

Haier



MRV S (America) Service Manual

SYJS-07-2017 REV.A

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1. General Information

1.1 Outdoor models and external appearance

MVHP036MV2AA

MVHP048MV2AA

MVHP056MV2AA



1.2 Feature

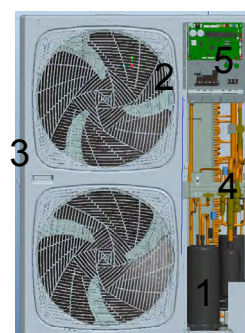
New platform, new outlook

1. Spiral air outlet grill
2. Built-in stop valve
3. Round corner



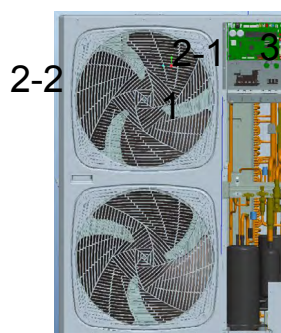
High efficiency, SEER 16.8, HSPF 10

1. DC inverter compressor
2. DC fan motor and 550mm big fan
3. Larger heat exchanger
4. Ball valve
5. New PCB program



Low sound level

1. New aerodynamics fan
2. Enlarged air inlet grill and spiral air outlet grill
3. Night silent mode



High convenience

1. Four handles design
2. "888" test panel
3. "Four-way" pipe connection



2. Specification

OUTDOOR	MODEL NUMBER	MVHP036MV2AA
Cooling Non-ducted	Rated Capacity Btu/hr	36,000
	Capacity Range Btu/hr	7,000-36,000
	Rated Power Input W	3,330
	SEER	16.0
	EER	10.9
Cooling Ducted	Rated Capacity Btu/hr	36,000
	Capacity Range Btu/hr	7,000-36,000
	Rated Power Input W	3,330
	SEER	16.0
	EER	10.9
Heating Non-ducted	Rated Heating Capacity 47°F Btu/hr	40,000
	Heating Capacity Range Btu/hr	8,000-40,000
	Rated Power Input W	3,480
	HSPF	10.0
	Rated Heating Capacity 17°F Btu/hr	25,000
	Max. Heating Capacity 17°F Btu/hr	25,600
	Max. Heating Capacity 5°F Btu/hr	22,400
	Max. Heating Capacity -4°F Btu/hr	21,880
Heating Ducted	Rated Heating Capacity 47°F Btu/hr	40,000
	Heating Capacity Range Btu/hr	8,000-40,000
	Rated Power Input W	3,480
	HSPF	10.0
	Rated Heating Capacity 17°F Btu/hr	25,000
	Max. Heating Capacity 17°F Btu/hr	25,600
	Max. Heating Capacity 5°F Btu/hr	22,400
	Max. Heating Capacity -4°F Btu/hr	21,880
Operating Range	Cooling °F(°C)	23-115(-5~46)
	Heating °F(°C)	-4~75(-20~24)
Power Supply	Voltage, Cycle, Phase V/Hz/-	208/230-60-1
Outdoor Unit	Compressor Type	DC Interfer Driven Rotary
	Maximum Fuse Size A	30
	Minimum Circuit Amp A	25.4
	Outdoor Noise Level dB	54
	Dimension: HxWxD in (mm)	52 3/4(1340) x 37 3/8(950) x14 5/8(370)
	Weight (Ship/Net)- lbs (kg)	265/247(120/112)
Indoor Unit	Max Indoor units	6
Refrigerate Line	Connections	Flare
	Liquid / Suction O.D. in	3/8", 5/8"
	Factory Charge Oz	123.0
	Maximum Line Length Ft / m	984/300
	Maximum Height Ft / m	164/50
	Maximum Line Length for each individual indoor unit Ft / m	492/150
If exceeding the following limits, you must contact your local distributor or dealer for individual design and separate order. - Line Length Ft / m: 492/150 - Height Ft / m: 98/30 - Line Length for each individual indoor unit Ft / m: 262/80.		

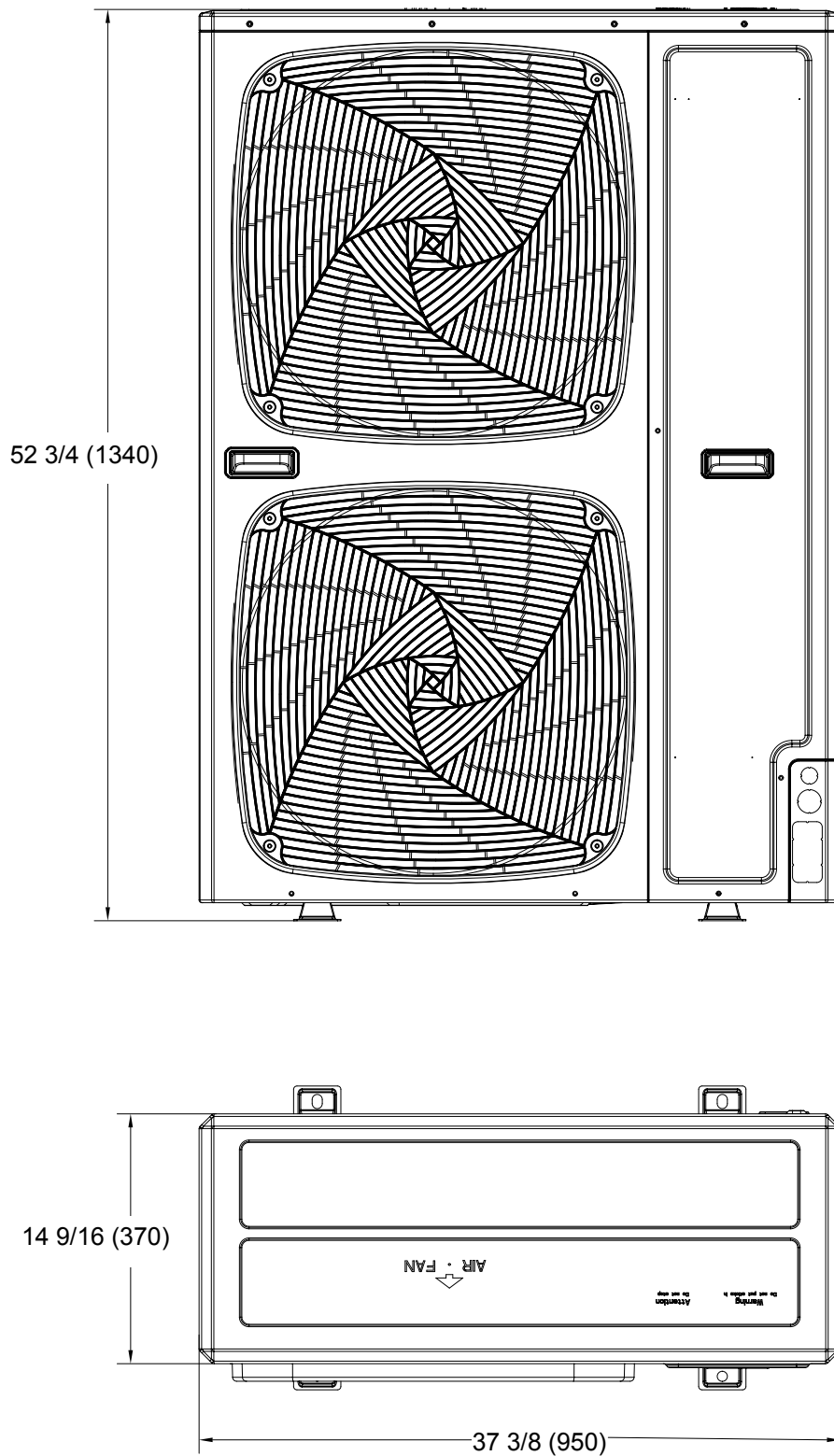
OUTDOOR	MODEL NUMBER	MVHP048MV2AA
Cooling Non-ducted	Rated Capacity Btu/hr	48,000
	Capacity Range Btu/hr	7,000-48,000
	Rated Power Input W	4,800
	SEER	16.0
	EER	10.0
Cooling Ducted	Rated Capacity Btu/hr	48,000
	Capacity Range Btu/hr	7,000-48,000
	Rated Power Input W	4,800
	SEER	16.0
	EER	10.0
Heating Non-ducted	Rated Heating Capacity 47°F Btu/hr	54,000
	Heating Capacity Range Btu/hr	8,000-54,000
	Rated Power Input W	5,250
	HSPF	10.0
	Rated Heating Capacity 17°F Btu/hr	32,400
	Max. Heating Capacity 17°F Btu/hr	34,600
	Max. Heating Capacity 5°F Btu/hr	30,400
	Max. Heating Capacity -4°F Btu/hr	29,540
Heating Ducted	Rated Heating Capacity 47°F Btu/hr	54,000
	Heating Capacity Range Btu/hr	8,000-54,000
	Rated Power Input W	5,250
	HSPF	10.0
	Rated Heating Capacity 17°F Btu/hr	32,400
	Max. Heating Capacity 17°F Btu/hr	34,600
	Max. Heating Capacity 5°F Btu/hr	30,400
	Max. Heating Capacity -4°F Btu/hr	29,540
Operating Range	Cooling °F(°C)	23-115(-5~46)
	Heating °F(°C)	-4~75(-20~24)
Power Supply	Voltage, Cycle, Phase V/Hz/-	208/230-60-1
Outdoor Unit	Compressor Type	DC Interfer Driven Rotary
	Maximum Fuse Size A	40
	Minimum Circuit Amp A	37.8
	Outdoor Noise Level dB	55
	Dimension: HxWxD in (mm)	52 3/4(1340) x 37 3/8(950) x 14 5/8(370)
	Weight (Ship/Net)- lbs (kg)	271/254(123/115)
Indoor Unit	Max Indoor units	8
Refrigerate Line	Connections	Flare
	Liquid / Suction O.D. in	3/8", 5/8"
	Factory Charge Oz	141.0
	Maximum Line Length Ft / m	984/300
	Maximum Height Ft / m	164/50
	Maximum Line Length for each individual indoor unit Ft / m	492/150
If exceeding the following limits, you must contact your local distributor or dealer for individual design and separate order. - Line Length Ft / m: 492/150 - Height Ft / m: 98/30 - Line Length for each individual indoor unit Ft / m: 262/80.		

OUTDOOR	MODEL NUMBER	MVHP056MV2AA
Cooling Non-ducted	Rated Capacity Btu/hr	56,000
	Capacity Range Btu/hr	7,000-56,000
	Rated Power Input W	5,580
	SEER	16.0
	EER	10.0
Cooling Ducted	Rated Capacity Btu/hr	56,000
	Capacity Range Btu/hr	7,000-56,000
	Rated Power Input W	5,580
	SEER	16.0
	EER	10.0
Heating Non-ducted	Rated Heating Capacity 47°F Btu/hr	59,000
	Heating Capacity Range Btu/hr	8,000-59,000
	Rated Power Input W	6,150
	HSPF	10.0
	Rated Heating Capacity 17°F Btu/hr	36,400
	Max. Heating Capacity 17°F Btu/hr	37,200
	Max. Heating Capacity 5°F Btu/hr	33,000
	Max. Heating Capacity -4°F Btu/hr	32,280
Heating Ducted	Rated Heating Capacity 47°F Btu/hr	59,000
	Heating Capacity Range Btu/hr	8,000-59,000
	Rated Power Input W	6,150
	HSPF	10.0
	Rated Heating Capacity 17°F Btu/hr	36,400
	Max. Heating Capacity 17°F Btu/hr	37,200
	Max. Heating Capacity 5°F Btu/hr	33,000
	Max. Heating Capacity -4°F Btu/hr	32,280
Operating Range	Cooling °F(°C)	23-115(-5~46)
	Heating °F(°C)	-4~75(-20~24)
Power Supply	Voltage, Cycle, Phase V/Hz/-	208/230-60-1
Outdoor Unit	Compressor Type	DC Interfer Driven Rotary
	Maximum Fuse Size A	40
	Minimum Circuit Amp A	38.8
	Outdoor Noise Level dB	55
	Dimension: HxWxD in (mm)	52 3/4(1340) x 37 3/8(950) x14 5/8(370)
	Weight (Ship/Net)- lbs (kg)	271/254(123/115)
Indoor Unit	Max Indoor units	9
Refrigerate Line	Connections	Flare
	Liquid / Suction O.D. in	3/8", 5/8"
	Factory Charge Oz	141.0
	Maximum Line Length Ft / m	984/300
	Maximum Height Ft / m	164/50
	Maximum Line Length for each individual indoor unit Ft / m	492/150
If exceeding the following limits, you must contact your local distributor or dealer for individual design and separate order. - Line Length Ft / m: 492/150 - Height Ft / m: 98/30 - Line Length for each individual indoor unit Ft / m: 262/80.		

3. Dimension

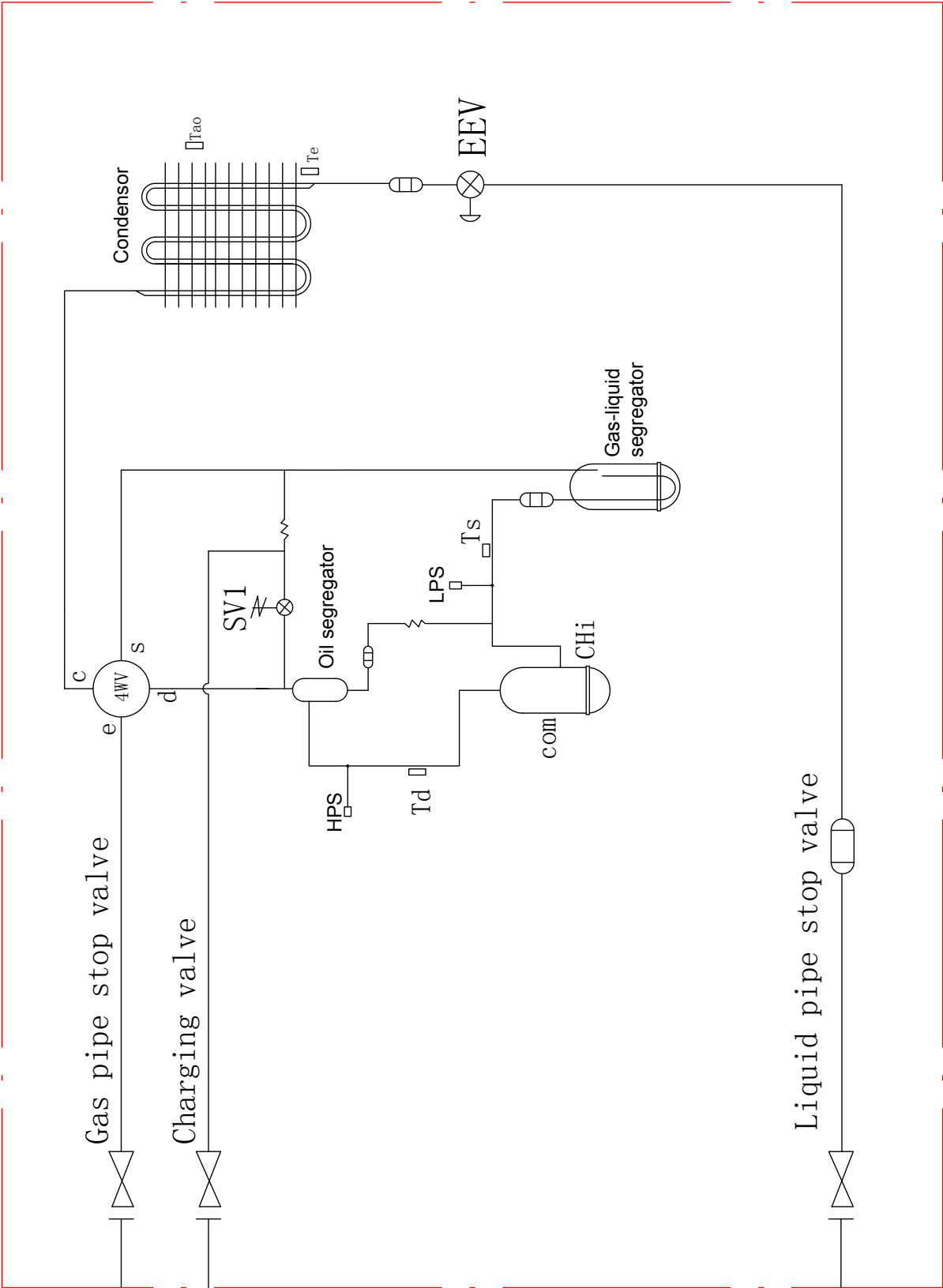
MVHP036-56MV2AA

Unit: inch (mm)

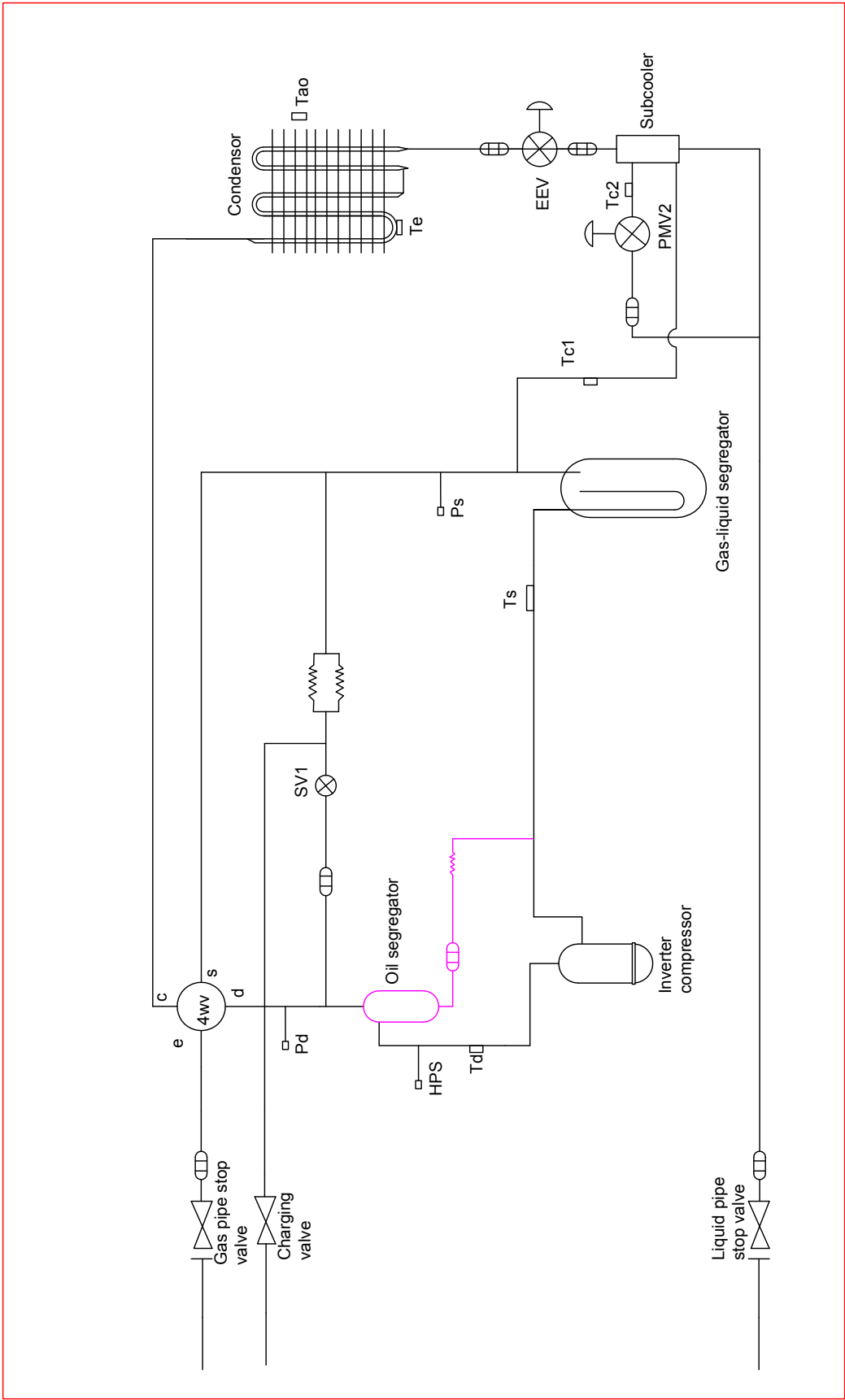


4. Piping Diagram

MVHP036MV2AA



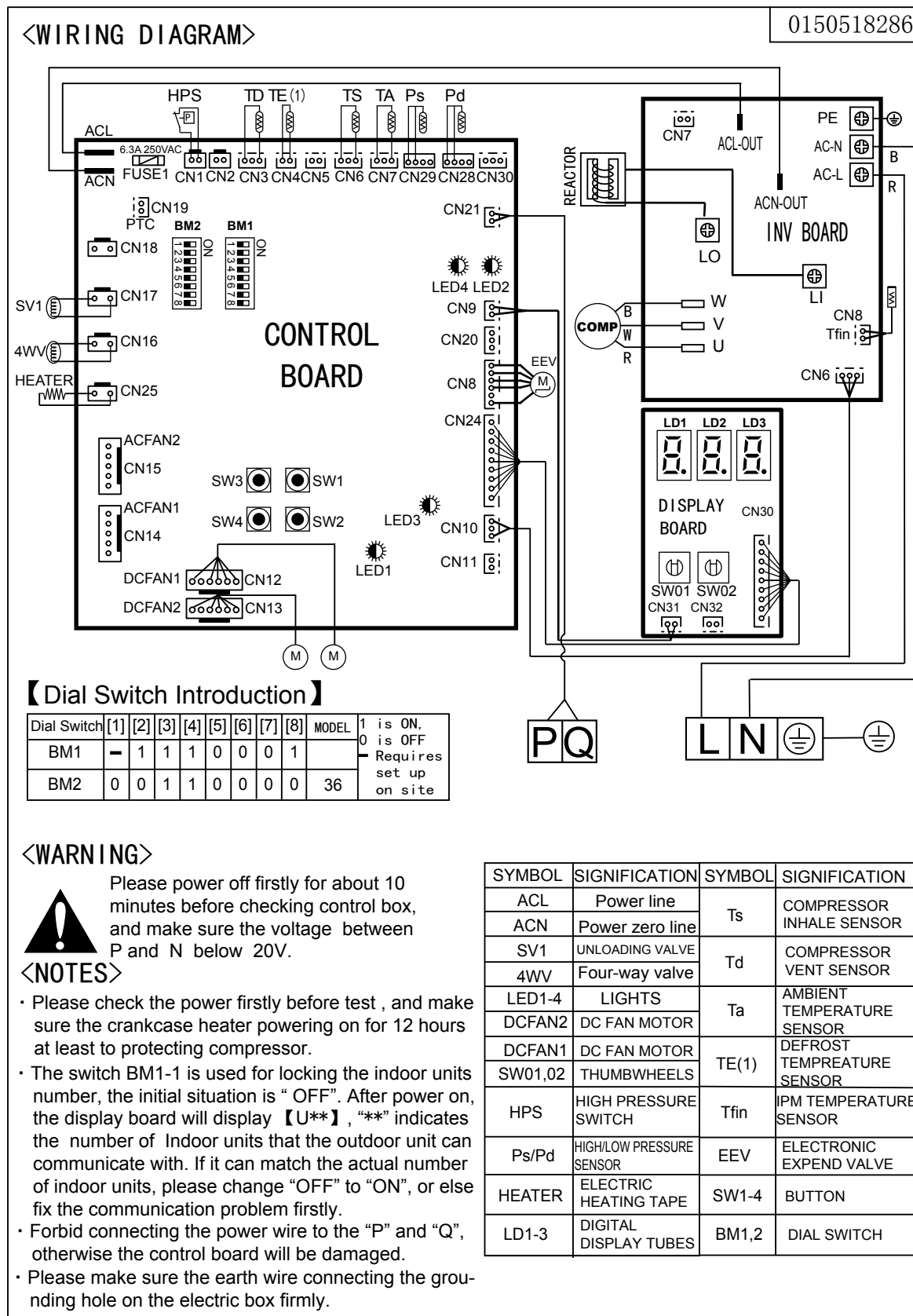
MVHP048-56MV2AA



Part name	Sign	Function	Date	Note
Compressor	/	Capacity control, meet indoor load request by adjusting frequency and opening and closing fixing frequency compressor.		20℃
Pressure switch	HPS	High pressure protection	4.15Mpa, OFF	
Electronic expansion valve	EEV	In heating, refrigerant flow control	36:Φ2.4 48/56:Φ3.0	
	PMV2	Subcooled control	Φ2.4	
Solenoid valve	SV1	1. Keep balance of high/low pressure when compressor starts up and stops 2. High/low pressure protection	AC220V Open when power is on, close when power is off.	2A
4-way valve	4WV	Changing over between cooling and heating	AC220V electrified in heating; powered off in cooling or defrosting.	
Pressure sensor	Pd	In heating, compressor frequency adjustment, abnormal pressure protection		
	Ps	In cooling, compressor frequency adjustment, abnormal pressure protection		
Temp. sensor	Td	Detect the top temp. of compressor	R(80℃)=50K B(25/80℃)=4450K	
	Ts	Detect the top suction of compressor	R(80℃)=10K B(25/80℃)=3700K	
	Tao	Detect ambient temp., set primary fan speed and control defrost condition		
	Tc1	Detect the temp. of before and after the supercooling valve to control the supercooling valve open angle.		
	Tc2			
	Te	Detect frost condition of outdoor heat exchanger		
Heater	Chi	Used to heat oil in inverter compressor	28W, 220V, one	

5. Wiring Diagram

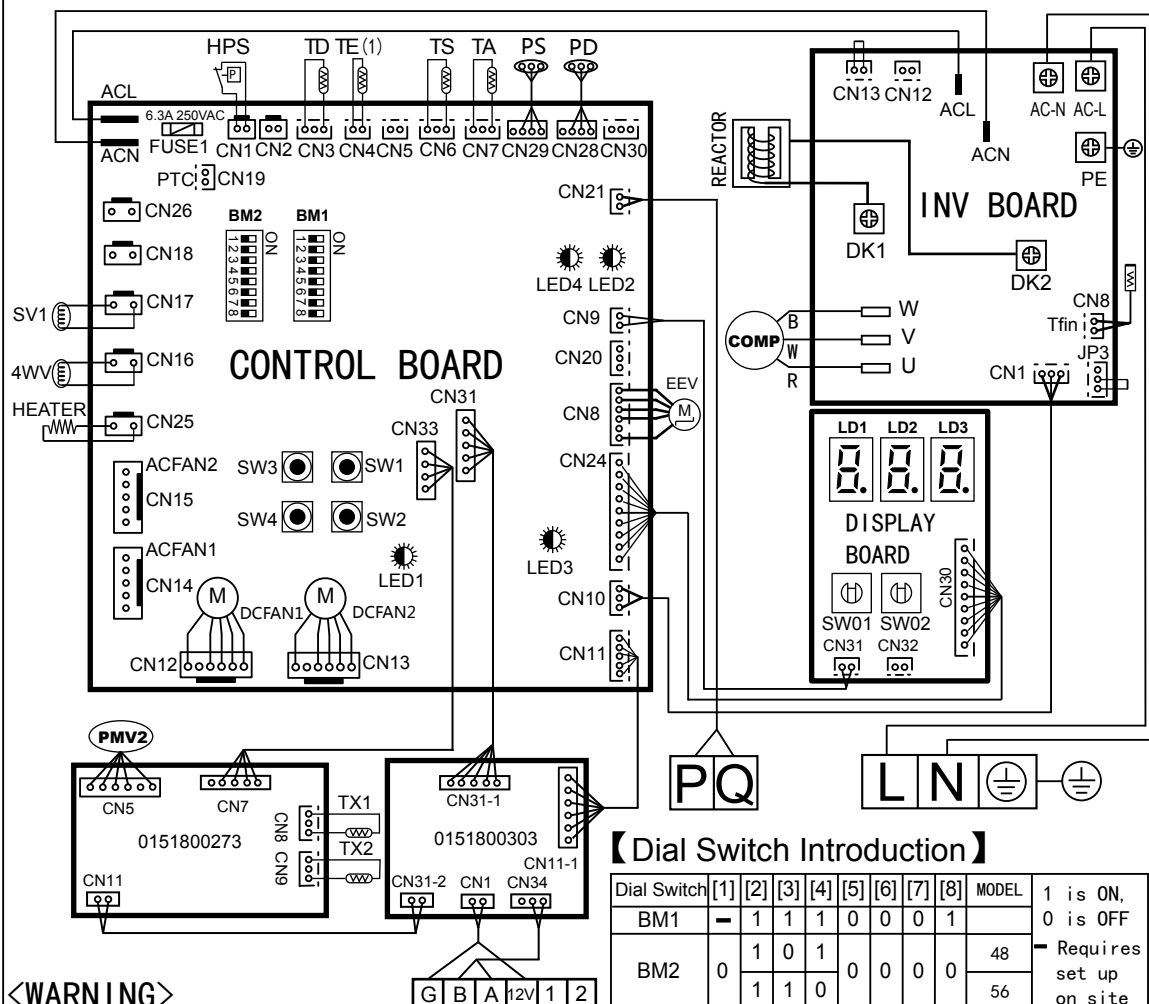
MVHP036MV2AA



MVHP048/056MV2AA

<WIRING DIAGRAM>

0150522553



<WARNING>



Please power off firstly for about 10 minutes before checking control box, and make sure the voltage between P and N below 20V.

<NOTES>

- Please check the power firstly before test, and make sure the crankcase heater powering on for 12 hours at least to protecting compressor.
- The switch BM1-1 is used for locking the indoor units number, the initial situation is "OFF". After power on, the display board will display 【U**】, "**" indicates the number of Indoor units that the outdoor unit can communicate with. If it can match the actual number of indoor units, please change "OFF" to "ON", or else fix the communication problem firstly.
- Forbid connecting the power wire to the "P" and "Q", otherwise the control board will be damaged.
- Please make sure the earth wire connecting the grounding hole on the electric box firmly.

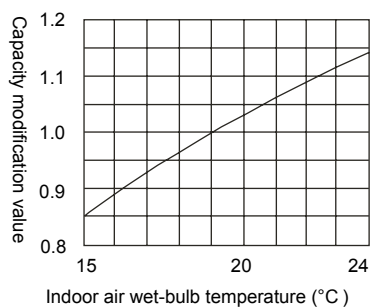
<SYMBOL>

SYMBOL	SIGNIFICATION	SYMBOL	SIGNIFICATION
ACL	POWER LINE	TS	COMPRESSOR INHALE SENSOR
ACN	POWER ZERO LINE	TD	COMPRESSOR VENT SENSOR
SV1	UNLOADING VALVE	TA	AMBIENT TEMPERATURE SENSOR
4WV	FOUR-WAY VALVE	TE(1)	DEFROST TEMPERATURE SENSOR
LED1-4	LIGHTS	PD	HIGH PRESSURE SENSOR
DCFAN2	DC FAN MOTOR	PS	LOW PRESSURE SENSOR
DCFAN1	DC FAN MOTOR	Tfin	IPM TEMPERATURE SENSOR
HPS	HIGH PRESSURE SWITCH	EEV	ELECTRONIC EXPEND VALVE
HEATER	ELECTRIC HEATING TAPE	TX1	TC1 TEMP SENSOR OF VALVE PLATE
LD1-3	DIGITAL DISPLAY TUBES	TX2	TC2 TEMP SENSOR OF VALVE PLATE
SW01,02	THUMBWHEELS	R	RED
BM1,2	DIAL SWITCH	W	WHITE
PMV2	ELECTRONIC EXPEND VALVE	B	BLACK
SW1-4	BUTTON		

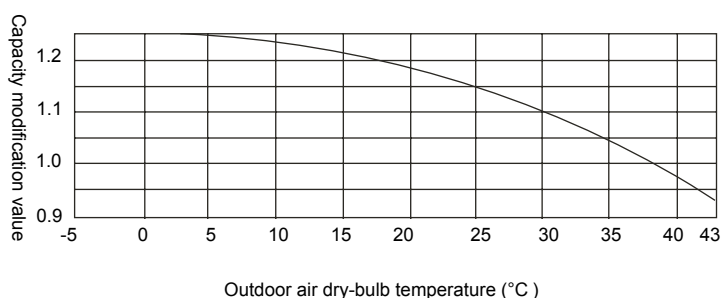
6. Capacity Calculation Due to Capacity Modification Coefficient

(1) Calculation method of refrigerating capacity----cooling capacity to be known=refrigerating capacity*(A*B*C*D*E)W

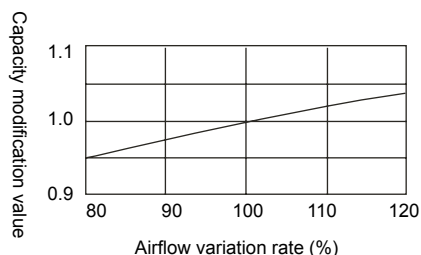
A. Capacity compensation value of indoor air wet-bulb temperature condition



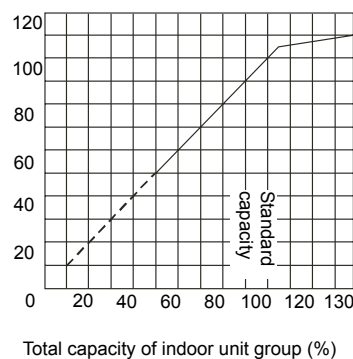
B. Capacity compensation value of outdoor air dry-bulb temperature condition



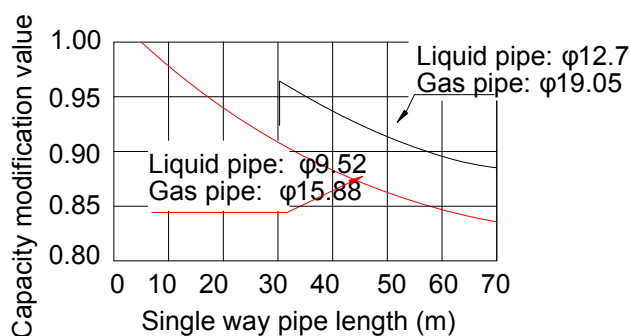
C. Capacity modification value under airflow variation rate of indoor unit group (only for duct unit)



D. Capacity compensation suitable for total capability of indoor unit group



E. Capacity compensation value of pipe length, pipe diameter and height drop



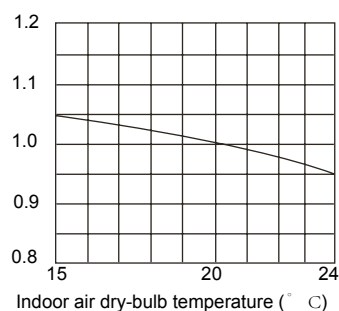
Notes for E:

- (1) The main pipe (from outdoor to the first branch pipe) diameter should be enlarged one size when the single way pipe length is over 98 7/16 ft (30m).
- (2) When in cooling mode, outdoor is lower than indoor; or when in heating mode, outdoor is higher than indoor, the compensation factor should be decreased the below value from figure E.

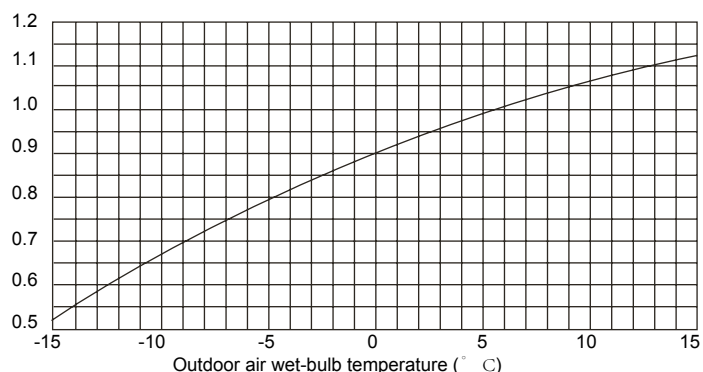
Vertical height drop between indoor and outdoor	16 3/8ft (5m)	32 13/16ft (10m)	49 3/16ft (15m)	65 5/8ft (20m)	82ft (25m)	98 7/16 ft (30m)
Adjustment factor	0.003	0.006	0.009	0.012	0.015	0.018

(2) Calculation method of refrigerating capacity----heating capacity to be known=refrigerating capacity*(A*B*C*D*E*F)W

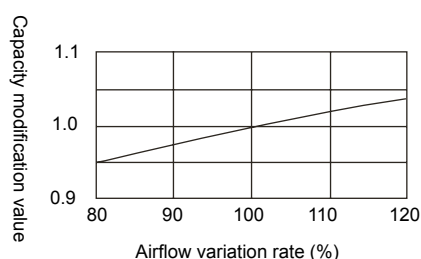
A. Capacity compensation value of indoor air dry-bulb temperature condition



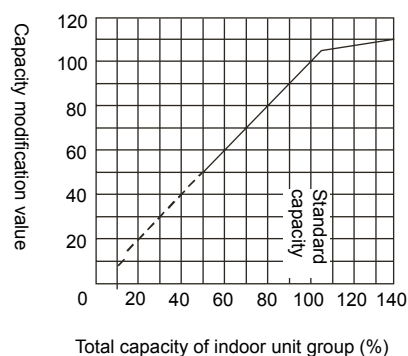
B. Capacity compensation value of outdoor air wet-bulb temperature condition



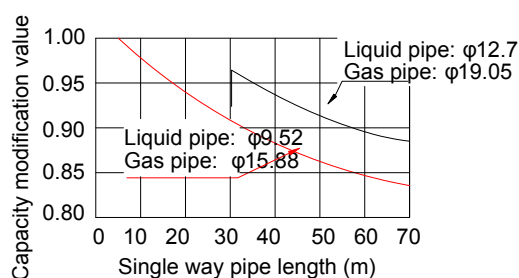
C. Capacity modification value under airflow variation rate of indoor unit group (only for duct unit)



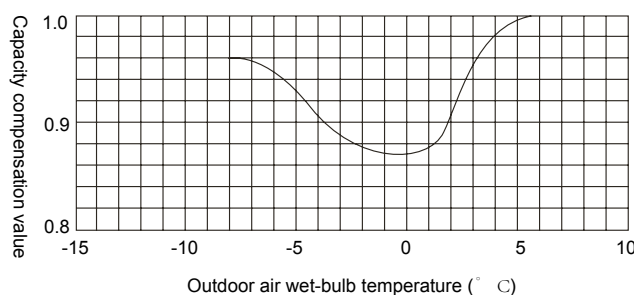
D. Capacity compensation suitable for total capability of indoor unit group



E. Capacity compensation value of pipe length and pipe diameter



F. Capacity compensation value for defrost capability of outdoor heat exchanger



Notes for E:

- (1) The main pipe (from outdoor to the first branch pipe) diameter should be enlarged one size when the single way pipe length is over 98 7/16ft (30m).
- (2) When in cooling mode, outdoor is lower than indoor; or when in heating mode, outdoor is higher than indoor, the compensation factor should be decreased the below value from figure E.

Vertical height drop between indoor and outdoor	16 3/8ft (5m)	32 13/16ft (10m)	49 3/16ft (15m)	65 5/8ft (20m)	82ft (25m)	98 7/16 ft (30m)
Adjustment factor	0.003	0.006	0.009	0.012	0.015	0.018

7. Cooling Capacity

MVHP036MV2AA Cooling															
Capacity Factor (%)	Outdoor Temp.	Indoor Temp.(°FWB)													
		57.2		60.8		64.4		67.0		68.0		71.6		75.2	
	(°FDB)	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
130%	23	32.32	1.15	38.16	1.89	44.16	2.06	47.18	2.27	48.92	2.73	50.72	2.95	52.63	3.30
	32	32.32	1.16	38.16	1.90	44.16	2.09	47.18	2.29	48.92	2.75	50.72	3.05	51.85	3.28
	41	32.32	1.17	38.16	1.91	44.16	2.12	47.18	2.36	48.92	2.83	50.72	3.11	51.18	3.36
	50	32.32	1.22	38.16	1.96	44.16	2.18	47.18	2.42	47.58	2.90	48.92	3.18	49.82	3.45
	59	32.32	1.28	38.16	2.05	44.16	2.28	45.60	2.54	46.24	3.05	47.14	3.34	48.48	3.63
	68	32.32	1.35	38.16	2.14	43.68	2.38	44.16	2.64	44.44	3.17	45.78	3.49	46.68	3.78
	77	32.32	1.61	38.16	2.41	42.10	2.68	42.60	2.98	43.10	3.58	44.44	3.93	45.34	4.26
	86	32.32	1.89	38.16	2.69	40.66	2.99	41.16	3.32	41.74	3.98	42.64	4.38	43.98	4.75
	95	32.32	2.25	38.16	2.97	39.24	3.30	39.72	3.67	40.40	4.14	41.30	4.55	42.64	4.93
	106	29.09	2.47	34.34	3.27	35.32	3.63	35.75	4.04	36.36	4.56	37.17	4.78	38.38	5.18
	109	27.47	2.72	32.44	3.59	33.35	4.00	33.76	4.44	34.34	5.01	35.11	5.02	36.24	5.30
	115	21.98	2.34	25.95	3.09	26.68	3.44	27.01	3.82	27.47	4.58	28.08	4.58	29.00	4.87
	118	19.78	2.18	23.35	2.87	24.01	3.20	24.31	3.55	24.72	4.26	25.28	4.26	26.10	4.53
	122	17.58	1.96	20.76	2.59	21.35	2.88	21.61	3.20	21.98	3.83	22.47	3.84	23.20	4.08
	126	15.38	1.72	18.16	2.28	18.68	2.53	18.91	2.81	19.23	3.37	19.66	3.38	20.30	3.59
120%	23	30.08	1.07	35.46	1.65	40.84	1.80	43.36	1.98	46.68	2.38	49.38	2.58	51.71	2.89
	32	30.08	1.08	35.46	1.66	40.84	1.82	43.36	2.00	46.68	2.40	49.38	2.67	50.93	2.86
	41	30.08	1.08	35.46	1.67	40.84	1.85	43.36	2.06	46.68	2.47	49.38	2.71	50.28	2.94
	50	30.08	1.12	35.46	1.76	40.84	1.95	43.36	2.16	46.24	2.59	48.02	2.85	48.92	3.09
	59	30.08	1.17	35.46	1.83	40.84	2.03	43.36	2.26	45.78	2.71	46.68	2.98	47.58	3.23
	68	30.08	1.22	35.46	2.12	40.84	2.36	43.36	2.62	43.98	3.14	44.88	3.45	45.78	3.75
	77	30.08	1.44	35.46	2.40	40.84	2.66	41.96	2.96	42.64	3.55	43.54	3.90	44.44	4.23
	86	30.08	1.67	35.46	2.68	39.86	2.98	40.54	3.31	41.30	3.97	41.74	4.36	43.10	4.72
	95	30.08	2.01	35.46	2.96	38.46	3.29	39.10	3.66	39.50	4.13	40.40	4.54	41.30	4.92
	106	27.07	2.21	31.91	3.26	34.61	3.62	35.19	4.02	35.55	4.54	36.36	4.77	37.17	5.17
	109	25.57	2.43	30.14	3.58	32.69	3.98	33.24	4.42	33.58	5.00	34.34	5.01	35.11	5.27
	115	20.45	2.09	24.11	3.08	26.15	3.42	26.59	3.80	26.86	4.56	27.47	4.57	28.08	4.86
	118	18.41	1.95	21.70	2.87	23.54	3.18	23.93	3.54	24.17	4.24	24.72	4.25	25.28	4.52
	122	16.36	1.75	19.29	2.58	20.92	2.86	21.27	3.18	21.49	3.82	21.98	3.83	22.47	4.07
	126	14.32	1.54	16.88	2.27	18.31	2.52	18.61	2.80	18.80	3.36	19.23	3.37	19.66	3.58
110%	23	27.38	0.96	32.32	1.51	37.34	1.64	39.72	1.81	42.20	2.17	48.48	2.35	51.23	2.63
	32	27.38	0.97	32.32	1.52	37.34	1.66	39.72	1.82	42.20	2.18	48.48	2.43	50.47	2.61
	41	27.38	0.97	32.32	1.52	37.34	1.69	39.72	1.88	42.20	2.25	48.48	2.47	49.82	2.68
	50	27.38	1.01	32.32	1.59	37.34	1.76	39.72	1.96	42.20	2.35	47.14	2.58	48.02	2.80
	59	27.38	1.06	32.32	1.66	37.34	1.84	39.72	2.05	42.20	2.45	45.78	2.69	46.68	2.92
	68	27.38	1.11	32.32	1.86	37.34	2.07	39.72	2.30	42.20	2.75	43.98	3.02	45.34	3.28
	77	27.38	1.28	32.32	2.40	37.34	2.66	39.72	2.96	41.30	3.55	42.20	3.90	43.10	4.23
	86	27.38	1.51	32.32	2.64	37.34	2.93	39.72	3.26	39.94	3.91	41.30	4.29	42.20	4.66
	95	27.38	1.79	32.32	2.93	37.34	3.26	38.28	3.62	38.60	4.09	39.50	4.49	40.84	4.87
	106	24.64	1.97	29.09	3.23	33.61	3.59	34.45	3.98	34.74	4.50	35.55	4.72	36.76	5.12
	109	23.27	2.17	27.47	3.55	31.74	3.95	32.54	4.38	32.81	4.95	33.58	4.96	34.71	5.24
	115	18.62	1.86	21.98	3.05	25.39	3.39	26.03	3.77	26.25	4.52	26.86	4.53	27.77	4.81
	118	16.76	1.73	19.78	2.84	22.85	3.16	23.43	3.50	23.62	4.20	24.17	4.21	24.99	4.48
	122	14.89	1.56	17.58	2.56	20.31	2.84	20.82	3.15	21.00	3.78	21.49	3.79	22.22	4.03
	126	13.03	1.37	15.38	2.25	17.77	2.50	18.22	2.78	18.37	3.33	18.80	3.33	19.44	3.55

