

VNMF Series

Mini VRF Side Discharge Technical Manual


220~240V/3/60Hz



Part 1 General Information

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1. Product lineup

Model	Capacity	External appearance	Power Supply
VNMF008Q4A-D13V252	25.2kW (8HP)		220V,3Ph,60Hz
VNMF009Q4A-D16V280	28kW (10HP)		

2. Features

2.1 Wide application range

2.1.1 Wide capacity range

The Capacity range of side discharge type is from 20kW to 45kW, which is designed to optimize performance and better match varieties of application requirement. Especially, the integrated designed VNMF series is focus on provide better air conditioning system solution for the small and middle-sized buildings in the global market.

2.1.2 Flexible indoor units connection

Model	Max. quantity of connectable indoor units
VNMF008Q4A-D11V252	11
VNMF009Q4A-D12V280	12

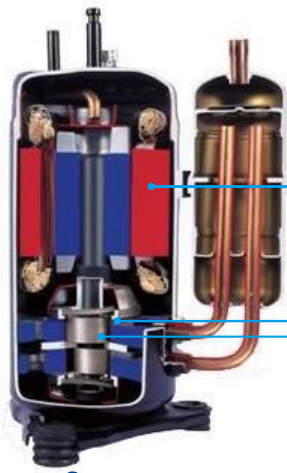
2.1.3 Flexible piping design

Piping length	Permitted value (m)	
Actual total piping length	120	
Longest piping	Actual length	60
	Equivalent length	70
Equivalent piping length from the farthest indoor unit to the first indoor branch joint	20	
The indoor unit to the nearest branch joint	15	
Level difference between indoor and outdoor units	Outdoor unit up	30
	Outdoor unit down	20
Level difference between indoor units	8	

2.2 High efficiency

2.2.1 High efficiency DC inverter compressor

High efficiency DC inverter twin rotary compressor



Compressor
(Twin Rotary) structure

Highly Efficient DC Motor:

- Creative motor core design
- High density neodymium magnet
- Concentrated type stator
- Wider operating frequency range

Better balance and Extremely Low Vibration:

- Twin eccentric cams
- 2 balance weights

Highly Stable Moving Parts:

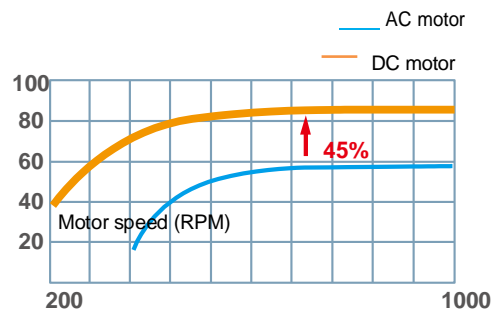
- Optimal material matching rollers and vanes
- Optimize compressor drive technology
- Highly robust bearings
- Compact structure

2.2.2 High efficiency DC motor

According to the running load and pressure, it controls the speed of DC fan to achieve the minimum power consumption.



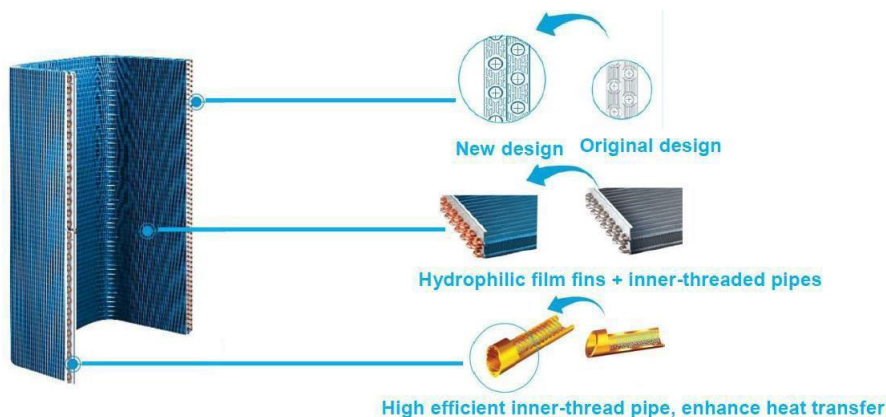
Efficiency (%)



2.2.3 High efficiency heat exchanger

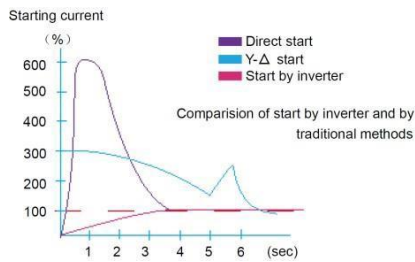
The new designed window fins enlarge the heat-exchanging area, decrease the air resistance, save more power and enhance heat exchange performance.

Hydrophilic film fins and inner-threaded copper pipes optimize heat exchange efficiency.



2.3 Enhanced comfort

2.3.1 Intelligent soft start technology

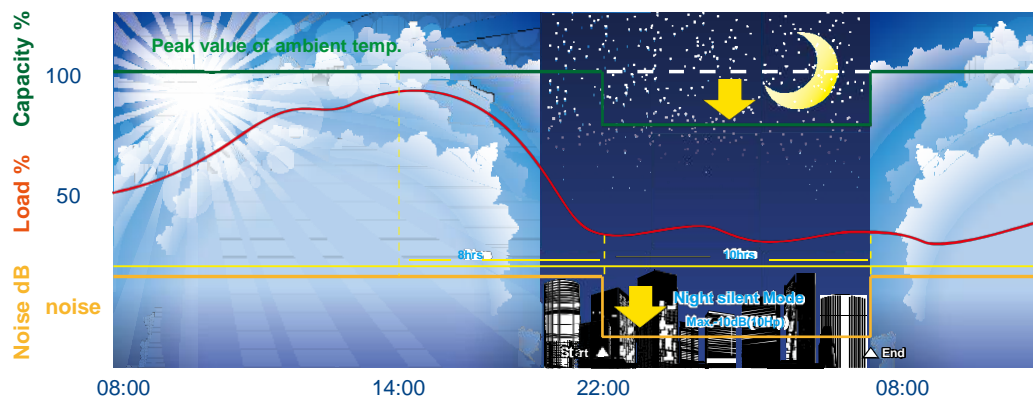


DC inverter compressor soft start function reduces strike to the electric network. This kind of high-performance and low sound scroll compressor operates at a faster rate when starting, reducing start-up time. It also helps the unit to quickly adjust the room temperature to the set level.

2.3.2 Night silent operation mode

Omega's Night Silent Mode feature which is easily set on the PCB board allows the unit to be set to vary time options during Non-Peak and Peak operation time optimizing the units noise output. Night silent operation will be activated X hours after the peak temperature during daytime, and it will go back to normal operation after Y hours.

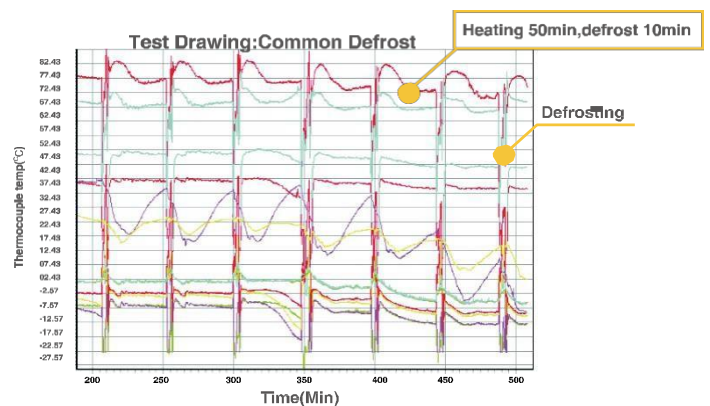
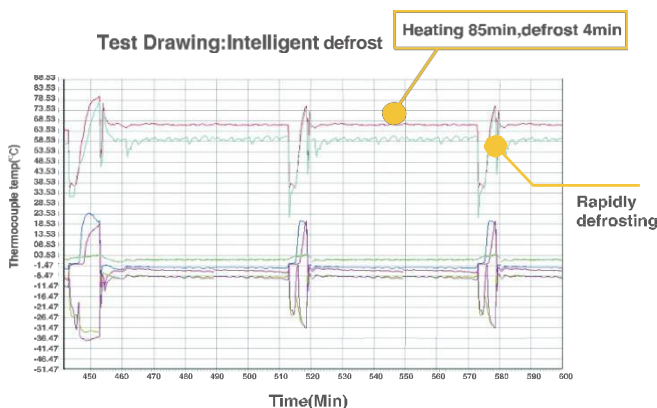
Model 1 → X: 6 hours, Y: 10 hours Model 2 → X: 8 hours, Y: 10 hours
 Model 3 → X: 6 hours, Y: 12 hours Model 4 → X: 8 hours, Y: 8 hours



Notes:

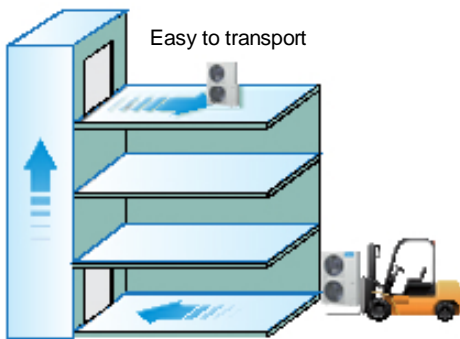
This function can be activated by setting at site. Temperature (load) curve shown in the graph is just an example.

2.3.3 Intelligent defrosting raises heat capacity



2.4 Easy installation and service

2.4.1 Compact design for effective use of space



Compact size and light weight design minimizes the installation footprint, reduces the installation floor load, and easier for transportation. For some projects the units can even be transported through the elevator or forklift, lessen access problem at the jobsite.

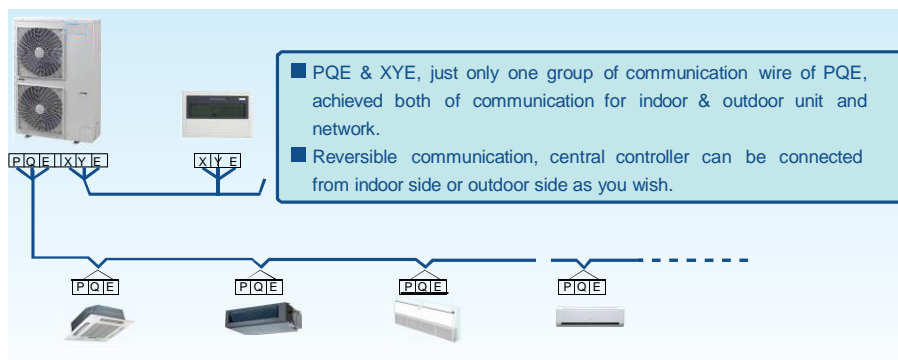
2.4.2 Space saving design

The side discharge type is slimmer and more compact, resulting in significant savings in installation space.

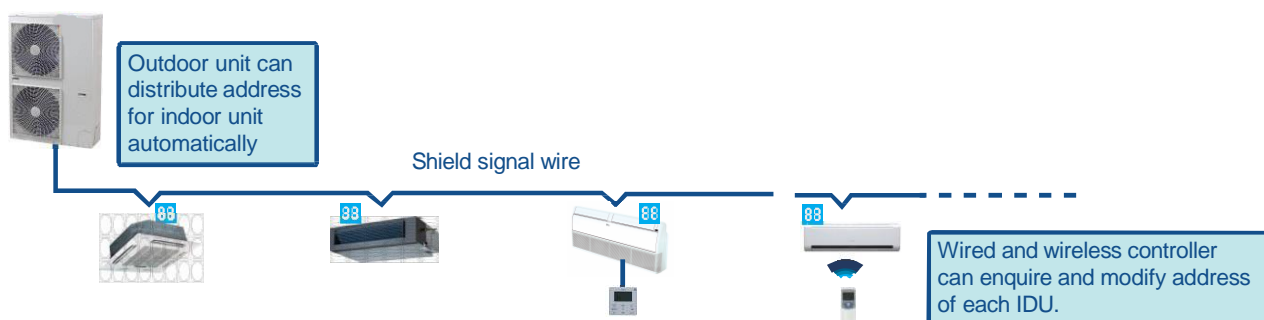


2.4.3 Simple signal line connection

Installation is easier as communication wiring can be shared by indoor & outdoor units. It's easy for the user to retrofit the existing system with a centralized control by simply connecting to the outdoor units.



2.4.4 Auto addressing



2.4.5 Easy maintenance

Forced cooling button makes outdoor unit run in cooling mode at any condition, so it is very easy for you to charge refrigerant to the system when it needs to be done. The self-diagnosis function detects malfunctions in major locations in the system and displays the type of malfunction and location. This allows service and maintenance to be performed more efficiently.



Part 2 Specifications & Performance

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1. Specifications

Model			VNMF008Q4A-D11V252	VNMF009Q4A-D12V280
Power supply		V-Ph-Hz	220V,3Ph,60Hz	220V,3Ph,60Hz
Cooling	Capacity	kW	25.2	28
	Power input	kW	6.8	7.8
	EER		3.71	3.59
Heating	Capacity	kW	27	31.5
	Power input	kW	6.4	7.6
	COP		4.22	4.14
Compressor	Model		LNB53FCFMC	LNB53FCFMC
	Type		Rotary	Rotary
	Brand		MITSUBISHI	MITSUBISHI
	Quantity		1	1
	Capacity	kW	26.9	26.9
	Input	kW	8.8	8.8
	Crankcase heater	W	25	25
	Refrigerant oil type		FV50S	FV50S
	Refrigerant oil charge	ml	1700+1500	1700+1500
Outdoor fan motor	Model		WZDK170-38G-1	WZDK170-38G-1
	Type		DC motor	DC motor
	Quantity		2	2
	Brand		Panasonic/Nidec/Weiling	Panasonic/Nidec/Weiling
	Insulation class		E	E
	Safe class		IP×4	IP×4
	Input	W	250(up)/185(down)	250(up)/185(down)
	Output	W	200(up)/150(down)	200(up)/150(down)
	Rated current	A	1.7(up)/1.4(down)	1.7(up)/1.4(down)
Outdoor fan	Material		ASG20	ASG20
	Type		Axial fan	Axial fan
	Quantity	mm	2	2
	Diameter	mm	560	560
	Height		170	170
Outdoor coil	Number of rows		2	2
	Tube pitch(a)× row pitch(b)	mm		
	Fin spacing	mm	1.5	1.5
	Fin type		Hydrophilic fin	Hydrophilic fin
	Tube outside diameter	mm	Φ7	Φ7
	Tube type		Inner groove tube	Inner groove tube
	Coil length×height	mm	1080×1512	1080×1512
	Number of circuits		18	18
Outdoor air flow		m ³ /h	10494	10494
Sound pressure level		dB(A)	58	60
Connectable indoor unit	Total capacity	%	50-130	50-130
	Max. quantity		11	12
Outdoor unit	Net dimension (W×H×D)	mm	1120×1558×528	1120×1558×528
	Packing (W×H×D)	mm	1270×1720×565	1270×1720×565
	Net/Gross Weight		kg	147/163
Refrigerant	Type		R410A	R410A
	Factory charged	kg	6.2	6.2
Throttle type			Electronic expansion valve	Electronic expansion valve
Design pressure (Hi/Lo)		MPa	4.4/2.6	4.4/2.6
Refrigerant piping	Liquid pipe	mm	Φ9.53	Φ9.53
	Gas pipe	mm	Φ22.2	Φ22.2
Ambient temp. range	Cooling	°C	-5~48	-5~48
	Heating	°C	-15~24	-15~24

Notes: Capacities are based on the following conditions:

Cooling: Indoor temperature 27 °C DB/19 °C WB; Outdoor temperature 35 °C DB/24 °C WB.

Heating: Indoor temperature 20 °C DB/15 °C WB; Outdoor temperature 7 °C DB/6 °C WB.

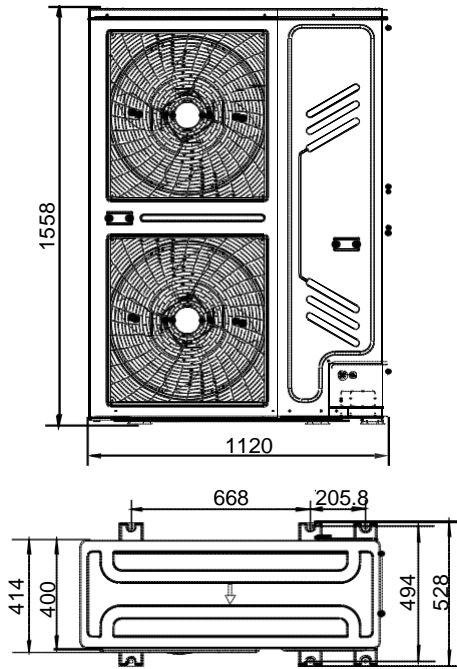
Piping length: Interconnecting piping length 7.5m, level difference of zero.

Sound values are measured in a semi-anechoic room, at a position 1m in front of the unit and 1.3m above the floor. The above data may be changed without notice for future improvement on quality and performance.

2. Dimensions

VNMF008Q4A-D11V252, VNMF009Q4A-D12V280

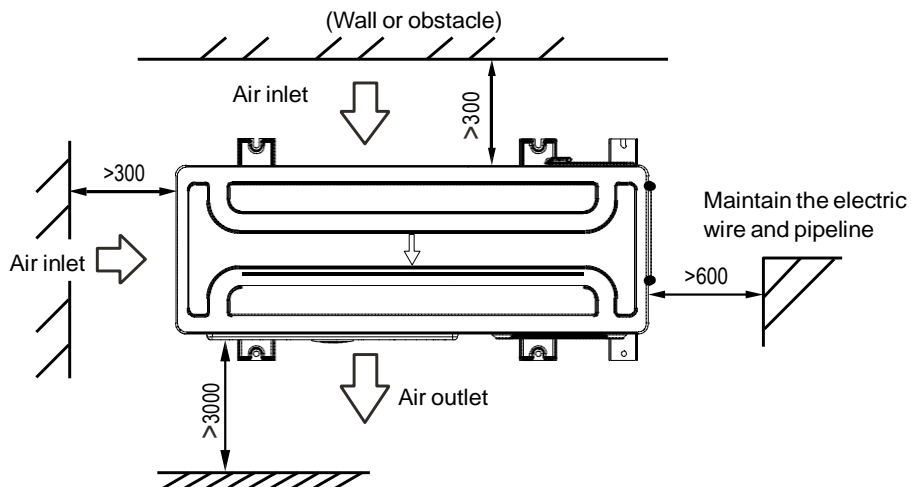
Unit: mm



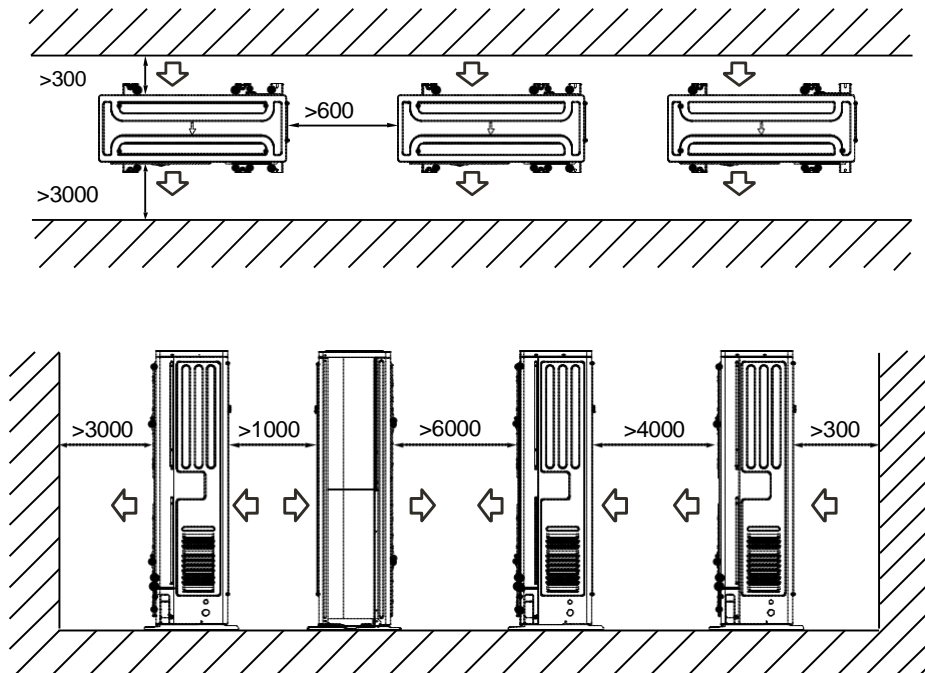
3. Service space

VNMF008Q4A-D11V252, VNMF009Q4A-D12V280

☒ Single unit installation

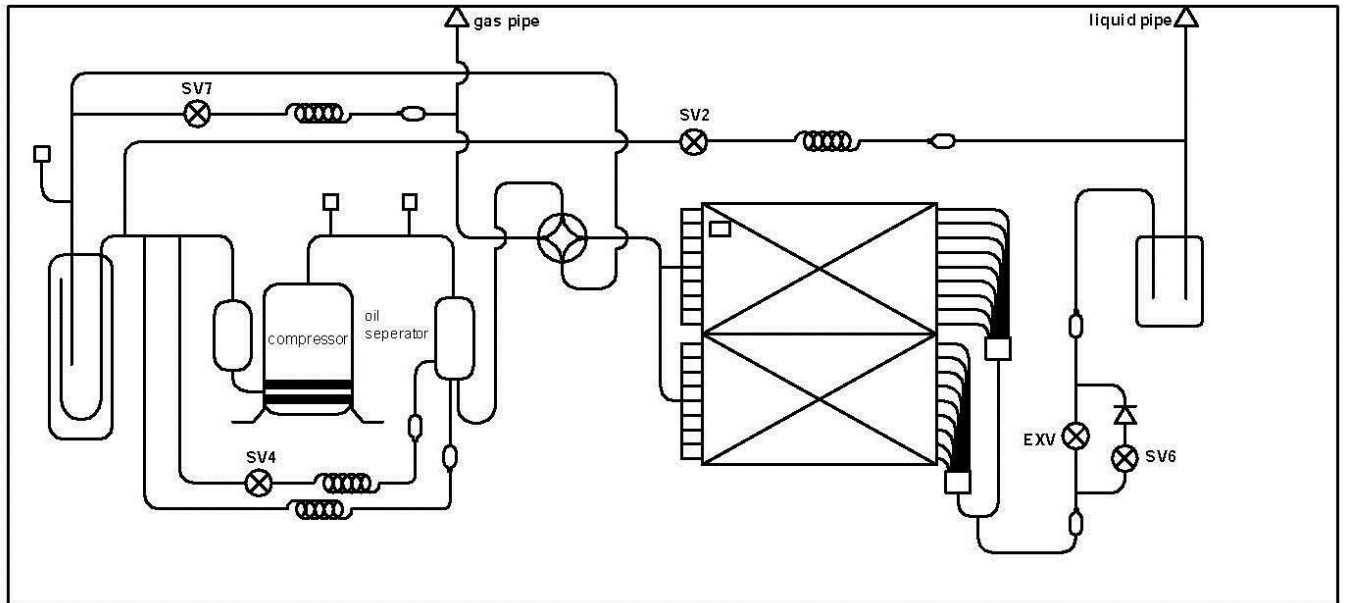


☒ Multiple unit installation



4. Piping diagrams

VNMF008Q4A-D11V252, VNMF009Q4A-D12V280



Key components:

Oil separator: It is used to separate oil from high pressure and high temperature gas refrigerant, which is pumped out from compressor. The separation efficiency is up to 99%, it makes the oil return back to each compressor very soon.

Gas-liquid separator: It is used to store the liquid refrigerant and oil; it can protect the compressor from liquid hammer.

Four-way valve (SV1): It is used to change the refrigerant flow direction; it is closed in cooling mode and opened in heating mode.

EXV (Electromagnetic Expansion Valve): It is used to adjust refrigerant volume.

SV2: It is used to protect compressor. When any compressor discharge temperature is higher than 100°C, SV2 will be open to spray a little liquid refrigerant to cooling compressor, and it will be closed when the discharge temperature is lower than 90°C.

SV4: It is used to help the oil in oil separator return back to compressor, guarantee the oil balance among compressors. When the unit is initial power on, SV4 will open 120 seconds, then it will reopen after DC inverter compressor running 5 minutes and then it will close after DC inverter compressor running 15 minutes. Later, SV4 will open 3 minutes after DC inverter running 20 minutes regularly.

SV5: It is used to enlarge refrigerant volume to accelerate defrosting speed. In defrosting mode, SV5 will be open to cut the refrigerant flowing circle, so the defrosting process will take less time, in cooling mode, SV5 will always be closed.

SV6: It is used to by-pass refrigerant. It will be closed in heating and standby mode. It will be open in forced cooling and oil return mode. In cooling mode, it will be open or closed according to discharge pressure.

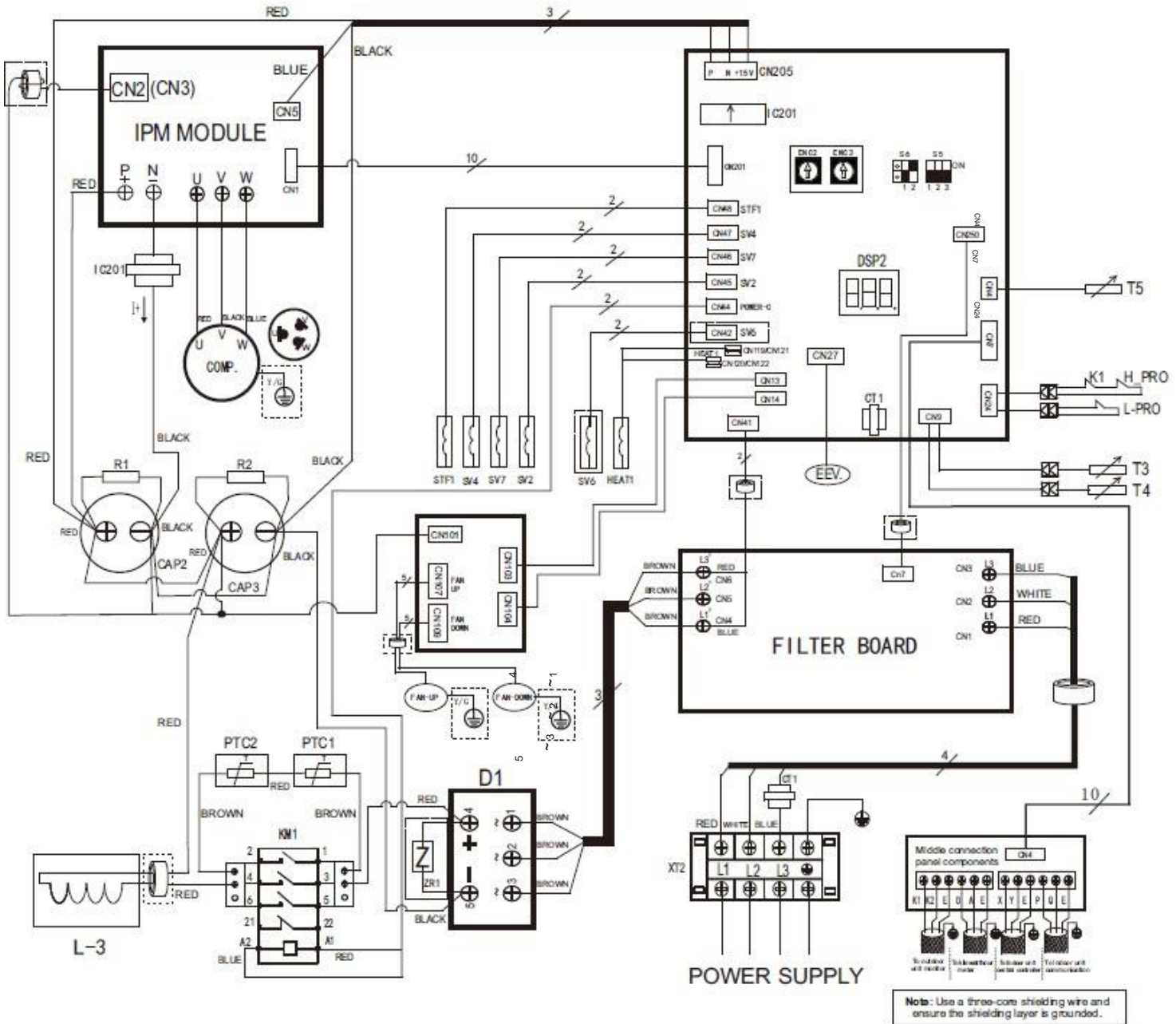
SV7: It is used to balance system pressure before open the unit, and it can guarantee system reliability in low temperature heating mode.

High pressure sensor: It is used to supervisor the discharge pressure of the compressor and to control the DC fan speed.

T3: Pipe temperature sensor; **T4:** Ambient temperature sensor

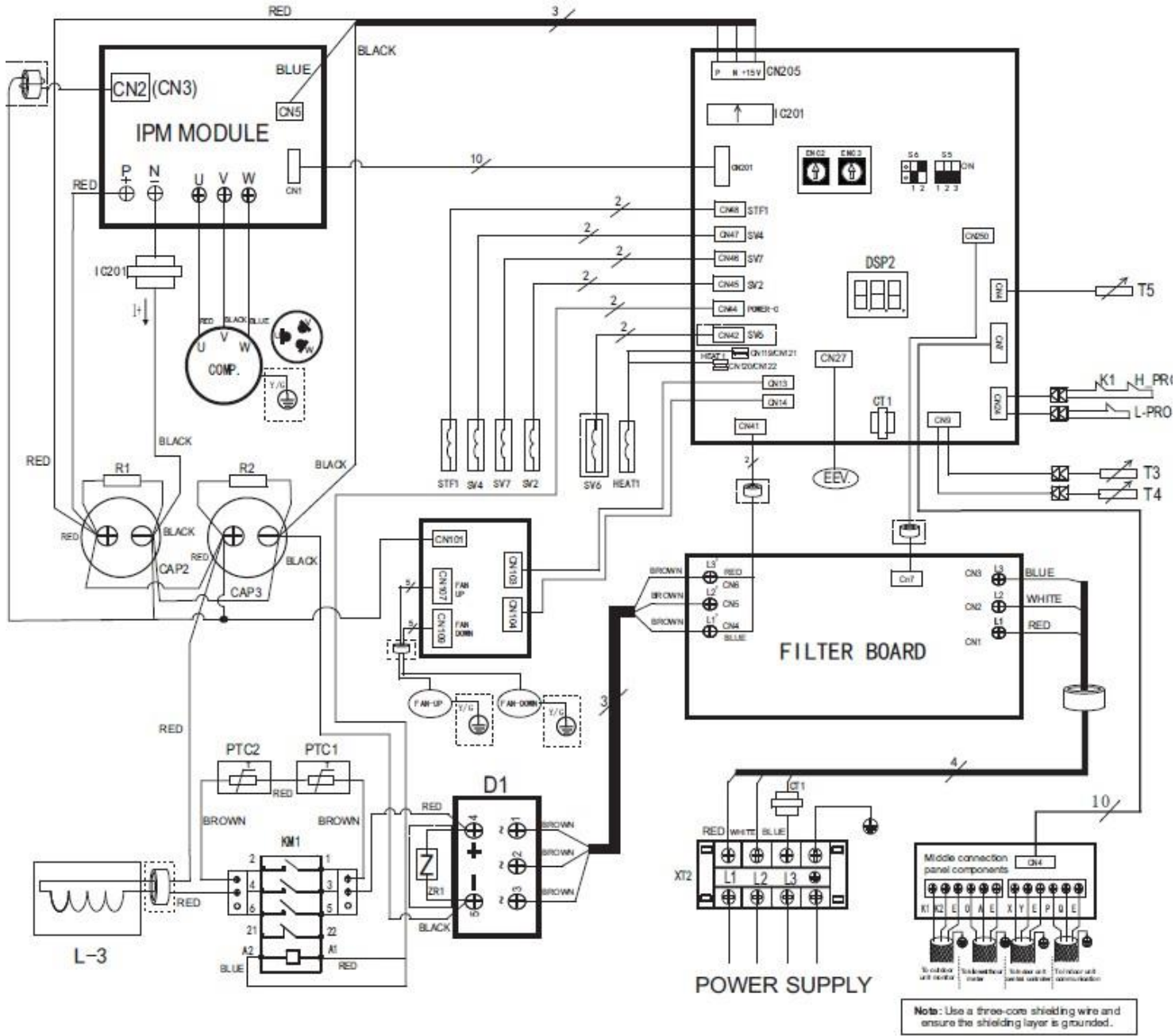
5 Wiring diagram

VNMF008Q4A-D11V252



5 Wiring diagram

VNMF009Q4A-D12V280



6. Electric characteristics

Model	Units				Power supply			Compressor		kW	OFM FLA
	Hz	Voltage	Min.	Max.	MCA	TOCA	MFA	MSC	RLA		
VNMF008Q4A-D11V252	60	220	198	242	35	37.8	40	/	28	0.17x2	2.1+1.7
VNMF009Q4A-D12V280	60	220	198	242	35	37.8	40	/	28	0.17x2	2.1+1.7

Notes:

1. RLA is based on the following conditions, Indoor temp. 27°C DB/19°C WB, Outdoor temp. 35°C DB
2. TOCA means the total value of each OC set.
3. MSC means the Max. current during the starting of compressor.
4. Voltage range: Units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed range limits.
5. Maximum allowable voltage variation between phases is 2%.
6. Selection wire size based on the value of MCA.
7. MFA is used to select the circuit breaker and the ground fault circuit interrupter (earth circuit breaker).

Symbols:

MCA: Min. Circuit Amps. (A)

TOCA: Total Over-current Amps. (A)

MFA: Max. Fuse Amps. (A)

MSC: Max. Starting Amps. (A)

RLA: Rated Locked Amps. (A)

OFM: Outdoor Fan Motor.

