	L-125B 660W 20V
22	R3813-991	Lamp Cover	2	-	Mips White
23	R7403-111	Harness Lamp L	2	-	UL AWG 18
24	R3314-191	Sensor Bracket	1	PP	White
25	R7213-082	Temp Display Sensor	1	-	Yellow



## H. Vapori Assembly

### 1. BSR23T, BSF23T, BSF49T

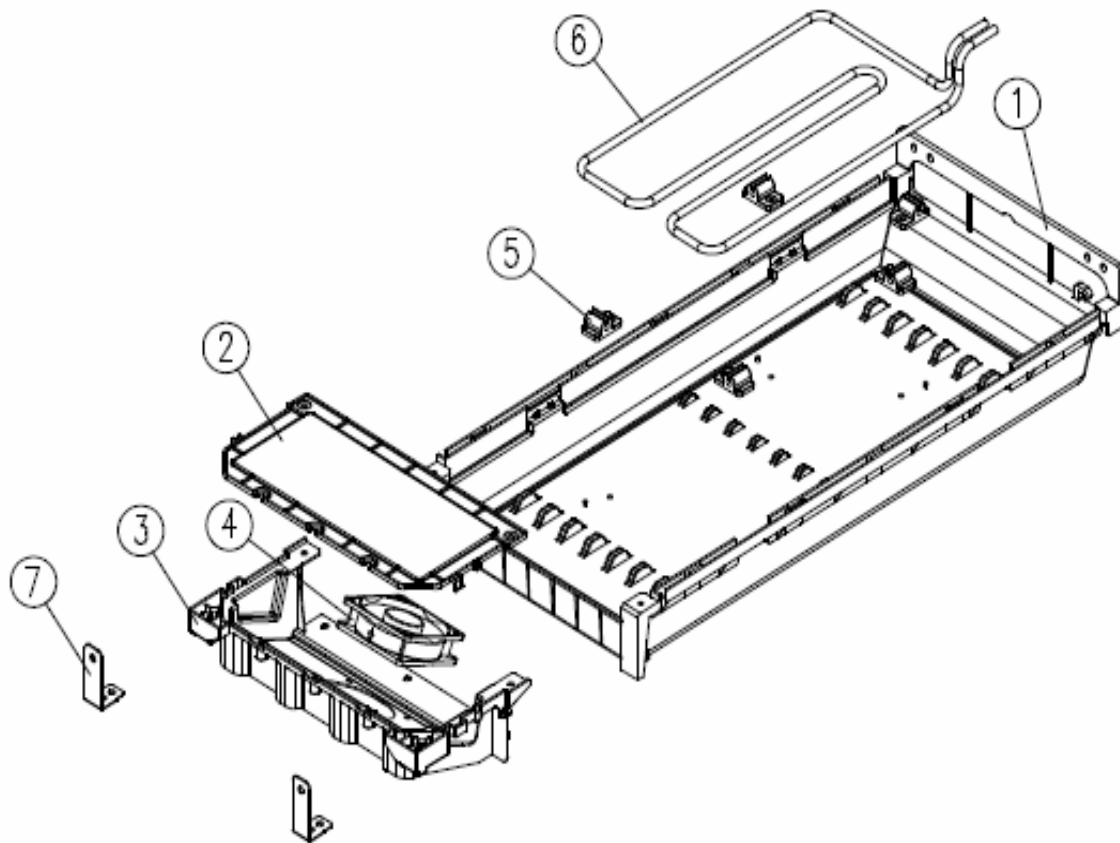
NO.	Model Code	Description	Qty	Material	Spec
1	R3132-600	Case Vapori T49	1	ABS	602.5x275x106.5
2	R3422-050	Cover DC Motor T49	1	ABS	280.5x131x11.5
3	R3422-030	Case DC Motor T49	1	ABS	283x143.5x69.5
4	R7423-442	Motor DC Vapori	1	-	DC12V, 250mA, 3000RPM
5	R1154-090	Wicking Drain Water	8	부직포	2.5Tx480x63.5
6	R3853-780	Guide Wicking (49D)	2	PP	T= 1.5, 269x40
7	R3313-730	Bracket Case Vapori Front	2	STS304	



## H. Vapori Assembly

### 2. BSR49T

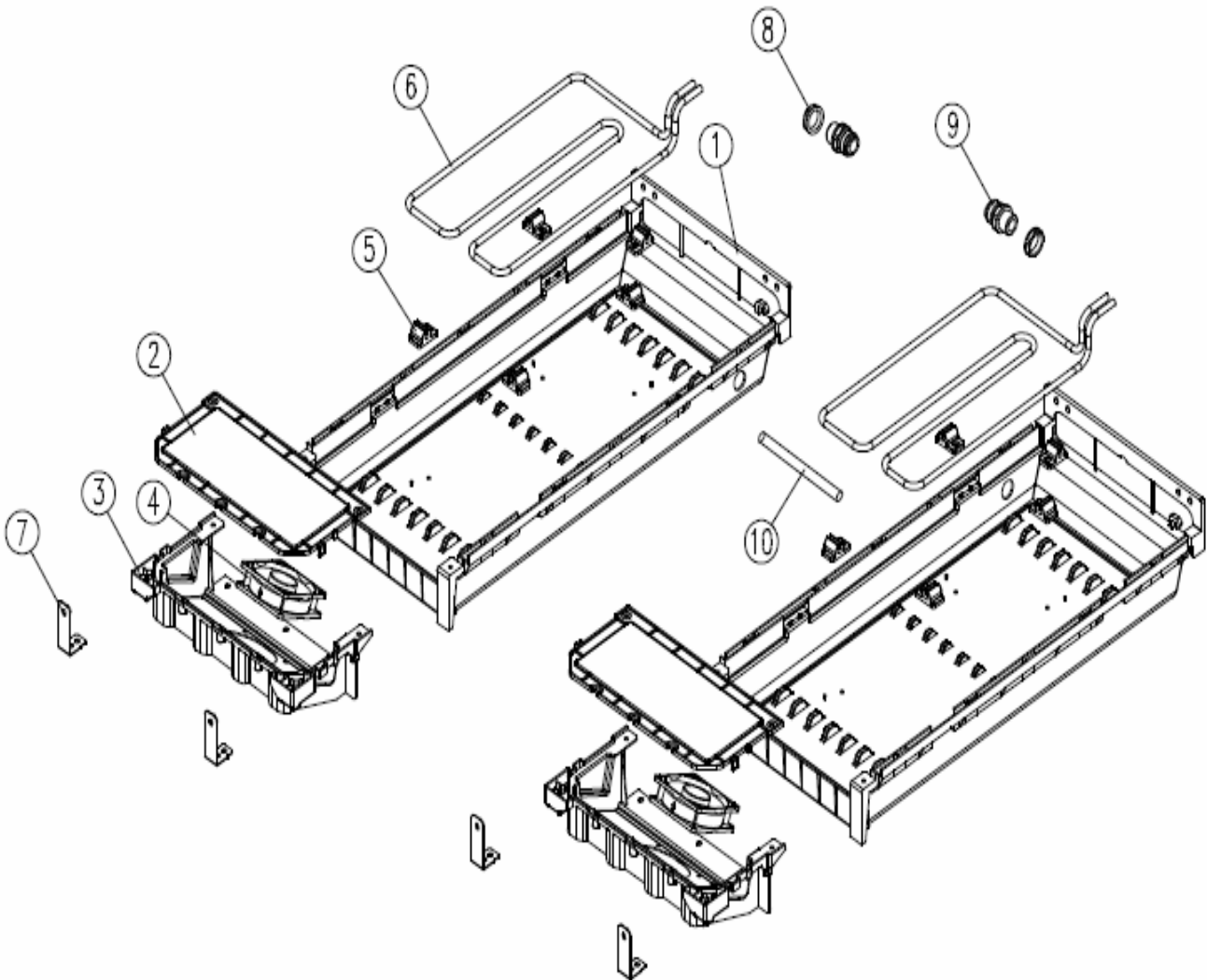
NO.	Model Code	Description	Qty	Material	Spec
1	R3132-600	Case Vapori T49	1	ABS	602.5x275x106.5
2	R3422-050	Cover DC Motor T49	1	ABS	280.5x131x11.5
3	R3422-030	Case DC Motor T49	1	ABS	283x143.5x69.5
4	R7423-442	Motor DC Vapori	1	-	DC12V, 250mA, 3000RPM
5	R3743-400	Holder Vapori Heater	5	Silicon	33x20x13.5
6	R7703-290	Heater Vaporizer	1		115V 50W Sheath Heater
7	R3313-730	Bracket Case Vapori Front	2	STS304	T= 1.2, 85.5x20.5



## H. Vapori Assembly

### 3. BSR72T

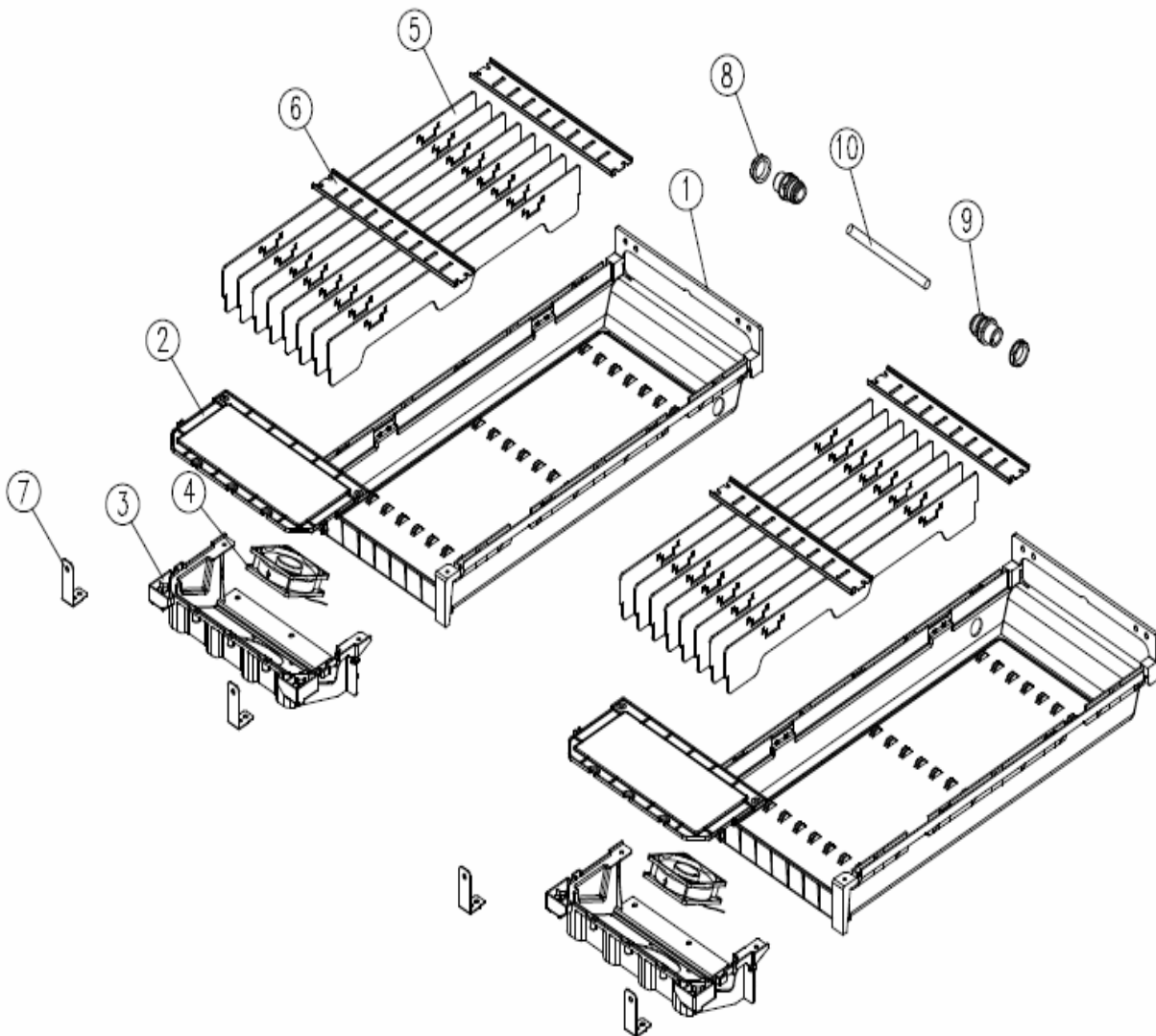
NO.	Model Code	Description	Qty	Material	Spec
1	R3132-600	Case Vapori T49	2	ABS	602.5x275x106.5
2	R3422-050	Cover DC Motor T49	2	ABS	280.5x131x11.5
3	R3422-030	Case DC Motor T49	2	ABS	283x143.5x69.5
4	R7423-442	Motor DC Vapori	2	-	DC12V, 250mA, 3000RPM
5	R3743-400	Holder Vapori Heater	10	Silicon	33x20x13.5
6	R7703-290	Heater Vaporizer	2		115V 50W Sheath Heater
7	R3313-730	Bracket Case Vapori Front	4	STS304	T= 1.2, 85.5x20.5
8	R223A-020	FITTING DIVIDER VAPORI NUT	2	-	PP NUT 20M
9	R223A-010	FITTING DIVIDER VAPORI	2	-	BSPP AMCB 1207M
10	R225A-010	FITTING TUBE	1	-	PE TUBE $\phi$ 12 L= 100mm