MVHP036MV2AA Cooling															
Capacity Factor (%)	Outdoor Temp.	Indoor Temp.(°FWB)													
		57.2		60.8		64.4		67.0		68.0		71.6		75.2	
	(°FDB)	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
100%		KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW
	23	25.14	0.89	29.62	1.35	33.84	1.47	36.00	1.62	38.60	1.95	43.10	2.11	50.31	2.36
	32	25.14	0.90	29.62	1.36	33.84	1.49	36.00	1.63	38.60	1.96	43.10	2.18	49.56	2.34
	41	25.14	0.90	29.62	1.37	33.84	1.51	36.00	1.69	38.60	2.02	43.10	2.22	48.92	2.41
	50	25.14	0.90	29.62	1.42	33.84	1.58	36.00	1.76	38.60	2.11	43.10	2.32	47.14	2.51
	59	25.14	0.95	29.62	1.49	33.84	1.66	36.00	1.84	38.60	2.21	43.10	2.43	45.78	2.63
	68	25.14	0.99	29.62	1.62	33.84	1.80	36.00	2.00	38.60	2.39	43.10	2.63	43.98	2.85
	77	25.14	1.12	29.62	1.95	33.84	2.16	36.00	2.41	38.60	2.89	41.74	3.17	42.64	3.43
	86	25.14	1.33	29.62	2.32	33.84	2.57	36.00	2.87	38.60	3.43	40.40	3.77	41.30	4.09
	95	25.14	1.56	29.62	2.69	33.84	2.99	36.00	3.33	38.16	3.98	39.06	4.38	39.50	4.75
	106	22.63	1.72	26.66	2.96	30.46	3.29	32.40	3.66	34.34	4.38	35.15	4.60	35.55	4.98
	109	21.37	1.89	25.18	3.26	28.76	3.62	30.60	4.03	32.44	4.82	33.20	4.83	33.58	5.13
	115	17.10	1.62	20.14	2.80	23.01	3.11	24.48	3.47	25.95	4.14	26.56	4.15	26.86	4.41
	118	15.39	1.51	18.13	2.61	20.71	2.89	22.03	3.22	23.35	3.85	23.90	3.86	24.17	4.10
	122	13.68	1.36	16.11	2.34	18.41	2.60	19.58	2.90	20.76	3.47	21.25	3.47	21.49	3.69
	126	11.97	1.20	14.10	2.06	16.11	2.29	17.14	2.55	18.16	3.05	18.59	3.06	18.80	3.25
90%		KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW
	23	22.44	0.75	26.48	1.20	30.66	1.31	32.58	1.44	34.56	1.72	38.60	1.87	43.85	2.09
	32	22.44	0.76	26.48	1.20	30.66	1.32	32.58	1.45	34.56	1.74	38.60	1.93	43.19	2.07
	41	22.44	0.76	26.48	1.21	30.66	1.35	32.58	1.49	34.56	1.79	38.60	1.96	42.64	2.13
	50	22.44	0.81	26.48	1.27	30.66	1.41	32.58	1.56	34.56	1.87	38.60	2.06	42.64	2.23
	59	22.44	0.85	26.48	1.33	30.66	1.47	32.58	1.64	34.56	1.96	38.60	2.16	42.64	2.34
	68	22.44	0.88	26.48	1.39	30.66	1.55	32.58	1.72	34.56	2.06	38.60	2.27	42.64	2.46
	77	22.44	0.98	26.48	1.67	30.66	1.85	32.58	2.06	34.56	2.47	38.60	2.71	41.74	2.94
	86	22.44	1.16	26.48	1.99	30.66	2.21	32.58	2.46	34.56	2.94	38.60	3.23	40.40	3.50
	95	22.44	1.37	26.48	2.34	30.66	2.60	32.58	2.89	34.56	3.46	38.16	3.80	39.06	4.12
	106	20.20	1.50	23.83	2.57	27.59	2.86	29.32	3.17	31.10	3.81	34.34	4.18	35.15	4.53
	109	19.07	1.65	22.51	2.83	26.06	3.15	27.69	3.49	29.38	4.19	32.44	4.60	33.20	4.99
	115	15.26	1.42	18.01	2.43	20.85	2.71	22.15	3.00	23.50	3.60	25.95	3.96	26.56	4.29
	118	13.73	1.32	16.21	2.26	18.76	2.52	19.94	2.79	21.15	3.35	23.35	3.68	23.90	3.99
	122	12.21	1.19	14.41	2.04	16.68	2.27	17.72	2.51	18.80	3.02	20.76	3.31	21.25	3.59
	126	10.68	1.05	12.60	1.79	14.59	1.99	15.51	2.21	16.45	2.65	18.16	2.91	18.59	3.16
80%		KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW
	23	19.76	0.71	23.34	1.05	27.16	1.15	29.08	1.26	30.52	1.52	34.12	1.64	39.24	1.84
	32	19.76	0.72	23.34	1.06	27.16	1.16	29.08	1.27	30.52	1.53	34.12	1.70	38.66	1.82
	41	19.76	0.72	23.34	1.06	27.16	1.18	29.08	1.31	30.52	1.57	34.12	1.73	38.16	1.87
	50	19.76	0.79	23.34	1.11	27.16	1.23	29.08	1.37	30.52	1.64	34.12	1.81	38.16	1.96
	59	19.76	0.83	23.34	1.16	27.16	1.29	29.08	1.43	30.52	1.71	34.12	1.89	38.16	2.05
	68	19.76	0.89	23.34	1.22	27.16	1.35	29.08	1.51	30.52	1.80	34.12	1.98	38.16	2.15
	77	19.76	0.96	23.34	1.22	27.16	1.35	29.08	1.51	30.52	1.80	34.12	1.98	38.16	2.15
	86	19.76	1.14	23.34	1.42	27.16	1.57	29.08	1.74	30.52	2.09	34.12	2.30	38.16	2.49
	95	19.76	1.33	23.34	1.99	27.16	2.21	29.08	2.46	30.52	2.94	34.12	3.23	38.16	3.50
	106	17.78	1.46	21.01	2.19	24.44	2.43	26.17	2.70	27.47	3.24	30.71	3.56	34.34	3.85
	109	16.80	1.60	19.84	2.41	23.09	2.67	24.72	2.97	25.94	3.56	29.00	3.91	32.44	4.24
	115	13.44	1.38	15.87	2.07	18.47	2.30	19.77	2.56	20.75	3.06	23.20	3.36	25.95	3.65
	118	12.09	1.28	14.28	1.93	16.62	2.14	17.80	2.38	18.68	2.85	20.88	3.13	23.35	3.39
	122	10.75	1.15	12.70	1.73	14.78	1.92	15.82	2.14	16.60	2.56	18.56	2.82	20.76	3.05
	126	9.41	1.02	11.11	1.53	12.93	1.69	13.84	1.88	14.53	2.25	16.24	2.48	18.16	2.69

MVHP036MV2AA Cooling															
Capacity Factor (%)	Outdoor Temp.	Indoor Temp.(°FWB)													
		57.2		60.8		64.4		67.0		68.0		71.6		75.2	
	(°FDB)	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
70%	23	17.50	0.70	20.64	0.91	23.66	0.99	25.28	1.09	26.94	1.30	30.08	1.42	34.16	1.59
	32	17.50	0.71	20.64	0.91	23.66	1.00	25.28	1.10	26.94	1.31	30.08	1.47	33.65	1.57
	41	17.50	0.71	20.64	0.92	23.66	1.02	25.28	1.13	26.94	1.35	30.08	1.49	33.22	1.62
	50	17.50	0.76	20.64	0.96	23.66	1.06	25.28	1.18	26.94	1.42	30.08	1.55	33.22	1.69
	59	17.50	0.82	20.64	1.01	23.66	1.12	25.28	1.24	26.94	1.48	30.08	1.63	33.22	1.77
	68	17.50	0.87	20.64	1.05	23.66	1.17	25.28	1.30	26.94	1.56	30.08	1.71	33.22	1.86
	77	17.50	0.94	20.64	1.18	23.66	1.31	25.28	1.46	26.94	1.75	30.08	1.92	33.22	2.08
	86	17.50	1.12	20.64	1.40	23.66	1.56	25.28	1.73	26.94	2.07	30.08	2.28	33.22	2.48
	95	17.50	1.31	20.64	1.66	23.66	1.84	25.28	2.05	26.94	2.45	30.08	2.69	33.22	2.92
	106	15.75	1.44	18.58	1.82	21.29	2.02	22.75	2.25	24.25	2.69	27.07	2.96	29.90	3.21
	109	14.88	1.59	17.54	2.01	20.11	2.22	21.49	2.48	22.90	2.96	25.57	3.26	28.24	3.53
	115	11.90	1.36	14.04	1.73	16.09	1.91	17.19	2.13	18.32	2.55	20.45	2.80	22.59	3.04
	118	10.71	1.27	12.63	1.60	14.48	1.78	15.47	1.98	16.49	2.37	18.41	2.61	20.33	2.83
	122	9.52	1.14	11.23	1.44	12.87	1.60	13.75	1.78	14.66	2.13	16.36	2.34	18.07	2.54
	126	8.33	1.00	9.82	1.27	11.26	1.41	12.03	1.57	12.82	1.88	14.32	2.06	15.81	2.24
60%	23	14.82	0.69	17.50	0.80	20.34	0.84	21.78	0.93	23.34	1.11	25.58	1.21	29.08	1.35
	32	14.82	0.69	17.50	0.81	20.34	0.85	21.78	0.93	23.34	1.12	25.58	1.25	28.65	1.34
	41	14.82	0.69	17.50	0.81	20.34	0.87	21.78	0.96	23.34	1.15	25.58	1.27	28.28	1.37
	50	14.82	0.75	17.50	0.85	20.34	0.90	21.78	1.00	23.34	1.20	25.58	1.32	28.28	1.43
	59	14.82	0.80	17.50	0.88	20.34	0.93	21.78	1.03	23.34	1.24	25.58	1.37	28.28	1.48
	68	14.82	0.87	17.50	0.93	20.34	0.97	21.78	1.08	23.34	1.30	25.58	1.43	28.28	1.55
	77	14.82	0.94	17.50	0.98	20.34	1.08	21.78	1.19	23.34	1.43	25.58	1.57	28.28	1.70
	86	14.82	1.11	17.50	1.30	20.34	1.28	21.78	1.42	23.34	1.70	25.58	1.87	28.28	2.03
	95	14.82	1.30	17.50	1.46	20.34	1.51	21.78	1.67	23.34	2.00	25.58	2.21	28.28	2.39
	106	13.34	1.43	15.75	1.60	18.31	1.66	19.60	1.84	21.01	2.21	23.02	2.43	25.45	2.63
	109	12.60	1.57	14.88	1.76	17.29	1.82	18.51	2.02	19.84	2.43	21.74	2.67	24.04	2.89
	115	10.08	1.35	11.90	1.52	13.83	1.57	14.81	1.74	15.87	2.09	17.39	2.30	19.23	2.48
	118	9.07	1.26	10.71	1.41	12.45	1.46	13.33	1.62	14.28	1.94	15.65	2.14	17.31	2.31
	122	8.06	1.13	9.52	1.27	11.06	1.31	11.85	1.46	12.70	1.75	13.92	1.92	15.38	2.08
	126	7.05	0.99	8.33	1.12	9.68	1.15	10.37	1.28	11.11	1.54	12.18	1.69	13.46	1.83
50%	23	12.56	0.67	14.82	0.78	17.02	0.84	18.14	0.92	19.30	1.10	21.54	1.18	24.48	1.33
	32	12.56	0.68	14.82	0.79	17.02	0.85	18.14	0.93	19.30	1.11	21.54	1.22	24.11	1.32
	41	12.56	0.68	14.82	0.79	17.02	0.86	18.14	0.96	19.30	1.14	21.54	1.24	23.80	1.36
	50	12.56	0.74	14.82	0.85	17.02	0.90	18.14	1.00	19.30	1.19	21.54	1.30	23.80	1.39
	59	12.56	0.81	14.82	0.87	17.02	0.92	18.14	1.03	19.30	1.23	21.54	1.35	23.80	1.45
	68	12.56	0.85	14.82	0.92	17.02	0.96	18.14	1.07	19.30	1.28	21.54	1.41	23.80	1.53
	77	12.56	0.93	14.82	0.97	17.02	1.07	18.14	1.18	19.30	1.42	21.54	1.55	23.80	1.68
	86	12.56	1.11	14.82	1.30	17.02	1.26	18.14	1.39	19.30	1.69	21.54	1.85	23.80	2.02
	95	12.56	1.27	14.82	1.39	17.02	1.39	18.14	1.64	19.30	2.01	21.54	2.13	23.80	2.32
	106	11.30	1.40	13.34	1.53	15.32	1.53	16.33	1.81	17.37	2.21	19.39	2.34	21.42	2.56
	109	10.68	1.54	12.60	1.69	14.47	1.69	15.42	1.99	16.41	2.43	18.31	2.58	20.23	2.81
	115	8.54	1.32	10.08	1.45	11.57	1.45	12.34	1.71	13.12	2.09	14.65	2.22	16.18	2.42
	118	7.69	1.23	9.07	1.35	10.42	1.35	11.10	1.59	11.81	1.95	13.18	2.06	14.57	2.25
	122	6.83	1.11	8.06	1.21	9.26	1.21	9.87	1.43	10.50	1.75	11.72	1.86	12.95	2.02
	126	5.98	0.97	7.05	1.07	8.10	1.07	8.63	1.26	9.19	1.54	10.25	1.63	11.33	1.78

MVHP048MV2AA Cooling															
Capacity Factor (%)	Outdoor Temp.	Indoor Temp.(°FWB)													
		57.2		60.8		64.4		67.0		68.0		71.6		75.2	
	(°FDB)	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
130%	23	43.09	1.66	50.88	2.73	58.88	2.97	62.91	3.27	65.23	3.93	67.63	4.26	70.18	4.76
	32	43.09	1.67	50.88	2.74	58.88	3.01	62.91	3.30	65.23	3.96	67.63	4.40	69.13	4.72
	41	43.09	1.68	50.88	2.75	58.88	3.06	62.91	3.40	65.23	4.08	67.63	4.48	68.24	4.85
	50	43.09	1.76	50.88	2.82	58.88	3.14	62.91	3.49	63.44	4.18	65.23	4.59	66.43	4.98
	59	43.09	1.84	50.88	2.96	58.88	3.29	60.80	3.66	61.65	4.39	62.85	4.82	64.64	5.23
	68	43.09	1.94	50.88	3.09	58.24	3.43	58.88	3.81	59.25	4.57	61.04	5.03	62.24	5.45
	77	43.09	2.32	50.88	3.48	56.13	3.87	56.80	4.30	57.47	5.16	59.25	5.67	60.45	6.14
	86	43.09	2.73	50.88	3.88	54.21	4.31	54.88	4.79	55.65	5.74	56.85	6.31	58.64	6.84
	95	43.09	3.24	50.88	4.28	52.32	4.76	52.96	5.29	53.87	6.17	55.07	6.79	56.85	7.35
	106	38.78	3.56	45.79	4.71	47.09	5.24	47.66	5.82	48.48	6.79	49.56	7.13	51.17	7.72
	109	36.63	3.92	43.25	5.18	44.47	5.76	45.02	6.40	45.79	7.47	46.81	7.48	48.33	7.90
	115	29.30	3.37	34.60	4.45	35.58	4.95	36.01	5.50	36.63	6.60	37.45	6.61	38.66	7.02
	118	26.37	3.14	31.14	4.14	32.02	4.61	32.41	5.12	32.97	6.14	33.70	6.15	34.79	6.53
	122	23.44	2.82	27.68	3.73	28.46	4.15	28.81	4.61	29.30	5.52	29.96	5.53	30.93	5.88
	126	20.51	2.48	24.22	3.28	24.90	3.65	25.21	4.05	25.64	4.86	26.21	4.87	27.06	5.17
120%	23	40.11	1.54	47.28	2.38	54.45	2.60	57.81	2.86	62.24	3.43	65.84	3.72	68.94	4.16
	32	40.11	1.56	47.28	2.39	54.45	2.62	57.81	2.88	62.24	3.46	65.84	3.84	67.91	4.13
	41	40.11	1.56	47.28	2.40	54.45	2.67	57.81	2.97	62.24	3.56	65.84	3.91	67.04	4.24
	50	40.11	1.61	47.28	2.53	54.45	2.81	57.81	3.12	61.65	3.74	64.03	4.11	65.23	4.46
	59	40.11	1.68	47.28	2.64	54.45	2.93	57.81	3.26	61.04	3.91	62.24	4.30	63.44	4.66
	68	40.11	1.76	47.28	3.06	54.45	3.40	57.81	3.78	58.64	4.53	59.84	4.98	61.04	5.40
	77	40.11	2.07	47.28	3.46	54.45	3.84	55.95	4.27	56.85	5.11	58.05	5.62	59.25	6.09
	86	40.11	2.41	47.28	3.86	53.15	4.29	54.05	4.77	55.07	5.72	55.65	6.28	57.47	6.81
	95	40.11	2.90	47.28	4.27	51.28	4.74	52.13	5.27	52.67	6.15	53.87	6.77	55.07	7.33
	106	36.10	3.19	42.55	4.70	46.15	5.21	46.92	5.80	47.40	6.77	48.48	7.11	49.56	7.70
	109	34.09	3.51	40.19	5.17	43.59	5.74	44.31	6.38	44.77	7.45	45.79	7.46	46.81	7.86
	115	27.27	3.02	32.15	4.44	34.87	4.93	35.45	5.48	35.81	6.58	36.63	6.59	37.45	7.00
	118	24.55	2.81	28.94	4.13	31.38	4.59	31.91	5.10	32.23	6.12	32.97	6.13	33.70	6.51
	122	21.82	2.53	25.72	3.72	27.90	4.13	28.36	4.59	28.65	5.50	29.30	5.52	29.96	5.86
	126	19.09	2.22	22.51	3.27	24.41	3.63	24.82	4.04	25.07	4.84	25.64	4.85	26.21	5.16
110%	23	36.51	1.38	43.09	2.17	49.79	2.36	52.96	2.61	56.27	3.12	64.64	3.38	68.31	3.79
	32	36.51	1.40	43.09	2.18	49.79	2.39	52.96	2.63	56.27	3.14	64.64	3.50	67.29	3.76
	41	36.51	1.40	43.09	2.19	49.79	2.43	52.96	2.71	56.27	3.24	64.64	3.56	66.43	3.86
	50	36.51	1.46	43.09	2.29	49.79	2.54	52.96	2.83	56.27	3.39	62.85	3.72	64.03	4.04
	59	36.51	1.53	43.09	2.39	49.79	2.65	52.96	2.95	56.27	3.53	61.04	3.88	62.24	4.21
	68	36.51	1.60	43.09	2.68	49.79	2.98	52.96	3.31	56.27	3.97	58.64	4.36	60.45	4.73
	77	36.51	1.84	43.09	3.46	49.79	3.84	52.96	4.27	55.07	5.11	56.27	5.62	57.47	6.09
	86	36.51	2.18	43.09	3.81	49.79	4.23	52.96	4.70	53.25	5.63	55.07	6.19	56.27	6.71
	95	36.51	2.58	43.09	4.23	49.79	4.70	51.04	5.22	51.47	6.10	52.67	6.70	54.45	7.26
	106	32.86	2.84	38.78	4.65	44.81	5.17	45.94	5.74	46.32	6.71	47.40	7.03	49.01	7.63
	109	31.03	3.12	36.63	5.12	42.32	5.69	43.38	6.32	43.75	7.38	44.77	7.39	46.29	7.81
	115	24.82	2.68	29.30	4.40	33.85	4.89	34.71	5.43	35.00	6.51	35.81	6.52	37.03	6.94
	118	22.34	2.50	26.37	4.09	30.47	4.55	31.24	5.05	31.50	6.06	32.23	6.07	33.33	6.45
	122	19.86	2.25	23.44	3.68	27.08	4.09	27.77	4.55	28.00	5.45	28.65	5.46	29.62	5.81
	126	17.38	1.98	20.51	3.24	23.70	3.60	24.29	4.00	24.50	4.80	25.07	4.80	25.92	5.11

MVHP048MV2AA Cooling															
Capacity Factor (%)	Outdoor Temp.	Indoor Temp.(°FWB)													
		57.2		60.8		64.4		67.0		68.0		71.6		75.2	
	(°FDB)	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
100%	23	33.52	1.28	39.49	1.95	45.12	2.12	48.00	2.34	51.47	2.80	57.47	3.04	67.08	3.40
	32	33.52	1.30	39.49	1.97	45.12	2.14	48.00	2.36	51.47	2.82	57.47	3.15	66.07	3.38
	41	33.52	1.30	39.49	1.97	45.12	2.18	48.00	2.43	51.47	2.91	57.47	3.20	65.23	3.47
	50	33.52	1.30	39.49	2.05	45.12	2.28	48.00	2.53	51.47	3.04	57.47	3.34	62.85	3.62
	59	33.52	1.37	39.49	2.15	45.12	2.39	48.00	2.65	51.47	3.18	57.47	3.50	61.04	3.79
	68	33.52	1.42	39.49	2.33	45.12	2.59	48.00	2.88	51.47	3.45	57.47	3.79	58.64	4.11
	77	33.52	1.61	39.49	2.81	45.12	3.12	48.00	3.47	51.47	4.16	55.65	4.57	56.85	4.95
	86	33.52	1.91	39.49	3.34	45.12	3.71	48.00	4.13	51.47	4.95	53.87	5.44	55.07	5.90
	95	33.52	2.25	39.49	3.88	45.12	4.31	48.00	4.80	50.88	5.74	52.08	6.31	52.67	6.84
	106	30.17	2.47	35.54	4.27	40.61	4.74	43.20	5.28	45.79	6.31	46.87	6.63	47.40	7.18
	109	28.49	2.72	33.57	4.69	38.35	5.22	40.80	5.81	43.25	6.95	44.27	6.96	44.77	7.40
	115	22.79	2.34	26.86	4.04	30.68	4.48	32.64	4.99	34.60	5.97	35.41	5.98	35.81	6.36
	118	20.51	2.18	24.17	3.75	27.61	4.17	29.38	4.65	31.14	5.55	31.87	5.56	32.23	5.92
	122	18.23	1.96	21.48	3.38	24.55	3.75	26.11	4.18	27.68	5.00	28.33	5.01	28.65	5.32
	126	15.96	1.72	18.80	2.97	21.48	3.30	22.85	3.68	24.22	4.40	24.79	4.41	25.07	4.69
90%	23	29.92	1.09	35.31	1.72	40.88	1.89	43.44	2.07	46.08	2.49	51.47	2.69	58.47	3.01
	32	29.92	1.10	35.31	1.74	40.88	1.91	43.44	2.08	46.08	2.50	51.47	2.78	57.59	2.99
	41	29.92	1.10	35.31	1.74	40.88	1.94	43.44	2.15	46.08	2.58	51.47	2.83	56.85	3.07
	50	29.92	1.17	35.31	1.83	40.88	2.03	43.44	2.25	46.08	2.70	51.47	2.97	56.85	3.22
	59	29.92	1.22	35.31	1.91	40.88	2.12	43.44	2.36	46.08	2.83	51.47	3.11	56.85	3.37
	68	29.92	1.27	35.31	2.01	40.88	2.23	43.44	2.48	46.08	2.97	51.47	3.27	56.85	3.54
	77	29.92	1.41	35.31	2.40	40.88	2.67	43.44	2.97	46.08	3.56	51.47	3.91	55.65	4.24
	86	29.92	1.67	35.31	2.87	40.88	3.18	43.44	3.54	46.08	4.24	51.47	4.66	53.87	5.05
	95	29.92	1.97	35.31	3.37	40.88	3.75	43.44	4.16	46.08	4.99	50.88	5.48	52.08	5.94
	106	26.93	2.17	31.78	3.71	36.79	4.12	39.10	4.58	41.47	5.49	45.79	6.03	46.87	6.53
	109	25.43	2.38	30.01	4.08	34.75	4.54	36.92	5.03	39.17	6.04	43.25	6.63	44.27	7.19
	115	20.35	2.05	24.01	3.51	27.80	3.90	29.54	4.33	31.33	5.19	34.60	5.70	35.41	6.18
	118	18.31	1.91	21.61	3.26	25.02	3.63	26.59	4.03	28.20	4.83	31.14	5.30	31.87	5.75
	122	16.28	1.72	19.21	2.94	22.24	3.27	23.63	3.62	25.07	4.35	27.68	4.77	28.33	5.17
	126	14.24	1.51	16.81	2.58	19.46	2.87	20.68	3.19	21.93	3.82	24.22	4.20	24.79	4.55
80%	23	26.35	1.03	31.12	1.52	36.21	1.65	38.77	1.82	40.69	2.19	45.49	2.37	52.32	2.65
	32	26.35	1.04	31.12	1.53	36.21	1.67	38.77	1.83	40.69	2.20	45.49	2.45	51.54	2.63
	41	26.35	1.04	31.12	1.53	36.21	1.70	38.77	1.89	40.69	2.27	45.49	2.49	50.88	2.70
	50	26.35	1.14	31.12	1.60	36.21	1.78	38.77	1.98	40.69	2.37	45.49	2.61	50.88	2.82
	59	26.35	1.20	31.12	1.67	36.21	1.86	38.77	2.06	40.69	2.47	45.49	2.72	50.88	2.95
	68	26.35	1.28	31.12	1.76	36.21	1.95	38.77	2.17	40.69	2.60	45.49	2.86	50.88	3.10
	77	26.35	1.38	31.12	1.76	36.21	1.95	38.77	2.17	40.69	2.60	45.49	2.86	50.88	3.10
	86	26.35	1.64	31.12	2.04	36.21	2.26	38.77	2.51	40.69	3.01	45.49	3.31	50.88	3.59
	95	26.35	1.91	31.12	2.87	36.21	3.18	38.77	3.54	40.69	4.24	45.49	4.66	50.88	5.05
	106	23.71	2.10	28.01	3.16	32.59	3.50	34.90	3.89	36.62	4.66	40.94	5.13	45.79	5.55
	109	22.39	2.31	26.45	3.47	30.78	3.85	32.96	4.28	34.59	5.13	38.67	5.64	43.25	6.11
	115	17.92	1.99	21.16	2.99	24.63	3.31	26.37	3.68	27.67	4.41	30.94	4.85	34.60	5.26
	118	16.12	1.85	19.05	2.78	22.16	3.08	23.73	3.43	24.90	4.10	27.84	4.51	31.14	4.89
	122	14.33	1.66	16.93	2.50	19.70	2.77	21.09	3.08	22.14	3.69	24.75	4.06	27.68	4.40
	126	12.54	1.46	14.81	2.20	17.24	2.44	18.46	2.71	19.37	3.25	21.65	3.57	24.22	3.87

MVHP048MV2AA Cooling															
Capacity Factor (%)	Outdoor Temp.	Indoor Temp.(°FWB)													
		57.2		60.8		64.4		67.0		68.0		71.6		75.2	
	(°FDB)	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
70%	23	23.33	1.01	27.52	1.31	31.55	1.43	33.71	1.57	35.92	1.88	40.11	2.04	45.55	2.29
	32	23.33	1.02	27.52	1.32	31.55	1.44	33.71	1.58	35.92	1.89	40.11	2.11	44.87	2.27
	41	23.33	1.02	27.52	1.32	31.55	1.47	33.71	1.63	35.92	1.95	40.11	2.15	44.29	2.33
	50	23.33	1.10	27.52	1.38	31.55	1.53	33.71	1.70	35.92	2.04	40.11	2.24	44.29	2.43
	59	23.33	1.18	27.52	1.45	31.55	1.61	33.71	1.79	35.92	2.14	40.11	2.35	44.29	2.55
	68	23.33	1.26	27.52	1.52	31.55	1.69	33.71	1.87	35.92	2.25	40.11	2.47	44.29	2.68
	77	23.33	1.36	27.52	1.70	31.55	1.89	33.71	2.10	35.92	2.52	40.11	2.77	44.29	3.00
	86	23.33	1.62	27.52	2.02	31.55	2.25	33.71	2.50	35.92	2.99	40.11	3.29	44.29	3.57
	95	23.33	1.89	27.52	2.39	31.55	2.65	33.71	2.95	35.92	3.53	40.11	3.88	44.29	4.21
	106	21.00	2.08	24.77	2.63	28.39	2.91	30.34	3.24	32.33	3.88	36.10	4.27	39.86	4.63
	109	19.83	2.29	23.39	2.89	26.81	3.21	28.65	3.57	30.53	4.27	34.09	4.69	37.65	5.09
	115	15.87	1.97	18.71	2.49	21.45	2.76	22.92	3.07	24.43	3.67	27.27	4.04	30.12	4.38
	118	14.28	1.83	16.84	2.31	19.31	2.56	20.63	2.85	21.98	3.42	24.55	3.75	27.11	4.07
	122	12.69	1.65	14.97	2.08	17.16	2.31	18.34	2.57	19.54	3.07	21.82	3.38	24.10	3.67
	126	11.11	1.45	13.10	1.83	15.02	2.03	16.04	2.26	17.10	2.71	19.09	2.97	21.08	3.23
60%	23	19.76	0.99	23.33	1.16	27.12	1.22	29.04	1.34	31.12	1.60	34.11	1.74	38.78	1.94
	32	19.76	1.00	23.33	1.17	27.12	1.23	29.04	1.35	31.12	1.61	34.11	1.80	38.20	1.93
	41	19.76	1.00	23.33	1.17	27.12	1.25	29.04	1.39	31.12	1.66	34.11	1.83	37.71	1.98
	50	19.76	1.08	23.33	1.22	27.12	1.30	29.04	1.44	31.12	1.73	34.11	1.90	37.71	2.06
	59	19.76	1.16	23.33	1.27	27.12	1.34	29.04	1.49	31.12	1.79	34.11	1.97	37.71	2.13
	68	19.76	1.26	23.33	1.34	27.12	1.40	29.04	1.56	31.12	1.87	34.11	2.06	37.71	2.23
	77	19.76	1.36	23.33	1.41	27.12	1.55	29.04	1.72	31.12	2.06	34.11	2.26	37.71	2.45
	86	19.76	1.60	23.33	1.87	27.12	1.84	29.04	2.05	31.12	2.45	34.11	2.70	37.71	2.92
	95	19.76	1.87	23.33	2.10	27.12	2.17	29.04	2.41	31.12	2.89	34.11	3.18	37.71	3.44
	106	17.78	2.06	21.00	2.31	24.41	2.39	26.14	2.65	28.01	3.18	30.70	3.50	33.94	3.78
	109	16.80	2.26	19.83	2.54	23.05	2.63	24.68	2.92	26.45	3.50	28.99	3.85	32.05	4.16
	115	13.44	1.95	15.87	2.19	18.44	2.26	19.75	2.51	21.16	3.01	23.19	3.31	25.64	3.58
	118	12.09	1.81	14.28	2.03	16.60	2.10	17.77	2.33	19.05	2.80	20.87	3.08	23.08	3.33
	122	10.75	1.63	12.69	1.83	14.75	1.89	15.80	2.10	16.93	2.52	18.55	2.77	20.51	3.00
	126	9.41	1.43	11.11	1.61	12.91	1.66	13.82	1.85	14.81	2.22	16.23	2.44	17.95	2.64
50%	23	16.75	0.97	19.76	1.13	22.69	1.21	24.19	1.33	25.73	1.59	28.72	1.70	32.63	1.92
	32	16.75	0.98	19.76	1.14	22.69	1.22	24.19	1.34	25.73	1.60	28.72	1.76	32.15	1.91
	41	16.75	0.98	19.76	1.14	22.69	1.24	24.19	1.38	25.73	1.65	28.72	1.79	31.73	1.96
	50	16.75	1.06	19.76	1.22	22.69	1.30	24.19	1.44	25.73	1.71	28.72	1.88	31.73	2.01
	59	16.75	1.17	19.76	1.26	22.69	1.32	24.19	1.48	25.73	1.78	28.72	1.94	31.73	2.09
	68	16.75	1.22	19.76	1.32	22.69	1.38	24.19	1.54	25.73	1.84	28.72	2.03	31.73	2.20
	77	16.75	1.34	19.76	1.40	22.69	1.54	24.19	1.70	25.73	2.04	28.72	2.23	31.73	2.42
	86	16.75	1.60	19.76	1.87	22.69	1.81	24.19	2.01	25.73	2.43	28.72	2.67	31.73	2.91
	95	16.75	1.83	19.76	2.01	22.69	2.01	24.19	2.37	25.73	2.90	28.72	3.07	31.73	3.35
	106	15.07	2.01	17.78	2.21	20.42	2.21	21.77	2.61	23.16	3.19	25.85	3.38	28.56	3.68
	109	14.23	2.21	16.80	2.43	19.29	2.43	20.56	2.87	21.87	3.51	24.41	3.71	26.97	4.05
	115	11.39	1.90	13.44	2.09	15.43	2.09	16.45	2.47	17.50	3.02	19.53	3.19	21.58	3.49
	118	10.25	1.77	12.09	1.95	13.89	1.95	14.80	2.29	15.75	2.81	17.58	2.97	19.42	3.24
	122	9.11	1.59	10.75	1.75	12.35	1.75	13.16	2.06	14.00	2.53	15.62	2.67	17.26	2.92
	126	7.97	1.40	9.41	1.54	10.80	1.54	11.51	1.82	12.25	2.22	13.67	2.35	15.11	2.57

MVHP056MV2AA Cooling															
Capacity Factor (%)	Outdoor Temp.	Indoor Temp. (°FWB)													
		57.2		60.8		64.4		67.0		68.0		71.6		75.2	
	(°FDB)	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
130%	23	50.28	1.93	59.36	3.17	68.69	3.46	73.39	3.81	76.10	4.57	78.90	4.95	81.87	5.53
	32	50.28	1.95	59.36	3.19	68.69	3.49	73.39	3.83	76.10	4.60	78.90	5.12	80.65	5.49
	41	50.28	1.95	59.36	3.20	68.69	3.56	73.39	3.95	76.10	4.74	78.90	5.21	79.61	5.64
	50	50.28	2.05	59.36	3.28	68.69	3.65	73.39	4.06	74.01	4.86	76.10	5.34	77.50	5.79
	59	50.28	2.14	59.36	3.44	68.69	3.82	70.93	4.25	71.93	5.10	73.33	5.60	75.41	6.08
	68	50.28	2.26	59.36	3.59	67.95	3.99	68.69	4.43	69.13	5.31	71.21	5.85	72.61	6.34
	77	50.28	2.70	59.36	4.05	65.49	4.50	66.27	5.00	67.04	5.47	69.13	6.01	70.53	6.51
	86	50.28	3.17	59.36	4.51	63.25	5.01	64.03	5.57	64.93	6.09	66.33	6.69	68.41	7.25
	95	50.28	3.77	59.36	4.98	61.04	5.53	61.79	6.15	62.84	6.33	64.24	6.96	66.33	7.54
	106	45.25	4.14	53.42	5.47	54.94	6.09	55.61	6.76	56.56	6.96	57.82	7.31	59.70	7.91
	109	42.73	4.56	50.46	6.02	51.88	6.70	52.52	7.32	53.42	7.66	54.61	7.67	56.38	8.10
	115	34.19	3.92	40.36	5.18	41.51	5.76	42.01	6.40	42.73	7.67	43.69	7.68	45.10	8.10
	118	30.77	3.65	36.33	4.82	37.36	5.36	37.81	5.95	38.46	7.13	39.32	7.14	40.59	7.59
	122	27.35	3.28	32.29	4.33	33.21	4.82	33.61	5.36	34.19	6.42	34.95	6.43	36.08	6.83
	126	23.93	2.89	28.26	3.81	29.05	4.24	29.41	4.71	29.91	5.65	30.58	5.66	31.57	6.01
120%	23	46.79	1.79	55.16	2.77	63.53	3.02	67.45	3.32	72.61	3.99	76.81	4.32	80.43	4.83
	32	46.79	1.81	55.16	2.78	63.53	3.05	67.45	3.35	72.61	4.02	76.81	4.47	79.23	4.80
	41	46.79	1.81	55.16	2.79	63.53	3.10	67.45	3.45	72.61	4.14	76.81	4.55	78.21	4.93
	50	46.79	1.87	55.16	2.94	63.53	3.27	67.45	3.63	71.93	4.35	74.70	4.78	76.10	5.18
	59	46.79	1.95	55.16	3.07	63.53	3.41	67.45	3.79	71.21	4.55	72.61	5.00	74.01	5.42
	68	46.79	2.05	55.16	3.56	63.53	3.95	67.45	4.39	68.41	5.27	69.81	5.79	71.21	6.28
	77	46.79	2.41	55.16	4.02	63.53	4.46	65.27	4.96	66.33	5.42	67.73	5.96	69.13	6.46
	86	46.79	2.80	55.16	4.49	62.00	4.99	63.06	5.55	64.24	6.06	64.93	6.66	67.04	7.22
	95	46.79	3.37	55.16	4.96	59.83	5.51	60.82	6.13	61.44	6.31	62.84	6.94	64.24	7.52
	106	42.11	3.71	49.64	5.46	53.84	6.06	54.74	6.74	55.30	6.94	56.56	7.29	57.82	7.89
	109	39.77	4.08	46.89	6.01	50.85	6.67	51.70	7.29	52.23	7.63	53.42	7.65	54.61	8.05
	115	31.82	3.51	37.51	5.17	40.68	5.73	41.36	6.38	41.78	7.65	42.73	7.66	43.69	8.09
	118	28.64	3.26	33.76	4.80	36.61	5.33	37.22	5.93	37.60	7.11	38.46	7.12	39.32	7.57
	122	25.45	2.94	30.01	4.32	32.55	4.80	33.09	5.34	33.43	6.40	34.19	6.41	34.95	6.81
	126	22.27	2.58	26.26	3.80	28.48	4.22	28.95	4.70	29.25	5.63	29.91	5.64	30.58	6.00
110%	23	42.59	1.61	50.28	2.52	58.08	2.75	61.79	3.03	65.64	3.63	75.41	3.93	79.70	4.40
	32	42.59	1.62	50.28	2.54	58.08	2.77	61.79	3.05	65.64	3.66	75.41	4.07	78.50	4.37
	41	42.59	1.63	50.28	2.55	58.08	2.82	61.79	3.15	65.64	3.77	75.41	4.14	77.50	4.49
	50	42.59	1.70	50.28	2.66	58.08	2.95	61.79	3.29	65.64	3.94	73.33	4.32	74.70	4.70
	59	42.59	1.78	50.28	2.78	58.08	3.08	61.79	3.43	65.64	4.10	71.21	4.51	72.61	4.89
	68	42.59	1.86	50.28	3.12	58.08	3.46	61.79	3.85	65.64	4.62	68.41	5.07	70.53	5.50
	77	42.59	2.14	50.28	4.02	58.08	4.46	61.79	4.96	64.24	5.42	65.64	5.96	67.04	6.46
	86	42.59	2.53	50.28	4.43	58.08	4.92	61.79	5.46	62.13	5.97	64.24	6.56	65.64	7.11
	95	42.59	3.00	50.28	4.92	58.08	5.46	59.55	6.07	60.04	6.25	61.44	6.87	63.53	7.45
	106	38.33	3.30	45.25	5.41	52.28	6.01	53.59	6.68	54.04	6.87	55.30	7.21	57.18	7.82
	109	36.20	3.63	42.73	5.95	49.37	6.61	50.61	7.34	51.04	7.56	52.23	7.57	54.00	8.01
	115	28.96	3.12	34.19	5.12	39.50	5.69	40.49	6.31	40.83	7.57	41.78	7.58	43.20	8.07
	118	26.07	2.90	30.77	4.76	35.55	5.29	36.44	5.87	36.75	7.04	37.60	7.05	38.88	7.50
	122	23.17	2.61	27.35	4.28	31.60	4.76	32.39	5.29	32.66	6.34	33.43	6.35	34.56	6.75
	126	20.27	2.30	23.93	3.77	27.65	4.19	28.34	4.65	28.58	5.58	29.25	5.59	30.24	5.94

MVHP056MV2AA Cooling															
Capacity Factor (%)	Outdoor Temp.	Indoor Temp. (°FWB)													
		57.2		60.8		64.4		67.0		68.0		71.6		75.2	
	(°FDB)	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
100%		KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW
	23	39.11	1.49	46.08	2.27	52.64	2.46	56.00	2.72	60.04	3.26	67.04	3.54	78.26	3.96
	32	39.11	1.51	46.08	2.28	52.64	2.49	56.00	2.74	60.04	3.28	67.04	3.66	77.09	3.93
	41	39.11	1.51	46.08	2.29	52.64	2.53	56.00	2.82	60.04	3.38	67.04	3.72	76.10	4.03
	50	39.11	1.51	46.08	2.38	52.64	2.65	56.00	2.94	60.04	3.53	67.04	3.88	73.33	4.21
	59	39.11	1.59	46.08	2.50	52.64	2.78	56.00	3.08	60.04	3.70	67.04	4.07	71.21	4.41
	68	39.11	1.65	46.08	2.71	52.64	3.01	56.00	3.35	60.04	4.01	67.04	4.41	68.41	4.78
	77	39.11	1.87	46.08	3.27	52.64	3.63	56.00	4.03	60.04	4.84	64.93	5.31	66.33	5.75
	86	39.11	2.22	46.08	3.88	52.64	4.31	56.00	4.80	60.04	5.75	62.84	6.32	64.24	6.86
	95	39.11	2.62	46.08	4.51	52.64	5.01	56.00	5.58	59.36	6.09	60.76	6.69	61.44	7.25
	106	35.20	2.88	41.47	4.96	47.38	5.51	50.40	6.14	53.42	6.69	54.68	7.02	55.30	7.61
	109	33.24	3.16	39.16	5.46	44.74	6.06	47.60	6.75	50.46	7.36	51.65	7.38	52.23	7.84
	115	26.59	2.72	31.33	4.69	35.80	5.21	38.08	5.81	40.36	6.94	41.32	6.96	41.78	7.40
	118	23.93	2.53	28.20	4.37	32.22	4.85	34.27	5.40	36.33	6.46	37.18	6.47	37.60	6.88
	122	21.27	2.28	25.07	3.93	28.64	4.36	30.46	4.86	32.29	5.81	33.05	5.82	33.43	6.19
	126	18.61	2.00	21.93	3.46	25.06	3.84	26.66	4.28	28.26	5.11	28.92	5.12	29.25	5.45
90%		KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW
	23	34.91	1.26	41.19	2.00	47.69	2.19	50.68	2.41	53.76	2.89	60.04	3.13	68.21	3.50
	32	34.91	1.27	41.19	2.02	47.69	2.22	50.68	2.42	53.76	2.91	60.04	3.23	67.19	3.47
	41	34.91	1.28	41.19	2.02	47.69	2.26	50.68	2.50	53.76	3.00	60.04	3.29	66.33	3.57
	50	34.91	1.36	41.19	2.13	47.69	2.36	50.68	2.62	53.76	3.14	60.04	3.45	66.33	3.74
	59	34.91	1.42	41.19	2.22	47.69	2.46	50.68	2.74	53.76	3.29	60.04	3.62	66.33	3.92
	68	34.91	1.48	41.19	2.34	47.69	2.59	50.68	2.88	53.76	3.45	60.04	3.80	66.33	4.12
	77	34.91	1.64	41.19	2.79	47.69	3.10	50.68	3.45	53.76	4.14	60.04	4.55	64.93	4.93
	86	34.91	1.94	41.19	3.34	47.69	3.70	50.68	4.12	53.76	4.93	60.04	5.42	62.84	5.87
	95	34.91	2.29	41.19	3.92	47.69	4.36	50.68	4.84	53.76	5.29	59.36	5.81	60.76	6.30
	106	31.42	2.52	37.07	4.31	42.92	4.80	45.61	5.32	48.38	5.82	53.42	6.39	54.68	6.93
	109	29.67	2.77	35.01	4.74	40.54	5.27	43.08	5.85	45.70	6.40	50.46	7.03	51.65	7.62
	115	23.74	2.38	28.01	4.08	32.43	4.54	34.46	5.03	36.56	6.04	40.36	6.63	41.32	7.19
	118	21.36	2.22	25.21	3.79	29.19	4.22	31.02	4.68	32.90	5.61	36.33	6.17	37.18	6.68
	122	18.99	1.99	22.41	3.41	25.95	3.80	27.57	4.21	29.25	5.05	32.29	5.55	33.05	6.01
	126	16.62	1.76	19.61	3.00	22.70	3.34	24.12	3.71	25.59	4.45	28.26	4.88	28.92	5.29
80%		KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW
	23	30.74	1.19	36.31	1.76	42.25	1.92	45.24	2.12	47.48	2.54	53.08	2.75	61.05	3.08
	32	30.74	1.21	36.31	1.77	42.25	1.94	45.24	2.13	47.48	2.56	53.08	2.85	60.13	3.06
	41	30.74	1.21	36.31	1.78	42.25	1.98	45.24	2.20	47.48	2.64	53.08	2.89	59.36	3.14
	50	30.74	1.33	36.31	1.86	42.25	2.07	45.24	2.30	47.48	2.76	53.08	3.03	59.36	3.28
	59	30.74	1.39	36.31	1.94	42.25	2.16	45.24	2.39	47.48	2.87	53.08	3.16	59.36	3.43
	68	30.74	1.49	36.31	2.05	42.25	2.27	45.24	2.52	47.48	3.02	53.08	3.32	59.36	3.60
	77	30.74	1.60	36.31	2.05	42.25	2.27	45.24	2.52	47.48	3.02	53.08	3.32	59.36	3.60
	86	30.74	1.91	36.31	2.37	42.25	2.63	45.24	2.92	47.48	3.50	53.08	3.85	59.36	4.17
	95	30.74	2.22	36.31	3.34	42.25	3.70	45.24	4.12	47.48	4.93	53.08	5.42	59.36	5.87
	106	27.66	2.44	32.68	3.67	38.02	4.07	40.71	4.53	42.73	5.42	47.77	5.96	53.42	6.46
	109	26.13	2.69	30.86	4.04	35.91	4.47	38.45	4.98	40.35	5.96	45.11	6.55	50.46	7.10
	115	20.90	2.31	24.69	3.47	28.73	3.85	30.76	4.28	32.28	5.13	36.09	5.64	40.36	6.11
	118	18.81	2.15	22.22	3.23	25.86	3.58	27.68	3.98	29.05	4.77	32.48	5.24	36.33	5.68
	122	16.72	1.93	19.75	2.91	22.98	3.22	24.61	3.58	25.83	4.29	28.87	4.72	32.29	5.11
	126	14.63	1.70	17.28	2.56	20.11	2.83	21.53	3.15	22.60	3.78	25.26	4.15	28.26	4.50