FLA: Full Load Amps. (A)

kW: Rated Motor Output (KW)

7. Capacity tables

7.1 Cooling capacity tables

VNMF008Q4A-D11V252

TC: Total Capacity (kW); PI: Power Input (kW) (Compressor + Outdoor fan motor)

combination (%) (Capacity index)	Outdoor temperature (°C DB)	Indoor temperature(°C)													
		DB:20.8,WB:14		DB:23.3,WB:16		DB:25.8,WB:18		DB:27,WB:19		DB:28.2,WB:20		DB:30.7,WB:22		DB:32,WB:24	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	10	22.40	2.65	26.80	3.16	30.26	3.73	31.72	3.90	32.27	3.93	32.77	3.94	35.54	3.98
	12	22.40	2.70	26.80	3.22	30.26	3.80	31.44	3.97	31.99	4.00	32.48	4.02	35.22	4.05
	14	22.40	2.75	26.80	3.28	30.26	3.87	31.16	4.05	31.70	4.07	31.90	4.09	34.91	4.13
	16	22.40	2.80	26.80	3.34	29.99	3.94	30.60	4.12	31.14	4.15	31.61	4.16	34.59	4.20
	18	22.40	2.85	26.80	3.40	29.46	4.01	30.32	4.19	30.86	4.22	31.32	4.24	34.28	4.27
	19	22.40	2.90	26.80	3.46	29.19	4.08	30.05	4.26	30.57	4.29	31.03	4.31	33.96	4.35
	21	22.40	3.11	26.80	3.71	28.92	4.37	29.77	4.57	30.29	4.60	30.74	4.62	33.65	4.66
	23	22.40	3.33	26.80	3.97	28.65	4.68	29.49	4.89	30.01	4.93	30.45	4.95	33.33	4.99
	25	22.40	3.56	26.80	4.25	28.38	5.01	29.21	5.24	29.72	5.27	30.16	5.30	33.02	5.34
	27	22.40	3.81	26.80	4.54	28.12	5.36	28.93	5.60	29.44	5.64	29.87	5.66	32.71	5.71
	29	22.40	4.07	26.59	4.85	27.85	5.72	28.66	5.98	29.16	6.02	29.58	6.04	32.39	6.10
	31	22.40	4.34	26.51	5.17	27.58	6.10	28.38	6.38	28.87	6.42	29.29	6.45	32.08	6.50
	33	22.40	4.62	26.51	5.51	27.31	6.50	28.10	6.79	28.59	6.84	29.00	6.87	31.76	6.93
	35	22.40	4.91	26.25	5.86	26.78	6.91	27.82	7.22	28.31	7.27	29.00	7.30	31.45	7.37
	37	22.40	5.22	26.25	6.23	26.78	7.35	27.26	7.68	27.74	7.74	26.97	7.77	30.82	7.84
	39	22.40	5.25	26.25	6.26	26.24	7.39	27.07	7.72	27.46	7.77	26.68	7.80	30.50	7.87
	41	22.40	5.27	25.72	6.29	26.24	7.42	26.99	7.75	27.18	7.81	26.39	7.84	30.19	7.91
	43	21.28	5.30	25.72	6.32	25.44	7.45	26.71	7.79	26.89	7.84	27.55	7.87	29.87	7.94
46	21.28	5.32	24.94	6.35	25.44	7.49	25.63	7.82	26.61	7.88	27.26	7.91	29.56	7.98	
48	21.28	5.34	24.94	6.37	24.10	7.52	25.20	7.86	25.76	7.92	26.97	7.95	29.25	8.02	
120%	10	22.11	2.61	25.88	3.11	28.78	3.67	30.72	3.83	31.82	3.86	32.31	3.88	35.04	3.91
	12	22.11	2.65	25.88	3.17	28.78	3.74	30.72	3.90	31.54	3.93	32.03	3.95	34.73	3.98
	14	22.11	2.70	25.88	3.22	28.78	3.80	30.72	3.98	31.26	4.00	31.74	4.02	34.42	4.05
	16	22.11	2.75	25.88	3.28	28.78	3.87	30.72	4.05	30.98	4.07	31.46	4.09	34.11	4.13
	18	22.11	2.80	25.88	3.34	28.78	3.94	30.72	4.12	30.70	4.15	31.17	4.16	33.80	4.20
	19	22.11	2.85	25.88	3.40	28.78	4.01	30.45	4.19	30.42	4.22	30.89	4.23	33.49	4.27
	21	22.11	3.05	25.88	3.64	28.78	4.30	30.17	4.49	29.87	4.52	30.60	4.54	33.18	4.58
	23	22.11	3.27	25.88	3.90	28.25	4.60	29.90	4.81	29.59	4.84	30.31	4.86	32.87	4.91
	25	22.11	3.50	25.88	4.17	27.99	4.93	29.63	5.15	29.31	5.18	30.03	5.20	32.56	5.25
	27	22.11	3.74	25.88	4.46	27.72	5.26	29.35	5.50	29.03	5.54	29.74	5.56	32.25	5.61
	29	22.11	3.99	25.88	4.76	27.46	5.62	28.80	5.87	28.75	5.92	29.46	5.94	31.94	5.99
	31	22.11	4.26	25.88	5.08	26.93	6.00	27.98	6.26	28.47	6.31	29.17	6.33	31.63	6.39
	33	22.11	4.54	25.88	5.41	26.67	6.39	27.71	6.67	28.19	6.72	28.88	6.75	31.32	6.81
	35	22.11	4.83	25.88	5.76	26.40	6.79	27.43	7.10	27.91	7.15	28.60	7.18	31.01	7.24
	37	22.11	5.13	25.88	6.12	26.14	7.23	26.88	7.55	27.35	7.60	28.03	7.63	30.39	7.70
	39	22.11	5.16	25.88	6.15	25.87	7.26	26.61	7.58	27.07	7.64	27.74	7.67	30.08	7.73
	41	22.11	5.18	24.59	6.18	25.61	7.29	26.33	7.62	26.80	7.67	27.45	7.70	29.77	7.77
	43	22.11	5.20	24.33	6.21	25.35	7.32	26.06	7.65	26.52	7.71	27.17	7.74	29.46	7.81
46	22.11	5.23	24.07	6.23	25.08	7.36	25.79	7.69	25.71	7.74	26.88	7.77	29.15	7.84	
48	21.45	5.25	23.81	6.26	24.82	7.39	25.24	7.72	25.96	7.78	26.60	7.81	28.84	7.88	
110%	10	21.52	2.55	25.22	3.04	25.73	3.59	28.60	3.75	30.73	3.78	31.49	3.79	34.14	3.83
	12	21.52	2.60	25.22	3.10	25.73	3.66	28.60	3.82	30.46	3.85	31.21	3.86	33.84	3.90
	14	21.52	2.64	25.22	3.15	25.73	3.72	28.60	3.89	30.19	3.92	30.93	3.93	33.54	3.97
	16	21.52	2.69	25.22	3.21	25.73	3.79	28.60	3.96	29.92	3.99	30.65	4.00	33.24	4.04
	18	21.52	2.74	25.22	3.27	25.73	3.86	28.60	4.03	29.65	4.06	30.37	4.07	32.93	4.11
	19	21.52	2.79	25.22	3.32	25.73	3.92	28.60	4.10	29.37	4.13	30.09	4.14	32.63	4.18

	21	21.52	2.99	25.22	3.56	25.73	4.20	28.60	4.39	29.10	4.42	29.82	4.44	32.33	4.48
	23	21.52	3.20	25.22	3.82	25.73	4.50	28.33	4.71	28.83	4.74	29.54	4.76	32.03	4.80
	25	21.52	3.42	25.22	4.08	25.73	4.82	28.07	5.04	28.56	5.07	29.26	5.09	31.72	5.14
	27	21.52	3.66	25.22	4.37	25.73	5.15	27.80	5.38	28.29	5.42	28.98	5.44	31.42	5.49
	29	21.52	3.91	25.22	4.66	25.73	5.50	27.53	5.75	28.01	5.79	28.70	5.81	31.12	5.86
	31	21.52	4.17	25.22	4.97	25.73	5.87	27.26	6.13	27.74	6.17	28.42	6.20	30.82	6.25
	33	21.52	4.44	25.22	5.29	25.73	6.25	27.00	6.53	27.47	6.57	28.14	6.60	30.52	6.66
	35	21.52	4.72	25.22	5.63	25.73	6.65	26.73	6.95	27.20	6.99	27.87	7.02	30.21	7.08
	37	21.52	5.02	25.22	5.99	25.73	7.07	26.20	7.39	26.65	7.44	27.31	7.47	29.61	7.54
	39	21.52	5.05	25.22	6.02	25.73	7.10	25.93	7.42	26.38	7.47	27.03	7.50	29.31	7.57
	41	21.52	5.07	25.22	6.04	25.73	7.13	25.66	7.45	26.11	7.50	26.75	7.53	29.01	7.60
	43	21.52	5.09	25.22	6.07	25.73	7.17	25.39	7.49	25.84	7.54	26.47	7.57	28.70	7.64
	46	21.52	5.11	25.22	6.10	25.73	7.20	25.13	7.52	25.57	7.57	26.19	7.60	28.40	7.67
	48	20.44	5.14	24.46	6.13	25.21	7.23	2.49	7.56	25.29	7.61	25.92	7.64	28.10	7.71
100%	10	20.29	2.31	23.78	2.98	24.26	3.51	25.20	3.60	27.44	3.63	29.42	3.64	32.19	3.68
	12	20.29	2.35	23.78	3.03	24.26	3.58	25.20	3.67	27.44	3.70	29.42	3.71	31.90	3.75
	14	20.29	2.39	23.78	3.09	24.26	3.64	25.20	3.74	27.44	3.77	29.16	3.78	31.62	3.81
	16	20.29	2.43	23.78	3.14	24.26	3.71	25.20	3.81	27.44	3.83	28.90	3.85	31.33	3.88
	18	20.29	2.48	23.78	3.20	24.26	3.77	25.20	3.88	27.44	3.90	28.64	3.92	31.05	3.95
	19	20.29	2.52	23.78	3.25	24.26	3.84	25.20	3.94	27.44	3.97	28.37	3.99	30.76	4.02
	21	20.29	2.70	23.78	3.49	24.26	4.12	25.20	4.23	27.44	4.26	28.11	4.28	30.48	4.32
	23	20.29	2.89	23.78	3.74	24.26	4.41	25.20	4.54	27.44	4.57	27.85	4.59	30.19	4.63
	25	20.29	3.10	23.78	4.00	24.26	4.72	25.20	4.86	27.18	4.90	27.58	4.92	29.91	4.96
	27	20.29	3.31	23.78	4.27	24.26	5.04	25.20	5.20	26.92	5.24	27.32	5.26	29.62	5.31
	29	20.29	3.53	23.78	4.56	24.26	5.39	25.20	5.56	26.67	5.60	27.06	5.62	29.34	5.67
	31	20.29	3.77	23.78	4.87	24.26	5.74	25.20	5.93	26.41	5.97	26.80	6.00	29.05	6.05
	33	20.29	4.01	23.78	5.18	24.26	6.12	25.20	6.32	25.90	6.37	26.53	6.39	28.77	6.45
	35	20.29	4.27	23.78	5.51	24.26	6.51	25.20	6.80	25.64	6.85	26.27	6.87	28.48	6.94
	37	20.29	4.54	23.78	5.87	24.26	6.92	24.70	6.99	25.13	7.04	25.75	7.06	27.92	7.13
	39	20.29	4.56	23.78	5.89	24.26	6.95	24.44	7.04	24.87	7.09	25.48	7.12	27.63	7.18
	41	20.29	4.58	23.78	5.92	24.26	6.98	24.19	7.11	24.62	7.16	25.22	7.19	27.35	7.26
	43	20.29	4.60	23.78	5.94	24.26	7.02	23.94	7.16	24.36	7.21	24.96	7.24	27.06	7.30
	46	20.29	4.62	23.30	5.97	24.26	7.05	23.69	7.21	24.10	7.26	24.69	7.29	26.78	7.35
	48	20.29	4.65	23.06	6.00	23.53	7.08	23.44	7.28	23.85	7.33	24.43	7.36	26.49	7.42
90%	10	18.26	2.06	21.40	2.45	21.83	2.89	22.68	3.02	23.08	3.04	25.30	3.06	27.43	3.08
	12	18.26	2.09	21.40	2.50	21.83	2.95	22.68	3.08	23.08	3.10	25.30	3.11	27.43	3.14
	14	18.26	2.13	21.40	2.54	21.83	3.00	22.68	3.13	23.08	3.16	25.30	3.17	27.43	3.20
	16	18.26	2.17	21.40	2.59	21.83	3.05	22.68	3.19	23.08	3.21	25.30	3.23	27.43	3.25
	18	18.26	2.21	21.40	2.63	21.83	3.11	22.68	3.25	23.08	3.27	25.30	3.28	27.17	3.31
	19	18.26	2.25	21.40	2.68	21.83	3.16	22.68	3.30	23.08	3.33	25.30	3.34	26.92	3.37
	21	18.26	2.41	21.40	2.87	21.83	3.39	22.68	3.54	23.08	3.56	25.30	3.58	26.66	3.61
	23	18.26	2.58	21.40	3.07	21.83	3.63	22.68	3.79	23.08	3.82	25.30	3.83	26.41	3.87
	25	18.26	2.76	21.40	3.29	21.83	3.88	22.68	4.06	23.08	4.09	25.06	4.10	26.15	4.14
	27	18.26	2.95	21.40	3.52	21.83	4.15	22.68	4.34	23.08	4.37	24.83	4.38	26.15	4.42
	29	18.26	3.15	21.40	3.76	21.83	4.43	22.68	4.63	23.08	4.66	24.59	4.68	26.15	4.72
	31	18.26	3.36	21.40	4.01	21.83	4.73	22.68	4.94	23.08	4.97	24.35	4.99	25.89	5.04
	33	18.26	3.58	21.40	4.27	21.83	5.03	22.68	5.26	23.08	5.30	23.88	5.32	25.89	5.37
	35	18.26	3.81	21.40	4.54	21.83	5.36	22.68	5.60	23.08	5.64	23.64	5.66	25.64	5.71
	37	18.26	4.05	21.40	4.83	21.83	5.70	22.68	5.95	23.08	5.99	23.17	6.02	25.12	6.07
	39	18.26	4.07	21.40	4.85	21.83	5.72	22.68	5.98	23.08	6.02	22.93	6.04	24.87	6.10
	41	18.26	4.08	21.40	4.87	21.83	5.75	22.68	6.00	23.08	6.05	22.70	6.07	24.61	6.13
	43	18.26	4.10	21.40	4.89	21.83	5.77	22.68	6.03	23.08	6.08	22.70	6.10	24.61	6.15
	46	18.26	4.12	21.40	4.92	21.39	5.80	22.68	6.06	23.08	6.10	22.70	6.13	24.61	6.18
	48	18.26	4.14	21.40	4.94	21.17	5.83	22.00	6.09	22.38	6.13	22.70	6.16	24.61	6.21
80%	10	16.23	1.77	19.02	2.05	19.40	2.39	20.16	2.49	20.51	2.51	21.02	2.52	22.79	2.54

	12	16.23	1.80	19.02	2.09	19.40	2.43	20.16	2.54	20.51	2.56	21.02	2.57	22.79	2.59
	14	16.23	1.84	19.02	2.12	19.40	2.48	20.16	2.59	20.51	2.61	21.02	2.62	22.79	2.64
	16	16.23	1.87	19.02	2.16	19.40	2.52	20.16	2.63	20.51	2.65	21.02	2.66	22.79	2.69
	18	16.23	1.90	19.02	2.20	19.40	2.56	20.16	2.68	20.51	2.70	21.02	2.71	22.79	2.73
	19	16.23	1.94	19.02	2.24	19.40	2.61	20.16	2.73	20.51	2.74	21.02	2.76	22.79	2.78
	21	16.23	2.07	19.02	2.40	19.40	2.80	20.16	2.92	20.51	2.94	21.02	2.95	22.79	2.98
	23	16.23	2.22	19.02	2.57	19.40	3.00	20.16	3.13	20.51	3.15	21.02	3.16	22.79	3.19
	25	16.23	2.38	19.02	2.75	19.40	3.21	20.16	3.35	20.51	3.37	21.02	3.39	22.79	3.42
	27	16.23	2.54	19.02	2.94	19.40	3.43	20.16	3.58	20.51	3.61	21.02	3.62	22.79	3.65
	29	16.23	2.71	19.02	3.14	19.40	3.66	20.16	3.82	20.51	3.85	21.02	3.86	22.79	3.90
	31	16.23	2.89	19.02	3.35	19.40	3.90	20.16	4.08	20.51	4.11	21.02	4.12	22.79	4.16
	33	16.23	3.08	19.02	3.57	19.40	4.16	20.16	4.34	20.51	4.37	21.02	4.39	22.79	4.43
	35	16.23	3.28	19.02	3.79	19.40	4.42	20.16	4.62	20.51	4.65	21.02	4.67	22.79	4.71
	37	16.23	3.49	19.02	4.03	19.40	4.70	20.16	4.91	20.51	4.95	21.02	4.97	22.33	5.01
	39	16.23	3.50	19.02	4.05	19.40	4.72	20.16	4.93	20.51	4.97	21.02	4.99	22.10	5.03
	41	16.23	3.52	19.02	4.07	19.40	4.74	20.16	4.96	20.51	4.99	21.02	5.01	21.88	5.06
	43	16.23	3.54	19.02	4.09	19.40	4.77	20.16	4.98	20.51	5.01	21.02	5.03	21.88	5.08
	46	16.23	3.55	19.02	4.11	19.40	4.79	20.16	5.00	20.51	5.04	21.02	5.06	21.88	5.10
48	16.23	3.57	19.02	4.13	19.40	4.81	20.16	5.03	20.51	5.06	21.02	5.08	21.88	5.13	
70%	10	14.20	1.47	16.64	1.79	16.98	2.06	17.64	2.08	17.95	2.09	18.39	2.10	19.94	2.12
	12	14.20	1.50	16.64	1.82	16.98	2.10	17.64	2.12	17.95	2.13	18.39	2.14	19.94	2.16
	14	14.20	1.53	16.64	1.85	16.98	2.14	17.64	2.15	17.95	2.17	18.39	2.18	19.94	2.20
	16	14.20	1.55	16.64	1.89	16.98	2.18	17.64	2.19	17.95	2.21	18.39	2.22	19.94	2.24
	18	14.20	1.58	16.64	1.92	16.98	2.21	17.64	2.23	17.95	2.25	18.39	2.26	19.94	2.28
	19	14.20	1.61	16.64	1.95	16.98	2.25	17.64	2.27	17.95	2.29	18.39	2.30	19.94	2.32
	21	14.20	1.72	16.64	2.09	16.98	2.41	17.64	2.43	17.95	2.45	18.39	2.46	19.94	2.48
	23	14.20	1.85	16.64	2.24	16.98	2.59	17.64	2.61	17.95	2.63	18.39	2.64	19.94	2.66
	25	14.20	1.98	16.64	2.40	16.98	2.77	17.64	2.79	17.95	2.81	18.39	2.82	19.94	2.85
	27	14.20	2.11	16.64	2.56	16.98	2.96	17.64	2.98	17.95	3.00	18.39	3.02	19.94	3.04
	29	14.20	2.25	16.64	2.74	16.98	3.16	17.64	3.18	17.95	3.21	18.39	3.22	19.94	3.25
	31	14.20	2.40	16.64	2.92	16.98	3.37	17.64	3.40	17.95	3.42	18.39	3.43	19.94	3.46
	33	14.20	2.56	16.64	3.11	16.98	3.59	17.64	3.62	17.95	3.64	18.39	3.66	19.94	3.69
	35	14.20	2.72	16.64	3.31	16.98	3.82	17.64	3.85	17.95	3.87	18.39	3.89	19.94	3.92
	37	14.20	2.90	16.64	3.52	16.98	4.06	17.64	4.09	17.95	4.12	18.39	4.14	19.94	4.17
	39	14.20	2.91	16.64	3.53	16.98	4.08	17.64	4.11	17.95	4.14	18.39	4.16	19.94	4.19
	41	14.20	2.92	16.64	3.55	16.98	4.10	17.64	4.13	17.95	4.16	18.39	4.17	19.94	4.21
	43	14.20	2.94	16.64	3.57	16.98	4.11	17.64	4.15	17.95	4.18	18.39	4.19	19.94	4.23
46	14.20	2.95	16.64	3.58	16.98	4.13	17.64	4.17	17.95	4.20	18.39	4.21	19.94	4.25	
48	14.20	2.96	16.64	3.60	16.98	4.15	17.64	4.19	17.95	4.22	18.39	4.23	19.94	4.27	
60%	10	12.17	1.15	14.27	1.40	14.55	1.61	15.12	1.63	15.38	1.64	15.76	1.64	17.09	1.66
	12	12.17	1.17	14.27	1.42	14.55	1.64	15.12	1.66	15.38	1.67	15.76	1.67	17.09	1.69
	14	12.17	1.19	14.27	1.45	14.55	1.67	15.12	1.69	15.38	1.70	15.76	1.70	17.09	1.72
	16	12.17	1.21	14.27	1.48	14.55	1.70	15.12	1.72	15.38	1.73	15.76	1.73	17.09	1.75
	18	12.17	1.24	14.27	1.50	14.55	1.73	15.12	1.75	15.38	1.76	15.76	1.76	17.09	1.78
	19	12.17	1.26	14.27	1.53	14.55	1.76	15.12	1.78	15.38	1.79	15.76	1.80	17.09	1.81
	21	12.17	1.35	14.27	1.64	14.55	1.89	15.12	1.90	15.38	1.92	15.76	1.92	17.09	1.94
	23	12.17	1.44	14.27	1.75	14.55	2.02	15.12	2.04	15.38	2.05	15.76	2.06	17.09	2.08
	25	12.17	1.55	14.27	1.88	14.55	2.16	15.12	2.18	15.38	2.20	15.76	2.21	17.09	2.23
	27	12.17	1.65	14.27	2.01	14.55	2.31	15.12	2.33	15.38	2.35	15.76	2.36	17.09	2.38
	29	12.17	1.76	14.27	2.14	14.55	2.47	15.12	2.49	15.38	2.51	15.76	2.52	17.09	2.54
	31	12.17	1.88	14.27	2.28	14.55	2.64	15.12	2.66	15.38	2.67	15.76	2.69	17.09	2.71
	33	12.17	2.00	14.27	2.43	14.55	2.81	15.12	2.83	15.38	2.85	15.76	2.86	17.09	2.89
	35	12.17	2.13	14.27	2.59	14.55	2.99	15.12	3.01	15.38	3.03	15.76	3.04	17.09	3.07
37	12.17	2.27	14.27	2.75	14.55	3.18	15.12	3.20	15.38	3.22	15.76	3.24	17.09	3.27	
39	12.17	2.28	14.27	2.77	14.55	3.19	15.12	3.22	15.38	3.24	15.76	3.25	17.09	3.28	

	41	12.17	2.29	14.27	2.78	14.55	3.20	15.12	3.23	15.38	3.25	15.76	3.27	17.09	3.29
	43	12.17	2.30	14.27	2.79	14.55	3.22	15.12	3.24	15.38	3.27	15.76	3.28	17.09	3.31
	46	12.17	2.31	14.27	2.80	14.55	3.23	15.12	3.26	15.38	3.28	15.76	3.30	17.09	3.32
	48	12.17	2.32	14.27	2.82	14.55	3.25	15.12	3.27	15.38	3.30	15.76	3.31	17.09	3.34
50%	10	10.14	0.92	11.89	1.12	12.13	1.29	12.60	1.30	12.82	1.31	13.14	1.32	14.24	1.33
	12	10.14	0.94	11.89	1.14	12.13	1.32	12.60	1.33	12.82	1.33	13.14	1.34	14.24	1.35
	14	10.14	0.96	11.89	1.16	12.13	1.34	12.60	1.35	12.82	1.36	13.14	1.36	14.24	1.38
	16	10.14	0.97	11.89	1.18	12.13	1.36	12.60	1.37	12.82	1.38	13.14	1.39	14.24	1.40
	18	10.14	0.99	11.89	1.20	12.13	1.39	12.60	1.40	12.82	1.41	13.14	1.41	14.24	1.43
	19	10.14	1.01	11.89	1.22	12.13	1.41	12.60	1.42	12.82	1.43	13.14	1.44	14.24	1.45
	21	10.14	1.08	11.89	1.31	12.13	1.51	12.60	1.52	12.82	1.54	13.14	1.54	14.24	1.55
	23	10.14	1.16	11.89	1.40	12.13	1.62	12.60	1.63	12.82	1.64	13.14	1.65	14.24	1.67
	25	10.14	1.24	11.89	1.50	12.13	1.73	12.60	1.75	12.82	1.76	13.14	1.77	14.24	1.78
	27	10.14	1.32	11.89	1.61	12.13	1.85	12.60	1.87	12.82	1.88	13.14	1.89	14.24	1.91
	29	10.14	1.41	11.89	1.72	12.13	1.98	12.60	1.99	12.82	2.01	13.14	2.02	14.24	2.03
	31	10.14	1.51	11.89	1.83	12.13	2.11	12.60	2.13	12.82	2.14	13.14	2.15	14.24	2.17
	33	10.14	1.60	11.89	1.95	12.13	2.25	12.60	2.27	12.82	2.28	13.14	2.29	14.24	2.31
	35	10.14	1.71	11.89	2.07	12.13	2.39	12.60	2.41	12.82	2.43	13.14	2.44	14.24	2.46
	37	10.14	1.81	11.89	2.20	12.13	2.54	12.60	2.56	12.82	2.58	13.14	2.59	14.24	2.61
	39	10.14	1.82	11.89	2.21	12.13	2.55	12.60	2.57	12.82	2.59	13.14	2.60	14.24	2.63
	41	10.14	1.83	11.89	2.22	12.13	2.57	12.60	2.59	12.82	2.60	13.14	2.61	14.24	2.64
	43	10.14	1.84	11.89	2.23	12.13	2.58	12.60	2.60	12.82	2.62	13.14	2.63	14.24	2.65
46	10.14	1.85	11.89	2.24	12.13	2.59	12.60	2.61	12.82	2.63	13.14	2.64	14.24	2.66	
48	10.14	1.86	11.89	2.26	12.13	2.60	12.60	2.62	12.82	2.64	13.14	2.65	14.24	2.67	

Cooling capacity tables

VNMF009Q4A-D12V280

TC: Total Capacity (kW); PI: Power Input (kW) (Compressor + Outdoor fan motor)

Combination (%) (Capacity index)	Outdoor temperature (°C DB)	Indoor temperature (°C)													
		DB:20.8,WB:1 4		DB:23.3,WB:1 6		DB:25.8,WB:1 8		DB:27,WB:1 9		DB:28.2,WB:2 0		DB:30.7,WB:2 2		DB:32,WB:2 4	
		TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI	TC	PI
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
130%	10	24.88	3.04	29.78	3.63	33.62	4.28	35.24	4.47	35.86	4.51	36.42	4.52	39.48	4.56
	12	24.88	3.10	29.78	3.70	33.62	4.36	34.93	4.56	35.54	4.59	36.09	4.61	39.13	4.65
	14	24.88	3.16	29.78	3.76	33.62	4.44	34.62	4.64	35.23	4.67	35.45	4.69	38.78	4.73
	16	24.88	3.21	29.78	3.83	33.32	4.52	34.00	4.72	34.60	4.76	35.13	4.78	38.44	4.82
	18	24.88	3.27	29.78	3.90	32.73	4.60	33.69	4.81	34.28	4.84	34.80	4.86	38.09	4.90
	19	24.88	3.32	29.78	3.97	32.43	4.68	33.38	4.89	33.97	4.92	34.48	4.94	37.74	4.99
	21	24.88	3.56	29.78	4.25	32.13	5.02	33.08	5.24	33.65	5.28	34.16	5.30	37.39	5.35
	23	24.88	3.82	29.78	4.55	31.84	5.37	32.77	5.61	33.34	5.65	33.84	5.68	37.04	5.73
	25	24.88	4.09	29.78	4.87	31.54	5.75	32.46	6.01	33.03	6.05	33.51	6.07	36.69	6.13
	27	24.88	4.37	29.78	5.21	31.24	6.15	32.15	6.42	32.71	6.47	33.19	6.49	36.34	6.55
	29	24.88	4.66	29.54	5.56	30.94	6.56	31.84	6.86	32.40	6.91	32.87	6.93	35.99	6.99
	31	24.88	4.97	29.46	5.93	30.65	7.00	31.53	7.31	32.08	7.36	32.55	7.39	35.64	7.46
	33	24.88	5.30	29.46	6.32	30.35	7.45	31.22	7.79	31.77	7.84	32.23	7.88	35.29	7.95
	35	24.88	5.63	29.17	6.72	29.75	7.93	30.91	8.29	31.45	8.34	32.23	8.38	34.94	8.45
	37	24.88	5.99	29.17	7.15	29.75	8.43	30.29	8.81	30.82	8.88	29.97	8.91	34.24	8.99
	39	24.88	6.02	29.17	7.18	29.16	8.47	30.08	8.85	30.51	8.91	29.65	8.95	33.89	9.03
	41	24.88	6.05	28.58	7.21	29.16	8.51	29.98	8.89	30.19	8.95	29.33	8.99	33.54	9.07
	43	23.64	6.07	28.58	7.24	28.27	8.55	29.68	8.93	29.88	9.00	30.61	9.03	33.19	9.11
46	23.64	6.10	27.71	7.28	28.27	8.59	28.48	8.97	29.57	9.04	30.29	9.07	32.84	9.15	
48	23.64	6.13	27.71	7.31	26.78	8.63	28.00	9.02	28.62	9.08	29.97	9.12	32.50	9.20	
120%	10	24.57	2.99	28.76	3.57	31.98	4.21	34.14	4.40	35.35	4.43	35.91	4.45	38.93	4.48
	12	24.57	3.05	28.76	3.63	31.98	4.29	34.14	4.48	35.04	4.51	35.59	4.53	38.59	4.57
	14	24.57	3.10	28.76	3.70	31.98	4.36	34.14	4.56	34.73	4.59	35.27	4.61	38.24	4.65
	16	24.57	3.16	28.76	3.76	31.98	4.44	34.14	4.64	34.42	4.67	34.95	4.69	37.90	4.73
	18	24.57	3.21	28.76	3.83	31.98	4.52	34.14	4.72	34.11	4.76	34.63	4.77	37.55	4.82
	19	24.57	3.27	28.76	3.90	31.98	4.60	33.83	4.80	33.80	4.84	34.32	4.86	37.21	4.90
	21	24.57	3.50	28.76	4.18	31.98	4.93	33.53	5.15	33.18	5.19	34.00	5.21	36.86	5.25
	23	24.57	3.75	28.76	4.47	31.39	5.28	33.22	5.52	32.87	5.56	33.68	5.58	36.52	5.63
	25	24.57	4.01	28.76	4.79	31.10	5.65	32.92	5.90	32.56	5.94	33.36	5.97	36.18	6.02
	27	24.57	4.29	28.76	5.12	30.80	6.04	32.61	6.31	32.25	6.35	33.05	6.38	35.83	6.44
	29	24.57	4.58	28.76	5.46	30.51	6.45	32.00	6.74	31.94	6.79	32.73	6.81	35.49	6.87
	31	24.57	4.89	28.76	5.83	29.92	6.88	31.09	7.19	31.63	7.24	32.41	7.26	35.14	7.33
	33	24.57	5.20	28.76	6.21	29.63	7.32	30.78	7.65	31.32	7.71	32.09	7.74	34.80	7.81
	35	24.57	5.54	28.76	6.60	29.34	7.79	30.48	8.14	31.01	8.20	31.77	8.23	34.45	8.31
	37	24.57	5.89	28.76	7.02	29.04	8.29	29.87	8.66	30.39	8.72	31.14	8.76	33.76	8.83
	39	24.57	5.91	28.76	7.05	28.75	8.32	29.57	8.70	30.08	8.76	30.82	8.79	33.42	8.87
	41	24.57	5.94	27.32	7.09	28.46	8.36	29.26	8.74	29.77	8.80	30.50	8.83	33.07	8.91
	43	24.57	5.97	27.03	7.12	28.16	8.40	28.96	8.78	29.46	8.84	30.19	8.87	32.73	8.95
46	24.57	6.00	26.74	7.15	27.87	8.44	28.65	8.82	28.57	8.88	29.87	8.92	32.39	8.99	
48	23.83	6.02	26.46	7.18	27.58	8.48	28.04	8.86	28.84	8.92	29.55	8.96	32.04	9.04	
110%	10	23.91	2.93	28.02	3.49	28.59	4.12	31.78	4.30	34.15	4.33	34.99	4.35	37.94	4.39
	12	23.91	2.98	28.02	3.55	28.59	4.19	31.78	4.38	33.85	4.41	34.68	4.43	37.60	4.47
	14	23.91	3.03	28.02	3.62	28.59	4.27	31.78	4.46	33.54	4.49	34.37	4.51	37.26	4.55
	16	23.91	3.09	28.02	3.68	28.59	4.35	31.78	4.54	33.24	4.57	34.06	4.59	36.93	4.63
	18	23.91	3.14	28.02	3.75	28.59	4.42	31.78	4.62	32.94	4.65	33.75	4.67	36.59	4.71
	19	23.91	3.20	28.02	3.81	28.59	4.50	31.78	4.70	32.64	4.73	33.44	4.75	36.26	4.79
	21	23.91	3.43	28.02	4.09	28.59	4.82	31.78	5.04	32.33	5.07	33.13	5.09	35.92	5.14
	23	23.91	3.67	28.02	4.38	28.59	5.17	31.48	5.40	32.03	5.44	32.82	5.46	35.59	5.51