# H. Vapor Assembly

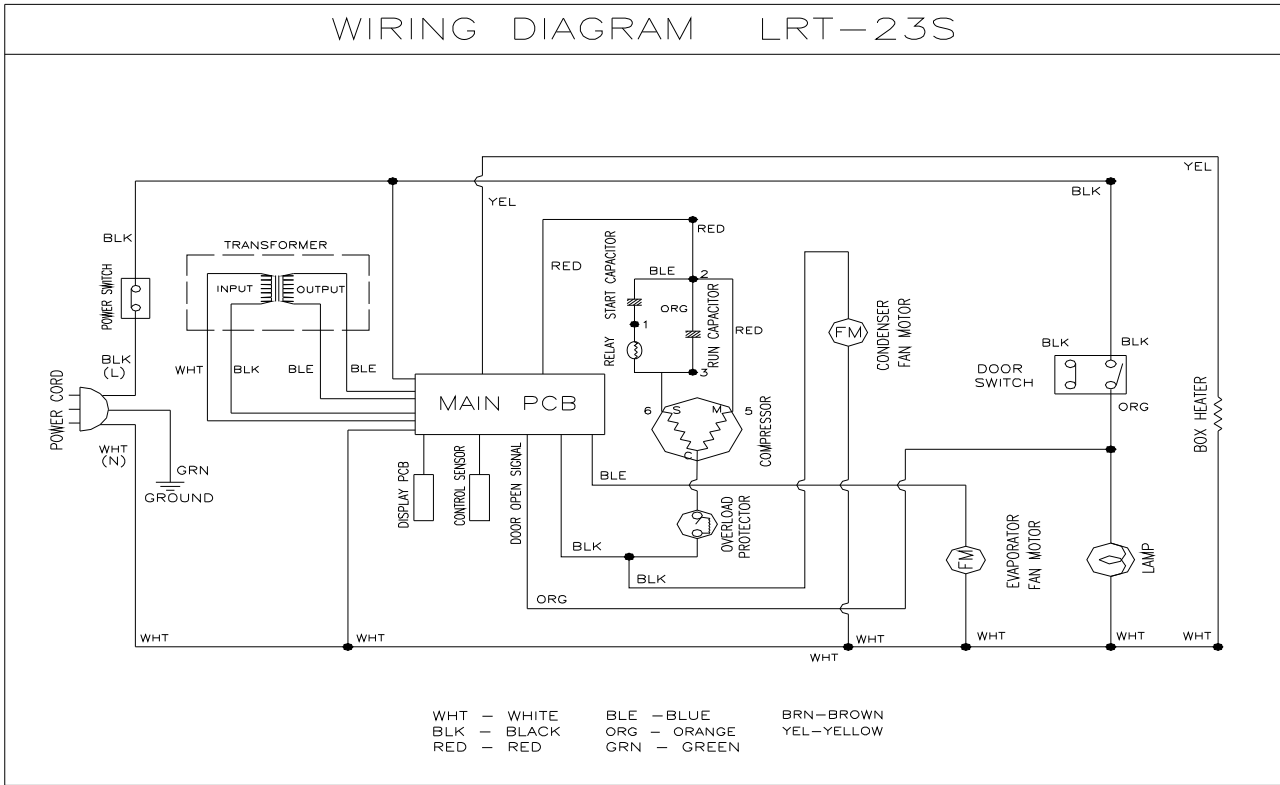
## 3. BSF72T

NO.	Model Code	Description	Qty	Material	Spec
1	R3132-600	Case Vapor T49	2	ABS	602.5x275x106.5
2	R3422-050	Cover DC Motor T49	2	ABS	280.5x131x11.5
3	R3422-030	Case DC Motor T49	2	ABS	283x143.5x69.5
4	R7423-442	Motor DC Vapor	2	-	DC12V, 250mA, 3000RPM
5	R1154-090	Wicking Drain Water	16	부직포	2.5Tx480x63.5
6	R3853-780	Guide Wicking (49D)	4	PP	T= 1.5, 269x40
7	R3313-730	Bracket Case Vapor Front	4	STS304	T= 1.2, 85.5x20.5
8	R223A-020	FITTING DIVIDER VAPORI NUT	2	-	PP NUT 20M
9	R223A-010	FITTING DIVIDER VAPORI	2	-	BSPP AM CB 1207M
10	R225A-010	FITTING TUBE	1	-	PE TUBE $\phi$ 12 L= 100mm