MVHP056MV2AA Cooling															
Capacity Factor (%)	Outdoor Temp.	Indoor Temp.(°FWB)													
		57.2		60.8		64.4		67.0		68.0		71.6		75.2	
	(°FDB)	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
70%	23	27.22	1.17	32.11	1.52	36.80	1.66	39.32	1.82	41.91	2.18	46.79	2.38	53.14	2.66
	32	27.22	1.18	32.11	1.53	36.80	1.68	39.32	1.84	41.91	2.20	46.79	2.46	52.35	2.64
	41	27.22	1.19	32.11	1.53	36.80	1.71	39.32	1.89	41.91	2.27	46.79	2.50	51.68	2.71
	50	27.22	1.28	32.11	1.60	36.80	1.78	39.32	1.98	41.91	2.37	46.79	2.60	51.68	2.82
	59	27.22	1.37	32.11	1.69	36.80	1.87	39.32	2.08	41.91	2.49	46.79	2.73	51.68	2.96
	68	27.22	1.46	32.11	1.77	36.80	1.96	39.32	2.17	41.91	2.62	46.79	2.87	51.68	3.12
	77	27.22	1.58	32.11	1.98	36.80	2.20	39.32	2.44	41.91	2.93	46.79	3.22	51.68	3.49
	86	27.22	1.88	32.11	2.35	36.80	2.62	39.32	2.91	41.91	3.48	46.79	3.82	51.68	4.15
	95	27.22	2.20	32.11	2.78	36.80	3.08	39.32	3.43	41.91	4.10	46.79	4.51	51.68	4.89
	106	24.50	2.42	28.90	3.06	33.12	3.39	35.39	3.77	37.72	4.51	42.11	4.96	46.51	5.38
	109	23.14	2.66	27.29	3.36	31.28	3.73	33.43	4.15	35.62	4.97	39.77	5.46	43.92	5.92
	115	18.51	2.29	21.83	2.89	25.03	3.21	26.74	3.57	28.50	4.27	31.82	4.69	35.14	5.09
	118	16.66	2.13	19.65	2.69	22.52	2.98	24.07	3.32	25.65	3.97	28.64	4.37	31.63	4.74
	122	14.81	1.91	17.47	2.42	20.02	2.68	21.39	2.99	22.80	3.57	25.45	3.93	28.11	4.26
	126	12.96	1.68	15.28	2.13	17.52	2.36	18.72	2.63	19.95	3.15	22.27	3.46	24.60	3.75
60%	23	23.05	1.15	27.22	1.35	31.64	1.41	33.88	1.56	36.31	1.86	39.79	2.02	45.24	2.26
	32	23.05	1.16	27.22	1.36	31.64	1.43	33.88	1.57	36.31	1.87	39.79	2.09	44.56	2.24
	41	23.05	1.16	27.22	1.36	31.64	1.45	33.88	1.62	36.31	1.93	39.79	2.13	43.99	2.30
	50	23.05	1.26	27.22	1.42	31.64	1.51	33.88	1.67	36.31	2.01	39.79	2.21	43.99	2.39
	59	23.05	1.35	27.22	1.48	31.64	1.56	33.88	1.73	36.31	2.08	39.79	2.29	43.99	2.48
	68	23.05	1.46	27.22	1.56	31.64	1.63	33.88	1.81	36.31	2.17	39.79	2.39	43.99	2.59
	77	23.05	1.58	27.22	1.64	31.64	1.80	33.88	2.00	36.31	2.39	39.79	2.63	43.99	2.85
	86	23.05	1.86	27.22	2.17	31.64	2.14	33.88	2.38	36.31	2.85	39.79	3.14	43.99	3.39
	95	23.05	2.17	27.22	2.44	31.64	2.52	33.88	2.80	36.31	3.36	39.79	3.70	43.99	4.00
	106	20.75	2.39	24.50	2.69	28.48	2.77	30.49	3.08	32.68	3.70	35.81	4.07	39.59	4.40
	109	19.60	2.63	23.14	2.95	26.89	3.05	28.80	3.39	30.86	4.07	33.82	4.47	37.39	4.84
	115	15.68	2.26	18.51	2.54	21.52	2.63	23.04	2.92	24.69	3.50	27.06	3.85	29.91	4.16
	118	14.11	2.10	16.66	2.36	19.36	2.44	20.73	2.71	22.22	3.25	24.35	3.58	26.92	3.87
	122	12.54	1.89	14.81	2.13	17.21	2.20	18.43	2.44	19.75	2.93	21.65	3.22	23.93	3.48
	126	10.97	1.67	12.96	1.87	15.06	1.93	16.13	2.15	17.28	2.58	18.94	2.83	20.94	3.07
50%	23	19.54	1.13	23.05	1.31	26.48	1.40	28.22	1.54	30.02	1.85	33.51	1.98	38.07	2.23
	32	19.54	1.14	23.05	1.32	26.48	1.42	28.22	1.56	30.02	1.86	33.51	2.05	37.50	2.22
	41	19.54	1.14	23.05	1.33	26.48	1.44	28.22	1.60	30.02	1.92	33.51	2.08	37.02	2.28
	50	19.54	1.23	23.05	1.42	26.48	1.51	28.22	1.67	30.02	1.99	33.51	2.19	37.02	2.34
	59	19.54	1.36	23.05	1.46	26.48	1.53	28.22	1.72	30.02	2.07	33.51	2.26	37.02	2.43
	68	19.54	1.42	23.05	1.53	26.48	1.60	28.22	1.79	30.02	2.14	33.51	2.36	37.02	2.56
	77	19.54	1.56	23.05	1.63	26.48	1.79	28.22	1.98	30.02	2.37	33.51	2.59	37.02	2.81
	86	19.54	1.86	23.05	2.17	26.48	2.10	28.22	2.34	30.02	2.82	33.51	3.10	37.02	3.38
	95	19.54	2.13	23.05	2.34	26.48	2.34	28.22	2.76	30.02	3.37	33.51	3.57	37.02	3.89
	106	17.58	2.34	20.75	2.57	23.83	2.57	25.40	3.03	27.02	3.71	30.16	3.93	33.32	4.28
	109	16.61	2.57	19.60	2.83	22.50	2.83	23.99	3.33	25.52	4.08	28.48	4.32	31.47	4.71
	115	13.29	2.21	15.68	2.43	18.00	2.43	19.19	2.87	20.42	3.51	22.78	3.71	25.18	4.05
	118	11.96	2.06	14.11	2.26	16.20	2.26	17.27	2.67	18.37	3.26	20.51	3.45	22.66	3.77
	122	10.63	1.85	12.54	2.04	14.40	2.04	15.35	2.40	16.33	2.94	18.23	3.11	20.14	3.39
	126	9.30	1.63	10.97	1.79	12.60	1.79	13.43	2.11	14.29	2.58	15.95	2.74	17.62	2.98

8. Heating capacity

MVHP036MV2AA Heating														
Capacity Factor (%)	Outdoor Temp.		Indoor Temp.(°FDB)											
			60.8		64.4		68.0		70.0		71.6		75.2	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	°FDB	°FWB	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW
130%	5.5	5.0	27.03	1.87	25.93	1.90	24.99	2.10	23.62	3.06	22.52	3.30	21.55	3.09
	9.3	8.6	28.57	2.05	27.48	2.09	26.58	2.31	25.26	3.20	24.17	3.46	23.25	3.25
	13.1	12.2	29.94	2.24	28.90	2.28	28.04	2.52	26.77	3.35	25.73	3.62	24.87	3.41
	14.9	14.0	30.78	2.67	29.80	2.73	28.96	3.01	27.71	3.57	26.71	3.85	25.87	3.78
	16.7	15.6	31.47	3.04	30.49	3.10	29.69	3.42	28.49	3.65	27.53	3.94	26.73	4.03
	19.4	18.3	32.49	3.41	31.55	3.48	30.78	3.84	29.61	3.69	28.67	4.02	27.91	4.47
	23.0	21.9	34.01	3.42	33.11	3.49	32.37	3.85	31.23	3.77	30.33	4.07	29.59	4.85
	26.6	25.3	35.38	3.23	34.52	3.30	33.84	3.64	32.74	3.81	31.90	4.11	31.21	5.10
	32.0	30.7	37.59	2.92	36.81	2.98	36.18	3.29	35.15	3.81	34.36	4.11	33.74	4.00
	37.4	36.0	39.96	2.55	39.22	2.60	38.63	2.87	37.63	3.60	36.87	3.88	36.30	3.68
	41.0	39.4	41.17	2.61	40.45	2.66	39.92	2.93	38.98	3.65	38.26	3.94	37.73	3.73
	47.0	43.0	43.80	2.76	43.15	2.81	42.64	3.10	41.72	3.70	41.04	3.99	40.53	3.86
	48.2	46.2	43.89	2.85	43.27	2.91	42.84	3.21	41.98	3.78	41.37	4.08	40.94	3.94
	51.8	49.6	45.42	2.92	44.91	2.98	44.56	3.29	43.80	3.81	43.29	4.11	42.97	4.00
	55.4	53.2	46.77	2.95	46.32	3.01	46.01	3.32	45.32	3.81	44.87	4.11	44.56	4.02
	59.0	56.7	48.14	2.90	47.73	2.96	47.48	3.26	46.83	3.81	46.42	4.11	46.18	3.98
	66.2	57.6	48.47	2.86	48.12	2.92	47.91	3.22	47.32	3.78	46.95	4.08	46.75	3.95
	69.8	59.0	49.16	3.12	48.85	3.18	48.73	3.51	48.18	3.78	47.89	4.08	47.77	3.90
120%	5.5	5.0	26.69	1.81	25.56	1.84	24.62	2.04	23.27	2.97	22.15	3.20	21.21	3.00
	9.3	8.6	28.22	1.99	27.14	2.03	26.22	2.24	24.89	3.11	23.82	3.36	22.90	3.15
	13.1	12.2	29.57	2.17	28.55	2.22	27.67	2.45	26.40	3.26	25.38	3.51	24.50	3.31
	14.9	14.0	30.43	2.59	29.43	2.64	28.59	2.92	27.34	3.59	26.36	3.87	25.52	3.68
	16.7	15.6	31.10	2.95	30.14	3.01	29.35	3.32	28.12	3.67	27.16	3.96	26.36	3.99
	19.4	18.3	32.13	3.32	31.19	3.38	30.43	3.73	29.24	3.95	28.32	4.22	27.55	4.30
	23.0	21.9	33.66	3.42	32.76	3.49	32.02	3.85	30.88	4.16	29.98	4.56	29.24	4.76
	26.6	25.3	35.01	3.13	34.17	3.20	33.48	3.53	32.39	4.49	31.53	4.84	30.84	4.89
	32.0	30.7	37.22	2.83	36.44	2.89	35.83	3.19	34.79	3.78	34.01	4.08	33.39	3.88
	37.4	36.0	39.61	2.47	38.85	2.52	38.26	2.78	37.28	3.49	36.52	3.77	35.93	3.57
	41.0	39.4	40.80	2.53	40.10	2.58	39.55	2.85	38.61	3.54	37.91	3.82	37.36	3.62
	47.0	43.0	43.46	2.68	42.78	2.73	42.27	3.01	41.35	3.66	40.70	3.94	40.18	3.74
	48.2	46.2	43.52	2.77	42.92	2.83	42.47	3.12	41.62	3.73	41.02	4.03	40.57	3.83
	51.8	49.6	45.05	2.83	44.54	2.89	44.19	3.19	43.46	3.78	42.94	4.08	42.60	3.88
	55.4	53.2	46.42	2.86	45.95	2.92	45.66	3.22	44.95	3.80	44.50	4.10	44.21	3.90
	59.0	56.7	47.77	2.82	47.36	2.87	47.12	3.17	46.46	3.77	46.05	4.06	45.81	3.86
	66.2	57.6	48.12	2.78	47.75	2.84	47.57	3.13	46.95	3.74	46.58	4.03	46.40	3.84
	69.8	59.0	48.79	3.03	48.51	3.09	48.36	3.41	47.83	3.70	47.53	3.99	47.40	3.79
110%	5.5	5.0	25.81	1.78	24.70	1.81	23.76	2.00	22.39	2.88	21.29	3.11	20.35	2.95
	9.3	8.6	27.34	1.95	26.26	1.99	25.36	2.20	24.03	3.02	22.94	3.26	22.02	3.10
	13.1	12.2	28.71	2.13	27.67	2.17	26.81	2.40	25.54	3.16	24.50	3.41	23.64	3.25
	14.9	14.0	29.55	2.54	28.57	2.59	27.73	2.86	26.48	3.49	25.48	3.76	24.64	3.60
	16.7	15.6	30.25	2.90	29.26	2.96	28.47	3.26	27.26	3.61	26.30	3.90	25.50	3.91
	19.4	18.3	31.27	3.25	30.33	3.32	29.55	3.66	28.38	3.92	27.44	4.14	26.69	4.25
	23.0	21.9	32.78	3.43	31.88	3.50	31.15	3.86	30.00	4.18	29.10	4.50	28.36	4.59
	26.6	25.3	34.15	3.07	33.29	3.14	32.62	3.46	31.51	4.48	30.67	4.83	29.98	4.81
	32.0	30.7	36.36	2.78	35.58	2.84	34.95	3.13	33.93	3.67	33.15	3.96	32.52	3.80
	37.4	36.0	38.73	2.43	38.00	2.47	37.40	2.73	36.40	3.39	35.64	3.66	35.07	3.50
	41.0	39.4	39.94	2.48	39.22	2.53	38.69	2.80	37.75	3.44	37.03	3.71	36.50	3.55
	47.0	43.0	42.58	2.62	41.92	2.68	41.41	2.95	40.49	3.55	39.82	3.83	39.30	3.68
	48.2	46.2	42.66	2.72	42.04	2.78	41.62	3.06	40.76	3.63	40.14	3.91	39.71	3.76
	51.8	49.6	44.19	2.78	43.68	2.84	43.33	3.13	42.58	3.67	42.07	3.96	41.74	3.80
	55.4	53.2	45.54	2.80	45.09	2.86	44.79	3.15	44.09	3.69	43.64	3.98	43.33	3.83
	59.0	56.7	46.91	2.76	46.50	2.81	46.26	3.10	45.60	3.66	45.19	3.94	44.95	3.79
	66.2	57.6	47.24	2.73	46.89	2.78	46.69	3.07	46.09	3.63	45.73	3.92	45.52	3.76
	69.8	59.0	47.93	2.97	47.63	3.03	47.51	3.34	46.95	3.59	46.67	3.87	46.54	3.71

MVHP036MV2AA Heating														
Capacity Factor (%)	Outdoor Temp.		Indoor Temp. (°FDB)											
			60.8		64.4		68.0		70.0		71.6		75.2	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	°FDB	°FWB	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW
100%	5.5	5.0	25.30	1.60	24.17	1.66	23.23	1.81	21.88	2.83	20.76	3.05	19.82	2.86
	9.3	8.6	26.83	1.73	25.75	1.80	24.83	1.95	23.50	2.96	22.43	3.20	21.51	3.00
	13.1	12.2	28.18	1.87	27.16	1.94	26.28	2.09	25.01	3.10	23.99	3.34	23.11	3.15
	14.9	14.0	29.04	2.19	28.04	2.26	27.20	2.41	25.95	3.42	24.97	3.69	24.13	3.50
	16.7	15.6	29.71	2.46	28.75	2.53	27.96	2.68	26.75	3.69	25.77	3.98	24.97	3.79
	19.4	18.3	30.74	2.74	29.80	2.80	29.04	2.95	27.85	3.73	26.93	4.03	26.16	4.09
	23.0	21.9	32.27	2.87	31.37	2.94	30.63	3.09	29.49	3.76	28.59	4.06	27.85	4.11
	26.6	25.3	33.62	2.60	32.78	2.67	32.09	2.82	31.00	3.81	30.14	4.10	29.45	3.94
	32.0	30.7	35.83	2.37	35.05	2.44	34.44	2.59	33.39	3.60	32.62	3.88	32.00	3.69
	37.4	36.0	38.22	2.10	37.46	2.17	36.87	2.32	35.89	3.33	35.13	3.59	34.54	3.40
	41.0	39.4	39.41	2.14	38.71	2.21	38.16	2.36	37.22	3.37	36.52	3.64	35.97	3.45
	47.0	43.0	42.11	2.25	41.43	2.32	40.90	2.47	40.00	3.48	39.35	3.76	38.83	3.57
	48.2	46.2	42.13	2.32	41.53	2.39	41.08	2.54	40.22	3.55	39.63	3.84	39.18	3.64
	51.8	49.6	43.66	2.37	43.15	2.44	42.80	2.59	42.07	3.60	41.55	3.88	41.21	3.69
	55.4	53.2	45.03	2.39	44.56	2.46	44.27	2.61	43.56	3.62	43.11	3.90	42.82	3.71
	59.0	56.7	46.38	2.36	45.97	2.43	45.73	2.58	45.07	3.58	44.66	3.87	44.42	3.68
	66.2	57.6	46.73	2.33	46.36	2.40	46.18	2.55	45.56	3.56	45.19	3.84	45.01	3.65
	69.8	59.0	47.40	2.29	47.12	2.36	46.97	2.51	46.44	3.52	46.13	3.79	46.01	3.61
90%	5.5	5.0	24.83	1.53	23.70	1.60	22.76	1.74	21.39	2.71	20.29	2.92	19.35	2.74
	9.3	8.6	26.34	1.66	25.28	1.73	24.36	1.87	23.03	2.84	21.94	3.07	21.04	2.89
	13.1	12.2	27.71	1.80	26.69	1.86	25.81	2.01	24.54	2.97	23.50	3.21	22.64	3.03
	14.9	14.0	28.57	2.10	27.57	2.17	26.73	2.31	25.48	3.28	24.48	3.54	23.66	3.36
	16.7	15.6	29.24	2.36	28.28	2.43	27.46	2.58	26.26	3.54	25.30	3.82	24.50	3.64
	19.4	18.3	30.27	2.62	29.33	2.69	28.57	2.83	27.38	3.68	26.44	3.96	25.69	3.92
	23.0	21.9	31.80	2.76	30.90	2.82	30.16	2.97	29.02	3.74	28.12	4.03	27.38	4.07
	26.6	25.3	33.15	2.49	32.31	2.56	31.62	2.70	30.51	3.68	29.67	3.96	28.98	3.78
	32.0	30.7	35.36	2.27	34.58	2.34	33.95	2.48	32.92	3.46	32.15	3.73	31.51	3.55
	37.4	36.0	37.75	2.01	36.99	2.08	36.40	2.22	35.40	3.19	34.66	3.44	34.07	3.26
	41.0	39.4	38.94	2.05	38.24	2.12	37.69	2.27	36.75	3.24	36.03	3.49	35.50	3.31
	47.0	43.0	41.60	2.16	40.92	2.23	40.41	2.37	39.49	3.34	38.81	3.61	38.32	3.42
	48.2	46.2	41.66	2.23	41.04	2.30	40.61	2.44	39.75	3.41	39.16	3.68	38.71	3.50
	51.8	49.6	43.19	2.27	42.68	2.34	42.33	2.48	41.57	3.46	41.08	3.73	40.74	3.55
	55.4	53.2	44.54	2.29	44.09	2.36	43.80	2.51	43.09	3.47	42.64	3.74	42.33	3.56
	59.0	56.7	45.91	2.26	45.50	2.33	45.26	2.47	44.60	3.44	44.19	3.71	43.95	3.53
	66.2	57.6	46.26	2.24	45.89	2.30	45.69	2.45	45.09	3.42	44.72	3.69	44.54	3.50
	69.8	59.0	46.93	2.20	46.63	2.26	46.50	2.41	45.97	3.37	45.66	3.64	45.54	3.46
80%	5.5	5.0	24.23	1.47	23.11	1.53	22.17	1.69	20.82	2.57	19.69	2.77	18.75	2.63
	9.3	8.6	25.77	1.59	24.68	1.66	23.76	1.81	22.43	2.69	21.37	2.91	20.45	2.76
	13.1	12.2	27.12	1.72	26.09	1.78	25.21	1.94	23.95	2.82	22.92	3.04	22.04	2.90
	14.9	14.0	27.98	2.01	26.97	2.08	26.13	2.24	24.89	3.11	23.91	3.35	23.07	3.22
	16.7	15.6	28.65	2.26	27.69	2.33	26.89	2.49	25.69	3.36	24.70	3.62	23.91	3.49
	19.4	18.3	29.67	2.52	28.73	2.58	27.98	2.75	26.79	3.61	25.87	3.89	25.09	3.76
	23.0	21.9	31.21	2.64	30.31	2.70	29.57	2.88	28.43	3.73	27.53	4.02	26.79	3.90
	26.6	25.3	32.56	2.39	31.72	2.45	31.02	2.62	29.94	3.48	29.08	3.76	28.38	3.63
	32.0	30.7	34.76	2.18	33.99	2.24	33.37	2.41	32.33	3.27	31.55	3.54	30.94	3.40
	37.4	36.0	37.16	1.93	36.40	1.99	35.81	2.15	34.83	3.03	34.07	3.27	33.48	3.13
	41.0	39.4	38.34	1.97	37.65	2.03	37.10	2.19	36.16	3.07	35.46	3.31	34.91	3.17
	47.0	43.0	41.00	2.07	40.33	2.14	39.82	2.30	38.90	3.17	38.24	3.42	37.73	3.28
	48.2	46.2	41.06	2.14	40.47	2.20	40.02	2.37	39.16	3.24	38.57	3.49	38.12	3.35
	51.8	49.6	42.60	2.18	42.09	2.24	41.74	2.41	41.00	3.27	40.49	3.54	40.14	3.40
	55.4	53.2	43.97	2.20	43.50	2.26	43.21	2.43	42.49	3.29	42.04	3.55	41.76	3.42
	59.0	56.7	45.32	2.17	44.91	2.23	44.66	2.39	44.01	3.26	43.60	3.52	43.35	3.39
	66.2	57.6	45.66	2.14	45.30	2.21	45.11	2.37	44.50	3.24	44.13	3.49	43.95	3.36
	69.8	59.0	46.34	2.10	46.05	2.17	45.91	2.33	45.38	3.20	45.07	3.46	44.95	3.32

MVHP036MV2AA Heating														
Capacity Factor (%)	Outdoor Temp.		Indoor Temp.(°FDB)											
			60.8		64.4		68.0		70.0		71.6		75.2	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	°FDB	°FWB	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW
70%	5.5	5.0	23.44	1.42	22.31	1.48	21.37	1.69	20.02	2.60	18.90	2.81	17.96	2.63
	9.3	8.6	24.95	1.55	23.89	1.60	22.97	1.81	21.64	2.73	20.55	2.94	19.65	2.76
	13.1	12.2	26.32	1.66	25.30	1.73	24.42	1.94	23.15	2.85	22.13	3.07	21.25	2.90
	14.9	14.0	27.18	1.95	26.18	2.01	25.34	2.24	24.09	3.14	23.09	3.39	22.27	3.22
	16.7	15.6	27.85	2.19	26.89	2.25	26.09	2.49	24.87	3.40	23.91	3.66	23.11	3.49
	19.4	18.3	28.88	2.44	27.93	2.49	27.18	2.75	25.99	3.65	25.05	3.93	24.29	3.76
	23.0	21.9	30.41	2.55	29.51	2.62	28.77	2.88	27.63	3.77	26.73	4.07	25.99	3.90
	26.6	25.3	31.76	2.31	30.92	2.37	30.22	2.62	29.12	3.52	28.28	3.80	27.59	3.63
	32.0	30.7	33.97	2.11	33.19	2.17	32.58	2.41	31.53	3.31	30.76	3.57	30.12	3.40
	37.4	36.0	36.36	1.87	35.60	1.93	35.01	2.15	34.01	3.06	33.27	3.30	32.68	3.13
	41.0	39.4	37.55	1.91	36.85	1.97	36.30	2.19	35.36	3.10	34.64	3.35	34.11	3.17
	47.0	43.0	40.20	2.01	39.53	2.07	39.02	2.30	38.10	3.20	37.44	3.46	36.93	3.28
	48.2	46.2	40.27	2.07	39.65	2.13	39.22	2.37	38.36	3.27	37.77	3.52	37.32	3.35
	51.8	49.6	41.80	2.11	41.29	2.17	40.94	2.41	40.18	3.31	39.69	3.57	39.35	3.40
	55.4	53.2	43.15	2.12	42.70	2.19	42.41	2.43	41.70	3.33	41.25	3.59	40.94	3.42
	59.0	56.7	44.52	2.10	44.11	2.16	43.87	2.39	43.21	3.30	42.80	3.56	42.56	3.39
	66.2	57.6	44.87	2.07	44.50	2.14	44.29	2.37	43.70	3.27	43.33	3.53	43.15	3.36
	69.8	59.0	45.54	2.04	45.24	2.10	45.11	2.33	44.58	3.24	44.27	3.49	44.15	3.32
60%	5.5	5.0	22.47	1.37	21.37	1.43	20.43	1.56	19.06	2.43	17.96	2.62	16.99	2.46
	9.3	8.6	24.01	1.49	22.92	1.55	22.02	1.68	20.70	2.55	19.61	2.75	18.69	2.59
	13.1	12.2	25.38	1.61	24.34	1.67	23.48	1.80	22.21	2.67	21.17	2.88	20.31	2.71
	14.9	14.0	26.22	1.88	25.21	1.94	24.40	2.07	23.15	2.94	22.15	3.17	21.31	3.01
	16.7	15.6	26.91	2.12	25.93	2.18	25.13	2.31	23.93	3.18	22.97	3.42	22.17	3.26
	19.4	18.3	27.91	2.35	26.99	2.41	26.22	2.54	25.05	3.41	24.11	3.68	23.33	3.51
	23.0	21.9	29.45	2.47	28.55	2.53	27.81	2.66	26.67	3.52	25.77	3.80	25.03	3.64
	26.6	25.3	30.82	2.23	29.96	2.29	29.28	2.42	28.18	3.29	27.32	3.55	26.65	3.39
	32.0	30.7	33.03	2.04	32.25	2.10	31.62	2.23	30.59	3.10	29.80	3.34	29.18	3.18
	37.4	36.0	35.40	1.80	34.66	1.86	34.07	1.99	33.07	2.86	32.31	3.08	31.72	2.92
	41.0	39.4	36.61	1.85	35.89	1.90	35.36	2.03	34.40	2.90	33.70	3.13	33.17	2.97
	47.0	43.0	39.24	1.94	38.57	2.00	38.08	2.12	37.16	2.99	36.48	3.23	35.97	3.07
	48.2	46.2	39.33	2.00	38.71	2.06	38.26	2.19	37.42	3.06	36.81	3.30	36.38	3.13
	51.8	49.6	40.84	2.04	40.35	2.10	40.00	2.23	39.24	3.10	38.73	3.34	38.40	3.18
	55.4	53.2	42.21	2.05	41.76	2.11	41.45	2.24	40.76	3.11	40.29	3.36	40.00	3.19
	59.0	56.7	43.58	2.03	43.17	2.09	42.92	2.22	42.27	3.08	41.86	3.33	41.62	3.17
	66.2	57.6	43.91	2.00	43.56	2.06	43.35	2.19	42.74	3.06	42.39	3.30	42.19	3.14
	69.8	59.0	44.58	1.97	44.29	2.03	44.17	2.16	43.62	3.03	43.33	3.26	43.19	3.10
50%	5.5	5.0	21.39	1.33	20.27	1.38	19.33	1.51	17.98	2.34	16.85	2.53	15.91	2.37
	9.3	8.6	22.92	1.44	21.84	1.50	20.92	1.62	19.59	2.46	18.51	2.65	17.61	2.49
	13.1	12.2	24.27	1.55	23.25	1.61	22.37	1.73	21.10	2.57	20.08	2.77	19.20	2.62
	14.9	14.0	25.13	1.82	24.13	1.87	23.29	2.00	22.04	2.84	21.06	3.06	20.22	2.90
	16.7	15.6	25.81	2.04	24.85	2.10	24.05	2.23	22.82	3.06	21.86	3.30	21.06	3.15
	19.4	18.3	26.83	2.27	25.89	2.33	25.13	2.45	23.95	3.29	23.01	3.55	22.25	3.39
	23.0	21.9	28.36	2.38	27.46	2.44	26.73	2.56	25.58	3.40	24.68	3.67	23.95	3.51
	26.6	25.3	29.71	2.16	28.88	2.22	28.18	2.34	27.08	3.18	26.24	3.43	25.54	3.27
	32.0	30.7	31.92	1.97	31.15	2.02	30.53	2.15	29.49	2.99	28.71	3.22	28.08	3.06
	37.4	36.0	34.31	1.74	33.56	1.80	32.97	1.92	31.96	2.76	31.23	2.98	30.63	2.82
	41.0	39.4	35.50	1.78	34.81	1.83	34.25	1.96	33.31	2.80	32.60	3.02	32.07	2.86
	47.0	43.0	38.16	1.87	37.48	1.93	36.97	2.05	36.05	2.89	35.40	3.12	34.89	2.96
	48.2	46.2	38.22	1.93	37.61	1.99	37.18	2.11	36.32	2.95	35.73	3.18	35.28	3.03
	51.8	49.6	39.75	1.97	39.24	2.02	38.90	2.15	38.16	2.99	37.65	3.22	37.30	3.06
	55.4	53.2	41.10	1.99	40.65	2.04	40.37	2.16	39.65	3.00	39.20	3.24	38.90	3.08
	59.0	56.7	42.47	1.96	42.07	2.01	41.82	2.14	41.17	2.98	40.76	3.21	40.51	3.05
	66.2	57.6	42.82	1.93	42.45	1.99	42.25	2.11	41.66	2.95	41.29	3.19	41.10	3.03
	69.8	59.0	43.50	1.90	43.19	1.96	43.07	2.08	42.54	2.92	42.23	3.15	42.11	2.99

MVHP048MV2AA Heating														
Capacity Factor (%)	Outdoor Temp.		Indoor Temp.(°FDB)											
			60.8		64.4		68.0		70.0		71.6		75.2	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	°FDB	°FWB	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW
130%	5.5	5.0	36.50	2.82	35.01	2.87	33.74	3.17	31.89	4.61	30.40	4.97	29.10	4.66
	9.3	8.6	38.57	3.09	37.10	3.15	35.89	3.48	34.10	4.83	32.63	5.22	31.39	4.90
	13.1	12.2	40.42	3.37	39.01	3.44	37.85	3.80	36.14	5.06	34.73	5.45	33.57	5.14
	14.9	14.0	41.55	4.03	40.22	4.11	39.09	4.53	37.41	5.38	36.06	5.80	34.92	5.70
	16.7	15.6	42.49	4.59	41.16	4.68	40.09	5.16	38.46	5.51	37.16	5.95	36.08	6.08
	19.4	18.3	43.87	5.14	42.60	5.25	41.55	5.79	39.98	5.56	38.71	6.07	37.68	6.74
	23.0	21.9	45.91	5.16	44.70	5.26	43.70	5.81	42.16	5.68	40.94	6.13	39.95	7.31
	26.6	25.3	47.76	4.87	46.60	4.97	45.69	5.48	44.20	5.75	43.07	7.36	42.13	7.80
	32.0	30.7	50.74	4.40	49.69	4.49	48.84	4.95	47.46	5.74	46.38	6.20	45.55	6.03
	37.4	36.0	53.94	3.84	52.95	3.92	52.15	4.33	50.80	5.43	49.78	5.86	49.00	5.54
	41.0	39.4	55.57	3.93	54.61	4.01	53.89	4.43	52.62	5.50	51.65	5.94	50.94	5.62
	47.0	43.0	59.13	4.16	58.25	4.24	57.56	4.68	56.32	5.58	55.41	6.02	54.72	5.82
	48.2	46.2	59.25	4.30	58.42	4.39	57.84	4.84	56.68	5.70	55.85	6.15	55.27	5.95
	51.8	49.6	61.32	4.40	60.63	4.49	60.16	4.95	59.13	5.74	58.44	6.20	58.00	6.03
	55.4	53.2	63.14	4.44	62.53	4.53	62.12	5.00	61.18	5.75	60.57	6.20	60.16	6.06
	59.0	56.7	64.99	4.37	64.44	4.46	64.10	4.92	63.22	5.74	62.67	6.20	62.34	6.00
	66.2	57.6	65.43	4.32	64.96	4.41	64.68	4.86	63.88	5.70	63.39	6.16	63.11	5.95
	69.8	59.0	66.37	4.70	65.95	4.80	65.79	5.29	65.04	5.70	64.66	6.15	64.49	5.88
120%	5.5	5.0	36.03	2.73	34.51	2.78	33.24	3.07	31.42	4.47	29.90	4.83	28.63	4.53
	9.3	8.6	38.10	3.00	36.63	3.06	35.39	3.38	33.60	4.69	32.16	5.06	30.92	4.76
	13.1	12.2	39.92	3.28	38.54	3.34	37.35	3.69	35.64	4.91	34.26	5.30	33.07	4.99
	14.9	14.0	41.08	3.91	39.73	3.99	38.60	4.40	36.91	5.41	35.59	5.84	34.45	5.54
	16.7	15.6	41.99	4.45	40.69	4.54	39.62	5.01	37.96	5.53	36.66	5.97	35.59	6.01
	19.4	18.3	43.37	5.00	42.10	5.10	41.08	5.63	39.48	5.95	38.24	6.36	37.19	6.48
	23.0	21.9	45.44	5.16	44.23	5.26	43.23	5.81	41.69	6.27	40.47	6.88	39.48	7.17
	26.6	25.3	47.26	4.72	46.13	4.82	45.19	5.32	43.73	6.76	42.57	7.29	41.63	7.37
	32.0	30.7	50.25	4.27	49.20	4.36	48.37	4.81	46.96	5.70	45.91	6.15	45.08	5.85
	37.4	36.0	53.48	3.73	52.45	3.80	51.65	4.20	50.33	5.27	49.31	5.69	48.51	5.39
	41.0	39.4	55.08	3.82	54.14	3.90	53.39	4.30	52.12	5.34	51.18	5.76	50.44	5.46
	47.0	43.0	58.67	4.04	57.75	4.12	57.06	4.54	55.82	5.52	54.94	5.95	54.25	5.65
	48.2	46.2	58.75	4.18	57.95	4.27	57.34	4.71	56.18	5.63	55.38	6.08	54.77	5.78
	51.8	49.6	60.82	4.27	60.13	4.36	59.66	4.81	58.67	5.70	57.98	6.15	57.51	5.85
	55.4	53.2	62.67	4.31	62.03	4.40	61.65	4.85	60.68	5.73	60.07	6.18	59.69	5.88
	59.0	56.7	64.49	4.25	63.94	4.33	63.61	4.78	62.72	5.68	62.17	6.12	61.84	5.82
	66.2	57.6	64.96	4.19	64.46	4.28	64.21	4.72	63.39	5.64	62.89	6.08	62.64	5.78
	69.8	59.0	65.87	4.56	65.48	4.65	65.29	5.14	64.57	5.57	64.16	6.01	63.99	5.71
110%	5.5	5.0	34.84	2.68	33.35	2.73	32.08	3.01	30.23	4.34	28.74	4.69	27.47	4.44
	9.3	8.6	36.91	2.94	35.45	3.00	34.23	3.31	32.44	4.55	30.98	4.92	29.73	4.67
	13.1	12.2	38.76	3.21	37.35	3.28	36.19	3.61	34.48	4.76	33.07	5.14	31.91	4.89
	14.9	14.0	39.89	3.83	38.57	3.91	37.44	4.32	35.75	5.26	34.40	5.67	33.27	5.43
	16.7	15.6	40.83	4.37	39.51	4.46	38.43	4.92	36.80	5.44	35.50	5.88	34.43	5.89
	19.4	18.3	42.21	4.90	40.94	5.00	39.89	5.52	38.32	5.90	37.05	6.24	36.03	6.42
	23.0	21.9	44.25	5.17	43.04	5.27	42.05	5.82	40.50	6.31	39.29	6.78	38.29	6.93
	26.6	25.3	46.10	4.64	44.94	4.73	44.03	5.22	42.54	6.76	41.41	7.06	40.47	7.26
	32.0	30.7	49.09	4.19	48.04	4.28	47.18	4.72	45.80	5.53	44.75	5.97	43.90	5.74
	37.4	36.0	52.29	3.66	51.29	3.73	50.49	4.12	49.14	5.11	48.12	5.52	47.35	5.27
	41.0	39.4	53.92	3.75	52.95	3.82	52.23	4.22	50.96	5.19	50.00	5.60	49.28	5.36
	47.0	43.0	57.48	3.96	56.60	4.04	55.90	4.45	54.66	5.36	53.75	5.78	53.06	5.54
	48.2	46.2	57.59	4.10	56.76	4.18	56.18	4.62	55.02	5.47	54.19	5.90	53.61	5.66
	51.8	49.6	59.66	4.19	58.97	4.28	58.50	4.72	57.48	5.53	56.79	5.97	56.35	5.74
	55.4	53.2	61.48	4.22	60.87	4.31	60.46	4.75	59.52	5.57	58.91	6.00	58.50	5.77
	59.0	56.7	63.33	4.16	62.78	4.24	62.45	4.68	61.56	5.52	61.01	5.95	60.68	5.71
	66.2	57.6	63.77	4.11	63.30	4.19	63.03	4.63	62.23	5.47	61.73	5.91	61.45	5.67
	69.8	59.0	64.71	4.47	64.30	4.56	64.13	5.04	63.39	5.41	63.00	5.83	62.83	5.60

MVHP048MV2AA Heating														
Capacity Factor (%)	Outdoor Temp.		Indoor Temp.(°FDB)											
			60.8		64.4		68.0		70.0		71.6		75.2	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	°FDB	°FWB	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW
100%	5.5	5.0	34.15	2.41	32.63	2.51	31.36	2.73	29.54	4.26	28.02	4.59	26.75	4.31
	9.3	8.6	36.22	2.61	34.76	2.72	33.52	2.94	31.72	4.47	30.29	4.82	29.04	4.53
	13.1	12.2	38.04	2.82	36.66	2.92	35.48	3.15	33.76	4.68	32.38	5.04	31.20	4.76
	14.9	14.0	39.20	3.30	37.85	3.41	36.72	3.63	35.03	5.15	33.71	5.56	32.58	5.27
	16.7	15.6	40.11	3.71	38.82	3.82	37.74	4.04	36.11	5.57	34.79	6.00	33.71	5.72
	19.4	18.3	41.49	4.13	40.22	4.22	39.20	4.45	37.60	5.63	36.36	6.08	35.31	6.16
	23.0	21.9	43.56	4.33	42.35	4.43	41.36	4.66	39.81	5.67	38.60	6.12	37.60	6.20
	26.6	25.3	45.39	3.92	44.25	4.02	43.32	4.25	41.85	5.74	40.69	6.19	39.75	5.94
	32.0	30.7	48.37	3.58	47.32	3.68	46.49	3.91	45.08	5.43	44.03	5.86	43.21	5.57
	37.4	36.0	51.60	3.16	50.58	3.27	49.78	3.49	48.45	5.02	47.43	5.41	46.63	5.12
	41.0	39.4	53.20	3.23	52.26	3.33	51.52	3.56	50.25	5.08	49.31	5.48	48.56	5.20
	47.0	43.0	56.84	3.40	55.93	3.50	55.21	3.72	54.00	5.25	53.12	5.66	52.43	5.38
	48.2	46.2	56.87	3.50	56.07	3.61	55.46	3.83	54.30	5.36	53.50	5.78	52.90	5.49
	51.8	49.6	58.94	3.58	58.25	3.68	57.78	3.91	56.79	5.43	56.10	5.86	55.63	5.57
	55.4	53.2	60.79	3.60	60.16	3.70	59.77	3.93	58.80	5.45	58.20	5.88	57.81	5.60
	59.0	56.7	62.61	3.55	62.06	3.66	61.73	3.88	60.85	5.40	60.29	5.83	59.96	5.55
	66.2	57.6	63.08	3.51	62.59	3.62	62.34	3.84	61.51	5.36	61.01	5.78	60.76	5.50
	69.8	59.0	63.99	3.45	63.61	3.55	63.41	3.78	62.70	5.31	62.28	5.72	62.12	5.44
90%	5.5	5.0	33.52	2.31	32.00	2.41	30.73	2.63	28.88	4.09	27.39	4.41	26.12	4.13
	9.3	8.6	35.56	2.51	34.12	2.60	32.88	2.82	31.09	4.29	29.62	4.63	28.41	4.35
	13.1	12.2	37.41	2.71	36.03	2.81	34.84	3.03	33.13	4.48	31.72	4.84	30.56	4.56
	14.9	14.0	38.57	3.17	37.21	3.27	36.08	3.49	34.40	4.94	33.05	5.34	31.94	5.06
	16.7	15.6	39.48	3.56	38.18	3.66	37.08	3.88	35.45	5.34	34.15	5.76	33.07	5.49
	19.4	18.3	40.86	3.96	39.59	4.06	38.57	4.27	36.97	5.54	35.70	5.98	34.67	5.91
	23.0	21.9	42.93	4.16	41.71	4.26	40.72	4.47	39.17	5.64	37.96	6.08	36.97	6.13
	26.6	25.3	44.75	3.76	43.62	3.86	42.68	4.08	41.19	5.54	40.06	5.98	39.12	5.70
	32.0	30.7	47.73	3.43	46.68	3.53	45.83	3.75	44.45	5.21	43.40	5.62	42.54	5.35
	37.4	36.0	50.96	3.03	49.94	3.14	49.14	3.35	47.79	4.81	46.79	5.19	45.99	4.92
	41.0	39.4	52.56	3.10	51.63	3.20	50.88	3.42	49.61	4.88	48.64	5.27	47.93	4.99
	47.0	43.0	56.15	3.26	55.24	3.36	54.55	3.58	53.31	5.04	52.40	5.44	51.74	5.16
	48.2	46.2	56.24	3.37	55.41	3.46	54.83	3.68	53.67	5.14	52.87	5.55	52.26	5.27
	51.8	49.6	58.31	3.43	57.62	3.53	57.15	3.75	56.13	5.21	55.46	5.62	54.99	5.35
	55.4	53.2	60.13	3.45	59.52	3.56	59.13	3.78	58.17	5.23	57.56	5.65	57.15	5.37
	59.0	56.7	61.98	3.41	61.43	3.51	61.10	3.73	60.21	5.19	59.66	5.60	59.33	5.32
	66.2	57.6	62.45	3.37	61.95	3.47	61.67	3.69	60.87	5.15	60.38	5.56	60.13	5.28
	69.8	59.0	63.36	3.32	62.94	3.41	62.78	3.63	62.06	5.09	61.65	5.49	61.48	5.22
80%	5.5	5.0	32.71	2.22	31.20	2.31	29.93	2.55	28.10	3.87	26.59	4.18	25.32	3.96
	9.3	8.6	34.79	2.40	33.32	2.50	32.08	2.73	30.29	4.06	28.85	4.38	27.61	4.17
	13.1	12.2	36.61	2.60	35.23	2.69	34.04	2.93	32.33	4.26	30.95	4.59	29.76	4.38
	14.9	14.0	37.77	3.03	36.41	3.13	35.28	3.37	33.60	4.69	32.27	5.06	31.14	4.85
	16.7	15.6	38.68	3.41	37.38	3.51	36.30	3.76	34.67	5.06	33.35	5.46	32.27	5.26
	19.4	18.3	40.06	3.79	38.79	3.89	37.77	4.14	36.17	5.44	34.92	5.86	33.87	5.67
	23.0	21.9	42.13	3.98	40.91	4.08	39.92	4.34	38.37	5.62	37.16	6.07	36.17	5.87
	26.6	25.3	43.95	3.61	42.82	3.70	41.88	3.95	40.42	5.25	39.26	5.66	38.32	5.47
	32.0	30.7	46.93	3.29	45.88	3.38	45.06	3.63	43.65	4.93	42.60	5.33	41.77	5.12
	37.4	36.0	50.16	2.91	49.14	3.00	48.34	3.24	47.02	4.56	45.99	4.93	45.19	4.72
	41.0	39.4	51.76	2.98	50.83	3.07	50.08	3.31	48.81	4.63	47.87	4.99	47.13	4.78
	47.0	43.0	55.35	3.12	54.44	3.22	53.75	3.46	52.51	4.77	51.63	5.15	50.94	4.94
	48.2	46.2	55.44	3.23	54.63	3.32	54.03	3.57	52.87	4.88	52.07	5.26	51.46	5.06
	51.8	49.6	57.51	3.29	56.82	3.38	56.35	3.63	55.35	4.93	54.66	5.33	54.19	5.12
	55.4	53.2	59.36	3.32	58.72	3.41	58.33	3.66	57.37	4.97	56.76	5.36	56.37	5.15
	59.0	56.7	61.18	3.27	60.63	3.37	60.29	3.61	59.41	4.92	58.86	5.31	58.53	5.10
	66.2	57.6	61.65	3.23	61.15	3.32	60.90	3.58	60.07	4.89	59.58	5.27	59.33	5.06
	69.8	59.0	62.56	3.17	62.17	3.27	61.98	3.52	61.26	4.83	60.85	5.21	60.68	5.00

