

SINGLE ZONE

MINISPLIT

SERVICE MANUAL



For the following models:

9H49YIMI
12H49YIMI
12H49ZIMI
18H49ZIMI
24H47ZIMI

9H49YOMI
12H49YOMI
12H49ZOMI
18H49ZOMI
24H47ZOMI

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1. Precaution

- Installation MUST conform with local building codes or, in the absence of local codes, with the National Electrical Code NFPA70/ANSI C1-1993 or current edition and Canadian Electrical Code Part1 CSA C.22.1.
- The information contained in the manual is intended for use by a qualified service technician familiar with safety procedures and equipped with the proper tools and test instruments.
- Installation or repairs made by unqualified persons can result in hazards to you and others.
- Failure to carefully read and follow all instructions in this manual can result in equipment malfunction, property damage, personal injury, and/or death.
- This service manual is only intended for the service engineer to use.

1.1 Safety Precaution

- To prevent injury or damage to the user, other people, or property, the following instructions must be followed.
- Incorrect operation due to ignoring instructions may cause harm or damage.
- Before servicing the unit, be sure to read this service manual first.

1.2 Warning

- Do not use a defective or underrated circuit breaker. Use this appliance on a dedicated circuit.
- For electrical work, contact the dealer, seller, a qualified electrician, or an authorized service center.
- Always ground the product.
- Install the panel and the cover of the control box securely.
- Always install a dedicated circuit and breaker.
- Use a properly rated breaker and fuse.
- Do not let the air conditioner run for a long time when the humidity in the area is high or if a door or window is left open.
- Do not touch or operate the product with wet hands.
- Do not place a heater or other appliance near the power cable.
- Do not allow water to run into electrical parts.
- Do not store or use flammable gas or combustibles near the product.
- Do not use the product in a tightly closed space for a long time. (oxygen deficiency)
- When flammable gas leaks, turn off the gas and open a window for ventilation before turning the product back on.
- If strange sounds or smoke comes from the product, turn the breaker off or disconnect the power supply cable.
- Stop operation and close the window during storms or hurricanes.
- Do not open the inlet grill of the product during operation.
- When the product is soaked, contact an authorized service center.
- Be careful to prevent water from entering the product.
- Turn the main power off when cleaning or maintaining the product.
- When the product is not used for a long time, disconnect the power supply plug or turn off the breaker.
- Do not step on the outdoor unit.

1.3 Caution

- Always check for gas (refrigerant) leakage after installation or repair of product.
- Install the drain hose to ensure that water is drained away properly.
- Keep level even when installing the product.
- Do not install the product where the noise or hot air from the outdoor unit could cause damage to harm to neighbors or other property.
- Use two or more people to lift and transport the product.
- Do not install the product where it will be directly exposed to sea wind (salt spray). Commercial coatings may be used to protect outdoor unit, if necessary.

1.4 Operational

- Do not use the product for special purposes, such as preserving foods, works of art, etc. It is a consumer air conditioner, not a precision refrigeration system.
- Do not block the inlet or outlet of air flow.
- Use a soft cloth to clean. Do not use harsh detergents, solvents, etc.
- Do not touch the metal parts of the product when removing the air filter. They are very sharp.
- Do not step on or put anything on the product (outdoor units).
- Always insert the filter securely. Clean the filter every two weeks or more often if necessary.
- Do not insert hands or other objects through air inlet or outlet while the product is operating.
- Do not drink the water drained from the product.
- Use a firm stool or ladder when cleaning or maintaining the product.
- Do not mix old and new batteries or different types of batteries.
- Do not recharge or disassemble the batteries. Do not dispose of batteries in a fire.
- If the liquid from the batteries gets onto your skin or clothes, wash it well with clean water. Do not use the remote if batteries have leaked inside.

2. Model/Part Names and Definitions

2.1 Model Names and Definition

A A H X X C D X X

Example: 1 2 H 4 9 Y I M I

AA – BTU capacity

H –heat pump

C – Rated Voltage

Y: 115V

Z: 230V

D – Type of unit

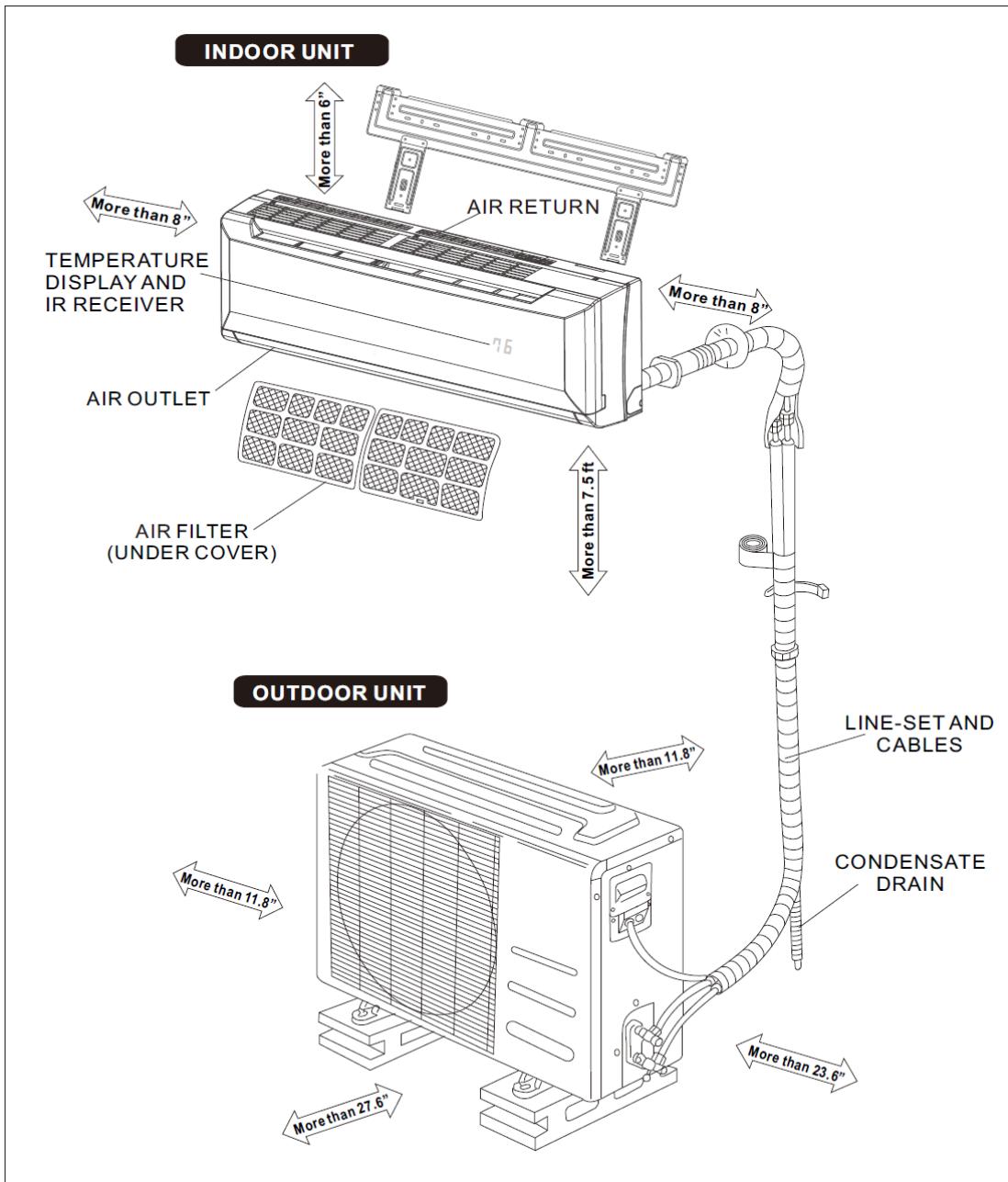
I: Indoor unit

O: Outdoor unit

X – Internal Code

Indoor	Outdoor	Voltage (V)	Capacity (BTU)	Heat Pump
9H47YIMI	9H49YOMI	115	9,000	X
12H47YIMI	12H49YOMI		12,000	X
12H47ZIMI	12H49ZOMI			X
18H47ZIMI	18H49ZOMI	230	18,000	X
24H46ZIMI	24H47ZOMI		24,000	X

2.2 Part Names



2.3 Function/Feature Names and Definition

Indoor Unit

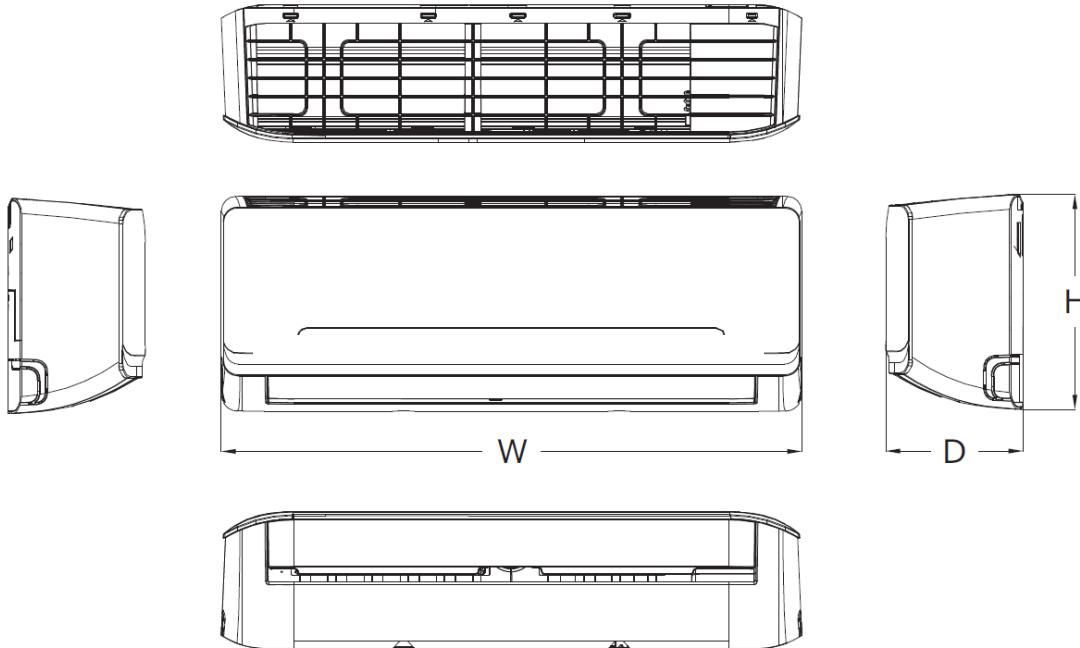
- Air Freshening Filter – Eliminate formaldehyde and other volatile organic compounds as well as harmful gases and odors.
- Follow Me – With this feature, a temperature sensor is built into the remote control. The unit will use that temperature sensor for the ambient temperature so the air conditioner is following the user.
- Louver Position Memory Function – When starting the unit again after shutting down, its louver will return to the angle that was previously set by the user.

Outdoor Unit

- Refrigerant leak detection – The refrigerant leak detection function can better prevent the compressor from being damaged by the leaked refrigerant or compressor overload.
- Self-diagnosis Function – The air conditioner's control board will shut off the unit if there is any abnormal operation or parts failure and display a corresponding error code for the potential cause of the problem.
- Compressor Crankcase Heater – Oil easily dissolves in refrigerant, especially in low temperature conditions. The crankcase heating belt can heat the bottom of the compressor to avoid pumping out too much oil with the refrigerant, which also protects the compressor.
- Freezing protection – In heating mode, the set temperature can be set to 46°F (8°C) to prevent pipes, etc. from freezing when the house is unoccupied for a long time severe cold weather.

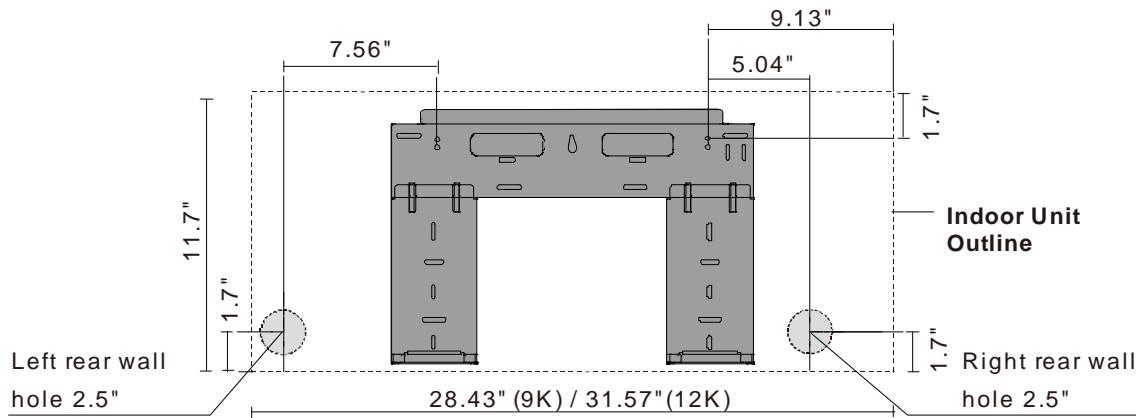
3. Dimension

3.1 Indoor Unit

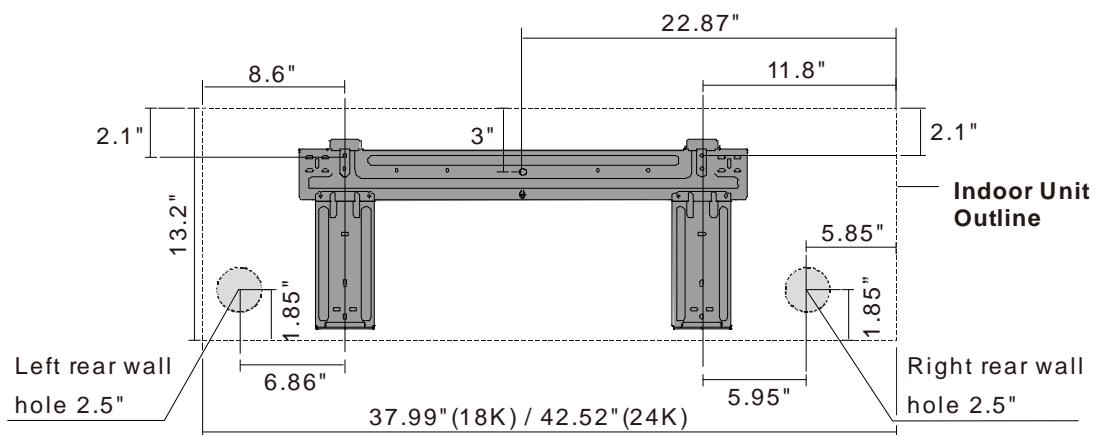


Model	W	D	H
9H47YIMI	28.43" (722 mm)	7.36" (187 mm)	11.42" (290 mm)
12H47YIMI	31.57" (802 mm)	7.44" (189 mm)	11.69" (297 mm)
18H47ZIMI	37.99" (965 mm)	8.46" (215 mm)	12.56" (319mm)
24H46ZIMI	42.52" (1080 mm)	8.9" (226 mm)	13.19" (335 mm)

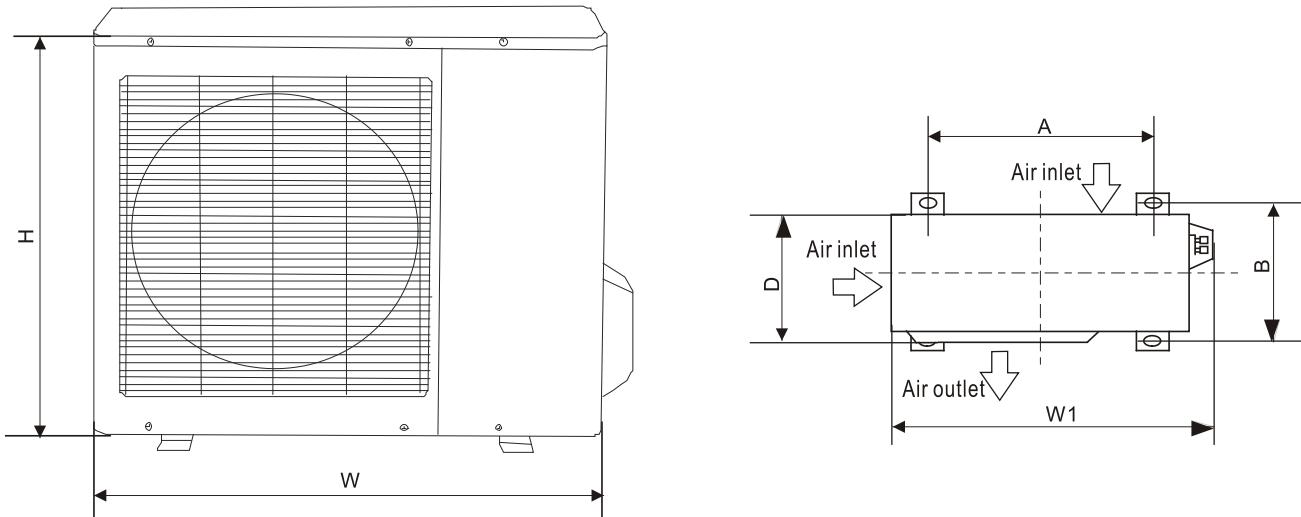
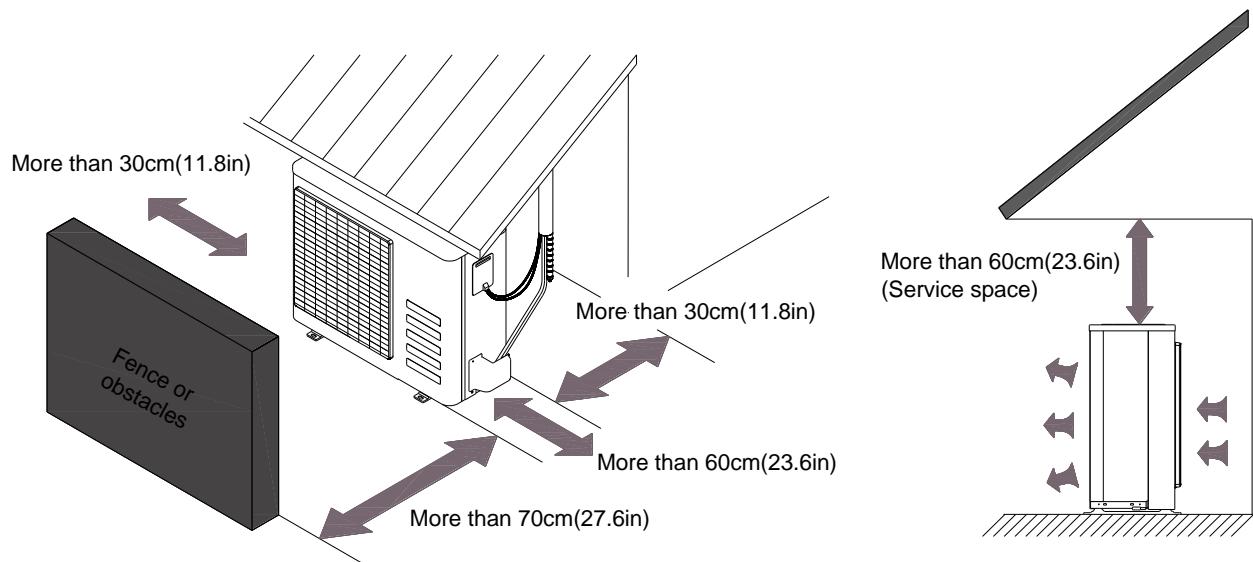
Mounting Plate for Models: 9H47YIMI, 12H47YIMI, 12H47ZIMI



Mounting Plate for models: 18H47YIMI, 24H46ZIMI



3.2 Outdoor Unit



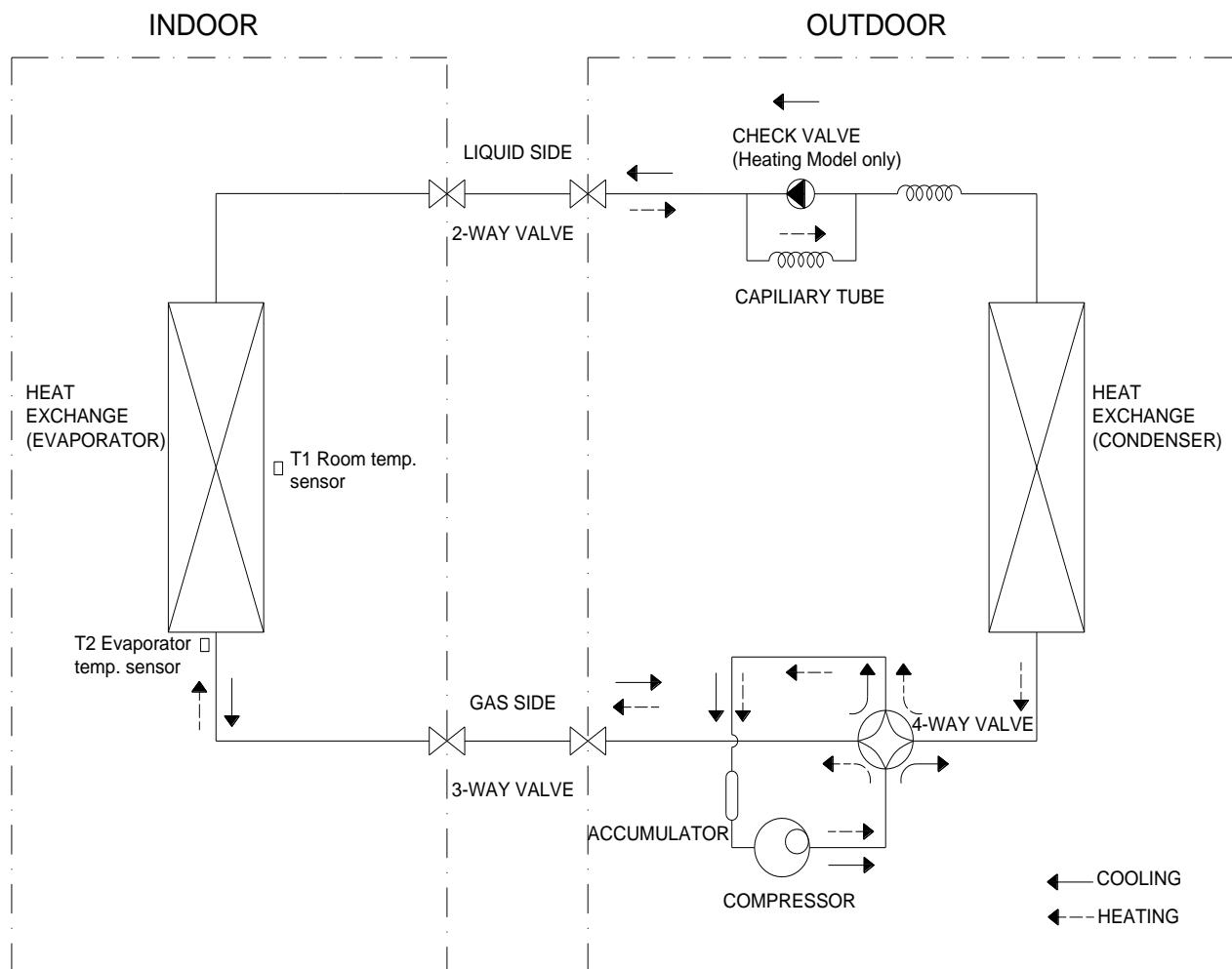
NOTE: The drawing above is for reference only. The appearance of actual units may be different.

Model	W	D	H	W1	A	B
9H49YOMI	30.31" (770 mm)	11.81" (300 mm)	21.85" (555 mm)	32.40" (823 mm)	20.87" (530 mm)	11.42" (290 mm)
12H49YOMI	31.50" (800 mm)	13.11" (333 mm)	21.81" (554 mm)	32.40" (823 mm)	20.87" (530 mm)	11.42" (290 mm)
18H49ZOMI						
24H47ZOMI	33.27" (845 mm)	14.29" (363 mm)	27.64" (702 mm)	34.41" (874 mm)	21.61" (549 mm)	12.80" (335 mm)

4. Refrigerant Cycle Diagram & Performance

4.1 Refrigerant Cycle Diagram

For models: 9H49YMI, 12H49YMI, 12H49ZMI, 18H49ZMI, 24H47ZMI



4.2 Performance Data

4.2.1 Cooling

NOTE: Actual capacity may vary from test results shown below.

Model	Cooling		Outdoor conditions (DB)																
	Indoor Conditions		-4F (-20C)	0F (-17.8C)	5F (-15C)	15F (-9.4C)	25F (-3.9C)	35F (1.7C)	45F (7.2C)	55F (12.8C)	65F (18.3C)	75F (23.9C)	85F (29.4C)	95F (35C)	105F (40.6C)	109.4F (43C)	115F (46.1C)	122F (50C)	
	DB	WB																	
9H49YMI (115V)	65F (18.3C)	54F	TC	8.25	8.73	8.99	9.03	9.22	9.37	9.30	9.50	9.65	9.57	9.77	9.89	9.29	8.59	8.08	7.48
			SC	5.69	5.94	6.21	6.39	6.54	6.57	6.85	7.33	6.82	6.88	7.12	6.94	6.74	6.70	6.87	6.66
	70F (21.1C)	59F	TC	8.72	9.13	9.56	9.61	9.65	9.74	9.95	9.99	10.14	10.18	10.22	10.35	9.78	9.09	8.55	7.78
			SC	6.01	6.21	6.61	6.80	6.84	6.84	7.33	7.71	7.17	7.32	7.44	7.25	7.09	7.09	7.27	6.92
	75F (23.9C)	63F	TC	9.05	9.63	9.93	10.08	10.23	10.23	10.43	10.43	10.64	10.63	10.78	10.91	10.26	9.64	8.87	8.16
			SC	6.25	6.55	6.82	7.19	7.28	7.26	7.80	7.90	7.52	7.64	7.85	7.65	7.44	7.52	7.54	7.26
	80F (26.7C)	67F	TC	9.48	9.98	10.39	10.50	10.60	10.71	10.81	10.92	11.02	11.13	11.23	11.31	10.74	9.99	9.29	8.55
			SC	6.45	6.73	7.17	7.42	7.60	7.56	7.94	8.27	7.79	8.00	8.18	7.93	7.79	7.90	7.61	
12H49YMI (115V)	65F (18.3C)	54F	TC	10.01	10.59	10.91	10.99	11.24	11.46	11.36	11.55	11.52	11.53	11.28	10.96	10.08	9.27	8.72	7.98
			SC	6.90	7.21	7.54	7.78	7.97	8.04	8.37	8.91	8.14	8.29	8.22	7.69	7.31	7.23	7.41	7.10
	70F (21.1C)	59F	TC	10.58	11.08	11.60	11.69	11.76	11.92	12.15	12.14	12.12	12.26	11.80	11.46	10.60	9.81	9.22	8.30
			SC	7.29	7.54	8.02	8.28	8.34	8.36	8.95	9.37	8.56	8.82	8.59	8.04	7.69	7.65	7.84	7.39
	75F (23.9C)	63F	TC	10.98	11.68	12.04	12.26	12.47	12.51	12.75	12.68	12.71	12.80	12.45	12.09	11.13	10.40	9.57	8.71
			SC	7.58	7.95	8.28	8.75	8.88	8.88	9.53	9.60	8.98	9.20	9.07	8.48	8.07	8.11	8.14	7.75
	80F (26.7C)	67F	TC	11.50	12.11	12.61	12.77	12.92	13.10	13.21	13.27	13.17	13.40	12.97	12.53	11.65	10.78	10.02	9.12
			SC	7.82	8.16	8.70	9.03	9.25	9.25	9.70	10.05	9.31	9.64	9.44	8.78	8.45	8.41	8.52	8.12
12H49ZMI (208-230V)	65F (18.3C)	54F	TC	9.37	9.98	10.33	10.35	10.44	10.68	10.64	10.78	11.06	11.20	11.40	11.60	10.84	9.25	8.56	7.92
			SC	6.63	7.08	7.43	7.54	7.32	7.74	7.86	7.84	8.05	7.85	8.06	9.05	9.00	7.87	7.61	7.21
	70F (21.1C)	59F	TC	9.82	10.28	10.89	10.92	10.95	11.13	11.09	11.24	11.66	11.81	11.96	12.16	11.29	9.65	8.92	8.25
			SC	6.96	7.29	7.83	7.95	7.67	8.07	8.20	8.17	8.49	8.28	8.45	9.49	9.37	8.20	7.94	7.51
	75F (23.9C)	63F	TC	10.73	11.23	11.77	11.73	11.90	12.08	12.05	12.35	12.59	12.69	12.99	13.29	12.20	10.54	9.75	9.02
			SC	7.60	7.97	8.46	8.55	8.34	8.76	8.91	8.98	9.17	8.90	9.18	10.36	10.13	8.96	8.68	8.20
	80F (26.7C)	67F	TC	11.35	11.95	12.45	12.55	12.66	12.79	12.82	13.07	13.32	13.57	13.82	14.06	12.98	11.15	10.37	9.54
			SC	8.04	8.47	8.95	9.14	8.87	9.27	9.48	9.50	9.70	9.51	9.77	10.97	10.77	9.48	9.23	8.68
18H49ZMI (208-230V)	65F (18.3C)	54F	TC	15.72	16.28	16.98	17.00	16.68	16.75	16.54	16.33	16.13	16.21	16.00	15.81	15.36	14.35	13.34	12.42
			SC	10.64	11.85	12.31	12.75	11.92	11.75	12.04	11.84	11.60	11.80	11.82	12.49	12.44	11.91	12.01	11.55
	70F (21.1C)	59F	TC	16.64	17.24	17.97	18.00	17.96	17.63	17.41	17.20	17.27	17.06	16.85	16.93	16.17	15.28	14.21	13.00
			SC	11.27	12.55	13.03	13.50	12.83	12.36	12.67	12.46	12.42	12.43	12.45	13.38	13.09	12.68	12.79	12.09
	75F (23.9C)	63F	TC	17.57	18.20	18.87	18.90	18.75	18.40	18.38	18.06	18.04	18.01	17.79	17.78	16.97	16.04	14.84	13.73
			SC	11.89	13.25	13.67	14.18	13.40	12.91	13.37	13.09	12.97	13.12	13.15	14.04	13.75	13.31	13.36	12.76
	80F (26.7C)	67F	TC	18.49	19.26	19.86	20.00	19.74	19.48	19.35	19.22	19.09	18.96	18.83	18.71	17.96	16.89	15.79	14.52
			SC	12.52	14.02	14.39	15.00	14.10	13.66	14.08	13.93	13.72	13.81	13.91	14.78	14.55	14.01	14.21	13.51
24H47ZMI (208-230V)	65F (18.3C)	54F	TC	20.34	21.23	21.53	21.18	21.22	20.90	20.59	20.64	20.33	20.02	20.17	19.95	18.94	18.02	16.75	15.32
			SC	14.76	15.30	17.12	17.10	16.54	16.27	15.52	14.98	14.66	15.92	16.28	15.55	14.75	14.67	15.44	14.68
	70F (21.1C)	59F	TC	21.94	22.75	23.08	22.98	22.36	22.29	22.21	22.13	21.80	21.72	21.25	21.28	20.43	19.32	17.96	16.62
			SC	15.92	16.40	18.36	18.55	17.43	17.35	16.75	16.06	15.72	17.27	17.16	16.58	15.91	15.72	16.56	15.93
	75F (23.9C)	63F	TC	23.05	23.64	24.25	24.01	23.63	23.55	23.33	22.99	22.90	22.69	22.46	22.48	21.47	20.18	18.77	17.36
			SC	16.73	17.06	19.25	19.29	18.36	18.34	17.59	16.68	16.51	18.04	18.13	17.52	16.71	16.34	17.08	16.64
	80F (26.7C)	67F	TC	24.66	25.42	25.94	25.68	25.41	25.18	24.95	24.72	24.49	24.26	24.15	24.04	22.96	21.58	20.18	18.56
			SC	18.10	18.33	20.46	20.55	19.45	19.31	18.82	17.94	17.66	19.30	19.50	18.73	17.88	17.33	18.29	17.80

4.2.2 Heating

NOTE: Actual capacity may vary from test results shown below.