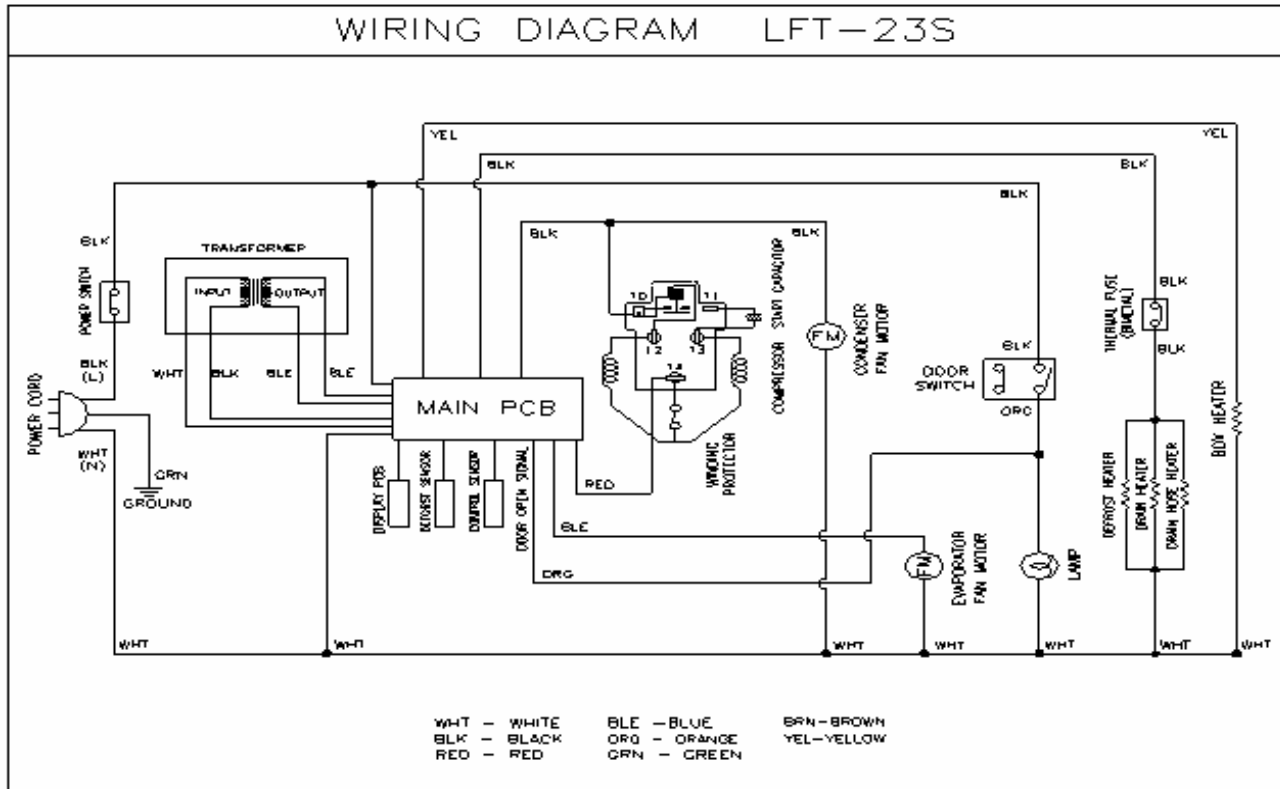


# III. WIRING DIAGRAM

## A. BSR23T(LRT-23S)

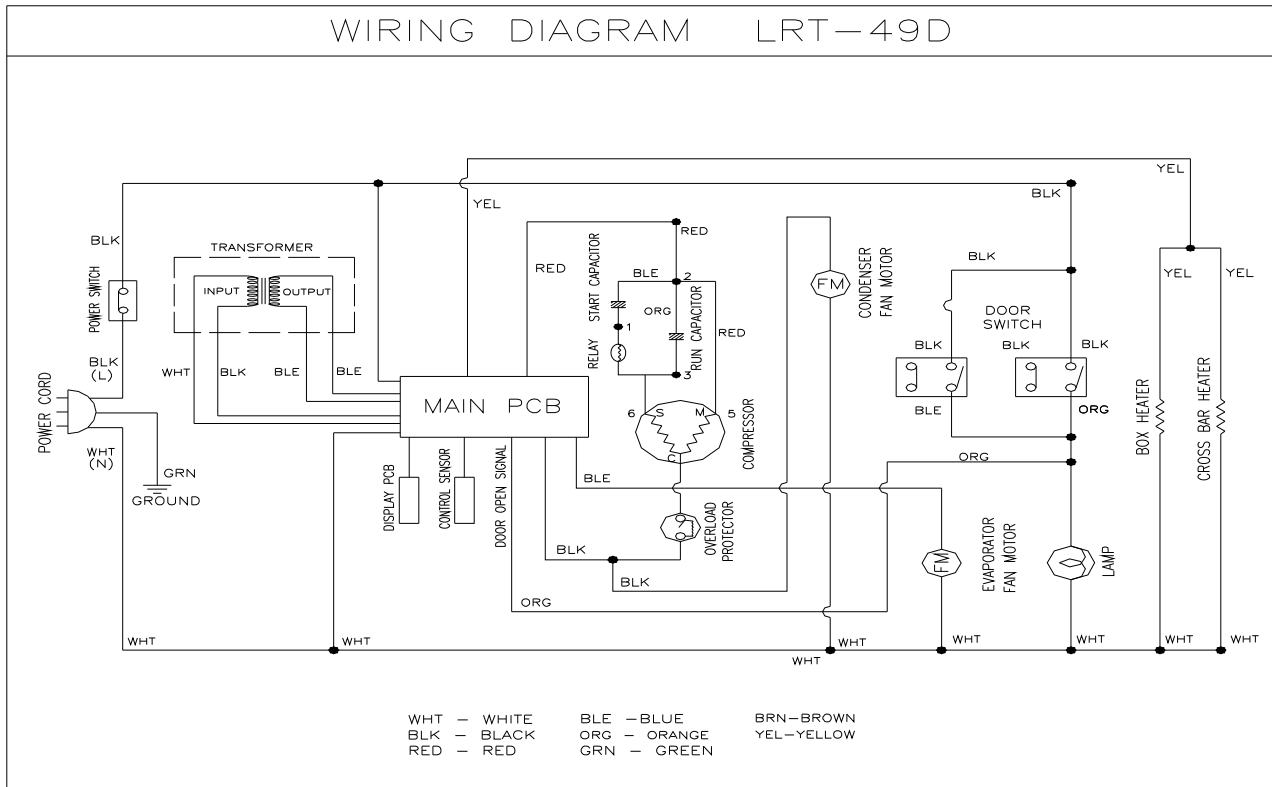


## B. BSF23T(LFT-23S)

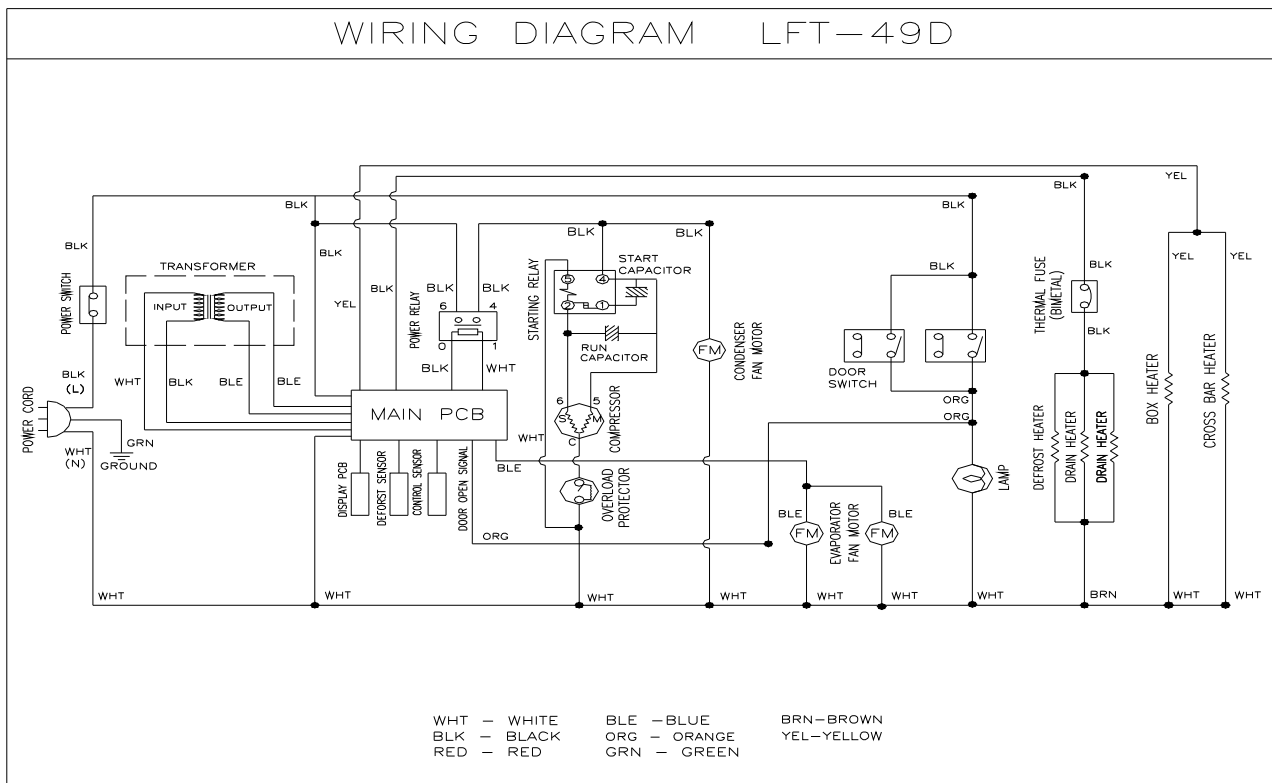


# III. WIRING DIAGRAM

## C. BSR49T(LRT-49D)

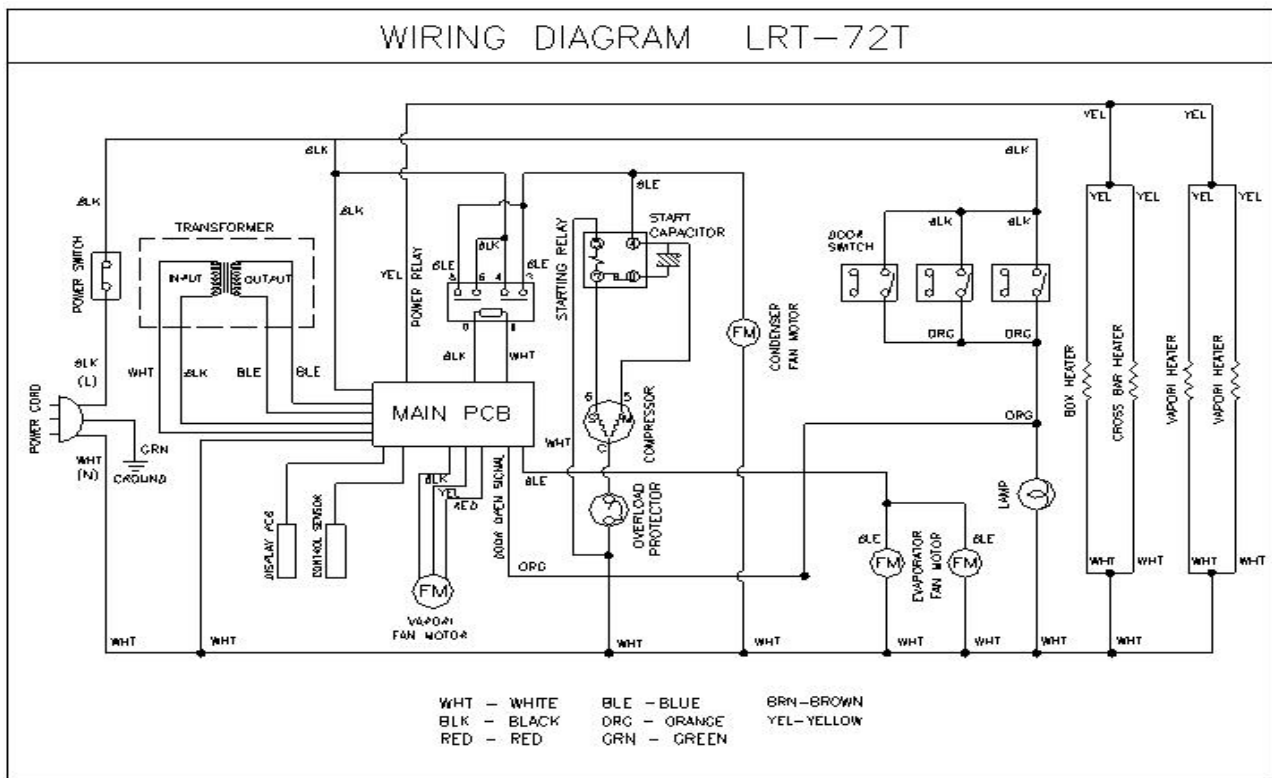


## D. BSF49T(LFT-49D)

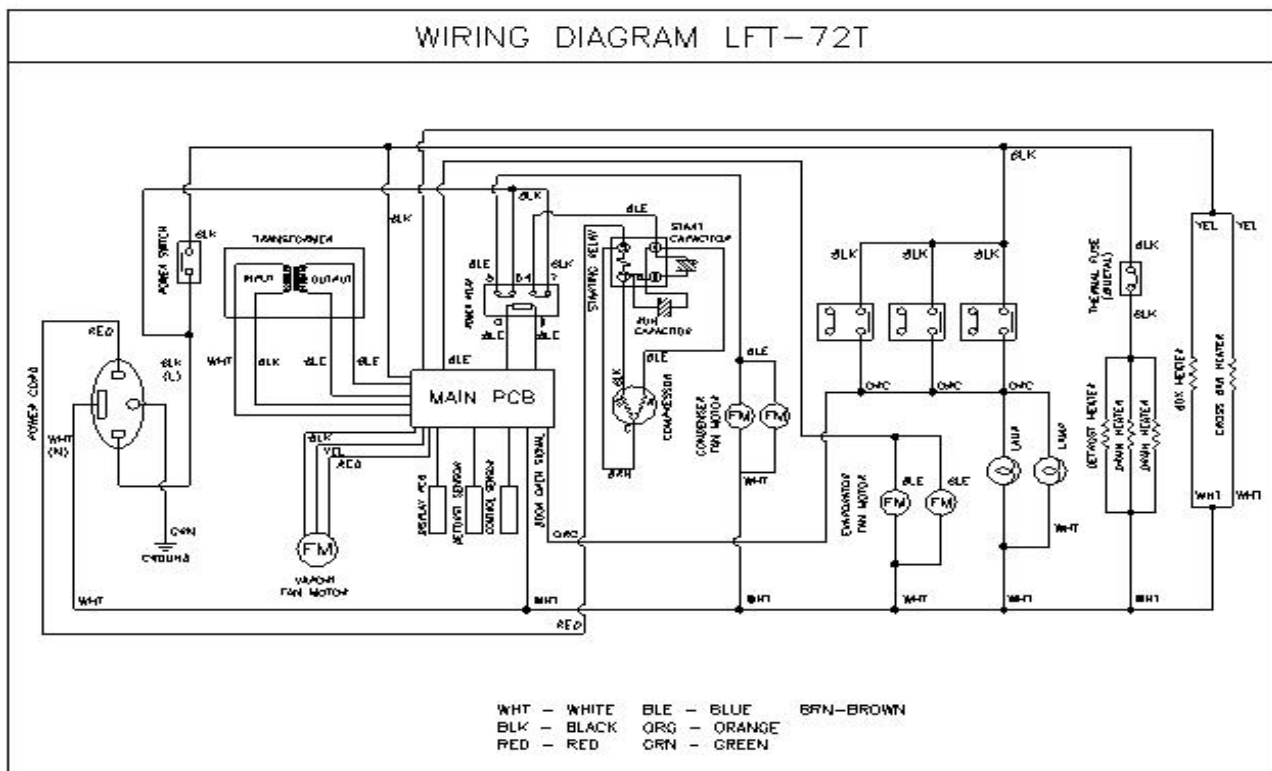


# III. WIRING DIAGRAM

## E. BSR72T(LRT-72T)



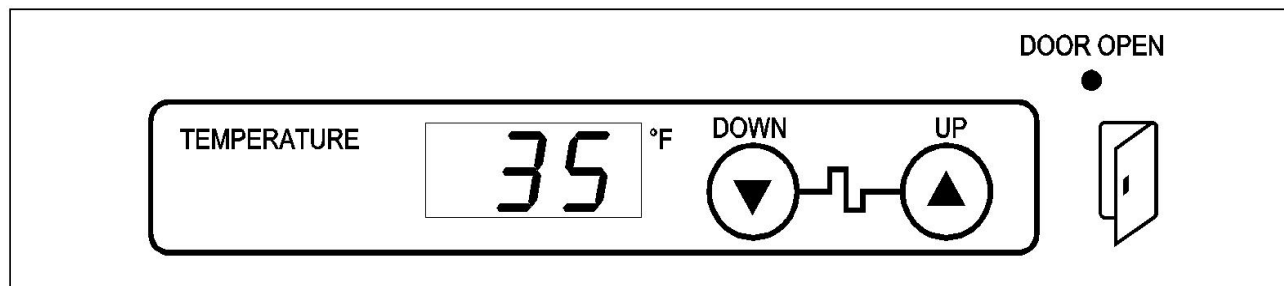
## F. BSF72T(LFT-72T)



# IV. General Information

## A. Control Buttons and Functions

### 1. Display Board



#### a) Setting

- Down : level-down of temperature.
- Up: level-up of temperature

		Preset	Setting Level	Level	Note
°C	Refrigerator	2	-2~4	6 Step	
	Freezer	-18	-23~-15	9 Step	
°F	Refrigerator	35	28~39	12 Step	
	Freezer	0	-9~5	15 Step	

#### b) Display

##### ① 888 SEGMENT Display

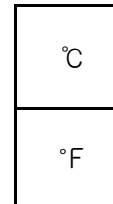
- The temperature setting button pressed, the 888 Segment blinks at 0.5-second intervals showing the set temperature.
- Temperature setting is available with the  $\Delta \nabla$  buttons.
- The setting is auto-saved in 5 seconds and the current inside temperature is displayed.

##### ② Temperature Display

- Regular mode: The inside temperature is displayed.
- Pre-cool mode: The off-point temperature set is displayed.  
ex)  $-0.4^{\circ}\text{F} (-18^{\circ}\text{C})$  set, the temperature of " $-4^{\circ}\text{F} (-20^{\circ}\text{C})$ ," identical to the compressor-off temperature, is shown for  $-4^{\circ}\text{F} (-20^{\circ}\text{C})$  or below.
- In defrosting: "dF" display: Defrosting heater on  $\rightarrow$  5-min respite  $\rightarrow$  fan (respite)  
Display until 1 minute after the inside fan is on (regular mode)
- \*In refrigerator, the actual inside temperature is shown.

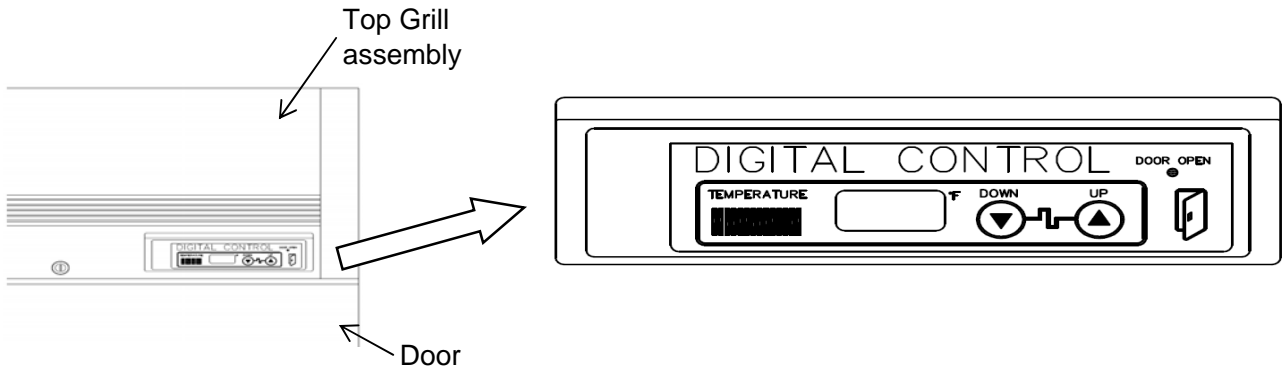
##### ③ Door LED Display

- LED blinking while the door is opened.