	25	23.91	3.93	28.02	4.68	28.59	5.53	31.18	5.78	31.73	5.82	32.51	5.84	35.25	5.89
	27	23.91	4.20	28.02	5.01	28.59	5.91	30.89	6.17	31.43	6.22	32.20	6.24	34.91	6.30
	29	23.91	4.48	28.02	5.35	28.59	6.31	30.59	6.59	31.13	6.64	31.89	6.67	34.58	6.72
	31	23.91	4.78	28.02	5.70	28.59	6.73	30.29	7.03	30.82	7.08	31.58	7.11	34.24	7.17
	33	23.91	5.09	28.02	6.07	28.59	7.17	30.00	7.49	30.52	7.54	31.27	7.57	33.91	7.64
	35	23.91	5.42	28.02	6.46	28.59	7.62	29.70	7.97	30.22	8.02	30.96	8.05	33.57	8.13
	37	23.91	5.76	28.02	6.87	28.59	8.11	29.11	8.47	29.61	8.53	30.34	8.57	32.90	8.64
	39	23.91	5.79	28.02	6.90	28.59	8.14	28.81	8.51	29.31	8.57	30.03	8.60	32.56	8.68
	41	23.91	5.81	28.02	6.93	28.59	8.18	28.51	8.55	29.01	8.61	29.72	8.64	32.23	8.72
	43	23.91	5.84	28.02	6.97	28.59	8.22	28.21	8.59	28.71	8.65	29.41	8.68	31.89	8.76
	46	23.91	5.87	28.02	7.00	28.59	8.26	27.92	8.63	28.41	8.69	29.10	8.72	31.56	8.80
	48	22.71	5.89	27.18	7.03	28.01	8.30	2.76	8.67	28.10	8.73	28.79	8.76	31.22	8.84
	100%	10	22.54	2.65	26.42	3.42	26.95	4.03	28.00	4.13	30.48	4.16	32.69	4.18	35.76
12		22.54	2.69	26.42	3.48	26.95	4.11	28.00	4.21	30.48	4.24	32.69	4.26	35.45	4.30
14		22.54	2.74	26.42	3.54	26.95	4.18	28.00	4.29	30.48	4.32	32.40	4.34	35.13	4.38
16		22.54	2.79	26.42	3.61	26.95	4.25	28.00	4.37	30.48	4.40	32.11	4.42	34.81	4.46
18		22.54	2.84	26.42	3.67	26.95	4.33	28.00	4.45	30.48	4.48	31.82	4.49	34.50	4.53
19		22.54	2.89	26.42	3.73	26.95	4.40	28.00	4.52	30.48	4.56	31.53	4.57	34.18	4.61
21		22.54	3.10	26.42	4.00	26.95	4.72	28.00	4.86	30.48	4.89	31.23	4.91	33.87	4.95
23		22.54	3.32	26.42	4.29	26.95	5.06	28.00	5.21	30.48	5.24	30.94	5.26	33.55	5.31
25		22.54	3.55	26.42	4.59	26.95	5.41	28.00	5.58	30.20	5.62	30.65	5.64	33.23	5.69
27		22.54	3.80	26.42	4.90	26.95	5.79	28.00	5.97	29.91	6.01	30.36	6.03	32.92	6.09
29		22.54	4.05	26.42	5.23	26.95	6.18	28.00	6.38	29.63	6.42	30.07	6.45	32.60	6.50
31		22.54	4.32	26.42	5.58	26.95	6.59	28.00	6.81	29.34	6.85	29.77	6.88	32.28	6.94
33		22.54	4.60	26.42	5.95	26.95	7.02	28.00	7.25	28.77	7.30	29.48	7.33	31.97	7.40
35		22.54	4.90	26.42	6.33	26.95	7.46	28.00	7.80	28.49	7.85	29.19	7.89	31.65	7.96
37		22.54	5.21	26.42	6.73	26.95	7.94	27.44	8.02	27.92	8.07	28.61	8.10	31.02	8.18
39		22.54	5.23	26.42	6.76	26.95	7.97	27.16	8.07	27.64	8.13	28.31	8.16	30.70	8.24
41		22.54	5.26	26.42	6.79	26.95	8.01	26.88	8.16	27.35	8.22	28.02	8.25	30.38	8.32
43	22.54	5.28	26.42	6.82	26.95	8.05	26.60	8.21	27.07	8.27	27.73	8.30	30.07	8.38	
46	22.54	5.30	25.89	6.85	26.95	8.08	26.32	8.27	26.78	8.33	27.44	8.36	29.75	8.43	
48	22.54	5.33	25.63	6.88	26.14	8.12	26.04	8.35	26.50	8.40	27.15	8.44	29.43	8.51	
90%	10	20.29	2.36	23.78	2.81	24.26	3.32	25.20	3.47	25.64	3.49	28.11	3.50	30.48	3.54
	12	20.29	2.40	23.78	2.86	24.26	3.38	25.20	3.53	25.64	3.56	28.11	3.57	30.48	3.60
	14	20.29	2.44	23.78	2.92	24.26	3.44	25.20	3.59	25.64	3.62	28.11	3.63	30.48	3.67
	16	20.29	2.49	23.78	2.97	24.26	3.50	25.20	3.66	25.64	3.68	28.11	3.70	30.48	3.73
	18	20.29	2.53	23.78	3.02	24.26	3.56	25.20	3.72	25.64	3.75	28.11	3.76	30.19	3.80
	19	20.29	2.58	23.78	3.07	24.26	3.62	25.20	3.79	25.64	3.81	28.11	3.83	29.91	3.86
	21	20.29	2.76	23.78	3.29	24.26	3.89	25.20	4.06	25.64	4.09	28.11	4.10	29.62	4.14
	23	20.29	2.96	23.78	3.53	24.26	4.16	25.20	4.35	25.64	4.38	28.11	4.40	29.34	4.44
	25	20.29	3.16	23.78	3.77	24.26	4.45	25.20	4.65	25.64	4.69	27.85	4.71	29.05	4.75
	27	20.29	3.38	23.78	4.03	24.26	4.76	25.20	4.98	25.64	5.01	27.58	5.03	29.05	5.07
	29	20.29	3.61	23.78	4.31	24.26	5.08	25.20	5.31	25.64	5.35	27.32	5.37	29.05	5.42
	31	20.29	3.85	23.78	4.59	24.26	5.42	25.20	5.67	25.64	5.70	27.06	5.73	28.77	5.78
	33	20.29	4.10	23.78	4.89	24.26	5.77	25.20	6.03	25.64	6.08	26.53	6.10	28.77	6.15
	35	20.29	4.37	23.78	5.21	24.26	6.14	25.20	6.42	25.64	6.46	26.27	6.49	28.48	6.55
	37	20.29	4.64	23.78	5.54	24.26	6.53	25.20	6.83	25.64	6.88	25.75	6.90	27.92	6.96
	39	20.29	4.66	23.78	5.56	24.26	6.56	25.20	6.86	25.64	6.91	25.48	6.93	27.63	6.99
	41	20.29	4.68	23.78	5.59	24.26	6.59	25.20	6.89	25.64	6.94	25.22	6.96	27.35	7.03
43	20.29	4.71	23.78	5.61	24.26	6.62	25.20	6.92	25.64	6.97	25.22	7.00	27.35	7.06	
46	20.29	4.73	23.78	5.64	23.77	6.65	25.20	6.95	25.64	7.00	25.22	7.03	27.35	7.09	
48	20.29	4.75	23.78	5.66	23.53	6.68	24.44	6.98	24.87	7.03	25.22	7.06	27.35	7.12	
80%	10	18.03	2.03	21.13	2.35	21.56	2.74	22.40	2.86	22.79	2.88	23.35	2.89	25.32	2.92
	12	18.03	2.07	21.13	2.39	21.56	2.79	22.40	2.91	22.79	2.93	23.35	2.95	25.32	2.97
	14	18.03	2.11	21.13	2.44	21.56	2.84	22.40	2.97	22.79	2.99	23.35	3.00	25.32	3.03

	16	18.03	2.14	21.13	2.48	21.56	2.89	22.40	3.02	22.79	3.04	23.35	3.05	25.32	3.08
	18	18.03	2.18	21.13	2.52	21.56	2.94	22.40	3.07	22.79	3.10	23.35	3.11	25.32	3.13
	19	18.03	2.22	21.13	2.57	21.56	2.99	22.40	3.13	22.79	3.15	23.35	3.16	25.32	3.19
	21	18.03	2.38	21.13	2.75	21.56	3.21	22.40	3.35	22.79	3.38	23.35	3.39	25.32	3.42
	23	18.03	2.55	21.13	2.95	21.56	3.44	22.40	3.59	22.79	3.62	23.35	3.63	25.32	3.66
	25	18.03	2.73	21.13	3.15	21.56	3.68	22.40	3.84	22.79	3.87	23.35	3.88	25.32	3.92
	27	18.03	2.92	21.13	3.37	21.56	3.93	22.40	4.11	22.79	4.14	23.35	4.15	25.32	4.19
	29	18.03	3.11	21.13	3.60	21.56	4.20	22.40	4.39	22.79	4.42	23.35	4.43	25.32	4.47
	31	18.03	3.32	21.13	3.84	21.56	4.48	22.40	4.68	22.79	4.71	23.35	4.73	25.32	4.77
	33	18.03	3.54	21.13	4.09	21.56	4.77	22.40	4.98	22.79	5.02	23.35	5.04	25.32	5.08
	35	18.03	3.76	21.13	4.35	21.56	5.07	22.40	5.30	22.79	5.34	23.35	5.36	25.32	5.41
	37	18.03	4.00	21.13	4.63	21.56	5.39	22.40	5.64	22.79	5.68	23.35	5.70	24.81	5.75
	39	18.03	4.02	21.13	4.65	21.56	5.42	22.40	5.66	22.79	5.70	23.35	5.72	24.56	5.77
	41	18.03	4.04	21.13	4.67	21.56	5.44	22.40	5.69	22.79	5.73	23.35	5.75	24.31	5.80
	43	18.03	4.06	21.13	4.69	21.56	5.47	22.40	5.71	22.79	5.75	23.35	5.78	24.31	5.83
	46	18.03	4.07	21.13	4.71	21.56	5.49	22.40	5.74	22.79	5.78	23.35	5.80	24.31	5.85
48	18.03	4.09	21.13	4.73	21.56	5.52	22.40	5.77	22.79	5.81	23.35	5.83	24.31	5.88	
70%	10	15.78	1.69	18.49	2.05	18.87	2.36	19.60	2.38	19.94	2.40	20.43	2.41	22.15	2.43
	12	15.78	1.72	18.49	2.09	18.87	2.41	19.60	2.43	19.94	2.44	20.43	2.45	22.15	2.48
	14	15.78	1.75	18.49	2.13	18.87	2.45	19.60	2.47	19.94	2.49	20.43	2.50	22.15	2.52
	16	15.78	1.78	18.49	2.16	18.87	2.50	19.60	2.52	19.94	2.53	20.43	2.54	22.15	2.57
	18	15.78	1.81	18.49	2.20	18.87	2.54	19.60	2.56	19.94	2.58	20.43	2.59	22.15	2.61
	19	15.78	1.84	18.49	2.24	18.87	2.58	19.60	2.60	19.94	2.62	20.43	2.63	22.15	2.66
	21	15.78	1.98	18.49	2.40	18.87	2.77	19.60	2.79	19.94	2.81	20.43	2.82	22.15	2.85
	23	15.78	2.12	18.49	2.57	18.87	2.97	19.60	2.99	19.94	3.01	20.43	3.02	22.15	3.05
	25	15.78	2.27	18.49	2.75	18.87	3.17	19.60	3.20	19.94	3.22	20.43	3.24	22.15	3.26
	27	15.78	2.42	18.49	2.94	18.87	3.39	19.60	3.42	19.94	3.44	20.43	3.46	22.15	3.49
	29	15.78	2.59	18.49	3.14	18.87	3.62	19.60	3.65	19.94	3.68	20.43	3.69	22.15	3.73
	31	15.78	2.76	18.49	3.35	18.87	3.86	19.60	3.90	19.94	3.92	20.43	3.94	22.15	3.97
	33	15.78	2.94	18.49	3.57	18.87	4.12	19.60	4.15	19.94	4.18	20.43	4.19	22.15	4.23
	35	15.78	3.13	18.49	3.80	18.87	4.38	19.60	4.41	19.94	4.44	20.43	4.46	22.15	4.50
	37	15.78	3.32	18.49	4.04	18.87	4.66	19.60	4.69	19.94	4.73	20.43	4.75	22.15	4.79
	39	15.78	3.34	18.49	4.05	18.87	4.68	19.60	4.71	19.94	4.75	20.43	4.77	22.15	4.81
41	15.78	3.35	18.49	4.07	18.87	4.70	19.60	4.74	19.94	4.77	20.43	4.79	22.15	4.83	
43	15.78	3.37	18.49	4.09	18.87	4.72	19.60	4.76	19.94	4.79	20.43	4.81	22.15	4.85	
46	15.78	3.38	18.49	4.11	18.87	4.74	19.60	4.78	19.94	4.81	20.43	4.83	22.15	4.88	
48	15.78	3.40	18.49	4.13	18.87	4.76	19.60	4.80	19.94	4.84	20.43	4.86	22.15	4.90	
60%	10	13.52	1.32	15.85	1.60	16.17	1.85	16.80	1.86	17.09	1.88	17.51	1.88	18.99	1.90
	12	13.52	1.34	15.85	1.63	16.17	1.88	16.80	1.90	17.09	1.91	17.51	1.92	18.99	1.94
	14	13.52	1.37	15.85	1.66	16.17	1.92	16.80	1.93	17.09	1.95	17.51	1.95	18.99	1.97
	16	13.52	1.39	15.85	1.69	16.17	1.95	16.80	1.97	17.09	1.98	17.51	1.99	18.99	2.01
	18	13.52	1.42	15.85	1.72	16.17	1.99	16.80	2.00	17.09	2.02	17.51	2.02	18.99	2.04
	19	13.52	1.44	15.85	1.75	16.17	2.02	16.80	2.04	17.09	2.05	17.51	2.06	18.99	2.08
	21	13.52	1.55	15.85	1.88	16.17	2.17	16.80	2.18	17.09	2.20	17.51	2.21	18.99	2.23
	23	13.52	1.66	15.85	2.01	16.17	2.32	16.80	2.34	17.09	2.36	17.51	2.36	18.99	2.39
	25	13.52	1.77	15.85	2.15	16.17	2.48	16.80	2.50	17.09	2.52	17.51	2.53	18.99	2.55
	27	13.52	1.89	15.85	2.30	16.17	2.65	16.80	2.68	17.09	2.69	17.51	2.71	18.99	2.73
	29	13.52	2.02	15.85	2.46	16.17	2.83	16.80	2.86	17.09	2.88	17.51	2.89	18.99	2.91
	31	13.52	2.16	15.85	2.62	16.17	3.02	16.80	3.05	17.09	3.07	17.51	3.08	18.99	3.11
	33	13.52	2.30	15.85	2.79	16.17	3.22	16.80	3.25	17.09	3.27	17.51	3.28	18.99	3.31
	35	13.52	2.44	15.85	2.97	16.17	3.42	16.80	3.45	17.09	3.48	17.51	3.49	18.99	3.52
	37	13.52	2.60	15.85	3.16	16.17	3.64	16.80	3.67	17.09	3.70	17.51	3.71	18.99	3.75
	39	13.52	2.61	15.85	3.17	16.17	3.66	16.80	3.69	17.09	3.71	17.51	3.73	18.99	3.76
41	13.52	2.62	15.85	3.19	16.17	3.68	16.80	3.70	17.09	3.73	17.51	3.75	18.99	3.78	
43	13.52	2.64	15.85	3.20	16.17	3.69	16.80	3.72	17.09	3.75	17.51	3.76	18.99	3.80	

	46	13.52	2.65	15.85	3.22	16.17	3.71	16.80	3.74	17.09	3.77	17.51	3.78	18.99	3.81
	48	13.52	2.66	15.85	3.23	16.17	3.73	16.80	3.76	17.09	3.78	17.51	3.80	18.99	3.83
50%	10	11.27	1.06	13.21	1.28	13.48	1.48	14.00	1.49	14.25	1.50	14.60	1.51	15.82	1.52
	12	11.27	1.08	13.21	1.31	13.48	1.51	14.00	1.52	14.25	1.53	14.60	1.54	15.82	1.55
	14	11.27	1.10	13.21	1.33	13.48	1.54	14.00	1.55	14.25	1.56	14.60	1.57	15.82	1.58
	16	11.27	1.12	13.21	1.36	13.48	1.56	14.00	1.58	14.25	1.59	14.60	1.59	15.82	1.61
	18	11.27	1.14	13.21	1.38	13.48	1.59	14.00	1.60	14.25	1.61	14.60	1.62	15.82	1.64
	19	11.27	1.15	13.21	1.40	13.48	1.62	14.00	1.63	14.25	1.64	14.60	1.65	15.82	1.66
	21	11.27	1.24	13.21	1.50	13.48	1.73	14.00	1.75	14.25	1.76	14.60	1.77	15.82	1.78
	23	11.27	1.33	13.21	1.61	13.48	1.86	14.00	1.87	14.25	1.89	14.60	1.89	15.82	1.91
	25	11.27	1.42	13.21	1.72	13.48	1.99	14.00	2.00	14.25	2.02	14.60	2.03	15.82	2.04
	27	11.27	1.52	13.21	1.84	13.48	2.13	14.00	2.14	14.25	2.16	14.60	2.17	15.82	2.19
	29	11.27	1.62	13.21	1.97	13.48	2.27	14.00	2.29	14.25	2.30	14.60	2.31	15.82	2.33
	31	11.27	1.73	13.21	2.10	13.48	2.42	14.00	2.44	14.25	2.46	14.60	2.47	15.82	2.49
	33	11.27	1.84	13.21	2.23	13.48	2.58	14.00	2.60	14.25	2.62	14.60	2.63	15.82	2.65
	35	11.27	1.96	13.21	2.38	13.48	2.74	14.00	2.76	14.25	2.78	14.60	2.80	15.82	2.82
	37	11.27	2.08	13.21	2.53	13.48	2.92	14.00	2.94	14.25	2.96	14.60	2.97	15.82	3.00
	39	11.27	2.09	13.21	2.54	13.48	2.93	14.00	2.95	14.25	2.97	14.60	2.99	15.82	3.01
41	11.27	2.10	13.21	2.55	13.48	2.94	14.00	2.97	14.25	2.99	14.60	3.00	15.82	3.03	
43	11.27	2.11	13.21	2.56	13.48	2.96	14.00	2.98	14.25	3.00	14.60	3.01	15.82	3.04	
46	11.27	2.12	13.21	2.57	13.48	2.97	14.00	2.99	14.25	3.02	14.60	3.03	15.82	3.05	
48	11.27	2.13	13.21	2.59	13.48	2.98	14.00	3.01	14.25	3.03	14.60	3.04	15.82	3.07	

7.2 Heating capacity tables

VNMF008Q4A-D11V252

TC: Total Capacity (kW); PI: Power Input (kW) (Compressor + Outdoor fan motor)

Combination (Capacity index)	Outdoor air temp.		Indoor temperature(°C DB)												
			16		18		20		21		22		24		
	°C DB	°C WB	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	
130%	-14.7	-15	19.31	5.28	19.31	5.49	19.12	5.74	18.55	5.78	18.36	5.82	17.99	5.89	
	-12.6	-13	19.95	5.37	19.95	5.58	19.75	5.84	19.17	5.88	18.98	5.91	18.59	5.99	
	-10.5	-11	20.59	5.46	20.59	5.67	20.39	5.93	19.79	5.97	19.59	6.01	19.19	6.09	
	-9.5	-10	21.24	5.50	21.24	5.71	21.03	5.98	20.40	6.02	20.20	6.05	19.79	6.14	
	-8.5	-9.1	21.88	5.54	21.88	5.75	21.66	6.02	21.02	6.06	20.81	6.10	20.39	6.18	
	-7	-7.6	22.53	5.60	22.53	5.82	22.30	6.09	21.64	6.13	21.42	6.17	20.99	6.25	
	-5	-5.6	23.17	5.69	23.17	5.90	22.94	6.18	22.26	6.22	22.04	6.26	21.59	6.34	
	-3	-3.7	23.81	5.77	23.81	5.99	23.58	6.27	22.88	6.31	22.65	6.35	22.19	6.44	
	0	-0.7	24.46	5.89	24.46	6.12	24.21	6.41	23.49	6.45	23.26	6.49	22.79	6.58	
	3	2.2	27.53	6.02	27.53	6.25	27.26	6.54	26.45	6.58	26.18	6.63	25.66	6.71	
	5	4.1	31.10	6.10	31.10	6.34	30.79	6.63	29.87	6.68	29.58	6.72	28.98	6.81	
	7	6	32.18	6.18	32.18	6.42	31.86	6.72	30.91	6.77	30.61	6.81	29.99	6.90	
9	7.9	32.18	5.98	32.18	6.21	31.86	6.50	30.91	6.54	30.61	6.58	29.99	6.67		
11	9.8	32.18	5.77	32.18	5.99	31.86	6.27	30.91	6.31	30.61	6.35	29.99	6.44		
13	11.8	32.18	5.56	32.18	5.78	31.86	6.05	30.91	6.08	30.61	6.12	29.99	6.21		
15	13.7	32.18	5.35	32.18	5.56	31.86	5.82	30.91	5.86	30.61	5.89	29.99	5.97		
120%	-14.7	-15	18.49	5.19	18.49	5.39	18.31	5.64	17.58	5.68	16.85	5.71	15.86	5.79	
	-12.6	-13	19.11	5.28	19.11	5.48	18.92	5.73	18.17	5.77	17.41	5.81	16.38	5.89	
	-10.5	-11	19.72	5.36	19.72	5.57	19.53	5.83	18.75	5.87	17.98	5.90	16.91	5.98	
	-9.5	-10	20.34	5.40	20.34	5.61	20.14	5.87	19.34	5.91	18.54	5.95	17.44	6.03	
	-8.5	-9.1	20.95	5.44	20.95	5.65	20.75	5.92	19.92	5.95	19.10	5.99	17.97	6.07	
	-7	-7.6	21.57	5.50	21.57	5.72	21.36	5.98	20.51	6.02	19.66	6.06	18.50	6.14	
	-5	-5.6	22.19	5.59	22.19	5.80	21.97	6.07	21.10	6.11	20.22	6.15	19.03	6.23	
	-3	-3.7	22.80	5.67	22.80	5.89	22.58	6.16	21.68	6.20	20.79	6.24	19.55	6.32	
	0	-0.7	23.42	5.79	23.42	6.01	23.19	6.29	22.27	6.33	21.35	6.37	20.08	6.46	
	3	2.2	26.36	5.91	26.36	6.14	26.10	6.43	25.07	6.47	24.03	6.51	22.61	6.60	
	5	4.1	29.78	5.99	29.78	6.22	29.48	6.51	28.31	6.56	27.14	6.60	25.54	6.69	
7	6	30.82	6.08	30.82	6.31	30.51	6.60	29.30	6.65	28.09	6.69	26.43	6.78		
9	7.9	30.82	5.87	30.82	6.10	30.51	6.38	29.30	6.42	28.09	6.46	26.43	6.55		
11	9.8	30.82	5.67	30.82	5.89	30.51	6.16	29.30	6.20	28.09	6.24	26.43	6.32		
13	11.8	30.82	5.46	30.82	5.67	30.51	5.94	29.30	5.98	28.09	6.02	26.43	6.10		
15	13.7	30.82	5.26	30.82	5.46	30.51	5.72	29.30	5.75	28.09	5.79	26.43	5.87		
110%	-14.7	-15	17.92	5.12	17.83	5.32	17.66	5.57	16.96	5.60	16.26	5.64	15.21	5.71	
	-12.6	-13	18.52	5.21	18.43	5.41	18.25	5.66	17.52	5.70	16.80	5.73	15.72	5.81	
	-10.5	-11	19.12	5.29	19.02	5.49	18.84	5.75	18.09	5.79	17.34	5.83	16.22	5.90	
	-9.5	-10	19.72	5.33	19.62	5.54	19.42	5.79	18.65	5.83	17.88	5.87	16.73	5.95	
	-8.5	-9.1	20.31	5.37	20.21	5.58	20.01	5.84	19.22	5.88	18.42	5.91	17.24	5.99	
	-7	-7.6	20.91	5.43	20.81	5.64	20.60	5.90	19.78	5.94	18.97	5.98	17.74	6.06	
	-5	-5.6	21.51	5.51	21.40	5.72	21.19	5.99	20.35	6.03	19.51	6.07	18.25	6.15	
	-3	-3.7	22.10	5.59	22.00	5.81	21.78	6.08	20.91	6.12	20.05	6.16	18.76	6.24	
	0	-0.7	22.70	5.71	22.59	5.93	22.37	6.21	21.48	6.25	20.59	6.29	19.26	6.38	

	-5	-5.6	19.73	5.41	19.63	5.62	19.44	5.82	18.67	5.92	17.90	5.96	16.74	6.04
	-3	-3.7	20.28	5.49	20.18	5.70	19.98	5.91	19.19	6.01	18.39	6.05	17.21	6.13
	0	-0.7	20.83	5.61	20.73	5.83	20.52	6.03	19.71	6.14	18.89	6.18	17.67	6.26
	3	2.2	23.45	5.73	23.33	5.95	23.10	6.16	22.18	6.27	21.27	6.31	19.90	6.39
	5	4.1	26.48	5.81	26.35	6.03	26.09	6.25	25.06	6.36	24.02	6.40	22.47	6.48
	7	6	27.41	5.89	27.27	6.11	27.00	6.40	25.93	6.44	24.86	6.48	23.25	6.57
	9	7.9	27.41	5.69	27.27	5.91	27.00	6.19	25.93	6.23	24.86	6.27	23.25	6.35
	11	9.8	27.41	5.49	27.27	5.70	27.00	5.97	25.93	6.01	24.86	6.05	23.25	6.13
	13	11.8	27.41	5.29	27.27	5.50	27.00	5.76	25.93	5.79	24.86	5.83	23.25	5.91
	15	13.7	27.41	5.10	27.27	5.29	27.00	5.54	25.93	5.58	24.86	5.61	23.25	5.69
90%	-14.7	-15	14.80	4.25	14.73	4.41	14.58	4.61	14.00	4.64	13.42	4.67	12.56	4.74
	-12.6	-13	15.29	4.32	15.22	4.48	15.07	4.69	14.47	4.72	13.87	4.75	12.98	4.82
	-10.5	-11	15.79	4.39	15.71	4.55	15.55	4.77	14.93	4.80	14.32	4.83	13.39	4.89
	-9.5	-10	16.28	4.42	16.20	4.59	16.04	4.80	15.40	4.83	14.77	4.87	13.81	4.93
	-8.5	-9.1	16.77	4.45	16.69	4.62	16.52	4.84	15.87	4.87	15.21	4.90	14.23	4.97
	-7	-7.6	17.27	4.50	17.18	4.68	17.01	4.89	16.34	4.93	15.66	4.96	14.65	5.02
	-5	-5.6	17.76	4.57	17.67	4.75	17.50	4.97	16.80	5.00	16.11	5.03	15.07	5.10
	-3	-3.7	18.25	4.64	18.16	4.81	17.98	5.04	17.27	5.07	16.55	5.10	15.49	5.17
	0	-0.7	18.75	4.74	18.65	4.92	18.47	5.15	17.74	5.18	17.00	5.22	15.91	5.28
	3	2.2	21.10	4.84	21.00	5.02	20.79	5.26	19.96	5.29	19.14	5.33	17.91	5.40
	5	4.1	23.83	4.90	23.72	5.09	23.48	5.33	22.55	5.36	21.62	5.40	20.22	5.47
	7	6	24.66	4.97	24.54	5.16	24.30	5.40	23.34	5.44	22.37	5.47	20.93	5.55
	9	7.9	24.66	4.80	24.54	4.99	24.30	5.22	23.34	5.26	22.37	5.29	20.93	5.36
	11	9.8	24.66	4.64	24.54	4.81	24.30	5.04	23.34	5.07	22.37	5.11	20.93	5.17
	13	11.8	24.66	4.47	24.54	4.64	24.30	4.86	23.34	4.89	22.37	4.92	20.93	4.99
15	13.7	24.66	4.30	24.54	4.47	24.30	4.68	23.34	4.71	22.37	4.74	20.93	4.80	
80%	-14.7	-15	14.25	3.60	14.18	3.74	14.04	3.92	13.48	3.94	12.93	3.97	12.09	4.02
	-12.6	-13	14.69	3.66	14.62	3.80	14.47	3.98	13.90	4.01	13.32	4.03	12.46	4.09
	-10.5	-11	15.13	3.72	15.05	3.86	14.90	4.05	14.31	4.07	13.72	4.10	12.84	4.15
	-9.5	-10	16.44	3.75	16.36	3.89	16.20	4.08	15.56	4.10	14.91	4.13	13.95	4.18
	-8.5	-9.1	17.54	3.78	17.45	3.92	17.28	4.11	16.59	4.13	15.91	4.16	14.88	4.22
	-7	-7.6	18.64	3.82	18.54	3.97	18.36	4.15	17.63	4.18	16.90	4.21	15.81	4.26
	-5	-5.6	19.73	3.88	19.63	4.03	19.44	4.21	18.67	4.24	17.90	4.27	16.74	4.33
	-3	-3.7	19.95	3.93	19.85	4.09	19.66	4.28	18.88	4.30	18.10	4.33	16.93	4.39
	0	-0.7	21.05	4.02	20.94	4.17	20.74	4.37	19.91	4.40	19.09	4.43	17.86	4.48
	3	2.2	21.92	4.10	21.82	4.26	21.60	4.46	20.74	4.49	19.89	4.52	18.60	4.58
	5	4.1	21.92	4.16	21.82	4.32	21.60	4.52	20.74	4.55	19.89	4.58	18.60	4.64
	7	6	21.92	4.22	21.82	4.38	21.60	4.58	20.74	4.61	19.89	4.64	18.60	4.71
	9	7.9	21.92	4.08	21.82	4.23	21.60	4.43	20.74	4.46	19.89	4.49	18.60	4.55
	11	9.8	21.92	3.93	21.82	4.09	21.60	4.28	20.74	4.30	19.89	4.33	18.60	4.39
	13	11.8	21.92	3.79	21.82	3.94	21.60	4.12	20.74	4.15	19.89	4.18	18.60	4.23
15	13.7	21.92	3.65	21.82	3.79	21.60	3.97	20.74	3.99	19.89	4.02	18.60	4.07	
70%	-14.7	-15	13.43	3.10	13.36	3.22	13.23	3.37	12.71	3.39	12.18	3.42	11.39	3.46
	-12.6	-13	13.81	3.15	13.74	3.27	13.61	3.43	13.07	3.45	12.53	3.47	11.72	3.52
	-10.5	-11	14.20	3.20	14.13	3.33	13.99	3.48	13.43	3.51	12.88	3.53	12.05	3.58
	-9.5	-10	15.35	3.23	15.27	3.35	15.12	3.51	14.52	3.53	13.92	3.56	13.02	3.60
	-8.5	-9.1	16.31	3.25	16.23	3.38	16.07	3.54	15.43	3.56	14.79	3.58	13.84	3.63
	-7	-7.6	17.27	3.29	17.18	3.42	17.01	3.58	16.34	3.60	15.66	3.62	14.65	3.67
	-5	-5.6	18.52	3.34	18.43	3.47	18.25	3.63	17.52	3.65	16.80	3.68	15.71	3.73
	-3	-3.7	19.18	3.39	19.09	3.52	18.90	3.68	18.15	3.71	17.40	3.73	16.28	3.78
	0	-0.7	19.18	3.46	19.09	3.59	18.90	3.76	18.15	3.79	17.40	3.81	16.28	3.86
	3	2.2	19.18	3.53	19.09	3.67	18.90	3.84	18.15	3.87	17.40	3.89	16.28	3.94
	5	4.1	19.18	3.58	19.09	3.72	18.90	3.89	18.15	3.92	17.40	3.95	16.28	4.00
	7	6	19.18	3.63	19.09	3.77	18.90	3.95	18.15	3.97	17.40	4.00	16.28	4.05
	9	7.9	19.18	3.51	19.09	3.65	18.90	3.82	18.15	3.84	17.40	3.86	16.28	3.92
	11	9.8	19.18	3.39	19.09	3.52	18.90	3.68	18.15	3.71	17.40	3.73	16.28	3.78
	13	11.8	19.18	3.27	19.09	3.39	18.90	3.55	18.15	3.57	17.40	3.60	16.28	3.64
15	13.7	19.18	3.14	19.09	3.27	18.90	3.42	18.15	3.44	17.40	3.46	16.28	3.51	
60%	-14.7	-15	16.44	2.49	16.36	2.56	16.20	2.64	15.56	2.66	14.91	2.68	13.95	2.71
	-12.6	-13	16.44	2.53	16.36	2.61	16.20	2.69	15.56	2.71	14.91	2.72	13.95	2.76
	-10.5	-11	16.44	2.57	16.36	2.65	16.20	2.73	15.56	2.75	14.91	2.77	13.95	2.80
	-9.5	-10	16.44	2.59	16.36	2.67	16.20	2.75	15.56	2.77	14.91	2.79	13.95	2.83

	-8.5	-9.1	16.44	2.61	16.36	2.69	16.20	2.77	15.56	2.79	14.91	2.81	13.95	2.85
	-7	-7.6	16.44	2.64	16.36	2.72	16.20	2.80	15.56	2.82	14.91	2.84	13.95	2.88
	-5	-5.6	16.44	2.68	16.36	2.76	16.20	2.85	15.56	2.86	14.91	2.88	13.95	2.92
	-3	-3.7	16.44	2.71	16.36	2.80	16.20	2.89	15.56	2.91	14.91	2.92	13.95	2.96
	0	-0.7	16.44	2.77	16.36	2.86	16.20	2.95	15.56	2.97	14.91	2.99	13.95	3.03
	3	2.2	16.44	2.83	16.36	2.92	16.20	3.01	15.56	3.03	14.91	3.05	13.95	3.09
	5	4.1	16.44	2.87	16.36	2.96	16.20	3.05	15.56	3.07	14.91	3.09	13.95	3.13
	7	6	16.44	2.91	16.36	3.00	16.20	3.10	15.56	3.12	14.91	3.14	13.95	3.18
	9	7.9	16.44	2.81	16.36	2.90	16.20	2.99	15.56	3.01	14.91	3.03	13.95	3.07
	11	9.8	16.44	2.71	16.36	2.80	16.20	2.89	15.56	2.91	14.91	2.93	13.95	2.96
	13	11.8	16.44	2.62	16.36	2.70	16.20	2.78	15.56	2.80	14.91	2.82	13.95	2.86
	15	13.7	16.44	2.52	16.36	2.60	16.20	2.68	15.56	2.70	14.91	2.71	13.95	2.75
50%	-14.7	-15	13.70	1.98	13.64	2.05	13.50	2.11	12.96	2.12	12.43	2.14	11.63	2.17
	-12.6	-13	13.70	2.02	13.64	2.08	13.50	2.15	12.96	2.16	12.43	2.17	11.63	2.20
	-10.5	-11	13.70	2.05	13.64	2.11	13.50	2.18	12.96	2.20	12.43	2.21	11.63	2.24
	-9.5	-10	13.70	2.07	13.64	2.13	13.50	2.20	12.96	2.21	12.43	2.23	11.63	2.26
	-8.5	-9.1	13.70	2.08	13.64	2.15	13.50	2.21	12.96	2.23	12.43	2.24	11.63	2.27
	-7	-7.6	13.70	2.10	13.64	2.17	13.50	2.24	12.96	2.25	12.43	2.27	11.63	2.30
	-5	-5.6	13.70	2.14	13.64	2.20	13.50	2.27	12.96	2.29	12.43	2.30	11.63	2.33
	-3	-3.7	13.70	2.17	13.64	2.24	13.50	2.31	12.96	2.32	12.43	2.34	11.63	2.37
	0	-0.7	13.70	2.21	13.64	2.28	13.50	2.36	12.96	2.37	12.43	2.39	11.63	2.42
	3	2.2	13.70	2.26	13.64	2.33	13.50	2.41	12.96	2.42	12.43	2.44	11.63	2.47
	5	4.1	13.70	2.29	13.64	2.36	13.05	2.44	12.96	2.45	12.43	2.42	11.63	2.50
	7	6	13.70	2.32	13.64	2.40	13.50	2.47	12.96	2.49	12.43	2.50	11.63	2.54
	9	7.9	13.70	2.25	13.64	2.32	13.50	2.39	12.96	2.40	12.43	2.42	11.63	2.45
	11	9.8	13.70	2.17	13.64	2.24	13.50	2.31	12.96	2.32	12.43	2.34	11.63	2.37
13	11.8	13.70	2.09	13.64	2.15	13.50	2.22	12.96	2.24	12.43	2.25	11.63	2.28	
15	13.7	13.70	2.01	13.64	2.07	13.50	2.14	12.96	2.15	12.43	2.17	11.63	2.20	