Model	Heating		Outdoor conditions (DB)														
	Indoor Conditions DB		-22F (-30C)	-13F (-25C)	-5F (-20.6C)	0F (-17.8C)	5F (-15C)	17F (-8.3C)	19.4F (-7C)	24.8F (-4C)	32F (0C)	35F (1.7C)	39.2F (4C)	44.6F (7C)	47F (8.3C)	53.6F (12C)	57F (13.9C)
9H49YMI (115V)	60F (15.6C)	TC	3.73	4.49	5.45	6.20	6.90	8.23	8.57	8.97	9.33	9.68	10.50	11.71	12.79	13.77	14.21
		Input	0.77	0.80	0.83	0.91	0.94	0.98	1.00	1.01	1.03	1.04	1.10	1.20	1.27	1.26	1.25
	65F (18.3C)	TC	3.60	4.34	5.30	6.01	6.70	7.95	8.23	8.62	9.01	9.35	10.21	11.39	12.33	13.28	13.76
		Input	0.78	0.81	0.85	0.92	0.95	1.00	1.01	1.03	1.04	1.05	1.12	1.22	1.29	1.28	1.27
	70F (21.1C)	TC	3.41	4.11	5.01	5.69	6.32	7.53	7.83	8.19	8.54	8.84	9.64	10.74	11.68	12.56	13.00
		Input	0.79	0.82	0.86	0.94	0.97	1.02	1.03	1.04	1.06	1.07	1.14	1.23	1.31	1.30	1.28
	75F (23.9C)	TC	3.25	3.94	4.83	5.46	6.07	7.26	7.55	7.86	8.20	8.53	9.16	10.21	11.03	12.00	12.48
		Input	0.80	0.83	0.87	0.95	0.98	1.03	1.04	1.06	1.07	1.08	1.15	1.25	1.33	1.32	1.30
12H49YMI (115V)	60F (15.6C)	TC	3.87	4.66	5.56	6.41	7.13	8.50	8.96	9.70	10.42	11.21	11.75	12.65	13.37	13.94	14.37
		Input	0.78	0.81	0.83	0.85	0.87	0.91	0.89	0.90	0.90	0.91	0.94	0.99	1.02	1.02	1.01
	65F (18.3C)	TC	3.74	4.51	5.38	6.21	6.89	8.21	8.70	9.42	10.05	10.81	11.36	12.22	12.90	13.51	13.92
		Input	0.79	0.82	0.84	0.86	0.89	0.93	0.91	0.91	0.91	0.93	0.95	1.00	1.03	1.03	1.02
	70F (21.1C)	TC	3.52	4.24	5.05	5.82	6.47	7.70	8.15	8.81	9.46	10.16	10.66	11.46	12.11	12.67	13.05
		Input	0.80	0.83	0.85	0.87	0.90	0.94	0.92	0.92	0.93	0.94	0.97	1.02	1.05	1.05	1.04
	75F (23.9C)	TC	3.36	4.07	4.87	5.59	6.21	7.39	7.86	8.37	8.94	9.71	10.18	11.01	11.69	12.23	12.53
		Input	0.82	0.85	0.87	0.88	0.91	0.96	0.93	0.94	0.94	0.96	0.98	1.03	1.06	1.06	1.05
12H49ZMI (208-230V)	60F (15.6C)	TC	4.92	5.93	7.06	7.86	8.74	10.26	10.98	11.93	12.86	13.65	14.09	15.08	15.79	16.37	16.88
		Input	1.07	1.11	1.13	1.21	1.25	1.29	1.33	1.38	1.43	1.47	1.43	1.45	1.44	1.41	1.39
	65F (18.3C)	TC	4.72	5.69	6.78	7.54	8.38	9.86	10.54	11.45	12.36	13.09	13.58	14.54	15.17	15.73	16.22
		Input	1.08	1.12	1.15	1.23	1.27	1.31	1.35	1.40	1.45	1.50	1.45	1.47	1.46	1.43	1.42
	70F (21.1C)	TC	4.53	5.45	6.49	7.21	8.02	9.43	10.08	10.94	11.79	12.50	12.96	13.86	14.50	15.02	15.47
		Input	1.10	1.14	1.17	1.25	1.29	1.33	1.37	1.42	1.47	1.52	1.47	1.49	1.49	1.45	1.44
	75F (23.9C)	TC	4.32	5.24	6.27	6.89	7.70	8.96	9.68	10.56	11.26	12.00	12.50	13.30	13.78	14.20	14.70
		Input	1.12	1.16	1.18	1.26	1.31	1.35	1.39	1.44	1.49	1.54	1.49	1.52	1.51	1.47	1.46
18H49ZMI (208-230V)	60F (15.6C)	TC	5.78	6.96	8.30	9.23	10.25	11.92	12.40	13.12	13.84	14.77	16.28	18.33	19.81	21.20	21.79
		Input	1.18	1.22	1.25	1.33	1.37	1.42	1.44	1.46	1.49	1.54	1.64	1.78	1.86	1.90	1.88
	65F (18.3C)	TC	5.54	6.69	7.97	8.82	9.81	11.42	11.90	12.60	13.29	14.23	15.58	17.54	18.88	20.20	20.85
		Input	1.19	1.24	1.27	1.35	1.40	1.44	1.46	1.49	1.51	1.57	1.66	1.81	1.89	1.93	1.91
	70F (21.1C)	TC	5.36	6.46	7.69	8.55	9.50	11.04	11.49	12.15	12.80	13.70	15.05	16.93	18.28	19.54	20.12
		Input	1.21	1.26	1.29	1.37	1.42	1.47	1.48	1.51	1.53	1.59	1.69	1.84	1.92	1.96	1.94
	75F (23.9C)	TC	5.17	6.27	7.38	8.25	9.21	10.54	10.97	11.67	12.29	13.22	14.45	16.08	17.27	18.56	19.32
		Input	1.23	1.27	1.30	1.39	1.44	1.49	1.51	1.53	1.55	1.62	1.72	1.87	1.95	1.99	1.97
24H47ZMI (208-230V)	60F (15.6C)	TC	10.23	12.34	14.70	16.35	17.95	21.14	21.54	22.07	22.55	23.23	25.25	28.28	29.63	30.72	31.83
		Input	2.12	2.19	2.24	2.39	2.45	2.53	2.50	2.49	2.49	2.48	2.53	2.67	2.64	2.58	2.57
	65F (18.3C)	TC	9.83	11.86	14.13	15.71	17.20	20.26	20.60	21.09	21.59	22.24	24.15	27.15	28.33	29.39	30.44
		Input	2.15	2.22	2.28	2.43	2.48	2.57	2.54	2.53	2.52	2.52	2.57	2.71	2.68	2.62	2.61
	70F (21.1C)	TC	9.52	11.47	13.65	15.17	16.67	19.61	19.96	20.44	20.90	21.51	23.36	26.24	27.46	28.45	29.44
		Input	2.18	2.26	2.31	2.47	2.52	2.61	2.58	2.57	2.56	2.56	2.61	2.76	2.73	2.66	2.65
	75F (23.9C)	TC	9.14	11.07	13.04	14.48	16.00	18.53	18.96	19.52	20.06	20.75	22.42	25.32	26.36	27.02	27.82
		Input	2.21	2.29	2.35	2.50	2.56	2.65	2.62	2.61	2.60	2.65	2.80	2.77	2.70	2.69	2.69

Legend:

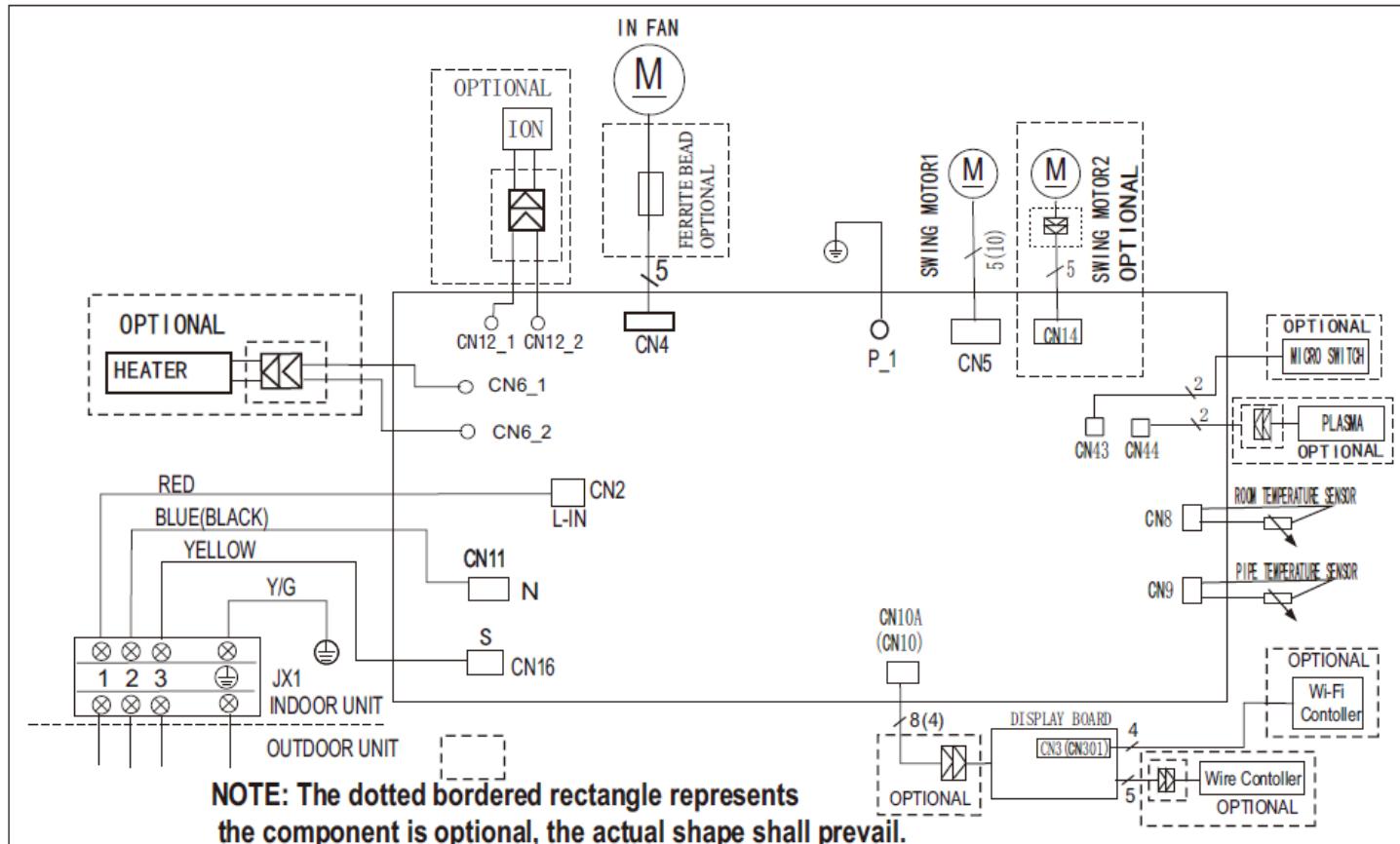
DB --- Dry Bulb; WB --- Wet Bulb; TC --- Total Net Capacity (1000 Btu/hour); SC --- Sensible Capacity (1000 Btu/hour);

SC --- Sensible Capacity (1000 Btu/hour).

5. Wiring Diagram

5.1 Indoor Unit

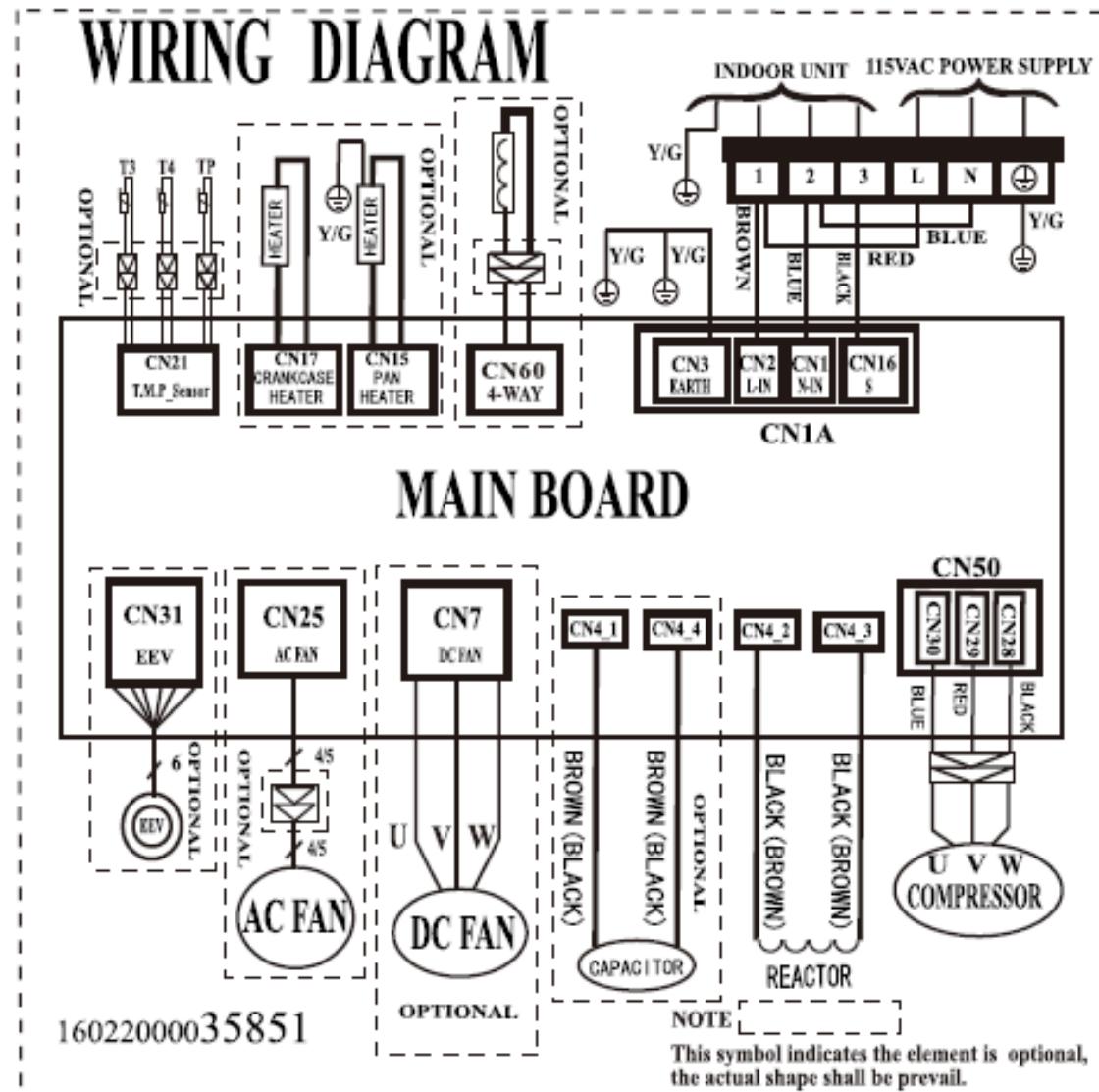
Abbreviation	Paraphrase
Y/G	Yellow-Green Conductor
ION	Positive and Negative Ion Generator
CAP	Capacitor
PLASMA	Electronic Dust Collector
L	LIVE
N	NEUTRAL
Heater	The Electric Heating Belt of Indoor Unit
T1	Indoor Room Temperature
T2	Coil Temperature of Indoor Heat Exchanger Middle



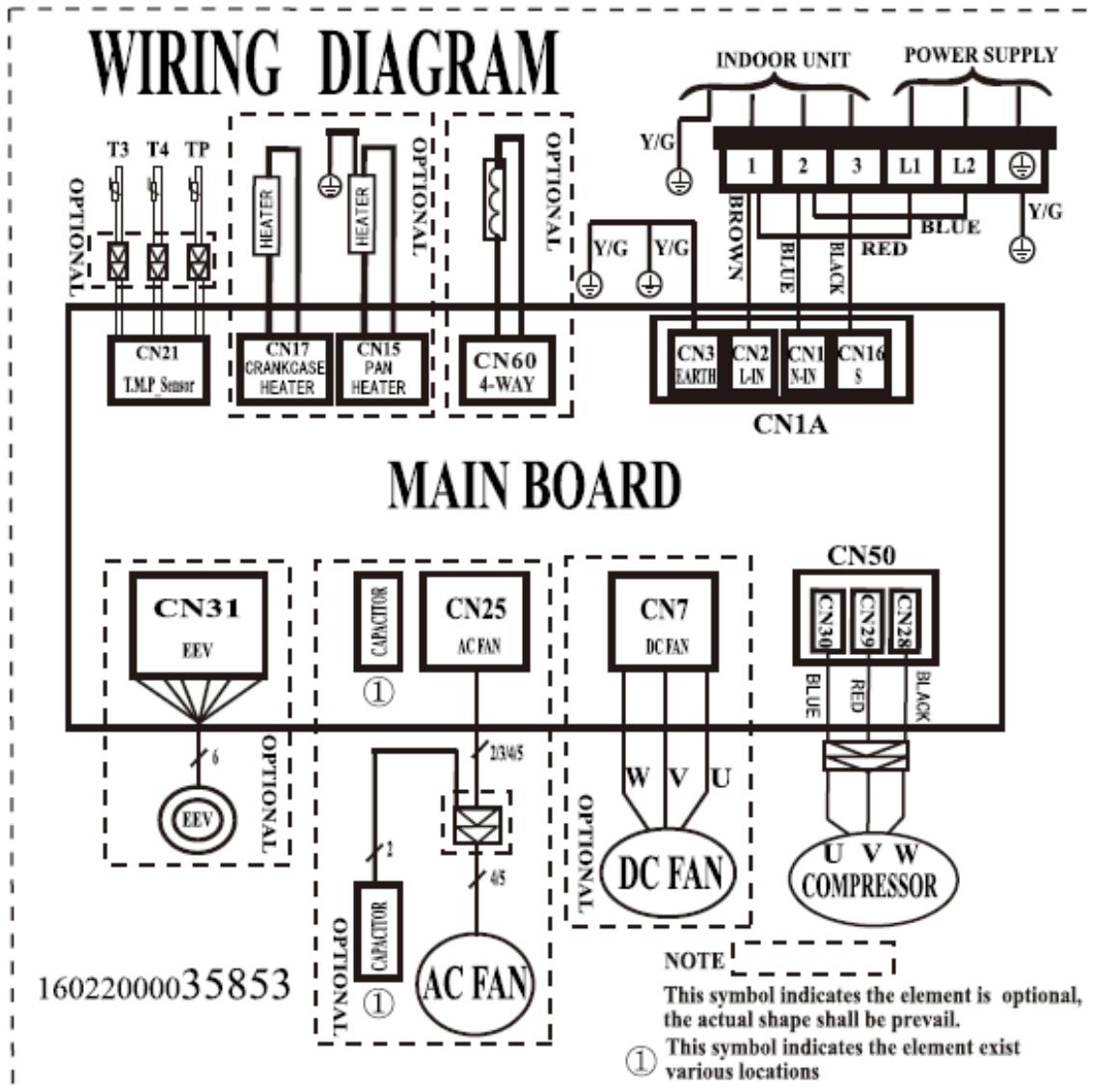
5.2 Outdoor Unit

Abbreviation	Paraphrase
4-WAY	Gas Valve Assembly/4-WAY VALVE
AC-FAN	Alternating Current FAN
DC-FAN	Direct Current FAN
CT1	AC Current Detector
COMP	Compressor
L-PRO	Low Pressure Switch
H-PRO	High Pressure Switch
T3	Coil Temperature of Condenser
T4	Outdoor Ambient Temperature
TH	Compressor Suction Temperature
TP	Compressor Discharge Temperature
EEV	Electronic Expansion Valve

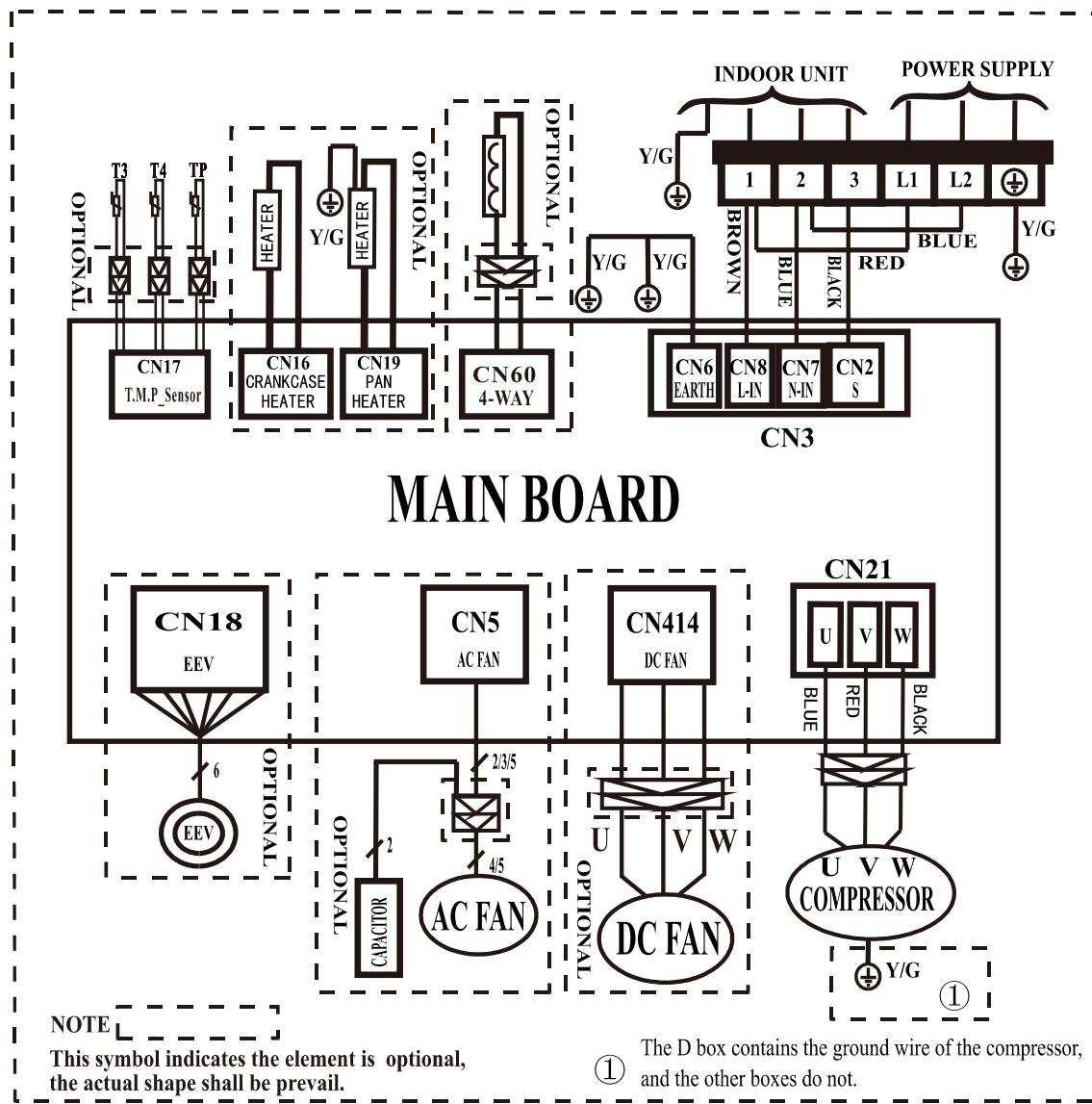
<u>Model</u>	<u>Voltage (V)</u>	<u>Capacity (BTU)</u>	<u>Type</u>
9H49YOMI	115	9,000	HEAT PUMP
12H49YOMI	115	12,000	HEAT PUMP



<u>Model</u>	<u>Voltage (V)</u>	<u>Capacity (BTU)</u>	<u>Type</u>
12H49ZOMI	230	12,000	HEAT PUMP
18H49ZOMI	230	18,000	HEAT PUMP

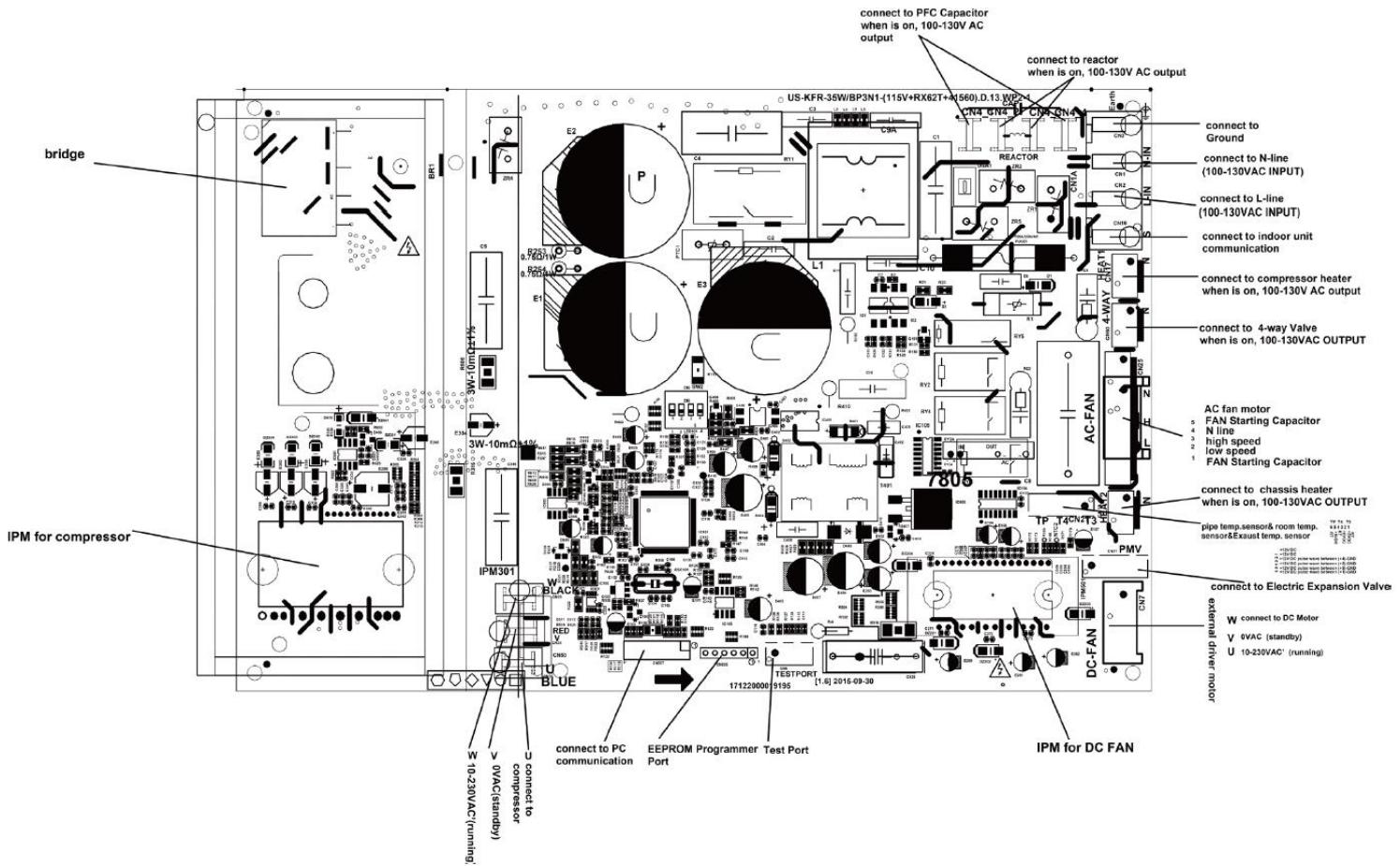


<u>Model</u>	<u>Voltage (V)</u>	<u>Capacity (BTU)</u>	<u>Type</u>
24H47ZOMI	230	24,000	HEAT PUMP