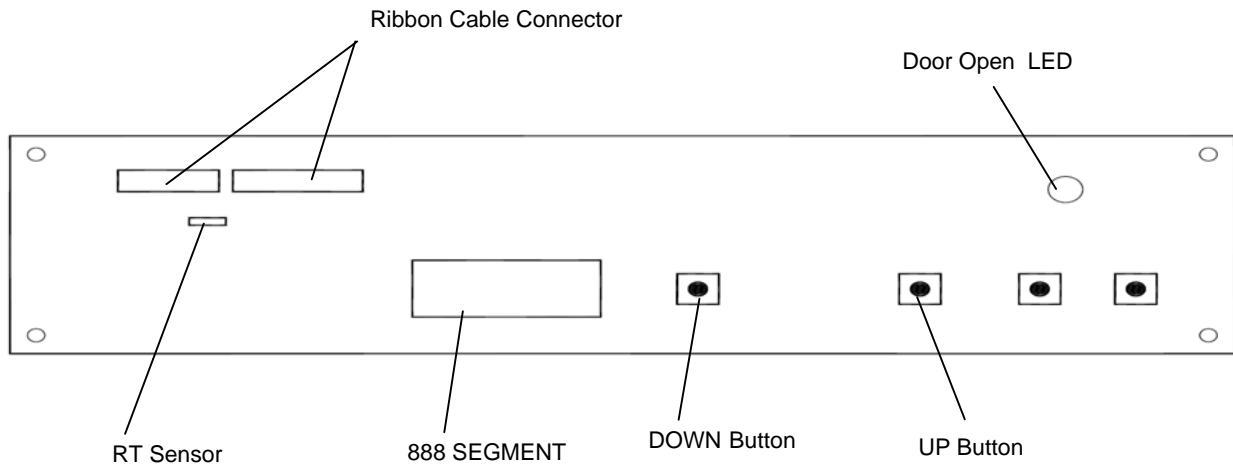


### c) Location

The display board is located on the right hand side of "Top Grill Assembly"  
From the display board, various electronic controls and function can be adjusted.  
See " C - 3."



### d) Lay out



\* RT Sensor : Ambient temperature Sensor

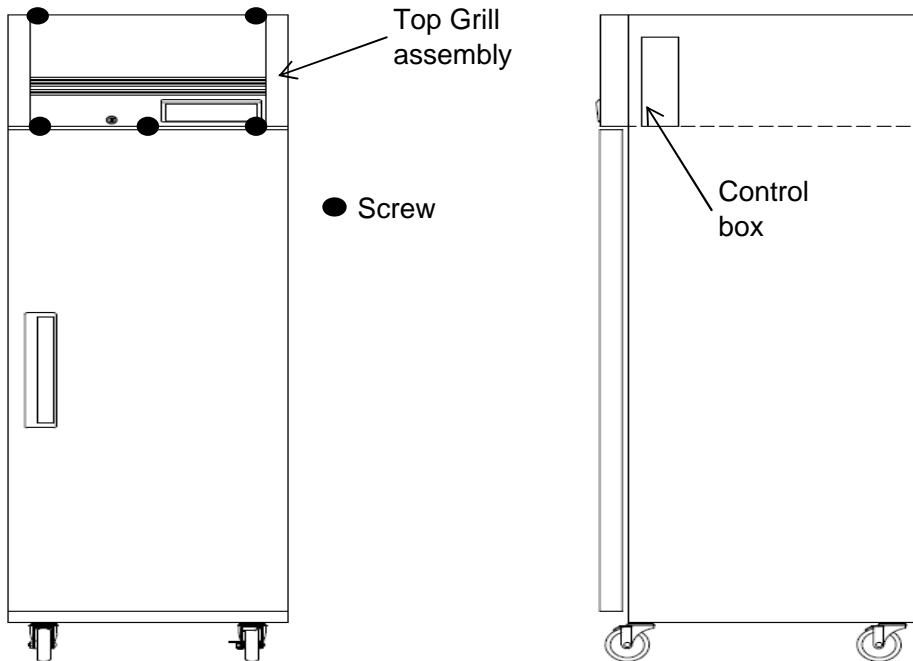
## 2. Control Board

### CAUTION

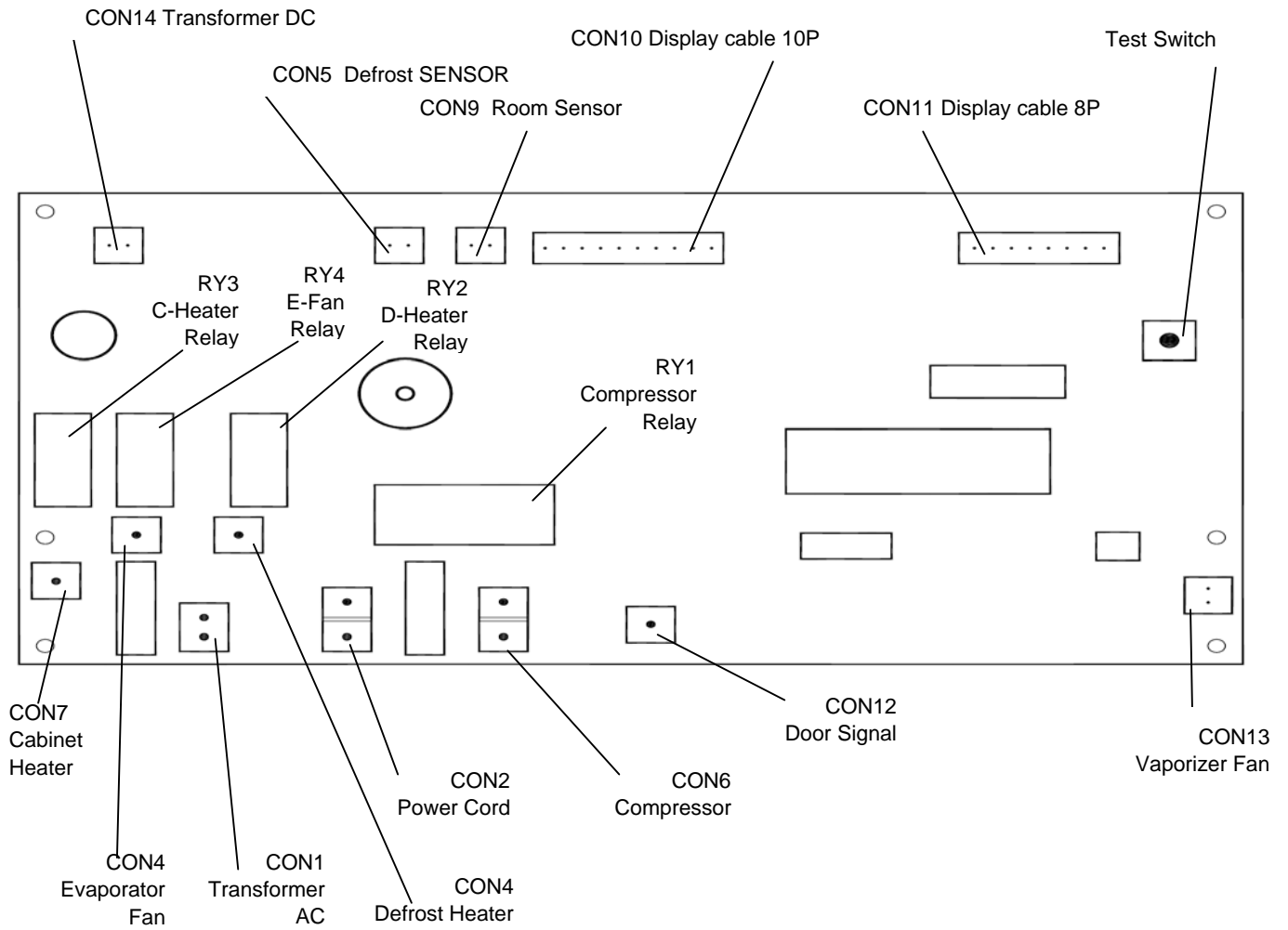
1. Fragile, handle very carefully.
2. The control board contains integrated circuits, which are susceptible to failure due to static discharge. It is especially important to touch the metal part of the unit before handling or replacing the board.
3. Do not fix the electronic devices or parts on the board in the field. Always replace the whole board assembly if it goes bad.
4. To prevent damage to the board, do not touch the electronic devices on the board or the back of the board.
5. Do not short out power supply to test for voltage.

#### a) Location

The control box is located behind the "Top Grill Assembly".  
If you remove 7 fixing screws, the control box can be found.



## b) Control Board Layout

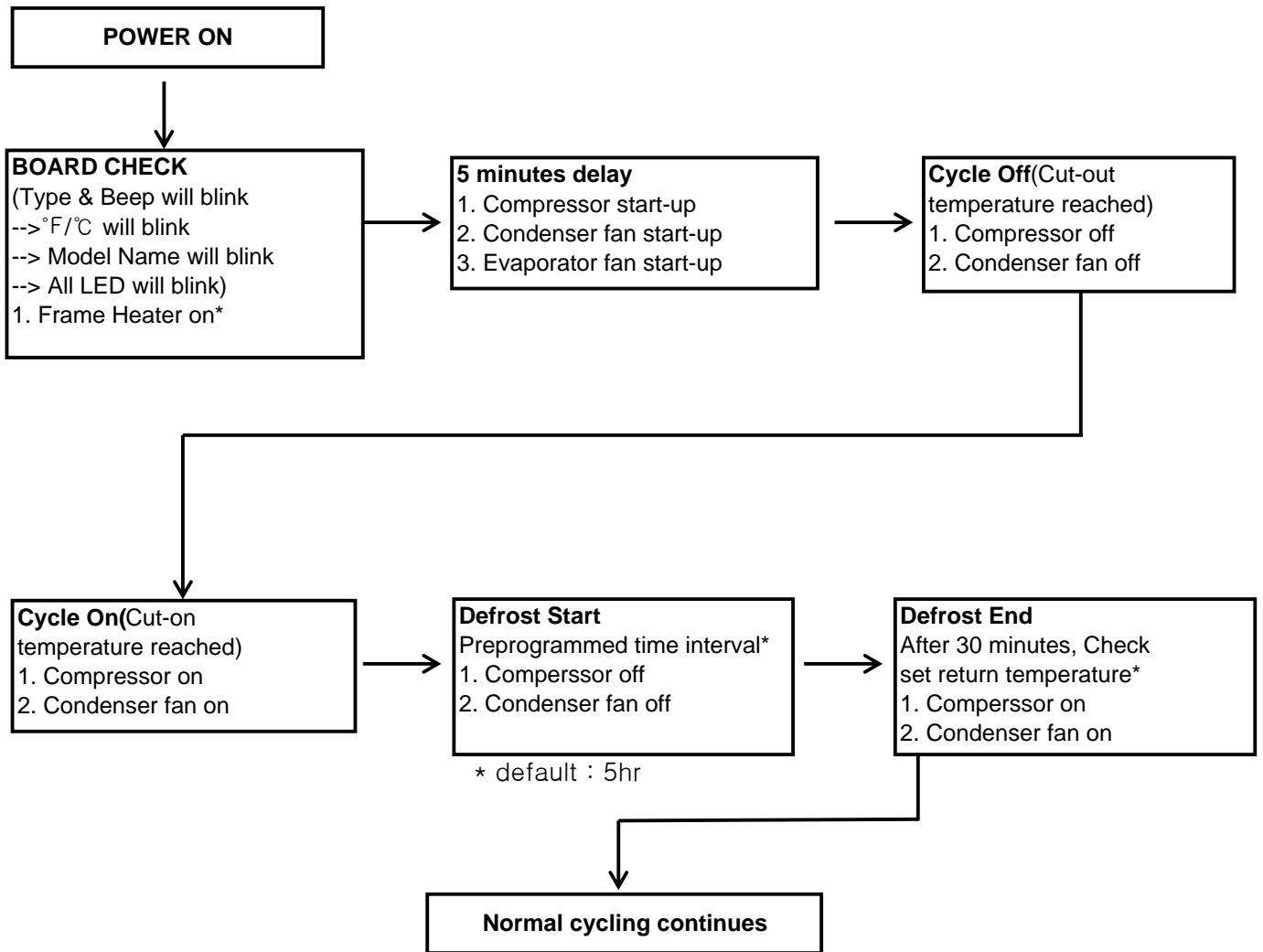


\* Refrigerator models (BSR23T, BSF23T) do not have CON4 and RY2.