Heating capacity tables

VNMF009Q4A-D12V280

TC: Total Capacity (kW); PI: Power Input (kW) (Compressor + Outdoor fan motor)

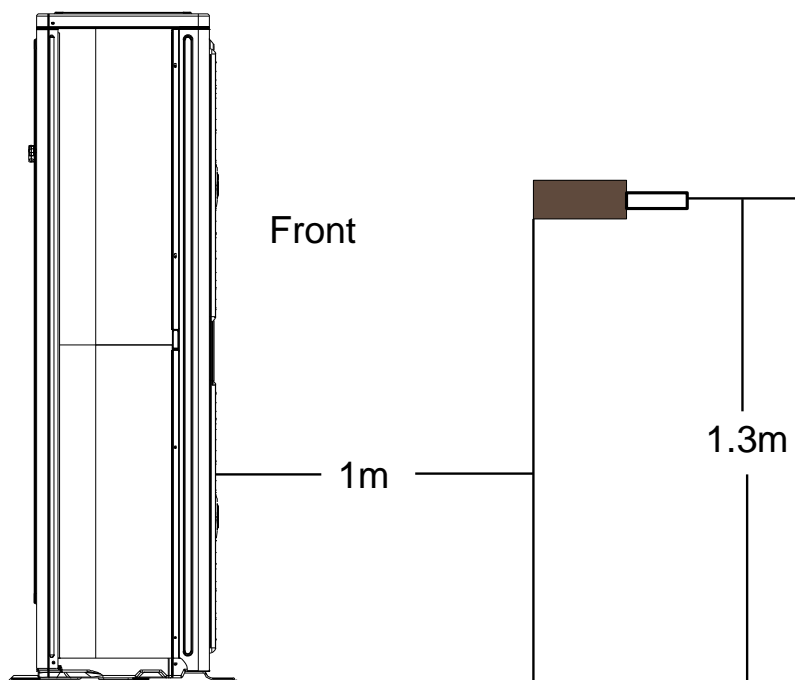
Combination (Capacity index)	Outdoor air temp.		Indoor temperature(°C DB)													
			16		18		20		21		22		24			
			TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW	TC kW	PI kW		
130%	°C DB	°C WB														
	-14.7	-15	22.53	6.27	22.53	6.51	22.30	6.82	21.64	6.86	21.42	6.91	20.99	7.00		
	-12.6	-13	23.28	6.38	23.28	6.62	23.05	6.93	22.36	6.98	22.14	7.02	21.69	7.11		
	-10.5	-11	24.03	6.48	24.03	6.73	23.79	7.04	23.08	7.09	22.85	7.14	22.39	7.23		
	-9.5	-10	24.78	6.53	24.78	6.78	24.53	7.10	23.80	7.14	23.57	7.19	23.09	7.29		
	-8.5	-9.1	25.53	6.58	25.53	6.83	25.28	7.15	24.53	7.20	24.28	7.24	23.79	7.34		
	120%	-14.7	-15	21.57	6.16	21.57	6.40	21.36	6.70	20.51	6.74	19.66	6.79	18.50	6.88	
		-12.6	-13	22.29	6.26	22.29	6.51	22.07	6.81	21.19	6.85	20.32	6.90	19.11	6.99	
		-10.5	-11	23.01	6.37	23.01	6.61	22.78	6.92	21.88	6.97	20.97	7.01	19.73	7.10	
-9.5		-10	23.73	6.41	23.73	6.66	23.49	6.97	22.56	7.02	21.63	7.06	20.35	7.16		
-8.5		-9.1	24.45	6.46	24.45	6.71	24.20	7.03	23.24	7.07	22.28	7.12	20.96	7.21		
110%		-14.7	-15	20.91	6.08	20.81	6.32	20.60	6.61	19.78	6.65	18.97	6.70	17.74	6.79	
		-12.6	-13	21.61	6.18	21.50	6.42	21.29	6.72	20.44	6.76	19.60	6.81	18.33	6.90	
		-10.5	-11	22.30	6.28	22.19	6.52	21.97	6.83	21.10	6.87	20.23	6.92	18.93	7.01	
	-9.5	-10	23.00	6.33	22.89	6.57	22.66	6.88	21.76	6.93	20.86	6.97	19.52	7.06		
	-8.5	-9.1	23.70	6.38	23.58	6.62	23.35	6.93	22.42	6.98	21.49	7.02	20.11	7.12		
	100%															

	-5	-5.6	23.02	6.43	22.91	6.68	22.68	6.91	21.78	7.03	20.88	7.08	19.53	7.17
	-3	-3.7	23.66	6.52	23.54	6.77	23.31	7.01	22.39	7.14	21.46	7.18	20.08	7.28
	0	-0.7	24.30	6.66	24.18	6.92	23.94	7.17	22.99	7.29	22.04	7.34	20.62	7.43
	3	2.2	27.35	6.80	27.22	7.07	26.95	7.32	25.88	7.44	24.81	7.49	23.21	7.59
	5	4.1	30.90	6.90	30.74	7.16	30.44	7.42	29.23	7.55	28.02	7.60	26.22	7.70
	7	6	31.97	6.99	31.82	7.26	31.50	7.60	30.25	7.65	29.00	7.70	27.13	7.80
	9	7.9	31.97	6.76	31.82	7.02	31.50	7.34	30.25	7.39	29.00	7.44	27.13	7.54
	11	9.8	31.97	6.52	31.82	6.77	31.50	7.09	30.25	7.14	29.00	7.18	27.13	7.28
	13	11.8	31.97	6.29	31.82	6.53	31.50	6.83	30.25	6.88	29.00	6.92	27.13	7.02
	15	13.7	31.97	6.05	31.82	6.29	31.50	6.58	30.25	6.62	29.00	6.66	27.13	6.75
90%	-14.7	-15	17.27	5.04	17.18	5.24	17.01	5.48	16.34	5.52	15.66	5.55	14.65	5.62
	-12.6	-13	17.84	5.12	17.75	5.32	17.58	5.57	16.88	5.61	16.18	5.64	15.14	5.72
	-10.5	-11	18.42	5.21	18.33	5.41	18.14	5.66	17.42	5.70	16.70	5.73	15.63	5.81
	-9.5	-10	18.99	5.25	18.90	5.45	18.71	5.70	17.97	5.74	17.23	5.78	16.12	5.86
	-8.5	-9.1	19.57	5.29	19.47	5.49	19.28	5.75	18.51	5.78	17.75	5.82	16.60	5.90
	-7	-7.6	20.14	5.35	20.04	5.55	19.85	5.81	19.06	5.85	18.27	5.89	17.09	5.97
	-5	-5.6	20.72	5.43	20.62	5.63	20.41	5.90	19.60	5.94	18.79	5.97	17.58	6.05
	-3	-3.7	21.29	5.51	21.19	5.72	20.98	5.98	20.15	6.02	19.31	6.06	18.07	6.14
	0	-0.7	21.87	5.62	21.76	5.84	21.55	6.11	20.69	6.15	19.84	6.19	18.56	6.28
	3	2.2	24.62	5.74	24.50	5.96	24.25	6.24	23.29	6.28	22.33	6.32	20.89	6.41
	5	4.1	27.81	5.82	27.67	6.05	27.40	6.33	26.31	6.37	25.22	6.41	23.60	6.50
	7	6	28.78	5.90	28.63	6.13	28.35	6.42	27.23	6.46	26.10	6.50	24.42	6.59
	9	7.9	28.78	5.70	28.63	5.92	28.35	6.20	27.23	6.24	26.10	6.28	24.42	6.36
	11	9.8	28.78	5.51	28.63	5.72	28.35	5.98	27.23	6.02	26.10	6.06	24.42	6.14
	13	11.8	28.78	5.31	28.63	5.51	28.35	5.77	27.23	5.81	26.10	5.84	24.42	5.92
15	13.7	28.78	5.11	28.63	5.31	28.35	5.55	27.23	5.59	26.10	5.63	24.42	5.70	
80%	-14.7	-15	16.63	4.28	16.54	4.44	16.38	4.65	15.73	4.68	15.08	4.71	14.11	4.77
	-12.6	-13	17.14	4.35	17.05	4.52	16.88	4.73	16.21	4.76	15.54	4.79	14.54	4.85
	-10.5	-11	17.65	4.42	17.56	4.59	17.39	4.80	16.70	4.84	16.01	4.87	14.98	4.93
	-9.5	-10	19.18	4.45	19.09	4.62	18.90	4.84	18.15	4.87	17.40	4.90	16.28	4.97
	-8.5	-9.1	20.46	4.49	20.36	4.66	20.16	4.88	19.36	4.91	18.56	4.94	17.36	5.01
	-7	-7.6	21.74	4.54	21.63	4.71	21.42	4.93	20.57	4.96	19.72	5.00	18.45	5.06
	-5	-5.6	23.02	4.60	22.91	4.78	22.68	5.00	21.78	5.04	20.88	5.07	19.53	5.14
	-3	-3.7	23.28	4.67	23.16	4.85	22.93	5.08	22.02	5.11	21.11	5.14	19.75	5.21
	0	-0.7	24.55	4.77	24.43	4.96	24.19	5.19	23.23	5.22	22.27	5.26	20.84	5.33
	3	2.2	25.58	4.87	25.45	5.06	25.20	5.30	24.20	5.33	23.20	5.37	21.70	5.44
	5	4.1	25.58	4.94	25.45	5.13	25.20	5.37	24.20	5.41	23.20	5.44	21.70	5.51
	7	6	25.58	5.01	25.45	5.20	25.20	5.44	24.20	5.48	23.20	5.51	21.70	5.59
	9	7.9	25.58	4.84	25.45	5.03	25.20	5.26	24.20	5.30	23.20	5.33	21.70	5.40
	11	9.8	25.58	4.67	25.45	4.85	25.20	5.08	24.20	5.11	23.20	5.14	21.70	5.21
	13	11.8	25.58	4.50	25.45	4.68	25.20	4.90	24.20	4.93	23.20	4.96	21.70	5.03
15	13.7	25.58	4.34	25.45	4.50	25.20	4.71	24.20	4.74	23.20	4.77	21.70	4.84	
70%	-14.7	-15	15.67	3.68	15.59	3.83	15.44	4.00	14.82	4.03	14.21	4.06	13.29	4.11
	-12.6	-13	16.11	3.74	16.03	3.89	15.88	4.07	15.25	4.10	14.62	4.12	13.67	4.18
	-10.5	-11	16.56	3.81	16.48	3.95	16.32	4.14	15.67	4.16	15.02	4.19	14.05	4.25
	-9.5	-10	17.90	3.83	17.82	3.98	17.64	4.17	16.94	4.20	16.24	4.22	15.19	4.28
	-8.5	-9.1	19.02	3.86	18.93	4.01	18.74	4.20	18.00	4.23	17.26	4.25	16.14	4.31
	-7	-7.6	20.14	3.91	20.04	4.06	19.85	4.25	19.06	4.27	18.27	4.30	17.09	4.36
	-5	-5.6	21.61	3.97	21.50	4.12	21.29	4.31	20.44	4.34	19.60	4.37	18.33	4.42
	-3	-3.7	22.38	4.02	22.27	4.18	22.05	4.37	21.18	4.40	20.30	4.43	18.99	4.49
	0	-0.7	22.38	4.11	22.27	4.27	22.05	4.47	21.18	4.50	20.30	4.53	18.99	4.59
	3	2.2	22.38	4.20	22.27	4.36	22.05	4.56	21.18	4.59	20.30	4.62	18.99	4.68
	5	4.1	22.38	4.26	22.27	4.42	22.05	4.63	21.18	4.66	20.30	4.69	18.99	4.75
	7	6	22.38	4.31	22.27	4.48	22.05	4.69	21.18	4.72	20.30	4.75	18.99	4.81
	9	7.9	22.38	4.17	22.27	4.33	22.05	4.53	21.18	4.56	20.30	4.59	18.99	4.65
	11	9.8	22.38	4.02	22.27	4.18	22.05	4.37	21.18	4.40	20.30	4.43	18.99	4.49
	13	11.8	22.38	3.88	22.27	4.03	22.05	4.22	21.18	4.24	20.30	4.27	18.99	4.33
15	13.7	22.38	3.73	22.27	3.88	22.05	4.06	21.18	4.09	20.30	4.11	18.99	4.17	
60%	-14.7	-15	19.18	2.95	19.09	3.04	18.90	3.14	18.15	3.16	17.40	3.18	16.28	3.22
	-12.6	-13	19.18	3.00	19.09	3.09	18.90	3.19	18.15	3.21	17.40	3.23	16.28	3.28
	-10.5	-11	19.18	3.05	19.09	3.14	18.90	3.24	18.15	3.26	17.40	3.29	16.28	3.33
	-9.5	-10	19.18	3.07	19.09	3.17	18.90	3.27	18.15	3.29	17.40	3.31	16.28	3.35

	-8.5	-9.1	19.18	3.10	19.09	3.19	18.90	3.29	18.15	3.31	17.40	3.34	16.28	3.38
	-7	-7.6	19.18	3.13	19.09	3.23	18.90	3.33	18.15	3.35	17.40	3.37	16.28	3.42
	-5	-5.6	19.18	3.18	19.09	3.28	18.90	3.38	18.15	3.40	17.40	3.42	16.28	3.47
	-3	-3.7	19.18	3.22	19.09	3.32	18.90	3.43	18.15	3.45	17.40	3.47	16.28	3.52
	0	-0.7	19.18	3.29	19.09	3.40	18.90	3.50	18.15	3.53	17.40	3.55	16.28	3.60
	3	2.2	19.18	3.36	19.09	3.47	18.90	3.58	18.15	3.60	17.40	3.62	16.28	3.67
	5	4.1	19.18	3.41	19.09	3.52	18.90	3.63	18.15	3.65	17.40	3.67	16.28	3.72
	7	6	19.18	3.46	19.09	3.56	18.90	3.68	18.15	3.70	17.40	3.72	16.28	3.77
	9	7.9	19.18	3.34	19.09	3.44	18.90	3.55	18.15	3.58	17.40	3.60	16.28	3.65
	11	9.8	19.18	3.22	19.09	3.32	18.90	3.43	18.15	3.45	17.40	3.47	16.28	3.52
	13	11.8	19.18	3.11	19.09	3.20	18.90	3.31	18.15	3.33	17.40	3.35	16.28	3.39
	15	13.7	19.18	2.99	19.09	3.09	18.90	3.18	18.15	3.20	17.40	3.22	16.28	3.27
50%	-14.7	-15	15.99	2.36	15.91	2.43	15.75	2.51	15.13	2.52	14.50	2.54	13.57	2.57
	-12.6	-13	15.99	2.40	15.91	2.47	15.75	2.55	15.13	2.57	14.50	2.58	13.57	2.62
	-10.5	-11	15.99	2.43	15.91	2.51	15.75	2.59	15.13	2.61	14.50	2.62	13.57	2.66
	-9.5	-10	15.99	2.45	15.91	2.53	15.75	2.61	15.13	2.63	14.50	2.64	13.57	2.68
	-8.5	-9.1	15.99	2.47	15.91	2.55	15.75	2.63	15.13	2.65	14.50	2.66	13.57	2.70
	-7	-7.6	15.99	2.50	15.91	2.58	15.75	2.66	15.13	2.68	14.50	2.69	13.57	2.73
	-5	-5.6	15.99	2.54	15.91	2.62	15.75	2.70	15.13	2.72	14.50	2.73	13.57	2.77
	-3	-3.7	15.99	2.57	15.91	2.65	15.75	2.74	15.13	2.76	14.50	2.77	13.57	2.81
	0	-0.7	15.99	2.63	15.91	2.71	15.75	2.80	15.13	2.82	14.50	2.83	13.57	2.87
	3	2.2	15.99	2.68	15.91	2.77	15.75	2.86	15.13	2.87	14.50	2.89	13.57	2.93
	5	4.1	15.99	2.72	15.91	2.81	15.22	2.90	15.13	2.91	14.50	2.87	13.57	2.97
	7	6	15.99	2.76	15.91	2.85	15.75	2.93	15.13	2.95	14.50	2.97	13.57	3.01
	9	7.9	15.99	2.67	15.91	2.75	15.75	2.84	15.13	2.85	14.50	2.87	13.57	2.91
	11	9.8	15.99	2.57	15.91	2.65	15.75	2.74	15.13	2.76	14.50	2.77	13.57	2.81
13	11.8	15.99	2.48	15.91	2.56	15.75	2.64	15.13	2.66	14.50	2.67	13.57	2.71	
15	13.7	15.99	2.39	15.91	2.46	15.75	2.54	15.13	2.56	14.50	2.57	13.57	2.61	

8. Sound levels

Side air discharge type



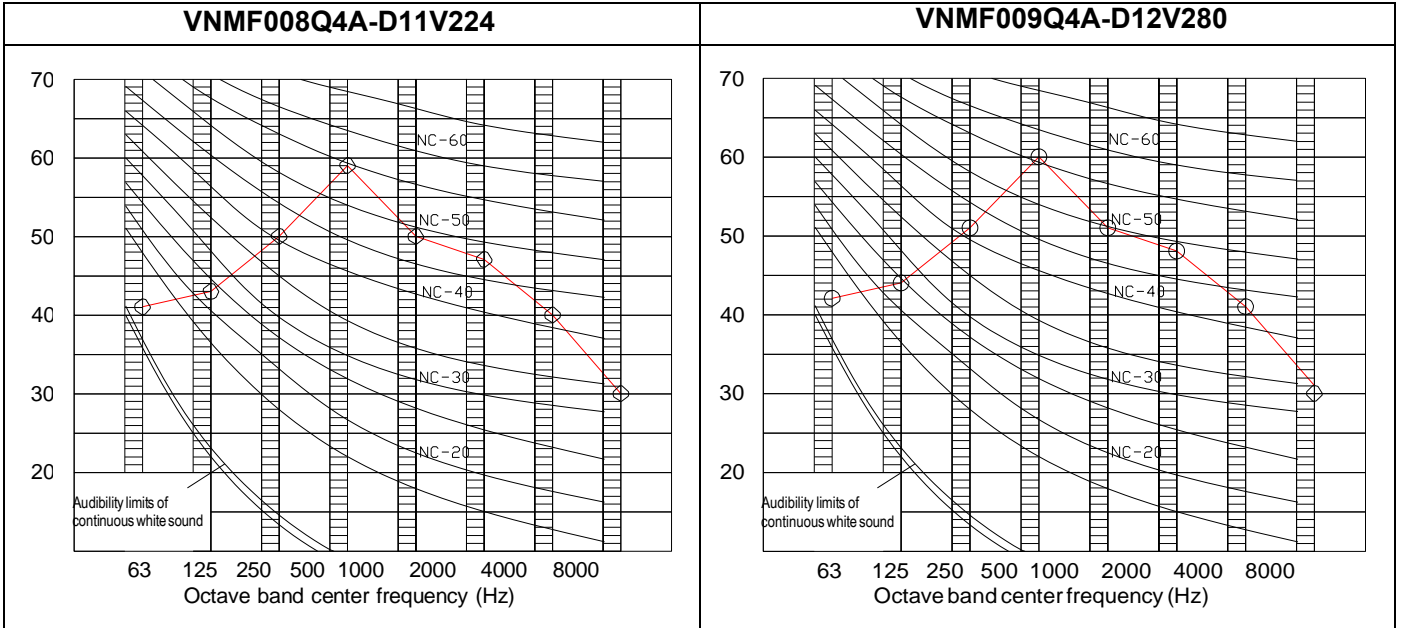
Notes:

- Data is valid at free field condition
- Data is valid at nominal operating condition
- Sound level will vary depending on a range of factors such as the construction (acoustic absorption coefficient) of particular room in which the equipment is installed
- Sound level can be increased in static pressure mode or used air guide.

Sound pressure level

Model	Sound pressure level d(B)A
VNMF008Q4A-D11V252	58
VNMF009Q4A-D12V280	60











Sound pressure spectrum



9. Accessories

9.1 Standard accessories

VNMF008Q4A-D11V252, VNMF009Q4A-D12V280

INSTALLATION FITTINGS	NAME	SHAPE	QUANTITY
	1. Outdoor unit installation manual		1
	2. Outdoor unit owner's manual		1
	3. Indoor unit owner's manual		1
	4. Installation Instructions: Indoor Unit Manifold		1
	5. Water outlet connection pipe		1
	6. Straight screwdriver		1
	7. Sealing ring		1
	8. Waterproof chassis cover		2
	9. Connection pipe		1
10. Curved connection pipe		1	

9.2 Optional accessories

Branch joint of outdoor & indoor unit

Optional accessories	Model name	Packing Size (mm)	Gross/net Weight (kg)	Function
Branch Joint of outdoor unit	VAMC002-DDF	255×150×185	1.5/1.2	Distribute the refrigerant to Indoor Units and balance the resistance between each outdoor unit.
	VAMC003-DDF	345×160×285	3.4/2.4	
	VAMC004-DDF	475×165×300	4.8/3.6	
Branch Joint of indoor unit	VAPC060-D01	290×105×100	0.4/0.3	
	VAPC102-D02	290×105×100	0.6/0.4	
	VAPC240-D03	310×130×125	0.9/0.6	
	VAPC460-D04	350×170×180	1.5/1.1	
	VAPC835-D05	365×195×215	1.9/1.4	

Part 3 Installation

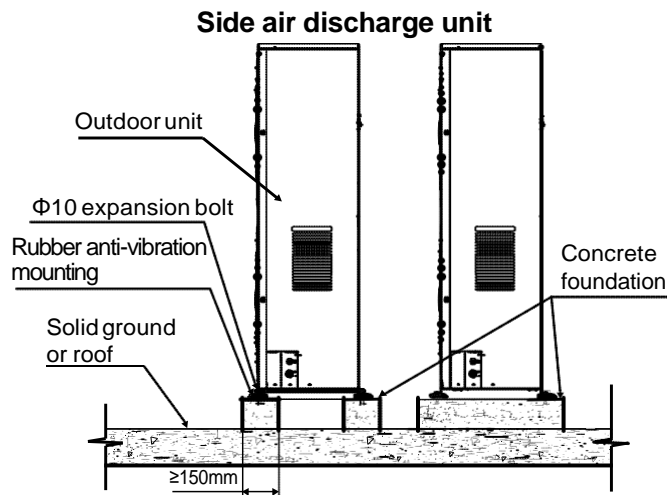
1. Select installation position	66
2. Foundation for installation	66
3. Installation space	67
4. Lifting method	69
5. Refrigerant piping installation	69
6. Branch pipe installation	73
7. Remove dirt or water in the piping	73
8. Gas tightness test	73
9. Vacuum	73
10. Additional refrigerant charge	74
11. Electric wiring installation	74
12. Running test	76
13. Caution on refrigerant leakage	76

1. Select installation position

- Ensure that the outdoor unit is installed in a dry, well-ventilated place.
- Ensure that the noise and exhaust ventilation of the outdoor unit do not affect the neighbors of the property owner or the surrounding ventilation.
- Ensure that the outdoor unit is installed in a well-ventilated place that is possibly closest to the indoor unit.
- Ensure that the outdoor unit is installed in a cool place without direct sunshine exposure or direct radiation of high-temp heat source.
- Do not install the outdoor unit in a dirty or severely polluted place, so as to avoid blockage of the heat exchanger in the outdoor unit.
- Do not install the outdoor unit in a place with oil pollution or full of harmful gas such as sulfurous gas.
- Do not install the outdoor unit in a place surrounded by salty air. (Except for the models with corrosion-resistant function)

2. Foundation for installation

- A solid, correct base can: Avoid the outdoor unit from sinking and avoid the abnormal noise generated due to base.
- Base types: Steel structure base or concrete base (See the figure below for the general making method)



Note: The key points to make basement:

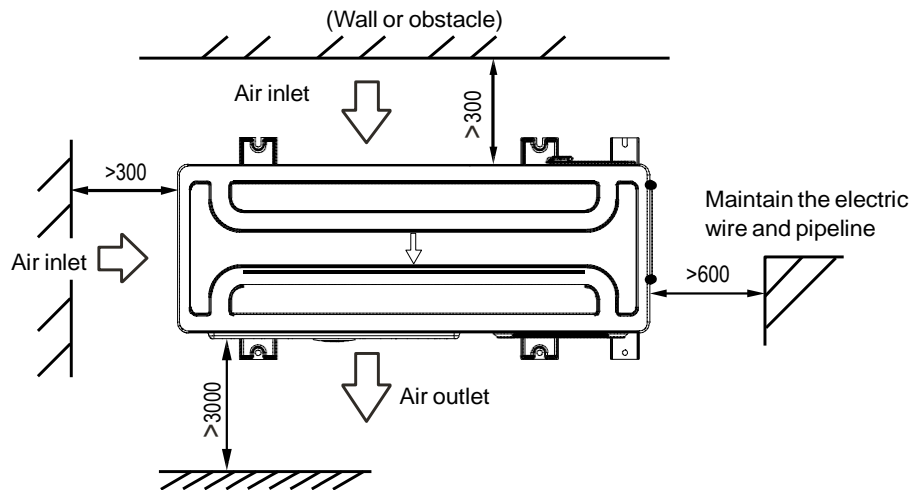
- ① The master unit's basement must be made on the solid concrete ground . Refer to the structure diagram to make concrete basement in detail, or make after field measurements.
- ① In order to ensure every point can contact equality, the basement should be on completely level.
- ① If the basement is placed on the roofing, the detritus layer isn't needed, but the concrete surface must be flat. The standard concrete mixture ratio is cement 1/ sand 2/ carpolite 4, and adds $\Phi 10$ strengthen reinforcing steel bar, the surface of the cement and sand plasm must be flat, border of the basement must be chamfer angle.
- ① Before construct the unit base, please ensure the base is directly supporting the rear and front folding edges of the bottom panel vertically, for the reason of these edges are the actual supported sites to the unit.
- ① In order to drain off the seeper around the equipment, a discharge ditch must be setup around the basement.
- ① Please check the affordability of the roofing to ensure the load capacity.

When piping from the bottom of the unit, the base height should be no less than 200mm.

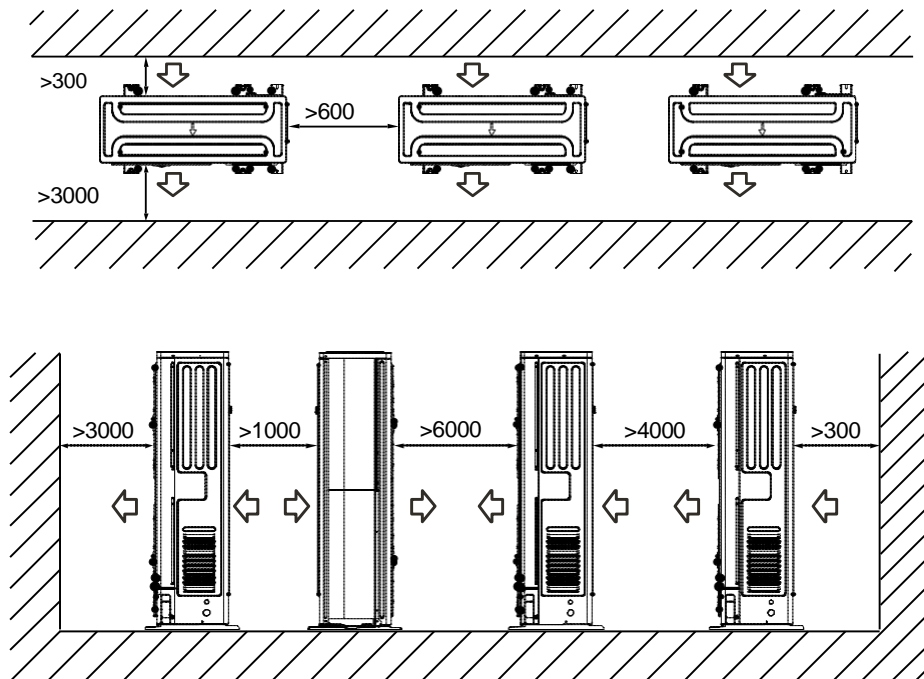
3. Installation space

VNMF008Q4A-D11V252, VNMF009Q4A-D12V280

☒ Single unit installation



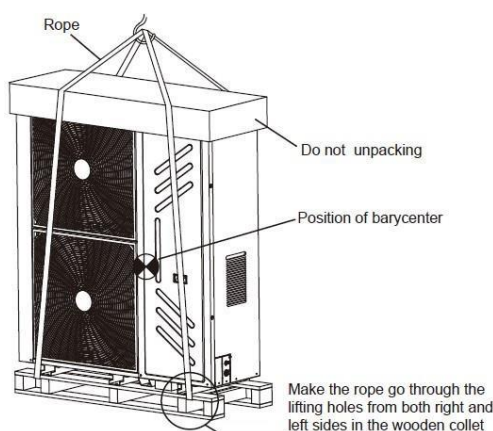
☒ Multiple unit installation



4. Lifting method

- Do not remove any package before the hoisting. Use two ropes to hoist the machine, keep the machine in balance, and then raise it safely and steadily. In case of no package or if the package is damaged, use plates or packing material to protect it.
- When conveying and hoisting the outdoor unit, keep it upright, ensure that the slope does not exceed 30°, and keep safety in mind.
- Steel wire can be used for conveying:
- Use 4 steel wires of the size above $\Phi 6\text{mm}$ to convey the outdoor unit. Pay attention to the gravity center and prevent sliding and tip-over of the outdoor unit.
- In order to prevent scratch and deformity the outdoor unit, apply a guard board to the surface of contact between the steel wire and the air conditioner.
- Remove the cushion for use in the transport after finishing the transport.

Fork lifter can be used for conveying.



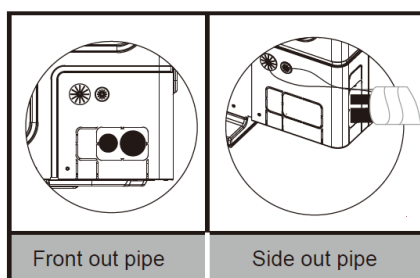
5. Refrigerant piping installation

5.1 Valve instruction

20/22.4/26kW

Unit (mm)

A multi-direction space is available for connecting pipes and wiring in various installation sites.

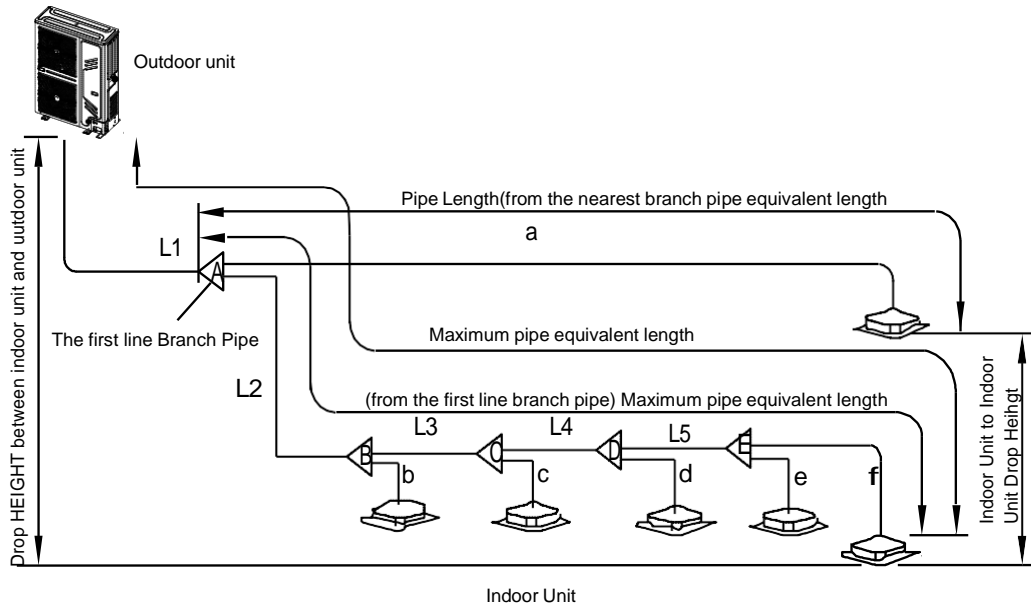


Model	Liquid pipe	Gas pipe
VNMF008(009)Q4A	$\Phi 9.53$	$\Phi 22.2$

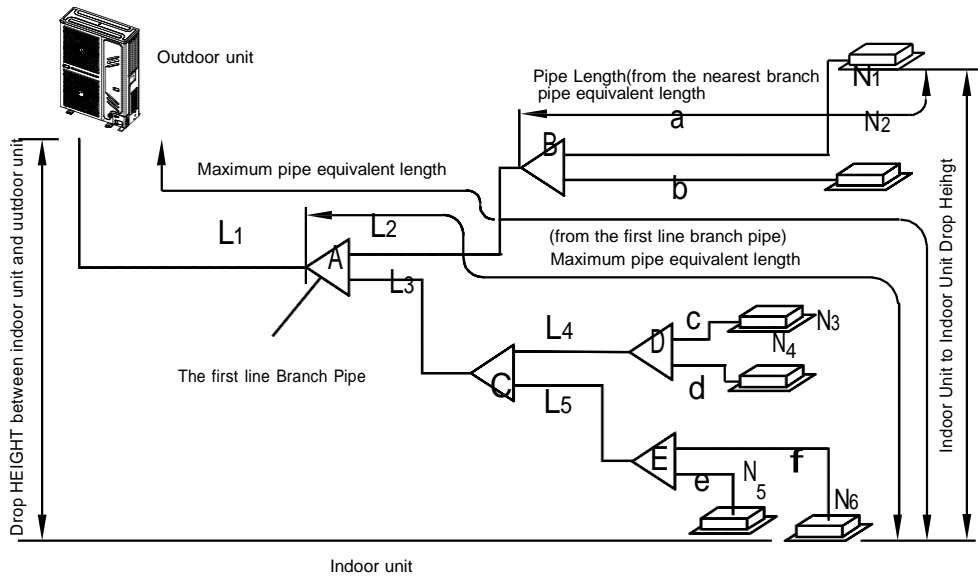
- Connecting pipe from right side: cut the side hole of the pipe-outlet plate selectively. It is suggested to cut a piece of metal plate below to avoid the mouse come and destroy the machine wiring body.
- Connecting pipe from front side: cut the frontal hole of the pipe-outlet plate selectively. It is suggested to cut a piece of metal plate right side to avoid the mouse come and destroy the machine wiring body.
- Connecting wiring cable: the strong and weak electrical wire should be out through the two plastic holes of the pipe-outlet plate, and binded with gas and liquid pipe together.