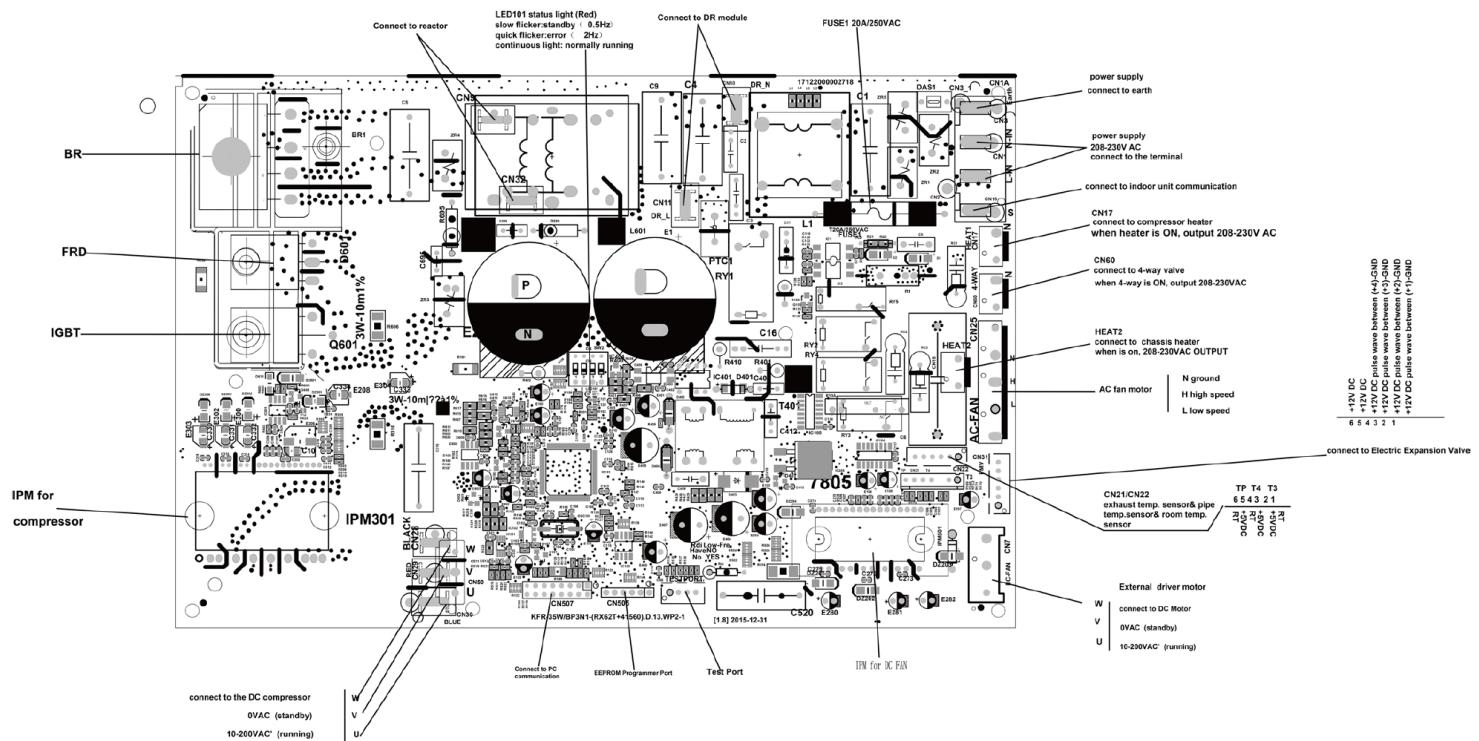


5.3 PC Boards

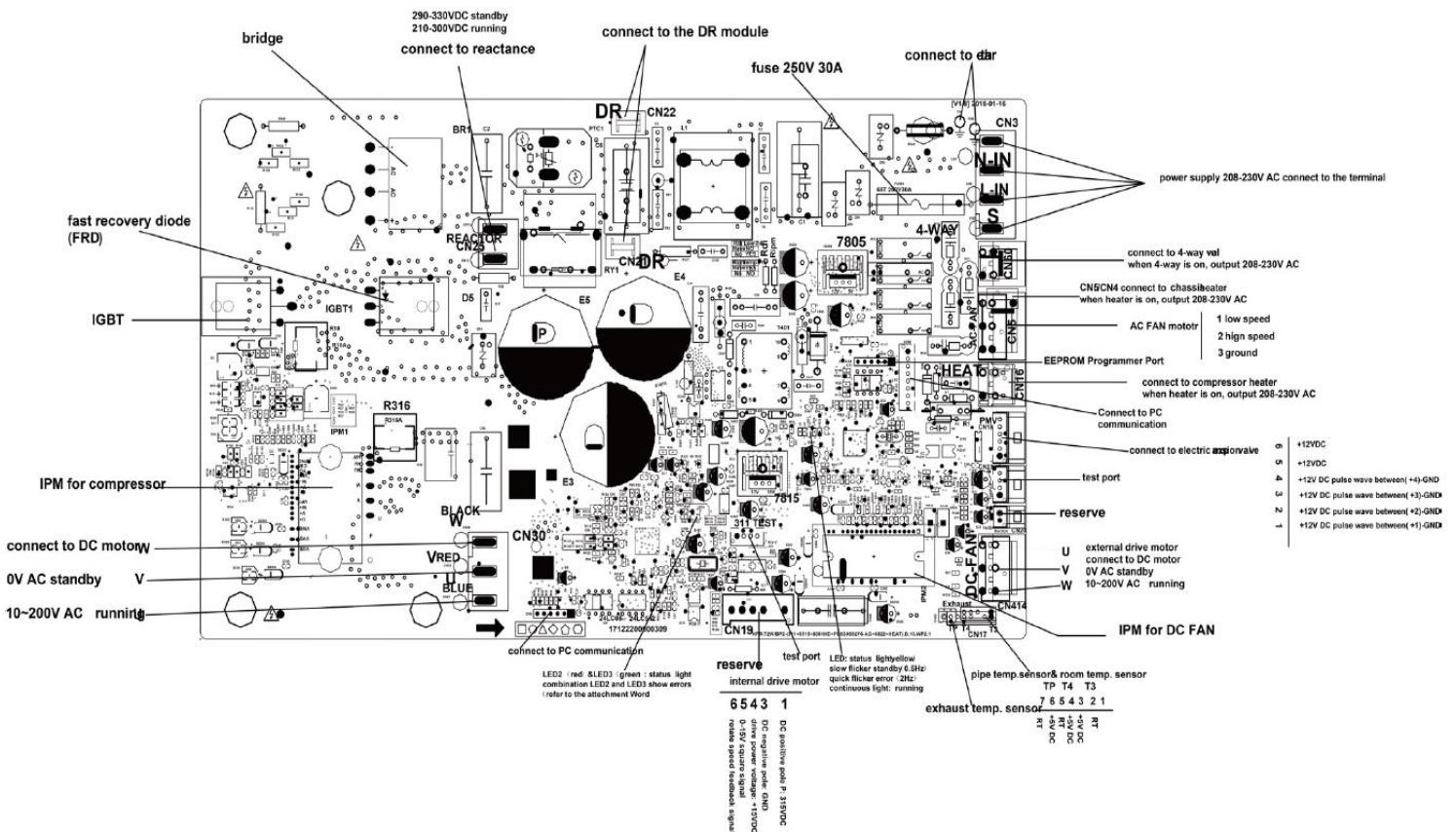
For models: 9H49YOMI, 12H49YOMI



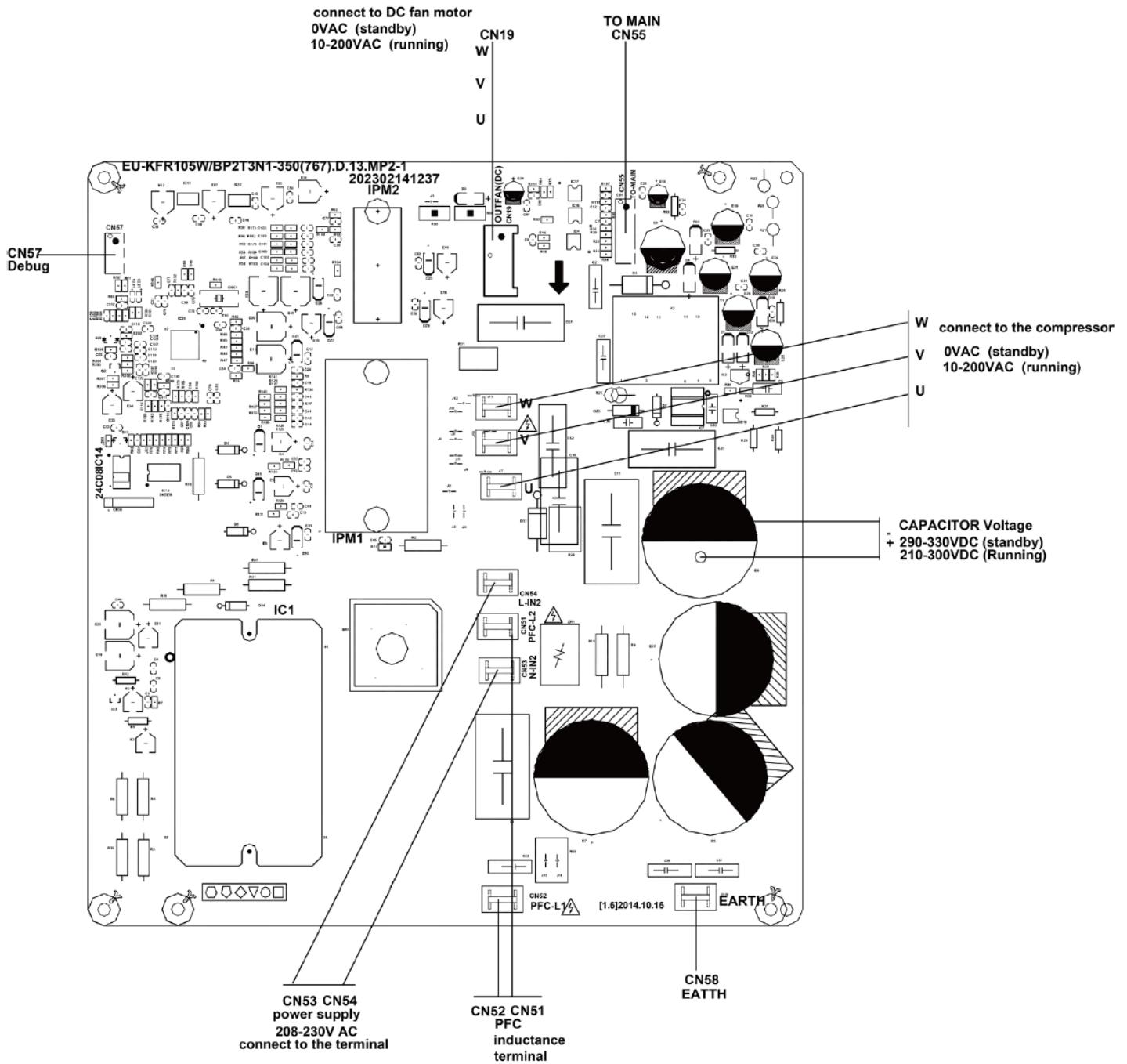
For model: 12H49ZOMII



For models: 18H49ZOMI, 24H47ZOMI



5.4 IPM Board



After power on, LED3 (Green) and LED2(Red) will flash if there are some problems.

No.	Problems	LED3 (Green)	LED2(Red)	Indoor display
1	Standby for normal	ON	OFF	
2	Operation normally	OFF	ON	
3	IPM malfunction or IGBT over-current protection	Flash (2.5 Hz)	OFF	P0
4	High voltage or low voltage protection	ON	ON	P1
5	EEPROM parameter error	ON	Flash	E5
6	Inverter compressor drive error	OFF	Flash	P4
		Flash (2.5 Hz)	ON	P4
		Flash (2.5 Hz)	OFF	P4

6. Installation Details

6.1 Wrench Torque Sheet

Outside Diameter		Recommended Torque	Max Torque
Φ6.35mm	1/4"	11.063 lb.ft (1500 N.cm)	11.801 lb.ft (1600 N.cm)
Φ9.52mm	3/8"	18.439 lb.ft (2500 N.cm)	19.177 lb.ft (2600 N.cm)
Φ12.7mm	1/2"	25.815 lb.ft (3500 N.cm)	26.552 lb.ft (3600 N.cm)
Φ15.9mm	5/8"	33.190 lb.ft (4500 N.cm)	34.665 lb.ft (4700 N.cm)

6.2 Cable Connection Sheet

The cable size and the current of the fuse or switch are determined by the maximum current indicated on the nameplate located on the side panel of the unit. Please refer to the nameplate before selecting the cable, fuse, and disconnect box. The supply power cable should be selected according to the specifications sheet shown below.

Appliance Amps	AWG Wire Size
10	18
13	16
18	14
25	12

6.3 Pipe Size, Length, and Elevation

Model		Pipe Size		Standard Length	Max Length	Max Elevation	Additional Refrigerant
Indoor	Outdoor	Gas	Liquid				
9H49YIMI	9H49YOMI	3/8" (Φ9.52 mm)	1/4"		82.0'	32.8'	0.161 oz/ft
12H49YIMI	12H49YOMI	1/2"	(Φ6.35 mm)	25'	(25 m)	(10 m)	(15 g/m)
12H49ZIMI	12H49ZOMI		(Φ12.7 mm)	(7.5 m)			
18H49ZIMI	18H49ZOMI	5/8" (Φ15.9 mm)	3/8" (Φ9.52 mm)		98' (30 m)	66' (20 m)	0.322 oz/ft (30 g/m)
24H48ZIMI	24H48ZOMI						

6.4 First Time Installation

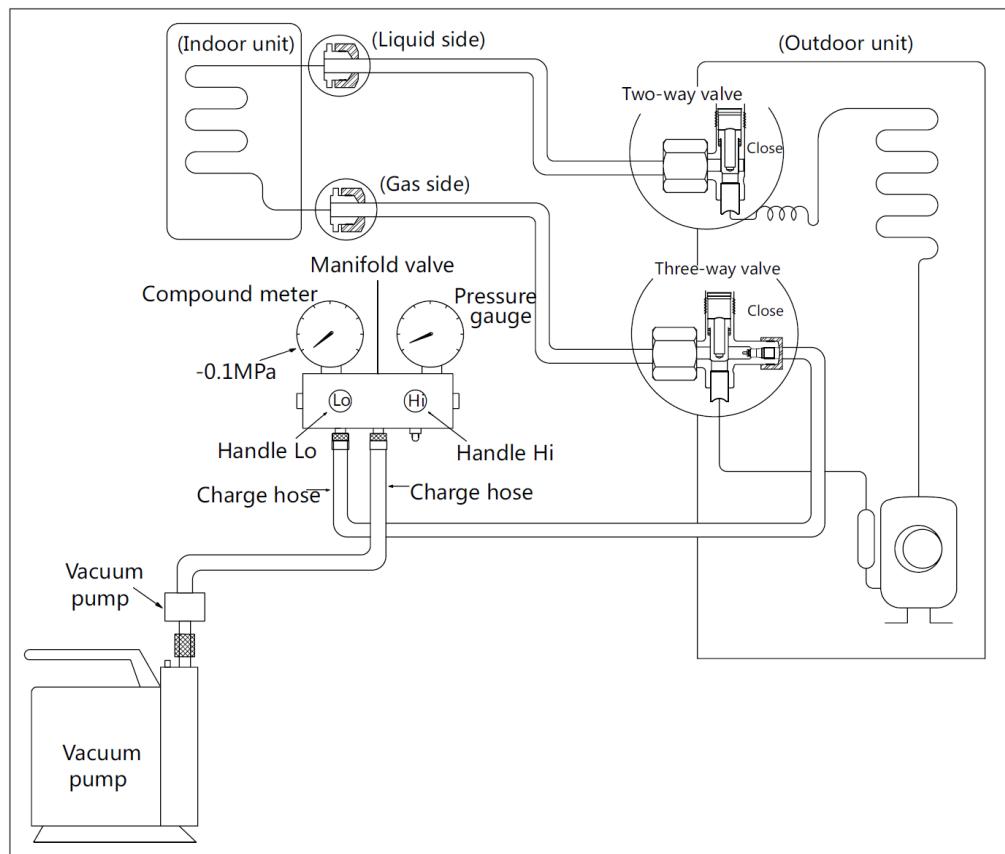
The indoor units and the pipes between indoor and outdoor units must be leak tested and evacuated in order to remove gas and moisture from the system. If not, the air and moisture in the refrigerant system can cause undesirable effects such as the ones shown below.

- Pressure in the system rises.
- Operating current rises.
- Cooling or heating efficiency drops.
- Moisture in the refrigerant circuit may freeze and block capillary tubing.
- Water may lead to corrosion of parts in the refrigerant system.

6.4.1 Gas Leak Check (Soap Water Method)

Apply soap water or a neutral liquid detergent to the indoor unit, line set connections, and service ports with a soft brush. If bubbles start forming, there is a leak at the connection where the bubbles form.

6.4.2 Air Purging with a Vacuum Pump

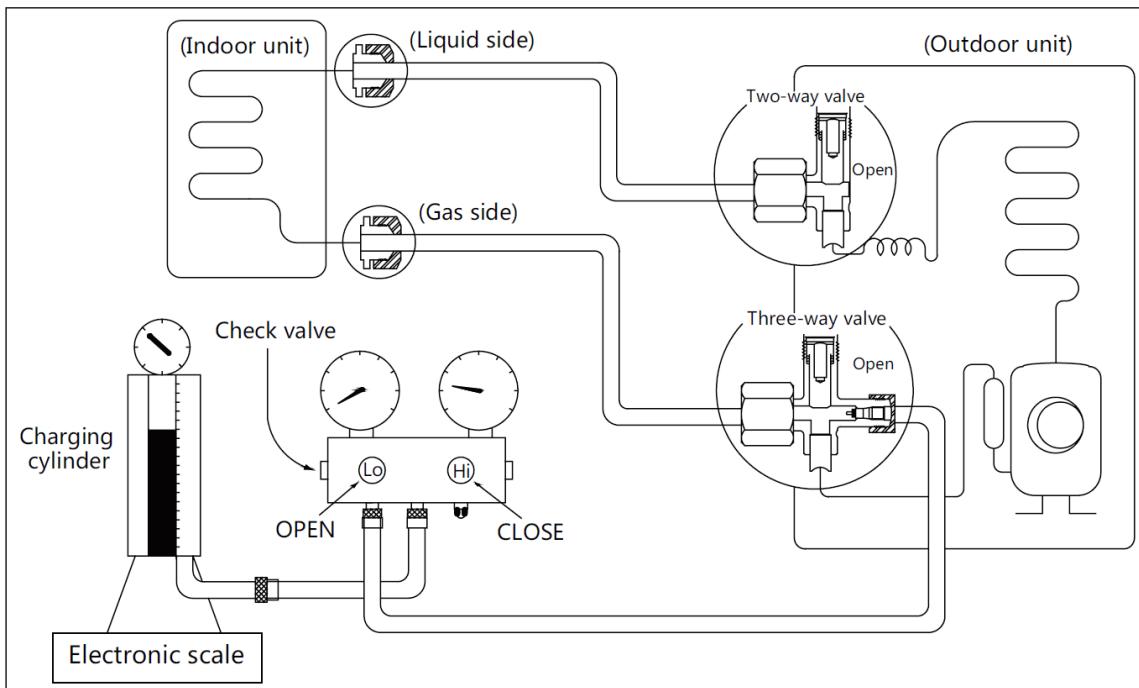


Procedure:

1. Tighten the flare nuts of the indoor and outdoor units. Confirm that both the 2-way and 3-way valves are set to the closed position.
2. Connect the charge hose with the push pin of Handle Lo (low pressure side) to the 3-way valve's gas side service port.
3. Connect the charge hose of Handle Hi (high pressure side) connection to the vacuum pump.
4. Fully open the Handle Lo of the manifold valve.
5. Operate the vacuum pump to evacuate.

6. Hold a vacuum for 120 minutes while the compound meter reads 500 microns (μmHg). If the meter does not indicate 500 microns after pumping for 30 minutes, continue checking the pressure for 20 minutes more. If the pressure can't achieve 500 microns after pumping 50 minutes, check to see if there are some leakage points. Fully close the Handle Lo valve of the manifold valve and stop the operation of the vacuum pump. Confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).
7. Turn the flare nut of the 3-way valves about 45° counterclockwise for 6 or 7 seconds after the gas comes out, then retighten the flare nut. Make sure the pressure display in the pressure indicator is 10 psi higher than the atmosphere pressure. Then remove the charge hose from the 3-way valve.
8. Fully open the 2-way valve and 3-way valve and securely tighten the cap of the 3-way valve.

6.5 Adding Refrigerant for a Used System

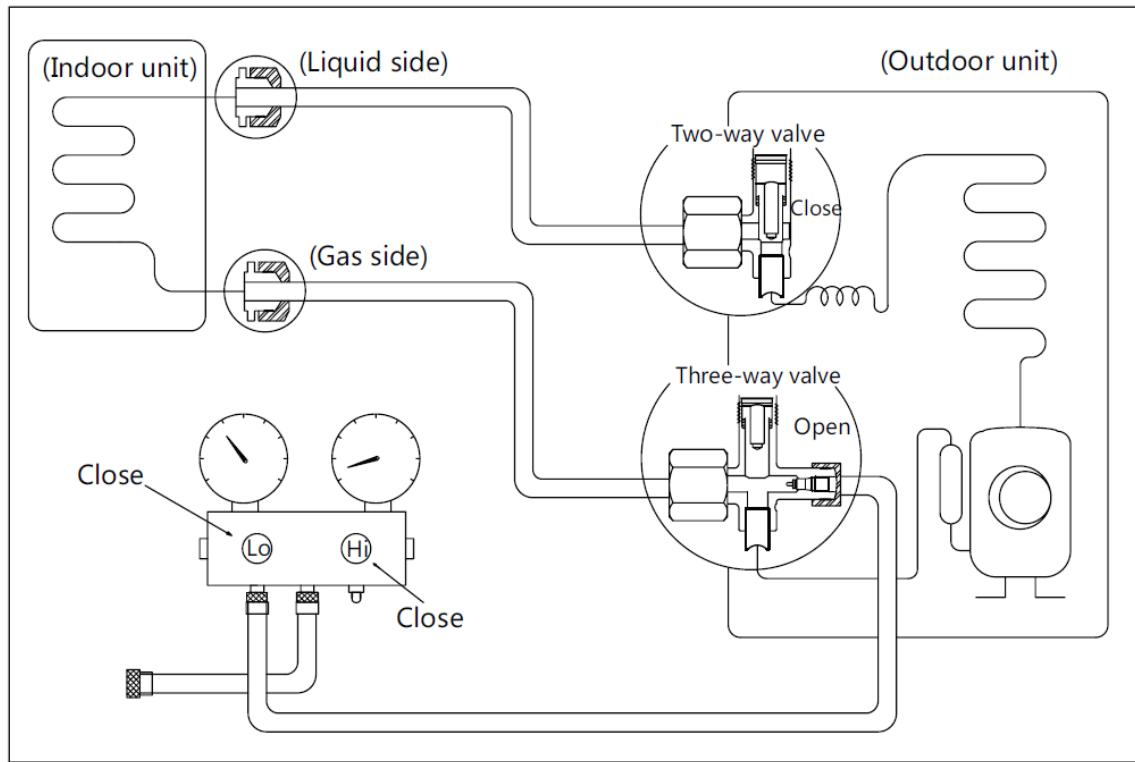


Procedure:

1. Connect the charge hose to the 3-way service port, open the 2-way valve and the 3-way valve. Connect the charge hose to the valve at the bottom of the cylinder. If the refrigerant is R410a, make sure the cylinder is upside-down to ensure liquid charge.
2. Purge the air from the charge hose. Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).
3. Put the charging cylinder onto the electronic scale and record the weight.
4. Operate the air conditioner at the cooling mode.
5. Open the valves (low side) on the charge set and charge the system with liquid refrigerant.
6. When the electronic scale displays the proper weight (refer to the gauge and the pressure of the low side), disconnect the charge hose from the 3-way valve's service port immediately and turn off the air conditioner before disconnecting the hose.
7. Mount the valve stem caps and the service port. Use torque wrench to tighten the service port cap to a torque of 13.3ft·lb (18N·m). Be sure to check for gas leakage.

6.6 Re-installation of the Indoor Unit

6.6.1. Collecting the Refrigerant into the Outdoor Unit

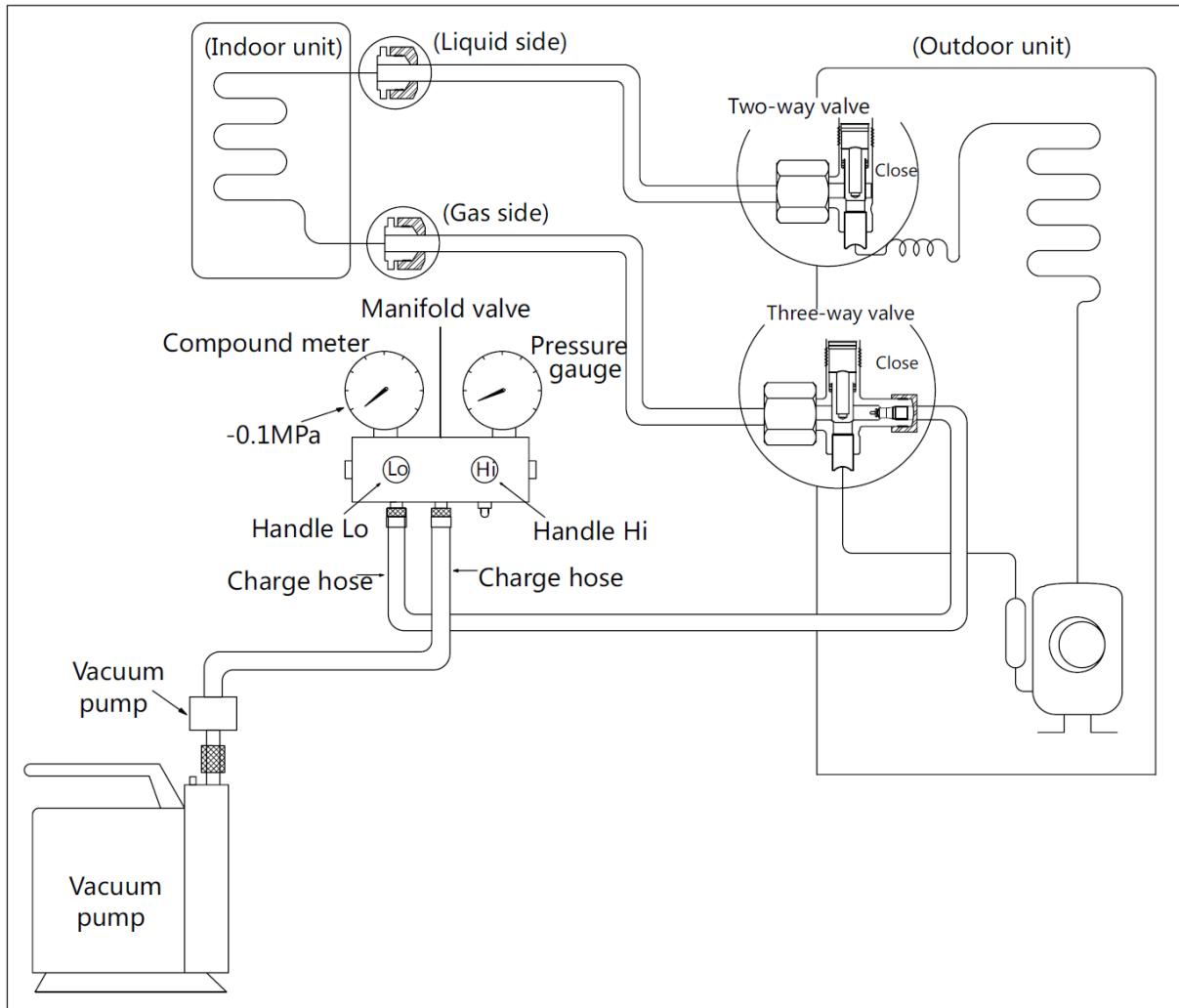


Procedure:

1. Confirm that both the 2-way and 3-way valves are set to the opened position. Remove the valve stem caps and confirm that the valve stems are in the opened position. Be sure to use a hexagonal wrench to operate the valve stems.
2. Connect the charge hose with the push pin of Handle Lo to the 3-way valves gas service port.
3. Air purging of the charge hose. Open the Handle Lo valve of the manifold valve slightly to purge air from the charge hose for 5 seconds and then close it quickly.
4. Set the 2-way valve to the close position.
5. Operate the air conditioner at the cooling cycle and stop it when the gauge indicates 14.5 psi (0.1 MPa).
6. Set the 3-way valve to the closed position immediately. Do this quickly so that the gauge ends up indicating 43.5 psi (0.3 MPa) to 72.5 psi (0.5 MPa). Disconnect the charge set, and tighten the 2-way and 3-way valve's stem nuts. Use a torque wrench to tighten the 3-way valves service port cap to a torque of 13.3ft·lb (18N·m). Be sure to check for gas leakage.

6.7 Re-installation of the Outdoor Unit

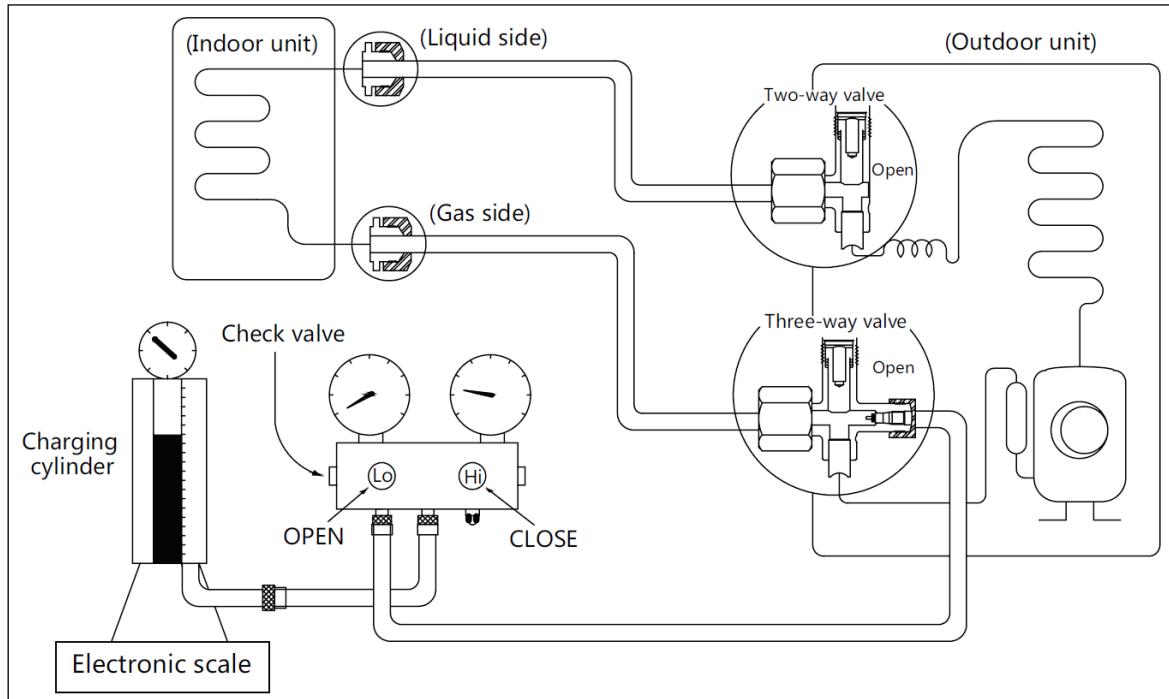
6.7.1 Evacuation for the Whole System



Procedure:

1. Confirm that both the 2-way and 3-way valves are set to the opened position.
2. Connect the vacuum pump to 3-way valve's service port.
3. Evacuation for approximately two hours. Confirm that the compound meter indicates 500 microns (μmHg).
4. Close the valve (low side) on the charge set, turn off the vacuum pump, and confirm that the gauge needle does not move (approximately 5 minutes after turning off the vacuum pump).
5. Disconnect the charge hose from the vacuum pump.

6.7.2 Refrigerant Charging



Procedure:

1. Connect the charge hose to the charging cylinder, open the 2-way valve and the 3-way valve. Connect the charge hose which you disconnected from the vacuum pump to the valve at the bottom of the cylinder. If the refrigerant is R410a, make the cylinder bottom up to ensure liquid charge.
2. Purge the air from the charge hose. Open the valve at the bottom of the cylinder and press the check valve on the charge set to purge the air (be careful of the liquid refrigerant).
3. Put the charging cylinder onto the electronic scale and record the weight.
4. Open the valves (low side) on the charge set and charge the system with liquid refrigerant. If the system cannot be charged with the specified amount of refrigerant, or can be charged with a little at a time (approximately 5oz or 150g each time), operating the air conditioner in the cooling cycle; however, one time is not sufficient, wait approximately 1 minute and then repeat the procedure.
5. When the electronic scale displays the proper weight, disconnect the charge hose from the 3-way valve's service port immediately. If the system has been charged with liquid refrigerant while operating the air conditioner, turn off the air conditioner before disconnecting the hose.
6. Mount the valve stem caps and the service port. Use torque wrench to tighten the service port cap to a torque of 13.3ft·lb (18N·m). Be sure to check for gas leakage.

7. Operation Characteristics

Temperature \ Mode	COOL	HEAT	DRY
Indoor Temperature	≥62°F (17°C)	≤86°F (30°C)	≥50°F (10°C)
Outdoor Temperature	5°F ~ 122°F* (-15°C ~ 50°C)	5°F ~ 86°F (-15°C ~ 30°C)	32°F ~ 122°F (0°C ~ 50°C)

* All models have this low ambient control characteristic

CAUTION:

1. If the air conditioner is used beyond the above conditions, certain safety protection features may come into operation and cause the unit to operate abnormally.
2. The room relative humidity should be less than 80%. If the air conditioner operates beyond this figure, the surface of the air conditioner may attract condensation. Please set the vertical air flow louver to its maximum angle (vertically to the floor), and set HIGH fan mode.
3. The optimum performance will be achieved during this operating temperature zone.

8. Electronic Functions

NOTE: The "x" variable for all graphs shown in this section is time.

8.1 Abbreviation

- T1: Indoor room temperature
- T2: Evaporator coil temperature
- T3: Condenser coil temperature
- T4: Outdoor ambient temperature
- T5: Compressor discharge temperature
- TS: Set temperature

8.2 Display Function

Operating Symbols Displayed in Panel



It displays the temperature settings when the air conditioner is operating.

It displays the room temperature in FAN mode.

Other function display:

- ON:** This code illuminates for 3 seconds when the Timer ON, Swing, Turbo or Silence function is activated.
- OF:** This code illuminates for 3 seconds when the Swing, Turbo or Silence function is cancelled or Timer OFF is activated.
- DF:** This code illuminates when unit is defrosting.
- cF:** This code illuminates when anti-cold air function is turned on.
- SC:** This code illuminates when unit is in self-cleaning process.
- FP:** This code illuminates when freeze protection is turned on.

8.3 Protection Features

1. Three minutes delay at restart for compressor.

1 minute delay for the 1st time starting up and 3 minutes delay for other startup times.

2. Compressor overload protection

If the compressor overload protection is triggered, the unit will stop and then later restart.

3. Temperature protection of compressor discharge

- T5 > 239°F Compressor stops running after 5 seconds.

4. Fan speed is out of control

When indoor fan speed operates too low (300 rpm) for a certain period of time, the unit will stop and the **E3** error code will display on the panel.

5. Inverter module protection

The inverter module has a protection feature for current, voltage, and temperature. If any of these do not operate properly, the unit will shut off and display the corresponding error code.

6. Indoor fan delayed open function

When the unit starts up, the louver will begin moving immediately but the indoor fan will open ten (7) seconds afterwards.

If the unit is in heating mode, the indoor fan is regulated by the anti-cold wind function.

7. Compressor preheating function

When it is cold, the oil in the compressor will not properly lubricate the compressor. A compressor heating belt can preheat the compressor (and oil) to prevent damage.

- If $T4 < 37.4^{\circ}\text{F}$ and the system was recently connected to the power supply or has been off for over three (3) hours, the compressor heating cable will turn on during startup.
- When $T4 > 41^{\circ}\text{F}$, the compressor will start running and the compressor heating belt will turn off.

8. Zero crossing detection error protection

If the AC time interval is not correct for a continuous 240 seconds, the unit will stop operating and the **E2** error code will display on the panel. The correct zero crossing signal time interval should be between 6-13ms.

9. Condenser temperature protection

The condenser has a temperature protection system to prevent it from getting too cold. This is important because the refrigerant system was designed to operate at a specific safety pressure. If the pressure gets too high, the compressor may get overload and an explosion may even occur in extreme circumstances.

- $T3 > 140^{\circ}\text{F}$ (for 5 sec) Compressor will stop until $T3 < 125.6^{\circ}\text{F}$.
- $131^{\circ}\text{F} < T3 < 140^{\circ}\text{F}$ Compressor slowly decrease speed every three (3) minutes.
- $125.6^{\circ}\text{F} < T3 < 131^{\circ}\text{F}$ Compressor operates at the current speed.
- $T3 < 125.6^{\circ}\text{F}$ Compressor maintains or increases the speed.

10. Evaporator temperature protection

The evaporator has a temperature protection system to prevent it from getting too cold. This is important because if the evaporator coils are too cold, too much condensate will be created which may get blown out by the fan or even freeze on the coils. The compressor operation will be as follows.

- $T2 > 44.6^{\circ}\text{F}$ Compressor maintains or increases the speed.
- $39.2^{\circ}\text{F} < T2 < 44.6^{\circ}\text{F}$ Compressor operates at the current speed.
- $32^{\circ}\text{F} < T2 < 39.2^{\circ}\text{F}$ Compressor decreases speed every three (3) minutes.
- $T2 < 32^{\circ}\text{F}$ Compressor will stop and restart when $T2 \geq 41^{\circ}\text{F}$.

11. Low voltage protection

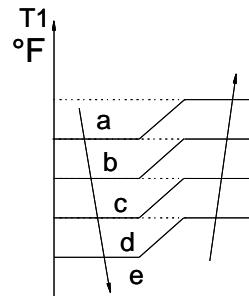
Voltage that is too low can cause overheating in the unit. To prevent this, all units come equipped with a low voltage protection system. When the voltage drops too low, the unit will

reduce the frequency going to the compressor. If the voltage is still low after three (3) minutes, the unit will keep running at the lower frequency with the error code **P1** display on the panel until the unit is restarted.