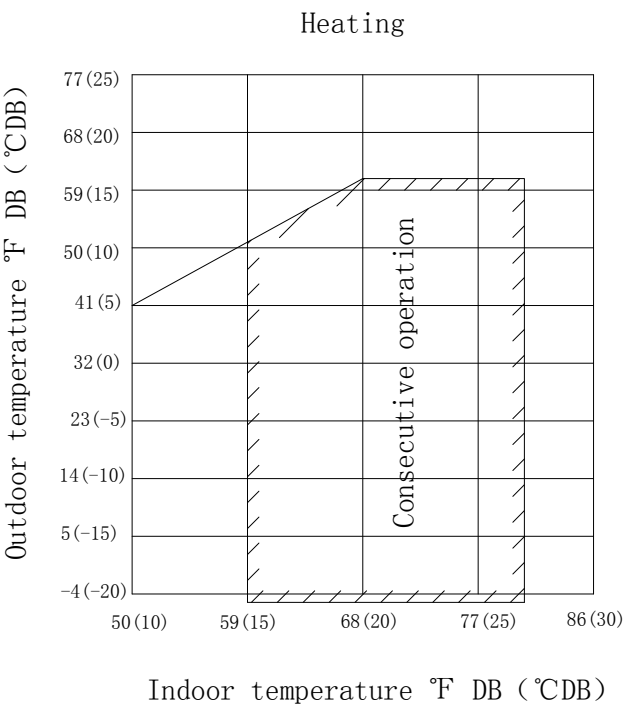
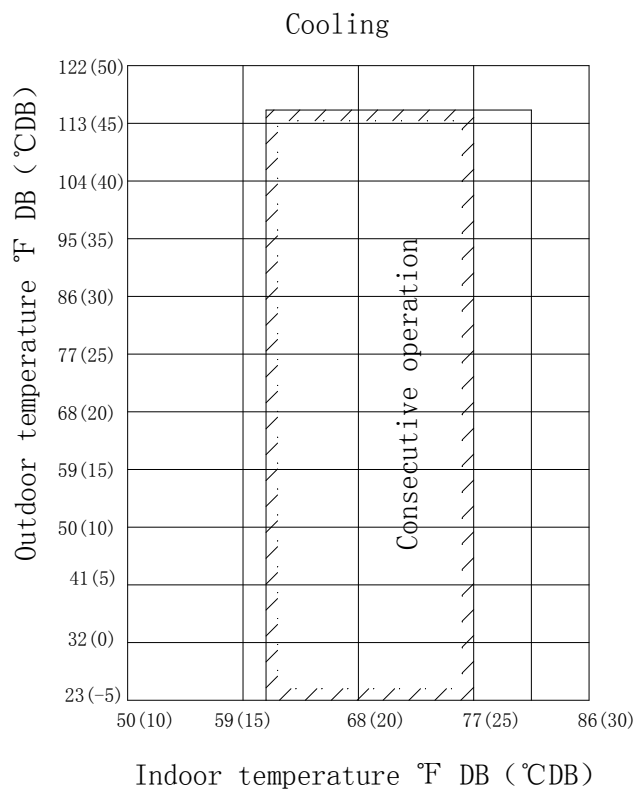
MVHP048MV2AA Heating														
Capacity Factor (%)	Outdoor Temp.		Indoor Temp. (°FDB)											
			60.8		64.4		68.0		70.0		71.6		75.2	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	°FDB	°FWB	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW
70%	5.5	5.0	31.64	2.14	30.12	2.23	28.85	2.55	27.03	3.92	25.51	4.23	24.24	3.96
	9.3	8.6	33.68	2.33	32.25	2.42	31.00	2.73	29.21	4.11	27.75	4.43	26.53	4.17
	13.1	12.2	35.53	2.51	34.15	2.60	32.96	2.93	31.25	4.30	29.87	4.64	28.68	4.38
	14.9	14.0	36.69	2.94	35.34	3.03	34.21	3.37	32.52	4.74	31.17	5.11	30.06	4.85
	16.7	15.6	37.60	3.30	36.30	3.40	35.23	3.76	33.57	5.12	32.27	5.53	31.20	5.26
	19.4	18.3	38.98	3.67	37.71	3.76	36.69	4.14	35.09	5.50	33.82	5.93	32.80	5.67
	23.0	21.9	41.05	3.85	39.84	3.95	38.84	4.34	37.30	5.69	36.08	6.13	35.09	5.87
	26.6	25.3	42.87	3.49	41.74	3.58	40.80	3.95	39.31	5.31	38.18	5.73	37.24	5.47
	32.0	30.7	45.86	3.18	44.81	3.28	43.98	3.63	42.57	4.99	41.52	5.39	40.67	5.12
	37.4	36.0	49.09	2.82	48.06	2.90	47.26	3.24	45.91	4.61	44.92	4.97	44.12	4.72
	41.0	39.4	50.69	2.88	49.75	2.97	49.00	3.31	47.73	4.68	46.77	5.05	46.05	4.78
	47.0	43.0	54.28	3.03	53.37	3.11	52.67	3.46	51.43	4.83	50.55	5.21	49.86	4.94
	48.2	46.2	54.36	3.12	53.53	3.21	52.95	3.57	51.79	4.93	50.99	5.31	50.38	5.06
	51.8	49.6	56.43	3.18	55.74	3.28	55.27	3.63	54.25	4.99	53.59	5.39	53.12	5.12
	55.4	53.2	58.25	3.20	57.64	3.30	57.26	3.66	56.29	5.02	55.68	5.41	55.27	5.15
	59.0	56.7	60.10	3.16	59.55	3.25	59.22	3.61	58.33	4.97	57.78	5.36	57.45	5.10
	66.2	57.6	60.57	3.12	60.07	3.22	59.80	3.58	59.00	4.93	58.50	5.32	58.25	5.06
	69.8	59.0	61.48	3.07	61.07	3.16	60.90	3.52	60.18	4.88	59.77	5.27	59.60	5.00
60%	5.5	5.0	30.34	2.07	28.85	2.16	27.58	2.35	25.73	3.66	24.24	3.96	22.94	3.70
	9.3	8.6	32.41	2.25	30.95	2.34	29.73	2.53	27.94	3.84	26.48	4.14	25.23	3.90
	13.1	12.2	34.26	2.43	32.85	2.52	31.69	2.71	29.98	4.02	28.57	4.34	27.41	4.09
	14.9	14.0	35.39	2.84	34.04	2.93	32.94	3.12	31.25	4.43	29.90	4.78	28.77	4.54
	16.7	15.6	36.33	3.20	35.01	3.28	33.93	3.48	32.30	4.79	31.00	5.16	29.93	4.92
	19.4	18.3	37.68	3.54	36.44	3.63	35.39	3.83	33.82	5.14	32.55	5.54	31.50	5.30
	23.0	21.9	39.75	3.72	38.54	3.81	37.55	4.00	36.00	5.31	34.79	5.74	33.79	5.49
	26.6	25.3	41.60	3.37	40.44	3.45	39.53	3.65	38.04	4.96	36.88	5.36	35.97	5.11
	32.0	30.7	44.59	3.07	43.54	3.16	42.68	3.36	41.30	4.67	40.22	5.03	39.40	4.79
	37.4	36.0	47.79	2.72	46.79	2.81	45.99	3.00	44.64	4.31	43.62	4.65	42.82	4.41
	41.0	39.4	49.42	2.78	48.45	2.86	47.73	3.07	46.44	4.37	45.50	4.72	44.78	4.47
	47.0	43.0	52.98	2.92	52.07	3.01	51.40	3.20	50.16	4.51	49.25	4.87	48.56	4.63
	48.2	46.2	53.09	3.02	52.26	3.11	51.65	3.30	50.52	4.61	49.69	4.97	49.11	4.72
	51.8	49.6	55.13	3.07	54.47	3.16	54.00	3.36	52.98	4.67	52.29	5.03	51.85	4.79
	55.4	53.2	56.98	3.10	56.37	3.19	55.96	3.38	55.02	4.69	54.39	5.06	54.00	4.81
	59.0	56.7	58.83	3.06	58.28	3.15	57.95	3.34	57.06	4.65	56.51	5.02	56.18	4.77
	66.2	57.6	59.27	3.02	58.80	3.11	58.53	3.30	57.70	4.61	57.23	4.97	56.95	4.73
	69.8	59.0	60.18	2.97	59.80	3.06	59.63	3.25	58.89	4.56	58.50	4.92	58.31	4.68
50%	5.5	5.0	28.88	2.00	27.36	2.09	26.09	2.27	24.27	3.54	22.75	3.82	21.48	3.58
	9.3	8.6	30.95	2.17	29.48	2.26	28.24	2.44	26.45	3.70	24.98	4.00	23.77	3.76
	13.1	12.2	32.77	2.34	31.39	2.43	30.20	2.61	28.49	3.87	27.11	4.18	25.92	3.95
	14.9	14.0	33.93	2.74	32.58	2.82	31.44	3.01	29.76	4.28	28.44	4.61	27.30	4.38
	16.7	15.6	34.84	3.08	33.54	3.16	32.47	3.36	30.81	4.62	29.51	4.98	28.44	4.75
	19.4	18.3	36.22	3.42	34.95	3.51	33.93	3.70	32.33	4.96	31.06	5.35	30.04	5.11
	23.0	21.9	38.29	3.59	37.08	3.68	36.08	3.87	34.54	5.13	33.32	5.53	32.33	5.30
	26.6	25.3	40.11	3.25	38.98	3.34	38.04	3.53	36.55	4.79	35.42	5.17	34.48	4.93
	32.0	30.7	43.10	2.97	42.05	3.05	41.22	3.24	39.81	4.51	38.76	4.86	37.90	4.62
	37.4	36.0	46.33	2.63	45.30	2.71	44.50	2.90	43.15	4.17	42.16	4.49	41.36	4.26
	41.0	39.4	47.93	2.69	46.99	2.77	46.24	2.95	44.97	4.22	44.01	4.55	43.29	4.31
	47.0	43.0	51.52	2.82	50.60	2.90	49.91	3.09	48.67	4.36	47.79	4.70	47.10	4.47
	48.2	46.2	51.60	2.91	50.77	2.99	50.19	3.18	49.03	4.45	48.23	4.80	47.62	4.56
	51.8	49.6	53.67	2.97	52.98	3.05	52.51	3.24	51.52	4.51	50.83	4.86	50.36	4.62
	55.4	53.2	55.49	2.99	54.88	3.07	54.50	3.26	53.53	4.53	52.92	4.89	52.51	4.64
	59.0	56.7	57.34	2.95	56.79	3.03	56.46	3.22	55.57	4.49	55.02	4.84	54.69	4.60
	66.2	57.6	57.81	2.91	57.31	3.00	57.04	3.19	56.24	4.45	55.74	4.81	55.49	4.57
	69.8	59.0	58.72	2.86	58.31	2.95	58.14	3.14	57.42	4.40	57.01	4.75	56.84	4.51

MVHP056MV2AA Heating														
Capacity Factor (%)	Outdoor Temp.		Indoor Temp.(°FDB)											
			60.8		64.4		68.0		70.0		71.6		75.2	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	°FDB	°FWB	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW
130%	5.5	5.0	39.88	3.30	38.25	3.36	36.86	3.71	34.84	4.74	33.21	5.11	31.79	4.79
	9.3	8.6	42.14	3.62	40.54	3.69	39.21	4.07	37.25	4.96	35.65	5.36	34.30	5.04
	13.1	12.2	44.16	3.95	42.62	4.03	41.35	4.45	39.48	5.19	37.95	5.60	36.68	5.29
	14.9	14.0	45.40	4.72	43.95	4.81	42.71	5.31	40.87	5.53	39.39	5.96	38.16	5.86
	16.7	15.6	46.42	5.37	44.97	5.48	43.80	6.05	42.02	5.66	40.60	6.11	39.42	6.25
	19.4	18.3	47.93	6.03	46.54	6.15	45.40	6.78	43.68	5.71	42.29	6.23	41.17	6.92
	23.0	21.9	50.16	6.04	48.83	6.17	47.75	6.80	46.06	5.83	44.73	6.30	43.65	7.50
	26.6	25.3	52.18	5.70	50.92	5.82	49.92	6.42	48.29	5.91	47.06	6.37	46.03	7.90
	32.0	30.7	55.44	5.16	54.29	5.26	53.36	5.80	51.85	5.90	50.67	6.37	49.77	6.19
	37.4	36.0	58.94	4.50	57.85	4.59	56.98	5.07	55.50	5.58	54.38	6.02	53.54	5.69
	41.0	39.4	60.72	4.61	59.66	4.70	58.88	5.18	57.49	5.65	56.44	6.10	55.65	5.78
	47.0	43.0	64.61	4.87	63.65	4.97	62.89	5.48	61.53	5.73	60.54	6.18	59.78	5.98
	48.2	46.2	64.73	5.04	63.83	5.14	63.19	5.67	61.93	5.86	61.02	6.32	60.39	6.11
	51.8	49.6	66.99	5.16	66.24	5.26	65.73	5.80	64.61	5.90	63.86	6.37	63.37	6.19
	55.4	53.2	68.98	5.20	68.32	5.31	67.87	5.86	66.84	5.91	66.18	6.37	65.73	6.22
	59.0	56.7	71.01	5.12	70.40	5.22	70.04	5.76	69.07	5.90	68.47	6.37	68.11	6.17
	66.2	57.6	71.49	5.06	70.97	5.16	70.67	5.70	69.80	5.86	69.26	6.32	68.95	6.12
	69.8	59.0	72.51	5.51	72.06	5.62	71.88	6.20	71.07	5.86	70.64	6.32	70.46	6.04
120%	5.5	5.0	39.36	3.19	37.70	3.26	36.32	3.59	34.33	4.60	32.67	4.96	31.28	4.65
	9.3	8.6	41.63	3.52	40.03	3.59	38.67	3.96	36.71	4.82	35.14	5.20	33.78	4.89
	13.1	12.2	43.62	3.84	42.11	3.92	40.81	4.32	38.94	5.04	37.43	5.44	36.14	5.13
	14.9	14.0	44.88	4.58	43.41	4.67	42.17	5.15	40.33	5.56	38.88	6.00	37.64	5.69
	16.7	15.6	45.88	5.21	44.46	5.32	43.28	5.87	41.47	5.68	40.06	6.13	38.88	6.17
	19.4	18.3	47.39	5.86	46.00	5.98	44.88	6.59	43.13	6.11	41.78	6.53	40.63	6.65
	23.0	21.9	49.65	6.04	48.32	6.17	47.24	6.80	45.55	6.44	44.22	7.06	43.13	7.37
	26.6	25.3	51.64	5.53	50.40	5.65	49.38	6.23	47.78	6.95	46.51	7.49	45.49	7.57
	32.0	30.7	54.90	5.00	53.75	5.10	52.85	5.63	51.31	5.86	50.16	6.32	49.26	6.01
	37.4	36.0	58.43	4.37	57.31	4.46	56.44	4.92	54.99	5.41	53.87	5.84	53.00	5.53
	41.0	39.4	60.18	4.47	59.15	4.56	58.34	5.03	56.95	5.48	55.92	5.92	55.11	5.61
	47.0	43.0	64.10	4.73	63.10	4.82	62.35	5.32	60.99	5.67	60.03	6.11	59.27	5.80
	48.2	46.2	64.19	4.90	63.31	5.00	62.65	5.51	61.38	5.78	60.51	6.24	59.84	5.93
	51.8	49.6	66.45	5.00	65.70	5.10	65.18	5.63	64.10	5.86	63.34	6.32	62.83	6.01
	55.4	53.2	68.47	5.05	67.78	5.15	67.36	5.69	66.30	5.88	65.64	6.35	65.21	6.04
	59.0	56.7	70.46	4.97	69.86	5.08	69.50	5.60	68.53	5.83	67.93	6.29	67.57	5.98
	66.2	57.6	70.97	4.91	70.43	5.01	70.16	5.53	69.26	5.79	68.71	6.25	68.44	5.94
	69.8	59.0	71.97	5.34	71.55	5.45	71.34	6.02	70.55	5.73	70.10	6.17	69.92	5.87
110%	5.5	5.0	38.07	3.14	36.44	3.20	35.05	3.53	33.03	4.46	31.40	4.82	30.01	4.56
	9.3	8.6	40.33	3.45	38.73	3.52	37.40	3.88	35.44	4.68	33.84	5.05	32.49	4.80
	13.1	12.2	42.35	3.76	40.81	3.84	39.54	4.23	37.67	4.89	36.14	5.29	34.87	5.03
	14.9	14.0	43.59	4.49	42.14	4.58	40.90	5.06	39.06	5.40	37.58	5.83	36.35	5.58
	16.7	15.6	44.61	5.12	43.16	5.22	41.99	5.76	40.21	5.59	38.79	6.04	37.61	6.05
	19.4	18.3	46.12	5.74	44.73	5.86	43.59	6.46	41.87	6.06	40.48	6.41	39.36	6.59
	23.0	21.9	48.35	6.06	47.03	6.18	45.94	6.82	44.25	6.48	42.92	6.96	41.84	7.11
	26.6	25.3	50.37	5.43	49.11	5.54	48.11	6.11	46.48	6.94	45.25	7.49	44.22	7.46
	32.0	30.7	53.63	4.91	52.48	5.01	51.55	5.53	50.04	5.68	48.90	6.13	47.96	5.89
	37.4	36.0	57.13	4.28	56.04	4.37	55.17	4.82	53.69	5.25	52.58	5.67	51.73	5.42
	41.0	39.4	58.91	4.39	57.85	4.48	57.07	4.94	55.68	5.33	54.63	5.75	53.84	5.50
	47.0	43.0	62.80	4.63	61.84	4.73	61.08	5.22	59.72	5.50	58.73	5.93	57.97	5.69
	48.2	46.2	62.92	4.80	62.02	4.90	61.38	5.41	60.12	5.62	59.21	6.06	58.58	5.82
	51.8	49.6	65.18	4.91	64.43	5.01	63.92	5.53	62.80	5.68	62.05	6.13	61.56	5.89
	55.4	53.2	67.17	4.95	66.51	5.05	66.06	5.57	65.03	5.72	64.37	6.17	63.92	5.93
	59.0	56.7	69.20	4.87	68.59	4.97	68.23	5.48	67.26	5.67	66.66	6.11	66.30	5.87
	66.2	57.6	69.68	4.81	69.17	4.91	68.86	5.42	67.99	5.62	67.45	6.07	67.14	5.83
	69.8	59.0	70.70	5.24	70.25	5.35	70.07	5.90	69.26	5.56	68.83	5.99	68.65	5.75

MVHP056MV2AA Heating														
Capacity Factor (%)	Outdoor Temp.		Indoor Temp.(°FDB)											
			60.8		64.4		68.0		70.0		71.6		75.2	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	°FDB	°FWB	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW
100%	5.5	5.0	37.31	2.82	35.65	2.94	34.27	3.20	32.28	4.99	30.62	5.38	29.23	5.05
	9.3	8.6	39.57	3.06	37.98	3.18	36.62	3.45	34.66	5.23	33.09	5.65	31.73	5.31
	13.1	12.2	41.57	3.31	40.06	3.42	38.76	3.69	36.89	5.48	35.38	5.90	34.08	5.57
	14.9	14.0	42.83	3.87	41.35	3.99	40.12	4.25	38.28	6.04	36.83	6.51	35.59	6.18
	16.7	15.6	43.83	4.35	42.41	4.47	41.23	4.74	39.45	6.52	38.01	7.03	36.83	6.70
	19.4	18.3	45.34	4.83	43.95	4.95	42.83	5.21	41.08	6.60	39.73	7.12	38.58	7.22
	23.0	21.9	47.60	5.07	46.27	5.19	45.19	5.46	43.50	6.64	42.17	7.16	41.08	7.27
	26.6	25.3	49.59	4.59	48.35	4.71	47.33	4.97	45.73	6.73	44.46	7.25	43.44	6.96
	32.0	30.7	52.85	4.19	51.70	4.31	50.80	4.58	49.26	6.36	48.11	6.86	47.21	6.52
	37.4	36.0	56.38	3.71	55.26	3.83	54.38	4.09	52.94	5.88	51.82	6.34	50.95	6.00
	41.0	39.4	58.13	3.78	57.10	3.90	56.29	4.17	54.90	5.95	53.87	6.42	53.06	6.09
	47.0	43.0	62.11	3.98	61.11	4.10	60.33	4.36	59.00	6.15	58.03	6.63	57.28	6.30
	48.2	46.2	62.14	4.10	61.26	4.23	60.60	4.49	59.33	6.27	58.46	6.78	57.79	6.43
	51.8	49.6	64.40	4.19	63.65	4.31	63.13	4.58	62.05	6.36	61.29	6.86	60.78	6.52
	55.4	53.2	66.42	4.22	65.73	4.34	65.30	4.61	64.25	6.39	63.58	6.89	63.16	6.56
	59.0	56.7	68.41	4.16	67.81	4.28	67.45	4.55	66.48	6.33	65.88	6.83	65.52	6.50
	66.2	57.6	68.92	4.11	68.38	4.24	68.11	4.50	67.20	6.28	66.66	6.78	66.39	6.44
	69.8	59.0	69.92	4.05	69.50	4.16	69.29	4.43	68.50	6.22	68.05	6.70	67.87	6.37
90%	5.5	5.0	36.62	2.71	34.96	2.82	33.57	3.08	31.55	4.79	29.92	5.16	28.53	4.84
	9.3	8.6	38.85	2.94	37.28	3.05	35.92	3.31	33.96	5.02	32.37	5.42	31.04	5.10
	13.1	12.2	40.87	3.17	39.36	3.29	38.07	3.54	36.20	5.25	34.66	5.67	33.39	5.34
	14.9	14.0	42.14	3.71	40.66	3.83	39.42	4.08	37.58	5.79	36.11	6.25	34.90	5.93
	16.7	15.6	43.13	4.17	41.72	4.29	40.51	4.55	38.73	6.25	37.31	6.75	36.14	6.43
	19.4	18.3	44.64	4.63	43.25	4.76	42.14	5.00	40.39	6.49	39.00	7.00	37.89	6.93
	23.0	21.9	46.90	4.87	45.58	4.98	44.49	5.24	42.80	6.60	41.47	7.13	40.39	7.18
	26.6	25.3	48.90	4.41	47.66	4.52	46.63	4.78	45.00	6.49	43.77	7.00	42.74	6.68
	32.0	30.7	52.15	4.02	51.01	4.13	50.07	4.39	48.56	6.10	47.42	6.59	46.48	6.26
	37.4	36.0	55.68	3.55	54.57	3.68	53.69	3.92	52.21	5.64	51.13	6.08	50.25	5.76
	41.0	39.4	57.43	3.63	56.41	3.75	55.59	4.01	54.20	5.71	53.15	6.17	52.36	5.85
	47.0	43.0	61.35	3.82	60.36	3.93	59.60	4.19	58.25	5.90	57.25	6.37	56.53	6.05
	48.2	46.2	61.44	3.94	60.54	4.06	59.90	4.31	58.64	6.03	57.76	6.50	57.10	6.18
	51.8	49.6	63.71	4.02	62.95	4.13	62.44	4.39	61.32	6.10	60.60	6.59	60.09	6.26
	55.4	53.2	65.70	4.05	65.03	4.17	64.61	4.43	63.55	6.13	62.89	6.61	62.44	6.29
	59.0	56.7	67.72	4.00	67.11	4.11	66.75	4.37	65.79	6.08	65.18	6.56	64.82	6.24
	66.2	57.6	68.23	3.95	67.69	4.07	67.39	4.32	66.51	6.04	65.97	6.51	65.70	6.19
	69.8	59.0	69.23	3.89	68.77	4.00	68.59	4.25	67.81	5.96	67.36	6.43	67.17	6.11
80%	5.5	5.0	35.74	2.60	34.08	2.71	32.70	2.98	30.71	4.54	29.05	4.90	27.66	4.64
	9.3	8.6	38.01	2.81	36.41	2.93	35.05	3.20	33.09	4.76	31.52	5.14	30.16	4.88
	13.1	12.2	40.00	3.04	38.49	3.15	37.19	3.43	35.32	4.98	33.81	5.37	32.52	5.13
	14.9	14.0	41.26	3.55	39.79	3.67	38.55	3.95	36.71	5.50	35.26	5.92	34.02	5.69
	16.7	15.6	42.26	4.00	40.84	4.11	39.67	4.41	37.89	5.93	36.44	6.40	35.26	6.16
	19.4	18.3	43.77	4.44	42.38	4.56	41.26	4.85	39.51	6.37	38.16	6.87	37.01	6.64
	23.0	21.9	46.03	4.66	44.70	4.78	43.62	5.08	41.93	6.59	40.60	7.11	39.51	6.88
	26.6	25.3	48.02	4.23	46.78	4.33	45.76	4.62	44.16	6.15	42.89	6.63	41.87	6.41
	32.0	30.7	51.28	3.86	50.13	3.96	49.23	4.25	47.69	5.78	46.54	6.24	45.64	6.00
	37.4	36.0	54.81	3.41	53.69	3.52	52.82	3.80	51.37	5.34	50.25	5.77	49.38	5.52
	41.0	39.4	56.56	3.49	55.53	3.59	54.72	3.88	53.33	5.42	52.30	5.85	51.49	5.60
	47.0	43.0	60.48	3.66	59.48	3.77	58.73	4.06	57.37	5.59	56.41	6.04	55.65	5.79
	48.2	46.2	60.57	3.78	59.69	3.89	59.03	4.18	57.76	5.71	56.89	6.16	56.22	5.92
	51.8	49.6	62.83	3.86	62.08	3.96	61.56	4.25	60.48	5.78	59.72	6.24	59.21	6.00
	55.4	53.2	64.85	3.89	64.16	3.99	63.74	4.28	62.68	5.82	62.02	6.27	61.59	6.04
	59.0	56.7	66.84	3.83	66.24	3.94	65.88	4.23	64.91	5.76	64.31	6.22	63.95	5.98
	66.2	57.6	67.36	3.78	66.81	3.89	66.54	4.19	65.64	5.72	65.09	6.17	64.82	5.93
	69.8	59.0	68.35	3.71	67.93	3.83	67.72	4.12	66.93	5.66	66.48	6.10	66.30	5.86

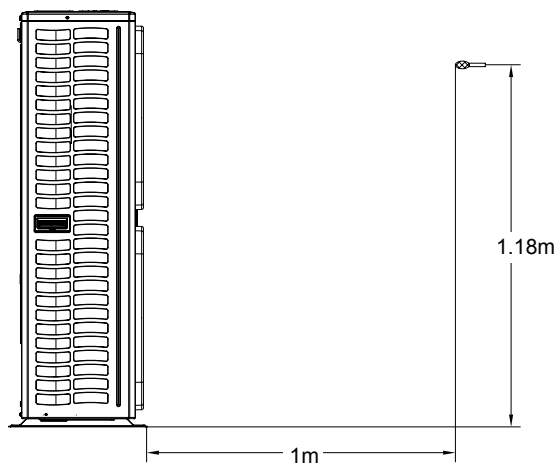
MVHP056MV2AA Heating														
Capacity Factor (%)	Outdoor Temp.		Indoor Temp.(°FDB)											
			60.8		64.4		68.0		70.0		71.6		75.2	
			TH	PI	TH	PI	TH	PI	TH	PI	TH	PI	TH	PI
	°FDB	°FWB	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW	KBtu/h	KW
70%	5.5	5.0	34.57	2.51	32.91	2.62	31.52	2.98	29.53	4.60	27.87	4.96	26.48	4.64
	9.3	8.6	36.80	2.73	35.23	2.83	33.87	3.20	31.91	4.81	30.31	5.19	28.99	4.88
	13.1	12.2	38.82	2.94	37.31	3.05	36.02	3.43	34.15	5.03	32.64	5.43	31.34	5.13
	14.9	14.0	40.09	3.44	38.61	3.54	37.37	3.95	35.53	5.55	34.05	5.99	32.85	5.69
	16.7	15.6	41.08	3.87	39.67	3.98	38.49	4.41	36.68	6.00	35.26	6.47	34.08	6.16
	19.4	18.3	42.59	4.30	41.20	4.41	40.09	4.85	38.34	6.44	36.95	6.95	35.83	6.64
	23.0	21.9	44.85	4.51	43.53	4.62	42.44	5.08	40.75	6.66	39.42	7.18	38.34	6.88
	26.6	25.3	46.84	4.08	45.61	4.19	44.58	4.62	42.95	6.22	41.72	6.71	40.69	6.41
	32.0	30.7	50.10	3.72	48.96	3.84	48.05	4.25	46.51	5.85	45.37	6.31	44.43	6.00
	37.4	36.0	53.63	3.30	52.51	3.40	51.64	3.80	50.16	5.40	49.08	5.83	48.20	5.52
	41.0	39.4	55.38	3.37	54.35	3.48	53.54	3.88	52.15	5.48	51.10	5.91	50.31	5.60
	47.0	43.0	59.30	3.54	58.31	3.65	57.55	4.06	56.19	5.66	55.23	6.10	54.48	5.79
	48.2	46.2	59.39	3.66	58.49	3.76	57.85	4.18	56.59	5.77	55.71	6.23	55.05	5.92
	51.8	49.6	61.65	3.72	60.90	3.84	60.39	4.25	59.27	5.85	58.55	6.31	58.03	6.00
	55.4	53.2	63.65	3.75	62.98	3.87	62.56	4.28	61.50	5.88	60.84	6.34	60.39	6.04
	59.0	56.7	65.67	3.71	65.06	3.81	64.70	4.23	63.74	5.83	63.13	6.28	62.77	5.98
	66.2	57.6	66.18	3.66	65.64	3.77	65.33	4.19	64.46	5.78	63.92	6.24	63.65	5.93
	69.8	59.0	67.17	3.60	66.72	3.71	66.54	4.12	65.76	5.71	65.30	6.17	65.12	5.86
60%	5.5	5.0	33.15	2.43	31.52	2.53	30.13	2.76	28.11	4.29	26.48	4.63	25.07	4.34
	9.3	8.6	35.41	2.63	33.81	2.74	32.49	2.97	30.53	4.50	28.93	4.85	27.57	4.57
	13.1	12.2	37.43	2.84	35.89	2.95	34.63	3.17	32.76	4.71	31.22	5.08	29.95	4.79
	14.9	14.0	38.67	3.33	37.19	3.43	35.99	3.66	34.15	5.19	32.67	5.60	31.43	5.32
	16.7	15.6	39.70	3.74	38.25	3.85	37.07	4.07	35.29	5.61	33.87	6.05	32.70	5.76
	19.4	18.3	41.17	4.15	39.82	4.25	38.67	4.48	36.95	6.02	35.56	6.49	34.42	6.21
	23.0	21.9	43.44	4.36	42.11	4.46	41.02	4.69	39.33	6.23	38.01	6.72	36.92	6.43
	26.6	25.3	45.46	3.94	44.19	4.05	43.19	4.27	41.57	5.81	40.30	6.27	39.30	5.99
	32.0	30.7	48.71	3.60	47.57	3.71	46.63	3.93	45.12	5.47	43.95	5.89	43.04	5.61
	37.4	36.0	52.21	3.18	51.13	3.29	50.25	3.52	48.77	5.05	47.66	5.45	46.78	5.16
	41.0	39.4	53.99	3.26	52.94	3.35	52.15	3.59	50.74	5.12	49.71	5.52	48.93	5.24
	47.0	43.0	57.88	3.42	56.89	3.53	56.16	3.75	54.81	5.29	53.81	5.70	53.06	5.42
	48.2	46.2	58.00	3.53	57.10	3.64	56.44	3.87	55.20	5.40	54.29	5.83	53.66	5.53
	51.8	49.6	60.24	3.60	59.51	3.71	59.00	3.93	57.88	5.47	57.13	5.89	56.65	5.61
	55.4	53.2	62.26	3.63	61.59	3.73	61.14	3.96	60.12	5.50	59.42	5.93	59.00	5.64
	59.0	56.7	64.28	3.58	63.68	3.69	63.31	3.91	62.35	5.45	61.74	5.88	61.38	5.59
	66.2	57.6	64.76	3.53	64.25	3.64	63.95	3.87	63.04	5.40	62.53	5.83	62.23	5.54
	69.8	59.0	65.76	3.48	65.33	3.58	65.15	3.81	64.34	5.34	63.92	5.76	63.71	5.48
50%	5.5	5.0	31.55	2.34	29.89	2.44	28.50	2.66	26.51	4.14	24.85	4.47	23.47	4.19
	9.3	8.6	33.81	2.54	32.21	2.64	30.86	2.86	28.90	4.34	27.30	4.68	25.97	4.41
	13.1	12.2	35.80	2.74	34.30	2.84	33.00	3.06	31.13	4.54	29.62	4.90	28.32	4.62
	14.9	14.0	37.07	3.21	35.59	3.31	34.36	3.53	32.52	5.01	31.07	5.40	29.83	5.13
	16.7	15.6	38.07	3.61	36.65	3.71	35.47	3.93	33.66	5.41	32.24	5.84	31.07	5.56
	19.4	18.3	39.57	4.01	38.19	4.11	37.07	4.33	35.32	5.81	33.93	6.26	32.82	5.99
	23.0	21.9	41.84	4.21	40.51	4.31	39.42	4.53	37.73	6.01	36.41	6.48	35.32	6.21
	26.6	25.3	43.83	3.81	42.59	3.91	41.57	4.13	39.94	5.61	38.70	6.06	37.67	5.77
	32.0	30.7	47.09	3.48	45.94	3.57	45.03	3.80	43.50	5.28	42.35	5.70	41.41	5.41
	37.4	36.0	50.61	3.08	49.50	3.17	48.62	3.39	47.15	4.88	46.06	5.26	45.19	4.98
	41.0	39.4	52.36	3.15	51.34	3.24	50.52	3.46	49.14	4.95	48.08	5.34	47.30	5.05
	47.0	43.0	56.29	3.30	55.29	3.40	54.54	3.62	53.18	5.11	52.21	5.51	51.46	5.23
	48.2	46.2	56.38	3.41	55.47	3.51	54.84	3.72	53.57	5.21	52.70	5.62	52.03	5.34
	51.8	49.6	58.64	3.48	57.88	3.57	57.37	3.80	56.29	5.28	55.53	5.70	55.02	5.41
	55.4	53.2	60.63	3.51	59.97	3.60	59.54	3.82	58.49	5.31	57.82	5.72	57.37	5.44
	59.0	56.7	62.65	3.46	62.05	3.55	61.68	3.77	60.72	5.26	60.12	5.67	59.75	5.39
	66.2	57.6	63.16	3.41	62.62	3.52	62.32	3.73	61.44	5.21	60.90	5.63	60.63	5.35
	69.8	59.0	64.16	3.35	63.71	3.46	63.52	3.68	62.74	5.16	62.29	5.56	62.11	5.29

9. Operation Range



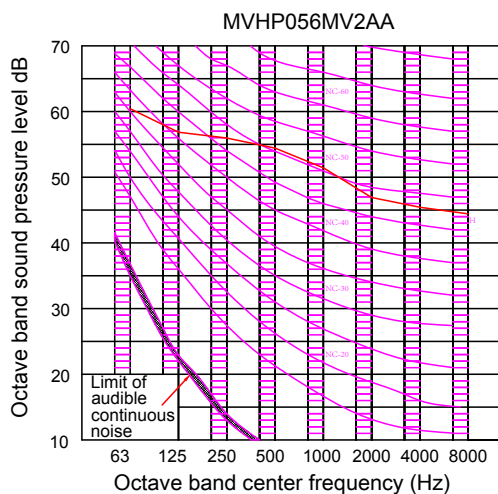
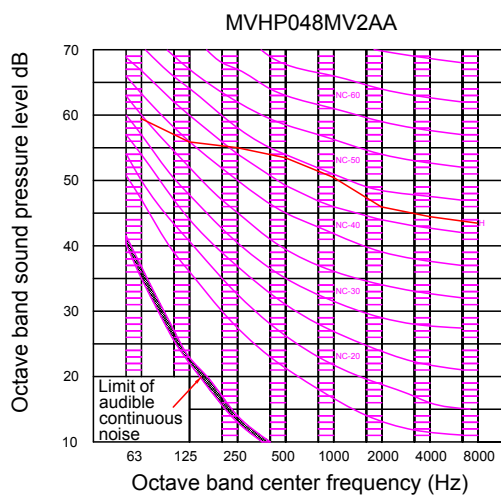
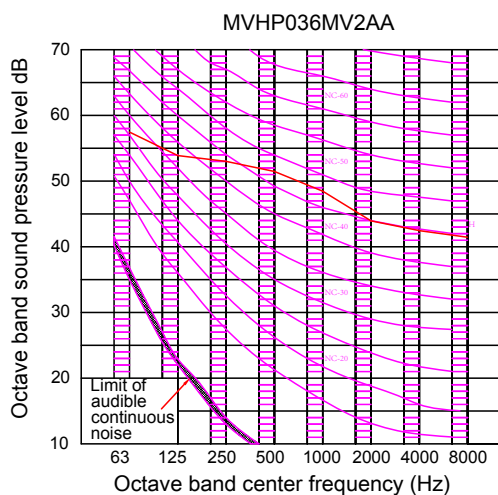
10. Sound Level

(1) Testing illustration



2) Testing condition:

- Unit running in the nominal condition
- Test in the semi-anechoic chamber
- Noise level varies from the actual factors such as room structure, etc.



11. Outdoor Piping Installation

11.1 Safety precautions

- This manual should be saved and stored close to this air conditioning equipment.
- There are two types of indications, " ⚠ WARNING" and " ⚠ CAUTION". The indication preventing from death or heavy injury is listed as " ⚠ WARNING". Even the indication listed as " ⚠ CAUTION" may also cause serious accident. Both of them are related to safety, and should be strictly followed.
- After installation and start-up, please give the manual to the user. The manual should be kept in safe place and close to the unit.

⚠ WARNING

- Installation or maintenance should be performed by an authorized agency. Wrong operation of this air conditioning equipment may cause water leakage, electric shock or fire.
- Please install the unit on the top of a solid foundation or structure which is strong enough to support the unit.
- The installation of this air conditioning equipment should follow local construction codes.
- Use the right cable size, secure the terminal firmly, organize the cables neatly and make sure no tension is added on cables. Cable insulation should not be damaged. The incorrect installation may lead to overheating or fire.
- When installing or moving the unit, the refrigerant system should be vacuumed and recharged with R-410A refrigerant. If any other gas enters the system, it may lead to abnormal high pressure which may cause damage or injury.
- Please use the proper manifolds or branches during the system installation. The wrong parts may cause refrigerant leakage.
- Keep the drain pipe away from toxic gas vents to prevent possible pollution of indoor environment.
- During or after the installation, please check whether there is a refrigerant leakage. If any leakage, please take any measures for ventilation. The refrigerant may be toxic at some concentration levels.
- The unit is not explosion-proof. Please keep it away from flammable gases.
- The drain pipe should be installed per this manual to ensure proper drainage. The pipe should be well insulated to avoid condensation. Incorrect installation may lead to water leakage.
- Both liquid pipe and the gas pipe should be well insulated. Not enough insulation may lead to system performance deterioration or humidity formation.
- This air conditioning equipment is not intended to be operated by persons with lack of experience and training, unless they have supervision or instruction concerning use of this air condition equipment.
- Please keep children away from this air conditioning equipment.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.

🚫 PROHIBIT

- This system uses R410A refrigerant, do not use oxygen, acetylene or any other flammable/toxic gases near the unit. These gases are dangerous and may cause explosion. It is recommended to use compressed air, nitrogen or refrigerant for such tests.
- Keep water away from the indoor and outdoor units. These products are equipped with electrical components, which may cause serious electric shock if exposed to water.
- Do not modify the safety devices in the indoor or outdoor unit. Modifying these devices can cause serious accidents.

- The maintenance cover plate of the indoor or outdoor unit should not be removed when the main circuit power supply on. Shut off power before removing.
- Refrigerant leakage can cause breathing problems. In the event of a refrigerant leak, close the main valve, extinguish any flame and contact a local servicer immediately.
- Use the proper breaker and surge protector. If not used, an electric shock or fire may cause injury or damage.
- The installation and service technician shall ensure that refrigerant leaks comply with local laws and regulations.

⚠CAUTION

- Grounding wire should be connected with the grounding bar. The grounding wire can not be connected to the gas pipe, water pipe, lightening rod or the telephone grounding wire. Improper grounding may cause electric shock.
- Don't install the unit in a location with flammable gas or it may cause fire.
- Install the water drainage pipe according to the manual, improper installation will cause water leakage and damage.
- The outdoor fan should not blow towards gardens/vegetation or the air will dry out the plants.
- Please ensure proper clearances, if not, service technicians will not have room to service.
- When installing the unit on a roof or other high places, to prevent injury to the service technician, please set a fixed ladder and railing at the installation site.
- Use a wrench and fasten the nut. Use a torque wrench to tighten at proper torque spec. Don't over tighten the nut or you risk damaging the flare. Will cause refrigerant leaks.
- Be sure to insulate the refrigerant pipe, or there will be water leakage or water dripping causing damage.
- After installing the refrigerant pipe, test for leaks by charging with nitrogen.
- Don't use the other refrigerants except for R410A. The R410A pressure is 1.6 times higher than R22 pressure. R410A tanks are marked with pink.
- We changed the stop valve diameter of the R410A unit to enhance the compression consistency. We also changed the flared pipe dimension. Adjust the R410A specially tools according to the below table.

	R410A specially tool	Remarks
1	gauge manifold	range: HP>652.5PSI(4.5MPa), LP>290PSI(2MPa)
2	charge hose	pressure: HP:768.5PSI(5.3MPa), LP:507.5PSI(3.5MPa)
3	electronic balance for charging R410A	can not use the measurable charging tank
4	torque spanner	
5	flare tool	
6	copper pipe gauge for adjusting projecting margin	
7	vacuum pump adapter	must be with reverse stop valve
8	leakage detector	can not use freon leakage detector, but the He detector

- When charging refrigerant, the refrigerant must be taken out in liquid state from the tank.
- When installing the power cord and the connecting line must be a least 1m from the TV or radio, so as to avoid image interference or noise.
- In the room with fluorescent lamp (reverse or fast start type), remote control signal transmission distance may not reach the predetermined value, so the indoor unit installed away from the fluorescent lamp as far as possible.
- Please use the fuse to meet the capacity requirements.
- To prevent the destruction of wires, electrical components, etc. by rats or other animals.
- Recommended room ventilation every 3 to 4 hours.

Arrival inspection

- After receiving the unit, should check whether there is transport damage. If any damage is found on the surface or= inside, it shall be reported immediately to the shipping company in writing.

11.2 Transportation and Lifting

Lifting

Please do not remove the packaging until the unit is close to the installation location.

⚠ CAUTION

- Do not place anything on the device
- Use two ropes for lifting the outdoor unit

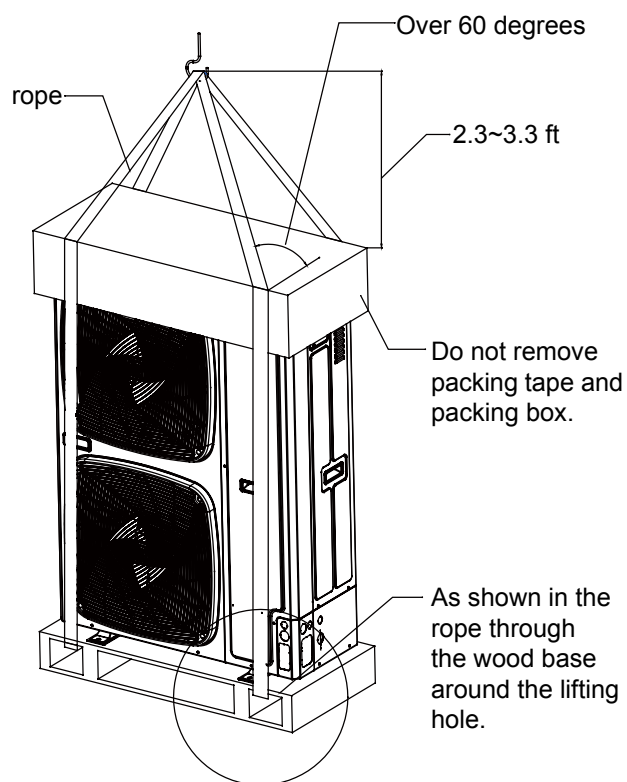
Hoisting method

Hoist the unit slowly and ensure that it is level.

- ① Removal of the outer packing is strictly prohibited
- ② Hoist outdoor unit packaging as shown using two ropes.

⚠ CAUTION

- To ensure safety, slowly lift while keeping the unit level.
- Do not use a forklift to move the unit without the unit packaging.
- Padding should be used to protect the unit while lifting it.



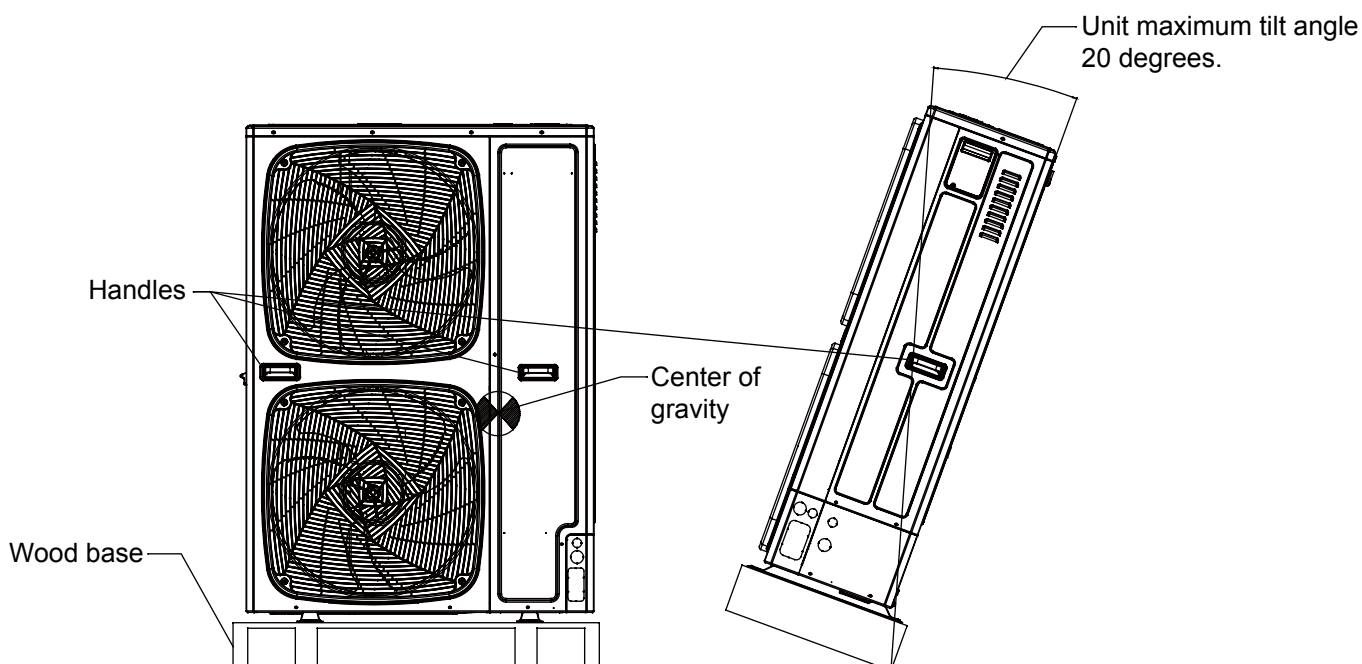
Manual handling

⚠ CAUTION

- In the installation and commissioning, the outdoor machine do not put any irrelevant material, to ensure that there is no debris inside the machine, or there may be a fire or accident.

Follow these points when moving the unit by hand:

- ① Do not destroy the wood base.
- ② In order to prevent the outdoor unit from tipping note the units center of gravity as shown in the figure.
- ③ Use two or more people to carry and move the outdoor unit.



11.3 Outdoor unit installation

In installation, please check specially the below items:

- If the connected units quantity and the total capacity is in the allowable range?
- If the refrigerant pipe length is in the limited range?
- If the pipe size is proper? And if the pipe is installed horizontally?
- If the branch pipe is installed horizontally or vertically?
- If the additional refrigerant is counted correctly and weighed by the standard balance?
- If there is refrigerant leakage?
- If all the indoor power supplies can be on/off simultaneously?
- If the power voltage is in compliance with the data marked on the rating label?
- If the address of indoors has been set?

(1) Before installation

- 1) Before installation, check if the model, power supply, pipe, wires and parts purchased respectively are correct.
- 2) Check if the indoors and outdoors can be combined as the following.

Outdoor		Indoor		Indoor capacity (1000Btu/h)		
Capacity (1000Btu/h)	Combination type	Indoor qty	Total indoor capacity (1000Btu/h)			
36	Single	6	18-46	07	total indoor capacity (1000Btu/h)	branch pipe (optional)
48	Single	8	24-62	09		
56	Single	9	27-72	12		
				18		
				24	less than 114	FQG-B335A
				32		
				36		
				42		
				48		

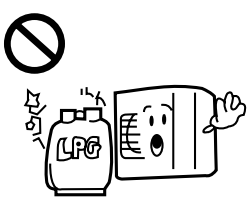
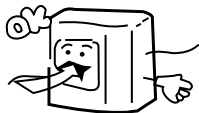
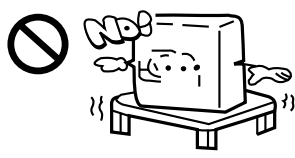
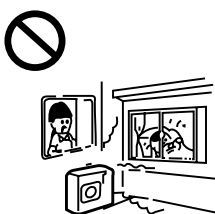
Notice:

Total capacities of indoor units being used $\leq$ 100% of rated capacities of outdoor unit.

Notice:

The branch pipe should be installed horizontally, the maximum error angle should not exceed 10 degrees.

(2) Installation place selection

Air-conditioner can't be installed in the place with inflammable gas. Or it will cause fire hazard. 	The unit should be installed at the place with good ventilation. No obstacle at the air inlet/outlet. And no strong wind blows the unit.  The installation space refers to the latter info.	The unit should be installed at the strong enough place. Or it will cause vibration and noise. 
The unit should be installed in a place where the cold/hot air or noise will not interfere with the neighbors. 	• A place where the water can drain easily. • A place where no other heat sources will affect the unit. • Consider snow depth when installing outdoor unit. • Install the anti-vibration rubber between the unit and the bracket.	• The unit should not be installed at the below places or it will cause damage. • A place where there is corrosive gas (spa area etc). A place blowing salty air (seaside etc). • A place with strong coal smoke. • A place with high humidity. • A place where there is device emitting electrical interference. • A place where voltage fluctuations occur.

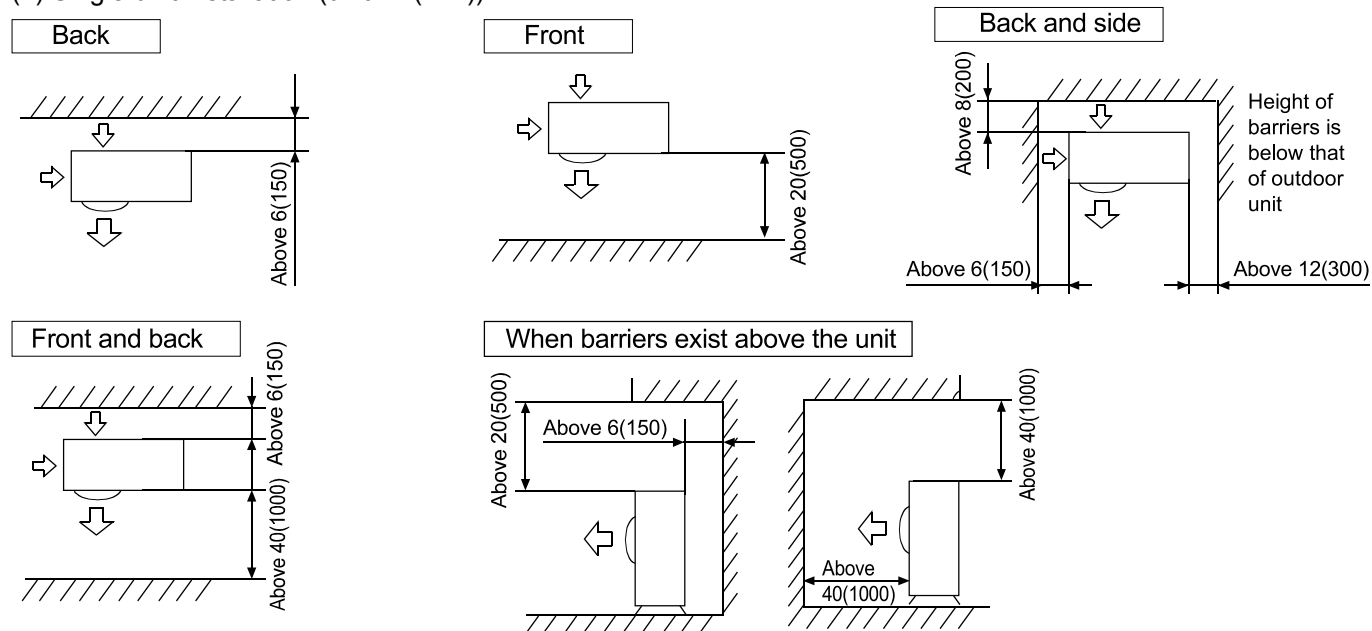
Note:

1. In snowy areas, install the unit on a bracket or under a snow-proof cover to prevent the accumulation of snow.
2. Do not install the unit at a place where flammable gas exists.
3. Install the unit in a sturdy location.
4. Install the unit in a level location.
5. When being installed in a location with strong winds, set the air outlet of the unit perpendicular to the wind direction. Also secure the unit with the bolts.
6. When opening the electric box cover for maintenance, please secure the cover with screws.