5.2 Refrigerant piping length permitted value

- The first connecting method



- The second connecting method

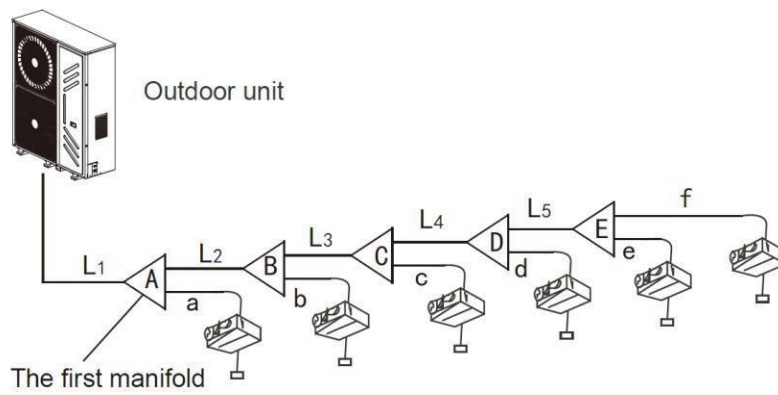


Piping length		Permitted value		Piping
		20-26kW		
Pipe Length	Total Pipe Length(Actual)		≤120m	L1+L2+L3+L4+L5+a+b+c+d+e+f
	Maximum Piping	Actual Length	≤60m	L1+L2+L3+L4+L5+f(The first connecting method) or L1+L3+L5+f(The second connecting method)
		Equivalent Length	≤70m	
	Pipe Length (from the first branch to the furthest IDU)		≤20m	L2+L3+L4+L5+f(The first connecting method) or L3+L5+f(The second connecting method)
Pipe Length(IDU to the nearest branch)		≤15m	a,b,c,d,e,f	
Level difference	Level difference between IDU~ODU	ODU up	≤30m	----
		ODU down	≤20m	----
	Level difference between IDU~IDU		≤8m	----

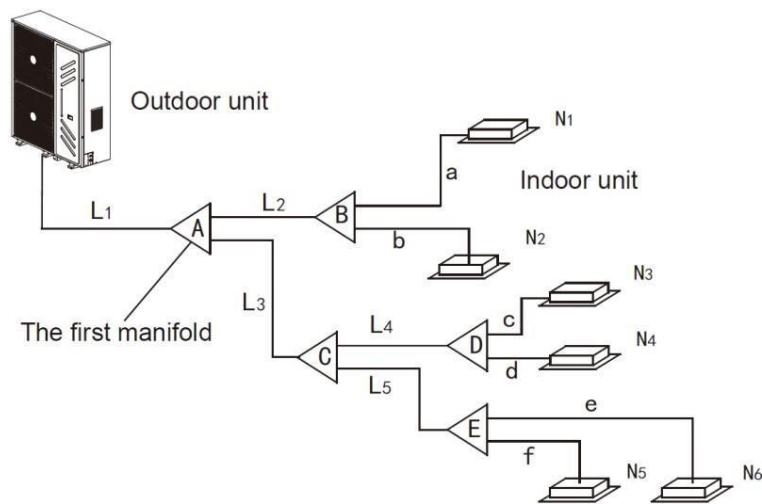
Note: When the total equivalent piping length of liquid + gas side is more than 90m, it must increase the size of air side main pipe. Besides, according to the distance of refrigerant pipe and the over matched state of indoor unit, when the capacity is decreasing it still can increase the gas side main pipe size.

5.3 Refrigerant piping selection

- The first connecting method



- The second connecting method



• Pipe name

Main pipe	L1
Indoor unit main pipe	L2, L3, L4, L5
Indoor unit branch pipe	a, b, c, d, e, f
Indoor unit branch pipe assembly	A, B, C, D, E

• Table1: Indoor unit branch pipe selection (a~f)

Capacity of indoor unit (A×100W)	Branching pipe length≤10m	
	Gas side	Liquid side
A≤50	Φ12.7	Φ6.35
A≥56	Φ15.9	Φ9.53

• Table 2: Indoor unit main pipe selection (L1~L5)

Capacity of indoor unit (A×100W)	Indoor unit main pipe (mm)		
	Gas side	Liquid side	Available branching pipe
A<166	Φ15.9	Φ9.53	FQZHN-01D
166≤A<230	Φ19.1	Φ9.53	FQZHN-01D
230≤A<330	Φ22.2	Φ9.53	FQZHN-02D
330≤A	Φ25.4	Φ12.7	FQZHN-02D

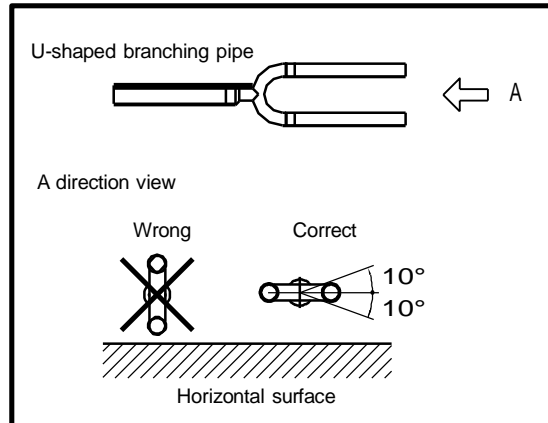
• Table 3: Main pipe selection (L1)

Model	When the equivalent length of all liquid and air pipes < 90m			When the equivalent length of all liquid and air pipes ≥90m		
	Gas side (mm)	Liquid side (mm)	The 1 st branch pipe	Gas side (mm)	Liquid side (mm)	The 1 st branch pipe
25.2/28kW	Φ22.2	Φ9.53	FQZHN-02D	Φ25.4	Φ9.53	FQZHN-02D

Note: the main pipe L1 can be selected from table2 or table3, the larger size should be finally selected.

6. Branch pipe installation

The branching pipe must be installed horizontally and error angle of it should not be larger than 10°. Otherwise, refrigerant assignment will be uneven and malfunction will be caused.



7. Remove dirt or water in the piping

- Make sure there is no any dirt or water in the pipe before connecting the piping to the outdoor units.
- Wash the piping with high pressure nitrogen, never use refrigerant of the outdoor unit to do that.

8. Gas tightness test

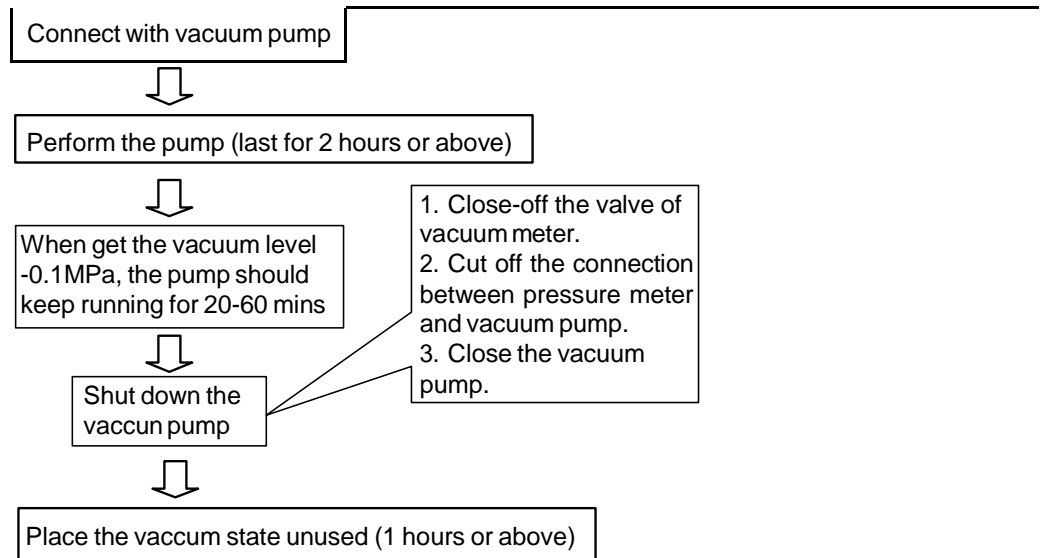
- Upon set up the indoor unit pipeline, please connect the Hi-pressure pipe with liquid side shut-off valve and connect Lo-pressure pipe with gas side shut off valve firstly.
- Use the vacuum pump discharging air inside the pipe from the two pistons (pistons of liquid side shut off valve and gas side shut off valve) simultaneously, until to the -1kgf/cm².
- Close the vacuum pump, charge 40kgf/cm² nitrogen gas from the pistons of the two shut-off valves simultaneously. Pressure inside should be maintained at there no less than 24 hrs.

Note:

- ⌚ Pressurized nitrogen (3.9MPa; 44kgf/cm²) is used for airtightness test.
- ⌚ It is not allowed to use oxygen, combustible gas or toxic gas to conduct the airtightness test.
- ⌚ When welding, please use wet cloth insulating the low pressure valve for protection.
- ⌚ To avoid the equipment be damaged, the pressure maintained time should not last too long.

9. Vacuum

- Use the vacuum pump which vacuum level lower than -0.1MPa and the air discharge capacity above 40L/min.
- The outdoor unit is not necessary to vacuum, don't open the outdoor unit gas and liquid pipe shut-off valves.
- Make sure the vacuum pump could result as -0.1MPa or below after 2 hours or above operation. If the pump operated 3 hours or above could not achieve to -0.1MPa or below, please check whether water mix or gas leak inside of the pipe.



Caution:

- ⦿ Don't mix up the different refrigerants or abuse the tools and measurements which directly contact with refrigerants.
- ⦿ Don't adopt refrigerant gas for air vacuuming.
- ⦿ If vacuum level could not get to -0.1MPa, please check whether resulted by leakage and confirm the leakage site. If no leakage, please operate the vacuum pump again 1 or 2 hrs.

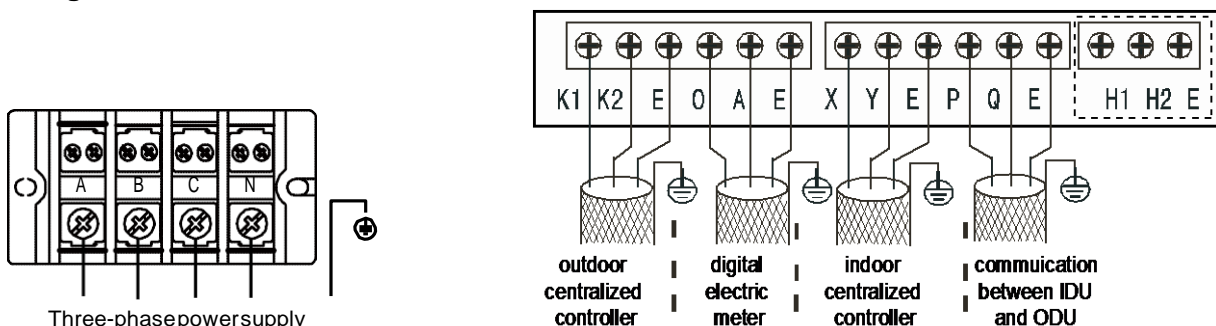
10. Additional refrigerant charge

Calculate the additional refrigerant charge according to the diameter and the length of the liquid side pipe of the outdoor/indoor unit connection. The refrigerant is R410A.

Pipe size of liquid side	Additional refrigerant charge per meter (kg)
Φ6.35	0.022
Φ9.53	0.054 (≤22.4kW)
	0.057 (>22.4kW)
Φ12.7	0.11
Φ15.9	0.17
Φ19.1	0.26
Φ22.2	0.36

11. Electric wiring installation

11.1 Wiring terminals instruction



11.2 Electric wiring installation

Note:

- Please select power supply for indoor unit and outdoor unit separately.
- The power supply should have specified branch circuit with leakage protector and manual switch.
- The power supply, leakage protector and manual of all the indoor units connecting to the same outdoor unit should be universal.

(Please set all the indoor unit power supply of one system into the same circuit. It should turn on or shut down the unit at the

same time, otherwise, the service life would affect seriously, even the unit may not turn on.)

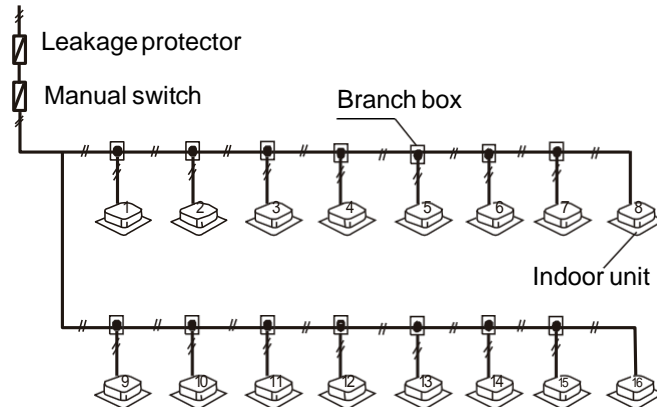
Please put the connective wiring system between indoor unit and outdoor unit with refrigerant piping system together.

It is suggested to use 3-core shielded wire as signal wire between indoor and outdoor units, multi-core wire is unavailable.

Please comply with relevant National Electric Standard.

Power wiring should be done by professional electrician.

Indoor unit powering supply wiring



Note:

- ① Set refrigerant piping system, signal wires between indoor units and signal wires between outdoor units into one system.
- ② Power must unified supply to all indoor units in the one system.
- ③ Please do not put the signal wires and power wires in the same wire tube; keep distance between the two tubes. (Keep distance above 300mm, when current capacity of power supply less than 10A, and Keep distance above 500mm, when current capacity of power supply less than 50A)

11.3 Signal wiring installation

The signal wire should be shielded wire. Using other wiring shall create signal interference, thus leading to error operation.

The shielded nets at the two sides of shielded wires are either grounded to the earth, or connected with each other and jointed to the sheet metal along to the earth.

Signal wire could not be bound together with refrigerant pipeline and power wire. When power wire and signal wire is distributed in parallel form, keep gap between them above 300mm so as to preventing signal interference.

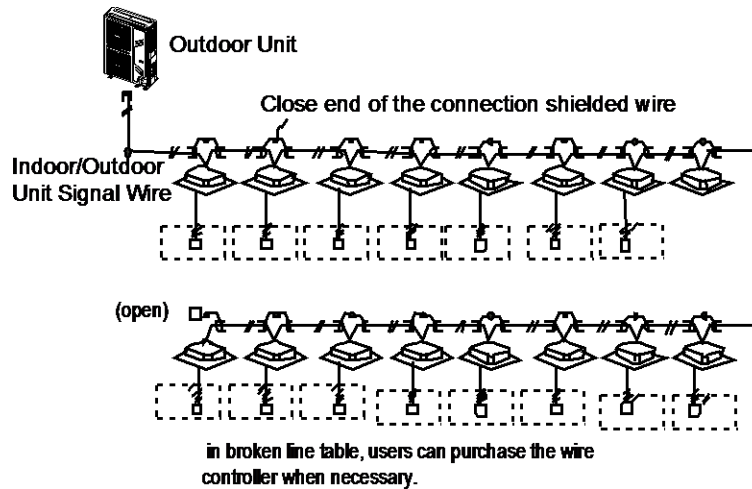
Signal wire could not form closed loop.

Signal wire has polarity, so be careful when connecting.

The shield net should be grounded at the wiring terminal of outdoor unit. The inlet and outlet wire net of indoor communication wire should be connected directly and could not be grounded, and form open circuit at the shield net of final indoor unit.

Signal wire between outdoor unit and indoor unit

Signal wire of indoor/outdoor unit adopts 3-core shielded wire ($\geq 0.75\text{mm}^2$) which has polarity, please connect it correctly.



12. Running test

Operate according to “key points for test running” on the electric control box cover.

CAUTION

- Test running cannot start until the outdoor unit has been connected to the power for 12hours.
- Test running cannot start until all the valves are affirmed open.
- Never make the test running if the machine has malfunction.
- Make sure the communication between the indoor unit and outdoor unit is normal before test running.

13. Caution on refrigerant leakage

- This air conditioner adopts R410A as refrigerant, which is safe and noncombustible.
- The room for air conditioner should be big enough that refrigerant leakage cannot reach the critical thickness. Besides this, you can take some action on time.

Refrigerant critical thickness: 0.44[kg/m³] for R410A.

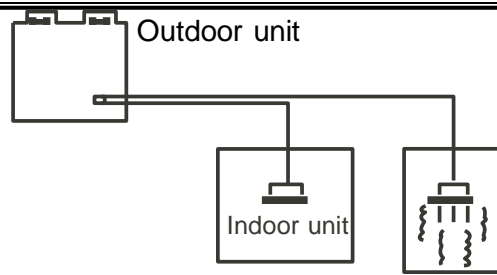
Confirm the critical thickness through follow steps, and take necessary actions.

1. Calculate the sum of the charge volume (A[kg]) Total Refrigerant volume of 10HP=factory refrigerant volume + super addition
2. Calculate the indoor cubage (B[m³]) (as the minimum cubage).
3. Calculate the refrigerant thickness

$$\frac{A[\text{kg}]}{B[\text{m}^3]} \leq \text{critical thickness}$$

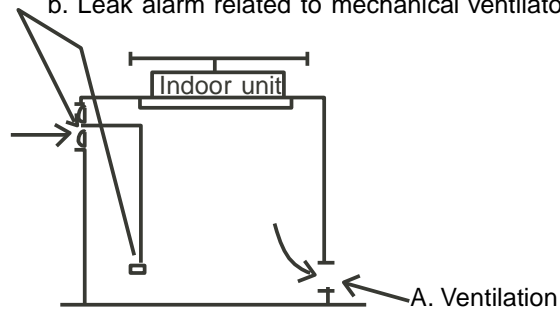
Counter measure against over high thickness

1. Install mechanical ventilator to reduce the refrigerant thickness under critical level. (ventilate regularly)
2. Install leak alarm facility related to mechanical ventilator if you cannot regularly ventilate.



Room full of leak refrigerant
(All refrigerant has run up)

b. Leak alarm related to mechanical ventilator



(Leak hunting siren should be installed in places easily keep refrigerant)

NOTE

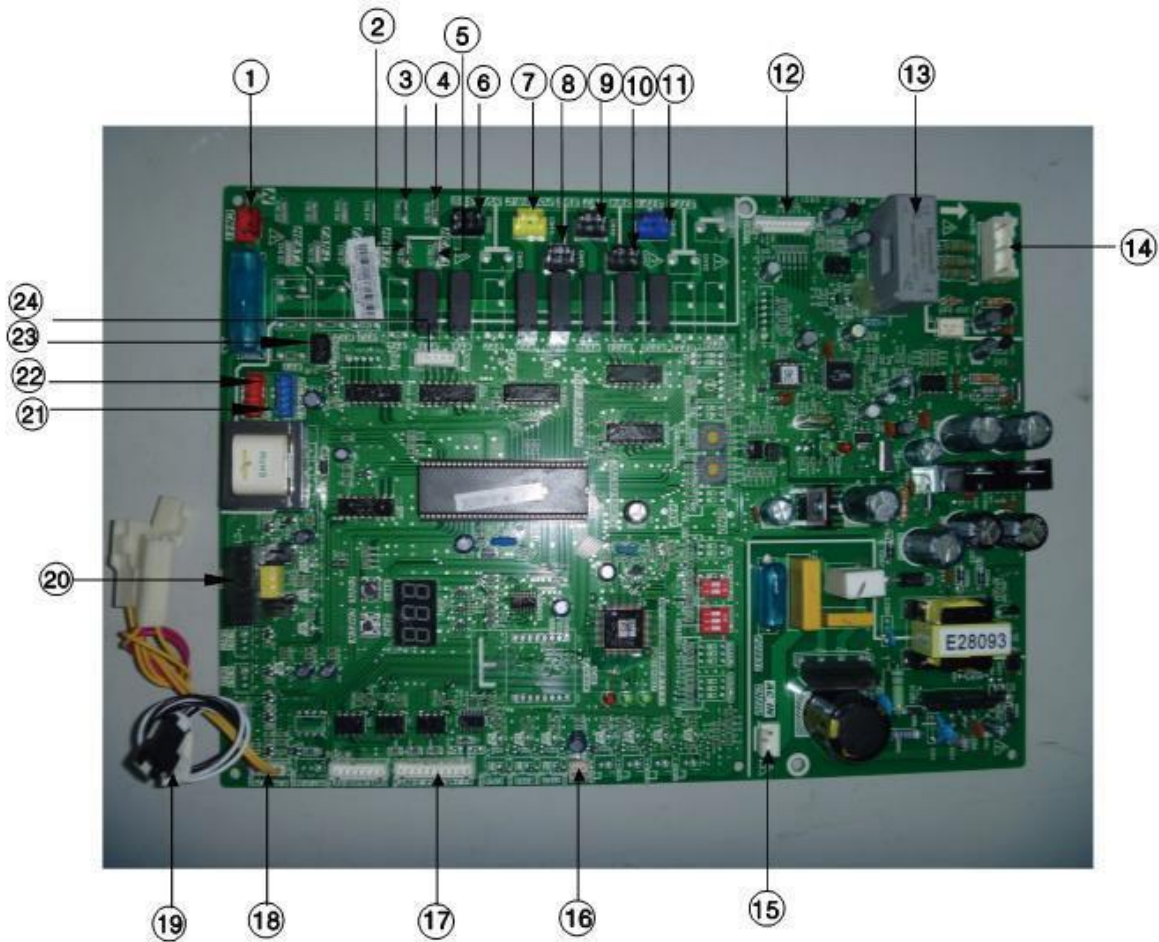
Please press "Force Cool" button to carry out refrigerant recycling process. Keep the low pressure above 0.2MPa; otherwise compressor may be burnt out.

Part 4 Troubleshooting

1. Main PCB ports instructions	79
2. Main PCB parts instructions	82
3. Error code table	87
4. Troubleshooting	89

1. Main PCB ports instructions

1.1 VNMF008Q4A-D11V252, VNMF009Q4A-D12V280

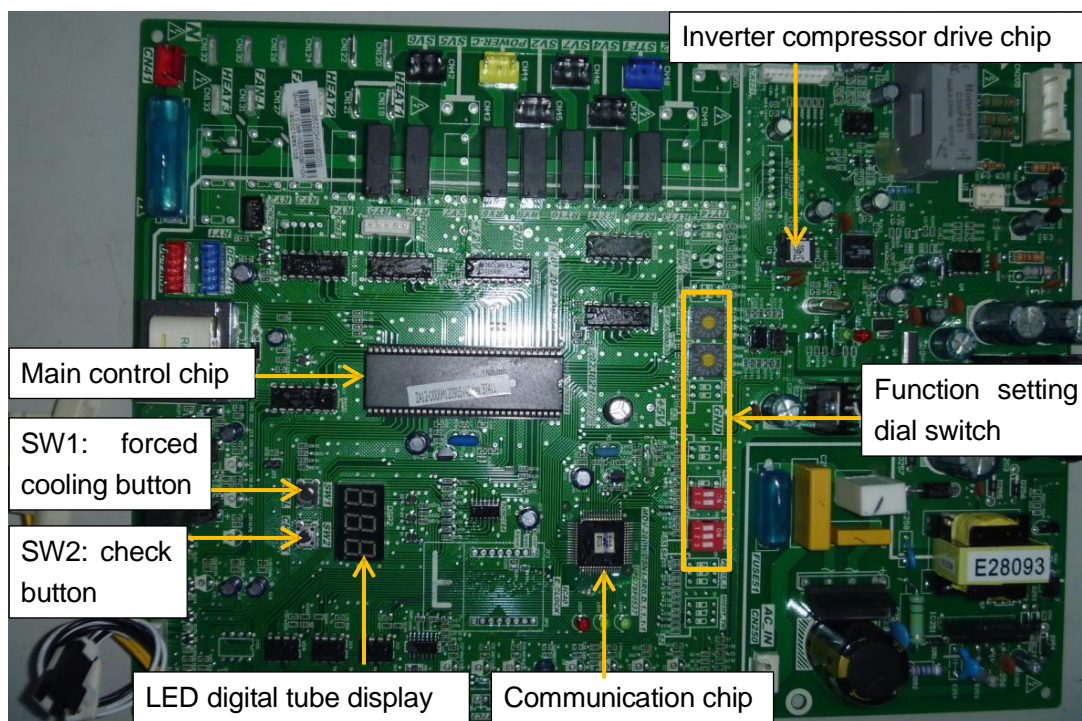


Ports instructions:

No.	Content	Port voltage
1	Power input port of the main PCB	220V
2	Load output port (crankcase heater HAET 1&HEAT 2)	220V
3	Load output port	220V
4	Load output port	220V
5	Load output port	220V
6	Load output port (solenoid valve SV6 control)	220V
7	Load output port (contactor control POWER-C port)	220V
8	Load output port (solenoid valve SV2 control)	220V
9	Load output port (solenoid valve SV7 control)	220V
10	Load output port (solenoid valve SV4 control)	220V
11	Load output port (solenoid valve ST1 control)	220V
12	Inverter module drive port	The third pin on the left: DC3.3V Other pins: in dynamic change
13	Mutual inductor for DC main lead current inspection	In dynamic change
14	Voltage detection port of inverter module	DC540V, +15V, N
15	Power input port of the main PCB	220V
16	Discharge temperature detection port of inverter compressor	DC0~5V (in dynamic change)
17	Communication port	DC2.5~5V
18	Signal input port for high pressure and low pressure detection switch	DC0~5V (in dynamic change)
19	Outdoor ambient temperature detection port	DC0~5V (in dynamic change)
20	Current detection port	DC0~5V (in dynamic change)
21	Control port of DC fan 1	The right pin: +5V
22	Control port of DC fan 2	The right pin: +5V
23	Power output port of the main PCB	The first pin on the left: +12V
24	EXV drive port	The first pin on the left: DC12V The other four pins: in dynamic change

2. Main PCB parts instructions

2.1 VNMF008Q4A-D11V252, VNMF009Q4A-D12V280



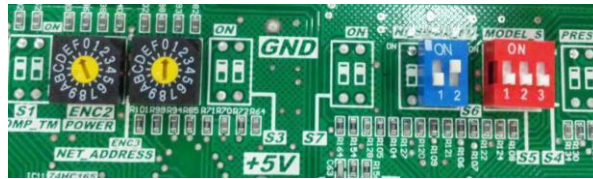
2.1.1 Check content instructions (SW2)

No.	Display content	Display content	Note
		Normal display ¹	/
1	0--	Capacity of this outdoor unit	8HP, 10HP
2	1--	Total capacity requirements of indoor units	Actual value
3	2--	Revised total capacity requirements of outdoor unit	Actual value
4	3--	Operating mode ²	0, 2, 3, 4
5	4--	Fan speed ³	0, 1, 2, 3, 4, 5, 6, 7, 8, 9
6	5--	Average temperature of T2B/T2	Actual value
7	6--	T3 pipe temperature	Actual value
8	7--	T4 ambient temperature	Actual value
9	8--	Discharge temperature of inverter compressor	Actual value
10	9--	Discharge temperature of fixed compressor (reserved)	0
11	0--	Surface temperature of radiator (reserved)	0
12	1--	Open degree of EXV	Actual value=display×8
13	2--	Current of inverter compressor	Actual value
14	3--	Current of fixed compressor (reserved)	0
15	4--	Discharge pressure (reserved)	0
16	5--	Priority mode ⁴	0, 1, 2, 3, 4
17	6--	Total quantity of indoor units	Actual value
18	7--	Quantity of running units	Actual value
19	8--	The last error or protection code	Display 00 if it has no error or protection code
20	9--	--	Check over

Note:

- 1: Display compressor frequency when system is running and display the quantity of indoor unit which communicate with outdoor unit when system is standby.
- 2: Operating mode: 0 – standby mode; 2 – cooling mode; 3 – heating mode; 4 – forced cooling.
- 3: Fan speed: 0 – fan stop; 1~9 – speed increase sequentially; 9 – the maximum fan speed.
- 4: Priority mode: 0 – heating priority; 1 – cooling priority; 2 – first running mode priority; 3 – only respond heating mode; 4 – only respond cooling mode.

2.1.2 System setting dial switches instructions



ENC2: Outdoor unit capacity setting	
ENC2 	Outdoor unit capacity setting: 0-2 are available (capacity code 0—20kW; capacity code 1—22.4kW) ; capacity code 2—26kW)
ENC3: Quantity of indoor units setting	
ENC3 	The quantity of indoor unit is 0-15 0~9 on ENC3 refer to 0~9 indoor units; A~F on ENC3 refer to 10~15 indoor units.
S5: Locking modes selection	
ON 	Heating priority mode (factory default)
ON 	Cooling priority mode
ON 	No.63 indoor unit running mode priority when there has No.63 indoor unit or larger capacity requirement priority when there has on No.63 indoor unit
ON 	Only response to heating mode
ON 	Only response to cooling mode
S6: Addressing mode selection	
ON 	Auto addressing mode
ON 	Manual addressing mode (factory default)
ON 	Clean the indoor unit address (only available for auto searching new indoor unit)

3. Error code table

3.1 VNMF008Q4A-D11V252, VNMF009Q4A-D12V280

Error code	Content	Note
E1	Reserved	
E2	communication fault between the outdoor and indoor units	
E4	T3 & T4 temperature sensor fault	
E5	Voltage protection fault or a lack of Phase B、Phase N	
E6	DC fan motor error	
E7	Discharge temp sensor error	
EA	A fan in the A region run for more than 5 minutes in Heat mode	
EB	2 times of E6 protection in 10 minutes	
H0	Communication error between main control chip and module chip	
H1	Communication error between main control chip and communication chip	
H4	3 times of P6 protection in 30 minutes	
H5	3 times of P2 protection in 30 minutes	
H7	The number of indoor units decreases	
H8	Reserved	
P0	Top temperature protection of inverter compressor	
P1	High pressure protection	
P2	Low pressure protection	
P3	Current protection of inverter compressor	
P4	Compressor discharge temperature protection	
P5	Outdoor condenser high temperature protection	
P6	Module protection (don't display)	
P8	Typhoon protection	
P9	Module protection of DC fan	
PE	Evaporator high temperature protection	
L0	Inverter module error	
L1	Low voltage protection of DC generatrix	
L2	High voltage protection of DC generatrix	
L3	Reserved	
L4	MCE error/ synchronization/ closed loop	
L5	Zero speed protection	
L6	Reserved	
L7	Phase sequence error	

L8	Frequency difference in one second more than 15Hz protection	
L9	Frequency difference between the real and the setting frequency more than 15Hz protection	

SW3 button (press SW3 ten times, every one second for a time)

The large capacity V4+ individual system (56-90kW) have the function of refrigerant volume automatic judgment.

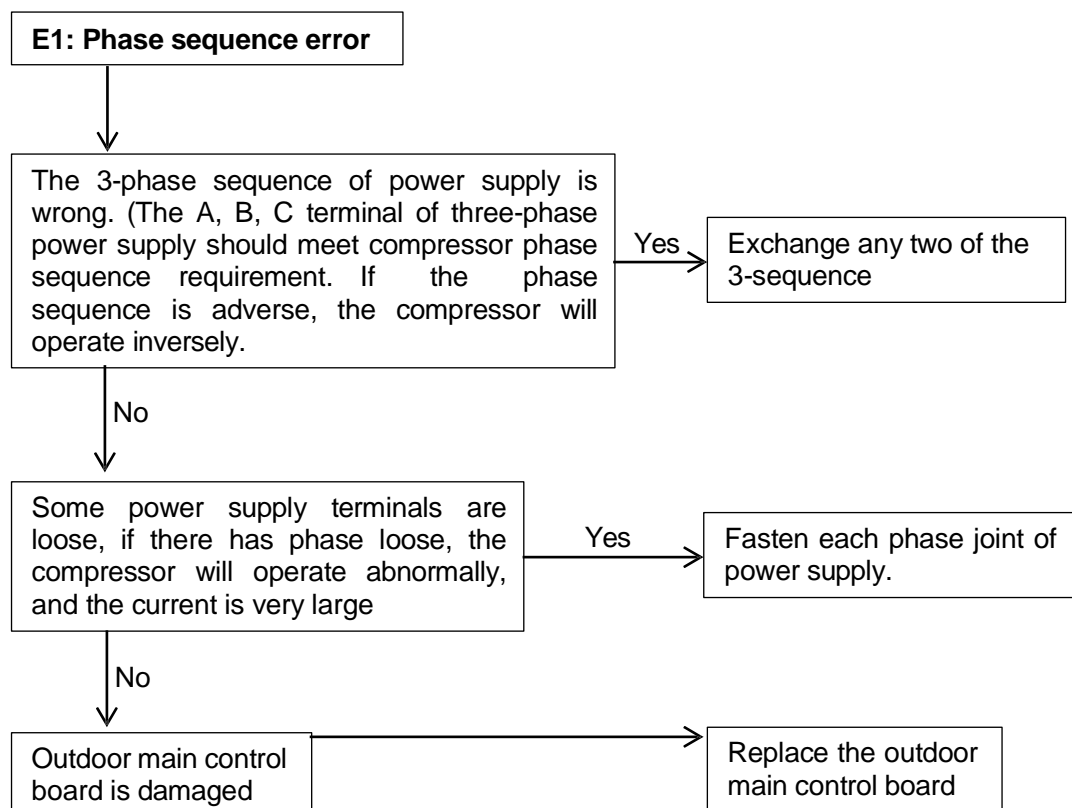
When all the indoor units are in cooling or heating mode, the system will be in refrigerant volume judgment mode automatically. If the system judges that the refrigerant volume is normal, the system will operate normally, no error code will display. If the system judges that the refrigerant volume is abnormal, corresponding error code will display on digital tube.