## B. Sequence of Operation and Timing Charts

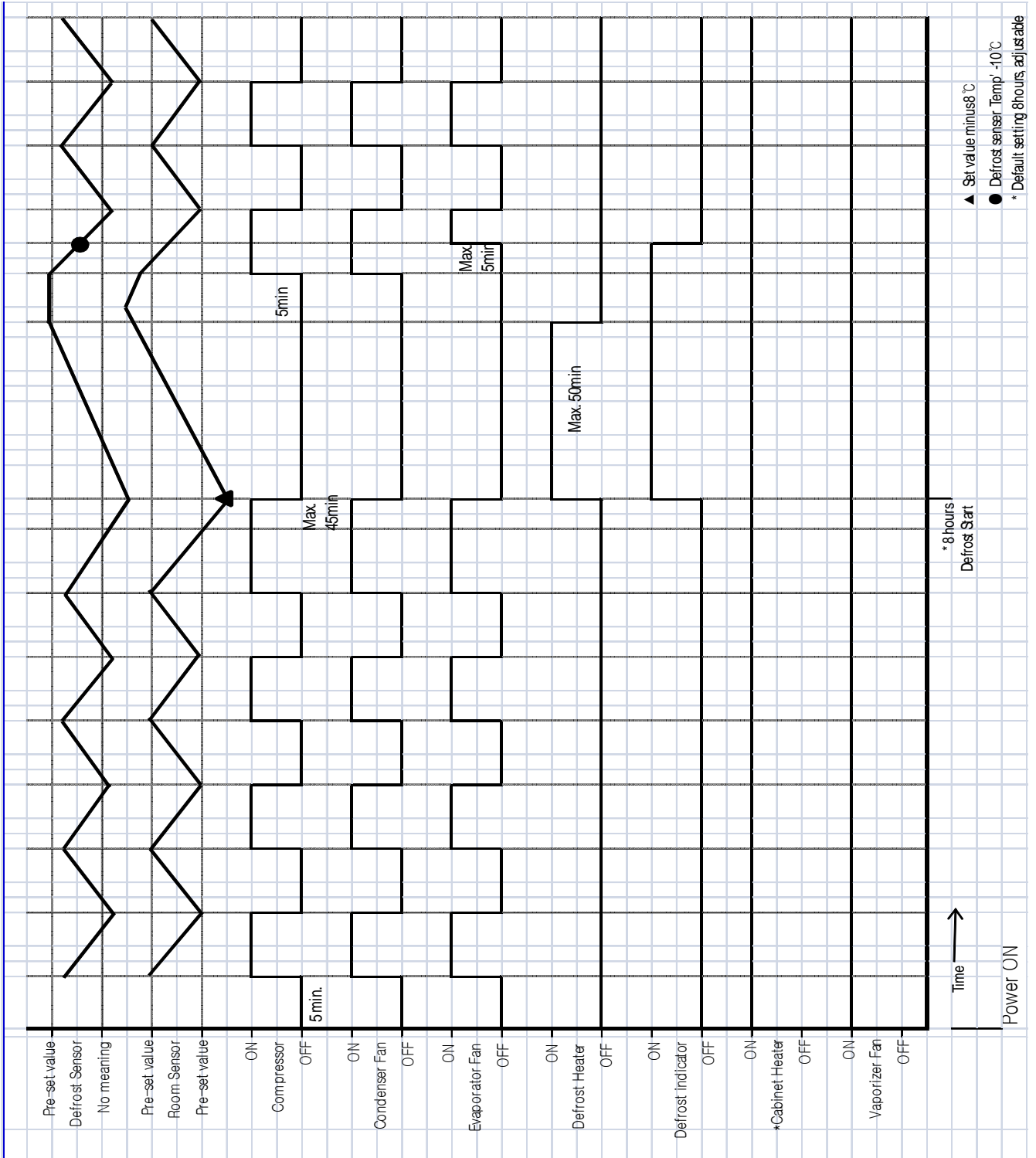
### 1. Refrigerator (BSR23T, BSR49T)

#### a) Sequence of Operation



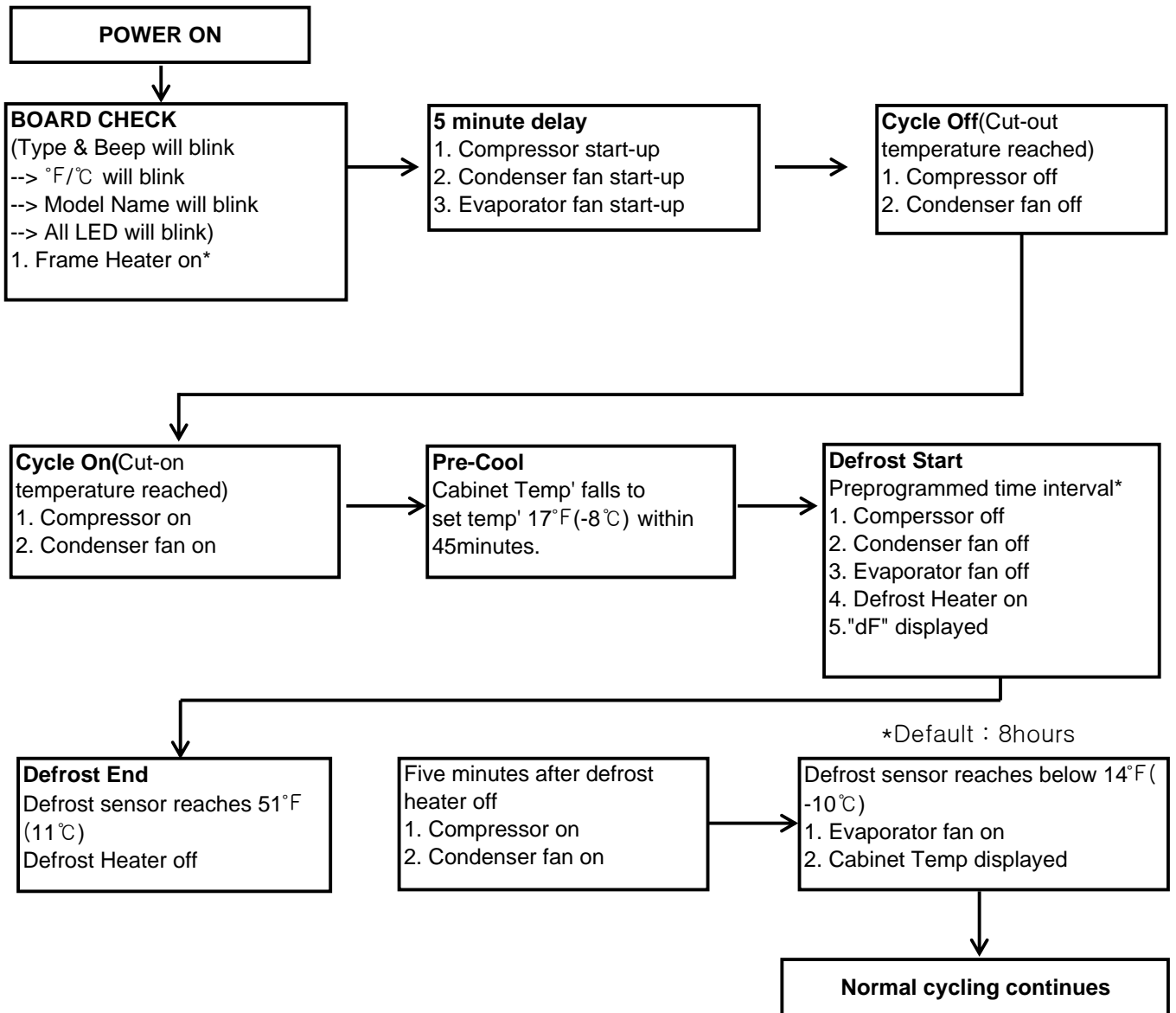
Note : The start circuit of the compressor is timed such that at power-up and during any compressor off time, there will be at least 5 minutes delay before the compressor will start. The only exception is when the overload activates and deactivates. The compressor has a 5 minute minimum run time during every run cycle.

b) Timing Chart (BSF23T, BSF49T)



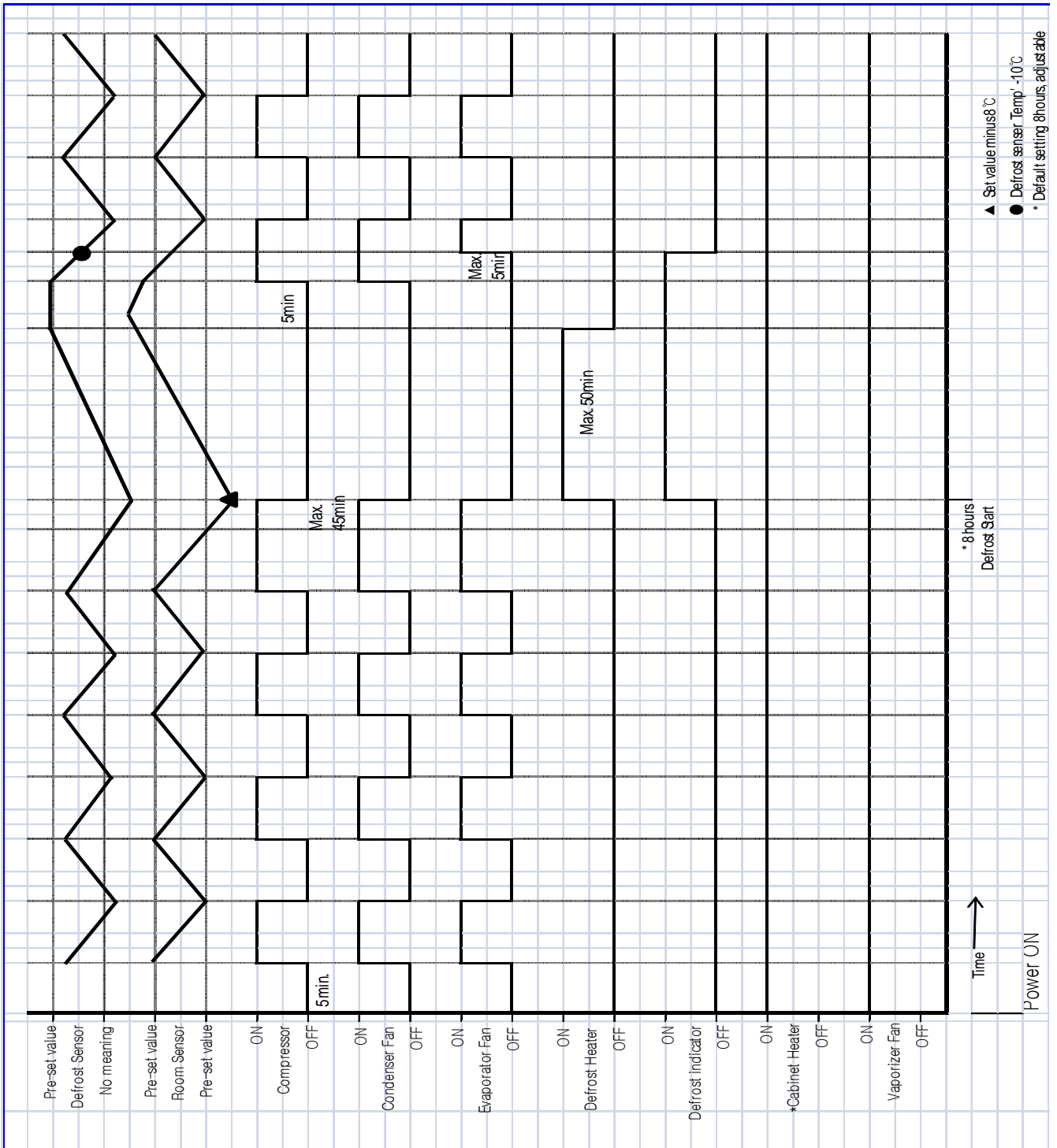
## 2. Freezer (BSF23T, BSF49T)

### a) Sequence of Operation



Note : The start circuit of the compressor is timed such that at power-up and during any compressor off time, there will be at least 5minute delay before the compressor will start. The only exception is when the overload activates and deactivates. The compressor has a 5 minute minimum run time during every run cycle.

b) Timing Chart



## C. Board Details & Setting

### 1. Board Details

Board Details		
No.	MODE	Description
1	Initial power supply	<p>1. Stand by</p> <ul style="list-style-type: none"> <li>- In operation, all output is off for 2 seconds.</li> <li>- In 2 seconds, the buzzer sounds with 2 blinks at a 0.5-second interval.</li> <li>- Then, additional 2 blinks of “°F/°C” follow at a 0.5-second interval.</li> <li>- Model name blinks 5times.</li> <li>- Every LED blinks 3 times at 0.5-second intervals.</li> <li>- The cabinet temperature is displayed.</li> </ul>
		<p>2. Initial Defrost Check</p> <p>&lt; Type F &gt; : BSF23T, BSF49T</p> <ul style="list-style-type: none"> <li>- The temperature of defrost sensor controls operation               <ol style="list-style-type: none"> <li>1) The compressor is on at 38°F(3.5°C) or above.</li> <li>2) The defrost mode is on when every sensor is at 38°F(3.5°C) or below</li> </ol> </li> <li>※ The pre-cool mode is on 5 minutes after the defrosting mode is on.</li> </ul> <p>&lt;Type R &gt; : BSR23T, BSR49T</p> <ul style="list-style-type: none"> <li>- The temperature of room sensor controls operation.               <ol style="list-style-type: none"> <li>1) The compressor is on at 41°F(5.0°C) or above</li> <li>2) The defrost mode is on below 41°F(5.0°C).</li> </ol> </li> </ul>
2	Regular Operation	<ul style="list-style-type: none"> <li>- 5-min compressor delay (The compressor stops operation for 5 minutes after it is off.)</li> <li>- The compressor is turned on or off depending on the room sensor temperature.</li> </ul>
3	Freezer	<ul style="list-style-type: none"> <li>- Defrost is available at 5, 6, 7, 8, 9 or 10-hour intervals. The default setting is 8 hours.</li> </ul>