(3) Installation and maintenance space

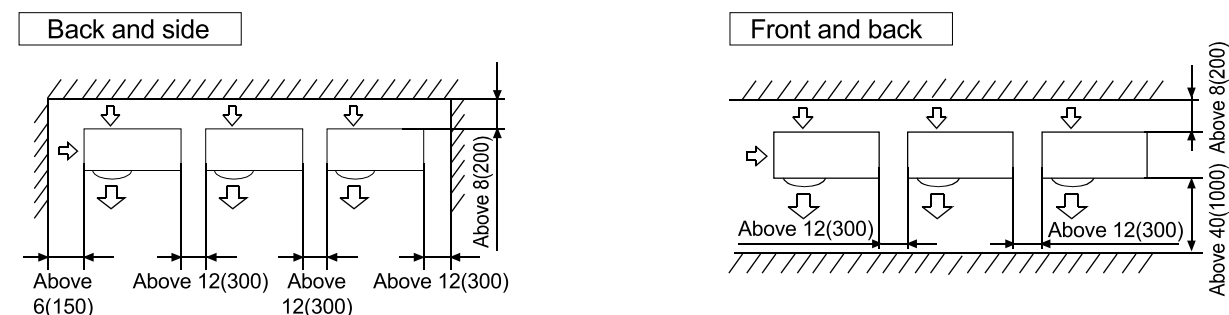
Selection of installation location of outdoor

(1) Single-unit installation (unit: in.(mm))



The top and two side surfaces must be exposed to open space, and barriers on at least one side of the front and back shall be lower than the outdoor unit.

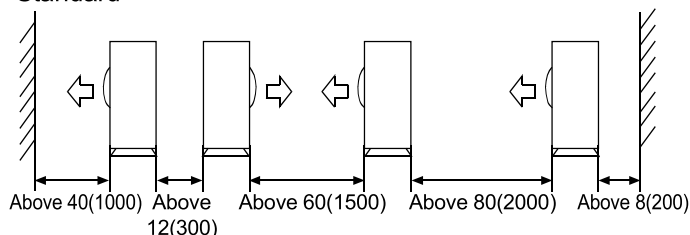
(2) Multi-unit installation (unit: in.(mm))



Height of barriers is below that of outdoor unit

(3) Multi-unit installation in front and back (unit: in.(mm))

Standard



The top and two side surfaces must be exposed to open space, and barriers on at least one side of the front and back shall be lower than the outdoor unit.

- The installation service spaces shown in the illustrations are based on an air intake temperature of 95°F(35°C)(DB) for COOL operation. In regions where the air intake temperature regularly exceeds 95°F(35°C)(DB), or if the heat load of outdoor units is expected to regularly exceed the maximum operating capacity, reserve a larger space than that indicated at the air intake side of units.
- Regarding the required air outlet space, position the units with consideration to the space required for the onsite refrigerant piping work as well. Consult your dealer if the work conditions do not match those in the drawings.

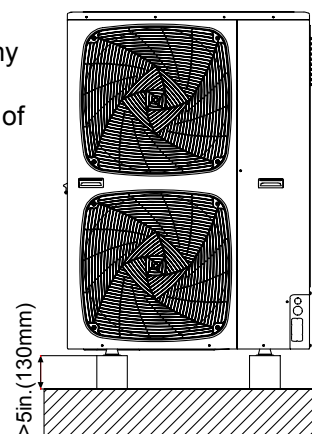
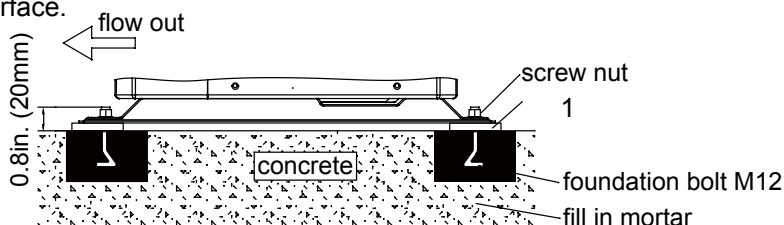
(4) Precautions on installation

NOTICE

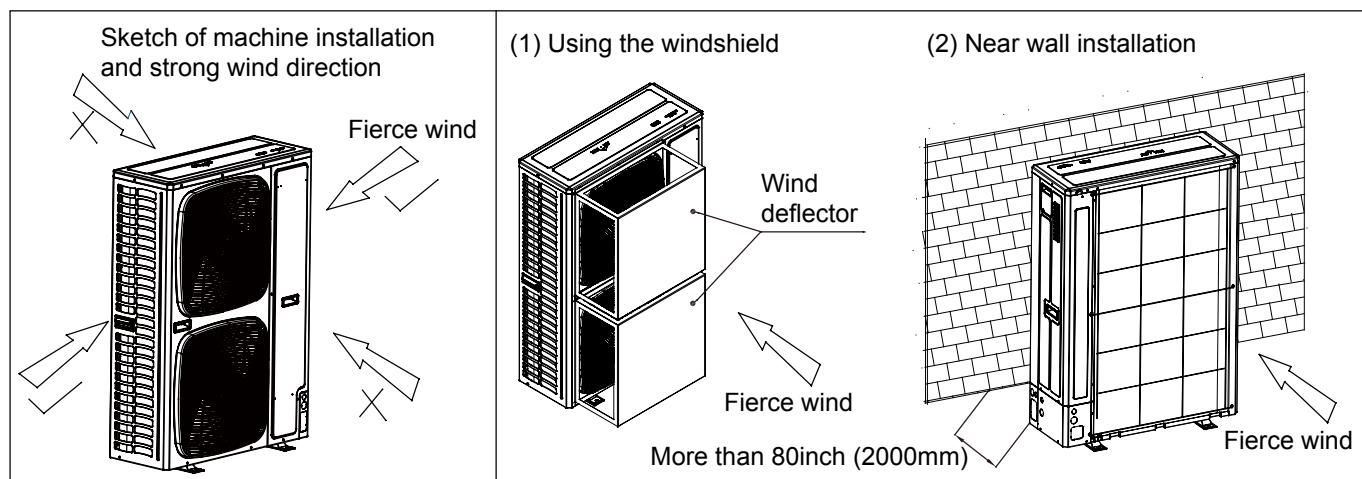
If drain holes of the outdoor unit are covered by a mounting base or by floor surface, raise the unit in order to provide a free space of more than 5in.(130mm) under the outdoor unit.

Foundation work

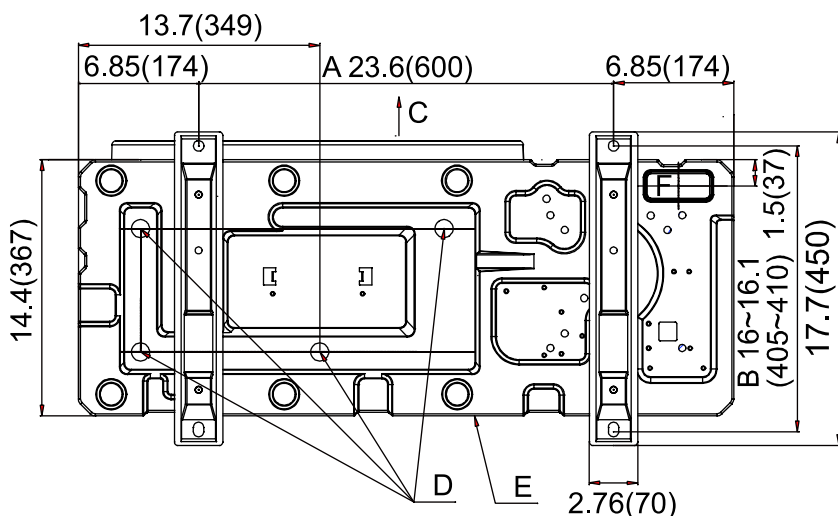
- Check the strength and level of the installation ground so that the unit will not cause any operating vibration or noise after installation.
- In accordance with the foundation drawing in the figure, fix the unit securely by means of the foundation bolts.
- It is best to screw in the foundation bolts until their length are 0.8in.(20mm) from the foundation surface.



- Fix the outdoor unit to the foundation bolts using nuts with resin washers(1) as shown in the figure.
- Avoid strong wind blowing directly to the outdoor fan and heat exchanger. If there is no need to install the outdoor machine in the open space of the building or the enclosure, the following two ways can be used to avoid the fan reversal or damage caused by strong wind blowing.



If the coating on the fastening area is stripped off, the nuts rust easily.
Dimensions (bottom view) (unit of measurement: mm)



- A leg pitch1
- B leg pitch2
- C Front grill (air outlet side)
- D Drain hole
- E Bottom frame
- F Knock-out hole (for piping line)

(5) Refrigerant pipe connection

Pipe connection method:

- To ensure correct efficiency, the pipe should be as short as possible.
- Coat refrigerant oil on the connector and the flare nut.
- When bending the pipe, the bend diameter should be as large as possible to prevent the pipe from breaking or kinking.
- When connecting the pipe, center it and thread the nut by hand.
- Then tighten it with the double spanners.
- Don't let any debris such as sand, water etc into the pipe.

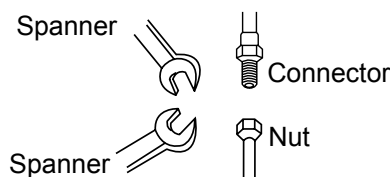
Cautions in piping installation:

- When welding the connector use hard solder, charge nitrogen into the pipe to prevent oxidation. If not the oxygen film in the pipe will clog the capillary and the expansion valve. May even cause a deadly accident.
- The refrigerant pipe should be clean. If water or any other impurities enter the pipe, charge with nitrogen to clean the pipe. The nitrogen should flow around the pressure of 72.5PSI(0.5Mpa). When charging the nitrogen, stop up the end of the pipe by hand to enhance the pressure in the pipe, then move your hand to stop up the other end of the pipe.
- The piping installation should be done while the stop valves are closed.
- Before welding the valve and the pipes, use a wet cloth to cool down the valve and the pipes.
- When the connection pipe and branch pipe need to be shortened, please use special shears. Do not use a saw.

Pipe material and specs selection

1. Please select the refrigerant pipe of the below material.
Material: the phosphoric oxidize seamless copper pipe, model: C1220T-1/2H (diameter is over 19.05); C1220T-0 (diameter is below 15.88).
2. Thickness and specs:
Confirm the pipe thickness and specs according to the pipe selection method(the unit is with R410A, if the pipe over 19.05 is 0-type, the pressure preservation will be bad, thus it must be 1/2H type and over the min. thickness).
3. The branch pipe must be from Haier.
4. When installing the stop valve, refer to the relative operation instruction.
5. The pipe installation should be in the allowable range.
6. The installation of branch pipe and gather pipe should be performed according to the relative manual.

When fastening and loosening the nut, operate with double spanners, because only one spanner cannot execute firmly.



If threading the nut as not aiming at the center, the screw thread will be damaged, further it will cause leakage.

Drain pipe disposal

- Make sure the drain works properly.
- In regions where buildups of snow can be expected, the accumulation and freezing of snow in the space between the heat exchanger and external plate may lower operating efficiency.
- After punching the knock-out hole, the application of repair-type paint on the surface around the edge sections is recommended to prevent rust.

Pipe specification:

- Pipe "a" diameter (between indoor and branch pipe) (depends on indoor pipe)
Please refer to the indoor air conditioner manual.
- Pipe "b" diameter (between branch pipes)

Total indoor capacity after the branch pipe (x1000Btu/h)	Gas pipe (in)	Liquid pipe (in)
$X < 38$	Ø5/8	Ø3/8
$38 \leq X < 80$	Ø3/4	Ø3/8

- Pipe "c" diameter (outdoor pipe diameter)

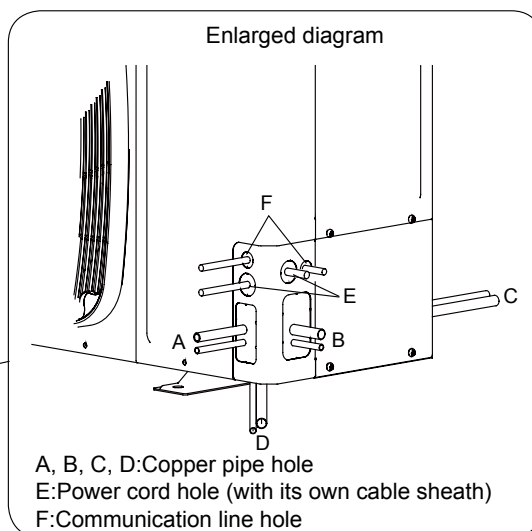
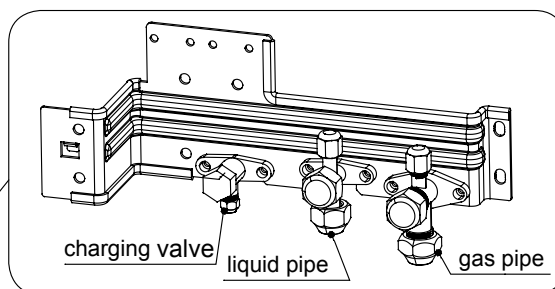
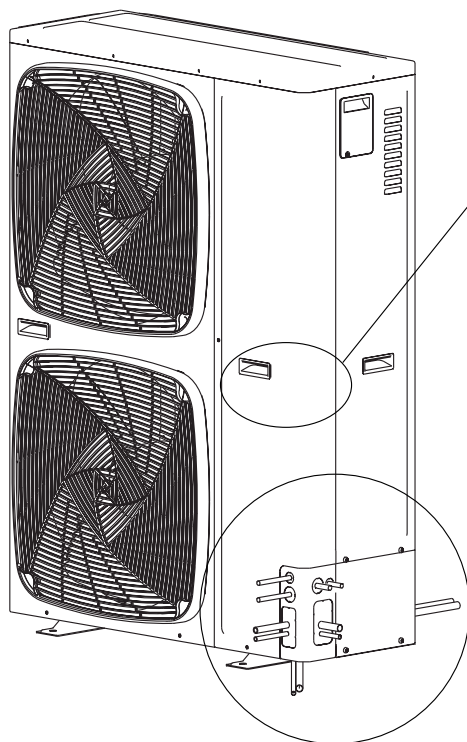
Outdoor capacity (x1000Btu/h)	Gas pipe (in)	Liquid pipe (in)
36	Ø5/8	Ø3/8
48	Ø5/8	Ø3/8
56	Ø5/8	Ø3/8

Note:

- When the distance from outdoor to the longest indoor is over 98ft, the main pipe should be the enlarged diameter.
- If pipe b diameter is larger than main pipe c, enlarge main pipe c diameter to be the same as pipe b.

Piping connection method:

Pipes can be connected in four directions

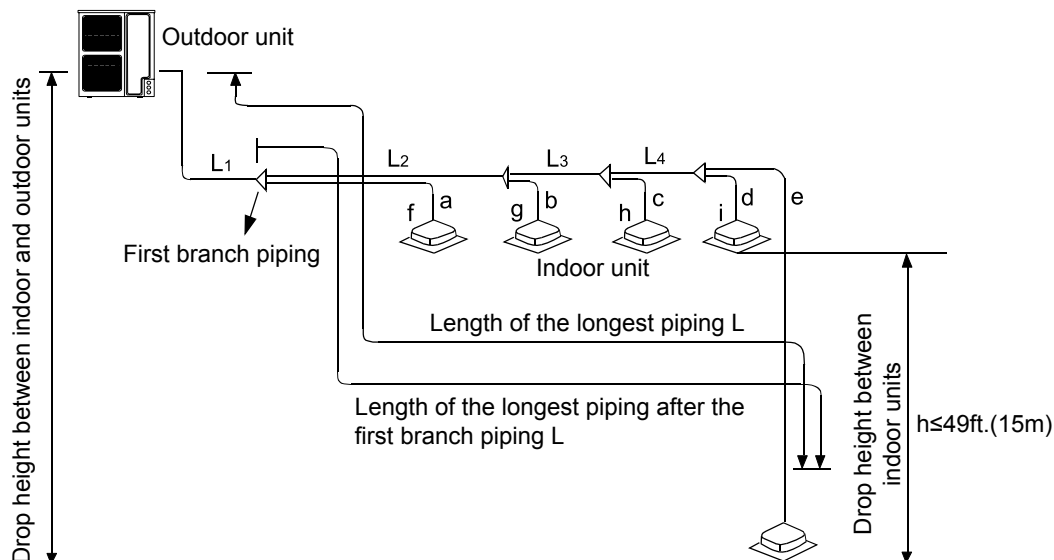


As shown in the figure, the piping can be connected from four directions. Through the front / rear hole piping on the cover hole or crack directly across the floor.

From the outdoor machine unloading piping cover with a screwdriver and hammer knock off holes along the guide wire break. Then, trim the edges of the holes, and mounted on the insulating sleeve (site) to protect the piping and wiring.

Long pipe and high drop

1. Allowable pipe length and height difference



Maximal length and drop height permissible of refrigerant piping

		Permissible value	Piping part
Piping length	Total length of piping (actual length)	492ft.(150m)	$L1+L2+L3+L4+a+b+c+d+e$
	Longest piping L Actual length	230ft.(70m)	$L1+L2+L3+L4+e$
	Piping length of indoor unit which is furthest to the first branch piping L (*)	131ft.(40m)	$L2+L3+L4+e$
Drop height	Drop height between indoor and outdoor unit H Up outdoor	98ft.(30m)	—
	Under outdoor	66ft.(20m)	—
	Drop height between indoor units h	49ft.(15m)	—

Unit pipe spec and connection method (unit: in.(mm))

A. Outdoor unit

Model	Gas pipe side		Liquid pipe side	
	Diameter	Connecting method	Diameter	Connecting method
MVHP036MV2AA	Ø5/8"15.88	Flared joint	Ø3/8"9.52	Flared joint
MVHP048MV2AA	Ø5/8"15.88		Ø3/8"9.52	
MVHP056MV2AA	Ø5/8"15.88		Ø3/8"9.52	

B. Indoor unit

Please refer to the indoor air conditioner manul.

Connecting method: Flared joint

C. Pipe spec and the torque

Diameter	Thickness	Torque
Ø1/4(6.35)	3/95"(0.8)	126~152lb.in(14.2~17.2N.m)
Ø3/8"(9.52)	3/95"(0.8)	289~353lb.in(32.7~39.9N.m)
Ø1/2"(12.7)	1/25"(1.0)	438~534lb.in(49.5~60.3N.m)
Ø5/8"(15.88)	1/25"(1.0)	547~667lb.in(61.8~75.4N.m)

Branch pipe

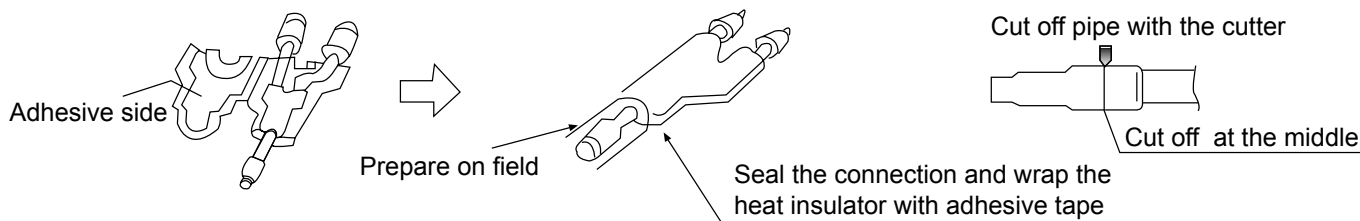
Outdoor unit type

Branch pipe selection:

total indoor capacity(1000Btu)	Model (optional)
less than 114	FQG-B335A

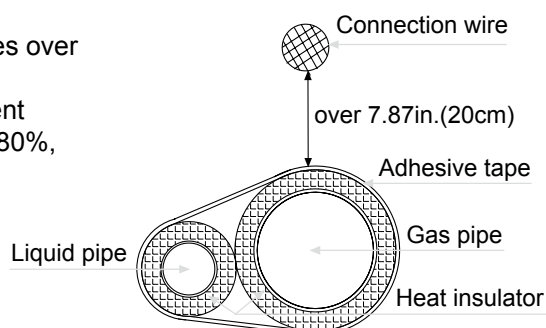
Note:

1. When connecting the pipe to the outdoor unit, please pay attention to the outdoor pipe dimension.
2. When changing the diameter between pipes and between the units, please change on the branch pipe side.
3. Be sure to blow nitrogen when welding. If not, oxides will be produced and cause heavy damage. Take precautions to prevent water and dust from getting into the pipe.



Insulation:

- Gas pipe and liquid pipe should be insulated separately.
- The insulation material for gas pipe should be rated for temperatures over 248°F (120°C). The liquid pipe should be for over 158°F (70°C).
- The insulation should be over 0.39in.(10mm) thick, when the ambient temp. is 86°F (30°C) When the relative humidity is over Liquid pipe 80%, the insulation thickness should be over 0.59in. (15mm).
- The material should be snug against the pipe without a gap, then be wrapped with adhesive tape. The connection wire can not be wrapped with the insulation material and should be at least 7.87in.(20cm) from the insulation.



Secure refrigerant piping

- During operation, the pipe will vibrate, expand or shrink. If not being secured, the refrigerant will focus on one part and cause the pipe to break.
- To prevent stressing the pipe, secure the pipe every 6.56-9.84ft.(2-3m).

Pipe installation

When doing the piping connection, please do the following:

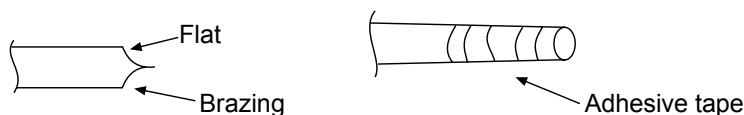
- Be careful not to damage any parts or pipes while connecting to the unit.
- Close the valves fully when connecting the pipes
- Protect the pipe from getting water or other impurities in them (welding after being laid down, or being sealed with adhesive tape).
- Use large diameter bends when possible(over 4 times of the pipe diameter).
- The connection between outdoor liquid pipe and the distributing pipe is flared type. Please flare the pipe with a tool used with R410A after installing the flare nut. If the pipe length has been adjusted with the copper pipe gauge, you can use the original tool to flare the pipe.
- The oil is ester oil, not the mineral oil, since the unit uses R410A.
- When connecting the pipe, fasten the pipes using a spanner. The torque refers to the former info.

Expanding pipe: A(in.(mm))		Projecting length of pipe to be expanded: B(mm)		
	Pipe outer diameter	A	When it is hard pipe	
		0 -0.4	Special tool for R410A	The former tool
	Ø1/4(6.35)	0.36(9.1)	0-1/51" (0-0.5)	1/25"-1/17" (1.0-1.5)
	Ø3/8"(9.52)	0.52(13.2)		
	Ø1/2"(12.7)	0.65(16.6)		
	Ø5/8"(15.88)	0.78(19.7)		

- The outdoor gas pipe and the refrigerant distributing pipe, as well the refrigerant distributing pipe and the branch pipe should be welded with hard solder.

- Weld the pipe while charging with nitrogen or it will cause impurities (including a film of oxidation) to clog the capillary and the expansion valve which may lead to deadly accidents.

- Protect the pipe ends from getting water and other impurities into the pipes (from welding, filed or being sealed with adhesive tape).

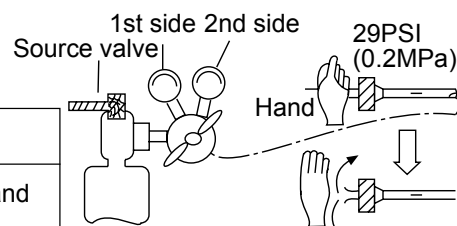
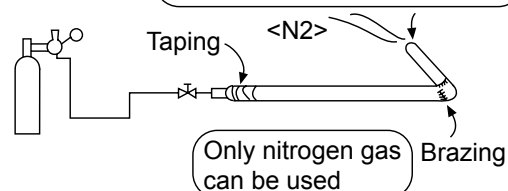


- The refrigerant pipe should be clean. The nitrogen should flow at pressure around 29PSI(0.2Mpa) and when charging the nitrogen, stop up the end of the pipe by hand to increase the pressure in the pipe, then move your hand and stop up the other end.

- Close the valves fully when connecting the pipes.

- When welding the valve and pipes, use a wet cloth to cool down the valve and pipes.

Seal the pipe end with adhesive tape or the stopper to increase the resistance, fill up the pipe with nitrogen.



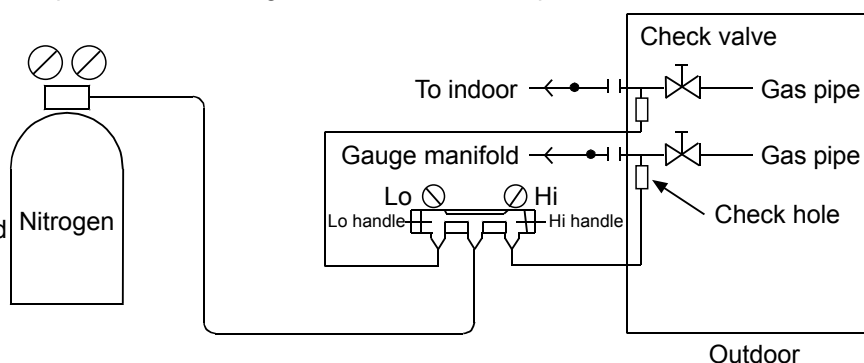
(6) Leakage test

- The outdoor unit has been tested for leakages from the factory. After connecting the distributing pipe, test for leakages from the outdoor check valve and the indoor pipe. While testing, the valves should be close.
- Refer to the below figure to charge nitrogen into the unit to test. Never use chlorine, oxygen, flammable gas for the leakage test. Apply pressure on both the gas pipe and the liquid pipe.
- Apply the pressure step by step to the target pressure.
 - Pressurize to 72.5PSI(0.5MPa) for more than 5 minutes, check if pressure goes down.
 - Pressurize to 217.5PSI(1.5MPa) for more than 5 minutes, check if pressure goes down.
 - Pressurize to the target pressure 580PSI(4.0MPa), record the temp. and the pressure.
 - Leave it at 4.0MPa for 1 day or more, if the pressure does not go down, the test is complete.

Note that when the temp. changes by 1degree, pressure will change 1.45PSI(0.01MPa). Correct the pressure as needed.

- After performing a~d, if the pressure goes down, there is leakage. Check any brazed and flared connections using soapy water. Fix the leakage and perform test again.

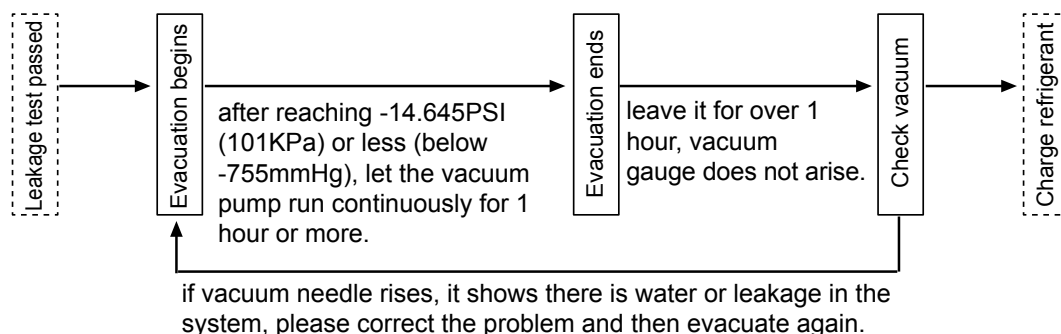
- After the leakage test evacuate the system.



(7) Evacuation

Evacuate at the liquid service valve and both sides of the gas service valve.

Operation procedure:



The unit is charged with R410A refrigerant. The details below should be paid attention to:

- To prevent different oils from getting into the pipe, please use the specific tool for R410A, especially for manifold gauge and charging hose.
- To prevent the compressor oil from getting into the refrigerant cycle, please use the anti-counter-flow adapter.

(8) Check valve operation

- Remove the valve cap.
- Turn the liquid stop valve and the gas stop valve with hexangular spanner until it stops. If the valve is opened with too much force the valve will be damaged.
- Tighten the valve cap.

Tighten as per the torque table below:

Tighten torque lb.in(N.m)			
	Shaft (valve body)	Cap (cover)	T-shape nut (check joint)
For gas pipe	less than 61.9(7)	less than 265.2(30)	114.9(13)
For liquid pipe	69.4(7.85) (MAX138.8(15.7))	260(29.4)(MAX346.5(39.2))	77.8(8.8) (MAX130(14.7))

(9) Additional refrigerant charging

Add additional refrigerant under the liquid state with the gauge.

If the additional refrigerant can not all be added, when the outdoor stops, charge it using trial mode.

If the unit runs for a long period undercharged, the compressor will eventually fail.(charging must be finished within 30 minutes especially when the unit is running while charging).

A. Charge amounts from the factory exclude the refrigerant in the pipes.

B. The unit is charged with a standard amount of refrigerant (distributing pipe length is 0).

Additional charge amount=actual length of liquid pipe x additional amount per meter liquid pipe

Additional charge amount=L1×0.113+L2×0.073+L3×0.037+L4×0.015

L1: total length of 5/8"(15.88) liquid pipe L2: total length of 1/2"(12.7) liquid pipe

L3: total length of 3/8"(9.52) liquid pipe L4: total length of 1/4"(6.35) liquid pipe

C. Refrigerant charging and additional charge

Additional refrigerant charging per lb (lb/ft.)						Charge when out of factory
Ø5/8"	Ø1/2"	Ø15.88	Ø3/8"	Ø1/4"	Ø6.35	
0.113	0.073	0.037	0.11	0.015	0.022	Refer to label

Note:

- To prevent adding different oils into the pipe, please only use a gauge manifold and charging hose for R410A.
- Tank color for R410A is pink.
- Do not use a charging cylinder because R410A will change when transferring to the cylinder.
- When charging refrigerant, the refrigerant should be taken out from the tank as liquid state. Mark the refrigerant amount added that was calculated by the pipe length on the unit label.

Secure refrigerant piping

- During operation, the pipe will vibrate, expand or shrink. If not being secured, the refrigerant will focus on one part and cause the pipe to break.
- To prevent stressing the pipe, secure the pipe every 6.56-9.84ft.(2-3m).

GWP: 2088

The product contains fluorinated greenhouse gases and its functioning relies upon such gases.

(10) Refrigerant recovery

- Start: press Start and Stop keys on the main control board at the same time for 5 seconds. The unit will start automatic recovery mode. The compressor starts, the LD2 and LD3 which are on display board will flashing display C0, runs for around 3 minutes.
- Operation: when the LD2 and LD3 flashing display C1, manually shut off the liquid pipe valve
- Off valve: when the system Ps < 1kg, the LD2 and LD3 display C2, quickly close the shut-off valve, after 5 seconds the system will shut down.
- End: manually power down the system to reset the program.
- Note: in heating, standby or while shutdown: the outdoor unit is forced into refrigeration operation.

11.4 The performance

Confirm the type of outdoor machine and the number of inside machine

- After installation, please confirm that the outdoor computer board BM1_1 is in the 0 state and then check the digital display. If the number of indoor units, the outdoor unit type and the power supply voltage is correct, change the BM1_1 dial to the 1 state. If it is not correct, please check the dial machine communication code and models, do not force the BM1_1 dial to the 1 state, it may cause system failure.

5-minute delay function

- If starting up the unit after being powered off, the compressor will run about 5 minutes later against being damaged.

Cooling/heating operation

- Indoor units can be controlled individually, but cannot run in cool and heat mode at the same time. If cool mode and the heat mode set at the same time, the unit set last will be set to standby, and the unit set first will run normally. If the A/C manager sets the unit to allow only cooling or only heating mode, the unit can not run at the other modes.

Heating mode characteristic

- While operating, if the outdoor temp. rises, the indoor fan motor will run at a low speed or stop.

Defrosting in heating mode

- In heating mode, defrosting will affect the heating efficiency. The unit will defrost for about 2~10 minutes automatically. During defrost, any frost will melt and condensate will flow from outdoor unit. While defrosting vapor will appear at the outdoor unit, which is normal. The indoor motor will run at low speed or stop, and the outdoor motor will stop.

The unit operation condition

- Please only operate the unit under the specified temperature range. If operating outside of the range, protection modes will cause the unit to stop operating.
- The relative humidity should be lower than 80%. If the unit runs while the humidity is over 80% for a long period, the dew on the unit will drop down and vapor will be blown from air outlet.

Protection device (such as high pressure switch)

- The unit has a high pressure switch which can stop system operation to protect the unit from damage. When the high pressure switch activates, cooling/heating mode will stop but the running LED on the wired controller will still be lit. The wired controller will also display an error code. The high pressure switch can be triggered by the following:
In cooling mode, air outlet and air inlet of the outdoor unit are clogged.
In heating mode, the indoor filter is full of dust; indoor air outlet is clogged.
When the protection mode goes off, please turn off the power and re-start the unit after eliminating the problem.

When power failure

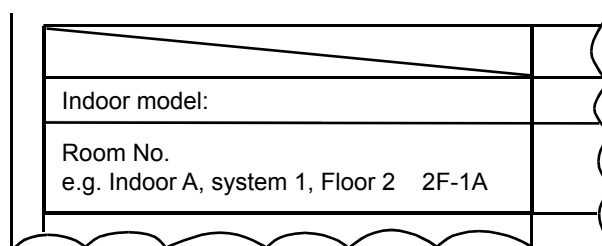
- When there is a power failure while the unit is running, all the operations will stop.
- After being powered again, if the re-start up function is enabled, the unit can resume to the last state before losing power; if the re-start up function is disabled, the unit needs to be switched on again manually.
- When abnormal operation occurs while running because of the storms, radio interference, etc, please turn off the power source. After eliminating the interference, press the "ON/OFF" button to start up the unit again.

Heating capacity

- A heat pump in heating mode absorbs the outdoor heat energy and releases it indoor. As the outdoor temperature goes down, the heating capacity will decrease.

System marks

- When multiple MRV-S systems are installed, to identify the matching outdoor and indoor, please label on the outdoor electric control box cover to indicate the connected indoor unit as shown in the below figure:



Trial operation

- Before trial operation:
Before being powered on, measure the resistance between the power terminal block (live wire and neutral wire) and the ground point with a multimeter. Check if it is over 1M Ω . If it is not, the unit will not operate.
To protect the compressor, power the outdoor unit for at least 12 hours before running the unit. If the crankcase heater is not powered on for 6 hours, the compressor will not work.
Confirm the bottom of the compressor is getting hot.
Except for when there is only one master unit connected (no slave unit), for all other conditions, fully open the outdoor service valves (gas side, liquid side). If the unit is operated without opening the valves, compressor failure will occur.
Confirm all indoor units are powered. If not, water leakage will occur.
Measure the system pressure while the unit is operating.
- Trial operation
During trial operation, refer to the information in the performance section. If the unit can not start up at the current room temperature, enter trial operation at the outdoor unit.

12. Outdoor Wiring Installation

⚠ WARNING

- Turn off the main power switch of the indoor and outdoor unit for 1 minute or more before wiring or servicing.
- To prevent damaging the wires and electrical components, avoid installing around animals. It may lead to the occurrence of fire.
- To prevent damaging the wires, avoid contact with refrigerant pipes, steel edges and electrical components. It may lead to the occurrence of fire.

⚠ CAUTION

- Secure the power cord with a wire tie in the unit.

Note:

when the outdoor unit is not using a circuit, it should be sealed with a rubber blocker.

Inspect

- Confirm that the electrical equipment used on the installation site (main power switch, circuit breaker, wire, conduit and wiring terminals, etc.) have been selected according to current data, to ensure that the device is in line with national standards.
- Confirm that the power supply voltage is within $\pm 10\%$ of the rated voltage and that the unit is properly grounded to prevent damage to the electrical components.
- Check for correct voltage. Otherwise, the compressor will not start if the voltage is too low.
- Measure the resistance between the ground and the electrical terminals and ensure that there is more than $1M\Omega$. Otherwise, the system will not start. Fix the issue prior to operating the system.

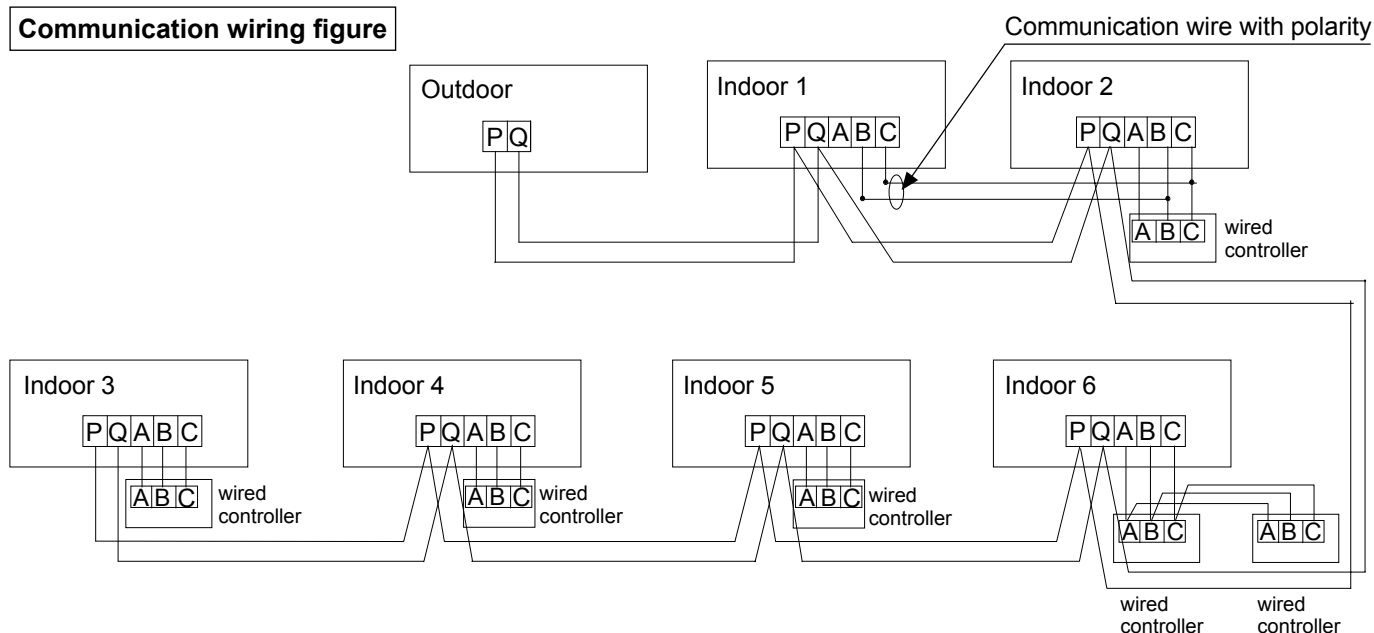
Connection

- Connect the power cord to the terminal of the indoor unit and the outdoor electrical box, connect the ground wire to the grounding bolt of the outdoor unit and the indoor electrical box.
- Connect the outdoor and indoor communication wire to the 1 and 2 terminals on the terminal block. If the power cord is connected to the communication terminals, the circuit board will be damaged.
- Use shielded twisted pair wire.
- Do not screw to the front of the cover.
- The power wire must be made of copper wire, and the power supply must conform with IEC 60245 requirements. If the power cord length exceeds 20m
- use a larger gauge wire.
- Use a round terminal connection on the wire with an insulating protective sleeve.
- Secure the wire away from any sharp edges and materials that may damage the wire to prevent damage and causing a fire or damage.

Signal wiring:

The outdoor unit and all the indoor units are connected in parallel through with shielded two wire cord.

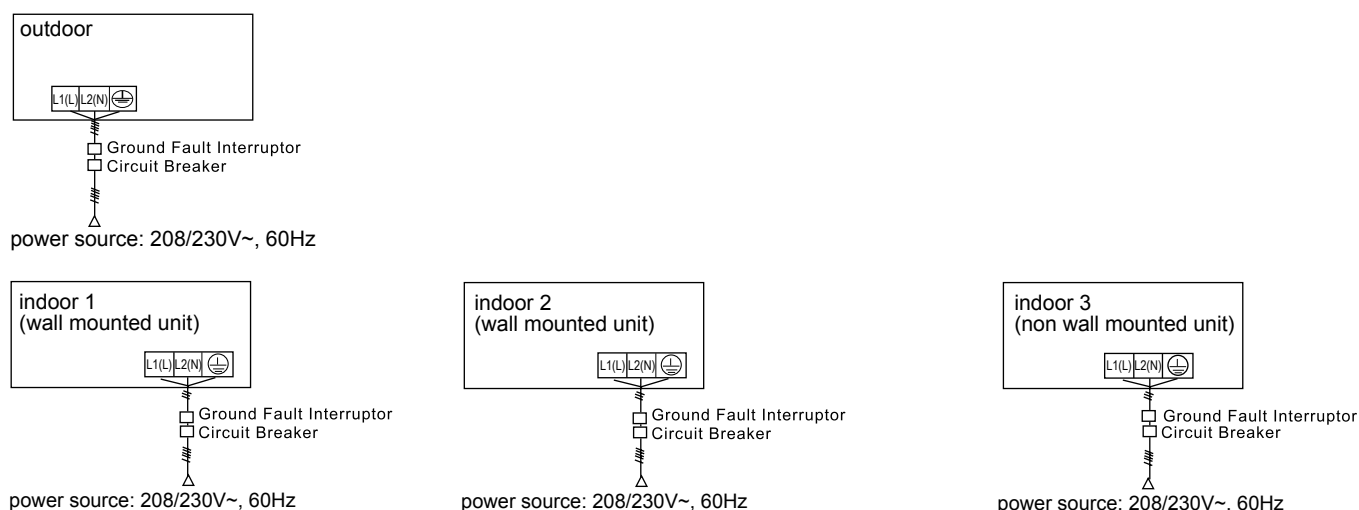
Communication wiring figure



The outdoor and all indoor units are connected in parallel through 2 non-polar wires. Three wiring options between the wired controller and indoor unit:

- A. 1 to multiple (group control): one wired controller controls 2~16 indoors, as shown in the above figure, indoor 1~indoor 2: indoor 2 is wired as control master unit, the others are wired control as slave units. The wired controller and the master indoor (directly connected to wired controller) is connected by 3 polar wires; the other indoors and the master indoors are connected by 2 polar wires.
- B. 1 to 1 (one wired controller controls one indoor): as shown in above figure, indoor 3~ indoor 4, indoor and wired controller are connected by 3 polar wires.
- C. 2 to 1 (two wired controller controls one indoor): as shown in above figure, indoor 6. Either of wired controllers can be set as master wired controller, and the other is slave wired controller. Master/slave wired controller, and master/indoor are connected by 3 polar wires. When indoor is controlled by remote controller, refer to the "wired control master unit/wired control slave unit/remote control unit table". A, B, C on signal terminal block need not wires and not connect the wired controller

Power wiring figure



Indoor and outdoor use their individual power source. All indoors use one power source. Must install the leakage breaker and the over current breaker, or electric shock will occur.

Outdoor power source and power cable

Item Model		Power source	Circuit breaker (A)	Ground wire
				Screw
Individual power	MVHP036MV2AA	208/230V~, 60Hz	30	3/16" (M5)
	MVHP048MV2AA		30	
	MVHP056MV2AA		40	

- Power cable must be fixed firmly.
- To avoid electrical shock, make sure to disconnect the power supply 1 minute or more before servicing the electrical parts. Even after 1 minute, always measure the voltage at the terminals of main circuit capacitors or electrical parts and before touching, make sure that those voltages are 50VDC or less.
- To persons in charge of electrical wiring work: Do not operate the unit until the refrigerant piping is complete. (Running it before the piping is ready will break the compressor)
- Each outdoor must be earthed well.
- When power cable exceeds the range, thicken it appropriately.
- The appliance shall be installed in accordance with national wiring regulations.
- All wiring must be performed by an authorized electrician.
- Be sure to install an earth leakage circuit breaker in accordance with applicable legislation. Failure to do so may cause electrical shock.

Indoor power source and communication wiring

⚠ WARNING

- Power lines must be copper wire.
- All indoor and outdoor units must be grounded properly. The ground wire must not be grounded using a gas pipe, water pipe, lightning rod or telephone wire. If the grounding is correct it may cause electric shock or fire.
- Power supply must be installed with an earth leakage circuit breaker, otherwise it may cause electrical shock or fire.
- The operation and maintenance of the electrical equipment shall be carried out with the power supply off.
- The indoor and outdoor units each get their own independent power supply.
- The communication line and the power line must be separate.