8.4 Operation Modes and Logic

8.4.1 Fan Mode

- Outdoor fan and compressor stop running.
- Temperature setting is disabled and not shown.
- Indoor fan can be set to high/med/low/auto.
- Louver operates in the same way as cooling mode.
- Auto fan logic: the unit operates the same as auto fan
In cooling mode with temperature set at 75°F.



8.4.2 Cooling Mode

8.4.2.1 Compressor Operation Logic

When $T1 - Ts < \Delta T - 3.6^{\circ}\text{F}$, the compressor will stop,

When $T1 - Ts > \Delta T - 1^{\circ}\text{F}$, the compressor will be activated.

ΔT is the programmed parameter of temperature compensation.

When Silence feature is activated, the compressor will run with low frequency.

When the current is more than setting value, the current protection function will be activated, and the compressor will stop.

8.4.2.2 Outdoor Fan Logic

The outdoor unit will be run at different fan speed according to T4.

For different outdoor units, the fan speeds are different.

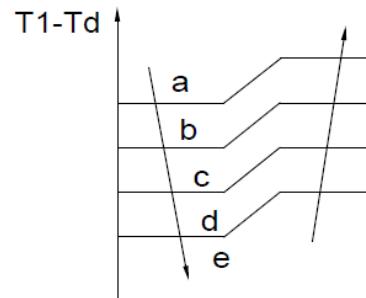
8.4.2.3 Indoor Fan Logic

When the compressor is on, the indoor fan can be set to high/med/low/auto.

The indoor fan is controlled as below:

Setting fan speed	T1-Td °C(°F)	Actual fan speed
H	A	H+ (H+=H+G)
	B	H (H=H)
	C	H- (H-=H-G)
M	D	M+ (M+=M+Z)
	E	M (M=M)
	F	M- (M-=M-Z)
L	G	L+ (L+=L+D)
	H	L (L=L)
	I	L- (L-=L-D)

The auto fan acts as beside:

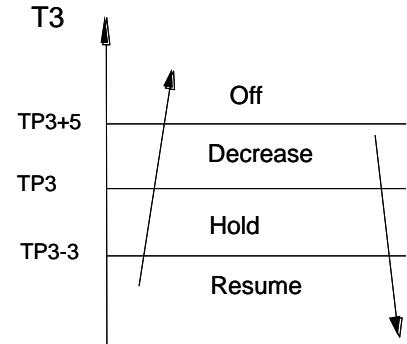


8.4.2.4 Condenser temperature protection

TP3<T3< TP3+5, the compressor frequency will decrease to the lower level until to F1 and then runs at F1. If TP3-3<T3< TP3, the compressor will keep running at the current frequency.

--T3< TP3-3, the compressor will not limit the frequency and resume to the former frequency.

--T3> TP3+5 for 5 seconds, the compressor will stop until T3< TP3-3.



8.4.2.5 Evaporator temperature protection

The compressor will stop when the evaporator temperature below the setting value.

8.4.3 Heating Mode

8.4.3.1 Compressor Operation Logic

When $T1-Ts > -\Delta T$, the compressor will stop,

when $T1-Ts < \Delta T - 1.5$, the compressor will be on.

ΔT is the programmed parameter of temperature compensation.

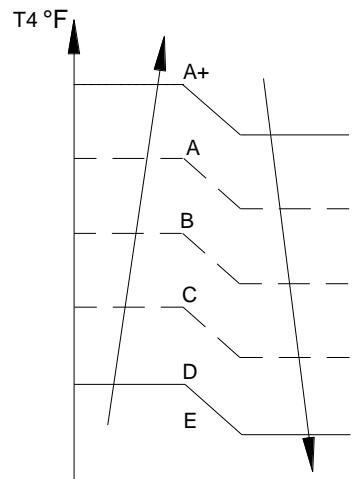
When the AC runs in Silence mode, the compressor will run with low frequency.

When the current is more than setting value, the current protection function will be activated and the compressor will stop.

8.4.3.2 Outdoor Fan Logic

The outdoor unit will be run at different fan speed according to T_4 .

For different outdoor units, the fan speeds are different.

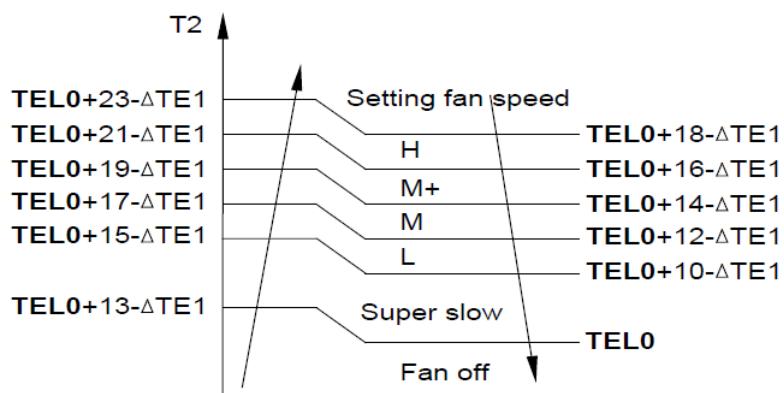


8.4.3.3 Indoor Fan Logic

When the compressor is on, the indoor fan can be set to high/med/low/auto. And the anti-cold wind function has the priority.

Anti-cold air function

- The indoor fan is controlled by the indoor temperature T_1 and indoor unit coil temperature T_2 .

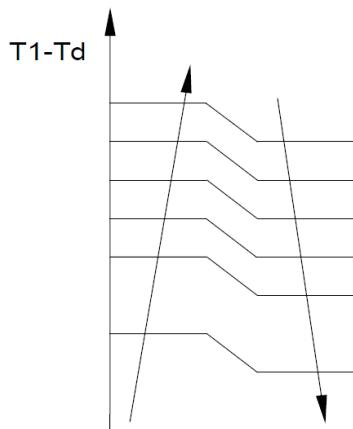


$T_1 \geq 19^\circ\text{C}(66.2^\circ\text{F})$	$\Delta TE1=0$
$15^\circ\text{C}(59^\circ\text{F}) \leq T_1 \leq 18^\circ\text{C}(64.4^\circ\text{F})$	$\Delta TE1=19^\circ\text{C}-T_1$ $(34.2^\circ\text{F}-T_1)$
$T_1 < 15^\circ\text{C}(59^\circ\text{F})$	$\Delta TE1=4^\circ\text{C}(7.2^\circ\text{F})$

- When the indoor temperature T1 reaches the setting temperature, the compressor continues operation, the indoor fan motor runs at the minimum speed or setting speed. (The anti-cold air function is valid).
- The indoor fan is controlled as below:

Setting fan speed	T1-Td °C(°F)	Actual fan speed
H	A	H+ (H+=H+G)
	B	H (=H)
	C	H- (H-=H-G)
M	D	M+ (M+=M+Z)
	E	M (M=M)
	F	M- (M-=M-Z)
L	G	L+ (L+=L+D)
	H	L (L=L)
	I	L- (L-=L-D)

Auto fan action in heating mode:



8.4.3.4 Defrost Mode

After extended use, frost may build up on the coils on the outdoor unit. The development of frost can slow the rate of heat transfer which can cause many various problems such as overloading the system. To prevent this, the system has an automatic defrost mode according to the temperature T3, and also the compressor running time.

During the defrosting mode, the compressor keep running, indoor and outdoor motor will stop, the operating symbol “**df**” will be displayed on the indoor panel.

If any one of the following items is satisfied, the defrosting will finish and the machine will back to normal heating mode.

----T3 rises to be higher than TCDE 1.8°F.

----T3 keeps on being higher than TCDE 3.6°F for 80 seconds.

----The machine has run for 15 minutes in defrosting mode.

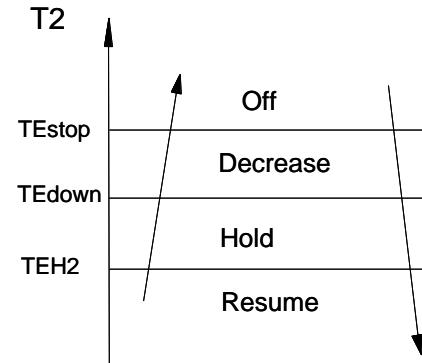
8.4.3.5 Evaporator temperature protection

Off: Compressor stops.

Decrease: Decrease the running frequency to the lower level.

Hold: Keep the current frequency.

Resume: No limitation for frequency.



8.4.4 AUTO Mode

This mode can be chosen with remote controller and the setting temperature can be changed between 62°F~86°C

In Auto mode, the unit will automatically choose between cooling, heating, or fan-only mode according to the temperature difference ΔT ($\Delta T = T_1 - T_s$) on the auto-fan speed. If the temperature changes enough to switch between heating and cooling mode, the compressor will stop for 15 minutes first and then determine what mode to switch into according to ΔT .

Range	Mode
$\Delta T > 3.6^{\circ}\text{F}$	COOL
$-3.6^{\circ}\text{F} < \Delta T \leq 3.6^{\circ}\text{F}$	FAN
$\Delta T \leq -3.6^{\circ}\text{F}$	HEAT

Indoor fan will run at auto fan of the relevant mode.

The louver operates same as in relevant mode.

If the machine switches mode between heating and cooling, the compressor will keep stopping for 15 minutes and then choose mode according to T_1-T_s .

If the setting temperature is modified, the machine will choose running function again.

8.4.5 Drying Mode

The unit can also be used to dehumidify the air. During the drying mode, indoor fan speed is fixed at breeze and can't be changed. The louver angle is the same as in cooling mode.

All protections are active and the same as that in cooling mode.

8.4.6 Emergency Operation Function

To enter this operation: When the unit is off, press the button beside the removable cover of the power supply terminal to go into forced auto mode. If the button is pressed again within 5 seconds, the machine will go into forced cooling mode.

During forced operation: All general protections and remote control capabilities are available.

Forced cooling mode: The compressor and outdoor fan keep running and the indoor fan runs at low speed. After running for 30 minutes, AC will turn to auto mode with 75°F setting temperature.

Forced auto mode: The action of forced auto mode is the same as normal auto mode with 75°F setting temperature.

When AC receives signals from the remote control, such as switch on, switch off, timer on, timer off, mode setting, fan speed setting, sleeping mode setting, follow me setting, it will quit the forced operation. Or press that button again when the unit is on and operating in any forced operation to exit the emergency operation

8.4.7 Timer Function

The timer function can be used to automatically turn on and off the unit. When the Timer On function is activated, the unit will automatically turn on when the set time is reached. When the Timer Off function is activated, the unit will automatically turn off when the set time is reached. The timing range is 24 hours and both the Timer On and Timer Off function can be activated simultaneously.

The timer function will not change the AC current operation mode.

The AC will quit the timer function when it has malfunction.

8.4.8 Sleep Function

The sleep function can be used to reduce energy usage for the air conditioner during sleeping hours. It is available in cooling, heating or auto mode. To activate this feature, press the sleep button. When activated, the unit will do the following:

1. The set temperature will be raised/lowered 2°F for cooling/heating respectively every hour for two hours (4°F change total).
2. After the second hour, the indoor fan is fixed at low speed. (Anti-cold wind function has the priority in heating mode.)
3. After seven (7) hours of being activated, the air conditioner exits sleep mode and resumes the mode and temperature that it was originally in.
4. Timer setting is available.

8.4.9 Auto-Restart Function

The indoor unit is equipped with an auto-restart function. In the case of a sudden power loss, the unit has a built-in module that memorizes the mode and temperature settings. When the power resumes, the unit will automatically restart with the same settings as before the power outage.

If AC was off before the power outage, and AC is required to start up now, the compressor will have 1 minute delay when power resumes. Other conditions, the compressor will have 3 minutes delay when restarts.

8.4.10 Refrigerant Leakage Detection

With this new technology, the display area will show “**EC**” when the outdoor unit detects refrigerant leakage. This function is only available in cooling mode.

8.4.11 Louver Position Memory Function

When starting the unit again after shutting down, its louver will restore to the angle originally set by the user, but the precondition is that the angle must be within the allowable range, if it exceeds, it will memorize the maximum angle of the louver. During operation, if the power fails or the end user shuts down the unit in the turbo mode, the louver will restore to the default angle.

8.4.12 Freezing Protection

In heating mode, the set temperature can be set to 46°F (8°C) to prevent things from freezing when the house is unoccupied for a long time in severe cold weather. “**FP**” shows on the display window of panel while this feature is activated.

8.4.13 Self Clean Function

For heat pump models, after running in cooling or drying mode, if the user press “Self Clean” button on remote control, firstly, indoor unit runs in fan only mode for a while, then low heat operation and finally runs in fan only again. This function will automatically clean and dry the Evaporator and keep the inside of indoor unit dry and prevent breeding of mold for the next operation. “**SC**” shows on the display window of panel while this feature is activated.

The Self Clean function will last approximately 16 minutes.

8.4.14 Follow Me

This allows the room temperature sensing to be transferred from the wall unit (evaporator) to the remote control.

- a. The buzzer will emit a sound while the FOLLOW ME button is pressed to active this function. The error detective function of room temperature sensor will be still valid.
- b. When the follow me function is activated, the remote control display will indicate actual room temperature and the wall unit will display set point temperature.
- c. The PCB will take action to the mode change information from remote control signal, but it will not affected by the setting temperature.
- d. The remote control will communicate with the indoor unit every 3 minutes interval until press the Follow Me button again to disable the function. The air conditioner will also cancel the Follow Me feature automatically if it does not receive the signal during any 7 minutes interval.

8.4.15 Silence Operation

Press the “SILENCE” button on remote control to active Silence function. When the Silence function is activated, the compressor running frequency will keep in low and the indoor unit will

bring faint breeze, which will reduce the noise to the lowest level and create a quiet and comfortable room for you.

Due to low frequency operation of compressor, it may result in insufficient cooling and heating capacity.

8.4.16 Temperature Differential Selection

In heating mode, the warm air is lighter than cold air. So the higher the height is, the higher temperature of air is. The air conditioner will use temperature differential which is up to 10.8°F, equals to 6°C controlled by software.

Temperature Compensation (for Heat Pump only)

The installation height is for reference only.

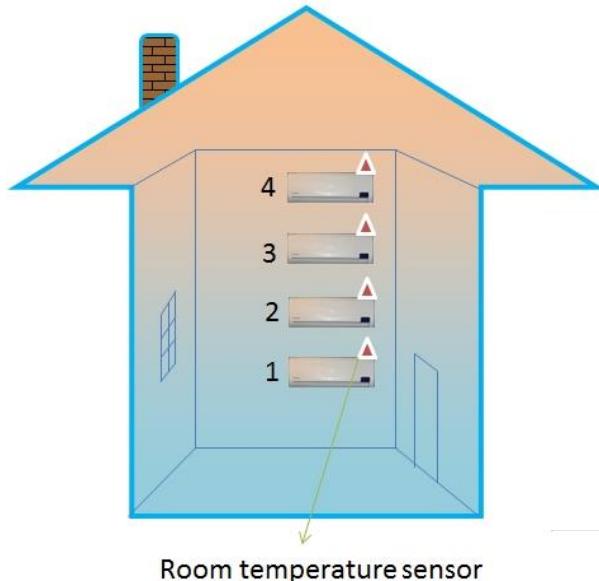
Installer should consider:

1. Avoid cool or heat source near by the indoor unit.
2. Avoid the obstacle to the air flow.

Temperature Compensation in Cooling

Factory Setting	Installation Height ft.	Temperature Compensation °F	Position
	Lower than 5.8	1.8	1
	Between 5.9 – 6.5	0	2
	Between 6.6 – 7.8	-1.8	3
x	Between 7.9 – 8.5	-3.6	4

Note: See Setup Manual on page 43 for changing



Temperature Compensation in Heating

Factory Setting	Installation Height ft.	Temperature Compensation °F	Position
	Lower than 5.8	0	1
x	Between 5.9 – 6.5	3.6	2
	Between 6.6 – 7.8	7.2	3
	Between 7.9 – 8.5	10.8	4

Note: See Setup Manual on page 42 for changing

8.4.16 Point Check Function

When indoor and outdoor unit were connected and started running, press the "LED" button on the remote control three times, and then press the DIRECTION/SWING button three times in ten seconds, the buzzer will keep ring for two seconds. The air conditioner will enter into the information enquiry status. You can press the LED or SWING button to check the previous or next item for operation data / failure record.

After entering the "information enquiry" status, the panel will display the code name in 2 seconds, the details are as follows:

Enquiry information	Displaying code	Meaning
T1	T1	T1 - Room temperature.
T2	T2	T2 - Indoor coil temperature.
T3	T3	T3 - Outdoor coil temperature.
T4	T4	T4 - outdoor ambient temperature.
T2B	Tb	T2B – N/A (for multi zone units only).
TP	TP	TP – discharge temperature
TH	TH	TH – N/A.
Targeted Frequency	FT	Targeted Frequency
Actual Frequency	Fr	Actual Frequency
Indoor fan speed	IF	Indoor fan speed
Enquiry information	Displaying code	Meaning
Outdoor fan speed	OF	Outdoor fan speed
EXV opening angle	LR	EXV opening angle
Compressor continuous running time	CT	Compressor continuous running time
Causes of compressor stop.	ST	Causes of compressor stop.
Reserve	R0	
Reserve	R1	
Reserve	b0	
Reserve	b1	
Reserve	b2	
Reserve	b3	
Reserve	b4	
Reserve	b5	
Reserve	b6	
Reserve	dL	
Reserve	Ac	
Reserve	Uo	
Reserve	Td	

When the AC enters the information enquiry status, it will display one code value in the next 25s, and then quit the enquiry status. The details of each item are as follows.

Enquiry information	Display value	Meaning	Remark
T1,T2,T3,T4, T2B,TP,TH, Targeted Frequency, Actual Frequency	-1F,-1E,-1d,-1c,-1b,-1A	-25,-24,-23,-22,-21,-20	1. All the displaying temperature is actual value.
	-19—99	-19—99	2. All the temperature is °C no matter what kind of remote controller is used.
	A0,A1,...A9	100,101,...109	3. T1,T2,T3,T4,T2B display range:-25~70,
	b0,b1,...b9	110,111,...119	TP display range:-20~130.
	c0,c1,...c9	120,121,...129	4. Frequency display range: 0~159HZ.
	d0,d1,...d9	130,131,...139	5. If the actual value exceeds the range, it will display the maximum value or minimum value.
	E0,E1,...E9	140,141,...149	
	F0,F1,...F9	150,151,...159	
Indoor fan speed /Outdoor fan speed	0	OFF	
	1,2,3,4	Low speed, Medium speed, High speed, Turbo	For some big capacity motors.
	14-FF	Actual fan speed=Display value turns to decimal value and then multiply 10. The unit is RPM.	For some small capacity motors, display value is from 14-FF(hexadecimal), the corresponding fan speed range is from 200-2550RPM.
EXV opening angle	0-FF	Actual EXV opening value=Display value turns to decimal value and then multiply 2.	
Compressor continuous running time	0-FF	0-255 minutes	If the actual value exceeds the range, it will display the maximum value or minimum value.
Causes of compressor stop.	0-99	For the detailed meaning, please consult with engineer	Decimal display
Reserve	0-FF		

8.5 Set-Up Changing Function

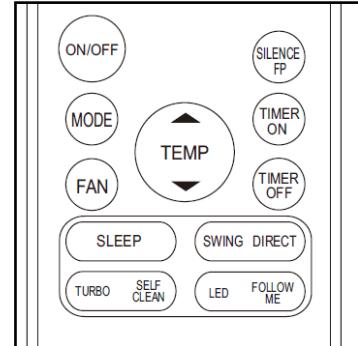
Some functions or settings, such as, temperature differential, filter reminder, louver position memory, auto-restart, anti-code air can be changed or disabled with the remote control according to different requests.

Important: The function can only be accessed in 30 seconds when the batteries were installed in the remote control, and the indoor unit must be turned off.

8.5.1 Set-up Steps

Follow the steps below to enter the set-up changing manual.

- Press and hold the three buttons "MODE", "FAN" and "TIMER ON" simultaneously for 5 seconds within 30 seconds after the batteries were installed in the remote control.
- Press "TEMP UP/DOWN" button to select the setup code.
- Press "MODE" button to enter the setup range.
- Press "FAN" or "TIMER OFF" to select the setup range.
- Press "TIMER ON" to confirm and exit.



8.5.1 Set-up Manual

Note: All temperature here is in Celsius.

Setup Manual					
Setup Code	Setup Name	Setup Range	Display (on remote /indoor unit panel)	Default Setting	Remark
F1	Auto Restart	ON	ON	ON	
		OFF	OFF		
F2	Temperature compensation in heating	-6°C ~ +6°C	-6 ~ 6	4°C	
F3	Indoor coil temperature setting (disable/active anti-cold air function in heating)	1 - Intelligent anti cold wind function	1	17°C	
		2 - temperature setting range: 0~21	2		
F4	Indoor fan speed setting while room temperature is satisfied	1 - Stop fan	1		Anti-cold wind function will be disabled while "4" (Thermal) selected
		2 - keeps run at low speed	2		
		3 - keeps run at set speed	3	3	
		4 (Thermal) - indoor fan will run 1 more minute at the lowest speed after the indoor fan stopped 4 minutes later while room temperature was satisfied.	4		
F5	Louver position memory	1 - NO	1		
		2 - Set-off memory for power off & power failure	2	2	
		3 - Set-off memory for power off only	3		

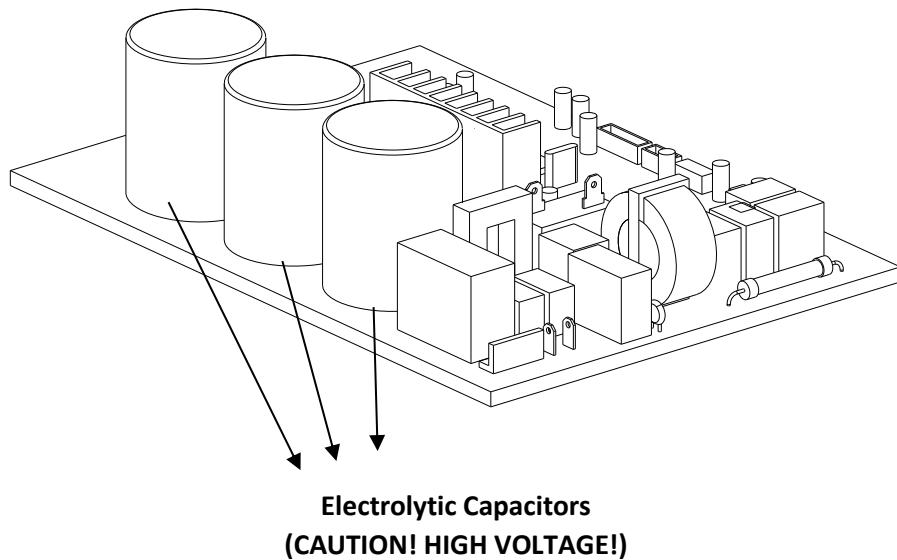
Setup Code	Setup Name	Setup Range	Display (on remote /indoor unit panel)	Default Setting	Remark
F6	unit operation	CH - Heat Pump	CH	CH	
		HH - Heating Only	HH		
F7	temperature compensation in cooling	-2°C ~ +2°C	-2 ~ 2	-2	
F8	refrigerant detection	ON	ON	ON	"EC" will display on the indoor panel while the refrigerant is not enough.
		OFF	OF		
F9	air filter clean reminder	ON	ON		After 240 hours of use, "CL" will flash on the indoor panel for 15 seconds each time when the unit restarts.
		OFF	OF	OFF	
E1	air freshening filter change reminder	ON	ON		After 2,880 hours of use, "nF" will flash on the indoor panel for 15 seconds each time when the unit restarts.
		OFF	OF	OFF	
E2	lowest setting temperature	17°C ~ 24°C (62°F ~ 76°F)	17°C - 24°C (62°F - 76°F)	17	
E3	highest setting temperature	25°C ~ 30°C (78°F ~ 88°F)	25°C ~ 30°C (78°F ~ 88°F)	30	
E5	operation priority for multi zone	H - heating	H	H	Not available for the single zone mini splits.
		C - cooling	C		
E6	network address	0 ~ 63	0 ~ 63	N/A	Cannot check, only show when the address changed by special command. No set-off memory while address changed.
E7	capacity selection	0 ~ 11	0 ~ 11	N/A	Cannot be changed.
E8	twins selection	0 ~ 2	0, 1, 2	N/A	Cannot be changed.
E9	static pressure selection	0 ~ 4	0 ~ 4	N/A	Cannot be changed.

9. Troubleshooting

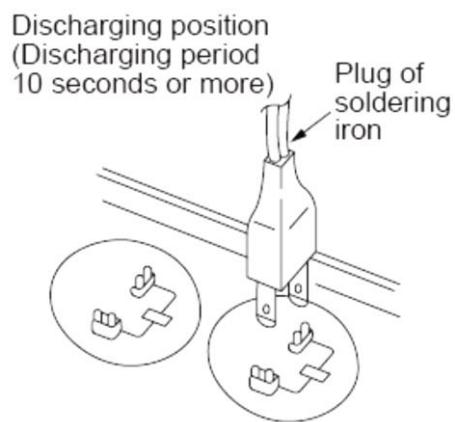
NOTE: All pictures used in this section are for reference only. Actual products may be different.

WARNING!

Electricity is still kept in the capacitors even when the power supply is shut off or disconnected. Do not forget to discharge the electricity in the capacitors before troubleshooting.



For other models, please connect the discharge resistance (approximately 100Ω 40W) or soldering iron (plug) between the "+" and "-" terminals of the electrolytic capacitor on the opposite side of the outdoor PCB.



NOTE: The picture above is for reference only. The actual plugs and capacitors may be different.

9.1 Indoor Unit Error Codes

Display	LED STATUS
E0	Indoor unit EEPROM parameter error
E1	Indoor / outdoor units communication error
E2	Zero-crossing signal detection error
E3	Indoor fan speed has been out of control
E4	Indoor room temperature sensor T1 open circuit or short circuit
E5	Evaporator coil temperature sensor T2 open circuit or short circuit
EC	Refrigerant leakage detection
F0	Overload current protection
F1	Outdoor ambient temperature sensor T4 open circuit or short circuit
F2	Condenser coil temperature sensor T3 open circuit or short circuit
F3	Compressor discharge temperature sensor T5 open circuit or short circuit
F4	Outdoor unit EEPROM parameter error
F5	Outdoor fan speed has been out of control
P0	IPM malfunction or IGBT over-strong current protection
P1	Over voltage or over low voltage protection
P2	High temperature protection of compressor top diagnosis and solution (only for 9k,12k models)
P3*	Outdoor ambient temperature too low.
P4	Inverter compressor drive error

*P3

- 1) In heating mode, when the outdoor temperature is lower than -13°F for 1 hour, the indoor unit display error code P3.
- 2) If the OUTDOOR temperature is higher than -8°F for 10 minutes and compressor stop for 1 hour OR outdoor temperature is higher than -23°F for 10 minutes, then the unit will return to work.

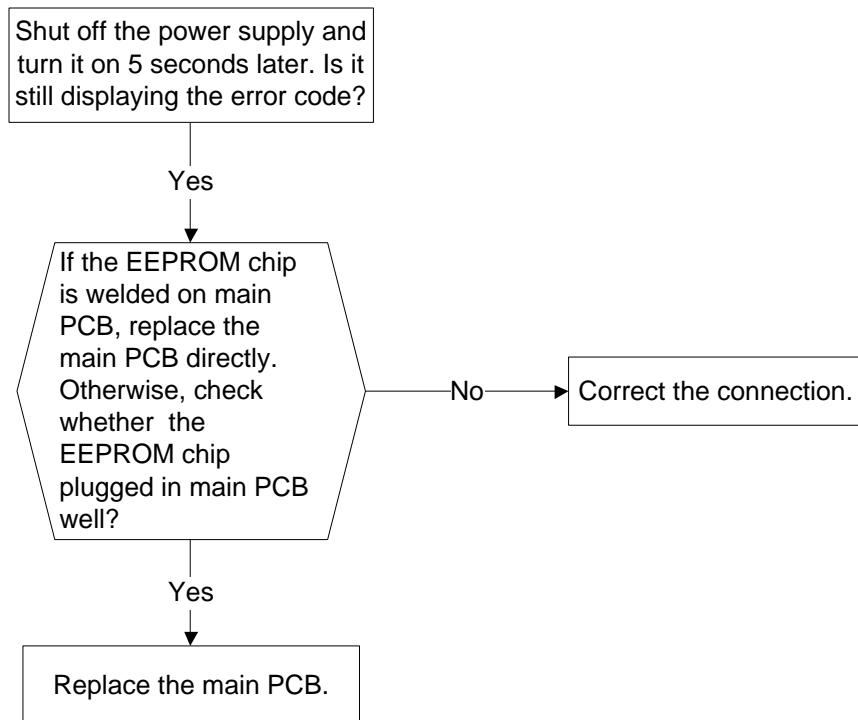
9.2 Diagnosis and Solution

9.2.1 E0/F4: EEPROM Parameter Error

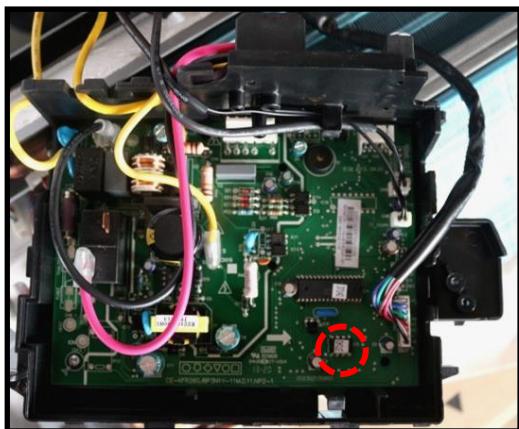
Condition: Indoor or outdoor PCB main chip does not receive feedback from EEPROM chip.

Possible Causes:

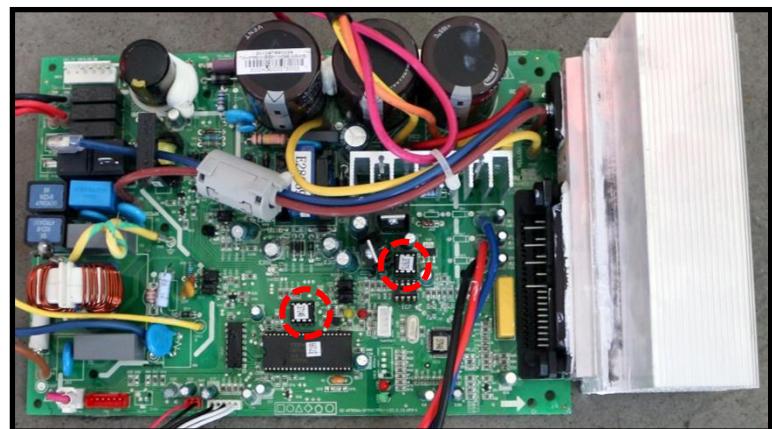
- Installation mistake
- PCB faulty



EEPROM: A read-only memory whose contents can only be erased and reprogrammed by using a pulsed voltage. For the location of the EEPROM chip, please refer to the pictures below.