Board Details		
No.	MODE	Description
4	Refrigerator	<ul style="list-style-type: none"> <li>- defrosting every 5 hours</li> </ul>
5	Defrost system - Freezer 1. PRE-COOL	<ul style="list-style-type: none"> <li>- This process is to lower the inside temperature before the defrost heater is on.</li> <li>- When defrost begins, the pre-cool mode is on before the defrosting heater is on.</li> <li>- The defrost heater is on if the cabinet temperature goes down to or below 17°F(-8°C) within 45 minutes.</li> <li>- The maximum duration of the pre-cool mode is 45 minutes.</li> </ul>
	2. HEATER ON	<ul style="list-style-type: none"> <li>- When the D-sensor on evaporator reaches 51°F(11°C), the defrost heater is off.</li> <li>- The defrost heater can remain on for up to 50 minutes.</li> <li>- In case of a D-sensor error, the heater is in operation for 20 minutes. Then, it is off if the room sensor temperature is 28°F(-2°C) or above.</li> <li>- In case of a defrosting or room sensor error, the heater is operates for up to 20 minutes.</li> <li>- When the D-sensor does not resume the defrosting temperature even 50 minutes after the defrosting heater is on, the error code is automatically saved.</li> <li>※ The pre-cool mode is off in case of a defrosting limit error.</li> </ul>
	3. Respite	<ul style="list-style-type: none"> <li>- When the defrost heater turns off, a 5-minute respite is given to stabilize the freezing cycle.</li> <li>-Defrost heater, fan and compressor is all off.</li> </ul>
	4. FAN stop	<ul style="list-style-type: none"> <li>- When the respite is over, the fan stops operation for up to 5 minutes to prevent the heated evaporator air from entering inside.</li> <li>- Only the compressor is in operation in this mode, cooling the evaporator and cabinet air.</li> <li>- If the D-sensor temperature goes down to or below 14°F(-10°C) within 5 minutes, the fan-stop mode is over and regular operation is available.</li> </ul>
6	Defrost system - Refrigerator	<ul style="list-style-type: none"> <li>- Defrost is available with the operation of the cooling fan.</li> <li>- In case of a refrigerator room sensor error, a 30-minute defrosting begins.</li> <li>- In 30 minutes, the system checks the refrigerator room sensor temp<sup>1</sup>.</li> <li>- Auto-return is on at a certain temperature.</li> <li>※ If the set temperature is 30°F(-1°C) or below, the return temperature is 37°F(+3°C). If the former is 32°F(0°C), the latter is 41°F(5°C).</li> </ul>

Board Details		
No.	MODE	Description
7	Cabinet heater control	<ul style="list-style-type: none"> <li>- If the compressor-on temperature is lower than the ambient temperature, the heater is off.</li> <li>- If the ambient temperature is 78°F(26°C) or above, the heater is on.</li> <li>- If the ambient temp' is between 78°F(26°C) and the compressor-on temp', the heater is turned on and off every 10 minutes.</li> <li>- If the RT temperature is lower than the compressor-on temperature, the code heater is off.</li> </ul>
8	Refrigerator Prevention of over-frosting system	<ul style="list-style-type: none"> <li>- When the compressor is off, the evaporator fan is off.</li> <li>- To prevent the refrigerator evaporator from over-frosting, the fan starts operation irrespective of the compressor-on or -off temperature if the inside temperature is 32°F(0°C) or below.</li> </ul>
9	Door	<ul style="list-style-type: none"> <li>- Door opening: the door-open lamp blinks</li> <li>- 5 minutes after door opening, the buzzer sounds and the lamp blinks until it is closed.</li> </ul>
10	Evaporator fan control	<ul style="list-style-type: none"> <li>- The fan starts operation when the compressor is on.</li> <li>- The fan stops operation when the door is opened.</li> <li>- The fan is off when the compressor is off.</li> <li>(The fan starts operation irrespective of the compressor-on or -off temperature if the inside temperature is 32°F(0°C) or below.)</li> <li>- The fan start operation 3 seconds after the door is closed.</li> </ul>

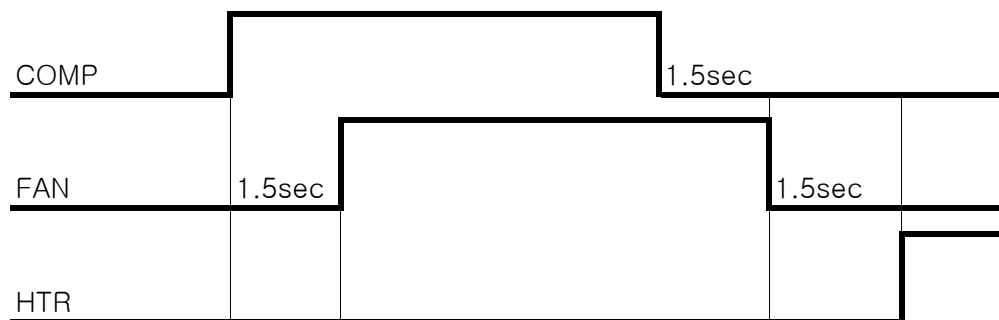
## 2. Compressor Operation and Re-run Prohibition

### a) Compressor Operation

- 1) The compressor is not to be operated for 5 minutes after it is off.
- 2) Operation is to depend on the refrigerator and freezer sensor temperatures.
- 3) Operation is to depend on the preset difference. ( Ex) preset difference  $>\pm 35^{\circ}\text{F}(2^{\circ}\text{C})$ : )
  - The compressor is on at 35°F(2°C) or more above the set temperature and off 35°F(2°C) or more below the set temperature.

### b) AC Load Sequential Control

- 1) Simultaneous operation is not available.  
An operation starts 1.5 seconds later than another.



### 3. SETTING

The Up and Down keys pressed at the same time, the setting mode is on.

S	E	L
---	---	---

 SEL is displayed on the 888 Segment

NO	MODE	SW 4(△)	DISPLAY	Note
1	Forced Defrost	once	ds	Display in 2seconds (LEDs are off except 888 segment.)
2	Mode setting	twice	OF	
3	TEST	3 times	St	
4	Error check	4 times	no	
5	Function change	5 times	23F	
6	°F / °C change	6 times	F	
7	Cabinet Heater setting change	7 times	Ht	
8	LED check and EEPROM clear	8 times	All LEDs blinking	

#### a) Forced Defrost mode

- 1) Display : : "ds" is displayed on the 888 Segment.
- 2) Activation: The Down switch (▽) pressed in 1),  
the setting mode is off and forced defrosting mode is on.  
② 888 SEGMENT displays "dF".

#### b) Mode setting

- 1) Display: The 888 Segment is displayed like the following.

0	F
---	---

 In 1 second 

0	0
---	---

- 2) Control: The Up button (△) pressed,

the setting mode is altered in order of off-point change, DIF change,  
temperature revision and defrosting duration adjustment.

00 a second after 0F: level-up and -down by 32°F(0.5°C)  
between 23°F(-5.0°C) and 41°F(+5.0°C)

- ① 0F, display 00 after a second : level-up and -down by 32°F(0.5°C) between.  
(Decimal point and the zero in front of it omitted: 32°F(5) displayed for 32°F(0.5°C)
  - ② 0d, display 20 after a second : 32(0.25) → 32(0.5) → 33(0.75) → 33(1.0) → 34(1.5)  
→ 35(2.0) → 37(3.0) → 39(4.0) → 41(5.0) (decimal point omitted)
  - ③ CA, display 00 after a second : level-up and -down by 33°F(1°C) between 23°F(-5.0)  
and 41°F(+0.5) (Inside temperature display adjusted: decimal point omitted)
  - ④ dt, display 6 after a second : In freezing, the minimum defrosting duration levels  
up and down by an hour between 0.5 and 10 hours. (no defrosting for 0)  
In refrigeration: the defrosting duration levels up and down  
by an hour between 0.5 and 10 hours.
- Down(▽): level-up and -down available with the switch
  - Adjustments are auto-saved.
  - Auto cancellation if no buttons are pressed for 5 seconds.

### c) Equipment Test Mode

- 1) "St" is displayed on the 888segment.
- 2) The Up switch(△) pressed, the operations allotted to Level 0 to 3 start.
- 3) Test Mode Stop : Auto cancellation if no buttons are pressed for 10 seconds at Level 0.

Level	Load operation	Operation duration	DISPLAY	Note			
0	All off	Auto return in 10 seconds	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;">S</td><td style="width: 20px; height: 20px;">t</td></tr></table>		S	t	
	S	t					
1	Compressor on Fan on	Continue	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;"></td><td style="width: 20px; height: 20px;">C</td><td style="width: 20px; height: 20px;">P</td></tr></table>		C	P	
	C	P					
2	Defrost heater on	Continue	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;">D</td><td style="width: 20px; height: 20px;">H</td><td style="width: 20px; height: 20px;">t</td></tr></table>	D	H	t	Not available for Type R
D	H	t					
3	Cabinet heater on	Continue	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 20px;">C</td><td style="width: 20px; height: 20px;">H</td><td style="width: 20px; height: 20px;">t</td></tr></table>	C	H	t	
C	H	t					

### d) Error mode check

- 1) Display  
: The 888 Segment display is like the following.

① No error

	n	O
--	---	---

② Error

S	1	_
---	---	---

 : Short error of the S1 sensor

- All of the errors saved in the Micom can be checked with the Up switch(△).
- Please refer to the trouble-shooting guide.

### e) Type Change Mode

- 1) The Down switch(▽) pressed, the mode changes to "FrE".
  - 2) Auto-cancellation and type saving is carried out, if no buttons are pressed for 5 seconds.
- ※ If change type, must re-input power.  
(The preset values are initialized in type change.)

### f) °F / °C Change Mode

- 1) The Down switch(▽) pressed, °F change to °C.
- 2) Auto-cancellation and type saving is carried out, if no buttons are pressed for 5 seconds.

### g) Cabinet Heater Setting Adjustment

- ① The Down switch(▽) pressed, change to setting value.  
– "00"→"02"→"04" → ~ "30" → "40" → "100" → "00"
- ② Mode

Value	On Time	Off Time	Value	On Time	Off Time
00	Cord H/T off		15	15 min	10 min
02	2 min	10 min	20	20 min	10 min
04	4 min	10 min	25	25 min	10 min
06	6 min	10 min	30	30 min	10 min
08	8 min	10 min	40	40 min	10 min
10	10 min	10 min	100	Cord H/T on	

- ③ Auto-cancellation and type saving is carried out,  
if no buttons are pressed for 5 seconds.

### f) LED Check and EEPROM Clear

- 1) All LED automatically turns off after blinking 5 times at 0.5 second intervals.
- 2) The EEPROM is cleared to save new defaults.  
The type set and temperature mark(°F / °C) are not cleared.

## D. Error Mode Display

### 1. ERROR Mode

#### a) S1 – Sensor Error

- 1) If the S1–Sensor is short or its temperature is 143°F(62°C) or above, the segment blinks ESH.
- 2) If the S1–Sensor is opened or its temperature is –58°F(–50°C) or below, the segment blinks ESL.
- 3) Please follow the following operation in case of an S1–Sensor error.  
Freezer : On for 10 and off for 20 minutes  
Refrigerator : On for 10 and off for 6 minutes
- 4) Regular operation is available when the error is fixed.

#### ※ Types of Sensors

No.	Sensor	Description
1	S1 – Sensor	Detected cabinet temperature.
2	D1 – Sensor	Detected Evaporator Coil temperature to defrost system.
3	Rt – Sensor	Detected ambient temperature.

## 2. Trouble Shooting : by blinking location

\* Please refer to the Error Check Mode.

NO	Category	Display	Error detail	Note
1	S1-SENSOR	S 1	Sensor is opened or at $-58^{\circ}\text{F}(-50^{\circ}\text{C})$ or below	Error Mode operation
		S 1 -	Sensor is short or at $149^{\circ}\text{F}(65^{\circ}\text{C})$ or above	
2	Rt-SENSOR	r t	Sensor is opened	Regular operation
		r t -	Sensor is short	
3	D1-SENSOR (Defrost - Sensor)	D 1	Sensor is opened or at $-58^{\circ}\text{F}(-50^{\circ}\text{C})$ or below	Regular operation
		D 1 -	Sensor is short or at $149^{\circ}\text{F}(65^{\circ}\text{C})$ or above	
4	Defrost Error	d F 1	In case of no D1 Sensor return or auto cancellation within 50 minutes	Regular operation
5	Cycl Error	C F 1	If the D1 Sensor temperature is $32^{\circ}\text{F}(0^{\circ}\text{C})$ or above 30 minutes after compressor begins to operate	Regular operation
6	Freezer Temperature Error	E H F	If operation at over $59^{\circ}\text{F}(15^{\circ}\text{C})$ continues for 2 hours	Regular operation
7	Refrigerator Temperature Error	E H r	If operation at over $44^{\circ}\text{F}(7^{\circ}\text{C})$ continues for 8 hours in a row	Regular operation
8	EEPROM Error	E E P	If EEPROM reading and writing is unavailable	Regular operation
9	Door Error	E D r	If the door s/w is sensed open for over an hour	Error Mode operation

## E. Compressor Protector

When a combined temperature/amperage value is above the limit specified by the compressor manufacturer, a protector will operate independently, turning off the compressor. The compressor will restart when this protector has reset.