When only partial indoor units are in cooling or heating mode, the system will not judge the refrigerant volume and the digital tube will reserve the last judging result.

Error code	Content
r1	Lack of refrigerant
r2	Obvious lack of refrigerant
r3	Serious lack of refrigerant
R1	Too much refrigerant
R2	Serious too much refrigerant

4. Troubleshooting

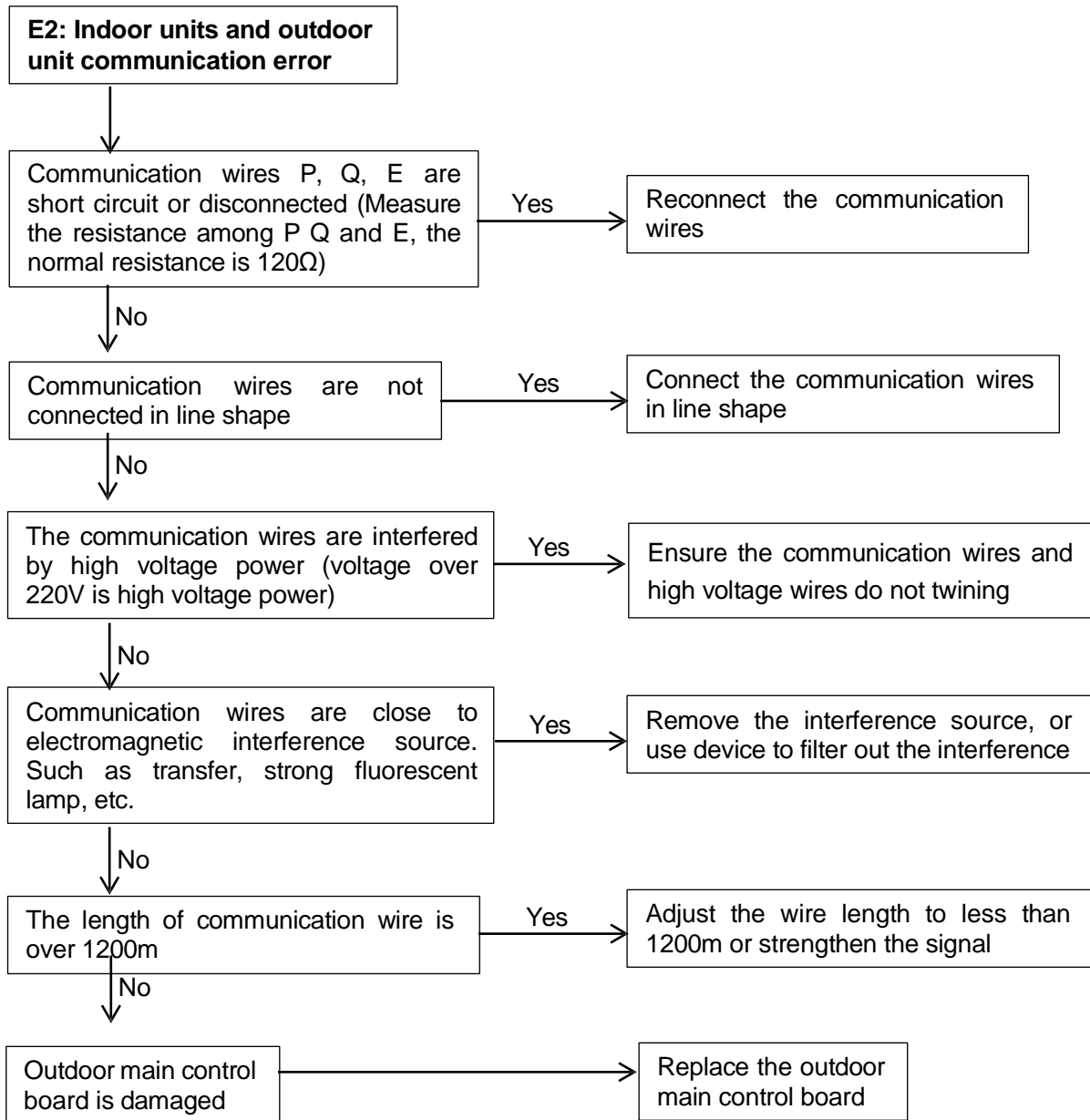
4.1 E1: Phase sequence error



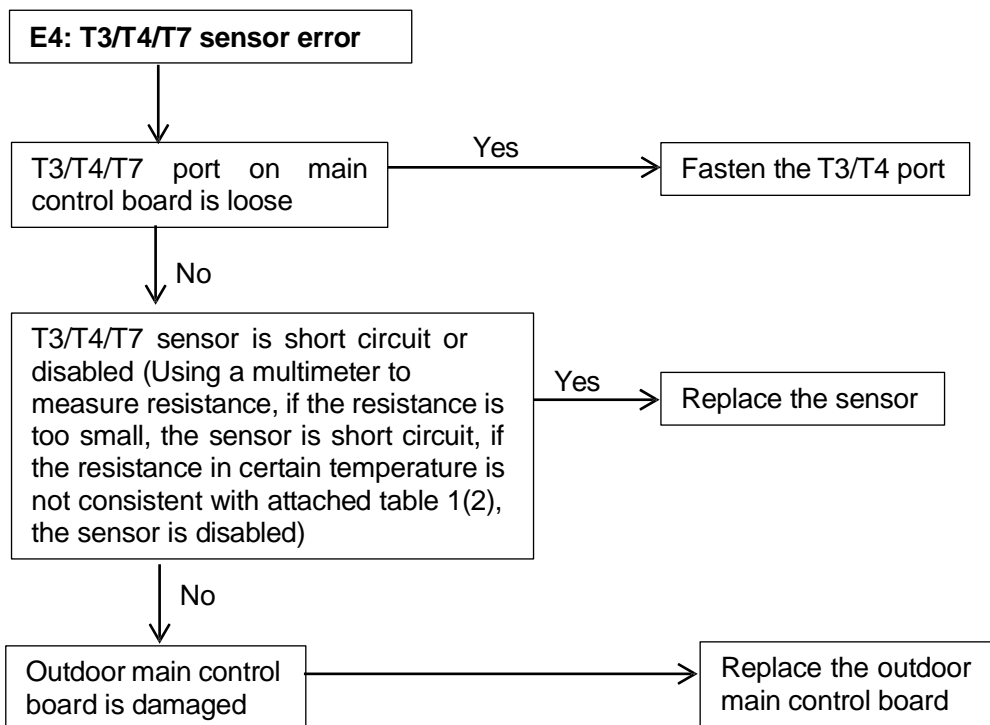
Note:

If the wiring connection of each outdoor unit is according to A, B, C phase sequence, when the quantity of outdoor units is large, the current difference between C phase and A, B phase will be very large for the power supply load of each outdoor unit is on C phase, it is very easy to lead to air switch break and wiring terminal burnout. So when the quantity of outdoor units is large, the phase sequence should be staggered, then the current can be distributed to the three phases equally.

4.2 E2: Indoor units and outdoor unit communication error



4.3 E4: Pipe temp T3/ambient temp T4 sensor error; E7: Discharge temp sensor T7 error



Case: There is no display on main control board, and the problem still exists after replacing main control board. Voltage values on measuring plate (such as 220V, 5V, 12V, etc.) are normal; after measuring resistance value of sensor, find that T4 thermo-bulb is earth-continuity, and further discover that the thermal cable of T4 sensor is punched by bolt, as follows:

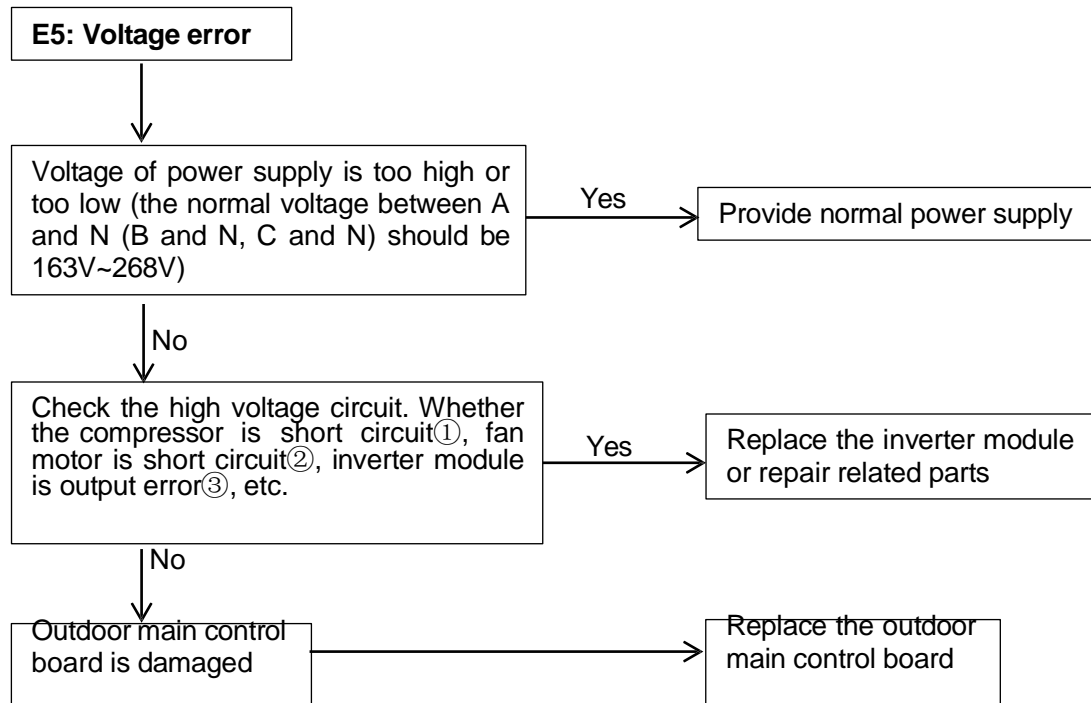


T4 sensor is worn out and connected with sheet metal



After being reconnected, the system becomes normal

4.4 E5: Voltage error



Note:

1. How to check whether the compressor is short circuit①:

The normal resistance value of inverter compressor among U V W is 0.7~1.5Ω, and infinity to earth. If the resistance value is out of the range, the compressor is abnormal.

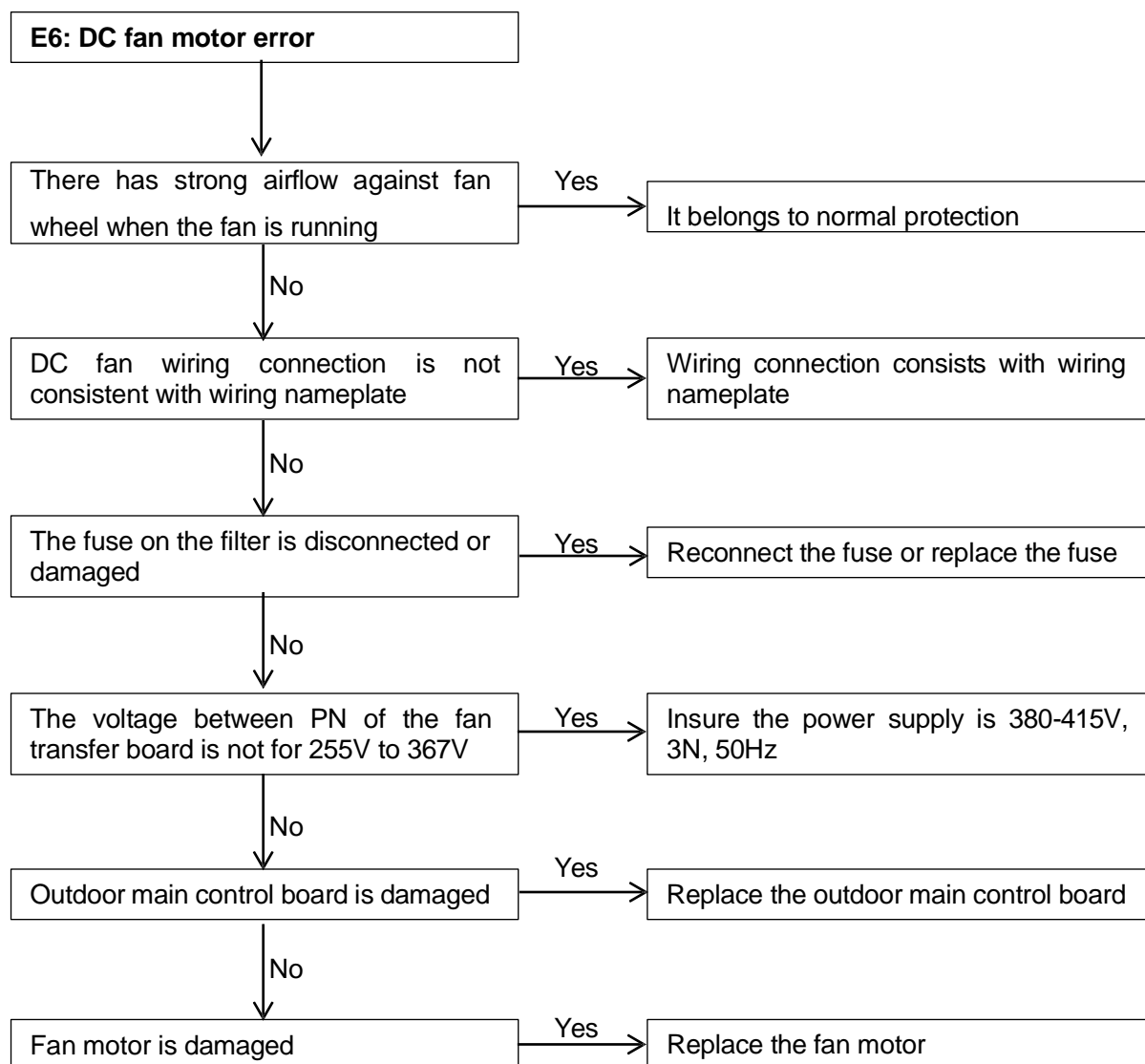
2. How to check whether the fan motor is short circuit②:

The normal value of DC fan motor coil among U V W is less than 10Ω, and the value of AC fan motor coil is from a few ohm to hundreds of ohm for different fan motor model. If the measured value is 0Ω, the fan motor is short circuit.

3. How to check whether the inverter module is output error③:

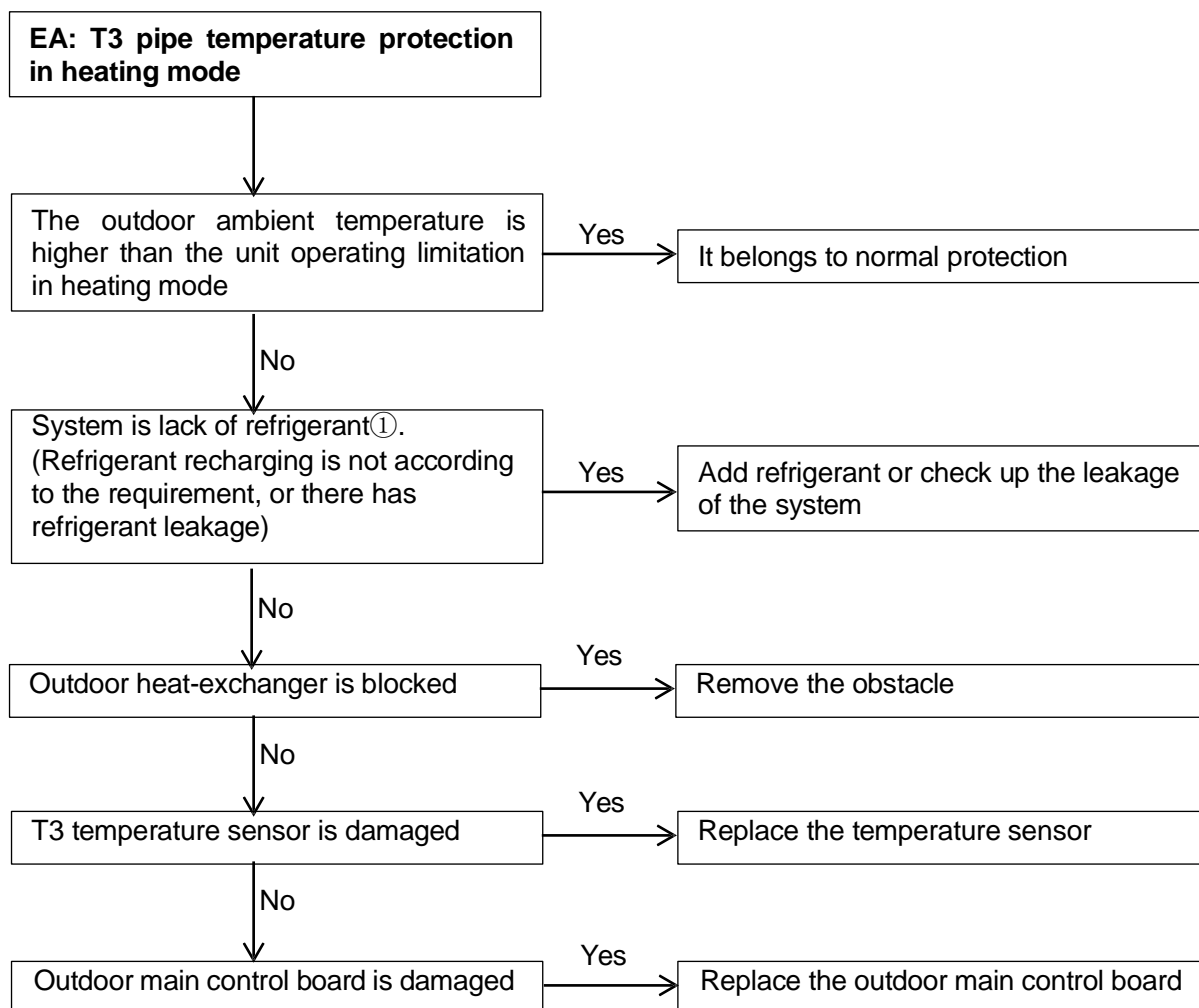
Dial the multimeter to diode file, black pen on P and red pen respectively on U,V,W, if the multimeter displays 0.4~0.7 V, it is normal; Red pen on N, black pen respectively on U,V,W, if the multimeter displays 0.4~0.7 V, it is normal. Satisfying the above two conditions at the same time indicates that the inverter module has no problem.

4.5 E6: DC fan motor error; EB: E6 protection appears twice in 10 minutes



4.6 EA: T3 pipe temperature protection in heating mode

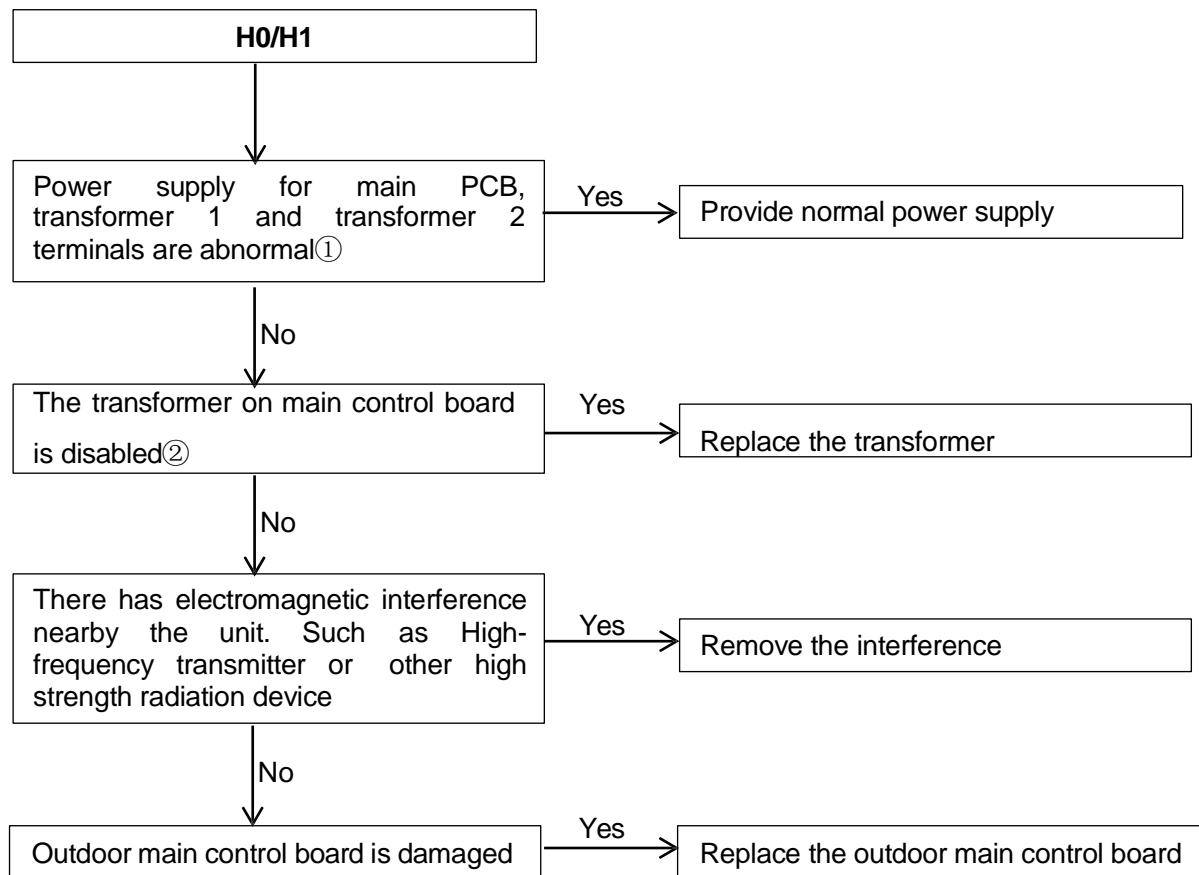
When T3 pipe temperature exceeds 27°C lasting for five minutes in heating mode, the unit will display EA error.



1. The phenomenon of lack of refrigerant②:

Top temperature and discharge temperature of all compressors are higher than normal value, discharge pressure and suction pressure are both lower than normal value, current is lower than normal value, suction pipe may be frosting. All the phenomenon will disappear after recharging refrigerant.

4.7 H0: Communication error between main control chip and module chip; H1: Communication error between main control chip and communication chip



Note:

1. How to check whether power supply of main PCB, transformer 1 and transformer 1 terminals are abnormal①

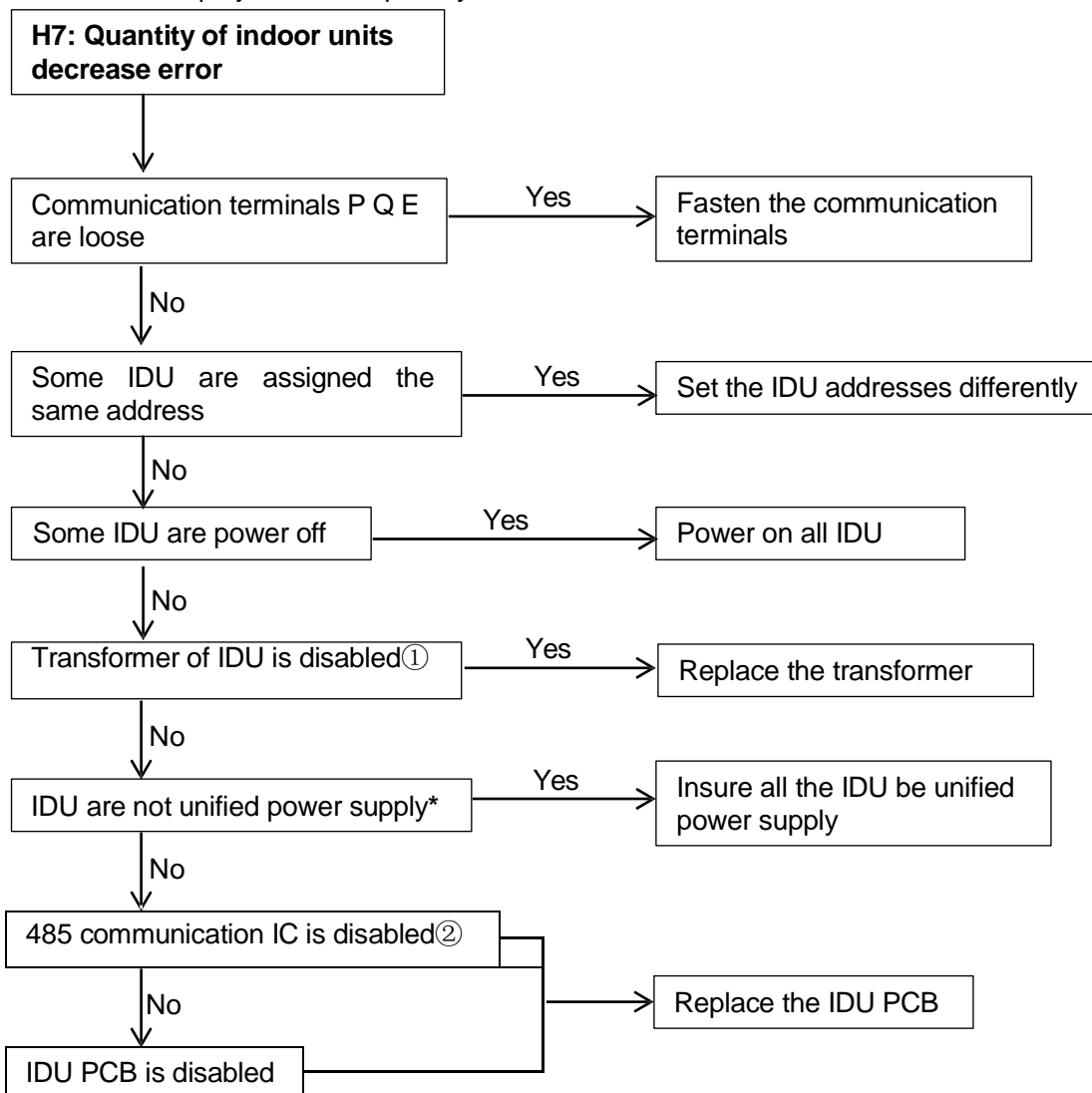
The voltage of power supply for transformer 1 and transformer 1 terminals are both 220V, the voltage between —GNDII and —+5VII terminals of Power supply for main PCB ports is 5V, and between —GNDII and —+12VII terminals of Power supply for main PCB ports is 12V.

2. How to check whether the transformer on main control board is disabled②

The voltage of power supply for transformer 1 and transformer 2 terminals are both 220V, the voltage of transformer 1 output terminals is AC9V (between left two pins) and AC13.5V (between rights two pins); the voltage of transformer 2 output terminal is AC14.5V (between left two pins) and AC 14.5V (between rights two pins). If the voltage is out of the range, the transformer is disabled.

4.8 H7: Quantity of indoor units decrease error

H7 error will display when the quantity of indoor units decrease above 3 minutes.



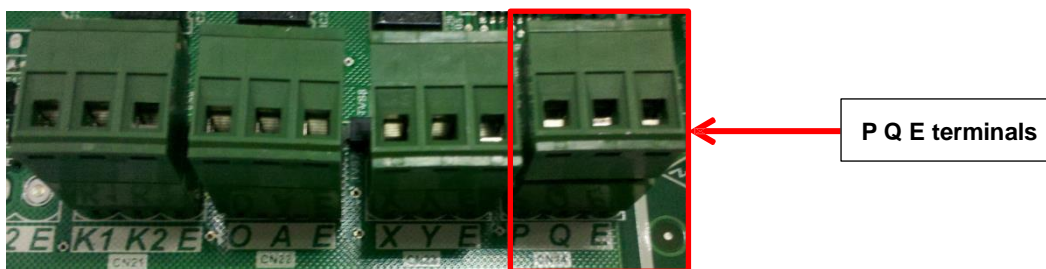
Note:

1. How to check whether the transformer of IDU is disabled①

The voltage input for IDU transformer is 220V, the voltage output of is AC9V (yellow-yellow) and AC13.5V (brown-brown)

2. How to check whether the 485 communication IC is disabled②

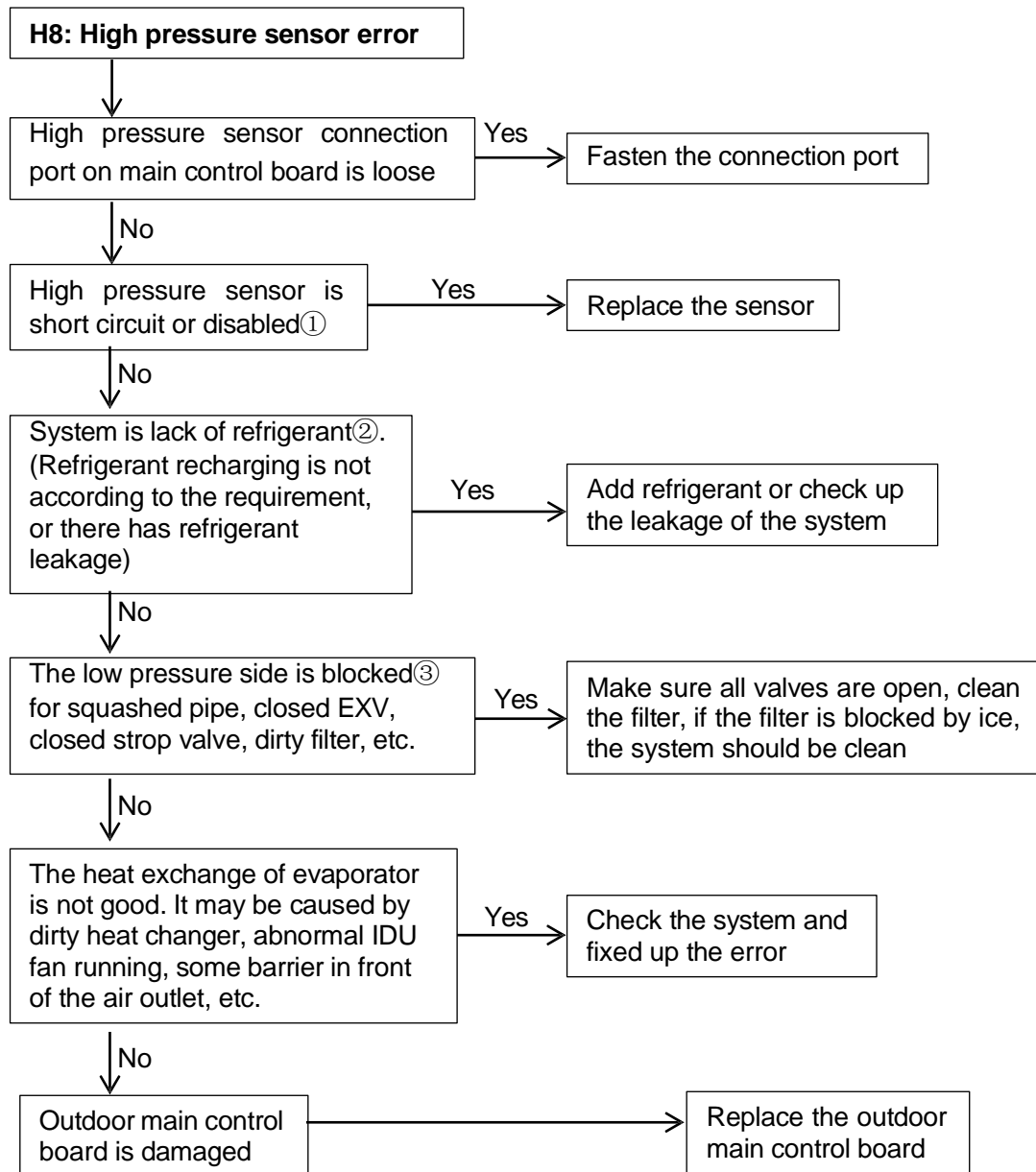
The normal voltage between —Pll and —GNDll is DC2.5~2.7V, between —Qll and —GNDll is DC2.5~2.7V. If the voltage is out of the normal range, the 485 communication IC is disabled.



*Indoor units should be unified power supply, which can prevent compressor from liquid hammer caused by dropped indoor units with EXV unclosed.

4.9 H8: High pressure sensor error

When the discharge pressure is lower than 0.3MPa, the system will display H8 error, the ODU in standby. When the discharge pressure is back to normal, H8 disappears and normal operation resumes.



Note:

1. How to check whether the high pressure sensor is short circuit or disabled①

Measure the resistance among the three terminals of the pressure sensor, if the resistance value is megohm or infinite, the pressure sensor is disabled, otherwise, it may be normal.

2. The phenomenon of lack of refrigerant②:

Top temperature and discharge temperature of all compressors are higher than normal value, discharge pressure and suction pressure are both lower than normal value, current is lower than normal value, suction pipe may be frosting. All the phenomenon will disappear after recharging refrigerant.