Indoor PCB



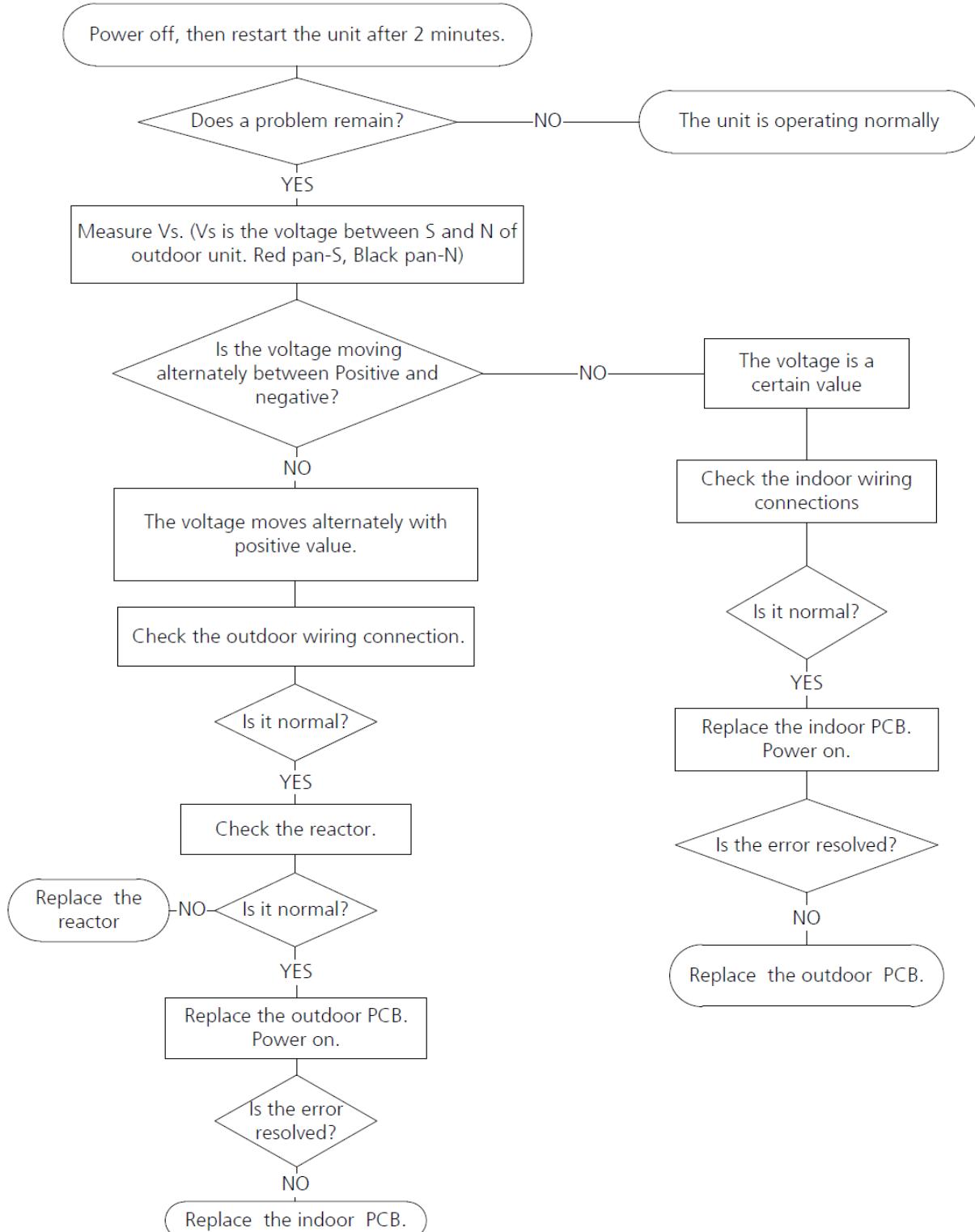
Outdoor PCB

9.2.2 E1: Indoor/Outdoor Communication Error

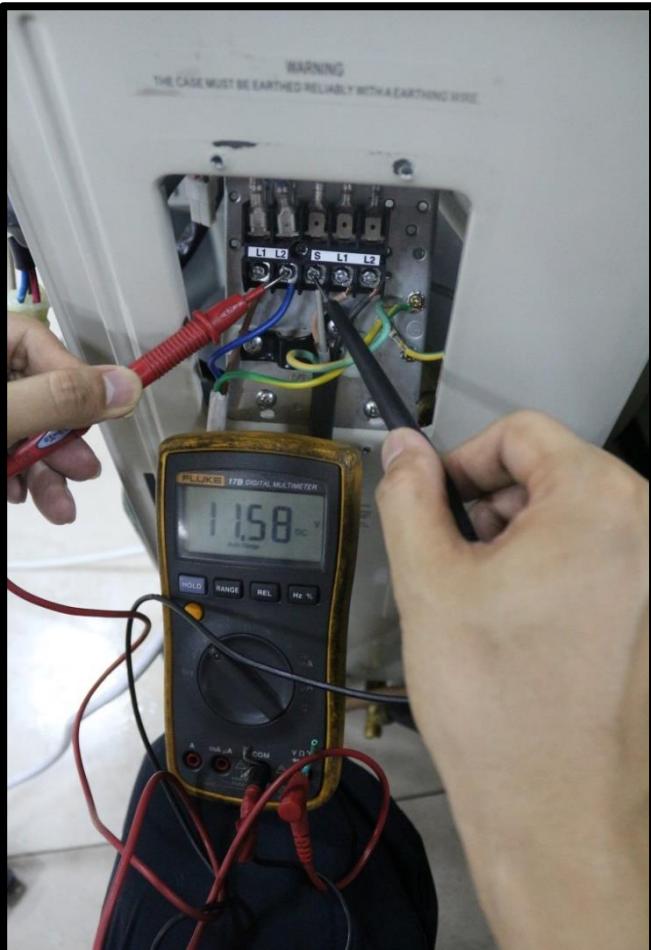
Condition: Indoor unit does not receive feedback from outdoor unit for 110 seconds, and this repeats four times continuously.

Possible Causes:

- Wiring mistake
- Indoor or outdoor PCB faulty



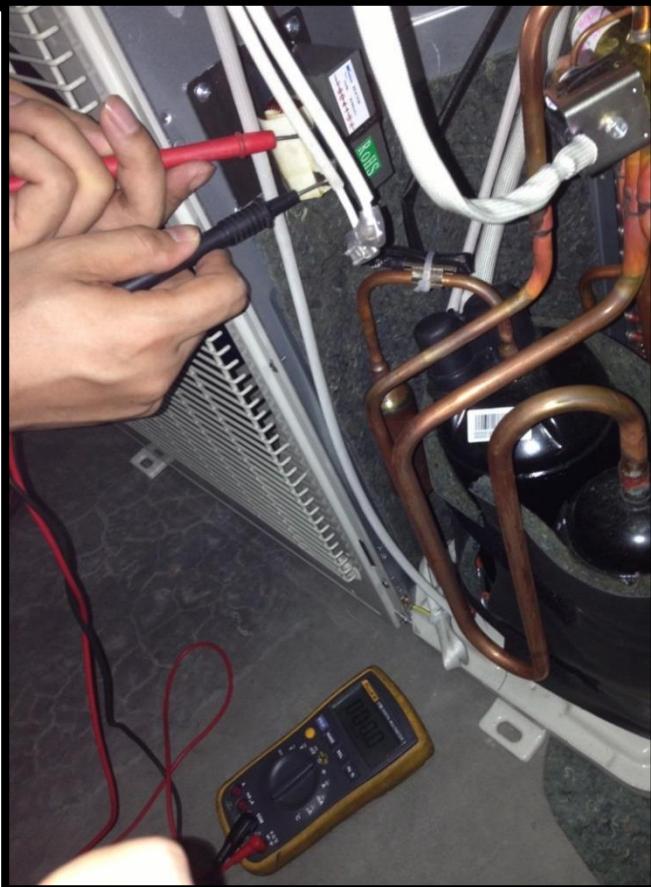
See next page for "Testing the Voltage" and "Testing the Reactor".



Testing the Voltage

Use a multimeter and switch to DC voltage to test the 2 port and 3 port of the outdoor unit. The red pin of multimeter connects with 2 port while the black pin is for the 3 port.

- When the unit is running normal, the voltage will move alternately between -25V to 25V.
- If the outdoor unit is faulty, the voltage will move alternately with positive value.
- If the indoor unit is faulty, the voltage will be a specific value.



Testing the Reactor

Use a multimeter to test the resistance of the reactor.

NOTE: The reactors are not attached to the capacitors.

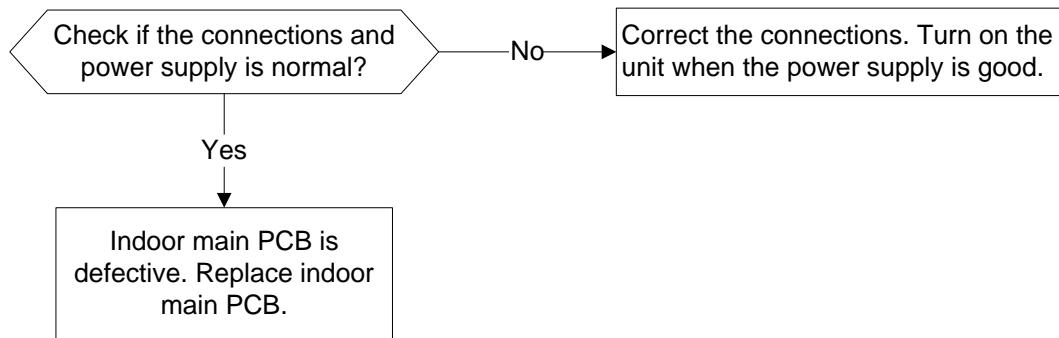
- The normal value should be around zero ohms (0Ω). If otherwise, the reactor is faulty and must be replaced.

9.2.3 E2: Zero-Crossing Detection Error

Condition: When PCB does not receive the zero crossing signal feedback for four (4) minutes or the zero crossing signal time interval is abnormal.

Possible Causes:

- Wiring mistake
- PCB faulty

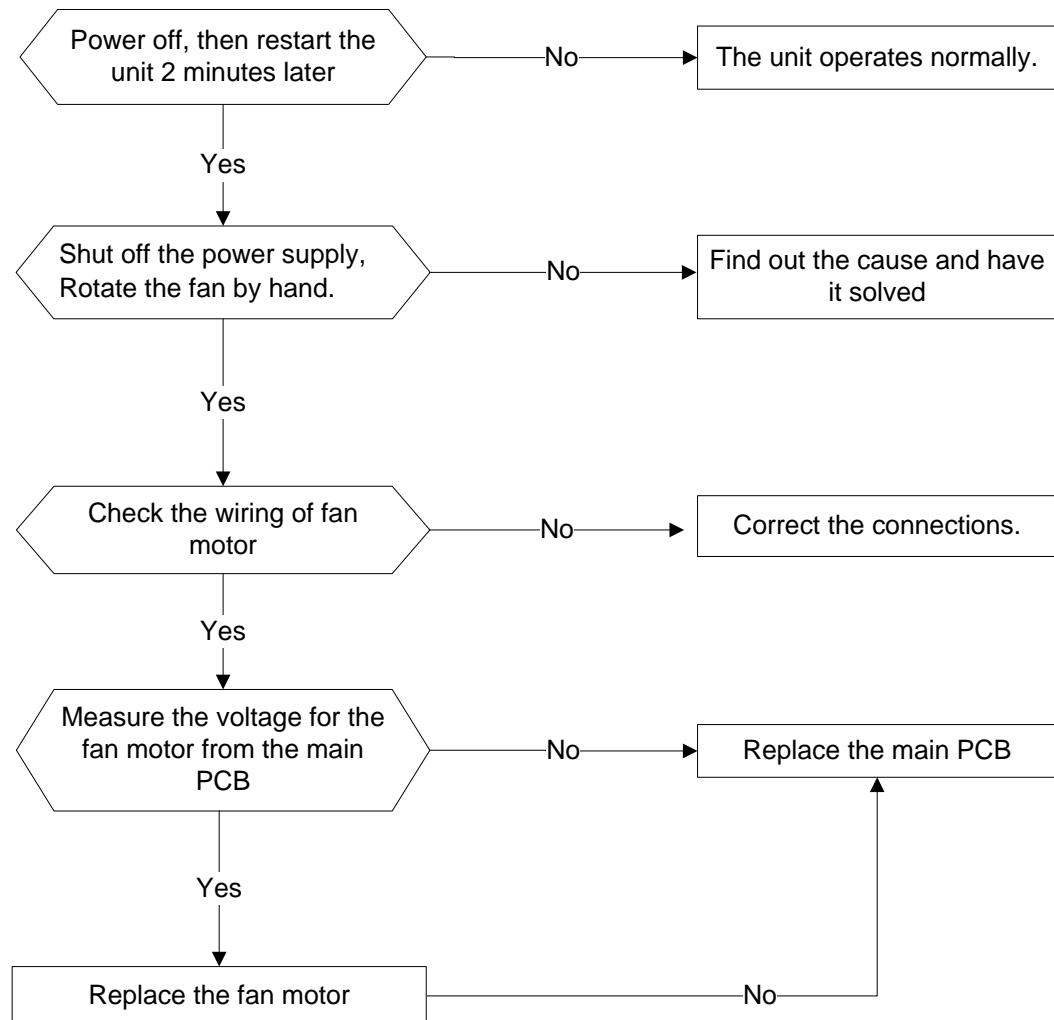


9.2.4 E3/F5: Fan Speed Out of Control Error

Condition: Indoor fan speed stays too low (300 RPM) for a certain time.

Possible Causes:

- Wiring mistake
- Fan assembly faulty
- Fan motor faulty
- PCB faulty

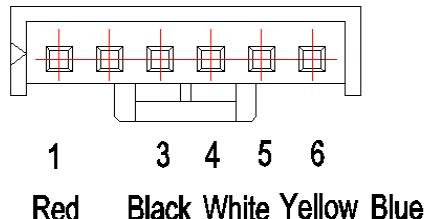


See next page for index 1

Index 1:

1: Indoor or Outdoor DC Fan Motor (control chip is in fan motor)

Power on and when the unit is in standby, measure the voltage of pin1-pin3, pin4-pin3 in fan motor connector. If the value of the voltage is not in the range showing in below table, there must be something wrong with the PCB and need to be replaced.



DC motor voltage input and output(voltage: 220-240V~)

NO.	Color	Signal	Voltage
1	Red	V _s /V _m	280V~380V
2	---	---	---
3	Black	GND	0V
4	White	V _{cc}	14-17.5V
5	Yellow	V _{sp}	0~5.6V
6	Blue	FG	14-17.5V

DC motor voltage input and output(voltage :115V~)

NO.	Color	Signal	Voltage
1	Red	V _s /V _m	140V~190V
2	---	---	---
3	Black	GND	0V
4	White	V _{cc}	14-17.5V
5	Yellow	V _{sp}	0~5.6V
6	Blue	FG	14-17.5V

2. Outdoor DC Fan Motor (control chip is in outdoor PCB)

Power on, and check if the fan can run normally, if the fan can run normally, the PCB must has problems and need to be replaced, If the fan can't run normally, measure the resistance of each two pins. If the resistance is not equal to each other, the fan motor must have problems and need to be replaced, otherwise the PCB must have problems and need to be replaced.

3. Indoor AC Fan Motor

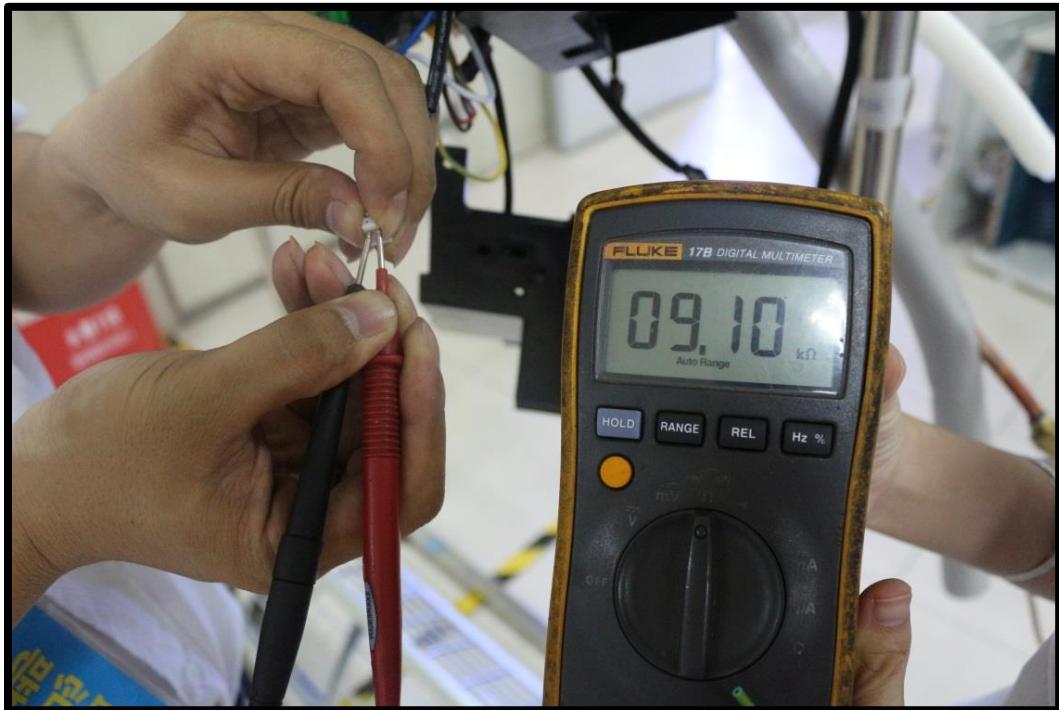
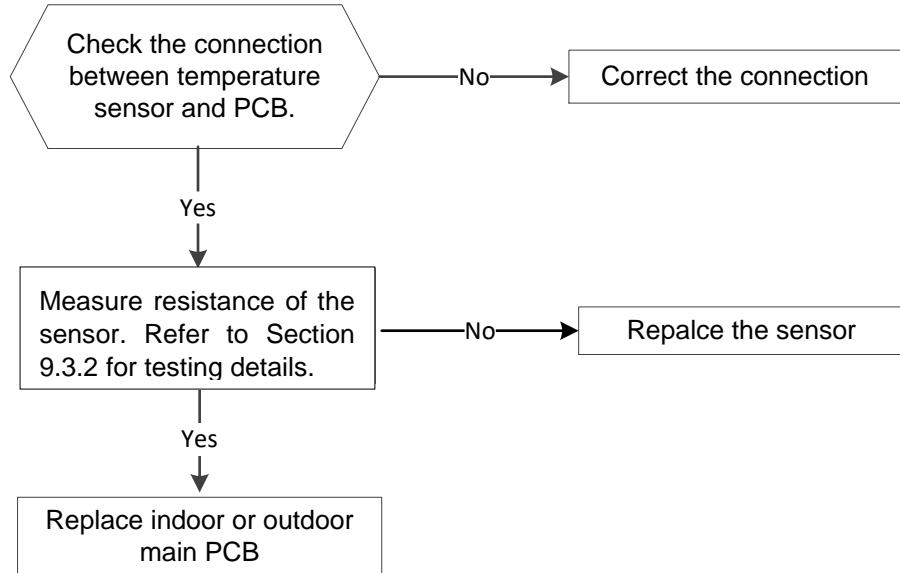
Power on and set the unit running in fan mode at high fan speed. After running for 15 seconds, measure the voltage of pin1 and pin2. If the value of the voltage is less than 100V (208~240V power supply) or 50V (115V power supply), the PCB must have problems and need to be replaced.

9.2.5 E4/E5/F1/F2/F3: Temperature Sensor Open or Short Circuit Error

Condition: Sampling voltage is lower than 0.06V or higher than 4.94V.

Possible Causes:

- Wiring mistake
- Sensor faulty



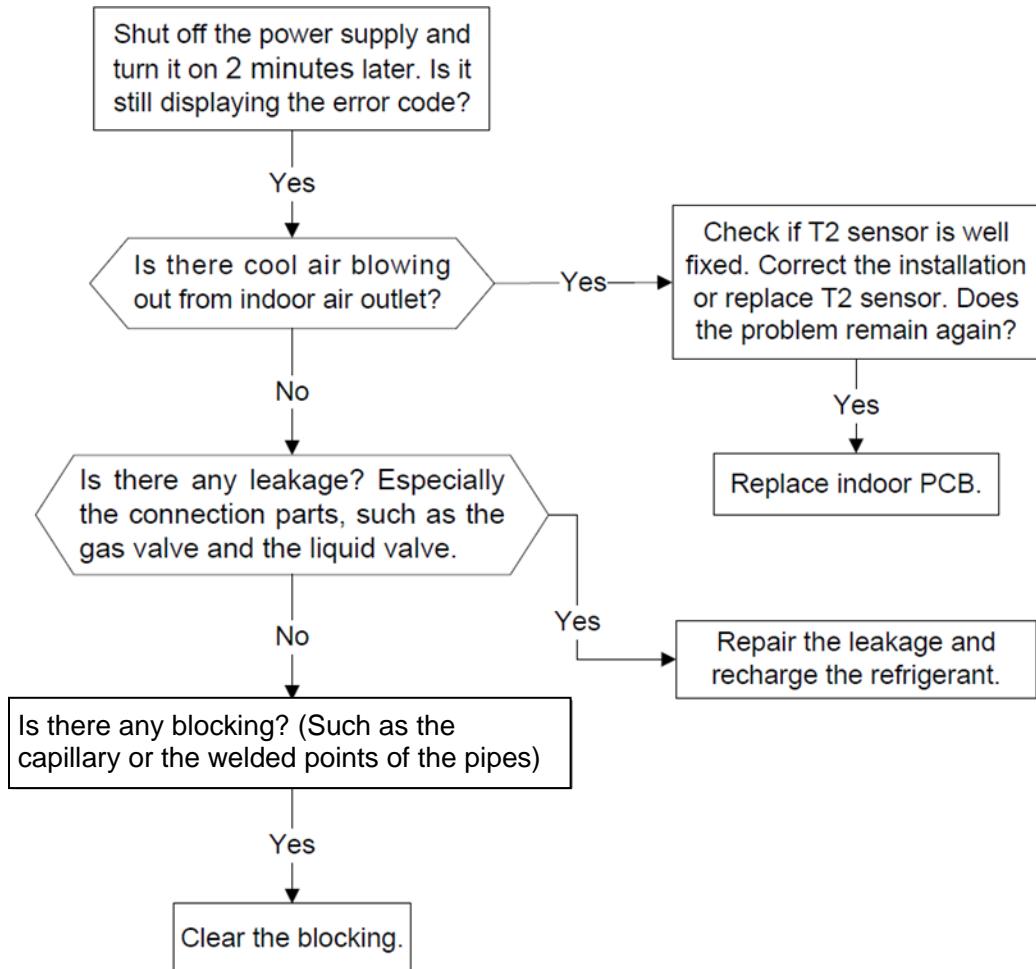
9.2.6 EC: Refrigerant Leak Detection

Condition: T_c : Temperature of the evaporator coil at the moment of startup

During the first five (5) minutes of starting up, if $T_2 < T_c - 3.8^\circ\text{F}$ (2°C) does not hold for four (4) continuous seconds three (3) times.

Possible Causes:

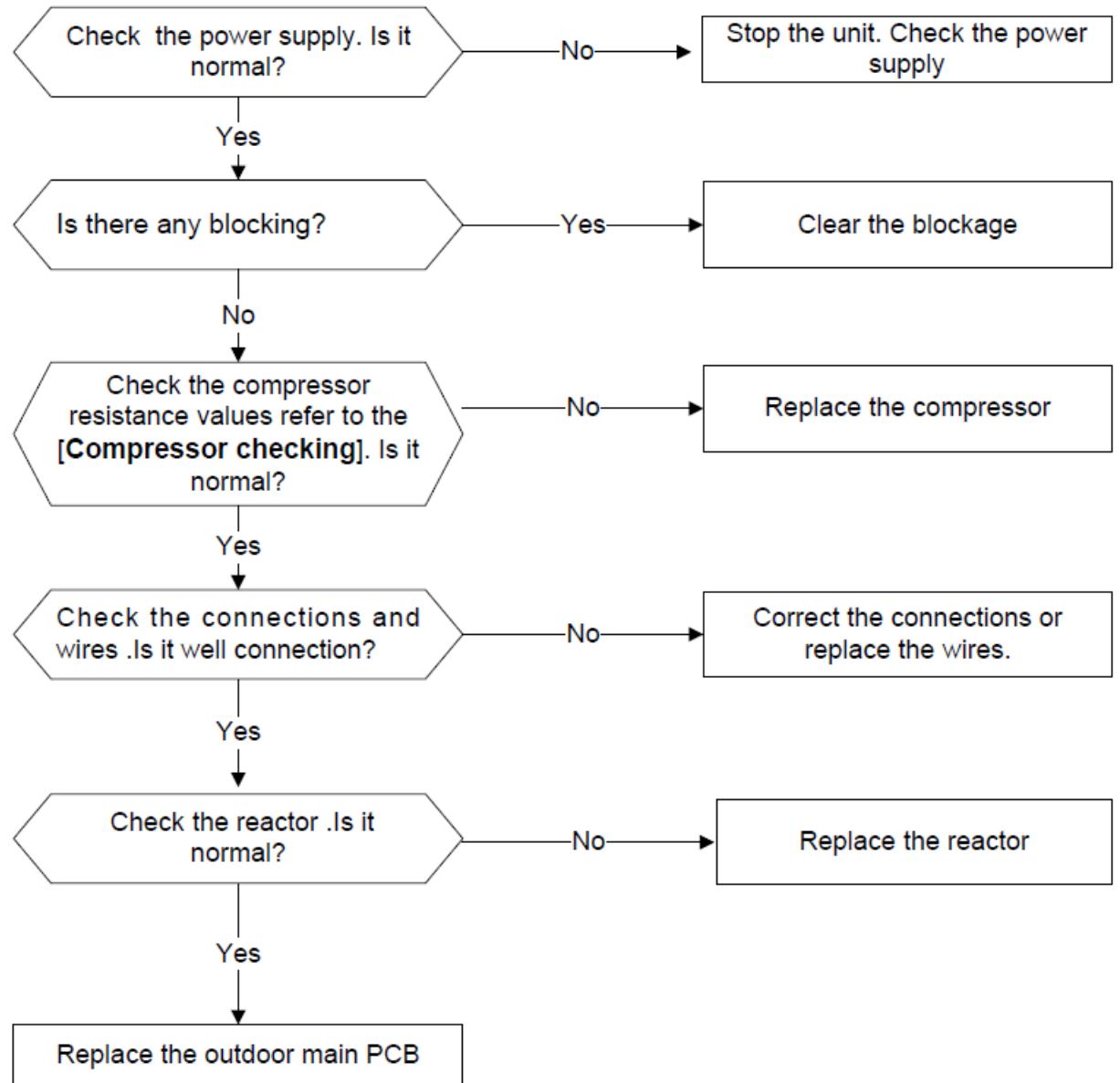
- T_2 sensor faulty
- Indoor PCB faulty
- Refrigerant system faulty (i.e. leakage/blockage)



9.2.7 F0: Overload-current Protection

Condition: An abnormal current rise is detected by checking the specified current detection circuit.

- Possible Causes:
- Wiring mistake
 - Power supply problems
 - System blockage
 - Compressor malfunction
 - Outdoor PCB faulty

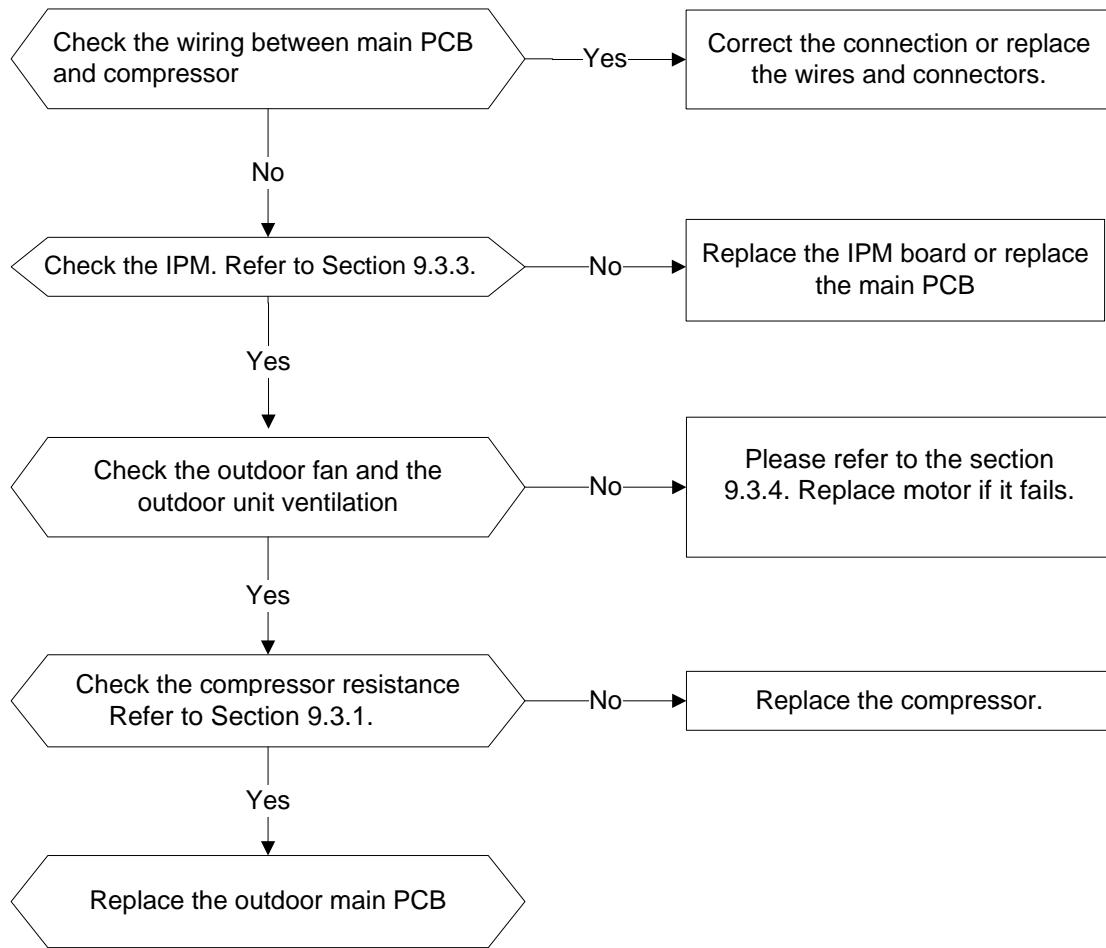


9.2.8 PO: IPM Malfunction or IGBT Over-current Protection

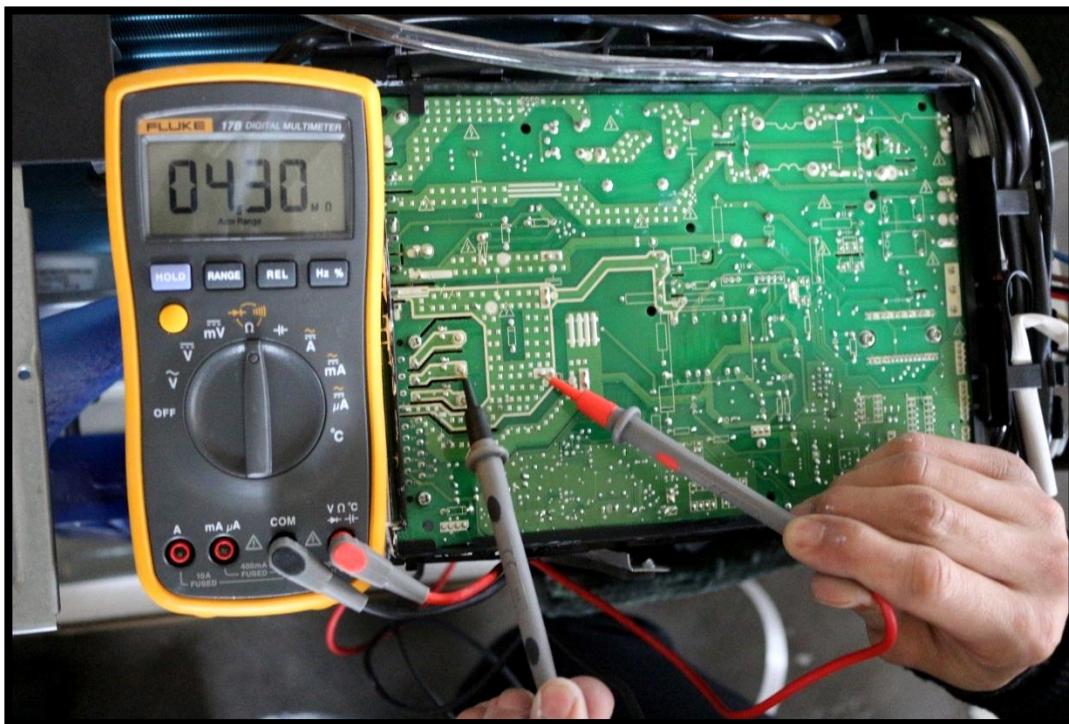
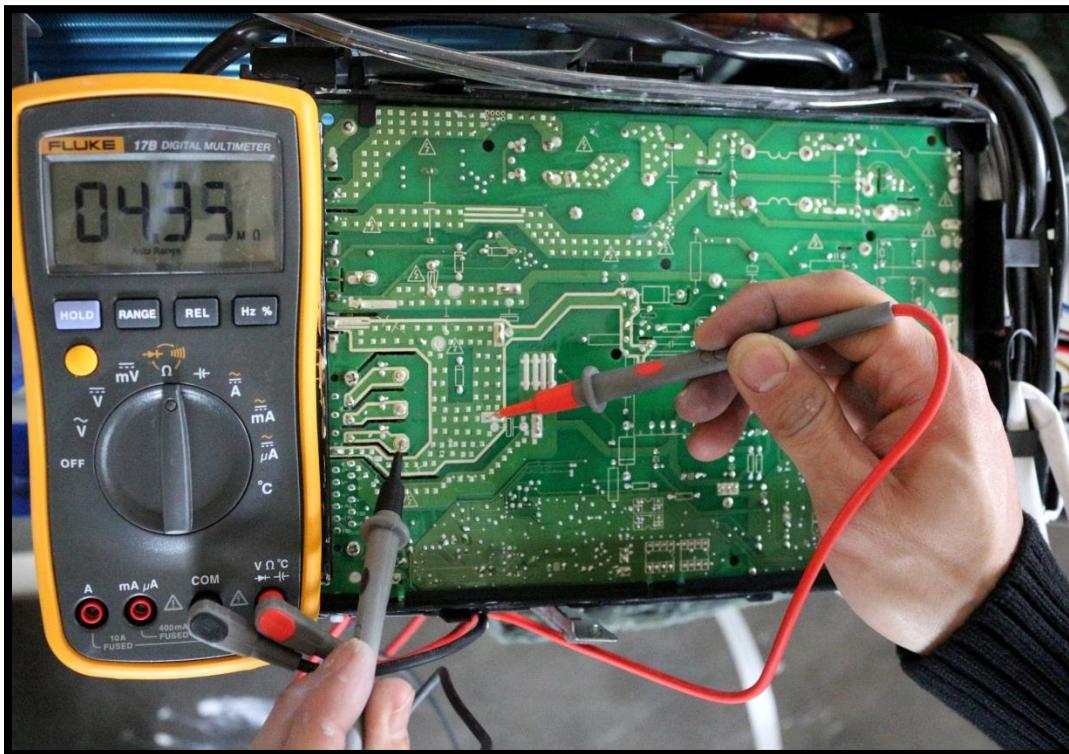
Condition: The voltage signal that the IPM sends to the compressor drive chip is abnormal.