Item Indoor total current (A)	Power cable section	Wire length ft.(m)	Rated current of overcurrent breaker (A)	Communication wire section	
				Outdoor/indoor	Indoor/indoor
<10	14AWG	75.5(23)	20	2-core × (18-14AWG) shielded wire	

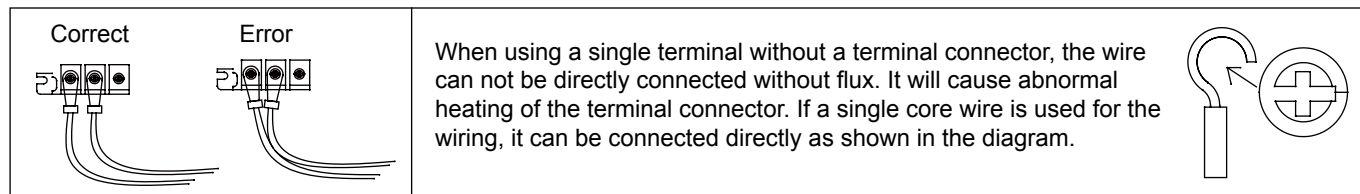
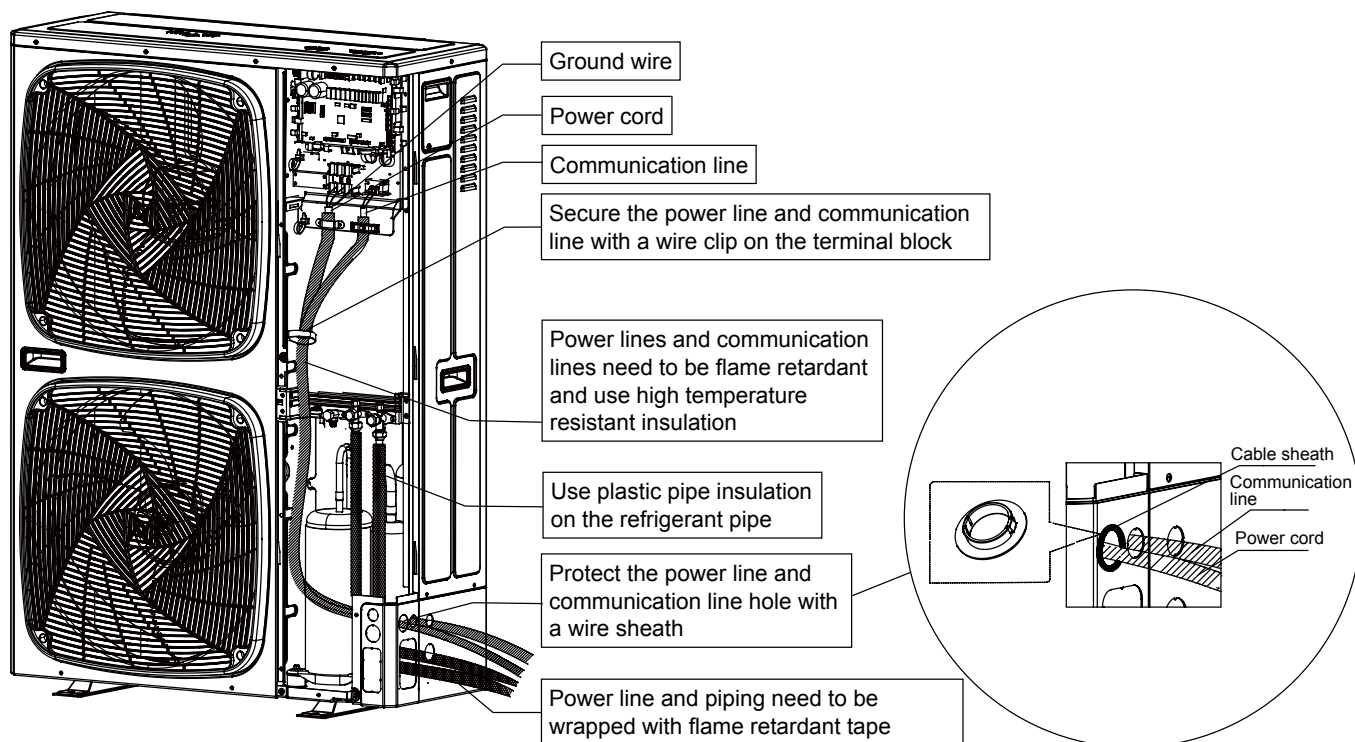
- Power cable and communication wire must be firmly connected.
- Each indoor unit must be properly grounded.
- When power cable exceeds the range, use a larger gauge as required.
- The Shielded layer of the communication wires must be connected together and be grounded at at each point.
- Communication wire total length cannot exceed 1000m.

Communication wire for wired controller

Wire length (ft.(m))	Wire spec	Wire length(m)	Wire spec
<328(100)	22AWG ×(3-core) shielded wire	≥984(300)and <1312(400)	16AWG ×(3-core) shielded wire
≥328(100) and <656(200)	20AWG×(3-core) shielded wire	≥1312(400) and <1968(600)	14AWG ×(3-core) shielded wire
≥656(200) and <984(300)	18AWG ×(3-core) shielded wire		

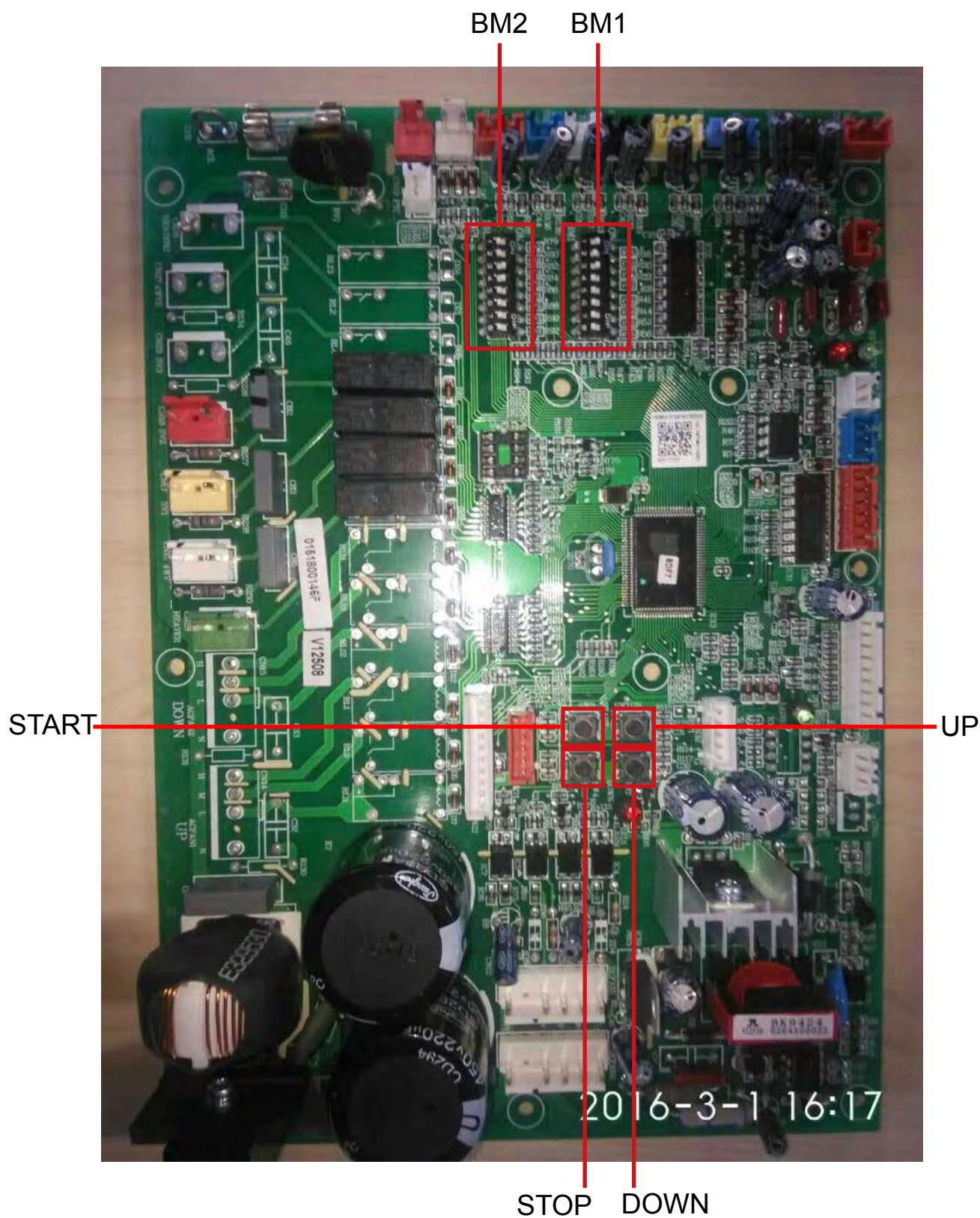
- Shielded layer of communication wire must be grounded at one end.
- The total length cannot exceed 600m.

Outdoor unit electrical wiring diagram

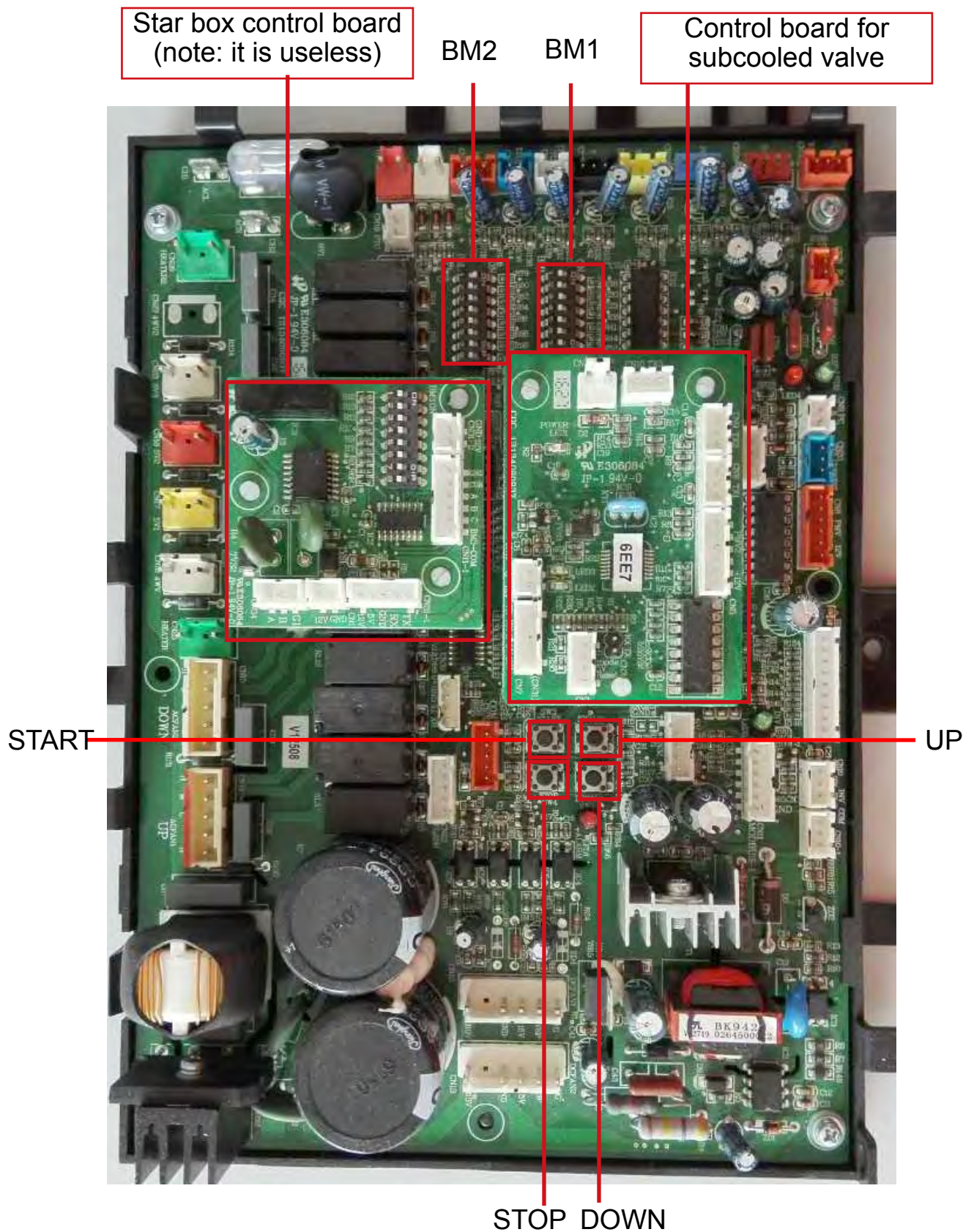


13. Outdoor Unit PCB

PCB: 0151800146JF (used for MVHP036MV2AA)



PCB: 0151800146J (used for MVHP048MV2AA and MVHP056MV2AA)



14. Dip Switch Setting

PCB 0151800146JF and 0151800146J

(1) BM1 introduction

BM1	Definition	Introduction	
BM1_1	Indoor searching after startup	OFF	Begin to search indoor
		ON	Stop searching indoor and lock the quantity
BM1_2	Celsius / Fahrenheit area selection	OFF	Celsius area
		ON	Fahrenheit area
BM1_3	Static pressure selection	OFF	0.12 inch of water column
		ON	0 (default)
BM1_4	Energy saving or refrigeration effect priority	OFF	Energy saving priority
		ON	Refrigeration effect priority (default)
BM1_5	Indoor simultaneous control	OFF	Invalid (default)
		ON	Valid
BM1_6	Defrosting condition selection	OFF	Not easy to frost area (default)
		ON	Easy to frost area
BM1_7	Defrosting level	OFF	Ordinary (default)
		ON	Strengthen (increase the defrosting time)
BM1_8	Quiet running function	OFF	Quiet running function is unavailable (default)
		ON	Quiet running function is available

Note:

Either the indoor unit quantity unlocked or the locked quantity is different with actual connecting number, the unit cannot running.

BM2	Definition	Introduction			
BM2-1	Cooling only or heat pump selection	OFF	Heat pump (default)		
		ON	Cooling only		
BM2_2	Outdoor horse power selection	OFF	ON	ON	MVHP036MV2AA
BM2_3		ON	OFF	ON	MVHP048MV2AA
BM2_4		ON	ON	OFF	MVHP056MV2AA
BM2-5	Power supply selection	OFF	Single phase (default)		
		ON	3-phase		
BM2-6	Communication protocol selection	OFF	New communication protocol (default)		
		ON	Old communication protocol		
BM2-7 BM2-8	Start mode selection	BM2-7	BM2-8	Start mode selection	
		OFF	OFF	First on indoor unit priority	
		OFF	ON	Last on indoor unit priority	
		ON	OFF	Cooling priority, any one indoor unit runs in cooling mode, the outdoor unit will run in cooling mode, the indoor units running in heating mode will stop	
		ON	ON	Heating priority, any one indoor unit runs in heating mode, the outdoor unit will run in heating mode, the indoor units running in cooling mode will stop.	

(2) Bridge instruction

CJ1:

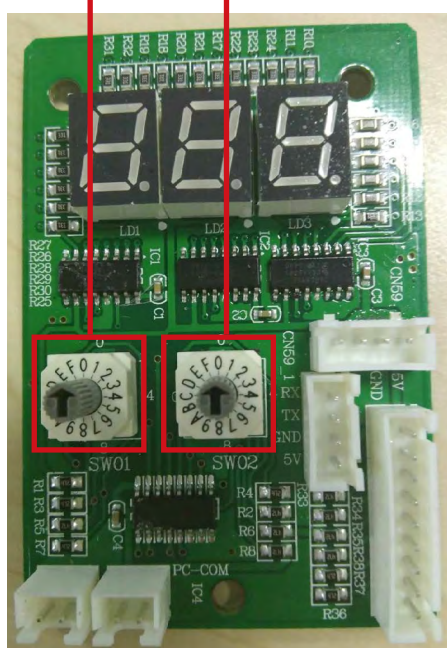
Short it before power ON-- PCB check its function (used for factory production).

Short it after power ON-- time short function, 60 seconds become to 1 second.

CJ2: Reserved

15. Monitor Tools

SW01 SW02



Main function instruction:

By setting the rotary switch, the digital tube will display the outdoor and indoor unit parameters (the outdoor current, discharge temp., suction temp., defrosting temp., coil temp. and outdoor ambient temp.; indoor unit coil temp. and valve open angle and so on), the data is inform of decimal integer. During the process of installation, adjuston and maintenance, the whole system's operating parameters can be tested conveniently which can help to check and solve problems quickly and correctly.

SW01	SW02	Seven segment digital tube display content
0	0	Outdoor machine fault code The machine units are not locked and no fault, in turn cycle "in the machine number, machine capacity, power supply type". (1) The connection machine number: display "U" + machine units. Such as "U08" means that the machine is connected to the 8 internal machine . (2) Outdoor mechanism cold capacity: such as 48 machine display 48(uint:KBtu/h). (3) Power supply type: 1PH represents a single phase, and the 3PH represents a three-phase).
	1	Outdoor operation mode (stop: OFF, refrigeration: CCC, heating: HHH)
	2	Program version
	3	E2 Edition
	4	Compressor target frequency.(according to Start 5 seconds, into the manual frequency control, Up/Down adjustment frequency, according to Stop for 5 seconds, exit the manual frequency control. Manual control, the frequency of flashing display, non manual control, the frequency of normal display.
	5	Actual frequency of compressor
	6	In machine units
	7	The machine units
	8	Outdoor machine capacity (unit:KBtu/h)
	9	External fan 1 (FAN1) speed (unit: RPM, maximum display of 999)
	A	External fan 2 (FAN2) speed (unit: RPM, maximum display of 999)
	B	The average Tc2 temperature of the internal machine (unit: Fahrenheit)
	C	The actual average Tc2 temperature of the unit (unit: Fahrenheit)
	D	Superheat of heating target (unit: Fahrenheit)
	E	Special running state of the mach: First bit: power supply type (0- single phase 1- three-phase); Second place: Mute (0- off, 1- open);Third place: the air to run (0- off, 1- open) (101: three phase power supply, mute off, open the gas)
	F	Forced fan running, no mandatory display "FAN" (according to Start 5 seconds into the fan manual control, Up/ Down adjust the fan gear, according to the Stop 5 seconds, exit fan manual control), mandatory display "0-15", this function is not affected by external fault influence

SW01	SW02	Seven segment digital tube display content
1	0	Td: exhaust gas sensor (unit: Fahrenheit)
	1	Ta: ring temperature sensor (unit: Fahrenheit)
	2	Ts: suction sensor (unit: Fahrenheit)
	3	Te: defrost sensor (unit: Fahrenheit)
	5	Pd: High pressure pressure (unit: psi)
	6	Ps: Low pressure (unit: psi)
	7	Outdoor machine PMV opening (unit: pls, maximum display 999)
	8	Valve state First bit: 4WV (0- closed, 1- open); Second bit: SV1 (0- closed, 1- open); the third bit: SV2 (0- off, 1- open) (example 101 indicates that the 4WV is turned on, the SV1 is turned off, the SV2 is turned on)
	9	First:high voltage switch HPS (0-disconnect,1-closed); second:low voltage switch LPS (0-disconnect,1-closed);third:heating belt(0-closed,1-open)(101:HPS LPS closed off, open the heating zone)
	A	Tfin: module temperature (unit: Fahrenheit)
	B	Press current (unit: A, 1 decimal)
	D	Module DC voltage (unit: V)
	E	CT current (unit: A, 1 decimal) Forced refrigeration alternately display "CCC" (press Start 5 seconds to enter, all internal cooling operation, according to Stop 5 seconds exit).
	F	Forced heat alternating display "HHH" (according to Start 5 seconds to enter, all the internal mechanism of hot running, press Stop to exit for 5 seconds).

SW01	SW02	Seven segment digital tube display content
2	0-F	Communication shows the program version (1 decimal), or "---"
3	0-F	The machine type: (0:common indoor machine; 1:wall hanging; 2:Fresh air machine ; 3:heat exchanger, 4/5/6/7:common indoor machine).
4	0-F	If there is a failure to show the internal fault code, otherwise, "---"
5	0-F	Indoor machine capability (unit:KBtu/h)
6	0-F	First and the second: indoor machine current mode of operation, (00: off, 01: air supply, 02: cooling, 03: dehumidification, 04: heating) , the third: external machine capacity requirements (0: No, 1: Yes)
7	0-F	Indoor machine PMV opening (unit: pls, maximum display 999)
8	0-F	Indoor unit of air conditioner: First: float switch (0- disconnect, 1- closed) Second place: water pump (0- closed, 1- open) Third place: electric heating (0- closed, 1- open) (110 float switch is closed, the water pump is opened, the electric heating off)
9	0-F	Indoor machine TA: ambient temperature value (unit: Fahrenheit)
A	0-F	Indoor TC1: air temperature value (unit: Fahrenheit)
B	0-F	Indoor machine TC2: liquid pipe temperature (unit: Fahrenheit)
C	0-F	Indoor machine motor: room running wind speed (0- stop, 1- low wind, 2- stroke, 3- high wind)

Supercooling valve plate module parameter display

SW01	SW02	Seven segment digital tube display content
D	0	Over cooling valve plate failure code (cold plate module sent)
	1	Super cooled valve plate program version (1 decimal)
	2	Target opening of the expansion valve of the supercooling valve plate(unit: pls, max: 999)
	3	The current opening of the expansion valve of the cold valve plate (unit: pls, max: 999)
	4	Tc1 temperature of supercooling valve plate (unit: Fahrenheit)
	5	Tc2 temperature of supercooling valve plate (unit: Fahrenheit)
	6	Set aside (display "---")
	7	Set aside (display "---")
	8	Set aside (display "---")
	9	Set aside (display "---")

16. Outdoor Unit Control

1. Compressor startup control

On startup, inverter compressor will keep for 3 min at 45rps (when $T_a < 43^\circ\text{C}$) or 3 min at 40rps (when $T_a \geq 43^\circ\text{C}$). in cooling mode, meet running 3min and $T_d \geq 85^\circ\text{C}$ (or max. running time is 5min), quite the startup control; in heating mode, meet running 3min and $T_s - T_c \geq 5^\circ\text{C}$ (or T_c or $T_s < -18^\circ\text{C}$, or max. running time is 5min), quite the startup control; During startup, the high pressure, high exhaust protection and current protection is priority and the low exhaust up frequency protection is shielded.

After startup control, system according to the TC2 value Thermo ON indoor liquid pipe temperature as the target to control the compressor frequency.

1.1 In cooling, the compressor frequency control as below:

Mode	Energy-saving mode	Effect priority mode	Outdoor ambient temperature
Target average TC2	R	R	$T_{ao} \leq 12^\circ\text{C}$
Target average TC2	9	8	$12^\circ\text{C} < T_{ao} < 40^\circ\text{C}$
Target average TC2	Set value+2	Set value +2	$T_{ao} \geq 40^\circ\text{C}$

Revalue set $T_{ao} < -5^\circ\text{C}$, Target average TC2: 0°C ; $-5^\circ\text{C} \leq T_{ao} < 12^\circ\text{C}$, Target average TC2 is the set value (when $12^\circ\text{C} < T_{ao} < 40^\circ\text{C}$) and slope value of 0.

1.2 In heating, the compressor frequency control as below:

Mode	Energy-saving mode	Effect priority mode	Outdoor ambient temperature
Target average TC2	Set	value+2	$T_{ao} \geq 15^\circ\text{C}$
Target average TC2	42	45	$T_{ao} \geq -5^\circ\text{C}$
Target average TC2	Set	value+2	$T_{ao} < -5^\circ\text{C}$

In order to improve the effect of indoor unit, reach the purpose of rapid cooling/heating, make the following control:

- 1) In cooling, when outdoor ambient temperature above 25°C , the first 60 min, TC2 drops 1°C , returned to normal after 60 min;
- 2) In heating, when outdoor ambient temperature below 15°C , the first 60 min, TC2 rise 1°C , returned to normal after 60 min;

2. Outdoor fan motor control

2.1 In cooling mode

According to outdoor temperature of T_c to control the outdoor unit , T_c refers to the higher value of T_e and T_c . when $T_c < 10^\circ\text{C}$, the fan will stop after running in the low speed for 1 minutes; when $10^\circ\text{C} \leq T_c < 25^\circ\text{C}$, fan reduce the speed per 1 class /45s drop 1 class speed; when $25^\circ\text{C} \leq T_c < 35^\circ\text{C}$, fan keeps the current speed; when $35^\circ\text{C} \leq T_c < 53^\circ\text{C}$, fan rise the speed per 1 class /45 s rise 1 class speed; when $T_c \geq 53^\circ\text{C}$, fan will running with the highest speed.

2.2 In heating mode

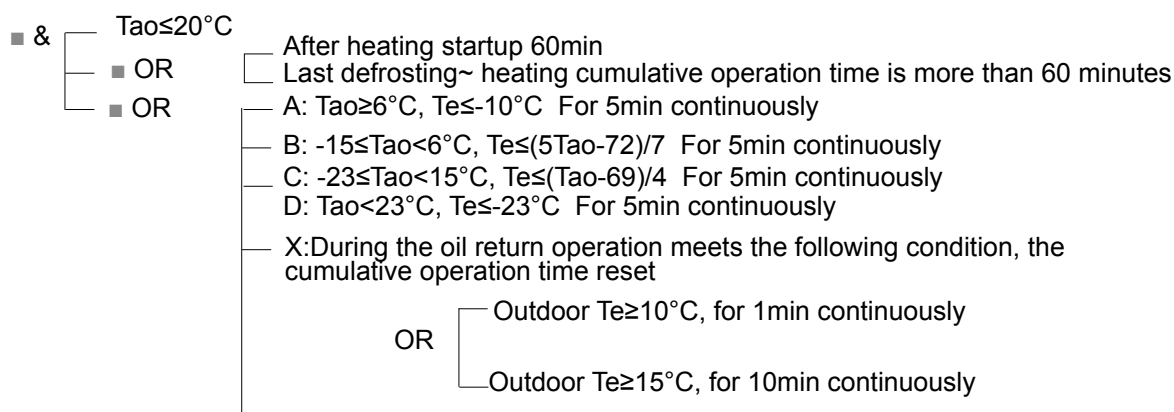
During the four-way valve revering, the fan motor stop. Four-way valve has the reversing, after the compressor start, in 1 minutes the wind speed based on ambient temperature (including defrosting control and the end of the heating oil return air discharge operation stages), according to the T_e temperature automatic control after 1 minute, T_e refers to the higher value of T_e and T_c .

When $T_e > 21^\circ\text{C}$, Fan reduce the speed per 1 class /45 s until to stop; when $16^\circ\text{C} < T_e \leq 21^\circ\text{C}$, Fan reduce the speed per 1 class /45 s to drop 1 class ; when $6^\circ\text{C} < T_e \leq 16^\circ\text{C}$, fan keeps the current speed; when $1^\circ\text{C} < T_e \leq 6^\circ\text{C}$, fan rise the speed per 1 class /45 s rise 1 class speed; when $T_e \leq 1^\circ\text{C}$, fan will running with the highest speed.

3. Defrosting control

In order to have the effect heating operation, need defrosting control.

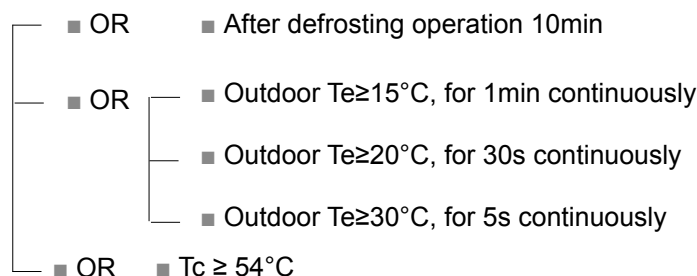
3.1 Entering condition:



3.2 Defrosting control

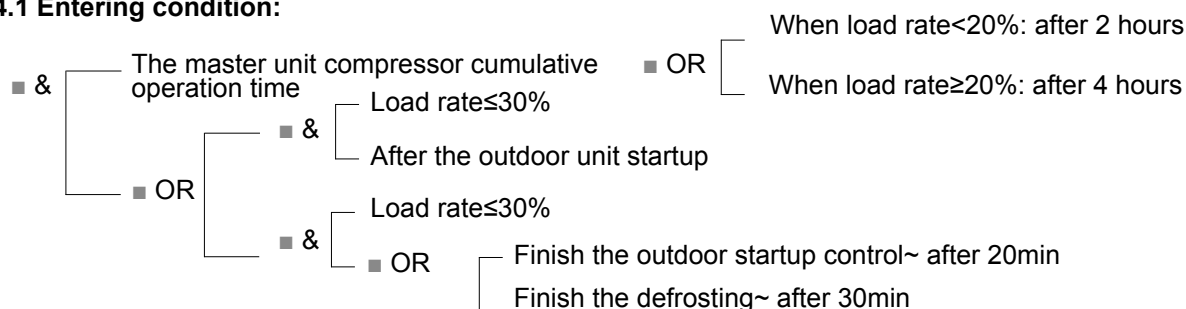
During defrosting, four-way valve power off, outdoor fan stop, indoor fan stop, outdoor PMV open to 470pls.

3.3 Quit defrosting



4. Oil return control

4.1 Entering condition:

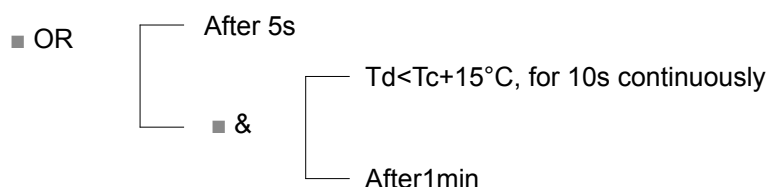


Note: $load\ rate = \frac{\sum indoor\ HP(Thermo\ ON)}{\sum indoor\ HP} * 100\%$

4.2 Oil return control

During Oil return, the compressor according to the 75% of maximum frequency control, the outdoor PMV opening angle is 470 PLS, the Thermo ON indoor PMV opening angle is 250 PLS, the Thermo OFF indoor PMV opening angle is 125 PLS. When $T_d > 95\text{ }^{\circ}\text{C}$, the indoor PMV opening angle increased 10%, max. time is 2. When $T_d < 90\text{ }^{\circ}\text{C}$, returns to the usually opening.

4.3 Oil return quit condition:



17. Failure Code

Digital tube indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
20	20-0	Defrosting temp sensor Te1 failure	AD value is below 11(open circuit) or over 1012(short circuit) for 60seconds, in cooling mode, if the sensor is abnormal, the unit operate in defrosting and within 3 minutes after defrosting, no alarm	Resumable
21	21	Ambient temp. sensor Ta failure	AD value is below 11(open circuit) or over 1012(short circuit) for 60seconds, in defrosting and within 3 minutes after defrosting, no alarm	Resumable
22	22	Suction temp. sensor Ts failure	AD value is below 11(open circuit) or over 1012(short circuit) for 60seconds, in defrosting and within 3 minutes after defrosting, no alarm	Resumable
23	23	Discharging temp. sensor Td failure	After compressor is running for 5 minutes, AD value is below 11(open circuit) or over 1012(short circuit) for 60seconds, in course of startup, defrosting and within 3 minutes after defrosting, no alarm	Resumable
26	26-0	Indoor communication failure	For continuous 200 cycles, can not find connected indoors	Resumable
26-1	26-1		For continuous 300seconds, the searched indoor quantity is less than the set quantity.	
26-2	26-2		For continuous 300seconds, the searched indoor quantity is more than the set quantity.	
28	28	High pressure sensor Pd failure	AD value is below 11(open circuit) or over 1012(short circuit) for 30seconds, in defrosting and within 3 minutes after defrosting, no alarm	Resumable
29	1D	Low pressure sensor Ps failure	AD value is below 11(open circuit) or over 1012(short circuit) for 30seconds, in defrosting and within 3 minutes after defrosting, no alarm	Resumable
30	30	High pressure switch HPS failure	If disconnect for 50ms continuously, alarm. If alarm 3 times in an hour, confirm the failure	Once confirmation, un-resumable
33	33	EEPROM failure	EEPROM failure	
34	34	Discharging temp. too high protection (Td)	Td $\geq$ 239°F(115°C) at interval of 25msec for twice continuously, and over the set value, then stop and alarm; 3 minutes later, resume automatically. If it occurs 3 times in an hour, confirm the failure.	
35	35	4-way valve reversing failure	After 4-way valve is electrified for 3 minutes, if the below conditions can be met for continous 10 seconds, that is conversing successfully: 1. this outdoor compressor is running normally 2. Pd-Ps $\geq$ 87PSI(0.6MPa), Otherwise, the system alarms reversing failure.	
39-0	39-0	Low pressure sensor Ps too low protection	After compressor is running (except for residual operation), if in cooling, Ps<7.25Psi(0.05MPa); in heating, Ps<4.35Psi(0.03MPa); in oil return, Ps<4.35Psi(0.03MPa) for continuous 5 minutes, alarm and stop. 2 minutes and 50 seconds later, resume automatically, if it occurs 3 times in an hour, confirm the failure.	

Digital tube indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
39-1	39-1	Compression ratio too high protection	After compressor is running, compression ratio 8. for continuous 5 minutes stop and alarm.2 minutes and 50 seconds later, resume automatically, if it occurs 3 times in an hour, confirm the failure.	Once confirmation, un-resumable
39-2	39-2	Compression ratio too low protection	In normal operation, compression ratio <1.8 for continuous 5 minutes stop and alarm.2 minutes and 1 seconds later, resume automatically, if it occurs 3 times in an hour, confirm the failure.	
40	40	High pressure sensor Pd too high protection	In normal operation, Pd>=601.7Psi(4.15MPa) for continuous 50ms, alarm and stop. 2 minutes and 50 seconds later, resume automatically, if it occurs 3 times in an hour, confirm the failure.	
43	43	Discharging temp. sensor Td too low protection	In normal operation, if Td<CT+18°F(10°C) for continuous 5 minutes, the unit stops and alarms.2 minutes and 50 seconds later, resume automatically. If it occurs 3 times in an hour, confirm the failure. After fixed frequency compressor alarms, inverter compressor will continue to run. If fixed frequency compressor has been locked for 3 times, the unit will stop and alarm.	
46	46	Communication with inverter board failure	No communication within 30 seconds continuously	Resumable
53	53	CT current is too low or current sensor fault	3 minutes after recovery,3 times in an hour, confirm failure; once confirmation, un-resumable	
54	54	Valve plate module communication fault	Cannot receive valve plate module signal in 200 continuous rounds or receive wrong data,recover automatically when received right data.	Resumable
57	57	Communication failure between valve plate module and host computer(sending by valve plate)	Communication failure between valve plate module and host computer	Resumable
58	58	Tc1 temp sensor of valve plate error(sending by valve plate)	Tc1 temp. sensor cannot connect with valve plate module	Resumable
59	59	Tc2 temp sensor of valve plate error(sending by valve plate)	Tc2 temp. sensor cannot connect with valve plate module	Resumable
60	60	Valve plate module error(sending by valve plate)	Reserved	Resumable
61	61	Valve plate module error(sending by valve plate)	Reserved	Resumable

Digital tube indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
62	62	Valve plate module error(sending by valve plate)	Reserved	Resumable
63	63	Valve plate dial setting error	No valve plate module dial but the valve plate module is detected.	Once confirmation, un-resumable
64	64	CT current is too high	CT current exceeds specified value, 3 minutes after recovery	3 times in an hour, confirm failure; once confirmation, un-resumable
71-0	71-0	Upper DC motor blocked	Running at speed below 20rpm for 30s, or at speed of 70% lower than the target for 2 minutes, 2 minutes and 50 seconds later after stop, resume automatically. It occurs 3 times in an hour, confirm the failure.	Once confirmation, un-resumable
71-1	71-1	Lower DC motor blocked		
75	75-0	No pressure drop between high pressure and low pressure	In 1 minute after INV compressor starts up, Pd-Ps≤14.5Psi(0.1MPa), then stop. 180 seconds later, resume automatically. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, unresumable
75-4	75-4	Too small pressure drop between high pressure and low pressure	If Pd-Ps≤29Psi(0.2MPa) for 5 minutes, the outdoor unit protection stop. ■ 3 minutes after stopping protection, restart. If it occurs 3 times in an hour, confirm the failure.	Once confirmed, unresumable
78	78	Lack of refrigerant	Compressor running in cooling mode, Ps<29Psi(0.2MPa) for 30 minutes; compressor running in heating mode, Tsi - ET>36°F(20°C); LEV will fully open for 60 minutes, the unit will output lack of refrigerant alarm,unit will not stop.	--
81	81	IPM modular temp. too high protection	IPM modular temp.≥185°F(85°C)	3 times in an hour, confirm failure; once confirmation, un-resumable
82	82	Compressor current protection	Compressor current exceeds specified value, 3 minutes after recovery	
83	83	Outdoor model set error	Model and the number of fans do not match	Un-resumable
108	108	Transient over current in IPM module rectifier side software	Transient over current in IPM module rectifier side software	3 times in an hour, confirm failure; once confirmation, un-resumable
109	109	Current detection circuit abnormality	Current detection circuit abnormality	
110	110	IPM modular protection (F0)	IPM modular over current, in short circuit, over heat, voltage too low of control circuit.	
111	111	Compressor out of control	In the course of compressor startup or running, the unit can not detect the rotor position, or not connecting compressor.	
112	112	Radiator of transducer temp. too high	Radiator temp. too high	
113	113	Transducer overload	Output current of transducer is too high	

Digital tube indication on master unit	Indication on wired controller (hex)	Failure code definition	Failure description	Remarks
114	114	Voltage too low of DC bus line of transducer	Voltage of power source is too low	3 times in an hour, confirm failure; once confirmation, un-resumable
115	115	Voltage too high of DC bus line of transducer	Voltage of power source is too high	
116	116	Communication abnormal between transducer and control PCB	Communication is disconnected	Resumable
117	117	Transducer over current (software)	Compressor startup fails for 5 times continuously, or compressor is running down till stops caused by over current or over heat	3 times in an hour, confirm failure; once confirmation, un-resumable
118	118	Compressor startup failure	The sensor used for current detecting of transducer is abnormal, disconnected or incorrectly connection	
119	119	Detecting circuit of transducer current is abnormal	Current detection sensor of frequency controller is abnormal or unconnected or connected wrongly.	
120	120	Power supply of transducer abnormal	Power supply of transducer is broken down instantly	
121	121	Power supply of inverter board is abnormal	Power supply of inverter board is broken down instantly	3 times in an hour, confirm failure; once confirmation, un-resumable
122	122	Radiator temp.sensor of transducer abnormal	Resistor of temp.sensor abnormal or temp. sensor disconnected	
123	123	Transient over current in IPM module rectifier side hardware	Transient over current in IPM module rectifier side hardware	

When there is no failure, if the starting condition can not be met, digital tube on master unit will display stand-by code:

555.0	Standby state of capacity overmatch	When capacity is over 130% or lower than 50%, the system is standby.	Resumable
555.1	Outdoor ambient temperature too high (heating)	Ta>80.6°F, Standby	
555.3	Outdoor ambient temperature too high or too low (cooling)	Ta>129.2°F or Ta<14°F, Standby	

Note:

1, The data in [] stores in EE

2, The PCB display failure method:

A. Digital display board: if the fault is 26-0, then display [26] first, and then display [-0]. If is 555.0, the first display [555], and then display [. 0]. Failure code display is 1 second, failure display interval is 2 seconds.

B. LED light: the red light LED1 on behalf of ten digits, green light LED3 on behalf of the unit digit.

If it is 26-0, first LED1 flashes 2 times , then LED3 flashes 6 times. So circularly display.

If is 111-1, first LED1 flashes 11times, then LED3 flashes 1 time, and then LED1 normally on the LED3 flashes 1 time at the same time. So circularly display.

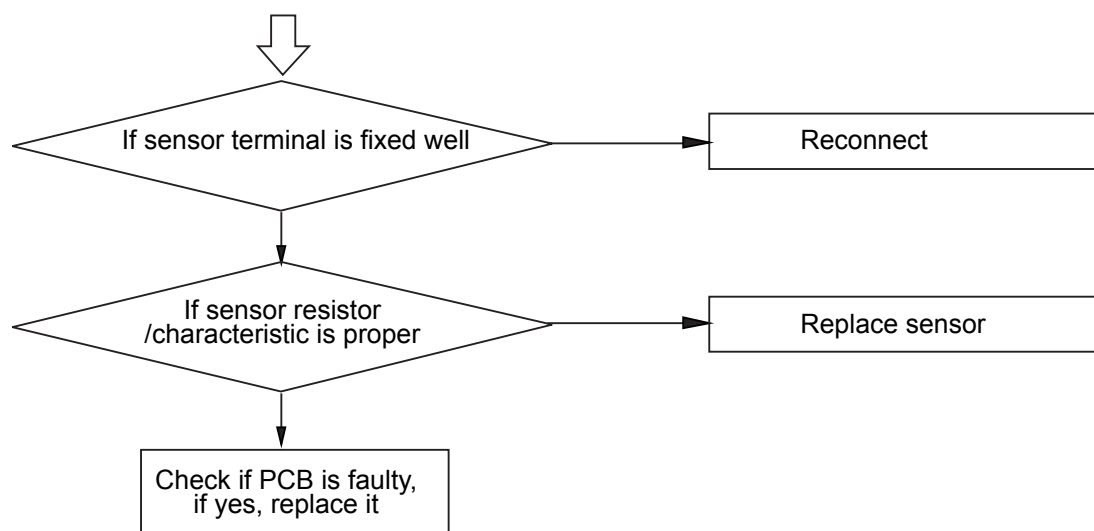
If is 555.0, the LED1 and LED3 normally on.

If is 555.4, the LED1 and LED3 flash 4 times at the same time. So circularly display.

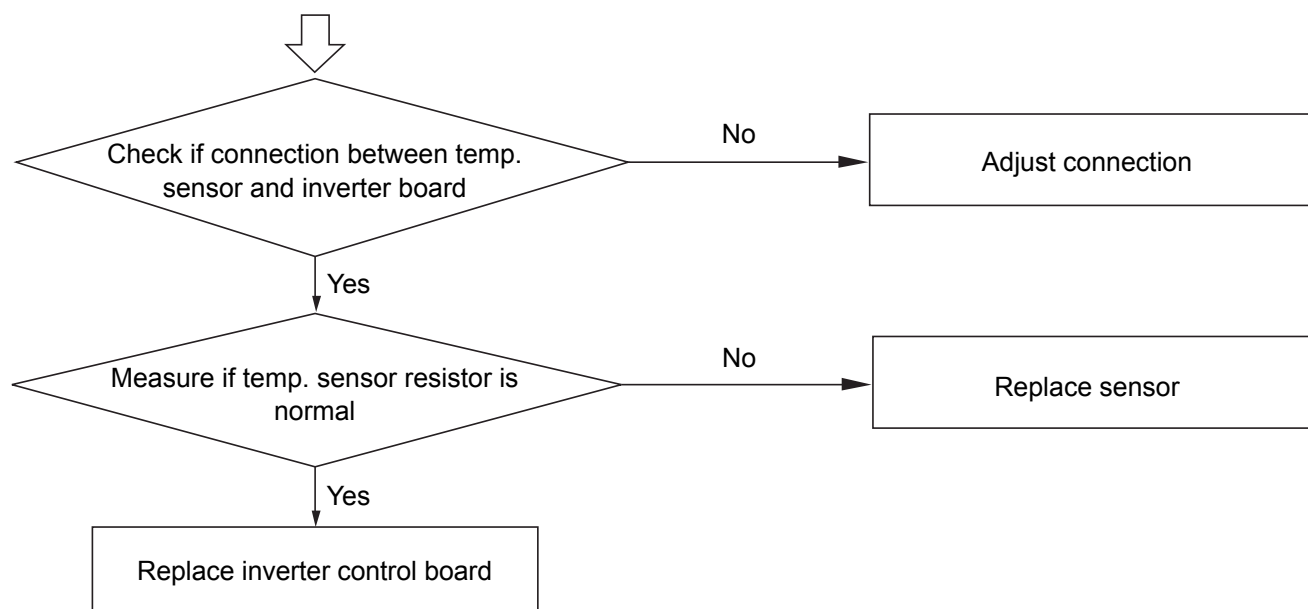
Flash frequency of LED lights is 2Hz, interval time is 2 seconds.