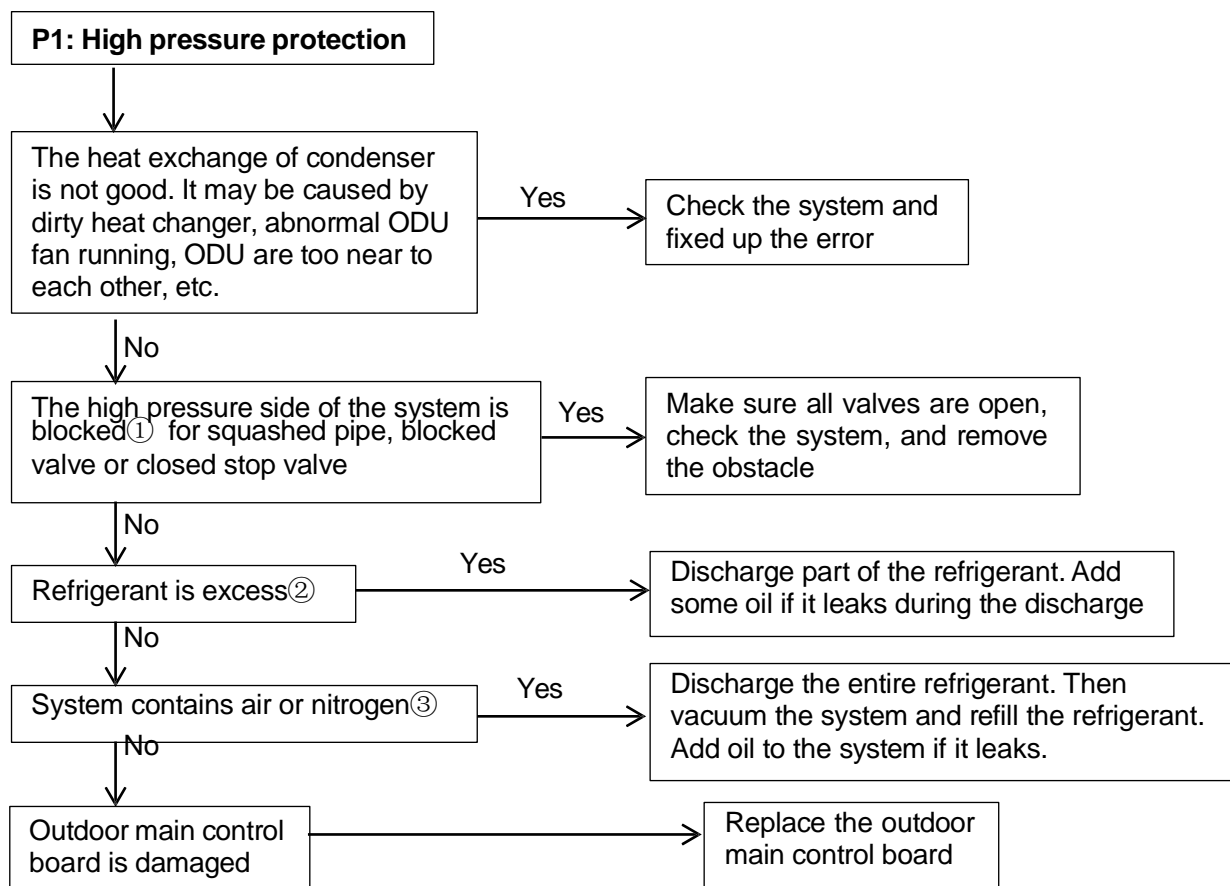
3. The phenomenon of the low pressure side is blocked③:

The discharge temperature is higher than normal value*, low pressure is lower than normal value*, current is lower than normal value* and suction pipe may be frosting.

*The normal system running parameters please refer to attached table 3.

4.10 P1: High pressure protection

When the pressure is over 4.4MPa, the system will display P1 protection, the ODU in standby. When the pressure is lower than 3.2MPa, P1 disappears and normal operation resumes.



Note:

1. The phenomenon of The high pressure side of the system is blocked^①:

The high pressure is higher than normal value, the low pressure is lower than normal value, and the discharge temperature is higher than normal value.

2. The phenomenon of the refrigerant is excess^②:

The high pressure is higher than normal value, the low pressure is higher than normal value, and the discharge temperature is lower than normal value.

3. The phenomenon of the system contains air or nitrogen^③:

The high pressure is higher than normal value, current is larger than normal value, discharge temperature is higher than normal value, compressor makes noise, pressure meter do not display steady.

*The normal system running parameters please refer to attached table 3.

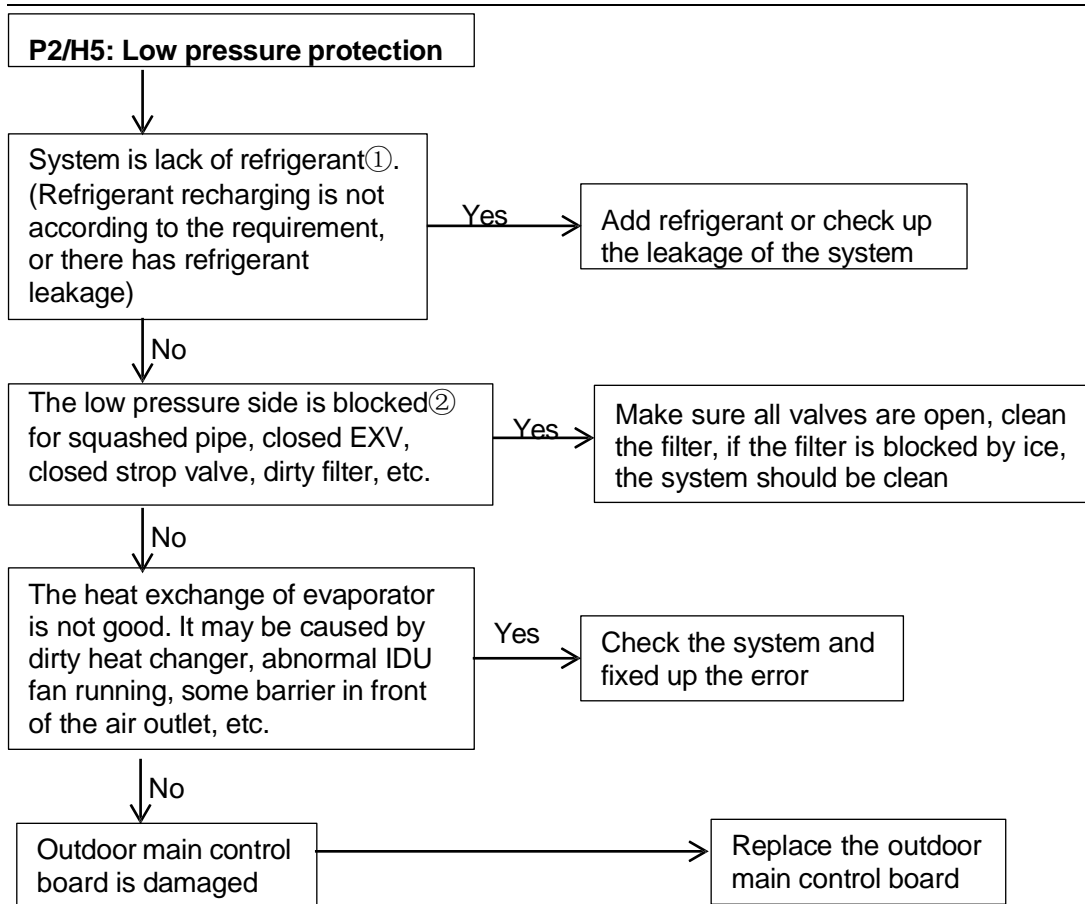
*If the system install three-phase protector, and the three-phase protector connect with high pressure switch in series connection, the system will display P1 protection when fist power on, and P1 protection will disappear after system is steady.

*If the system install three-phase protector, and the three-phase protector connect with low pressure switch in series connection, the system will display P2 protection when fist power on, and P2 protection will disappear after system is steady.

4.11 P2/H5: Low pressure protection

When the pressure is lower than 0.05MPa, the system will display P2 protection, the ODU in standby. When the pressure is higher than 0.15MPa, P2 disappears and resumes normal operation.

H5 error will display when system appear 3 times P2 protection in 60 minutes, it cannot resume automatically, and it can resume only by restarting the machine.



Note:

1. The phenomenon of lack of refrigerant①:

Top temperature and discharge temperature of all compressors are higher than normal value, discharge pressure and suction pressure are both lower than normal value, current is lower than normal value, suction pipe may be frosting. All the phenomenon will disappear after recharging refrigerant.

2. The phenomenon of the low pressure side is blocked②:

The discharge temperature is higher than normal value*, low pressure is lower than normal value*, current is lower than normal value* and suction pipe may be frosting.

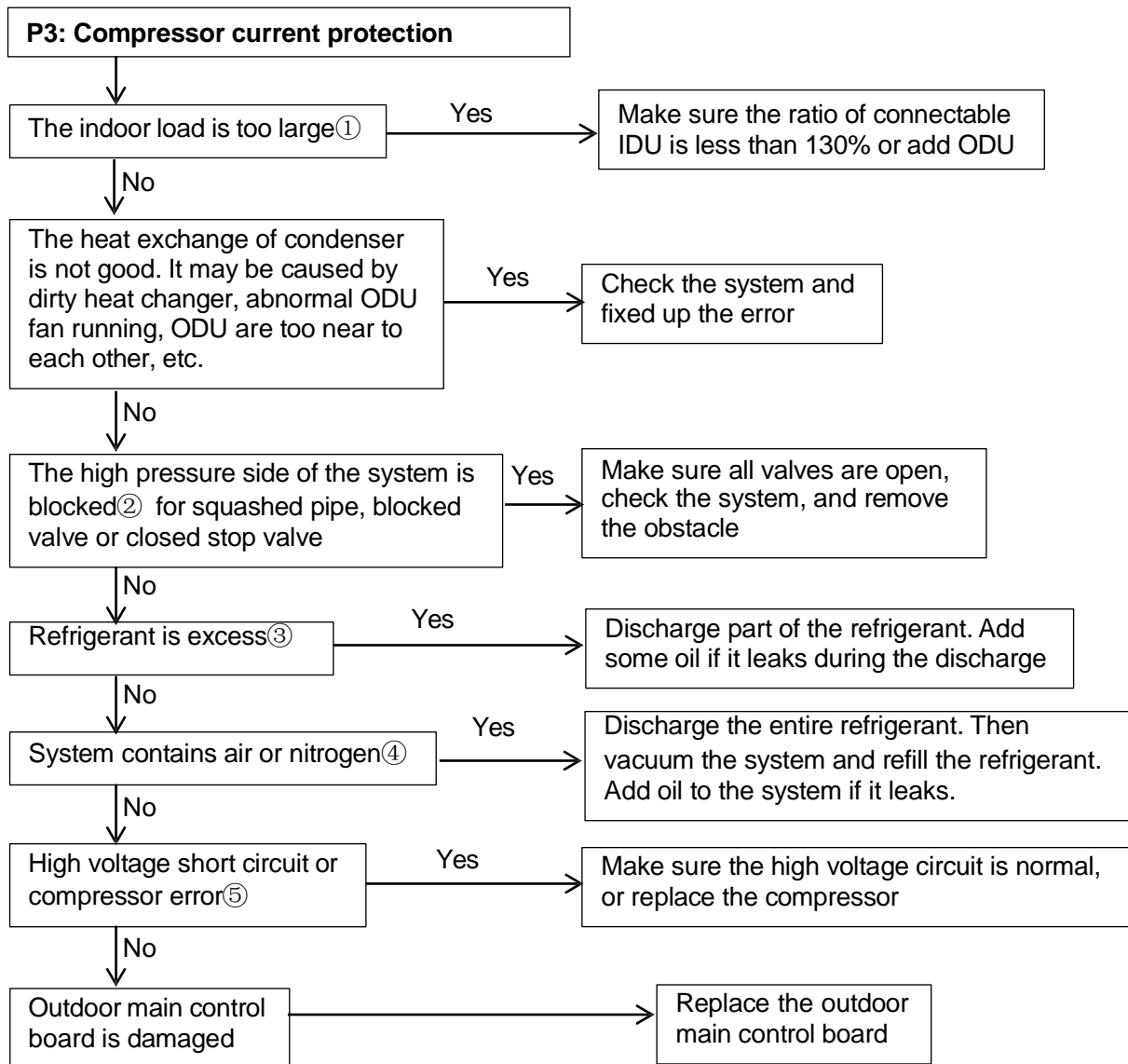
*The normal system running parameters please refer to attached table 3.

*If the system install three-phase protector, and the three-phase protector connect with high pressure switch in series connection, the system will display P1 protection when fist power on, and P1 protection will disappear after system is steady.

*If the system install three-phase protector, and the three-phase protector connect with low pressure switch in series connection, the system will display P2 protection when fist power on, and P2 protection will disappear after system is steady.

4.12 P3: Current protection of inverter compressor

P3: When the current of inverter compressor is over 12A, the system will display P3 protection, the ODU in standby. When the current goes back to normal range, P3 disappears and normal operation resumes.



Note:

1. The phenomenon of the indoor load is too large①:

The suction temperature and discharge temperature are both higher than normal value.

2. The phenomenon of The high pressure side of the system is blocked②:

The high pressure is higher than normal value, the low pressure is lower than normal value, and the discharge temperature is higher than normal value.

3. The phenomenon of the refrigerant is excess③:

The high pressure is higher than normal value, the low pressure is higher than normal value, and the discharge temperature is lower than normal value.

4. The phenomenon of the system contains air or nitrogen④:

The high pressure is higher than normal value, current is larger than normal value, discharge temperature is higher than normal value, compressor makes noise, pressure meter do not display steady.

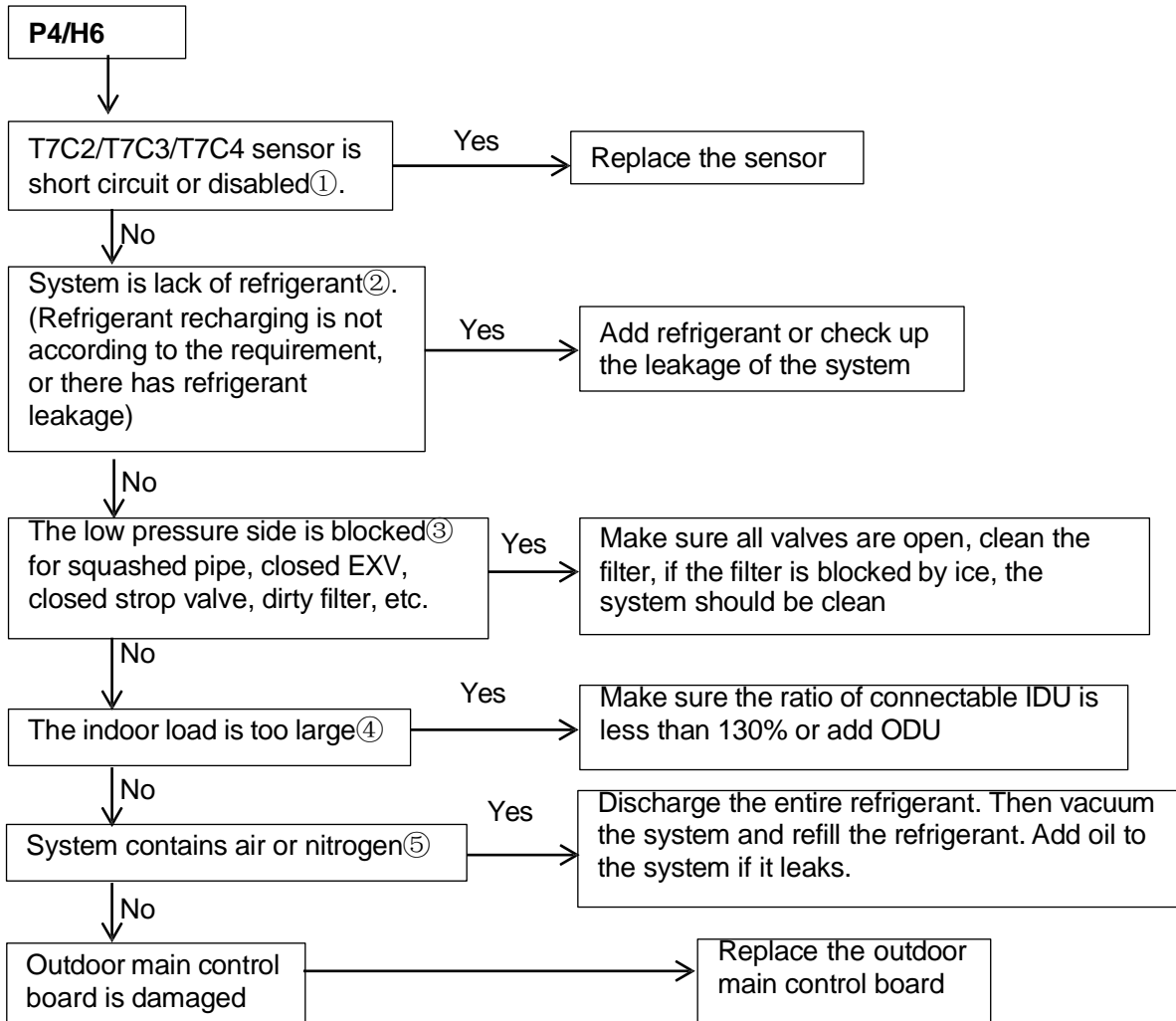
5. How to check whether compressor is error⑤:

Measure the resistance between two terminals among the three terminals of compressor. The resistance between two terminals is 2-5Ω, the resistance between each terminal and ground is infinity, if the resistance is out of the normal range, the compressor

is error.

*The normal system running parameters please refer to attached table 3.

4.13 P4: Discharge temperature protection; H6: P4 protection appears three times in 100 minutes



Note:

H6 error cannot resume automatically, and it can resume only by restarting the machine.

1. How to check whether the T7C2/T7C3/T7C4 sensor is short circuit or disabled①:

Using a multimeter to measure resistance, if the resistance is too small, the sensor is short circuit, if the resistance in certain temperature is not consistent with attached table 2, the sensor is disabled

2. The phenomenon of lack of refrigerant②:

Top temperature and discharge temperature of all compressors are higher than normal value, discharge pressure and suction pressure are both lower than normal value, current is lower than normal value, suction pipe may be frosting. All the phenomenon will disappear after recharging refrigerant.

3. The phenomenon of the low pressure side is blocked③:

The discharge temperature is higher than normal value*, low pressure is lower than normal value*, current is lower than normal value* and suction pipe may be frosting.

4. The phenomenon of the indoor load is too large④:

The suction temperature and discharge temperature are both higher than normal value.

5. The phenomenon of the system contains air or nitrogen⑤:

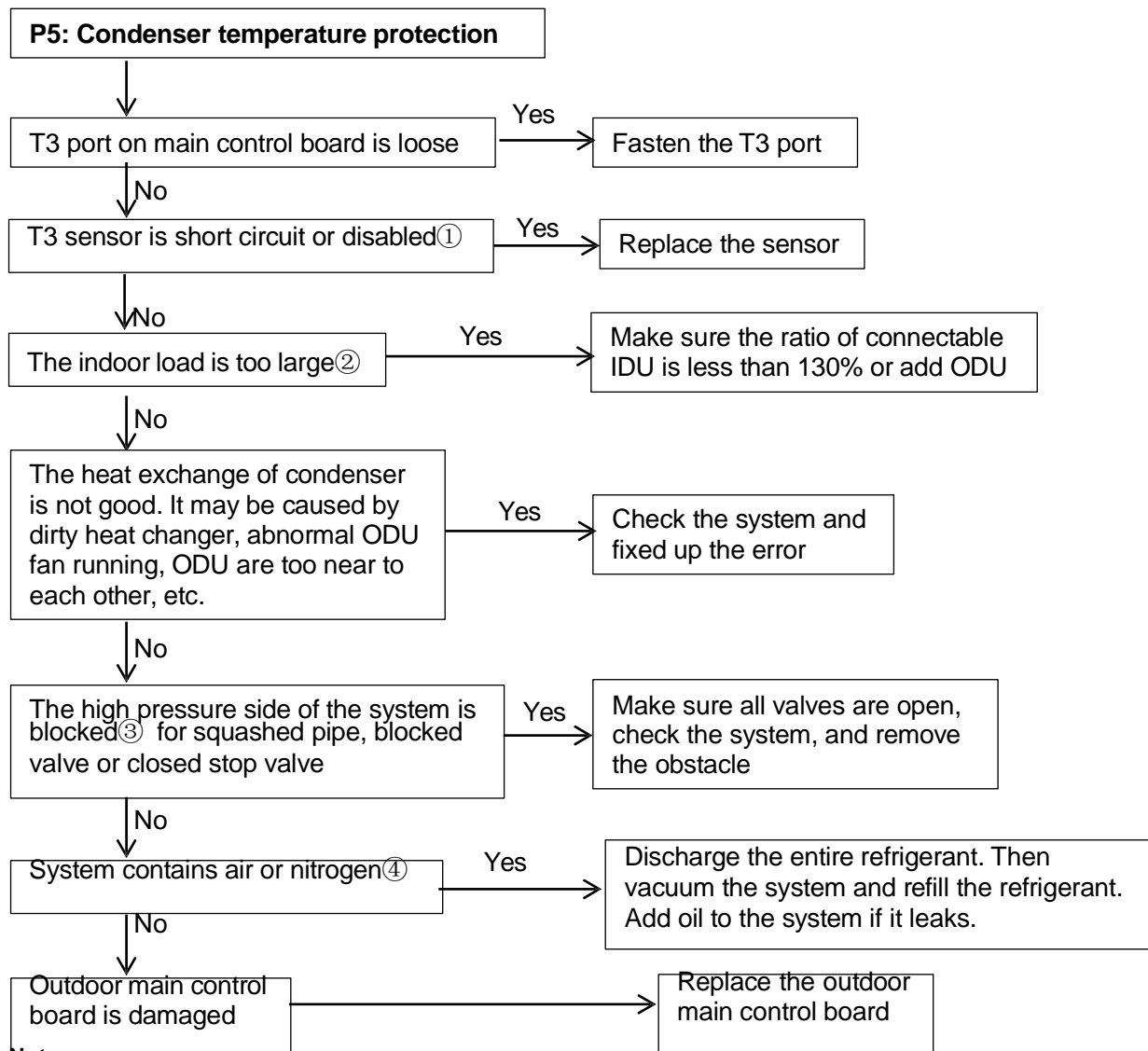
The high pressure is higher than normal value, current is larger than normal value, discharge temperature is higher than normal value, compressor makes noise, pressure meter do not display steady.

*The normal system running parameters please refer to attached table 3.

4.14 P5: Condenser temperature protection

When condenser temperature is over 65°C, the system will display P5 protection, the ODU in standby. When

the temperature goes back to normal range, P5 disappear and normal operation resumes.



Note:

1. How to check whether the T3 sensor is circuit or disabled①:

Using a multimeter to measure resistance, if the resistance is too small, the sensor is short circuit, if the resistance in certain temperature is not consistent with attached table 1, the sensor is disabled

2. The phenomenon of the indoor load is too large②:

The suction temperature and discharge temperature are both higher than normal value.

3. The phenomenon of The high pressure side of the system is blocked③:

The high pressure is higher than normal value, the low pressure is lower than normal value, and the discharge temperature is higher than normal value.

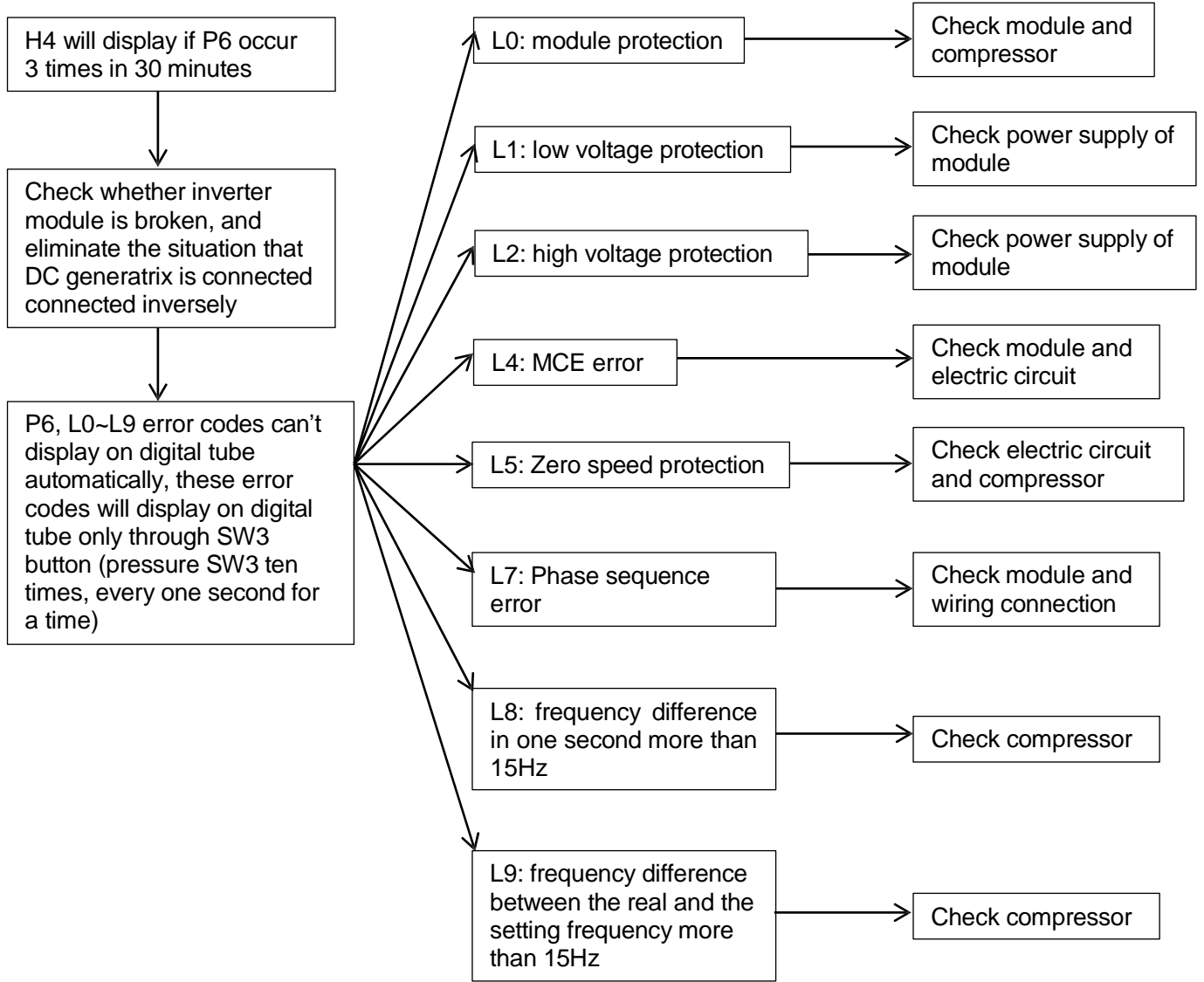
4. The phenomenon of the system contains air or nitrogen④:

The high pressure is higher than normal value, current is larger than normal value, discharge temperature is higher than normal value, compressor makes noise, pressure meter do not display steady.

4.15 P6/H4: Module protection

P6, L0~L9 error codes can't display on digital tube automatically, these error codes will display on digital tube only through SW3 button (pressure SW3 ten times, every one second for a time)

If the system display three times P6 protection in 60 minutes, the system will stop and display H4 error code. When the system displays H4 error code, the system can resume only by restarting the machine. At this time, malfunction should be disposed promptly to avoid further damage.



1) L0 troubleshooting

Step 1: Compressor check

Measure the resistance between each two of U, V, W terminals of the compressor, all the resistance should be the same and equal to 0.9~5 Ohms. (Fig. A and Fig. B)

Measure the resistance between each of U, V, W terminals of the compressor to ground (Fig. C), all the resistance should trend to infinity (Fig. D), otherwise the compressor has been malfunction, needs to be replaced.



Fig. A



Fig.B

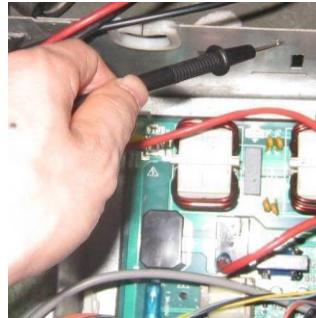


Fig.C

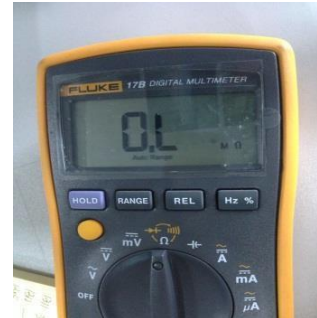
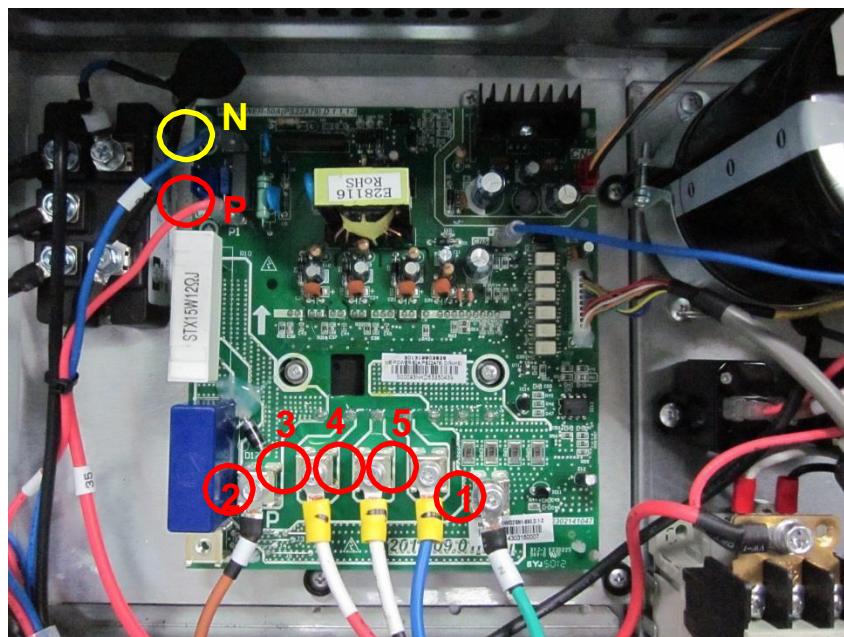


Fig.D

If the resistance value are normal, then go to step 2.

Step 2: Module check

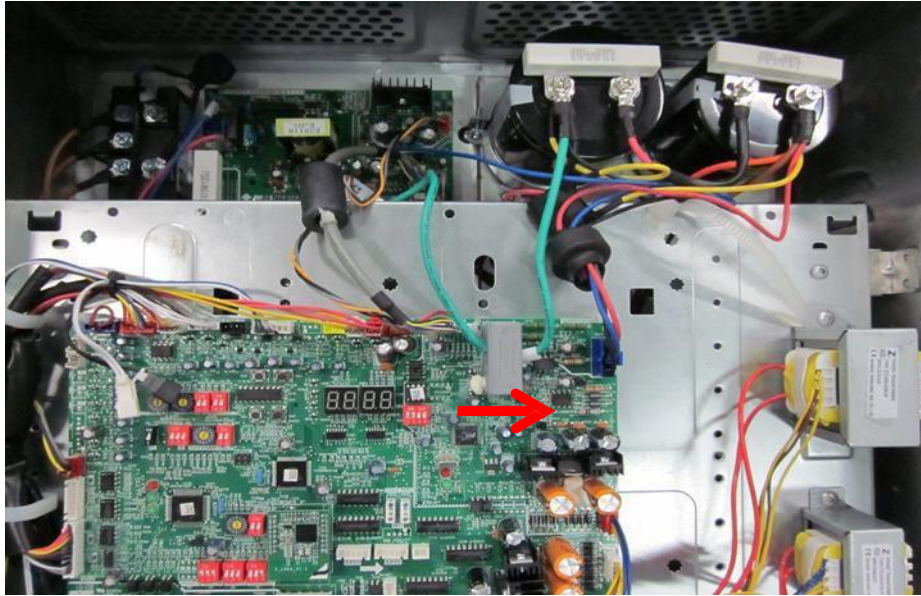


- 1) DC voltage between terminal P and terminal N should be 1.41 times of the local power supply voltage.
- 2) DC voltage between terminal 1 and 2 should be 510V~580V.
- 3) Disconnect the terminal 3, 4, and 5 from inverter compressor. Measure the resistance between any two terminals among terminal 1, 2, 3, 4, 5. All the values should be infinity. If any of the value approximates to 0, the inverter module is damaged and should be replaced.

After replaced the inverter module, if the system is still abnormal, then go to step 3.

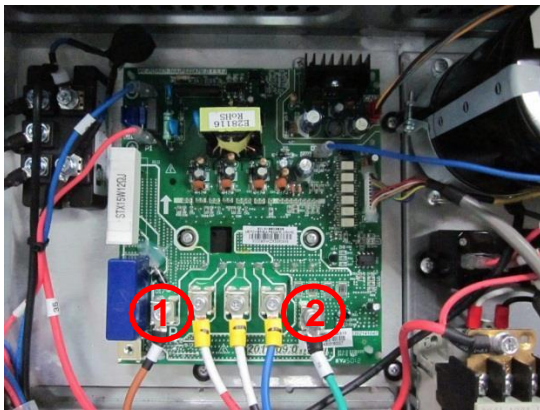
Step 3: DC generatrix check

Direction of the current in DC supply wire which is running through the inductor should be the same as the direction of arrow marked on the inductor.

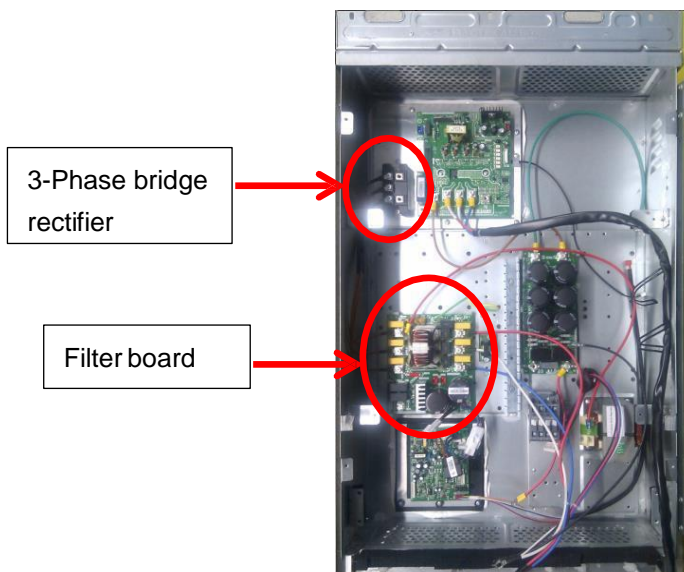


2) L1/L4 troubleshooting

Step 1: Check the DC voltage between 1 and 2 terminal, the normal value should be 510V~580V, if the voltage is lower than 510V, go to step 2.