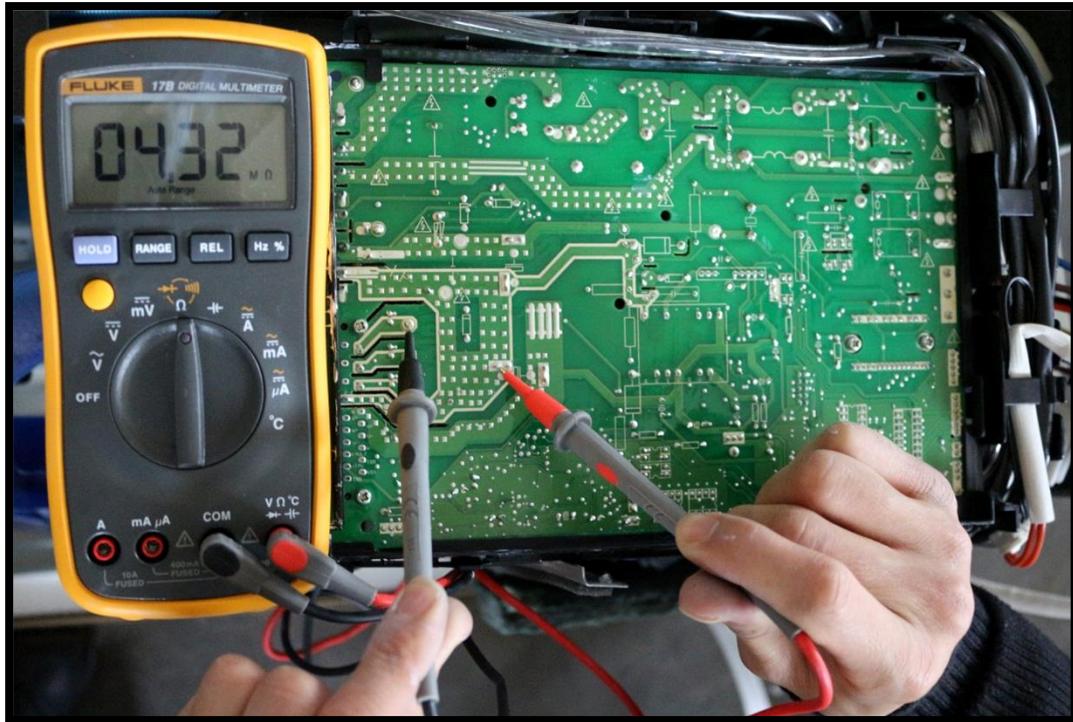
Possible Causes:

- Wiring mistake
- IPM malfunction
- Outdoor fan assembly faulty
- Compressor malfunction
- Outdoor PCB faulty

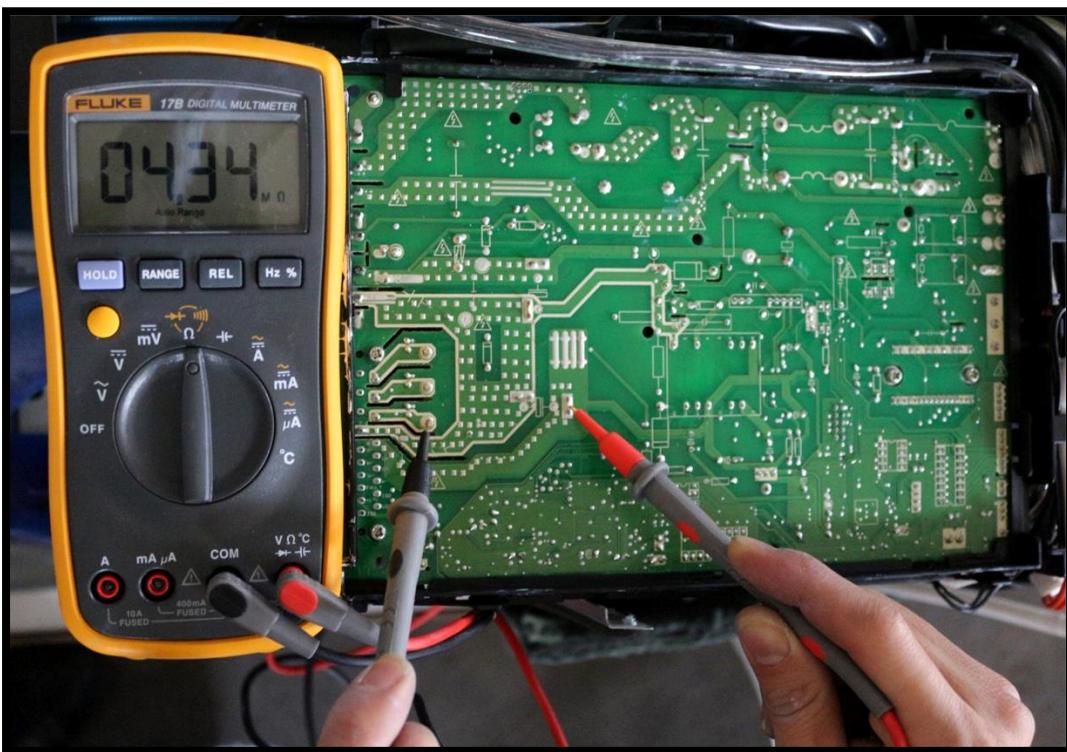


Note: The pictures below are only for reference, they may be not same as the ones on your unit.

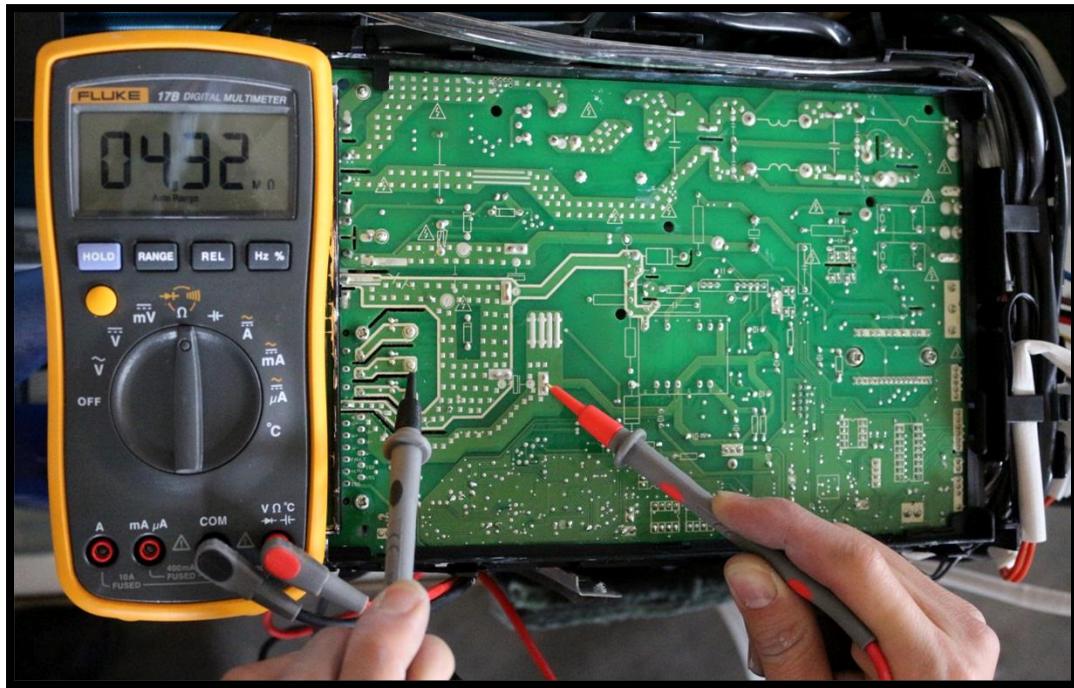




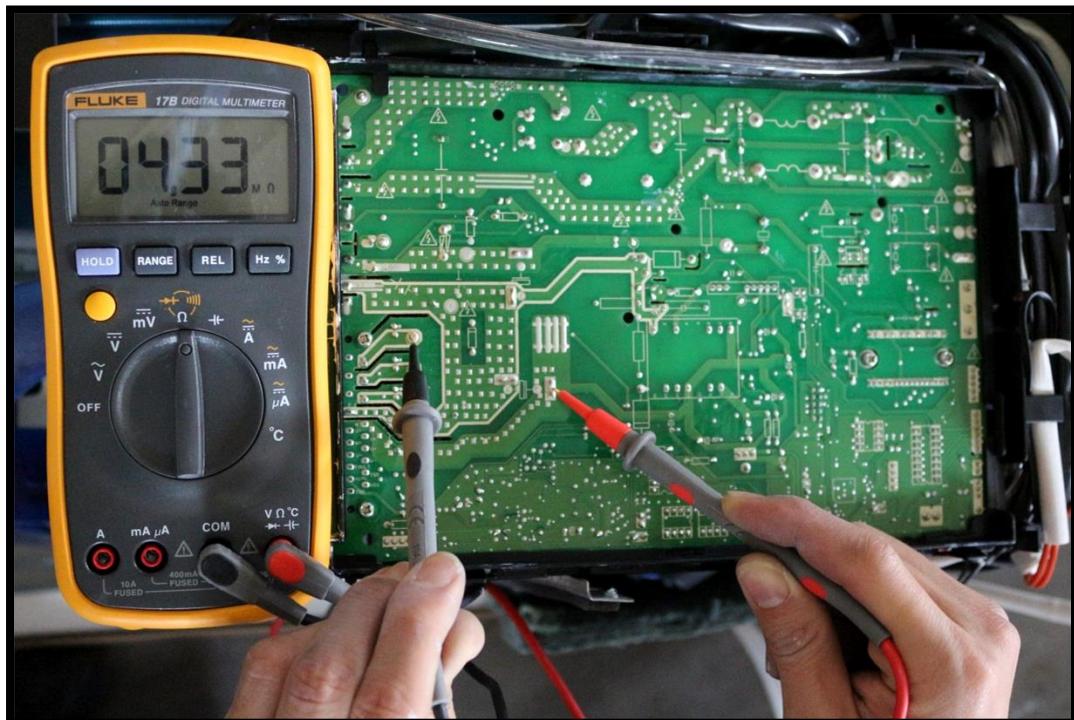
P-W



N-U



N-V

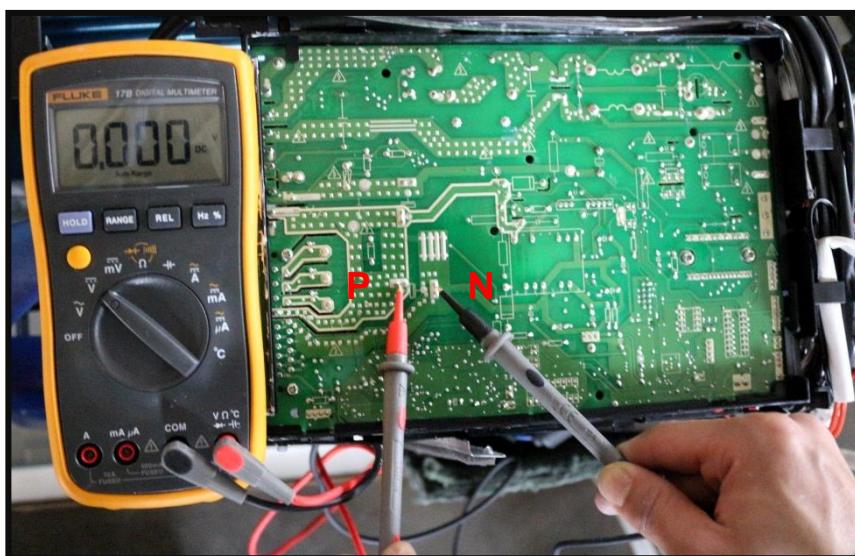
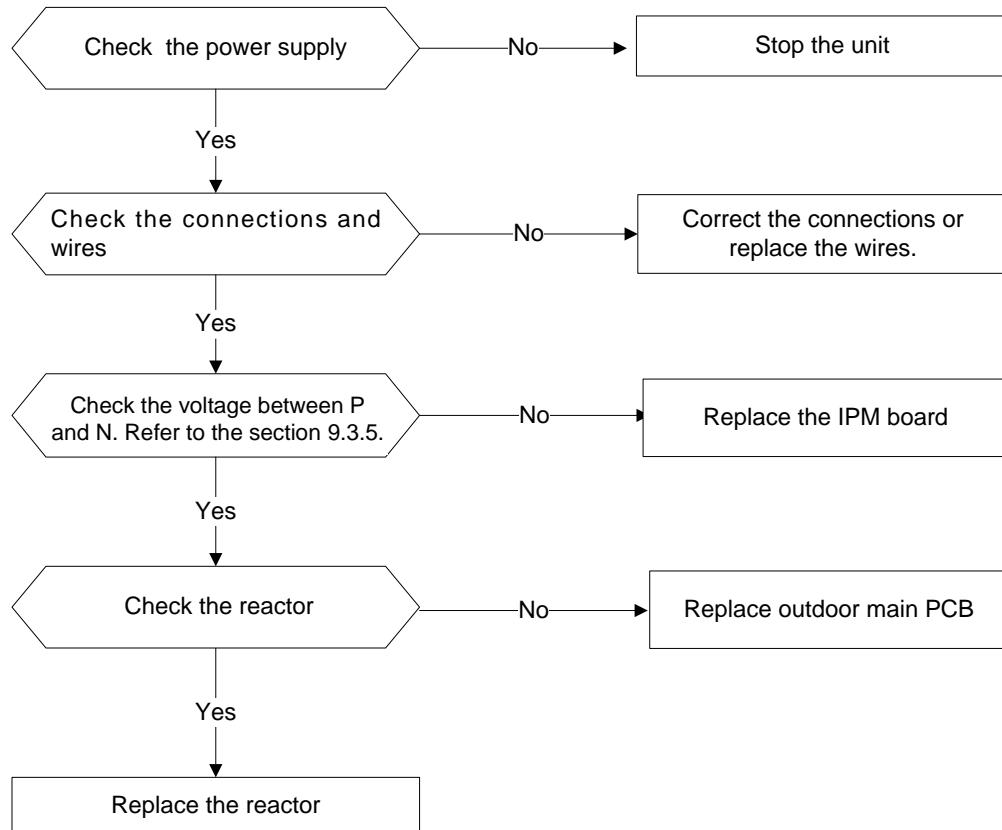


N-W

9.2.9 P1: High or Low Voltage Protection

Condition: An abnormal voltage rise or drop was detected by the specified voltage detection circuit.

- Possible Causes:
- Power supply faulty
 - Refrigerant system faulty (i.e. leakage/blockage)
 - PCB faulty



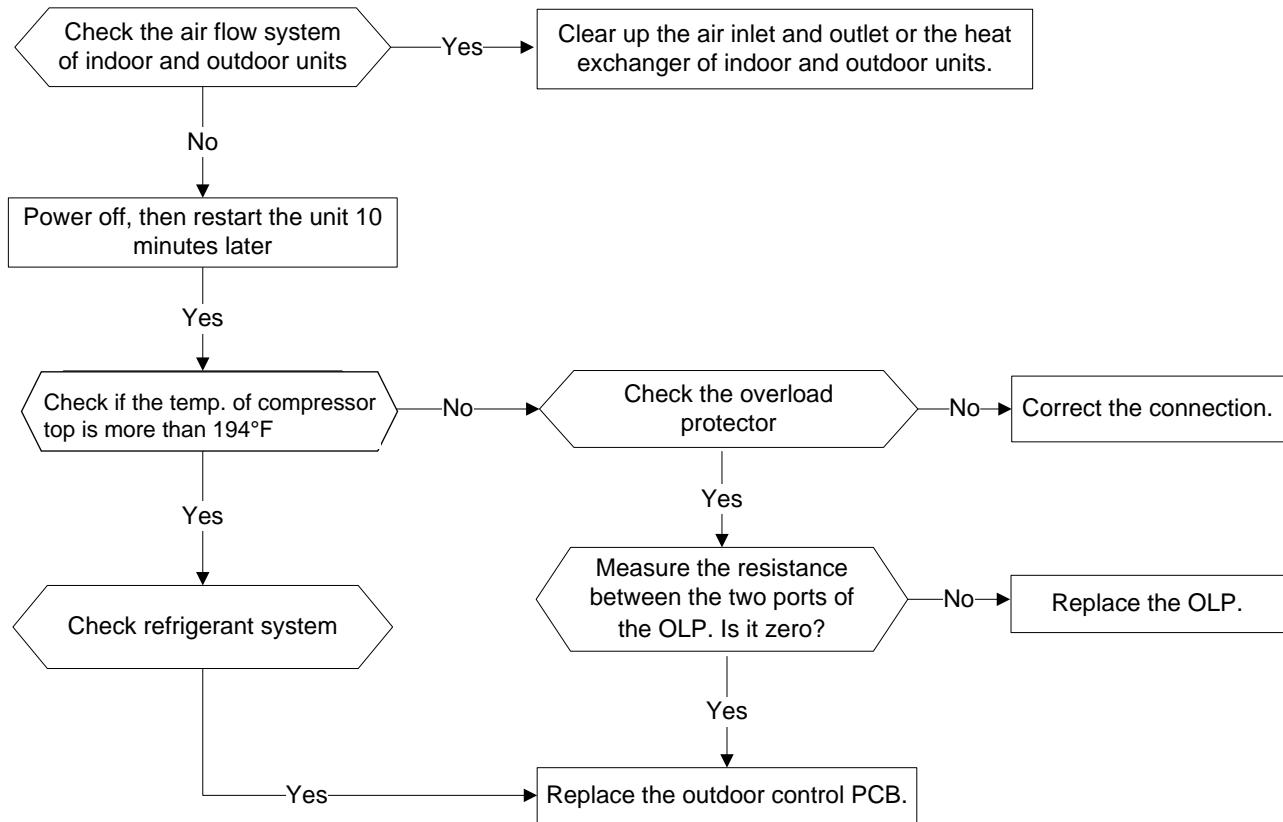
Measuring the DC Voltage between P and N Port

The normal voltage value should be around 310V.

9.2.10 P2: High Temperature Protection of Compressor Top

Condition: The sampling voltage is not 5V.

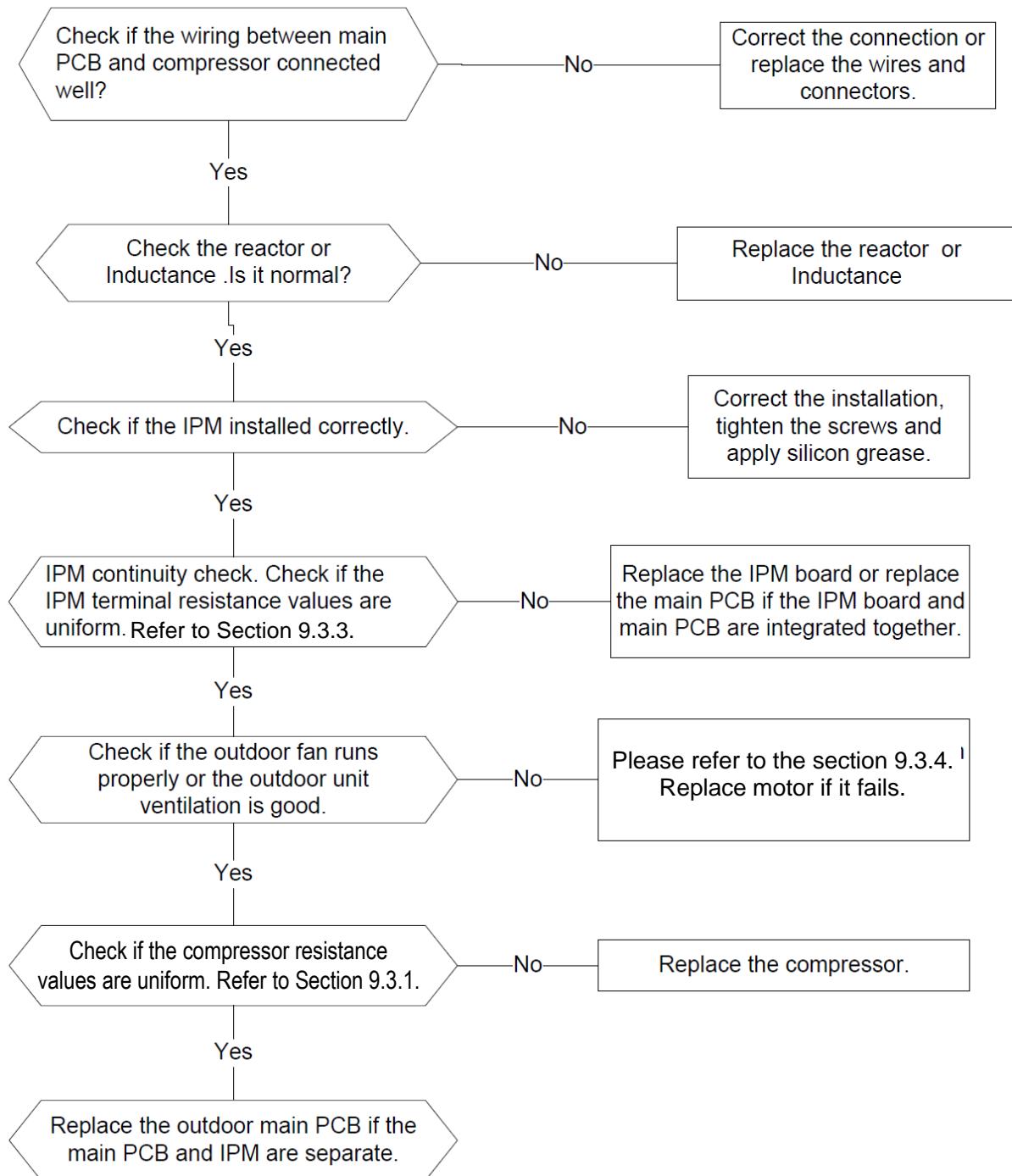
- Possible Causes:
- Power supply faulty
 - Refrigerant system faulty (i.e. leakage/blockage)
 - PCB faulty



9.2.11 P4: Inverter Compressor Drive Error

Condition: An abnormal inverter compressor drive is detected by a special detection circuit, including communication signal detection, voltage detection, compressor rotation speed signal detection, etc.

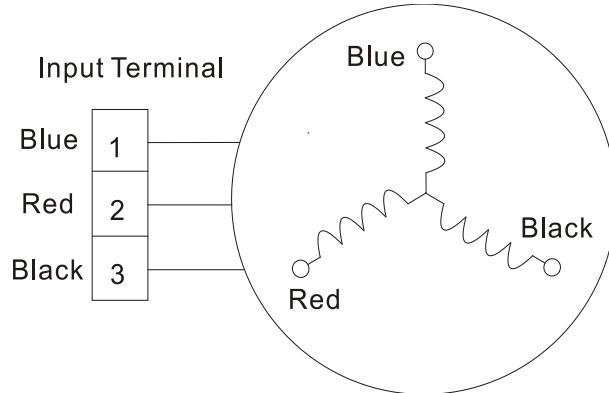
- Possible Causes:
- Wiring mistake
 - IPM malfunction
 - Outdoor fan assembly faulty
 - Compressor malfunction
 - Outdoor PCB faulty



9.3 General Testing and Measurements

9.3.1 Compressor Check

Measure the resistance value of each winding by using the multimeter.



Resistance @ 68°F (20°C)

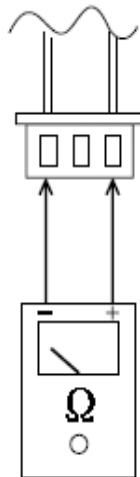
Position	9H47YOMI	12H47YOMI	12H47ZOMI	18H47ZOMI	24H46ZOMI	30H48ZOMI	36H46ZOMI
	ASN98D22UFZ	ASN98D22UFZ	ASN98D22UFZ	ASM135D23UFZ	ATF235D22UMT	ATF250D22UMT	ATF250D22UMT
Blue – Red							
Blue – Black		1.57 Ω		1.75 Ω	0.75 Ω		0.75 Ω
Red – Blue							



9.3.2 Temperature Sensor Check

Disconnect the temperature sensor from the PCB and measure the resistance using a multimeter. The variables for the different temperature sensors are shown below.

- T1:** Room temperature sensor
- T2:** Indoor coil temperature sensor
- T3:** Outdoor coil temperature sensor
- T4:** Outdoor ambient temperature sensor
- T5(TP):** Compressor discharge temperature sensor



Multimeter

Temperature Sensor Resistance Value Table for T1, T2, T3, T4

°C	°F	kΩ	°C	°F	kΩ	°C	°F	kΩ	°C	°F	kΩ
-20	-4	115.266	20	68	12.6431	60	140	2.35774	100	212	0.62973
-19	-2	108.146	21	70	12.0561	61	142	2.27249	101	214	0.61148
-18	0	101.517	22	72	11.5	62	144	2.19073	102	216	0.59386
-17	1	96.3423	23	73	10.9731	63	145	2.11241	103	217	0.57683
-16	3	89.5865	24	75	10.4736	64	147	2.03732	104	219	0.56038
-15	5	84.219	25	77	10	65	149	1.96532	105	221	0.54448
-14	7	79.311	26	79	9.55074	66	151	1.89627	106	223	0.52912
-13	9	74.536	27	81	9.12445	67	153	1.83003	107	225	0.51426
-12	10	70.1698	28	82	8.71983	68	154	1.76647	108	226	0.49989
-11	12	66.0898	29	84	8.33566	69	156	1.70547	109	228	0.486
-10	14	62.2756	30	86	7.97078	70	158	1.64691	110	230	0.47256
-9	16	58.7079	31	88	7.62411	71	160	1.59068	111	232	0.45957
-8	18	56.3694	32	90	7.29464	72	162	1.53668	112	234	0.44699
-7	19	52.2438	33	91	6.98142	73	163	1.48481	113	235	0.43482
-6	21	49.3161	34	93	6.68355	74	165	1.43498	114	237	0.42304
-5	23	46.5725	35	95	6.40021	75	167	1.38703	115	239	0.41164
-4	25	44	36	97	6.13059	76	169	1.34105	116	241	0.4006
-3	27	41.5878	37	99	5.87359	77	171	1.29078	117	243	0.38991
-2	28	39.8239	38	100	5.62961	78	172	1.25423	118	244	0.37956
-1	30	37.1988	39	102	5.39689	79	174	1.2133	119	246	0.36954
0	32	35.2024	40	104	5.17519	80	176	1.17393	120	248	0.35982
1	34	33.3269	41	106	4.96392	81	178	1.13604	121	250	0.35042
2	36	31.5635	42	108	4.76253	82	180	1.09958	122	252	0.3413
3	37	29.9058	43	109	4.5705	83	181	1.06448	123	253	0.33246
4	39	28.3459	44	111	4.38736	84	183	1.03069	124	255	0.3239
5	41	26.8778	45	113	4.21263	85	185	0.99815	125	257	0.31559
6	43	25.4954	46	115	4.04589	86	187	0.96681	126	259	0.30754
7	45	24.1932	47	117	3.88673	87	189	0.93662	127	261	0.29974
8	46	22.5662	48	118	3.73476	88	190	0.90753	128	262	0.29216
9	48	21.8094	49	120	3.58962	89	192	0.8795	129	264	0.28482
10	50	20.7184	50	122	3.45097	90	194	0.85248	130	266	0.2777
11	52	19.6891	51	124	3.31847	91	196	0.82643	131	268	0.27078
12	54	18.7177	52	126	3.19183	92	198	0.80132	132	270	0.26408
13	55	17.8005	53	127	3.07075	93	199	0.77709	133	271	0.25757
14	57	16.9341	54	129	2.95896	94	201	0.75373	134	273	0.25125
15	59	16.1156	55	131	2.84421	95	203	0.73119	135	275	0.24512
16	61	15.3418	56	133	2.73823	96	205	0.70944	136	277	0.23916
17	63	14.6181	57	135	2.63682	97	207	0.68844	137	279	0.23338
18	64	13.918	58	136	2.53973	98	208	0.66818	138	280	0.22776
19	66	13.2631	59	138	2.44677	99	210	0.64862	139	282	0.22231

Temperature Sensor Resistance Value Table for T5(TP)

°C	°F	kΩ	°C	°F	kΩ	°C	°F	kΩ	°C	°F	kΩ
-20	-4	542.7	18	64	75.24	56	133	15.73	94	201	4.426
-19	-2	511.9	19	66	71.86	57	135	15.16	95	203	4.294
-18	0	483	20	68	68.66	58	136	14.62	96	205	4.167
-17	1	455.9	21	70	65.62	59	138	14.09	97	207	4.045
-16	3	430.5	22	72	62.73	60	140	13.59	98	208	3.927
-15	5	406.7	23	73	59.98	61	142	13.11	99	210	3.812
-14	7	384.3	24	75	57.37	62	144	12.65	100	212	3.702
-13	9	363.3	25	77	54.89	63	145	12.21	101	214	3.595
-12	10	343.6	26	79	52.53	64	147	11.79	102	216	3.492
-11	12	325.1	27	81	50.28	65	149	11.38	103	217	3.392
-10	14	307.7	28	82	48.14	66	151	10.99	104	219	3.296
-9	16	291.3	29	84	46.11	67	153	10.61	105	221	3.203
-8	18	275.9	30	86	44.17	68	154	10.25	106	223	3.113
-7	19	261.4	31	88	42.33	69	156	9.902	107	225	3.025
-6	21	247.8	32	90	40.57	70	158	9.569	108	226	2.941
-5	23	234.9	33	91	38.89	71	160	9.248	109	228	2.86
-4	25	222.8	34	93	37.3	72	162	8.94	110	230	2.781
-3	27	211.4	35	95	35.78	73	163	8.643	111	232	2.704
-2	28	200.7	36	97	34.32	74	165	8.358	112	234	2.63
-1	30	190.5	37	99	32.94	75	167	8.084	113	235	2.559
0	32	180.9	38	100	31.62	76	169	7.82	114	237	2.489
1	34	171.9	39	102	30.36	77	171	7.566	115	239	2.422
2	36	163.3	40	104	29.15	78	172	7.321	116	241	2.357
3	37	155.2	41	106	28	79	174	7.086	117	243	2.294
4	39	147.6	42	108	26.9	80	176	6.859	118	244	2.233
5	41	140.4	43	109	25.86	81	178	6.641	119	246	2.174
6	43	133.5	44	111	24.85	82	180	6.43	120	248	2.117
7	45	127.1	45	113	23.89	83	181	6.228	121	250	2.061
8	46	121	46	115	22.89	84	183	6.033	122	252	2.007
9	48	115.2	47	117	22.1	85	185	5.844	123	253	1.955
10	50	109.8	48	118	21.26	86	187	5.663	124	255	1.905
11	52	104.6	49	120	20.46	87	189	5.488	125	257	1.856
12	54	99.69	50	122	19.69	88	190	5.32	126	259	1.808
13	55	95.05	51	124	18.96	89	192	5.157	127	261	1.762
14	57	90.66	52	126	18.26	90	194	5	128	262	1.717
15	59	86.49	53	127	17.58	91	196	4.849	129	264	1.674
16	61	82.54	54	129	16.94	92	198	4.703	130	266	1.632
17	63	78.79	55	131	16.32	93	199	4.562			

9.3.3 IPM Continuity Check

First turn off the power to the unit and wait approximately 20 seconds to allow the electrolytic capacitors to fully discharge. Next remove the IPM from the PCB. Use a multimeter to measure the resistance between P & UVWN; UVW & N. See the table below for proper resistance values.

Position		Resistance	Position		Resistance
(+) Red	(-) Black	∞ (Several MΩ)	(+) Red	(-) Black	∞ (Several MΩ)
P	N		U		
	U		V		
	V		W		
	W		(+) Red		

9.3.4 Outdoor AC Fan Motor Check

To check if the outdoor fan motor is working properly, measure the resistance value of each winding with a multimeter.