18. Troubleshooting

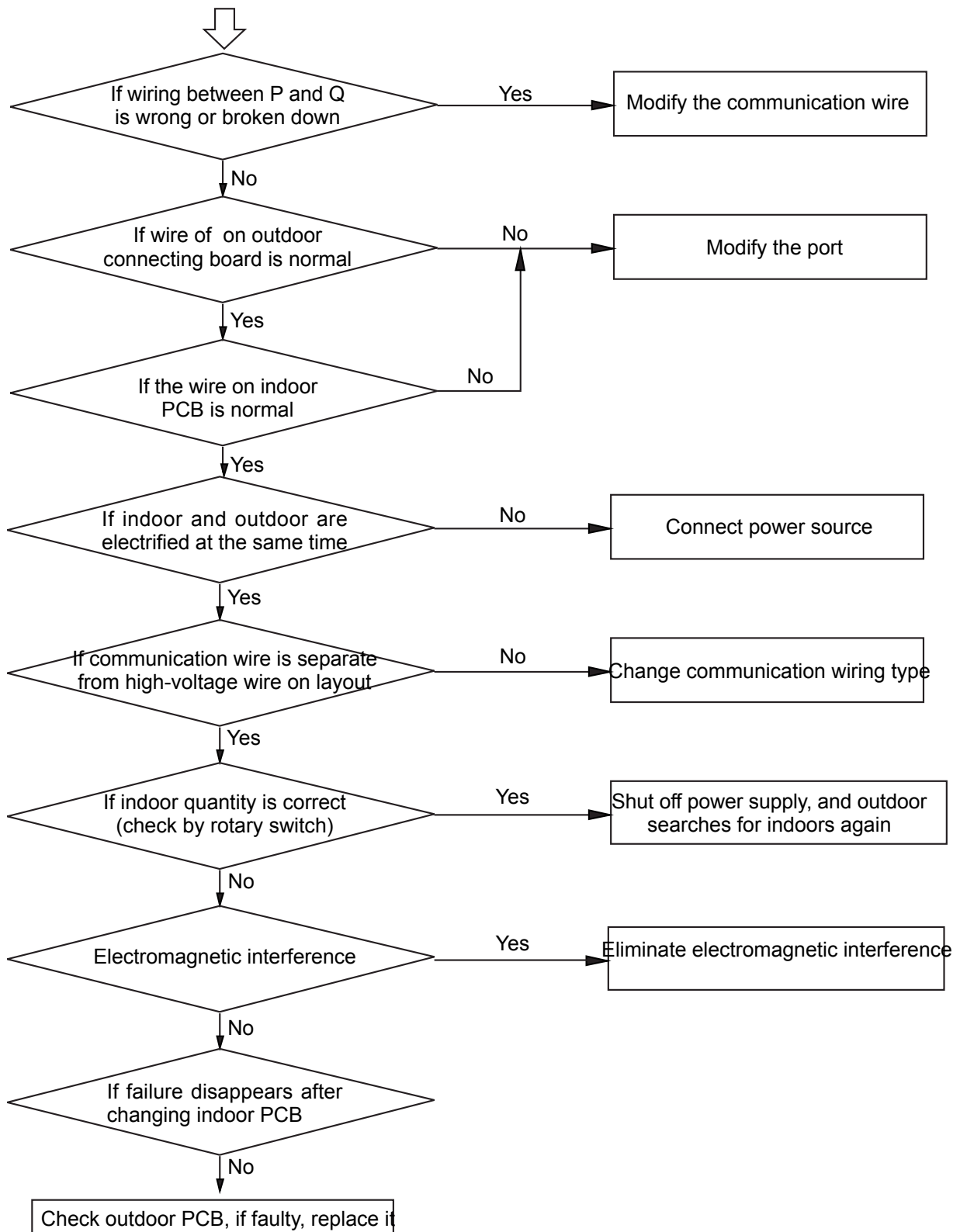
[20-23] Temperature sensor failure

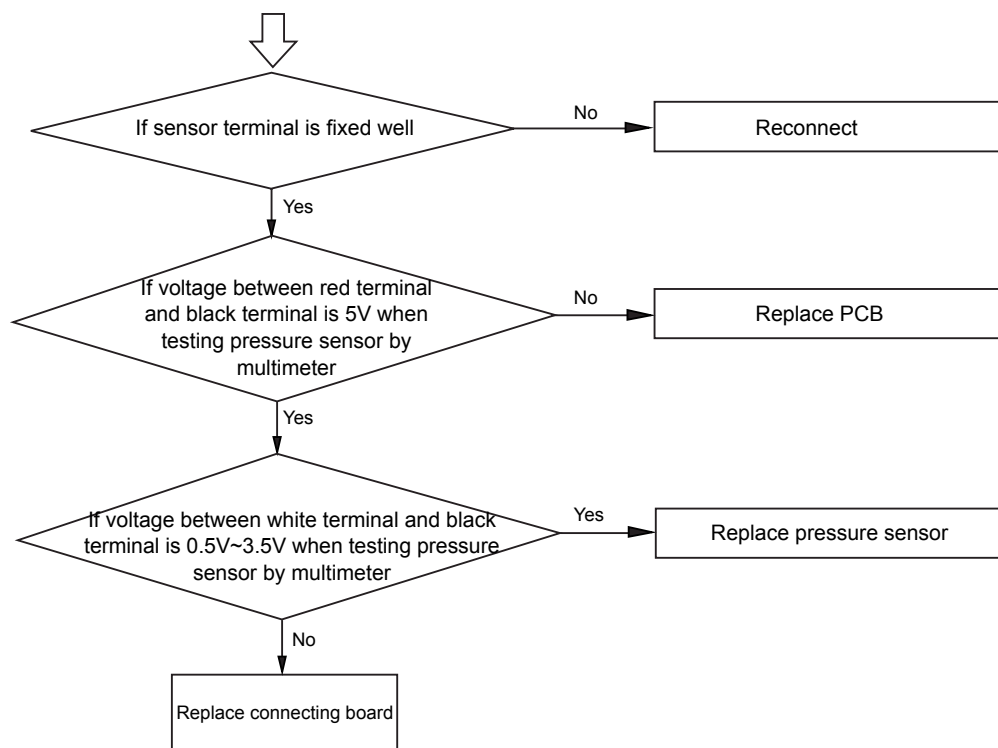


[122] Radiator temp. sensor of transducer abnormal

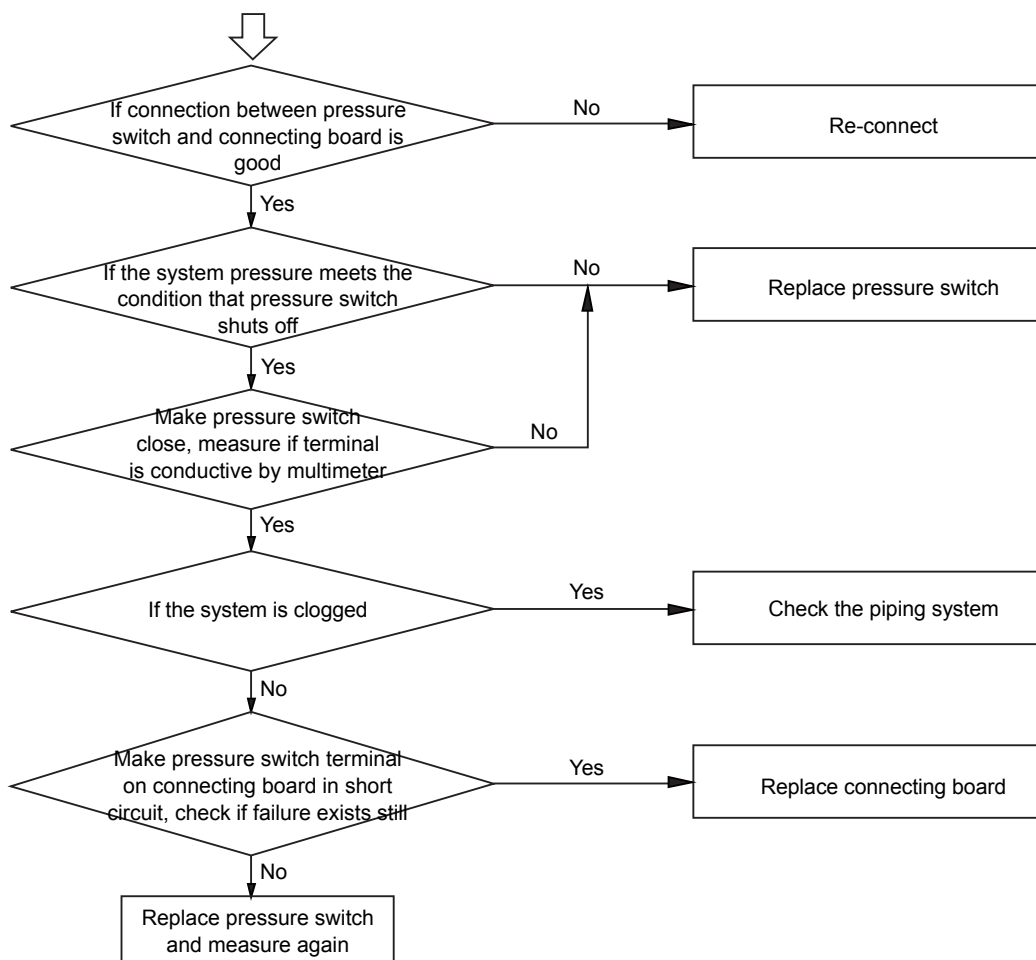


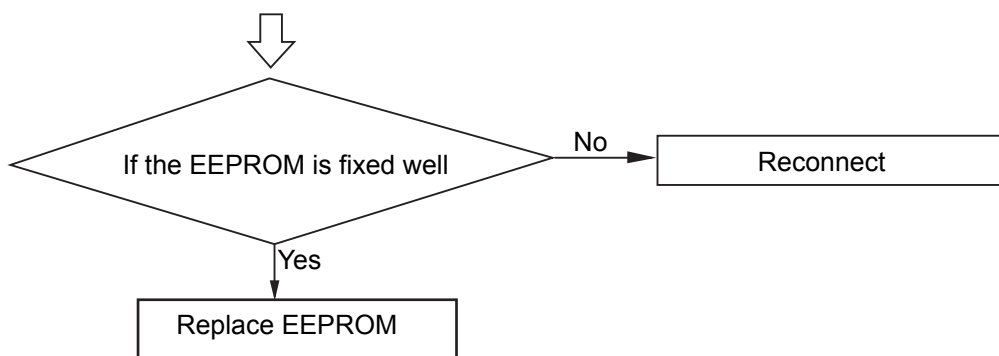
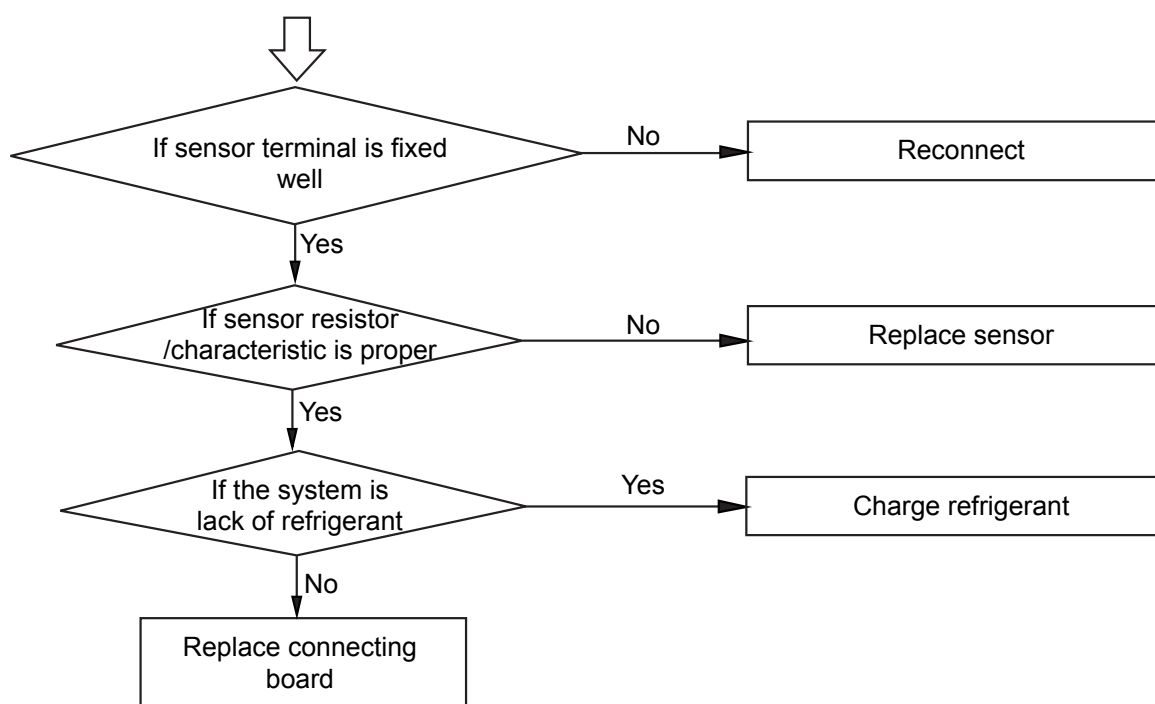
[26-0, 26-1, 26-2] Communication circuit between indoor and outdoor



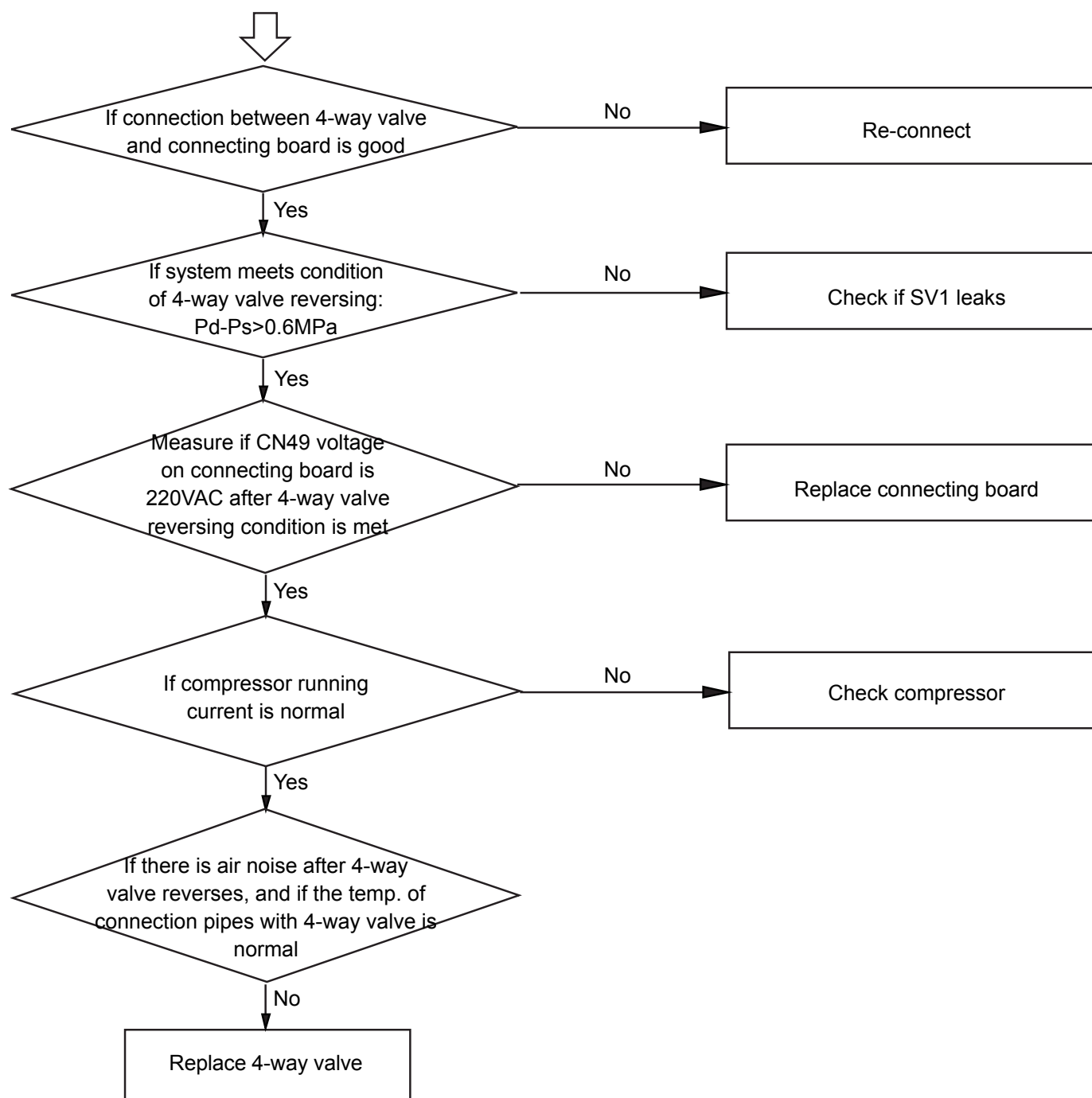
[28, 29] High/low pressure sensor failure

[30] High pressure switch failure

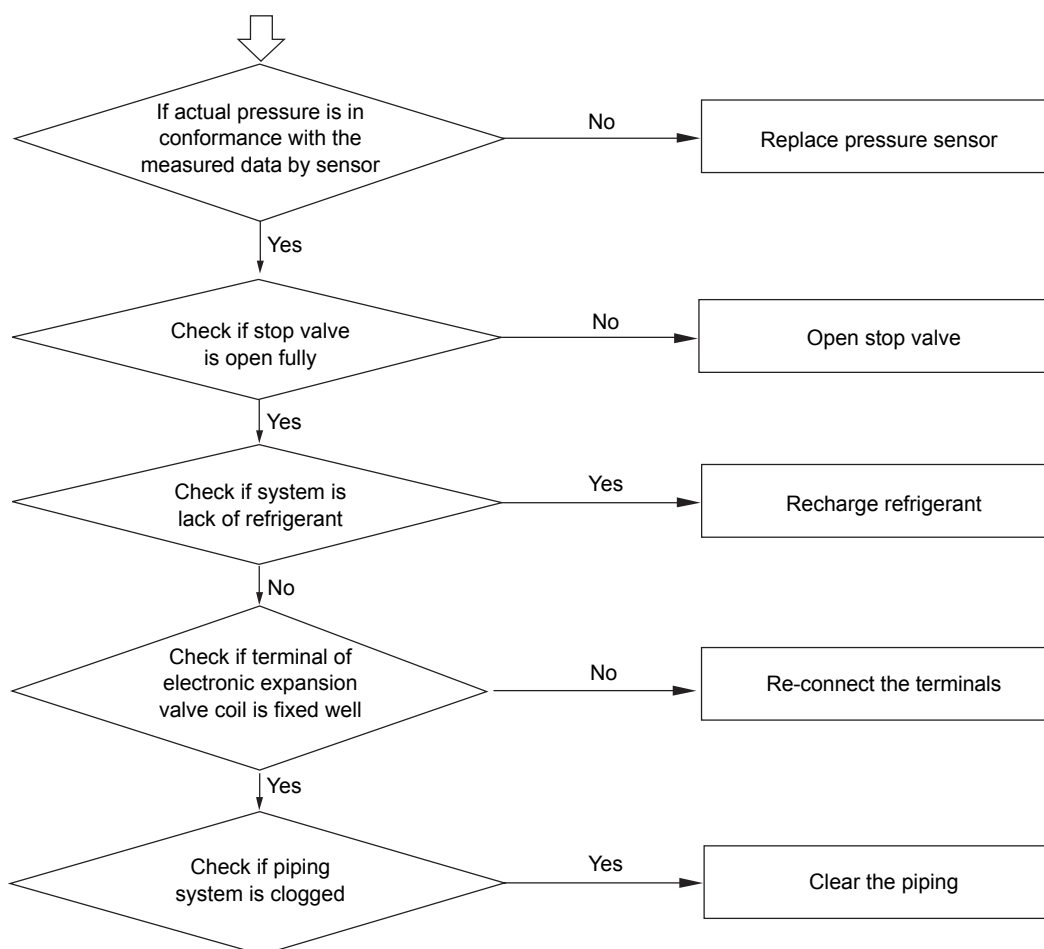


[33] Outdoor EEPROM failure**[34] Protection of discharging temp. too high**

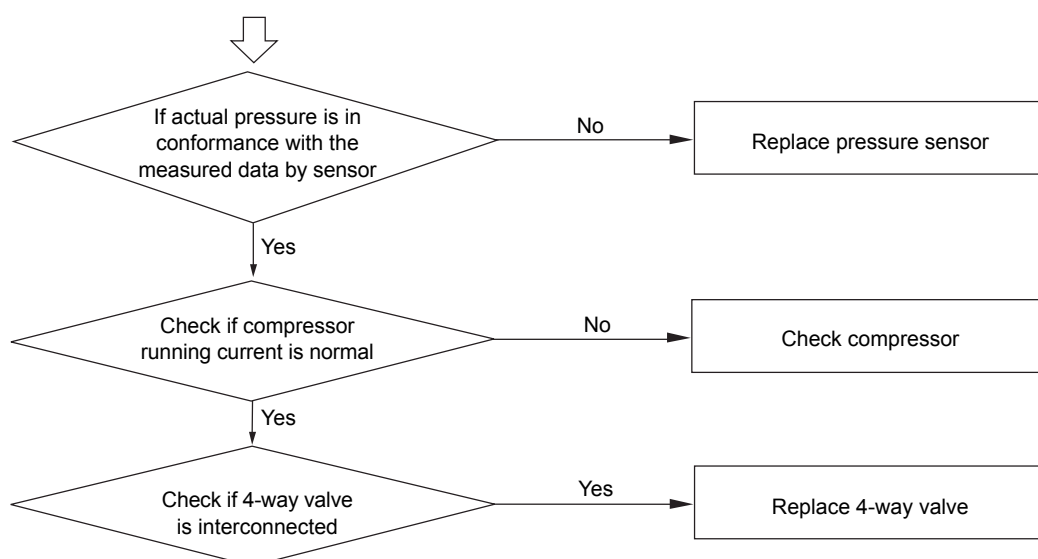
[35] 4-way valve reversing failure



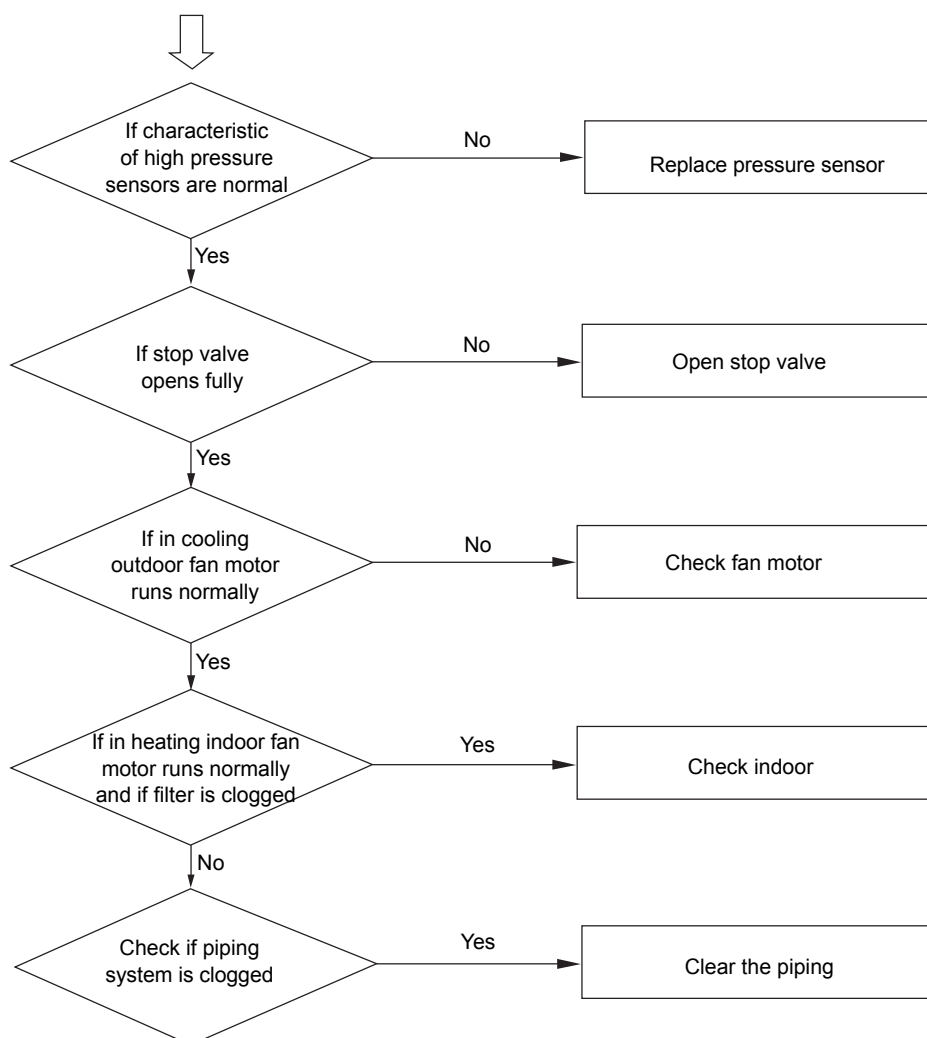
[39-0, 39-1] Low pressure too low and compression ratio too high



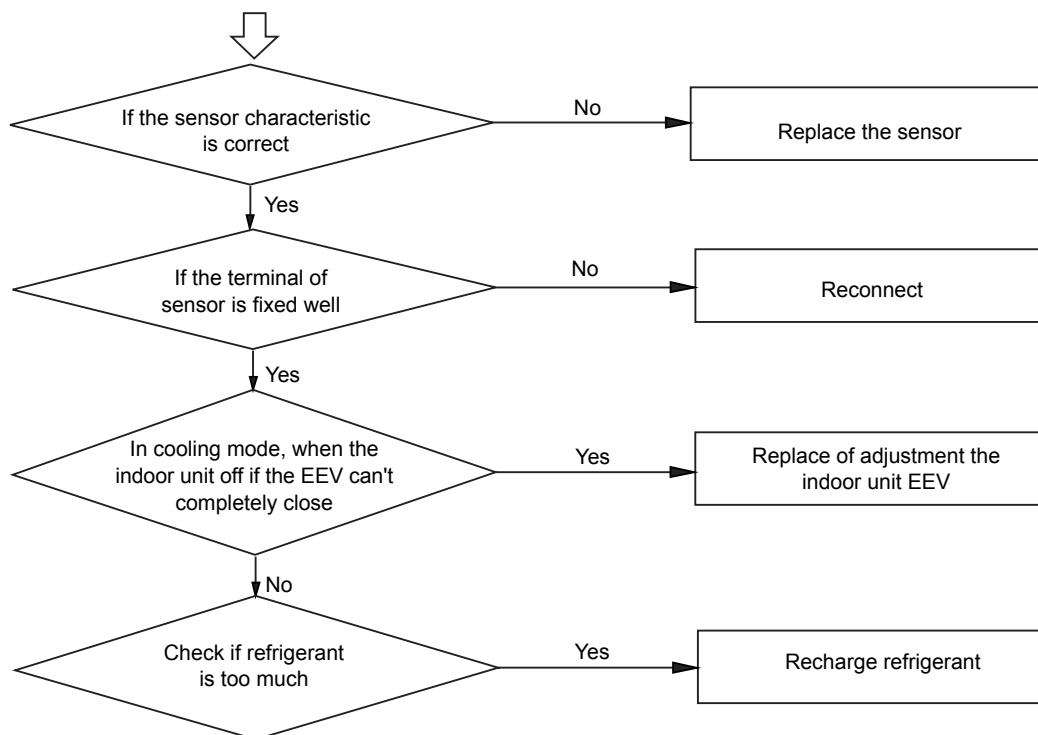
[39-2] Compression ratio too low



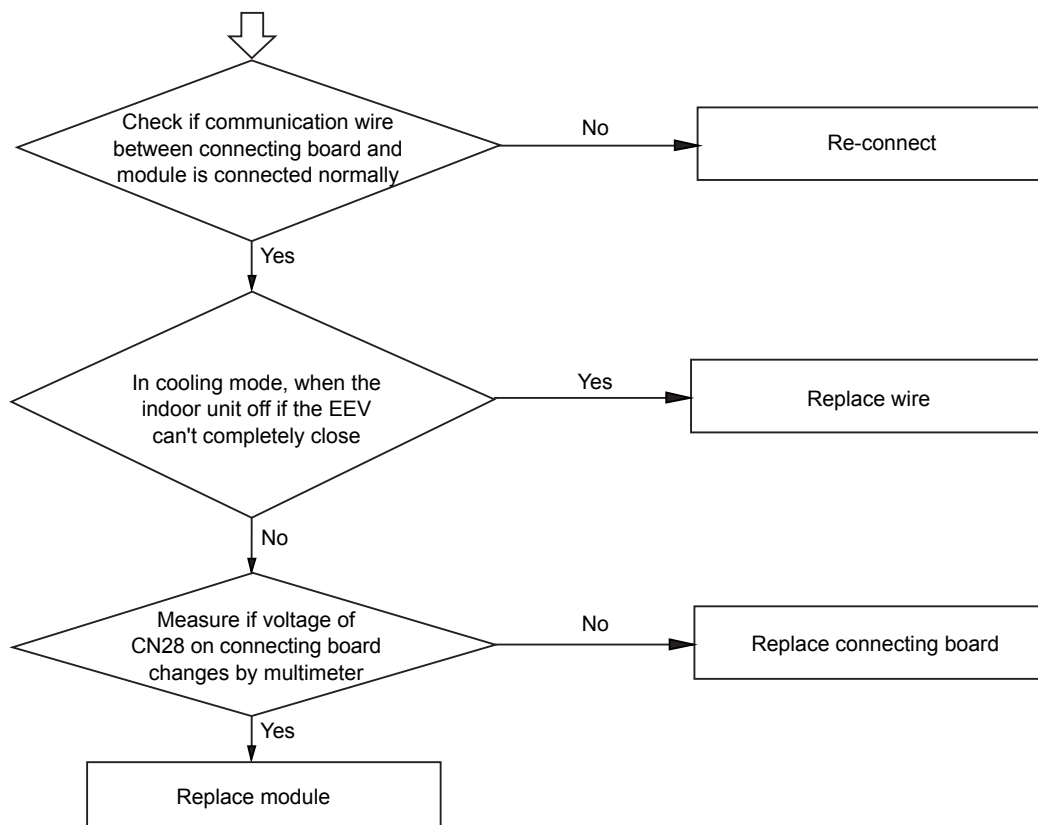
[40] High pressure too high failure



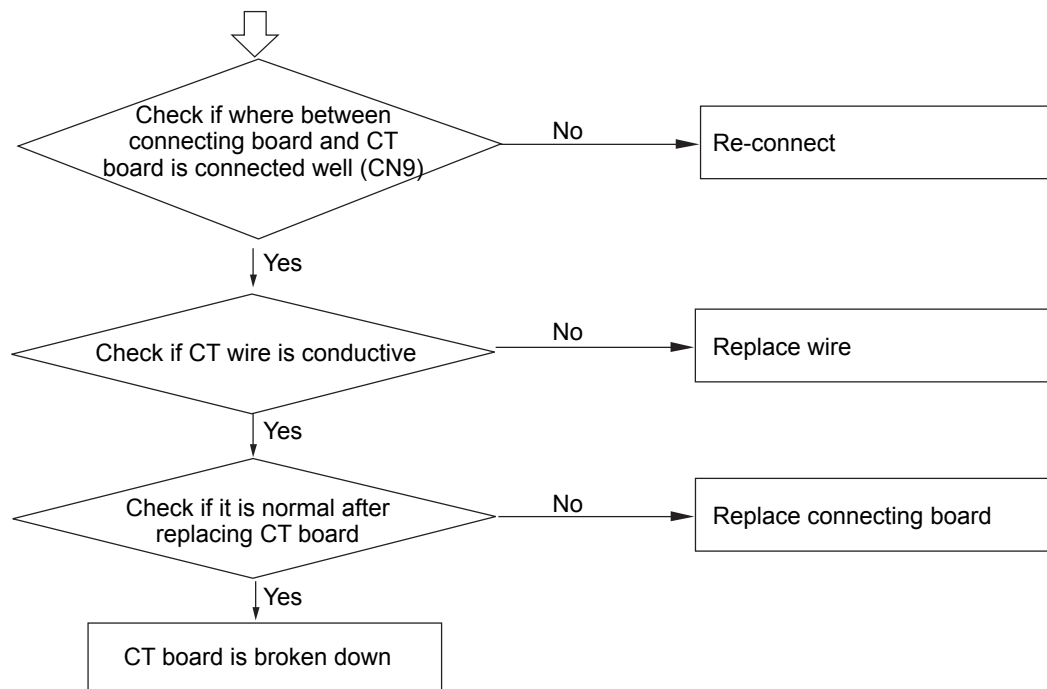
[43] Discharging temp. sensor Td too low protection



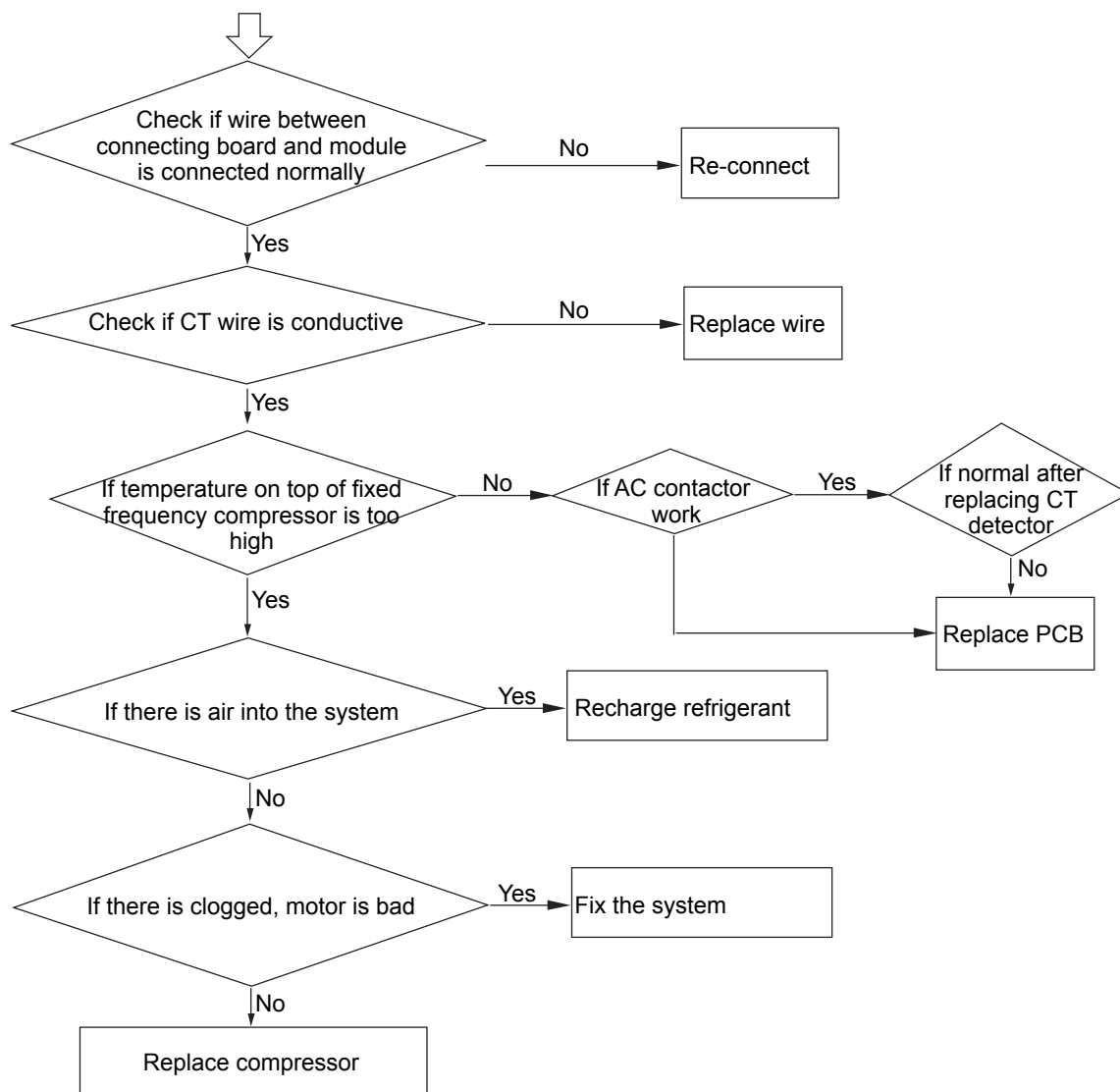
[46] Communication with inverter module failure



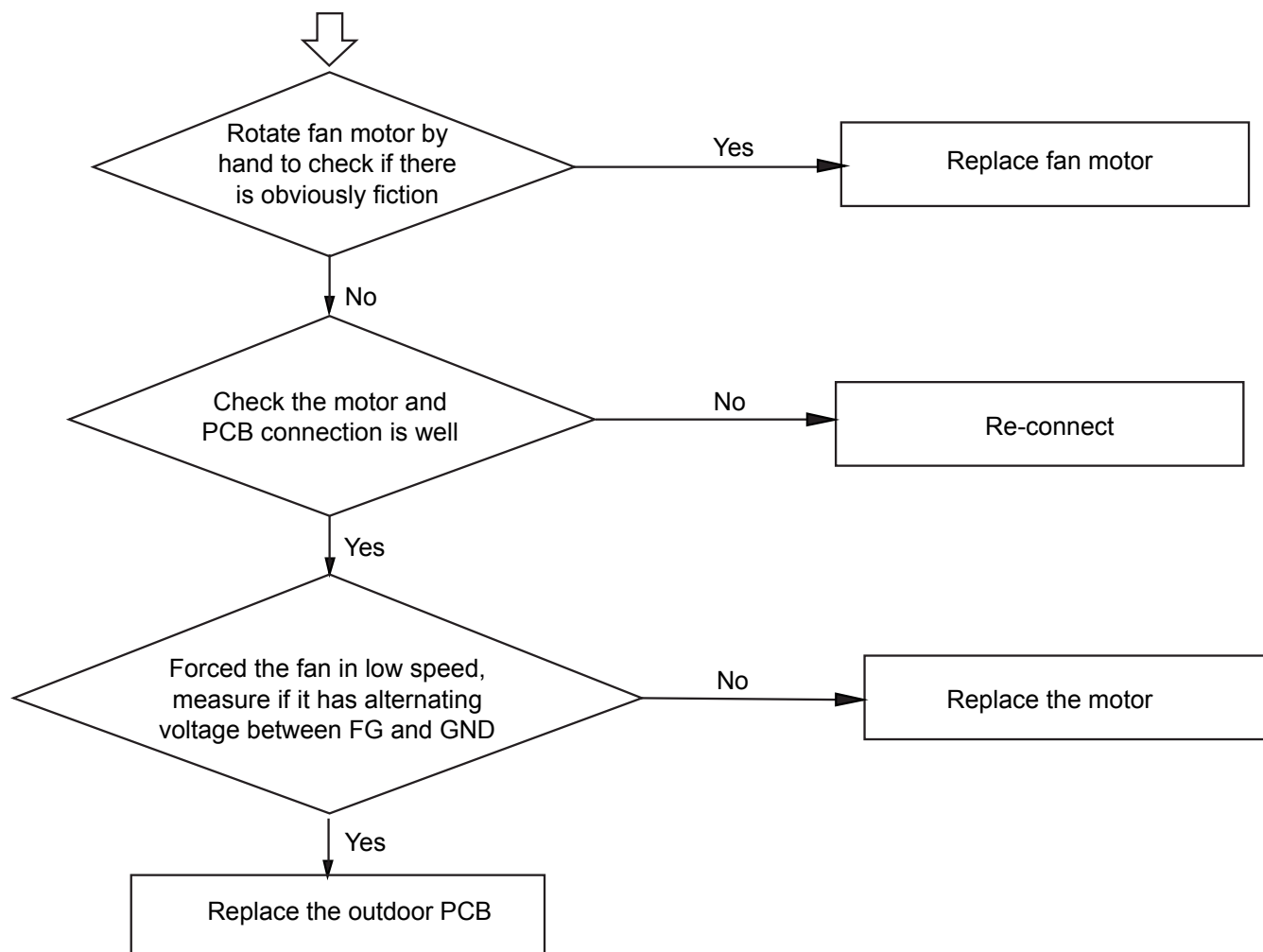
[53] CT Current too low or current sensor failure

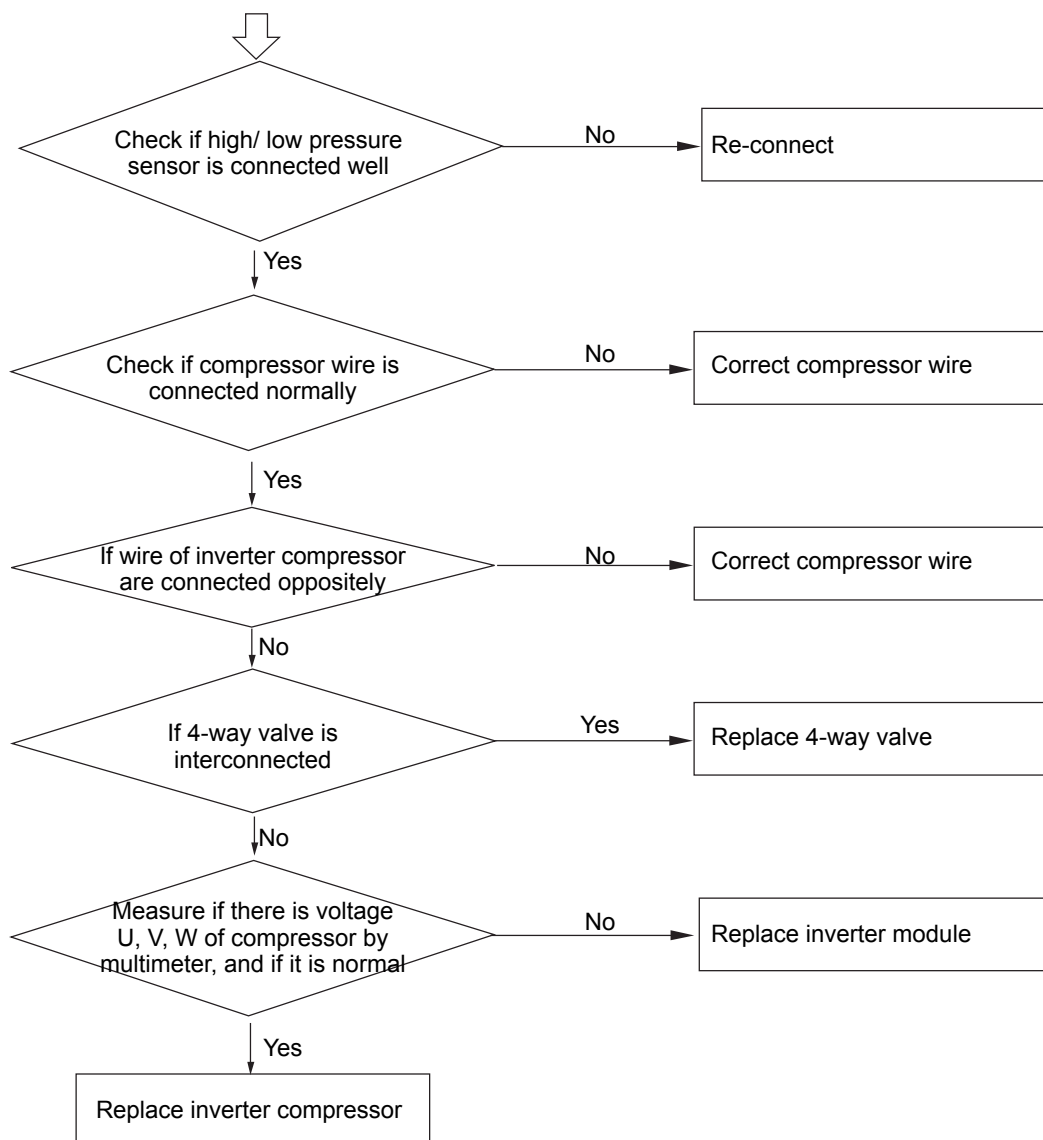


[64] CT current too high



[71-0,71-1] DC motor blocked



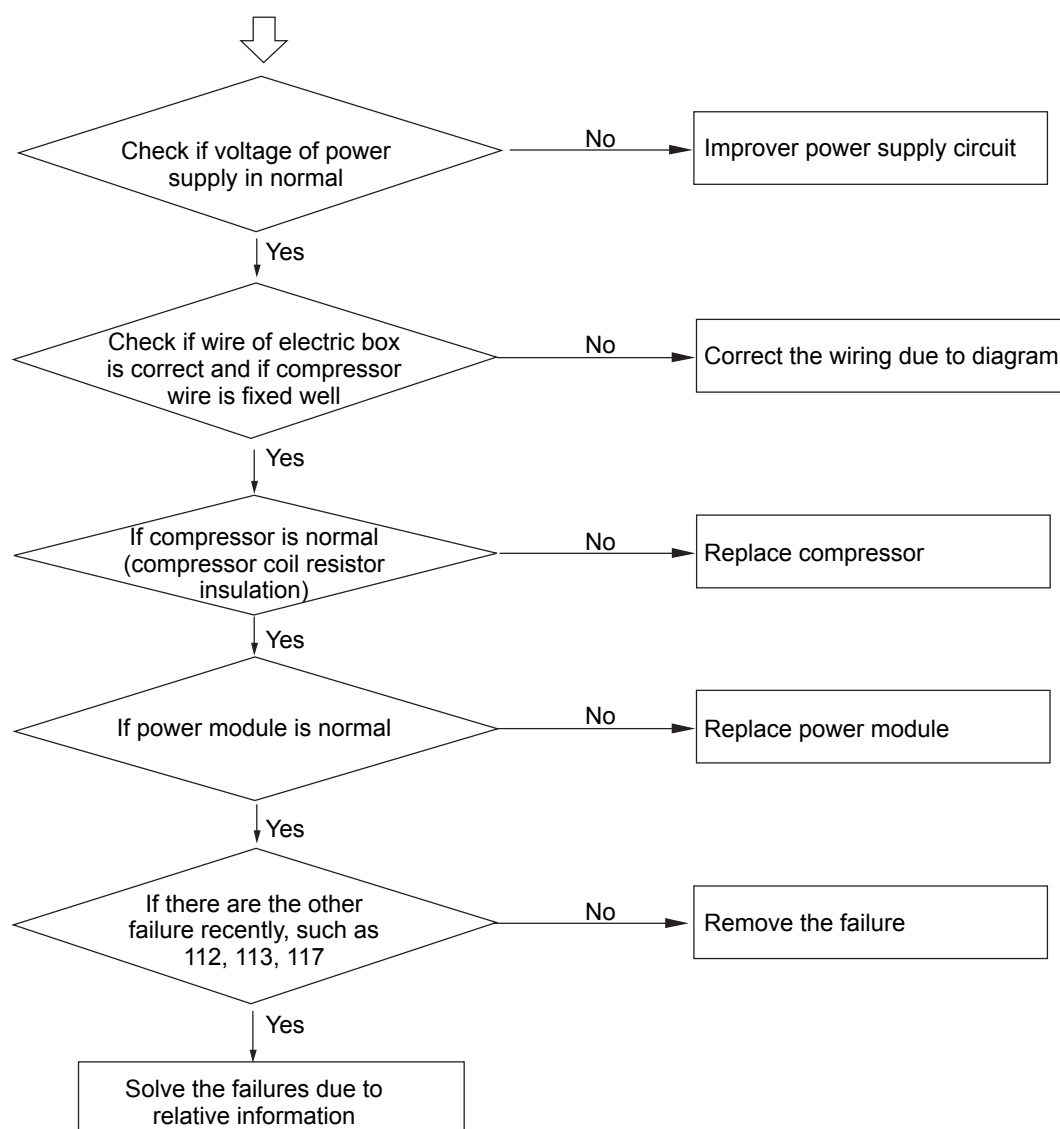
[75-0, 75-4] Pressure difference between high pressure and low pressure is abnormal