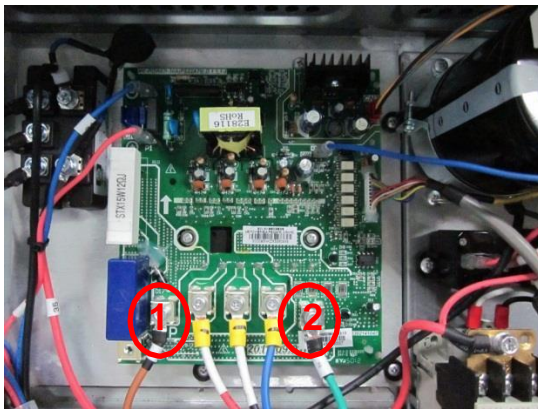
Step 2: Check whether the wires of rectifier circuit are loose or not. If wires are loosen, fasten the wires. If wires are OK, replace the main PCB.



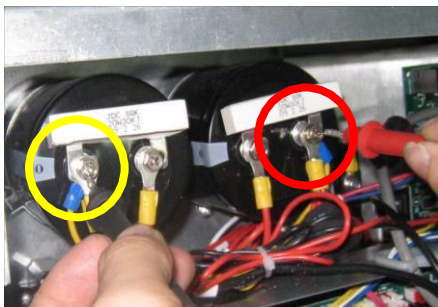
3) L2 troubleshooting

Step 1: Check the DC voltage between 1 and 2 terminal, the normal value should be 510V~580V, if the voltage

is higher than 580V, go to step 2.



Step 2: Check the voltage between the two electrolytic capacitors, the normal value should be 510V~580V.



Turn the measure range of the meter to 1kV, measure the voltage between two electrolytic capacitors



If the value is not in the range, that means the power supply for electrolytic capacitors has problem, you should check the power supply, whether the voltage is too high and whether the voltage is stable. If the voltage value is normal, then the main PCB has malfunction, it needs to be replaced.

4) L8/L9 troubleshooting

Step 1: Compressor check

Measure the resistance between each two of U, V, W terminals of the compressor, all the resistance should be the same and equal to 0.9~5 Ohms. (Fig. A and Fig. B)

Measure the resistance between each of U, V, W terminals of the compressor to ground (Fig. C), all the resistance should trend to infinity (Fig. D), otherwise the compressor has been malfunction, needs to be replaced.



Fig. A



Fig. B

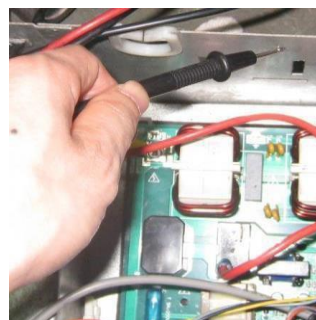


Fig. C

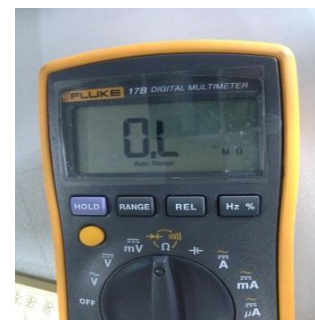


Fig. D

If the resistance value are normal, then go to step 2.

Step 2: Disconnect the power wiring from the compressor (named compressor A) of the faulted system (named system A).

If there is a system running normally nearby (named system B):

Extend the power line of the inverter compressor of system B, connect compressor A to the control box of system B, make sure that the U, V, W terminals are connected in right order, then start system B.

If compressor A can start normally, that means compressor is OK, the control box of system A is malfunction, then replace the main PCB of system A with correct wire connection.

If compressor A can not start normally, that means compressor A is damaged, needs to be replaced.

If there is no normal system nearby:

Replace the main PCB of system A with correct connection, if compressor A can start normally, it means the main PCB which is replaced is damaged. If compressor A still can't start normally, replace the compressor.

5) Guide for compressor replacement

Step 1: Take out the compressor from the faulty outdoor unit, pour out the oil from the compressor according to the method illustrated. Normally the oil will outflow from the discharge pipe of the compressor.



Step 2: check the oil of the system

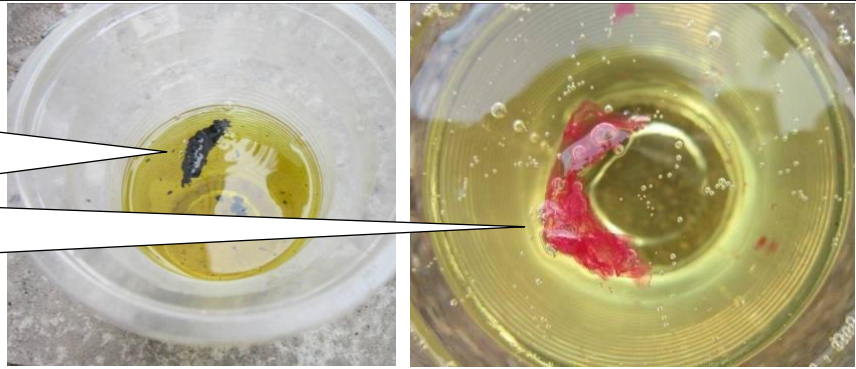
Normally the oil is clear and transparent, if it is a little yellowing, it is also OK. However, if the oil is become black, feculent, or even there is impurity in the oil, that means the system has problems and the oil has gone bad, the oil need to be replaced.

The oil is black, it has been carbonized

The oil is a little yellowing, but it is clear and transparent, the quality is OK



The oil is transparent, but there is impurity in the oil, the impurity may clog the filter

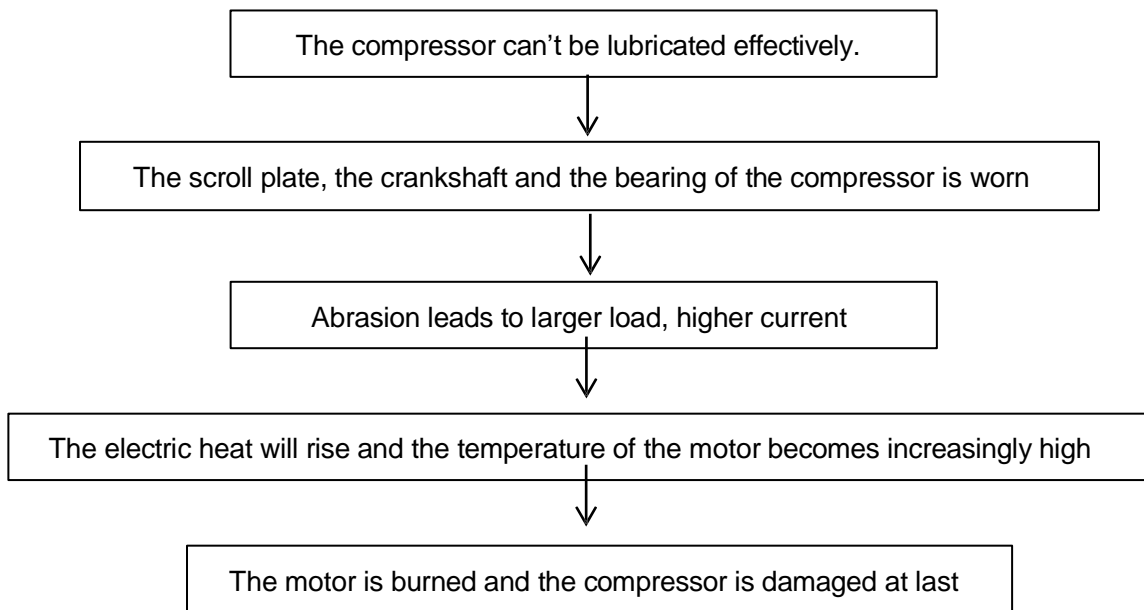


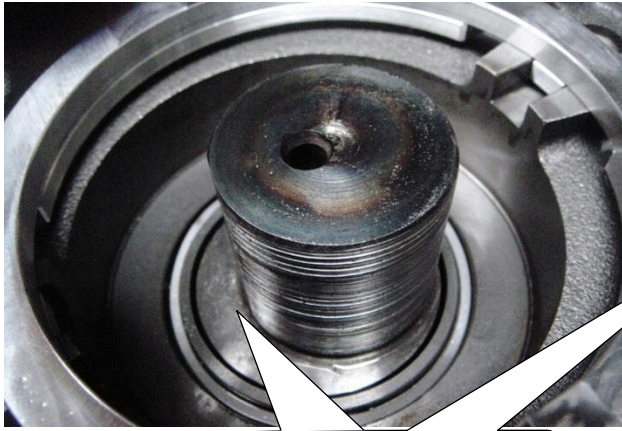
The oil becomes cloudy and gray

The oil contains a lot of copper scrap



If the oil has gone bad:





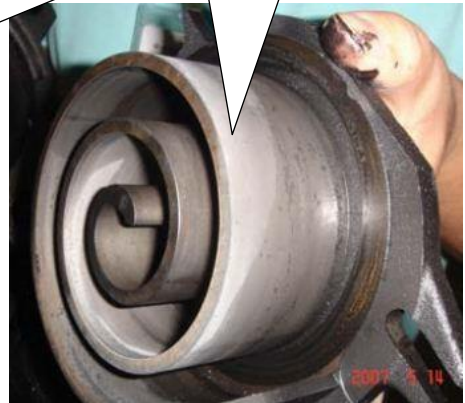
The crank shaft is worn



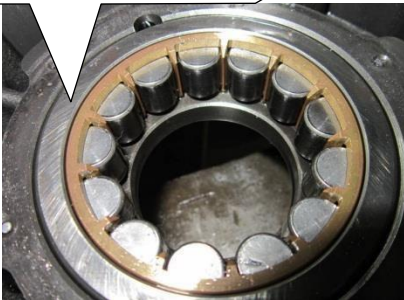
The scroll plate is worn.



A normal bearing of the compressor



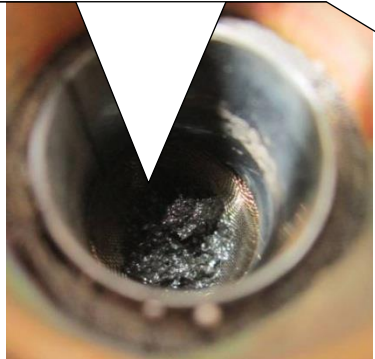
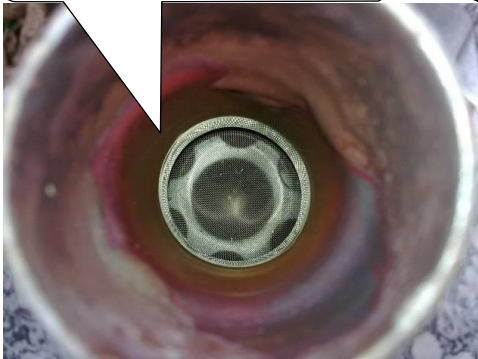
The bearing is worn seriously, it is damaged completely

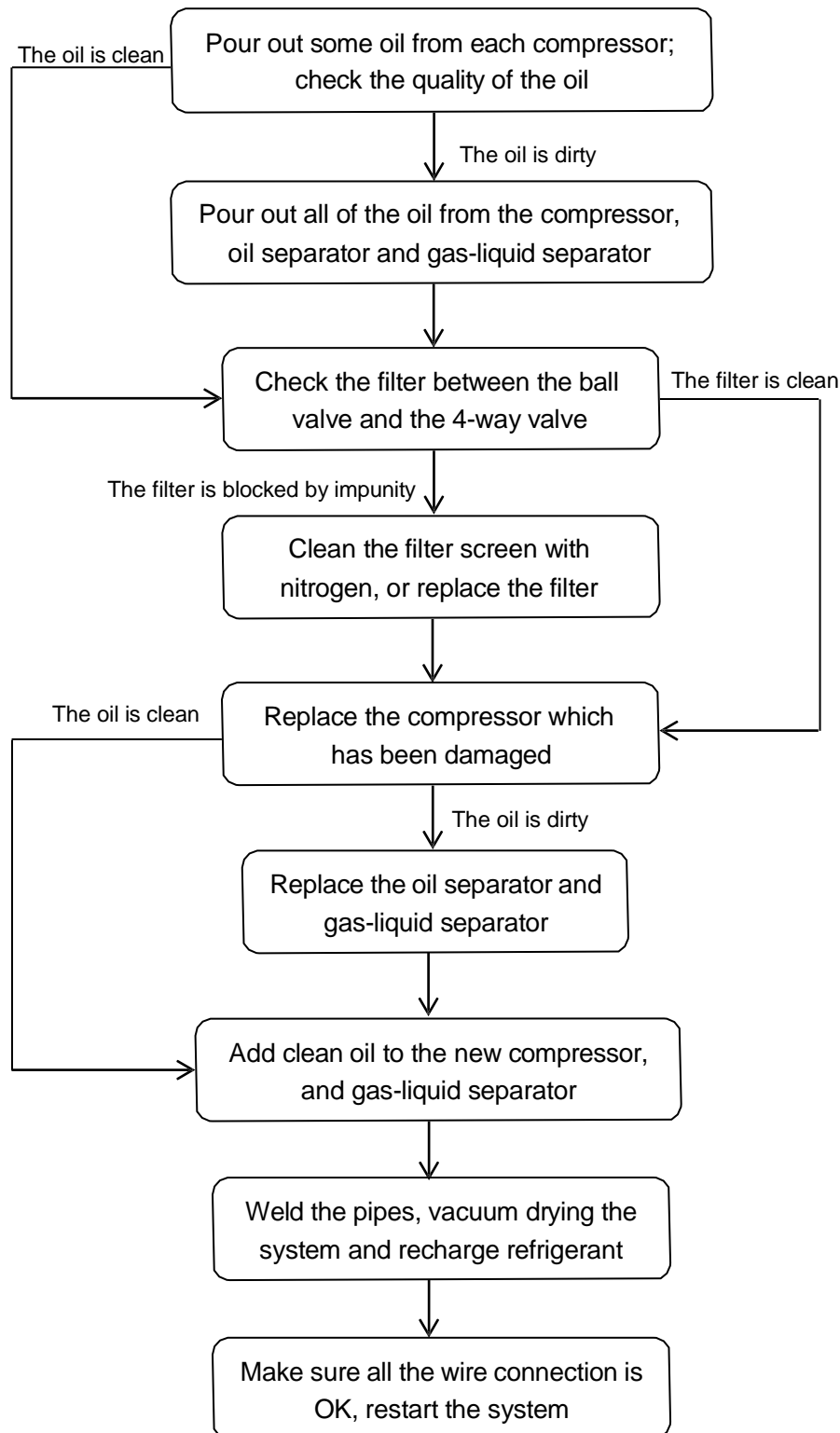


A clean filter (on the suction pipe of the system)



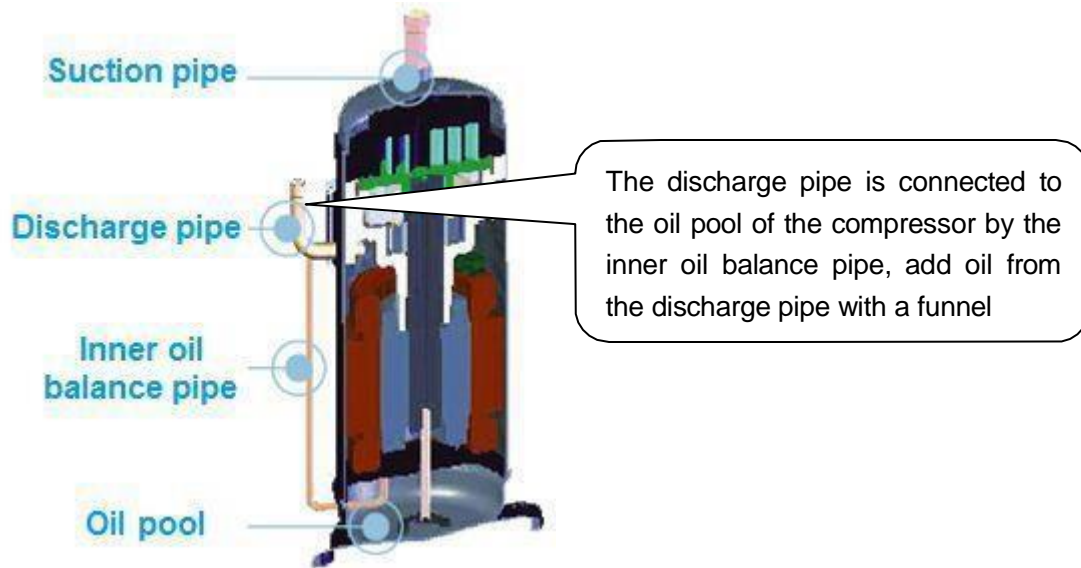
The filter is blocked by impurity, the suction of the compressor will be affected



Step 3: Replace the compressor**Note:**

1. Before pouring out the oil, shake the compressor, oil separator and gas-liquid separator first, because impurity may deposit at the bottom of the tank.
2. If the oil of one compressor is clean, there's no need to check the oil of the other compressor. If the oil of one compressor has gone bad, check the oil of the other compressor is necessary. If all the oil of an outdoor unit needs to be replaced, after adding oil to the compressors, the rest oil should be charged to the gas-liquid separator.

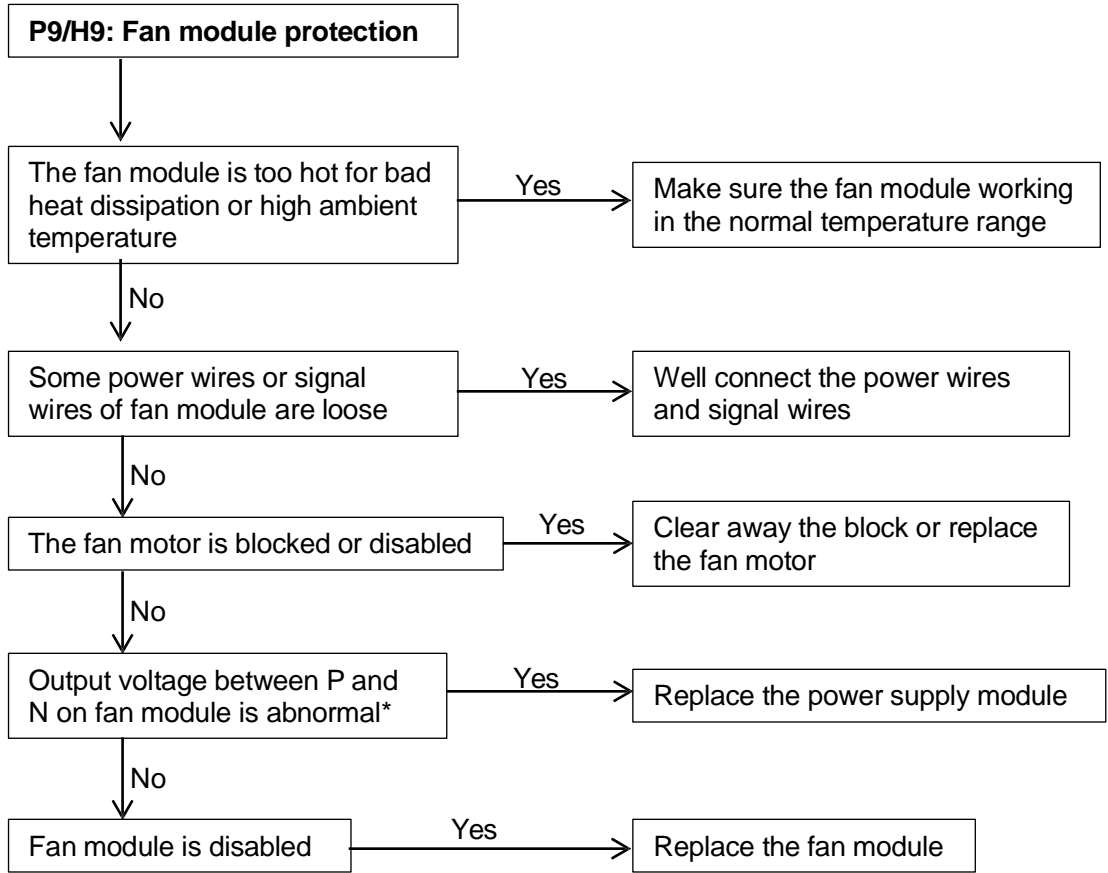
3. Add oil to the compressor from the discharge pipe.



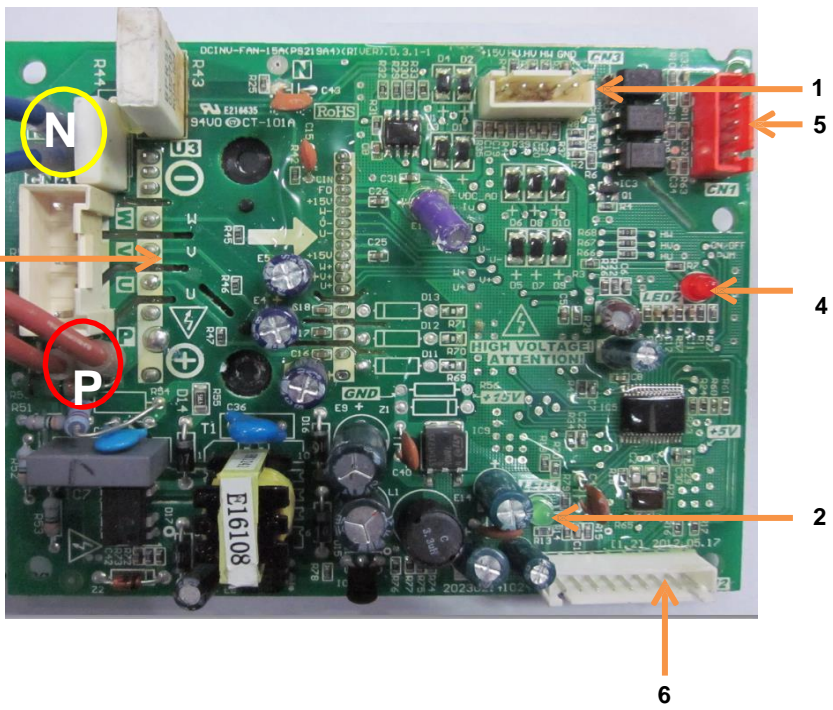
4. The type of the oil is FVC-68D, make sure the type of the oil is right because different compressor need different type of oil, if the type is wrong there will be various kinds of problems.

4.16 P9/H9: DC fan module protection

If the system display three times P9 protection in 60 minutes, the system will stop and display H9 error code. When the system displays H9 error code, the system can resume only by restarting the machine. At this time, malfunction should be disposed promptly to avoid further damage.



Fan module instruction



- 1 Program input port
- 2 Power supply indicator lamp
- 3 Fan motor U, V, W output port
- 4 Fault indicator lamp
- 5 PCB control signal input port
- 6 Signal feedback port

* The normal value of output voltage between P and N on fan module is DC 310V

P9 protection analysis

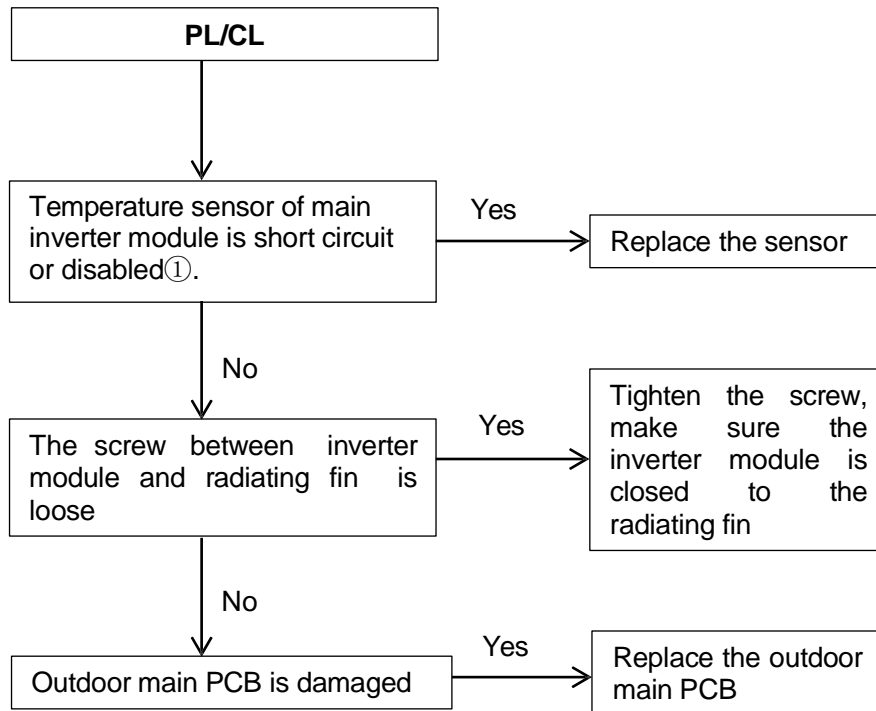
Conditions	Fault indicator lamp of fan module	Power supply indicator lamp of fan module	Digital tube display	Malfunction analysis
Power on	Off	Off	Quantity of IDU or -0	Check the power supply circuit for fan module. Check whether there has power supply for lightning protection plate, whether the protective tube is broken, whether the voltage after rectification is normal, whether the bridge rectifier is broken.
Power on	Off	Flicker	Quantity of IDU or -0	Power supply of fan module has problem, needs to replace the fan module.
When fan motor start	At first the lamp is on then the lamp is off	On	P9/H9	Check whether the drive port and signal feedback port is loose, whether the fan module and fan motor is installed firmly. If above conditions are all OK, it needs to replace the fan module.
When fan motor start	At first the lamp is on then the lamp flicker	On	P9/H9	Check whether the transformer in lightning protection plate is open circuit, whether the relay is broken. If occurs above problem, it needs to replace the lightning protection plate.
Fan motor running several minutes	On	On	P9/H9	Check whether the capacity setting from dial switch is accordance with actual ODU capacity, whether the capacity from spot check is accordance with actual ODU capacity. If occurs above problem, it needs to adjust the capacity setting. If above conditions are both OK, it needs to replace the main control board.

4.17 PL/C7: Temperature protection of main inverter module

When the temperature of inverter module is over 80°C, it will display PL protection.

If the system display three times PL protection in 100 minutes, the system will stop and display C7 error code.

When the system displays C7 error code, the system can resume only by restarting the machine.



1. How to check whether the temperature sensor is short circuit or disabled①:

Using a multi-meter to measure resistance, if the resistance is too small, the sensor is short circuit, if the resistance in certain temperature is not consistent with attached table 2, the sensor is disabled

Attached table 1: Resistance value of ambient temperature and pipe temperature sensor

Temperature (°C)	Resistance value (kΩ)	Temperature (°C)	Resistance value (kΩ)	Temperature (°C)	Resistance value (kΩ)	Temperature (°C)	Resistance value (kΩ)
-20	115.266	20	12.6431	60	2.35774	100	0.62973
-19	108.146	21	12.0561	61	2.27249	101	0.61148
-18	101.517	22	11.5	62	2.19073	102	0.59386
-17	96.3423	23	10.9731	63	2.11241	103	0.57683
-16	89.5865	24	10.4736	64	2.03732	104	0.56038
-15	84.219	25	10	65	1.96532	105	0.54448
-14	79.311	26	9.55074	66	1.89627	106	0.52912
-13	74.536	27	9.12445	67	1.83003	107	0.51426
-12	70.1698	28	8.71983	68	1.76647	108	0.49989
-11	66.0898	29	8.33566	69	1.70547	109	0.486
-10	62.2756	30	7.97078	70	1.64691	110	0.47256
-9	58.7079	31	7.62411	71	1.59068	111	0.45957
-8	56.3694	32	7.29464	72	1.53668	112	0.44699
-7	52.2438	33	6.98142	73	1.48481	113	0.43482
-6	49.3161	34	6.68355	74	1.43498	114	0.42304
-5	46.5725	35	6.40021	75	1.38703	115	0.41164
-4	44	36	6.13059	76	1.34105	116	0.4006
-3	41.5878	37	5.87359	77	1.29078	117	0.38991
-2	39.8239	38	5.62961	78	1.25423	118	0.37956
-1	37.1988	39	5.39689	79	1.2133	119	0.36954
0	35.2024	40	5.17519	80	1.17393	120	0.35982
1	33.3269	41	4.96392	81	1.13604	121	0.35042
2	31.5635	42	4.76253	82	1.09958	122	0.3413
3	29.9058	43	4.5705	83	1.06448	123	0.33246
4	28.3459	44	4.38736	84	1.03069	124	0.3239
5	26.8778	45	4.21263	85	0.99815	125	0.31559
6	25.4954	46	4.04589	86	0.96681	126	0.30754
7	24.1932	47	3.88673	87	0.93662	127	0.29974
8	22.5662	48	3.73476	88	0.90753	128	0.29216
9	21.8094	49	3.58962	89	0.8795	129	0.28482
10	20.7184	50	3.45097	90	0.85248	130	0.2777
11	19.6891	51	3.31847	91	0.82643	131	0.27078
12	18.7177	52	3.19183	92	0.80132	132	0.26408
13	17.8005	53	3.07075	93	0.77709	133	0.25757
14	16.9341	54	2.95896	94	0.75373	134	0.25125
15	16.1156	55	2.84421	95	0.73119	135	0.24512
16	15.3418	56	2.73823	96	0.70944	136	0.23916
17	14.6181	57	2.63682	97	0.68844	137	0.23338
18	13.918	58	2.53973	98	0.66818	138	0.22776
19	13.2631	59	2.44677	99	0.64862	139	0.22231

Attached table 2: Resistance value of compressor discharge temperature sensor

Temperature (°C)	Resistance value (kΩ)	Temperature (°C)	Resistance value (kΩ)	Temperature (°C)	Resistance value (kΩ)	Temperature (°C)	Resistance value (kΩ)
-20	542.7	20	68.66	60	13.59	100	3.702
-19	511.9	21	65.62	61	13.11	101	3.595
-18	483	22	62.73	62	12.65	102	3.492
-17	455.9	23	59.98	63	12.21	103	3.392
-16	430.5	24	57.37	64	11.79	104	3.296
-15	406.7	25	54.89	65	11.38	105	3.203
-14	384.3	26	52.53	66	10.99	106	3.113
-13	363.3	27	50.28	67	10.61	107	3.025
-12	343.6	28	48.14	68	10.25	108	2.941
-11	325.1	29	46.11	69	9.902	109	2.86
-10	307.7	30	44.17	70	9.569	110	2.781
-9	291.3	31	42.33	71	9.248	111	2.704
-8	275.9	32	40.57	72	8.94	112	2.63
-7	261.4	33	38.89	73	8.643	113	2.559
-6	247.8	34	37.3	74	8.358	114	2.489
-5	234.9	35	35.78	75	8.084	115	2.422
-4	222.8	36	34.32	76	7.82	116	2.357
-3	211.4	37	32.94	77	7.566	117	2.294
-2	200.7	38	31.62	78	7.321	118	2.233
-1	190.5	39	30.36	79	7.086	119	2.174
0	180.9	40	29.15	80	6.859	120	2.117
1	171.9	41	28	81	6.641	121	2.061
2	163.3	42	26.9	82	6.43	122	2.007
3	155.2	43	25.86	83	6.228	123	1.955
4	147.6	44	24.85	84	6.033	124	1.905
5	140.4	45	23.89	85	5.844	125	1.856
6	133.5	46	22.89	86	5.663	126	1.808
7	127.1	47	22.1	87	5.488	127	1.762
8	121	48	21.26	88	5.32	128	1.717
9	115.2	49	20.46	89	5.157	129	1.674
10	109.8	50	19.69	90	5	130	1.632
11	104.6	51	18.96	91	4.849		
12	99.69	52	18.26	92	4.703		
13	95.05	53	17.58	93	4.562		
14	90.66	54	16.94	94	4.426		
15	86.49	55	16.32	95	4.294	B(25/50)=3950K	
16	82.54	56	15.73	96	4.167		
17	78.79	57	15.16	97	4.045	R(90°C)=5KΩ+-3%	
18	75.24	58	14.62	98	3.927		
19	71.86	59	14.09	99	3.812		

Attached table 3: Commissioning and operating parameters of refrigerant system

Conditions 1: Make sure outdoor unit can detect all the indoor units, the quantity of indoor units display steadily and be equal to actual quantity of installed indoor units.

Conditions 2: Make sure all the valves in outdoor unit are open, indoor units EXV have connected to indoor PCB.

Conditions 3: The ratio of connectable indoor units is 100%. When ambient temperature is high, operate the system in cooling mode and set the temperature 17°C. When ambient temperature is low, operate the system in heating mode and set the temperature 30°C. Then get the parameters after system running normally more than 30 minutes.

Outdoor unit cooling parameters table

Ambient temperature (T4)	°C	20-27	27-33	33-38	38-45
Discharge pressure (spot check)	MPa	2.1-2.3	2.8-3.1	3.3-3.5	3.7-3.9
Pressure of high pressure valve	MPa	1.8-2.0	2.4-2.7	2.8-3.0	3.2-3.5
Pressure of low pressure valve	MPa	0.7-0.9	0.8-1.0	1.0-1.2	1.2-1.4
Discharge temperature (spot check)	°C	50-65	70-85	70-90	80-90
DC Inverter compressor current (spot check)	A	4-5	6-7	7-8	9-11
Fixed compressor current (spot check)	A	6-7	8-9	9-11	11-12
Average temperature of evaporator outlet T2B	°C	8-9	12-15	16-17	20

Outdoor unit heating parameters table

Ambient temperature (T4)	°C	-15--5	-5-5	5-12	12-18
Discharge pressure (spot check)	MPa	2.0-2.2	2.2-2.7	3.0-3.1	2.6-2.7
Pressure of high pressure valve	MPa	1.7-1.8	1.8-2.4	2.6-2.8	2.1-2.4
Pressure of low pressure valve	MPa	2.0-2.2	2.2-2.6	3.0-3.1	2.5-2.7
Discharge temperature (spot check)	°C	50-70	60-70	60-85	60-70
DC Inverter compressor current (spot check)	A	5	5-6	6-8	5-6
Fixed compressor current (spot check)	A	6	6-7	9-10	8-9
Average temperature of condenser outlet T2	°C	33	33-40	46-50	39-41



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