Resistance @ 68°F (20°C)

Position	9H49YOMI	12H49YOMI	12H49ZOMI	18H49ZOMI	24H47ZOMI
	YKT-32-6-202L	YKT-32-6-202L	YKT-32-6-3L	YKT-48-6-206	YKT-63-6-200L
Black – Red					
Main	86 Ω		213 Ω	152 Ω	88.5 Ω
White – Black					
Aux	64Ω		156 Ω	142 Ω	138 Ω

9.3.5 Voltages on P and N

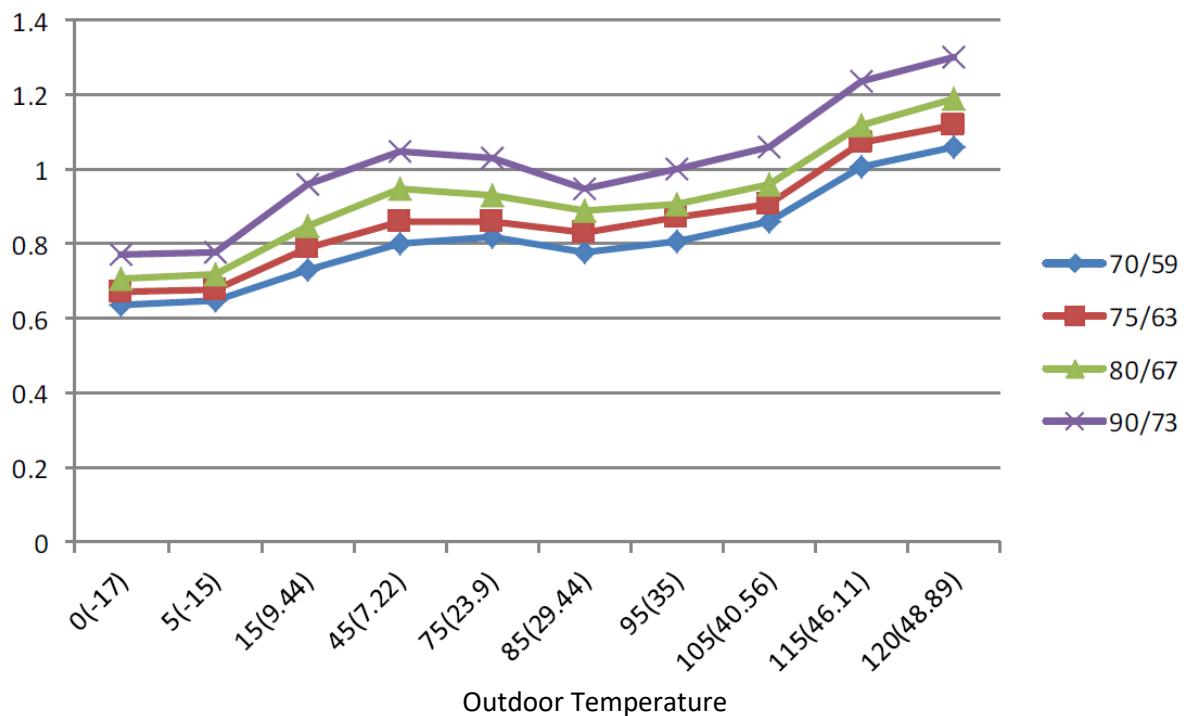
Normal Voltage on P and N

	208-240VAC (1-phase, 3-phase)	380-420VAC (3-phase)
	Standby	
	Around 310 VDC	Around 530 VDC
	Operating	
FC	With partial active PFC module	With fully active PFC module /
	>310 VDC	>370 VDC
		>450 VDC

9.3.6 Pressure on Service Port

Cooling
For models: 9H49YMI, 12H49YMI, 12H49ZMI

°F(°C)	ODU(DB) IDU(DB/WB)										
		0(-17)	5(-15)	15 (9.44)	45 (7.22)	75 (23.89)	85 (29.44)	95 (35)	105 (40.56)	115 (46.11)	120 (48.89)
BAR	70/59 (21.11/15)	6.4	6.5	7.3	8.0	8.2	7.8	8.1	8.6	10.1	10.6
	75/63 (23.89/17.22)	6.7	6.8	7.9	8.6	8.6	8.3	8.7	9.1	10.7	11.2
	80/67 (26.67/19.44)	7.1	7.2	8.5	9.5	9.3	8.9	9.1	9.6	11.2	11.9
	90/73 (32.22/22.78)	7.7	7.8	9.6	10.5	10.3	9.5	10.0	10.6	12.4	13.0
PSI	70/59 (21.11/15)	93	94	106	116	119	113	117	125	147	154
	75/63 (23.89/17.22)	97	99	115	125	124	120	126	132	155	162
	80/67 (26.67/19.44)	103	104	123	138	135	129	132	140	162	173
	90/73 (32.22/22.78)	112	113	139	152	149	138	145	154	180	189
MPa	70/59 (21.11/15)	0.64	0.65	0.73	0.8	0.82	0.78	0.81	0.86	1.01	1.06
	75/63 (23.89/17.22)	0.67	0.68	0.79	0.86	0.86	0.83	0.87	0.91	1.07	1.12
	80/67 (26.67/19.44)	0.71	0.72	0.85	0.95	0.93	0.89	0.91	0.96	1.12	1.19
	90/73 (32.22/22.78)	0.77	0.78	0.96	1.05	1.03	0.95	1	1.06	1.24	1.3

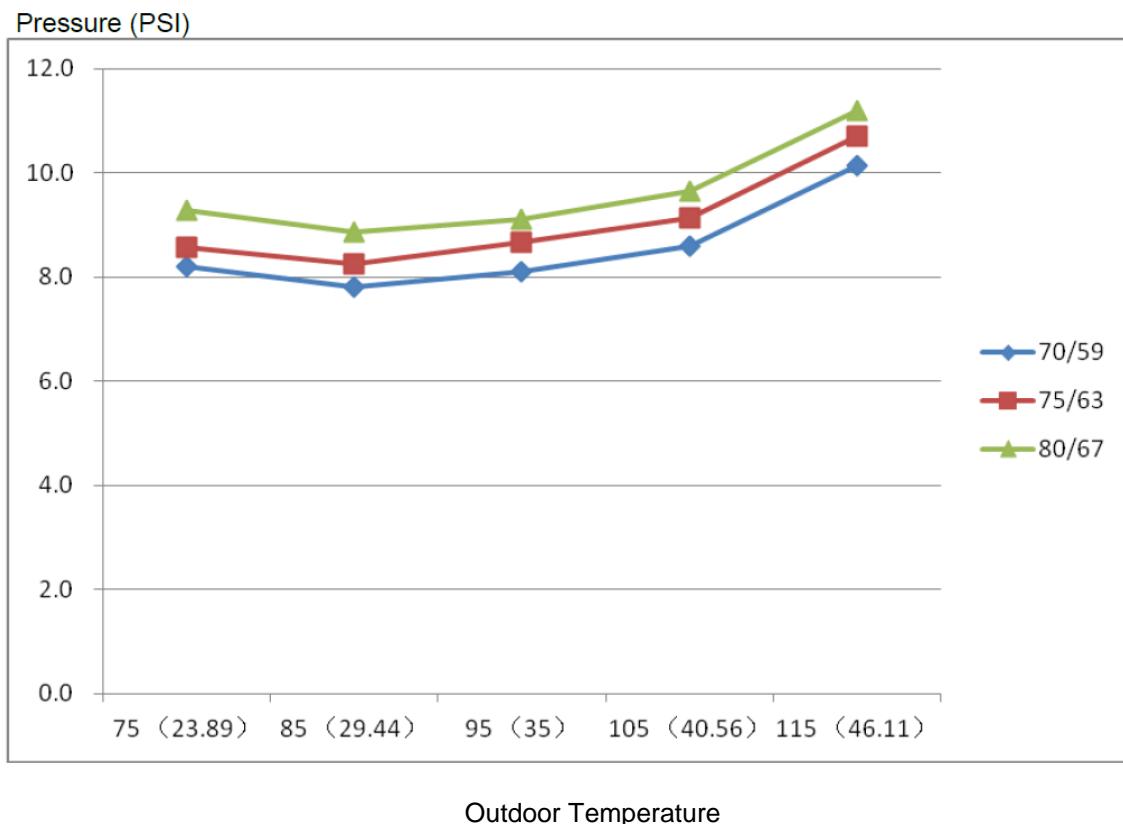


For models: 18H49ZMI, 24H47ZMI

°F(°C)	ODT IDT	75	85	95	105	115
		(23.89)	(29.44)	(35)	(40.56)	(46.11)
BAR	70/59	8.2	7.8	8.1	8.6	10.1
BAR	75/63	8.6	8.3	8.7	9.1	10.7
BAR	80/67	9.3	8.9	9.1	9.6	11.2

°F(°C)	ODT IDT	75	85	95	105	115
		(23.89)	(29.44)	(35)	(40.56)	(46.11)
PSI	70/59	119	113	117	125	147
PSI	75/63	124	120	126	132	155
PSI	80/67	135	129	132	140	162

°F(°C)	ODT IDT	75	85	95	105	115
		(23.89)	(29.44)	(35)	(40.56)	(46.11)
MPA	70/59	0.82	0.78	0.81	0.86	1.01
MPA	75/63	0.86	0.83	0.87	0.91	1.07
MPA	80/67	0.93	0.89	0.91	0.96	1.12

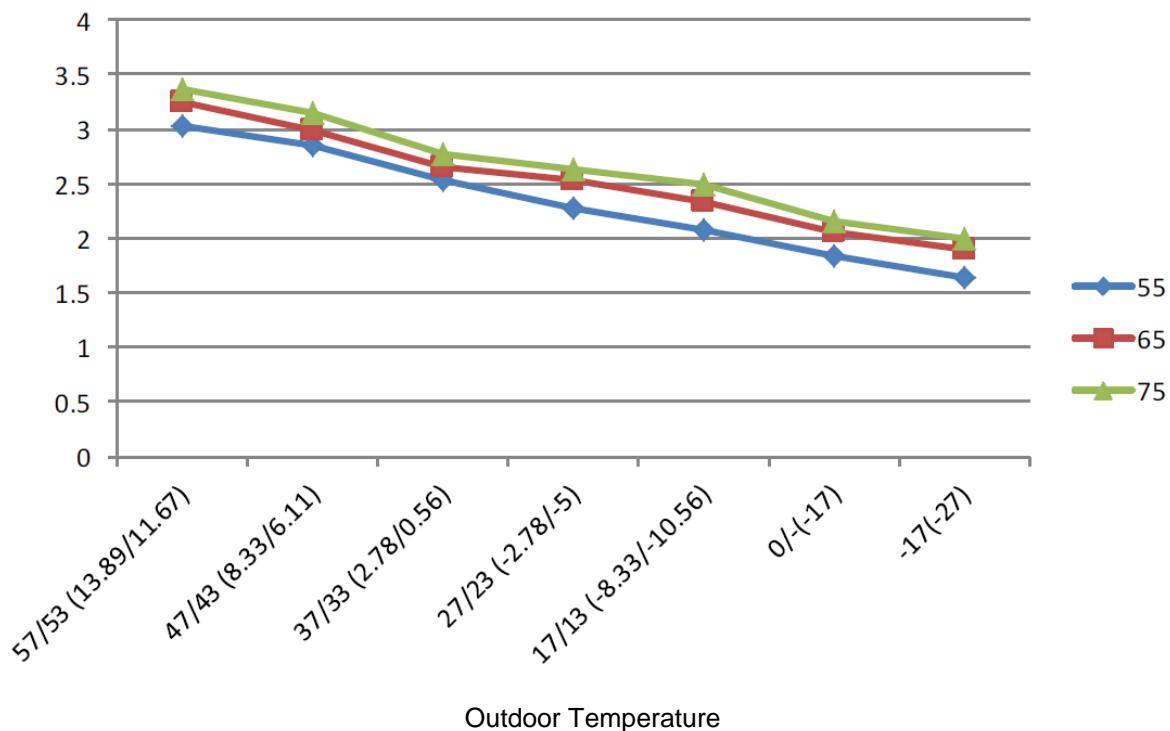


Heating

For models: 9H49YMI, 12H49YMI, 12H49ZMI

°F(°C)	ODU(DB/WB)	57/53 (13.89/11.67)	47/43 (8.33/6.11)	37/33 (2.78/0.56)	27/23 (-2.78/-5)	17/13 (-8.33/-10.56)	0/-2 (-17/-19)	-17/-18 (-27/-28)
	IDU(DB)							
BAR	55(12.78)	30.3	28.5	25.3	22.8	20.8	18.5	16.5
	65(18.33)	32.5	30.0	26.6	25.4	23.3	20.5	19.0
	75(23.89)	33.8	31.5	27.8	26.3	24.9	21.5	20.0
PSI	55(12.78)	439	413	367	330	302	268	239
	65(18.33)	471	435	386	368	339	297	276
	75(23.89)	489	457	403	381	362	312	290
MPa	55(12.78)	3.03	2.85	2.53	2.28	2.08	1.85	1.65
	65(18.33)	3.25	3.00	2.66	2.54	2.33	2.05	1.90
	75(23.89)	3.38	3.15	2.78	2.63	2.49	2.15	2.00

Pressure (PSI)



Outdoor Temperature

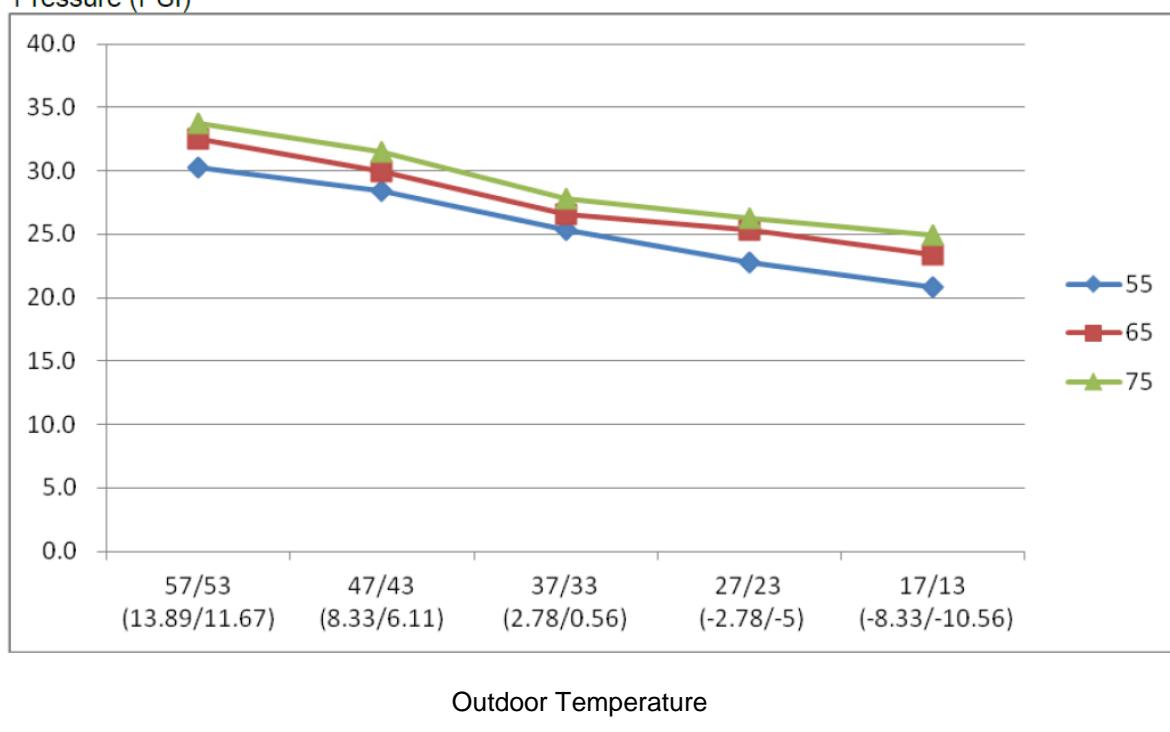
For models: 18H49ZMI, 24H47ZMI

$^{\circ}\text{F}$ ($^{\circ}\text{C}$)	ODT IDT	57/53 (13.89/11.67)	47/43 (8.33/6.11)	37/33 (2.78/0.56)	27/23 (-2.78/-5)	17/13 (-8.33/-10.56)
BAR	55	30.3	28.5	25.3	22.8	20.8
BAR	65	32.5	30.0	26.6	25.4	23.3
BAR	75	33.8	31.5	27.8	26.3	24.9

$^{\circ}\text{F}$ ($^{\circ}\text{C}$)	ODT IDT	57/53 (13.89/11.67)	47/43 (8.33/6.11)	37/33 (2.78/0.56)	27/23 (-2.78/-5)	17/13 (-8.33/-10.56)
PSI	55	439	413	367	330	302
PSI	65	471	435	386	368	339
PSI	75	489	457	403	381	362

$^{\circ}\text{F}$ ($^{\circ}\text{C}$)	ODT IDT	57/53 (13.89/11.67)	47/43 (8.33/6.11)	37/33 (2.78/0.56)	27/23 (-2.78/-5)	17/13 (-8.33/-10.56)
MPA	55	3.03	2.85	2.53	2.28	2.08
MPA	65	3.25	3.00	2.66	2.54	2.33
MPA	75	3.38	3.15	2.78	2.63	2.49

Pressure (PSI)



9.4 Quick Maintenance by Error Code

If you cannot test whether specific parts are faulty, you can directly change the required parts according the error code. Please check the following table.

Part requiring replacement	Error Code									
	E0	E1	E2	E3	E4	E5	EC	F0	F1	F2
Indoor PCB	X	X	X	X	X	X	X	-	-	-
Outdoor PCB	-	X	-	-	-	-	-	X	X	X
Reactor	-	X	-	-	-	-	-	-	-	-
Indoor fan motor	-	-	X	X	-	-	-	-	-	-
Outdoor fan motor	-	-	-	-	-	-	-	-	-	-
Temperature sensor	-	-	-	-	X	X	X	-	X	X
T2 sensor	-	-	-	-	-	-	-	X	-	-
Additional refrigerant	-	-	-	-	-	-	-	-	-	-
Compressor	-	-	-	-	-	-	-	-	X	-
IPM board	-	-	-	-	-	-	-	-	-	-
Outdoor unit	-	-	-	-	-	-	-	-	X	-

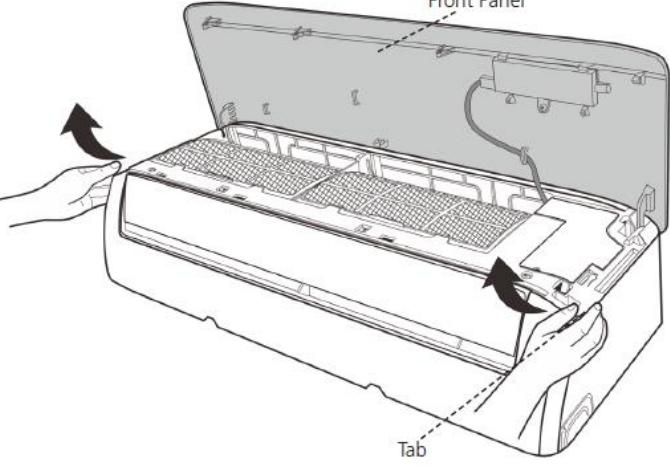
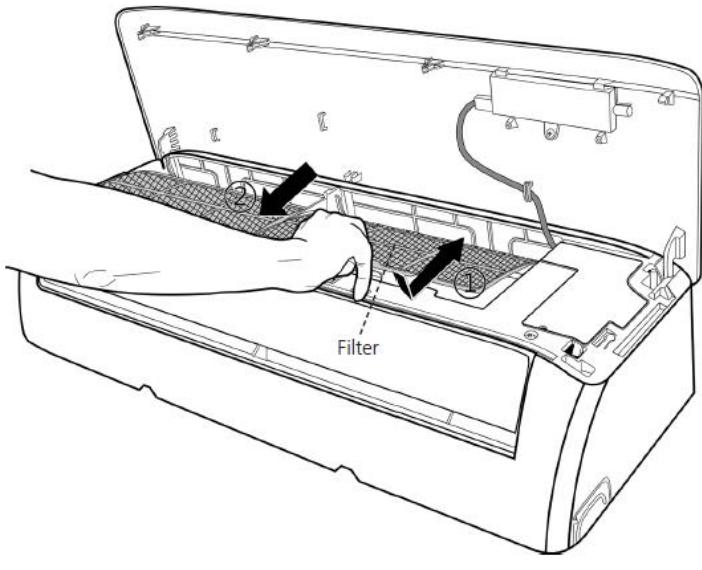
Part requiring replacement	Error Code								
	F3	F4	F5	P0	P1	P2	P3	P4	P5
Indoor PCB	-	-	-	-	-	-	-	-	-
Outdoor PCB	X	X	X	X	X	X	-	X	-
Reactor	-	-	-	-	X	-	-	-	-
Indoor fan motor	-	-	-	-	-	-	-	-	-
Outdoor fan motor	-	-	X	-	-	-	-	-	-
Temperature sensor	X	-	-	-	-	-	-	-	-
T2 sensor	-	-	-	-	-	-	-	-	-
Additional refrigerant	-	-	-	-	-	-	-	-	-
Compressor	-	-	-	X	-	-	-	X	-
IPM board	-	-	-	X	X	-	-	X	-
Outdoor unit	-	-	-	-	-	-	-	-	-

10. Unit Disassembly

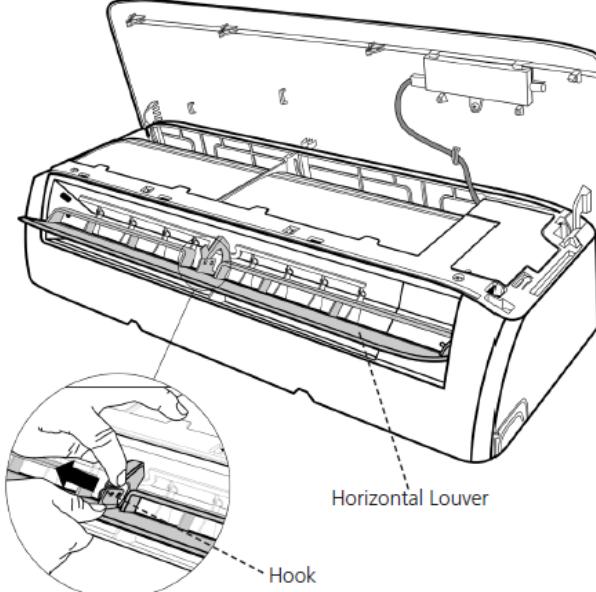
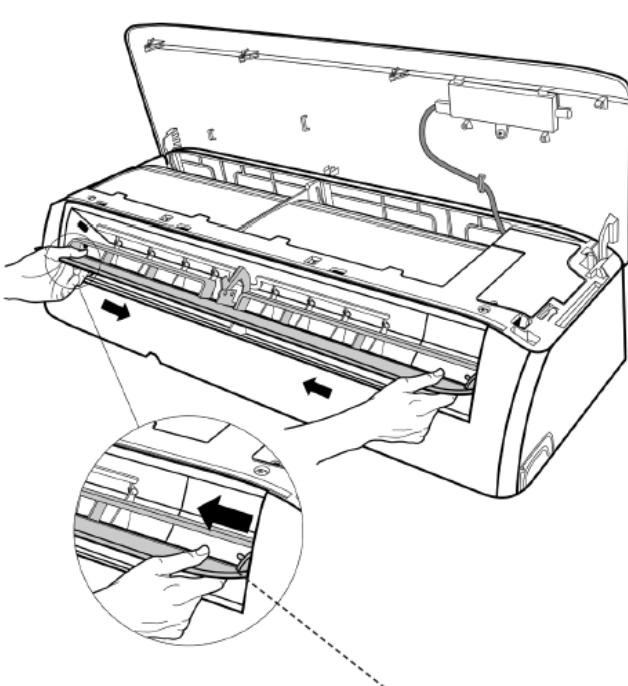
Refer to the section below to see how to get to various parts of the indoor and outdoor units. The model used for the demonstration down below is the 24H45YZIMI/24H45ZOMI.

10.1 Indoor Unit

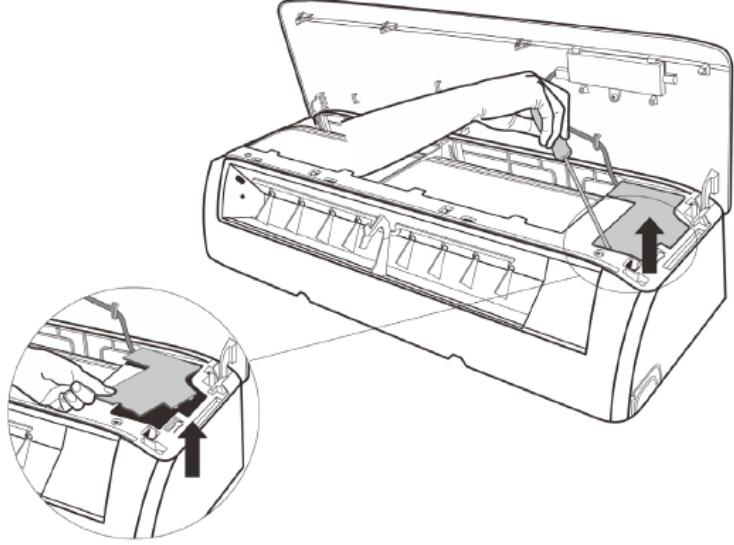
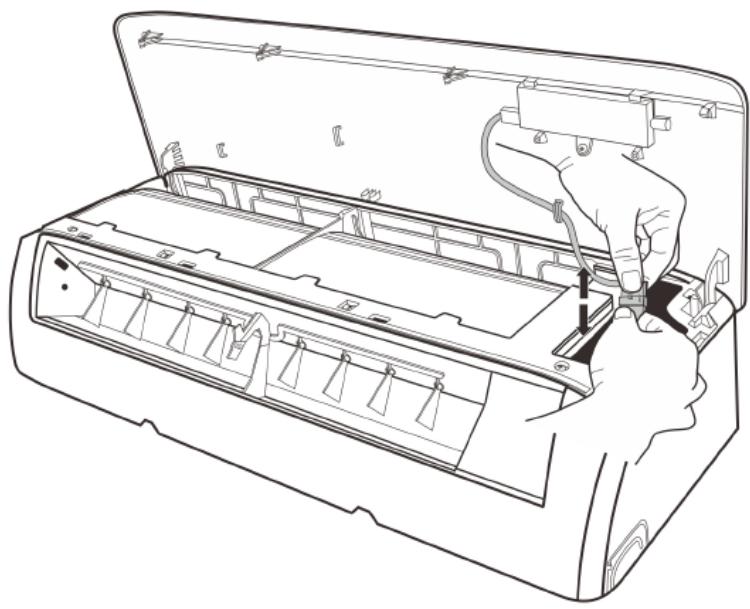
10.1.1 Removing the Front Panel

Procedure	Illustration
1) Hold the front panel by the tabs on the both sides and lift it (see CJ_AB_INV_001).	 <p>CJ_AB_INV_001</p>
2) Push up the bottom of an air filter (step 1), and then pull it out downwards (step 2) (see CJ_AB_INV_002).	 <p>CJ_AB_INV_002</p>

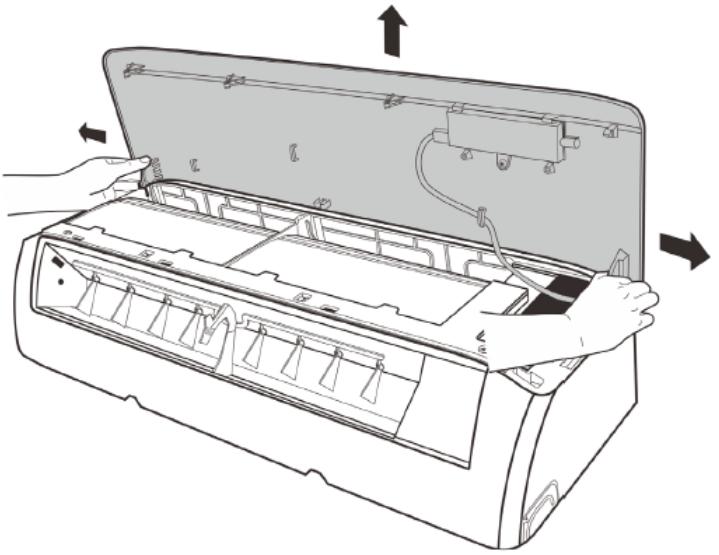
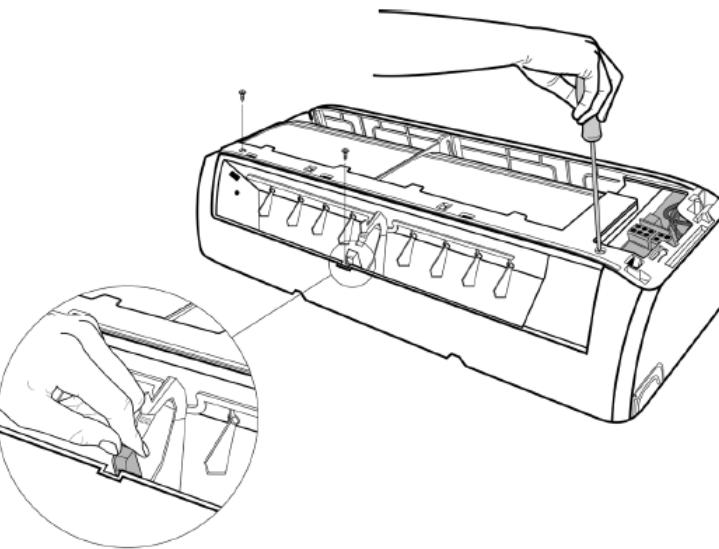
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
<p>3) Open the horizontal louver and push the hook towards left to open it (see CJ_AB_INV_003).</p>	 <p>CJ_AB_INV_003</p>
<p>4) Bend the horizontal louver lightly by both hands to loosen the hooks, then remove the horizontal louver (see CJ_AB_INV_004).</p>	 <p>CJ_AB_INV_004</p>

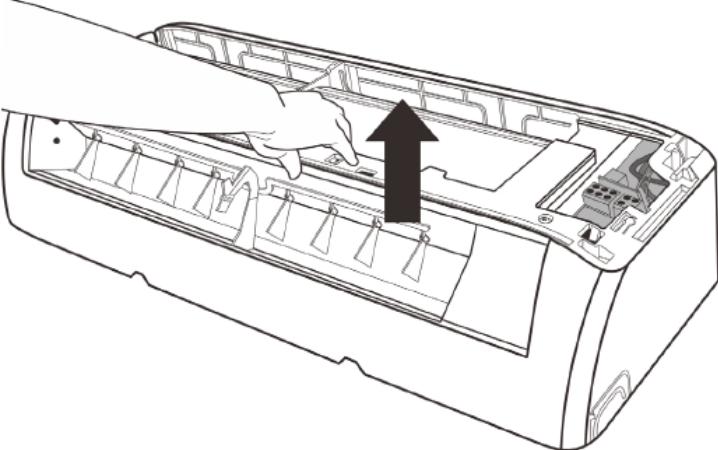
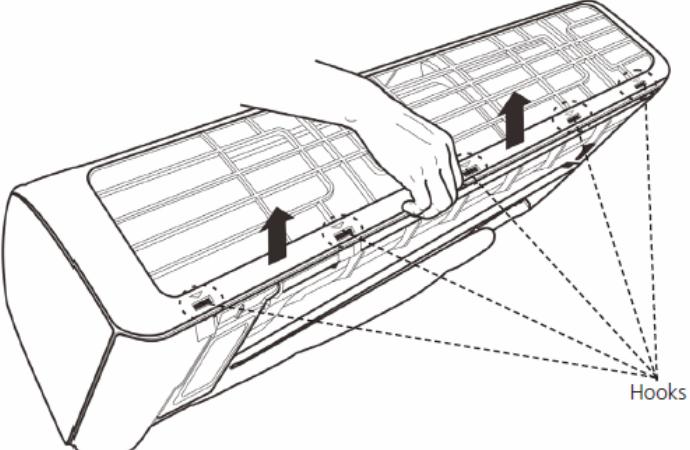
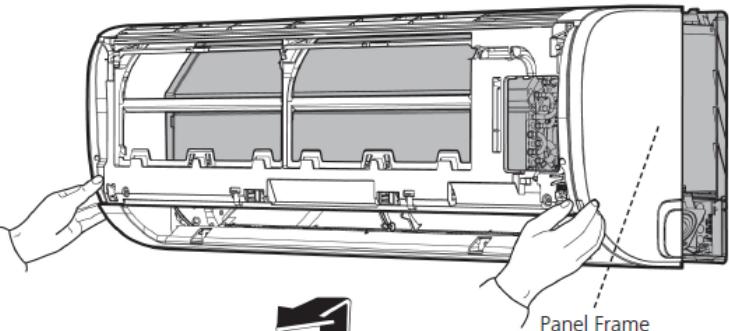
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
5) Pry the electrical cover by a screw driver, and rotate it towards left, then remove it. (see CJ_AB_INV_005).	 <p style="text-align: center;">CJ_AB_INV_005</p>
6) Disconnect the connector for display board. (see CJ_AB_INV_006).	 <p style="text-align: center;">CJ_AB_INV_006</p>