[82] Compressor current protection

[108] Transient over current in IPM module rectifier side software

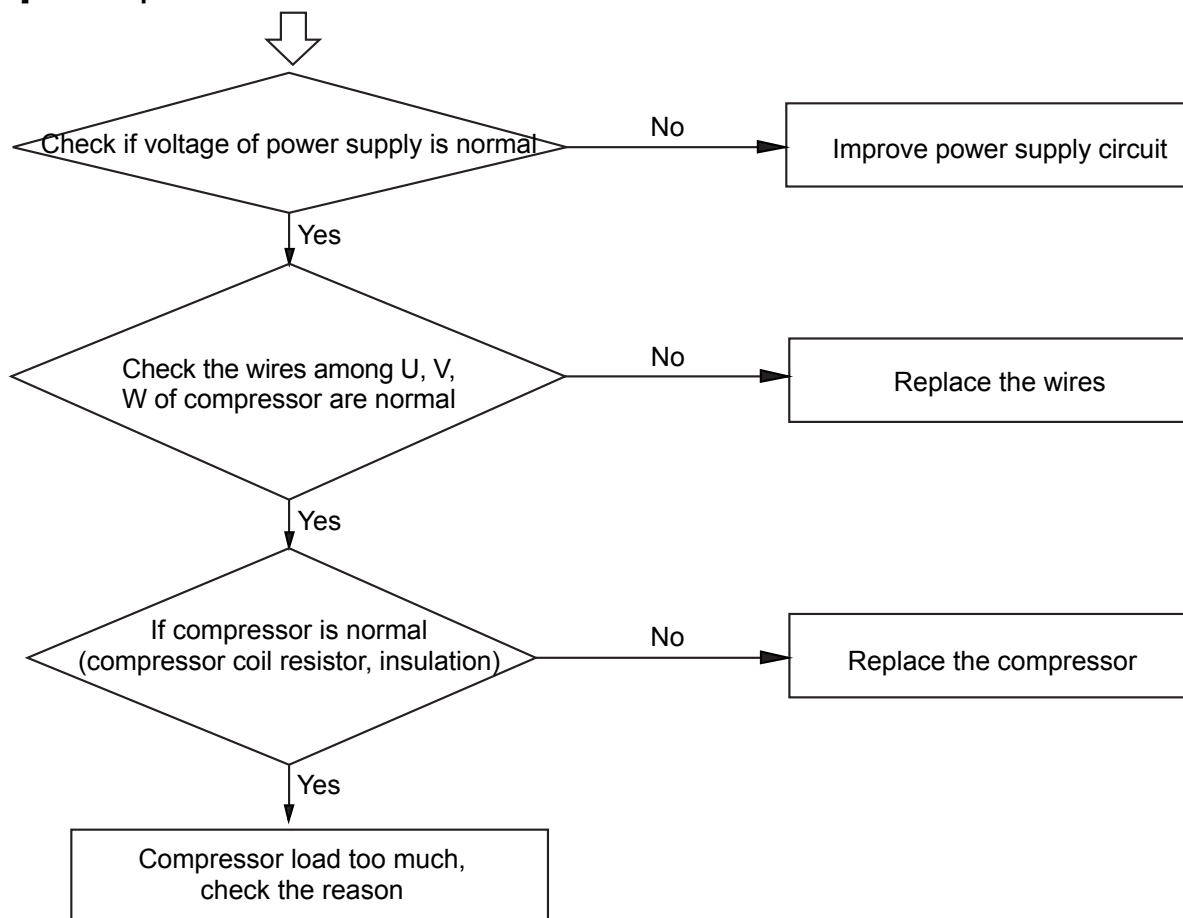
[110] IPM module hardware over current

[123] Transient over current in IPM module rectifier side hardware

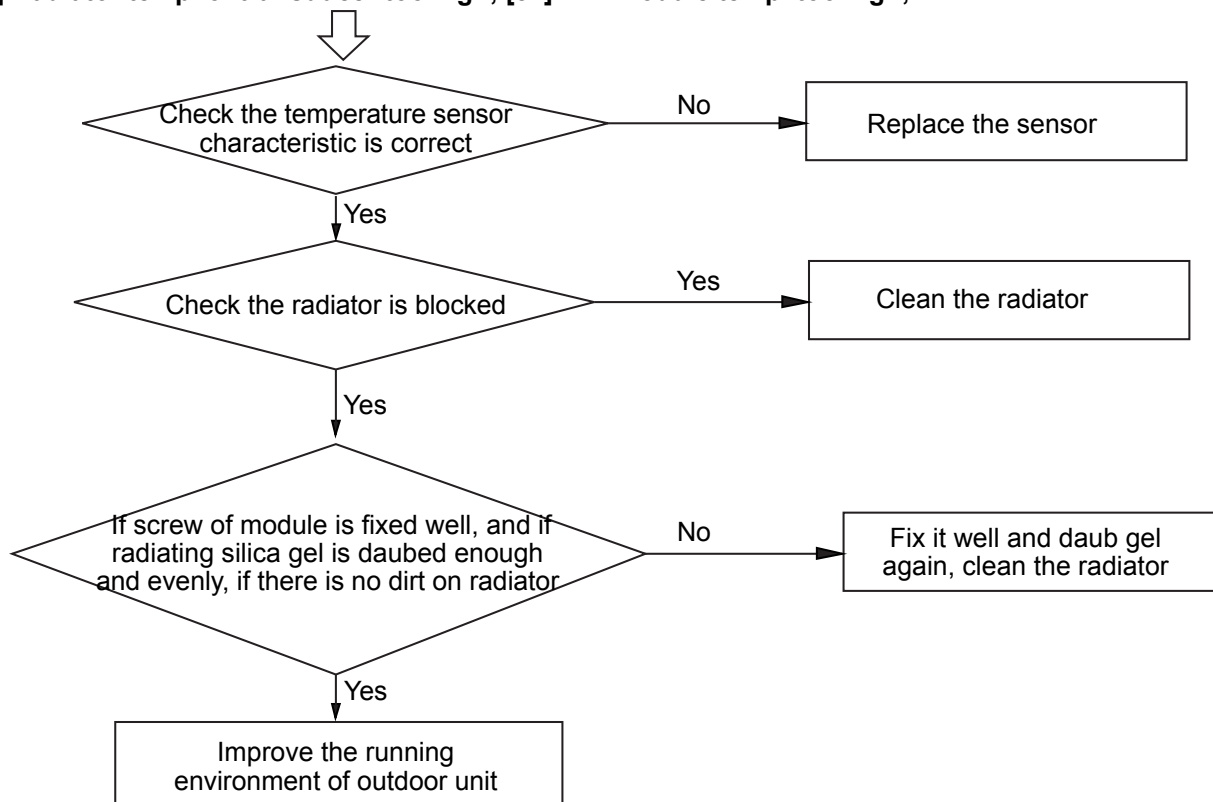


[111] Compressor out of control

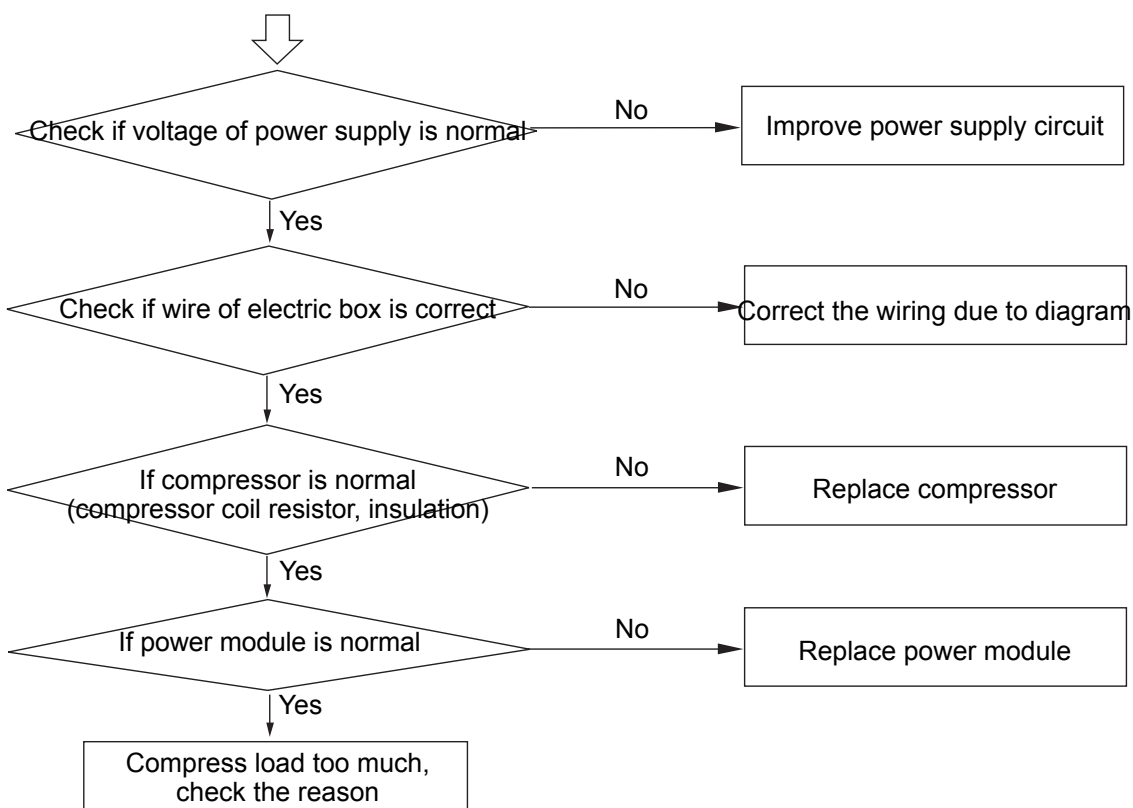
[118] the compressor start failure



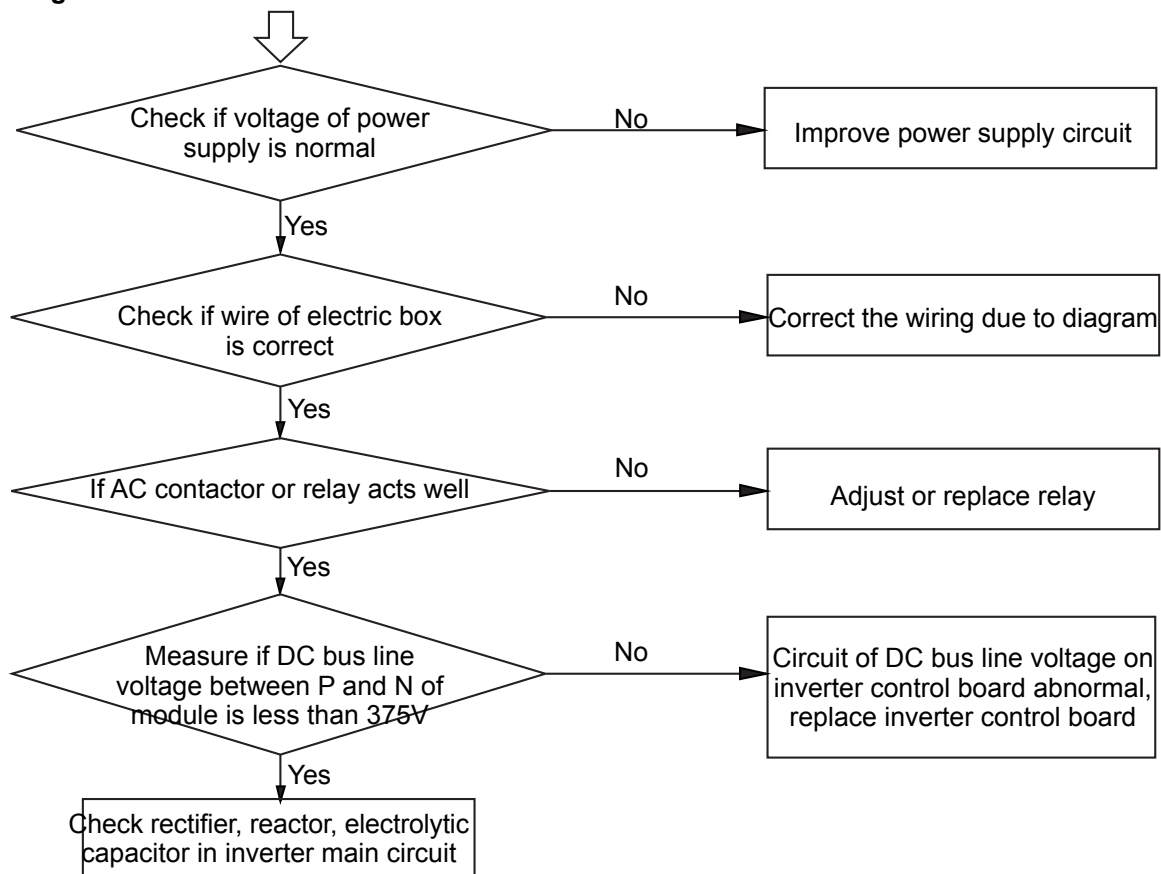
[112] Radiator temp. of transducer too high; [81] IPM module temp. too high;



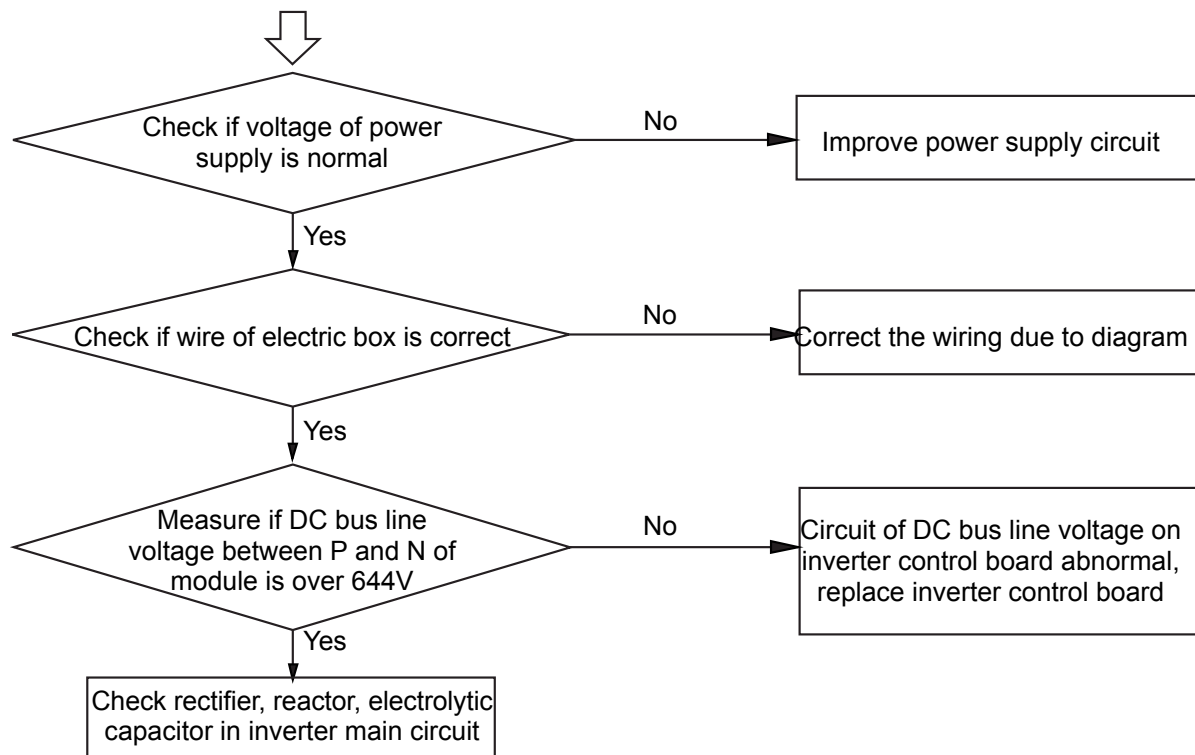
[113] Protection of overload



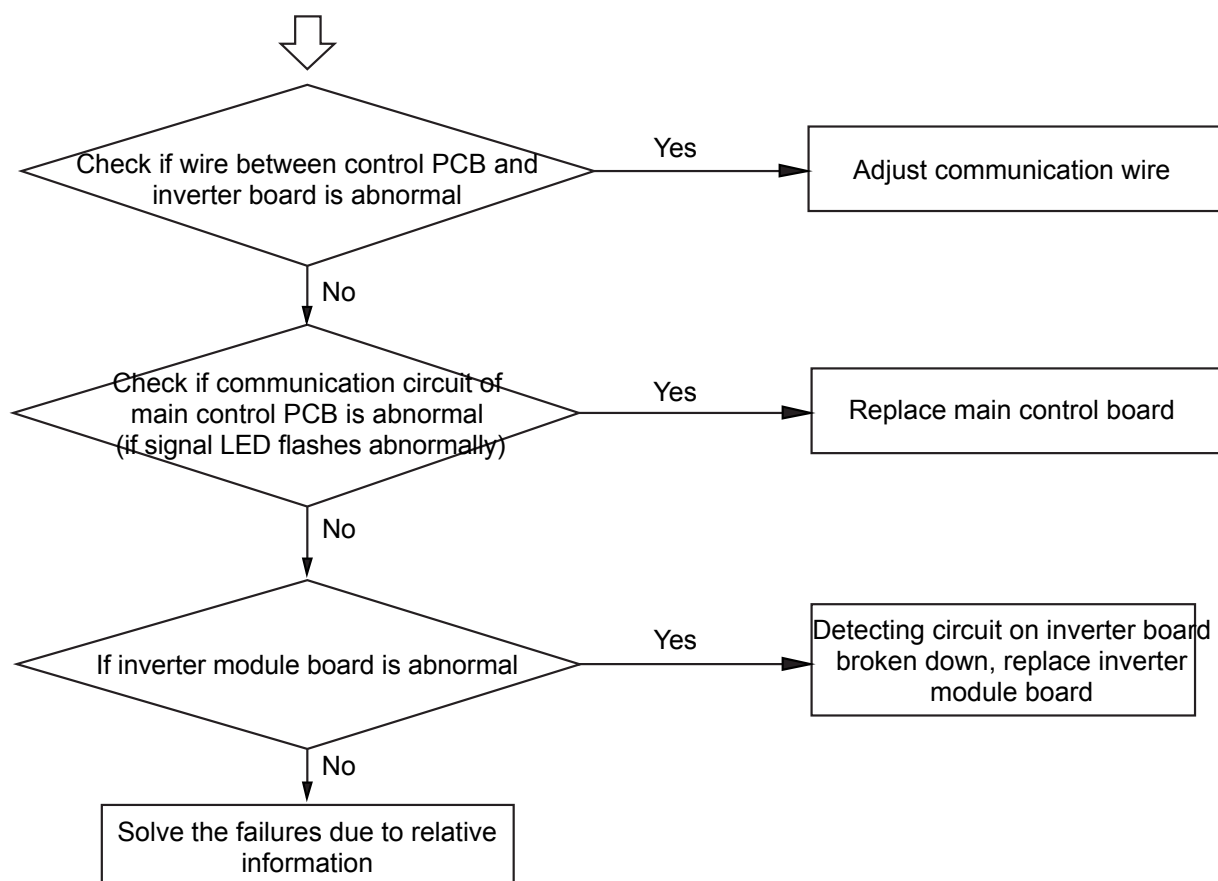
[114] Voltage too low of DC bus line of transducer



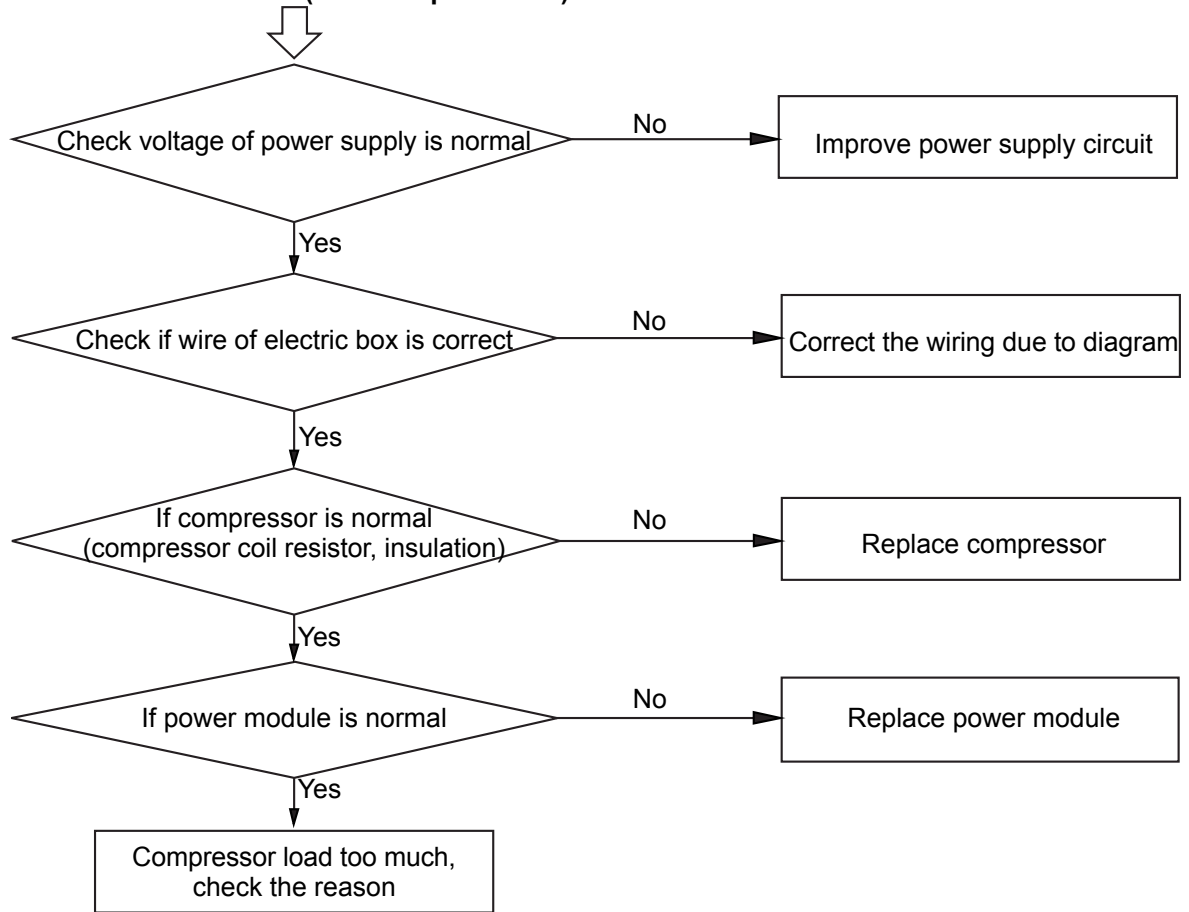
[115] Voltage too high of DC bus line of transducer



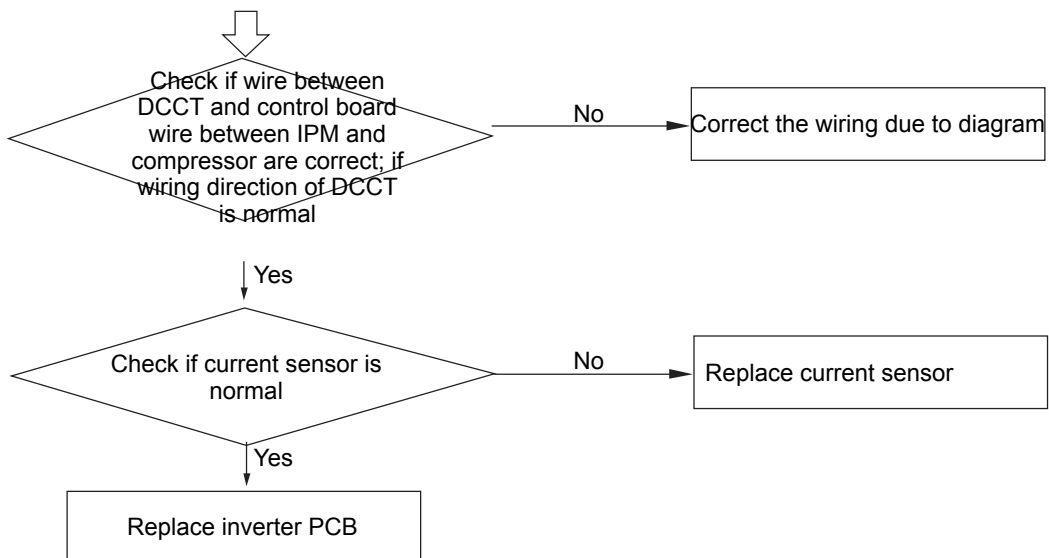
[116] Communication abnormal between transducer (inverter module board) and control PCB



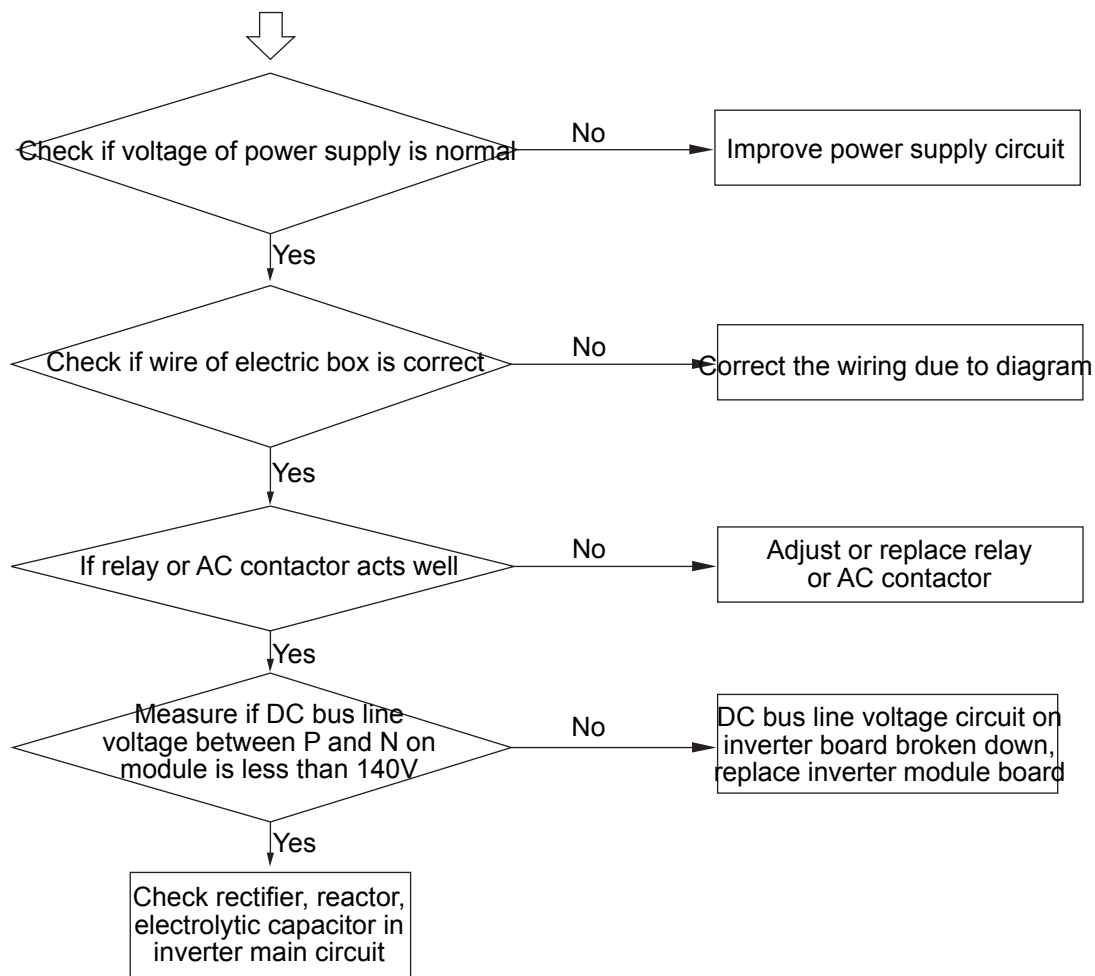
[117] Transducer over current (software protection)



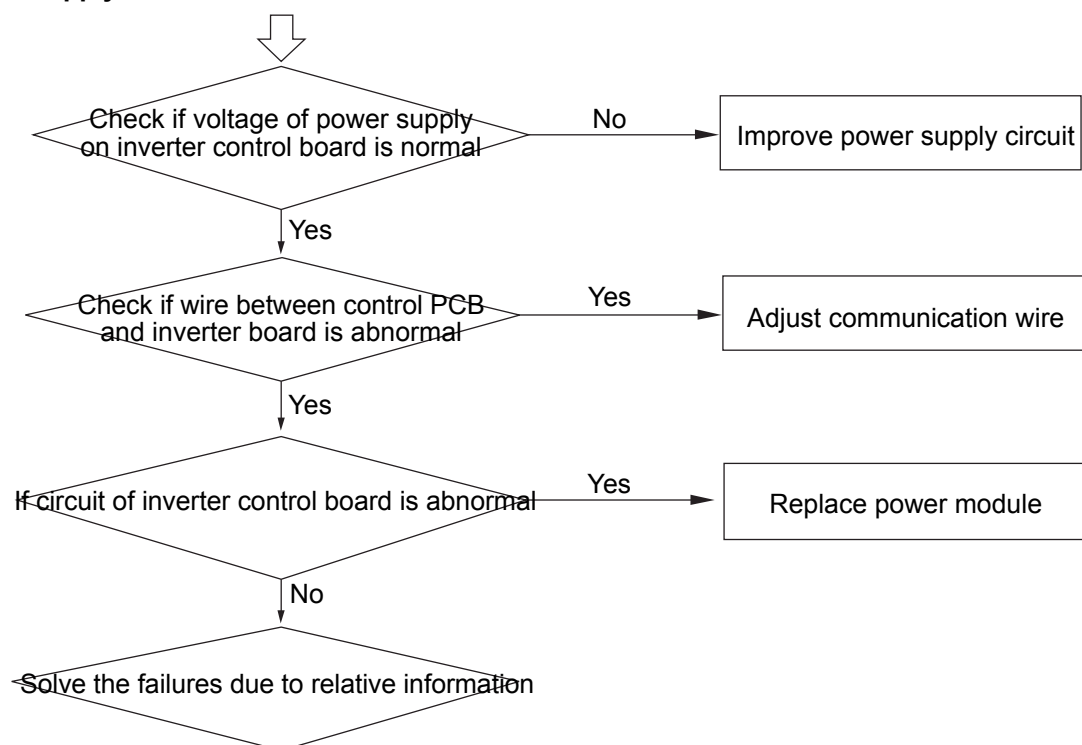
[119] Current detection circuit of transducer is abnormal



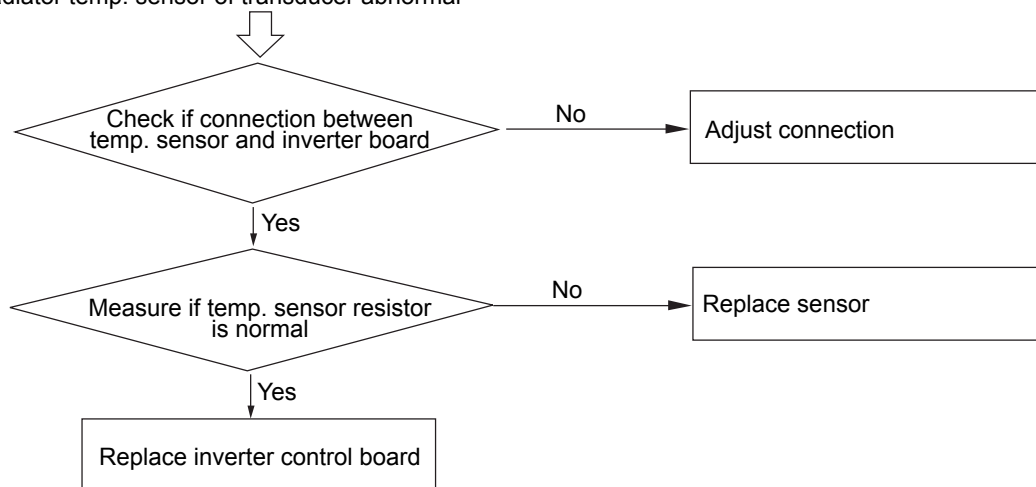
[120] Power supply of transducer abnormal



[121] Power supply of inverter board is abnormal



[122] Radiator temp. sensor of transducer abnormal



Appendix I: Sensor Resistance Table

Code	Resistance	Description
0010450192	10K	Outdoor ambient temp. sensor
0010450194	10K	Defrosting temp. sensor
0010451303	50K	Discharging temp. sensor
0010451307	10K	Suction temp. sensor

R80=50kΩ±3% B25/80=4450K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
0	1749.014	1921.993	2094.972	9	9
1	1651.431	1813.265	1975.099	8.93	8.93
2	1560.165	1711.646	1863.127	8.85	8.85
3	1474.737	1616.593	1758.449	8.78	8.78
4	1394.709	1527.611	1660.513	8.7	8.7
5	1319.683	1444.25	1568.817	8.63	8.63
6	1249.295	1366.096	1482.897	8.55	8.55
7	1183.21	1292.773	1402.336	8.48	8.48
8	1121.124	1223.935	1326.746	8.4	8.4
9	1062.756	1159.265	1255.774	8.33	8.33
10	1007.85	1098.474	1189.098	8.25	8.25
11	956.167	1041.293	1126.419	8.18	8.18
12	907.491	987.477	1067.463	8.1	8.1
13	861.621	936.799	1011.977	8.03	8.03
14	818.372	889.052	959.732	7.95	7.95
15	777.574	844.042	910.51	7.88	7.88
16	739.066	801.59	864.114	7.8	7.8
17	702.705	761.533	820.361	7.73	7.73
18	668.353	723.717	779.081	7.65	7.65
19	635.885	688.001	740.117	7.58	7.58
20	605.185	654.254	703.323	7.5	7.5
21	576.145	622.355	668.565	7.43	7.43
22	548.663	592.189	635.715	7.35	7.35
23	522.645	563.651	604.657	7.28	7.28
24	498.006	536.644	575.282	7.2	7.2
25	474.662	511.076	547.49	7.13	7.13
26	452.538	486.862	521.186	7.05	7.05
27	431.563	463.922	496.281	6.98	6.98
28	411.671	442.182	472.693	6.9	6.9
29	392.8	421.572	450.344	6.83	6.83
30	374.891	402.028	429.165	6.75	6.75
31	357.891	383.489	409.087	6.68	6.68
32	341.749	365.898	390.047	6.6	6.6
33	326.416	349.201	371.986	6.53	6.53
34	311.848	333.349	354.85	6.45	6.45
35	298.004	318.295	338.586	6.38	6.38
36	284.843	303.995	323.147	6.3	6.3

R80=50kΩ±3% B25/80=4450K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
37	272.329	290.407	308.485	6.23	6.23
38	260.427	277.493	294.559	6.15	6.15
39	249.104	265.216	281.328	6.08	6.08
40	238.329	253.541	268.753	6	6
41	228.073	242.437	256.801	5.93	5.93
42	218.308	231.873	245.438	5.85	5.85
43	209.01	221.82	234.63	5.78	5.78
44	200.154	212.252	224.35	5.7	5.7
45	191.715	203.142	214.569	5.63	5.63
46	183.674	194.467	205.26	5.55	5.55
47	176.009	186.204	196.399	5.48	5.48
48	168.703	178.333	187.963	5.4	5.4
49	161.735	170.832	179.929	5.33	5.33
50	155.089	163.682	172.275	5.25	5.25
51	148.748	156.866	164.984	5.18	5.18
52	142.698	150.367	158.036	5.1	5.1
53	136.924	144.168	151.412	5.03	5.03
54	131.411	138.255	145.099	4.95	4.95
55	126.148	132.613	139.078	4.88	4.88
56	121.122	127.229	133.336	4.8	4.8
57	116.32	122.089	127.858	4.73	4.73
58	111.732	117.181	122.63	4.65	4.65
59	107.347	112.494	117.641	4.58	4.58
60	103.157	108.018	112.879	4.5	4.5
61	99.15	103.741	108.332	4.43	4.43
62	95.319	99.654	103.989	4.35	4.35
63	91.655	95.748	99.841	4.28	4.28
64	88.149	92.014	95.879	4.2	4.2
65	84.795	88.443	92.091	4.13	4.13
66	81.584	85.028	88.472	4.05	4.05
67	78.511	81.761	85.011	3.98	3.98
68	75.569	78.636	81.703	3.9	3.9
69	72.752	75.645	78.538	3.83	3.83
70	70.052	72.781	75.51	3.75	3.75
71	67.466	70.04	72.614	3.68	3.68

R80=50kΩ±3% B25/80=4450K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
72	64.988	67.415	69.842	3.6	3.6
73	62.613	64.901	67.189	3.53	3.53
74	60.337	62.493	64.649	3.45	3.45
75	58.154	60.185	62.216	3.38	3.38
76	56.06	57.973	59.886	3.3	3.3
77	54.051	55.852	57.653	3.23	3.23
78	52.125	53.82	55.515	3.15	3.15
79	50.275	51.87	53.465	3.08	3.08
80	48.5	50	51.5	3	3
81	46.728	48.206	49.684	3.07	3.07
82	45.028	46.484	47.94	3.13	3.13
83	43.397	44.832	46.267	3.2	3.2
84	41.833	43.246	44.659	3.27	3.27
85	40.332	41.723	43.114	3.33	3.33
86	38.891	40.26	41.629	3.4	3.4
87	37.509	38.856	40.203	3.47	3.47
88	36.181	37.506	38.831	3.53	3.53
89	34.905	36.209	37.513	3.6	3.6
90	33.68	34.962	36.244	3.67	3.67
91	32.503	33.764	35.025	3.73	3.73
92	31.373	32.612	33.851	3.8	3.8
93	30.286	31.504	32.722	3.87	3.87
94	29.242	30.439	31.636	3.93	3.93
95	28.236	29.413	30.59	4	4
96	27.271	28.427	29.583	4.07	4.07
97	26.342	27.478	28.614	4.13	4.13
98	25.448	26.564	27.68	4.2	4.2
99	24.589	25.685	26.781	4.27	4.27
100	23.762	24.838	25.914	4.33	4.33
101	22.966	24.023	25.08	4.4	4.4
102	22.199	23.237	24.275	4.47	4.47
103	21.462	22.481	23.5	4.53	4.53
104	20.751	21.752	22.753	4.6	4.6

R80=50kΩ±3% B25/80=4450K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
105	20.067	21.049	22.031	4.67	4.67
106	19.408	20.372	21.336	4.73	4.73
107	18.773	19.72	20.667	4.8	4.8
108	18.162	19.091	20.02	4.87	4.87
109	17.573	18.485	19.397	4.93	4.93
110	17.005	17.9	18.795	5	5
111	16.459	17.337	18.215	5.07	5.07
112	15.931	16.793	17.655	5.13	5.13
113	15.422	16.268	17.114	5.2	5.2
114	14.933	15.763	16.593	5.27	5.27
115	14.46	15.275	16.09	5.33	5.33
116	14.005	14.804	15.603	5.4	5.4
117	13.565	14.349	15.133	5.47	5.47
118	13.141	13.911	14.681	5.53	5.53
119	12.733	13.488	14.243	5.6	5.6
120	12.339	13.08	13.821	5.67	5.67
121	11.958	12.685	13.412	5.73	5.73
122	11.591	12.305	13.019	5.8	5.8
123	11.238	11.938	12.638	5.87	5.87
124	10.897	11.584	12.271	5.93	5.93
125	10.567	11.242	11.917	6	6
126	10.249	10.911	11.573	6.07	6.07
127	9.943	10.593	11.243	6.13	6.13
128	9.647	10.285	10.923	6.2	6.2
129	9.362	9.988	10.614	6.27	6.27
130	9.087	9.701	10.315	6.33	6.33
131	8.822	9.425	10.028	6.4	6.4
132	8.566	9.158	9.75	6.47	6.47
133	8.319	8.9	9.481	6.53	6.53
134	8.08	8.651	9.222	6.6	6.6
135	7.85	8.411	8.972	6.67	6.67
136	7.629	8.18	8.731	6.73	6.73
137	7.416	7.957	8.498	6.8	6.8
138	7.209	7.741	8.273	6.87	6.87
139	7.011	7.533	8.055	6.93	6.93
140	6.82	7.333	7.846	7	7

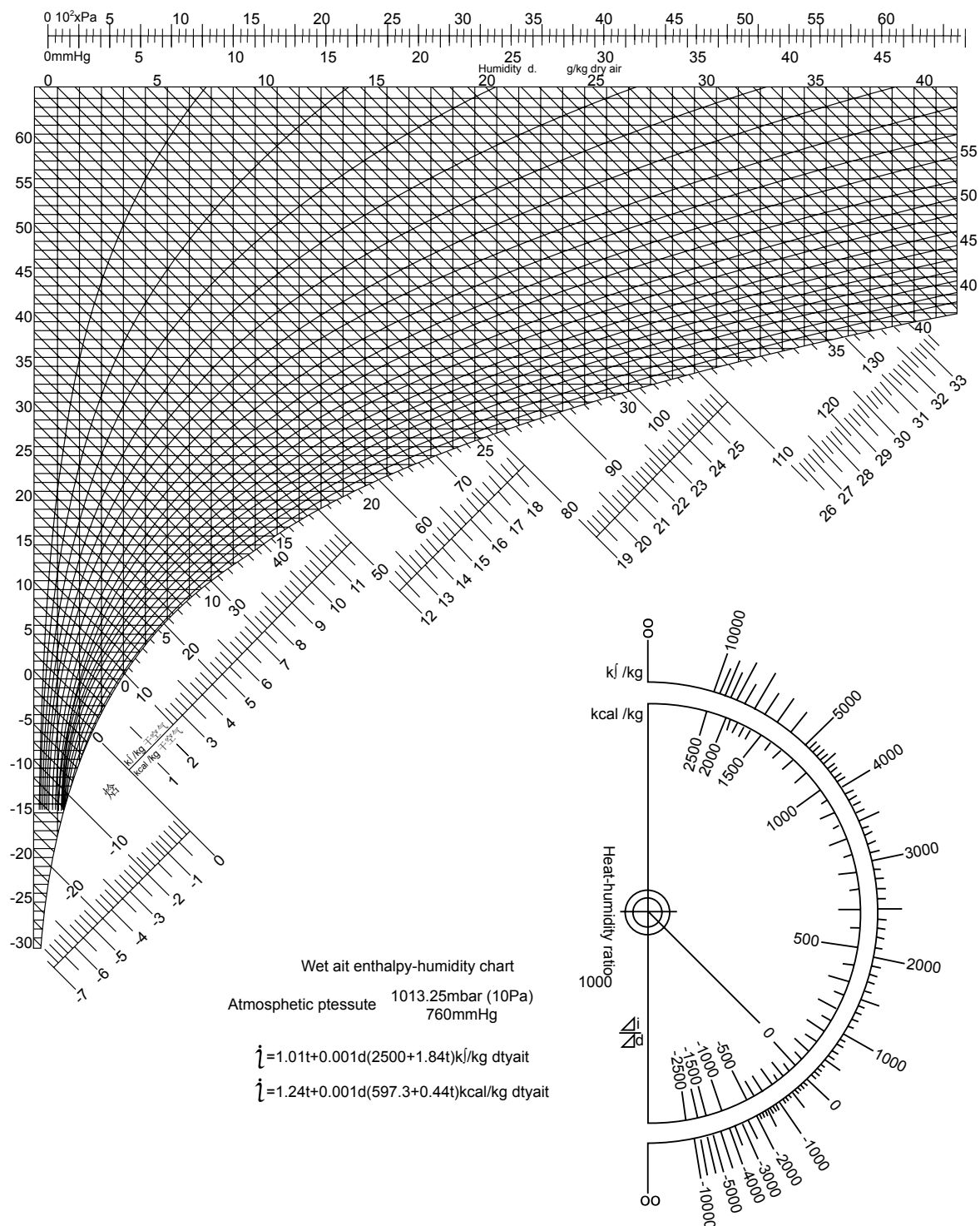
R25=10kΩ±3% B25/50=3700K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
-30	145.819	135.018	124.217	7	7
-29	138.071	129.126	120.181	6.93	6.93
-28	131.793	123.339	114.885	6.85	6.85
-27	125.665	117.684	109.703	6.78	6.78
-26	119.706	112.18	104.654	6.71	6.71
-25	113.933	106.843	99.753	6.64	6.64
-24	108.361	101.687	95.013	6.56	6.56
-23	102.997	96.719	90.441	6.49	6.49
-22	97.847	91.946	86.045	6.42	6.42
-21	92.915	87.371	81.827	6.35	6.35
-20	88.2	82.994	77.788	6.27	6.27
-19	83.702	78.815	73.928	6.2	6.2
-18	79.417	74.832	70.247	6.13	6.13
-17	75.342	71.041	66.74	6.05	6.05
-16	71.471	67.437	63.403	5.98	5.98
-15	67.798	64.015	60.232	5.91	5.91
-14	64.316	60.769	57.222	5.84	5.84
-13	61.017	57.692	54.367	5.76	5.76
-12	57.895	54.778	51.661	5.69	5.69
-11	54.942	52.019	49.096	5.62	5.62
-10	52.149	49.409	46.669	5.55	5.55
-9	49.51	46.941	44.372	5.47	5.47
-8	47.016	44.607	42.198	5.4	5.4
-7	44.659	42.4	40.141	5.33	5.33
-6	42.433	40.315	38.197	5.25	5.25
-5	40.332	38.345	36.358	5.18	5.18
-4	38.346	36.482	34.618	5.11	5.11
-3	36.472	34.723	32.974	5.04	5.04
-2	34.7	33.059	31.418	4.96	4.96
-1	33.027	31.487	29.947	4.89	4.89
0	31.445	30	28.555	4.82	4.82
1	29.951	28.594	27.237	4.75	4.75
2	28.538	27.264	25.99	4.67	4.67
3	27.202	26.006	24.81	4.6	4.6
4	25.938	24.815	23.692	4.53	4.53

R25=10kΩ±3% B25/50=3700K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
5	24.742	23.687	22.632	4.45	4.45
6	23.61	22.619	21.628	4.38	4.38
7	22.538	21.607	20.676	4.31	4.31
8	21.522	20.647	19.772	4.24	4.24
9	20.559	19.737	18.915	4.16	4.16
10	19.646	18.874	18.102	4.09	4.09
11	18.779	18.054	17.329	4.02	4.02
12	17.958	17.276	16.594	3.95	3.95
13	17.177	16.537	15.897	3.87	3.87
14	16.436	15.834	15.232	3.8	3.8
15	15.731	15.166	14.601	3.73	3.73
16	15.061	14.53	13.999	3.65	3.65
17	14.424	13.925	13.426	3.58	3.58
18	13.817	13.349	12.881	3.51	3.51
19	13.24	12.8	12.36	3.44	3.44
20	12.69	12.277	11.864	3.36	3.36
21	12.166	11.778	11.39	3.29	3.29
22	11.666	11.302	10.938	3.22	3.22
23	11.189	10.848	10.507	3.15	3.15
24	10.734	10.414	10.094	3.07	3.07
25	10.3	10	9.7	3	3
26	9.898	9.604	9.31	3.06	3.06
27	9.514	9.226	8.938	3.13	3.13
28	9.147	8.864	8.581	3.19	3.19
29	8.796	8.519	8.242	3.25	3.25
30	8.459	8.188	7.917	3.31	3.31
31	8.137	7.871	7.605	3.38	3.38
32	7.828	7.568	7.308	3.44	3.44
33	7.532	7.277	7.022	3.5	3.5
34	7.248	6.999	6.75	3.56	3.56
35	6.977	6.733	6.489	3.63	3.63
36	6.716	6.477	6.238	3.69	3.69
37	6.466	6.232	5.998	3.75	3.75
38	6.227	5.998	5.769	3.81	3.81
39	5.997	5.773	5.549	3.88	3.88
40	5.776	5.557	5.338	3.94	3.94
41	5.564	5.35	5.136	4	4

R25=10kΩ±3% B25/50=3700K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
42	5.36	5.151	4.942	4.06	4.06
43	5.166	4.961	4.756	4.13	4.13
44	4.978	4.778	4.578	4.19	4.19
45	4.799	4.603	4.407	4.25	4.25
46	4.625	4.434	4.243	4.31	4.31
47	4.46	4.273	4.086	4.38	4.38
48	4.301	4.118	3.935	4.44	4.44
49	4.148	3.969	3.79	4.5	4.5
50	4.001	3.826	3.651	4.56	4.56
51	3.86	3.689	3.518	4.63	4.63
52	3.724	3.557	3.39	4.69	4.69
53	3.594	3.431	3.268	4.75	4.75
54	3.468	3.309	3.15	4.81	4.81
55	3.349	3.193	3.037	4.88	4.88
56	3.233	3.081	2.929	4.94	4.94
57	3.123	2.974	2.825	5	5
58	3.015	2.87	2.725	5.06	5.06
59	2.913	2.771	2.629	5.13	5.13
60	2.815	2.676	2.537	5.19	5.19
61	2.721	2.585	2.449	5.25	5.25
62	2.63	2.497	2.364	5.31	5.31
63	2.543	2.413	2.283	5.38	5.38
64	2.459	2.332	2.205	5.44	5.44
65	2.379	2.255	2.131	5.5	5.5
66	2.301	2.18	2.059	5.56	5.56
67	2.228	2.109	1.99	5.63	5.63
68	2.156	2.04	1.924	5.69	5.69
69	2.088	1.974	1.86	5.75	5.75
70	2.021	1.91	1.799	5.81	5.81
71	1.958	1.849	1.74	5.88	5.88
72	1.897	1.791	1.685	5.94	5.94
73	1.839	1.735	1.631	6	6
74	1.782	1.68	1.578	6.06	6.06
75	1.728	1.628	1.528	6.13	6.13

R25=10kΩ±3% B25/50=3700K±3%					
Temp	Resistance (kΩ)			% (Resist. Tol)	
(°C)	Rmax	R (t) Normal	Rmin	MAX (+)	MIN (-)
76	1.676	1.578	1.48	6.19	6.19
77	1.626	1.53	1.434	6.25	6.25
78	1.578	1.484	1.39	6.31	6.31
79	1.531	1.439	1.347	6.38	6.38
80	1.486	1.396	1.306	6.44	6.44
81	1.443	1.355	1.267	6.5	6.5
82	1.401	1.315	1.229	6.56	6.56
83	1.362	1.277	1.192	6.63	6.63
84	1.323	1.24	1.157	6.69	6.69
85	1.285	1.204	1.123	6.75	6.75
86	1.249	1.169	1.089	6.81	6.81
87	1.214	1.136	1.058	6.88	6.88
88	1.181	1.104	1.027	6.94	6.94
89	1.148	1.073	0.998	7	7
90	1.116	1.042	0.968	7.06	7.06
91	1.085	1.013	0.941	7.13	7.13
92	1.056	0.985	0.914	7.19	7.19
93	1.026	0.957	0.888	7.25	7.25
94	0.998	0.93	0.862	7.31	7.31
95	0.971	0.904	0.837	7.38	7.38
96	0.944	0.879	0.814	7.44	7.44
97	0.918	0.854	0.79	7.5	7.5
98	0.893	0.83	0.767	7.56	7.56
99	0.867	0.806	0.745	7.63	7.63
100	0.843	0.783	0.723	7.69	7.69
101	0.819	0.76	0.701	7.75	7.75
102	0.796	0.738	0.68	7.81	7.81
103	0.772	0.716	0.66	7.88	7.88
104	0.749	0.694	0.639	7.94	7.94
105	0.727	0.673	0.619	8	8

Appendix II: Enthalpy-Humidity Chart





Haier Commercial Air Condition

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