Note :

1. Compressor protector resets automatically.
2. If condenser fan is operating and the compressor is off, it is most likely that the protector has operated.

# V. Service Diagnosis

## A. Diagnosis Chart

Problem	Possible Cause	Remedy	
1. Compress will not start – no current draw.	1. Power Switch	1. "OFF" position.	1. Move to "ON" position.
		2. Loose connection.	2. Tighten.
		3. Failure.	3. Call electrician.
	2. Cord and Plug	1. Defective.	1. Replace.
	3. Ground Fault Circuit interrupter	1. Tripped.	1. Check and reset.
		2. Defective.	2. Replace.
	4. Voltage	1. Too low.	1. Call electrician.
		2. Too hige.	2. Call electrician.
	5. Wiring to Control Board	1. Loose connection.	1. Tighten.
		2. Faulty.	2. Check continuity and replace.
6. Transformer	1. Open coil winding.	1. Check continuity and replace.	
7. Control Board	1. Defective.	1. Replace control board.	
8. Compressor Overload	1. Defective.	1. Replace.	
9. Compressor	1. Open windings.	1. Check continuity and replace.	
	10. Relay(Compressor)	1. Bad contacts.	1. Replace.
		2. Open coil winding.	2. Check and replace.
2. Compressor will not run – draws current and trips on overload.	1. Voltage	1. Too low.	1. Call electrician.
	2. Start Relay	1. Bad contacts.	1. Replace.
		2. Open coil winding.	2. Replace.
	3. Compressor	1. Locked rotor.	1. Replace.
4. Start Capacitor	1. Defective.	1. Check and replace.	
3. Compressor runs intermittently and trips on overload.	1. Voltage	1. Too low.	1. Call electrician.
		2. Too hige.	2. Call electrician.
	2. Refrigerant Line or Component	1. Plugged or restricted.	1. Clean and replace filter
	3. Condenser Fan Motor	1. Failed.	1. Replace.
	4. Refrigerant	1. Overcharged.	1. Evacuate and recharge
2. Non-condensibile in system		2. Evacuate and recharge	
5. Location of Unit	1. Restricted air flow to condenser.	1. Move unit or increase ventilation.	
4. Cabinet inside temperature too high; compressor will not start	1. Compressor Relay	1. Defective. ( 115V to relay coil.)	1. Check and replace.
	2. Circuit Board	1. Defective. ( Compressor relay coil not energized at 115V.)	1. Replace.

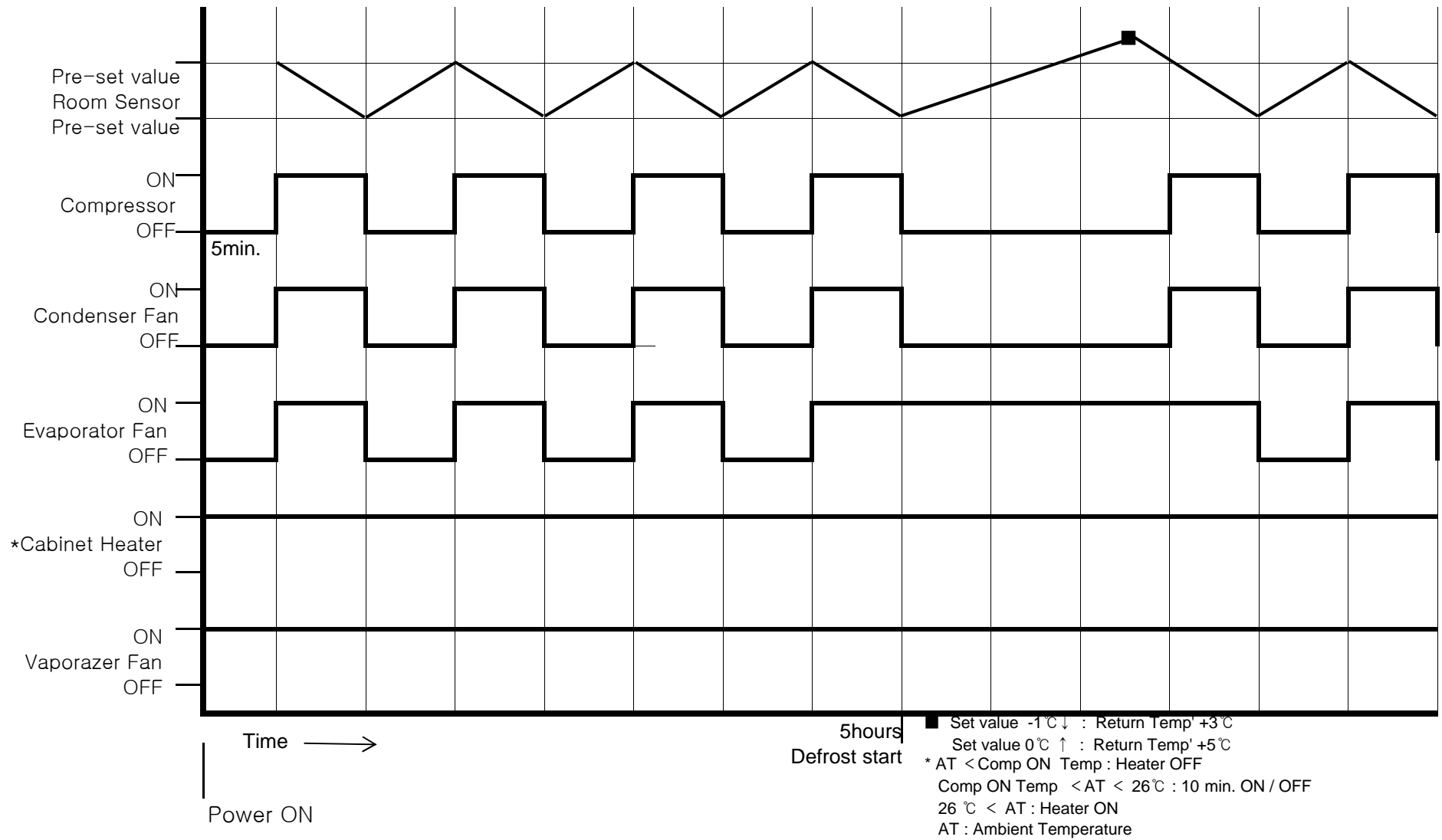
Problem	Possible Cause		Remedy
5. Cabinet temperature too high.	1. Setpoint	1. Incorrect.	1. Correct setpoint. Factory defaults : Freezer -0.4°F (-18°C) Refrigerator 35°F (2°C)
	2. Door	1. Not sealing, or open for long intervals.	1. Check for sealing, check for door open at time of warm cabinet temperature.
	3. Defrost	1. Not enough defrosts occurring per day. Operation in humid conditions.	1. Freezer ; See "C. 1. 5 Defrost System." 2. Refrigerator : "C. 1. 6 Defrost System." 3. Check D-Sensor position.
	4. Refrigerant	1. Leak.	1. Repair leak and recharge
	5. Fan Motor	1. Defective.	1. Check and replace.
	6. Condenser	1. Dirty.	1. Clean.
	7. S1-Sensor	1. Defective.	1. Check and replace.
	8. Control Board	1. Defective.	1. Replace.
6. Cabinet temperature display indicator does not illuminate properly.	1. Board Connection	1. Bad connection between control board and display board.	1. Check connection.
	2. Display Board	1. Defective.	1. Replace.
	3. Control Board	1. Defective.	1. Replace.
7. Cabinet inside temperature too low.	1. Sensor	1. Defective.	1. Check and Replace.
	2. Compressor Relay	1. Defective; contacts welded.	1. Replace.
	3. Circuit Board	1. Defective.	1. Replace.
8. Evaporator does not defrost completely	1. D-Sensor	1. Defective.	1. Check and replace.
	2. Defrost	1. Not enough defrosts occurring per day. Operation in humid conditions.	1. Freezer ; See "C. 1. 5 Defrost System." 2. Refrigerator : "C. 1. 6 Defrost System." 3. Check D-Sensor position.
	3. Defrost Heaters	1. Defective.	1. Freezer : Replace heaters.
	4. Safety Defrost Thermostat	1. Defective, turning off heaters prematurely, or fused open.	1. Freezer : Replace safety defrost thermostat.

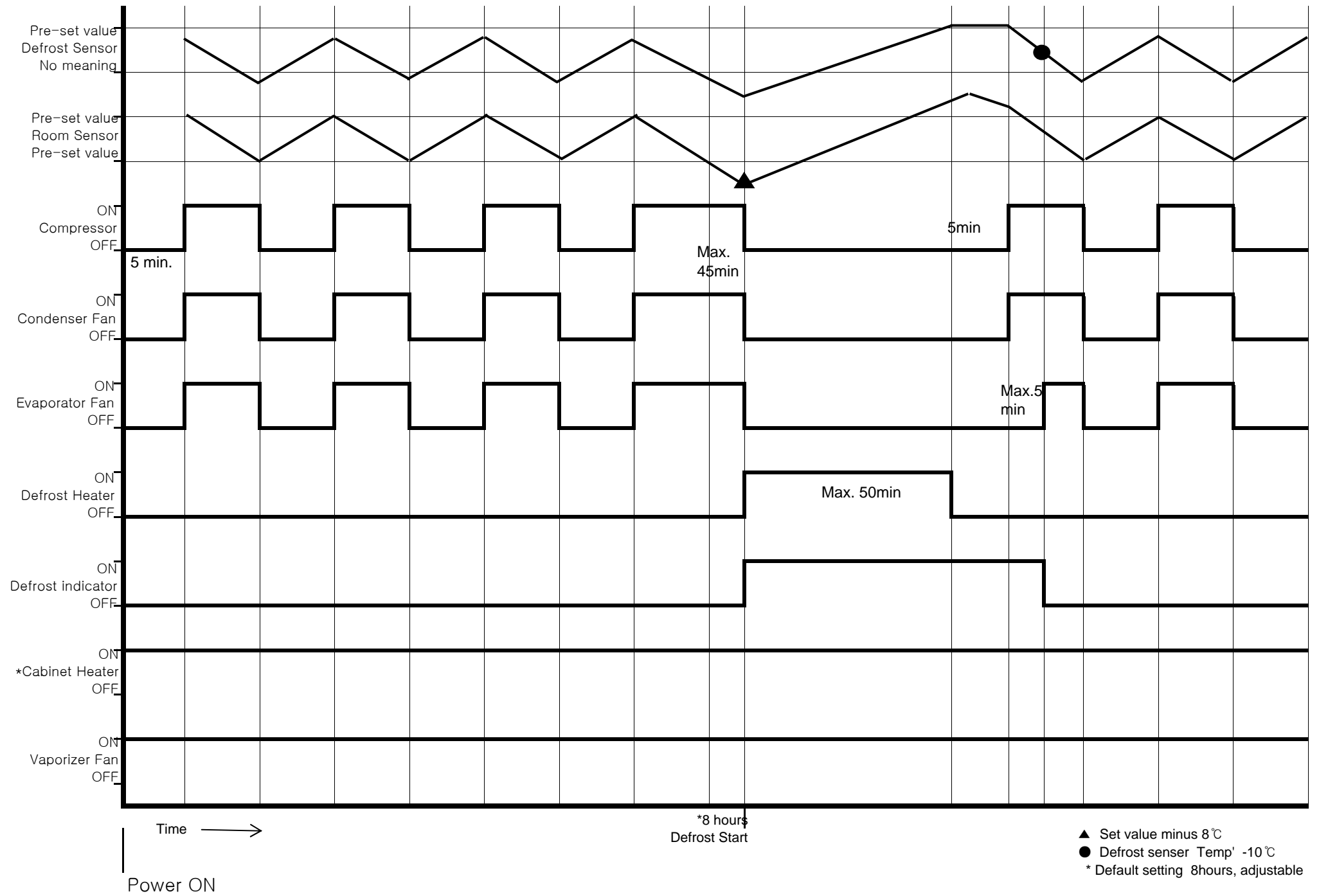
Problem	Possible Cause		Remedy
9. Defrost cycle lasts too long.	1. Defrost Sensor	1. Defective.	1. Replace.
	2. Control Board	1. Defective.	1. Replace.
	3. Defrost	1. Not enough defrosts occurring per day. Operation in humid conditions.	1. Freezer ; See "C. 1. 5 Defrost System." 2. Refrigerator : "C. 1. 6 Defrost System." 3. Check D-Sensor position.
	3. Defrost Heaters	1. Defective.	1. Freezer : Replace heaters.
	4. Safety Defrost Thermostat	1. Defective, turning off heaters prematurely, or fused open.	1. Freezer : Replace safety defrost thermostat.
11. Abnormal noise	1. Fasteners	1. Loose fasteners allow vibration of part.	1. Tighten fasteners.
	2. Compressor	1. Problem with mount.	1. Properly mount compressor. Replace any missing grommets.
		2. Floodback to compressor.	2. Check for signs of floodback to compressor. Evacuate and recharge if necessary.
		3. Defective.	3. Replace.
	3. Fan	1. Fan blade loose.	1. Adjust and tighten.
		2. Defective motor.	2. Replace.
4. Relay	1. Chattering.	1. Replace.	

## B. Thermistor Check

Thermistors (semiconductors) are used for the cabinet control sensor and defrost termination sensor. The resistance varies depending on temperature. No adjustment is required.

If necessary, check for resistance between thermistor leads and visually check the thermistor mounting.





# VI. Removal and Replacement of Components

## A. Removal and Replacement of Compressor

### IMPORTANT

Always install a new drier every time the sealed refrigeration system is opened.  
Do not replace the drier until after all other repair or replacement has been made.  
Install the new drier with the arrow on the drier in the direction of the refrigerant flow.

Note : When replacing a compressor with a defective winding, be sure to install the new start capacitor and start relay supplied with the replacement compressor. Due to the ability of the POE oil in the compressor to absorb moisture quickly, the compressor must not be opened more than 15 minutes for replacement or service.

- 1) Unplug the unit from the electrical outlet.
- 2) Recover the refrigerant and store it in approved container.
- 3) Remove the terminal cover on the compressor, and disconnect the compressor wiring.
- 4) Remove the discharge and suction pipes.
- 5) Remove the hold-down bolts.
- 6) Remove the compressor. Unpack the new compressor package.
- 7) Attach the rubber grommets of the prior compressor.
- 8) Place the compressor in position and secure it using the bolts.
- 9) Remove the drier, then place the new drier in position.
- 10) Remove plugs from the suction, discharge and process pipes.
- 11) Braze all fittings while purging with nitrogen gas flowing at a pressure of 3 to 4 PSIG.
- 12) Check for leaks using nitrogen gas (140 PSIG) and soap bubbles.
- 13) Evacuate the system, and charge it with refrigerant. See the nameplate for the required refrigerant charge.
- 14) Connect the terminals and replace the terminal cover in its correct position.
- 15) Plug the unit back in.

## B. Removal and Replacement of Evaporator

### IMPORTANT

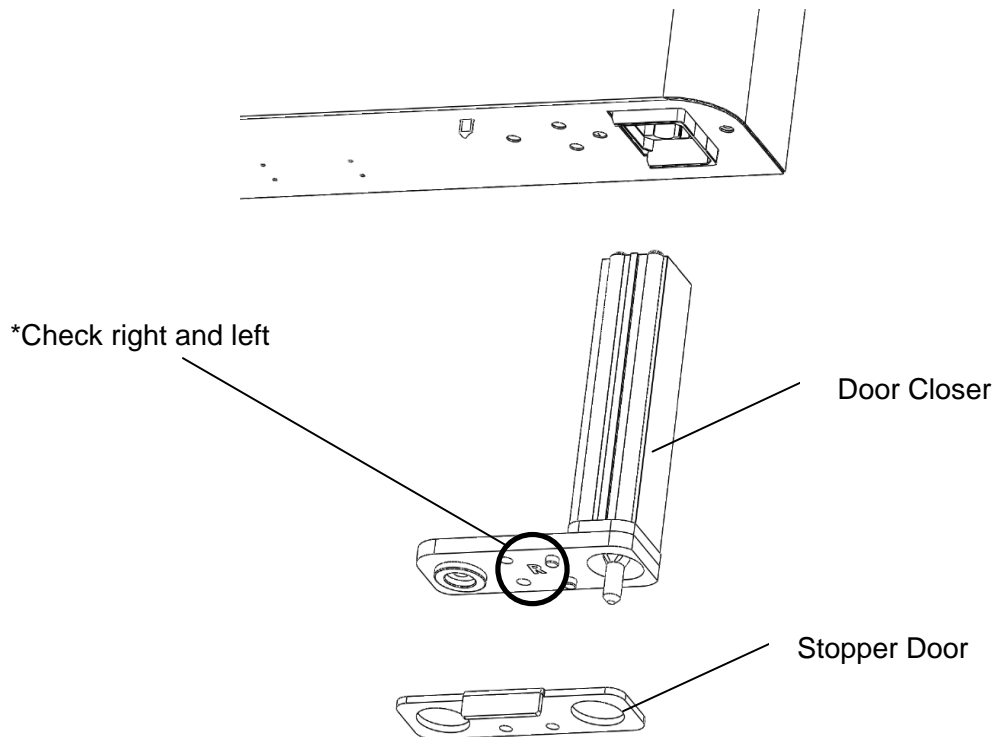
Always install a new drier every time the sealed refrigeration system is opened.  
Do not replace the drier until after all other repair or replacement has been made.  
Install the new drier with the arrow on the drier in the direction of the refrigerant flow.

- 1) Unplug the unit from the electrical outlet.
- 2) Recover the refrigerant and store it in an approved container.
- 3) Remove the insulation tubing.
- 4) Disconnect evaporator inlet & outlet pipes.
- 5) Remove fixed screws and remove " cover evaporator."
- 6) Unhook all wiring connections to cover evaporator.
- 7) Remove the screws that secure evaporator.
- 8) Place the new evaporator in position and secure it using screws.
- 9) Remove the drier, then place the new drier in position.
- 10) Check for leaks using nitrogen gas ( 140 PSIG ) and soap bubbles.
- 11) Evacuate the system, and charge it with refrigerant. See the nameplate for the required refrigerant charge.
- 12) Replace the removed parts in the reverse order of which they were removed.
- 13) Plug the unit back in.

## C. Removal and Replacement of Door Closer

- 1) Remove the top Grill assembly.
- 2) Remove the bolts at top hinge.
- 3) Open the door approximately 90° and lift door up.
- 4) Remove stopper door.
- 5) Insert the new door closer.

Note : When install door closer, Check door closer right and left



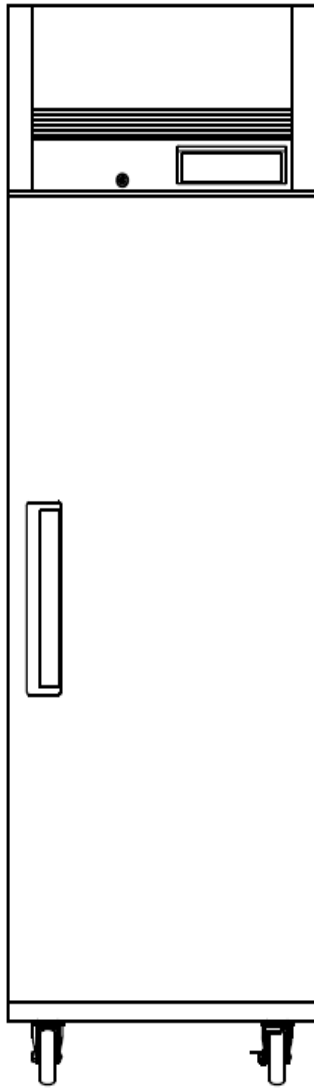
- 6) Replace the stopper door and secure it using the screws.
- 7) Reverse procedure to reassemble door to cabinet.

## D. Removal and Replacement of Control Board

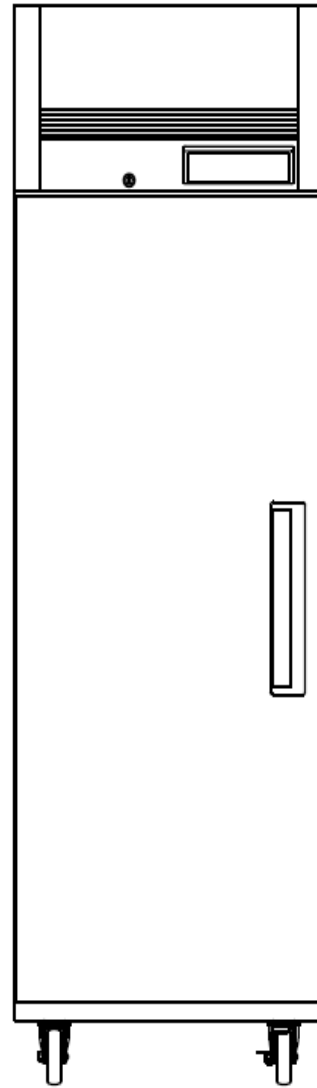
- 1) Unplug the unit from the electrical outlet.
- 2) Remove the control box cover.
- 3) Unhook all wiring connections to the control board.
- 4) Remove the control board by carefully squeezing the tips of the board mounts.
- 5) Identify the board revision and function(refrigerator/freezer).
- 6) Replace the board in the control box taking care not to damage it.
- 7) Hook all wiring connections back to the control board.
- 8) Replace the control box cover.
- 9) Plug the unit back in.

## E. Door Re-Hinging ( only 23 models )

23 models of the door is reversible as shown below.

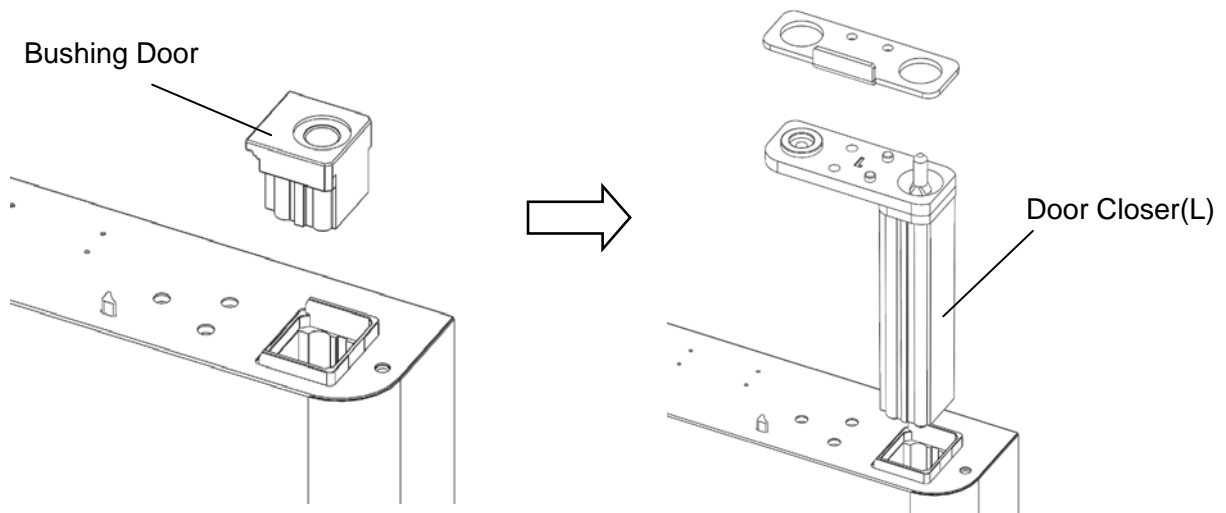


A : The door hinges  
on the right cabinet wall  
\* manufacture specification.

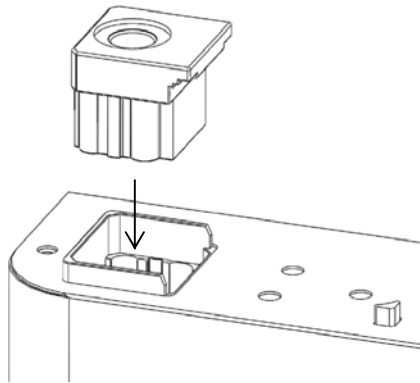


B : The door hinges  
on the left cabinet wall

- 1) Remove the top grill assembly.
- 2) Remove the bolts at top hinge.
- 3) Open the door approximately 90° and lift door up.
- 4) Remove stopper door and door closer(R).
- 5) Remove the bushing door and insert door closer (L) and stopper door.



- 6) Insert bushing door on the opposite side of door.



- 7) Replace the bottom hinge (L).
- 8) Replace the door that changed door closer.
- 9) Replace the top hinge (R).
- 10) Reassemble the top grill assembly.

Note : Door closer (L) , bottom hinge (L) and top hinge (L) are optional parts.

# VII. Cleaning Instructions

## 1. CLEANING THE INTERIOR AND EXTERIOR

- The interior and exterior of the unit can be cleaned using warm water with soap.
- Do not use an abrasive cleaner because it will scratch the surface.

## 2. CLEANING THE CONDENSER FINS

- To maintain proper refrigeration performance, the Condenser coil must be free of dust, dirt, and grease.

It will require to clean it periodically. Condenser fins should be cleaned, at least every three months (90 days) or as needed.

## 3. CLEAN THE GASKET

- The door gasket should be cleaned frequently to maintain proper sealing.  
Use warm water and a mild soap.

## 4. CHECK AFTER CLEANING

- Check the unit again for safety.
- Check that the unit is operating properly.