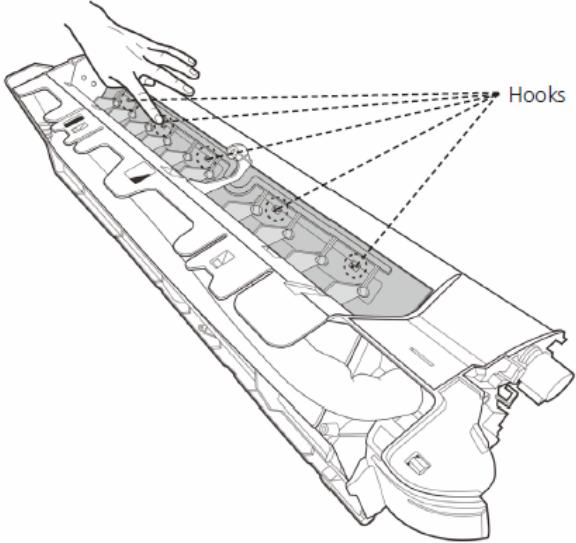
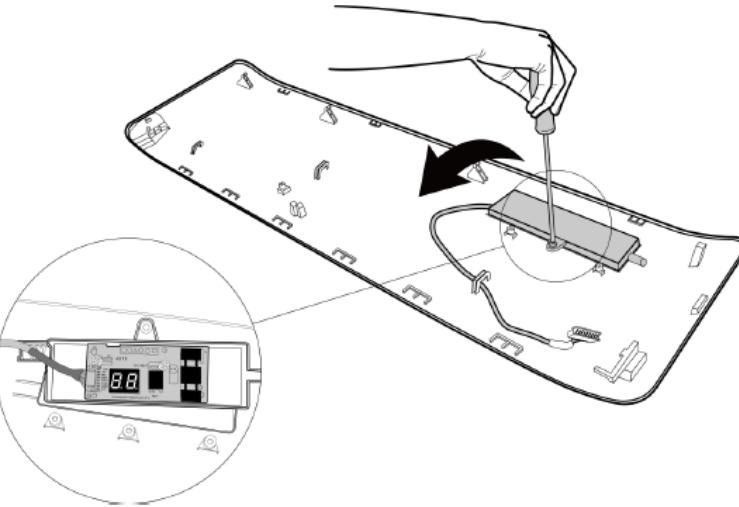
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
7) Slid the front panel side to side to release each axis (see CJ_AB_INV_007)	 <p>A line drawing of a rectangular unit with a front panel. The panel is shown partially open, revealing internal components like a circuit board and wires. Two hands are shown sliding the front panel horizontally to the left and right, indicated by arrows. An upward-pointing arrow is also present above the panel.</p> <p>CJ_AB_INV_007</p>
8) Open the screw cap and then remove the 3 screws (see CJ_AB_INV_008).	 <p>A line drawing of the same unit with its front panel removed. A hand is shown using a screwdriver to remove three screws from the bottom edge of the panel. An inset circular diagram provides a close-up view of one of the screws being removed. A screw cap is shown separately.</p> <p>CJ_AB_INV_008</p>

Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
9) Release the hooks with hands. (see CJ_AB_INV_009)	 <p>CJ_AB_INV_009</p>
10) Release the 5 hooks in the back (see CJ_AB_INV_010).	 <p>CJ_AB_INV_010</p>
11) Pull out the panel frame while pushing the hook through a clearance between the panel frame and the heat exchanger. (see CJ_AB_INV_011)	 <p>CJ_AB_INV_011</p>

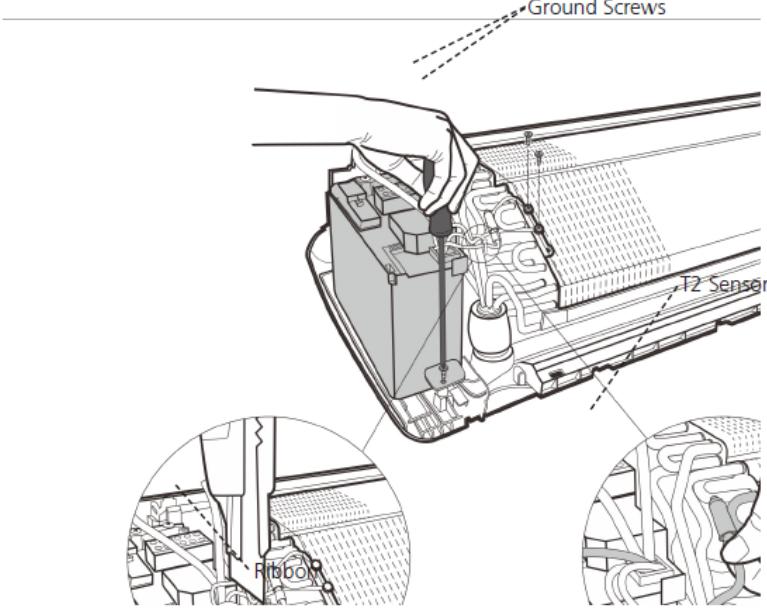
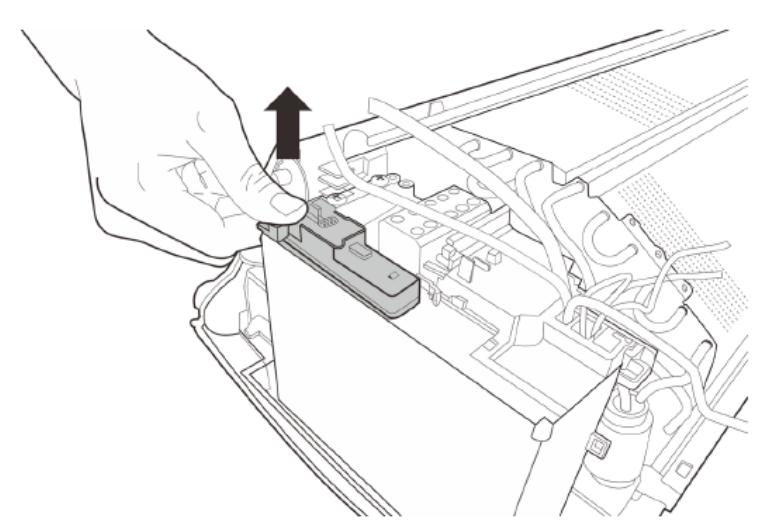
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
12)Release the 5 hooks of the vertical blades, then pull the vertical blades rightward and remove it (see CJ_AB_INV_012).	 <p style="text-align: center;">CJ_AB_INV_012</p>
13)Remove 1 screw of the display board. (see CJ_AB_INV_013). 14)Rotate the display board in the direction shown in the right picture. (see CJ_AB_INV_013).	 <p style="text-align: center;">CJ_AB_INV_013</p>

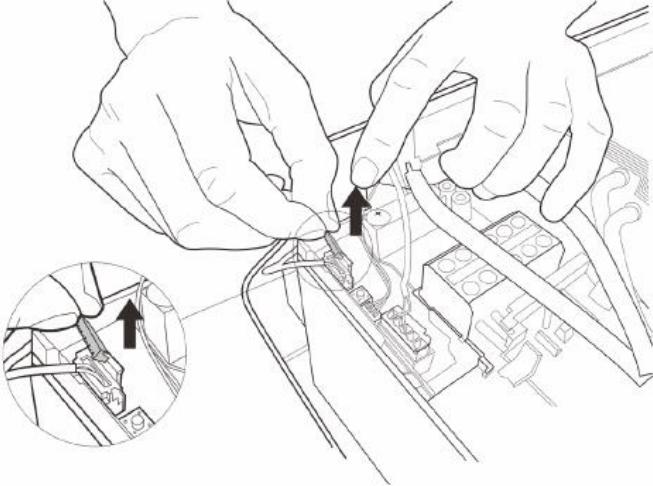
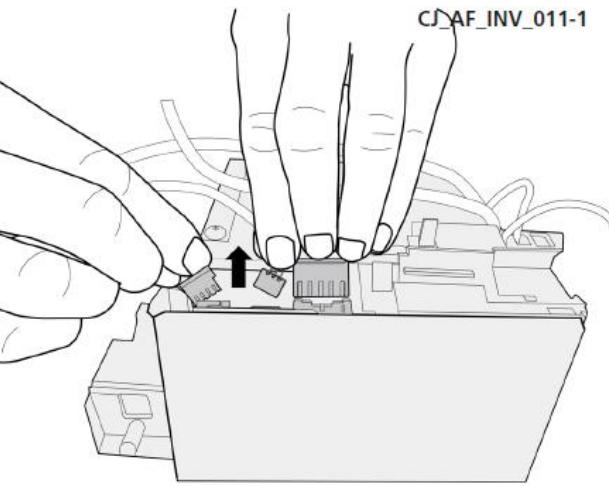
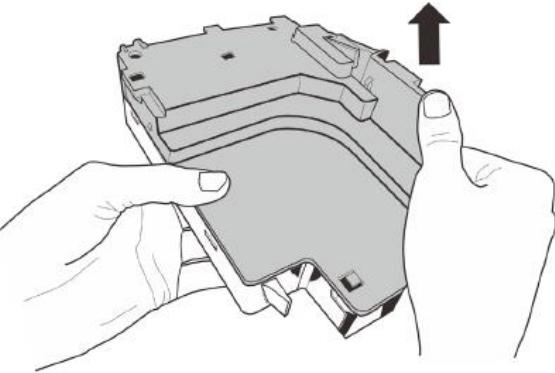
Note: This section is for reference only. Actual unit appearance may vary.

10.1.2 Accessing the Electrical parts (Antistatic gloves must be worn.)

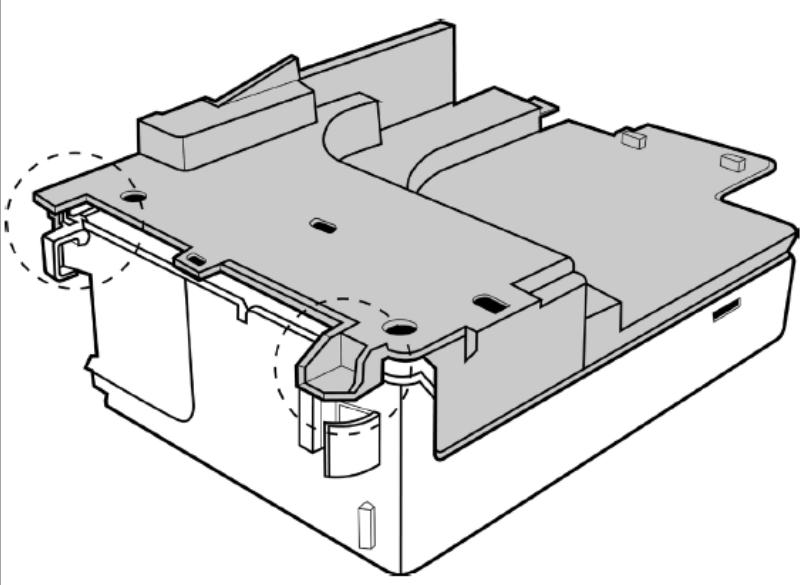
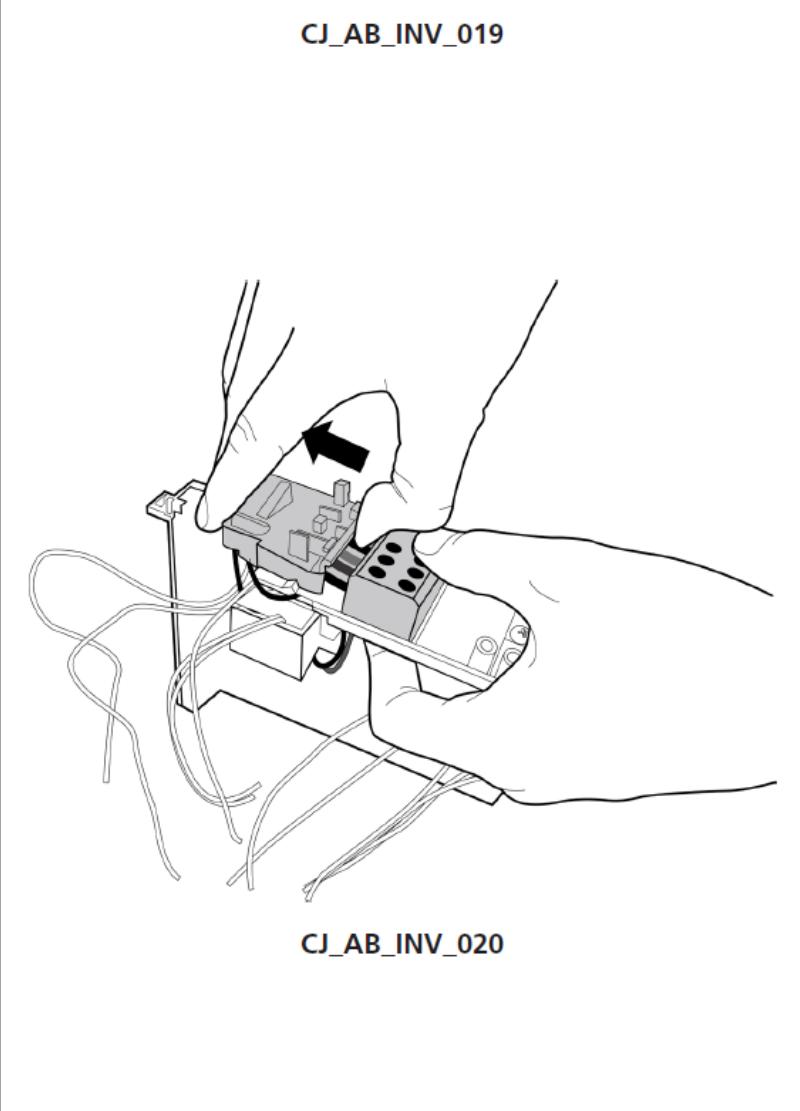
Note: Remove the front panel (Refer to 10.1.1) before disassembling.

Procedure	Illustration
<ol style="list-style-type: none">1) Cut the ribbon by a shear, then pull out the coil temperature sensor (T2) (see CJ_AB_INV_014).2) Remove one fixing screw of the electronic control box and two screws used for the ground connection (see CJ_AB_INV_014).	 <p>CJ_AB_INV_014</p>
3) An upward force is maintained until the cover of electronic control box is removed (see CJ_AB_INV_015).	 <p>CJ_AB_INV_015</p>

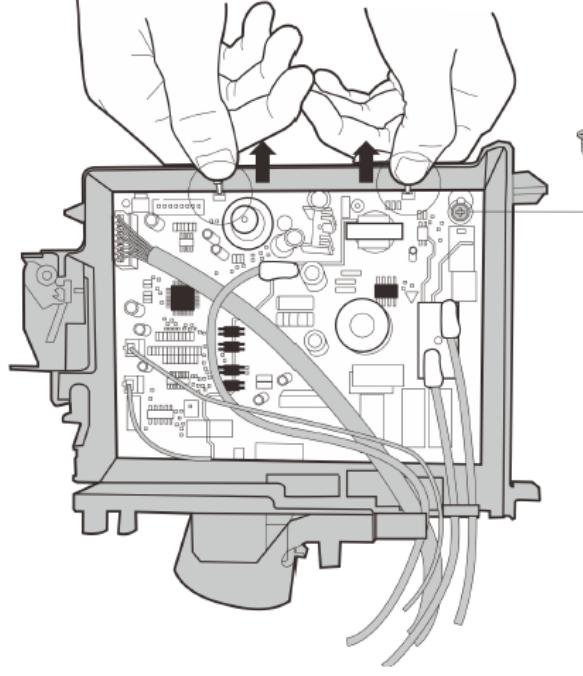
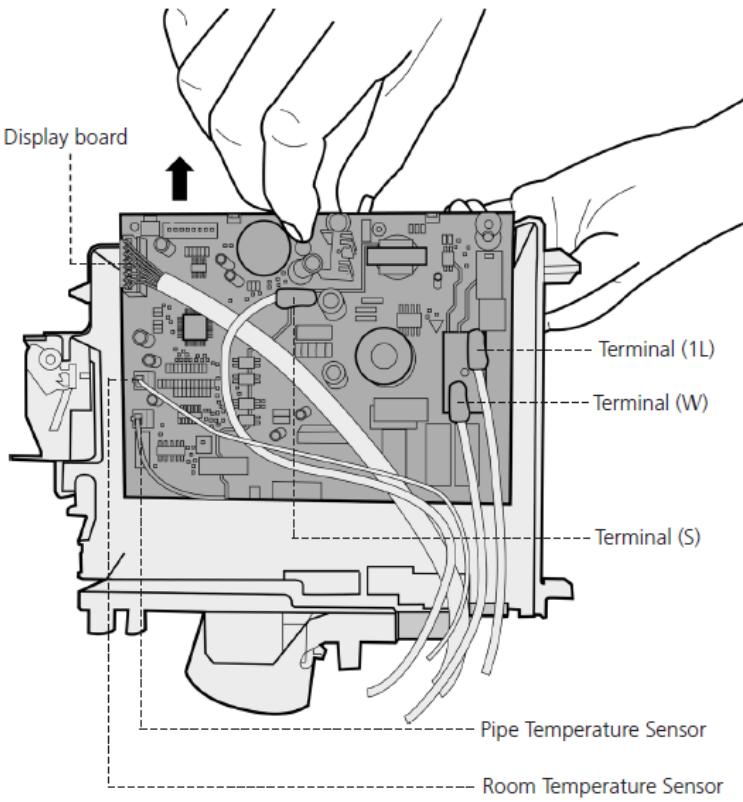
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
4) Remove the fixed devices of the connectors (see CJ_AB_INV_016).	 <p style="text-align: center;">CJ_AB_INV_016</p>
5) Disconnect the connectors of fan motor, the step motor and the T2 sensor (see CJ_AB_INV_017).	 <p style="text-align: center;">CJ_AB_INV_017</p>
6) Open the left side plate of electronic control box (see CJ_AB_INV_018).	 <p style="text-align: center;">CJ_AB_INV_018</p>

Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
7) Open the two clips on the front of the electric box. (see CJ_AB_INV_019)	 CJ_AB_INV_019
8) Open the upper cover plate of electronic control box (see CJ_AB_INV_020).	 CJ_AB_INV_020

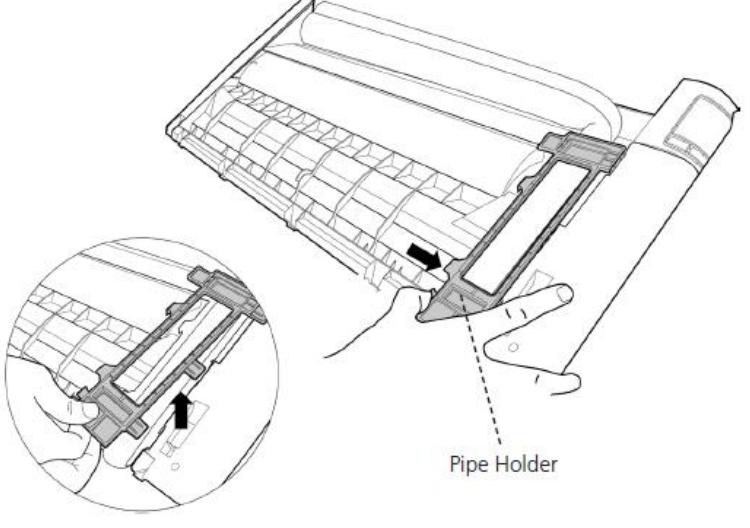
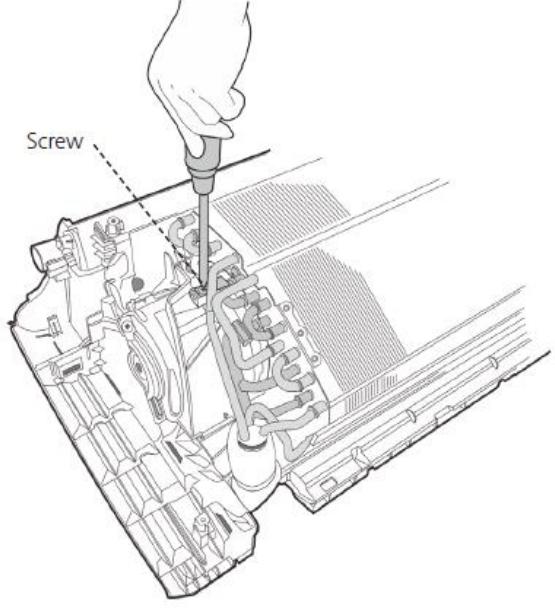
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
<p>9) Remove 1 screw and open the 2 clips along the direction indicated in right image (see CJ_AB_INV_021).</p>	
<p>10) Pull out the electrical main board along the direction indicated in right image to remove it (see CJ_AB_INV_022).</p>	 <p>CJ_AB_INV_022</p>

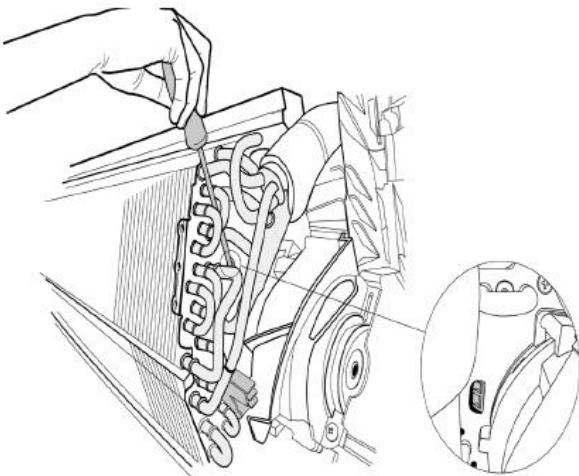
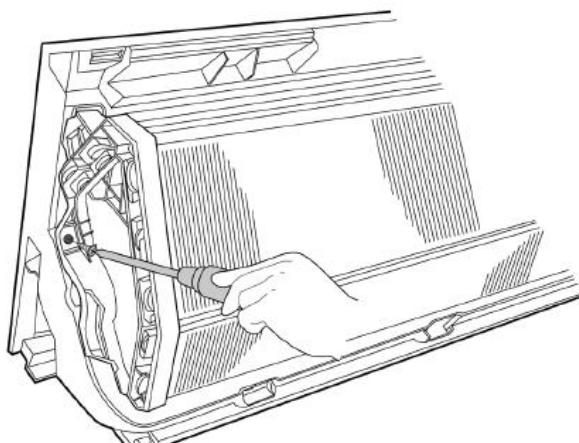
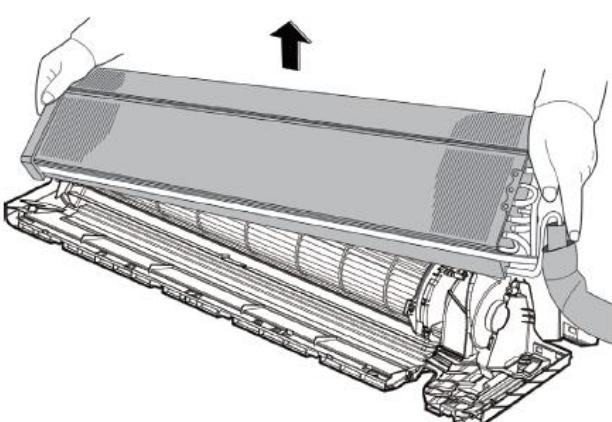
Note: This section is for reference only. Actual unit appearance may vary.

10.1.3 Accessing the Evaporator

Note: Remove the front panel and Electrical parts (Refer to 10.1.1 & 10.1.2) before disassembling.

Procedure	Illustration
1) Disassemble the pipe holder located at the rear of the unit (see CJ_AB_INV_023).	 CJ_AB_INV_023
2) Remove the 1 screws on the evaporator located at the fixed plate (see CJ_AB_INV_024).	 CJ_AB_INV_024

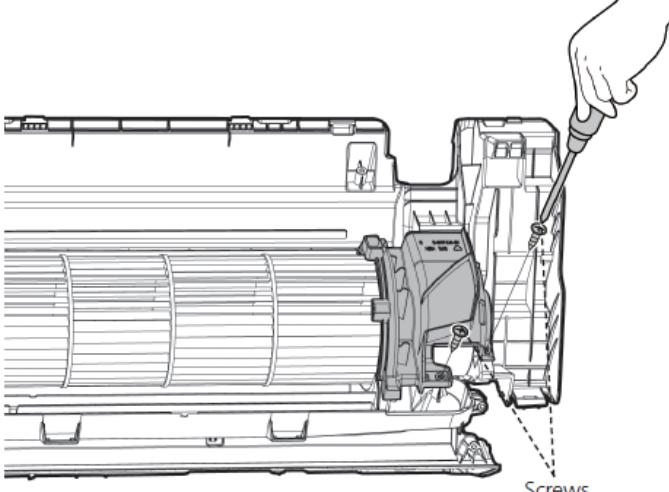
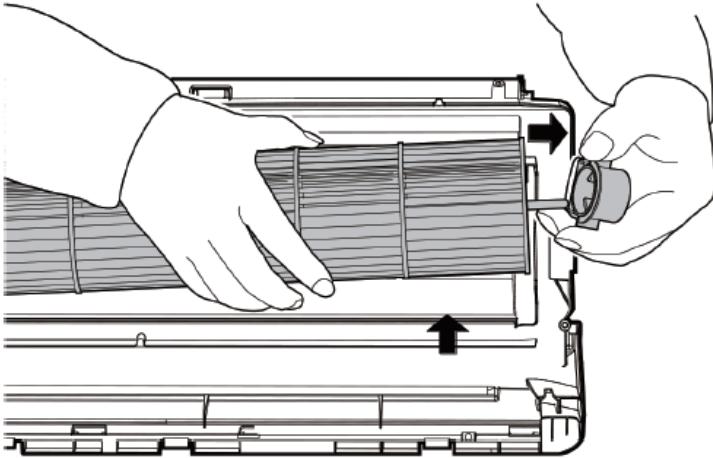
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
3) Release the hook on the evaporator (see CJ_AB_INV_025).	
4) Remove the one screw on the evaporator located at the fixed plate (see CJ_AB_INV_026).	
5) Pull out the evaporator (see CJ_AB_INV_027).	

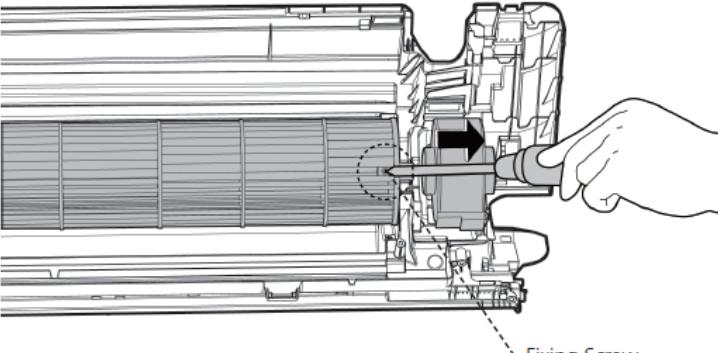
Note: This section is for reference only. Actual unit appearance may vary.

10.1.4 Accessing the Fan Motor and Fan

Note: Remove the front panel, Electrical parts and Evaporator (Refer to 10.1.1, 10.1.2 & 10.1.3) before disassembling.

Procedure	Illustration
1) Remove the two screws and remove the fixing board of the fan motor (see CJ_AB_INV_028).	 <p>CJ_AB_INV_028</p>
2) Remove the bearing sleeve (see CJ_AB_INV_029).	 <p>CJ_AB_INV_029</p>

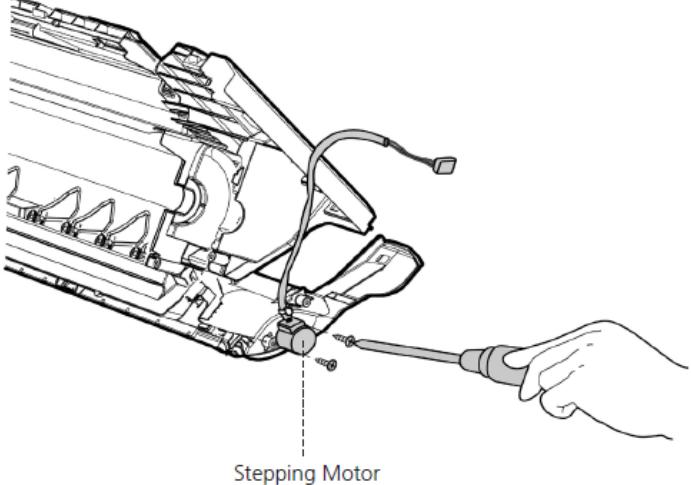
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
<p>3) Remove the fixing screw (see CJ_AB_INV_030).</p> <p>4) Pull out the fan motor and fan assembly from the side.</p>	 <p>The illustration shows a cross-section of a fan assembly. A hand is using a screwdriver to remove a single screw from the side of the assembly. The screw is labeled 'Fixing Screw'. The label 'CJ_AB_INV_030' is centered below the illustration.</p>

Note: This section is for reference only. Actual unit appearance may vary.

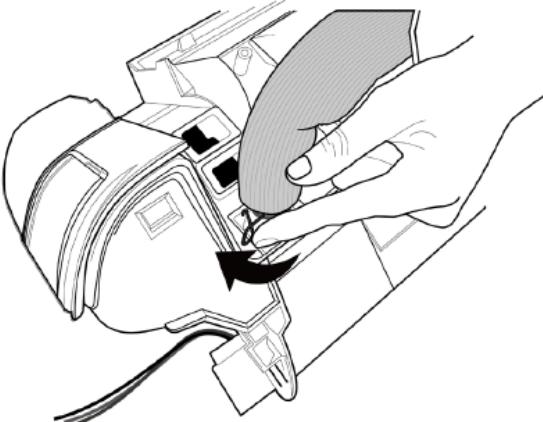
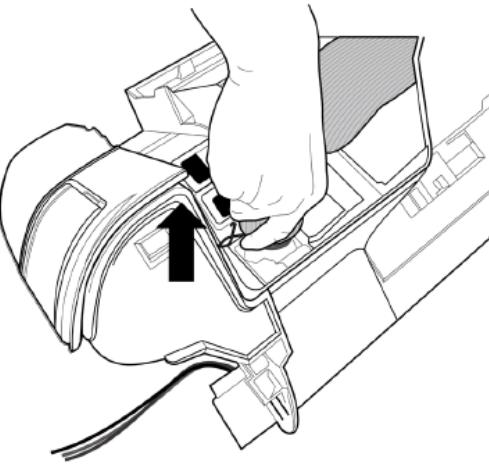
10.1.5 Removing the Step Motor

Note: Remove the front panel and Electrical parts (Refer to 10.1.1, 10.1.2) before disassembling.

Procedure	Illustration
1) Remove the two screws, then remove the stepping motor (see CJ_AB_INV_031).	 <p>CJ_AB_INV_031</p>

Note: This section is for reference only. Actual unit appearance may vary.

10.1.6 Removing the Drain Hose

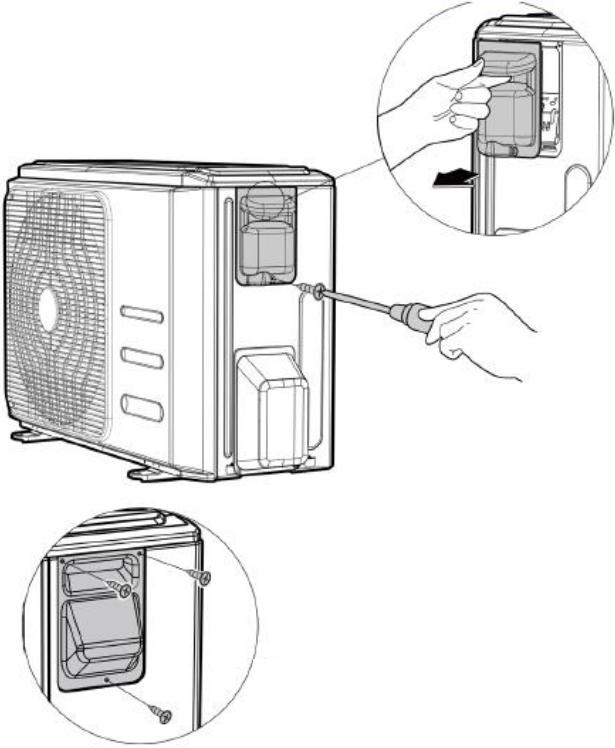
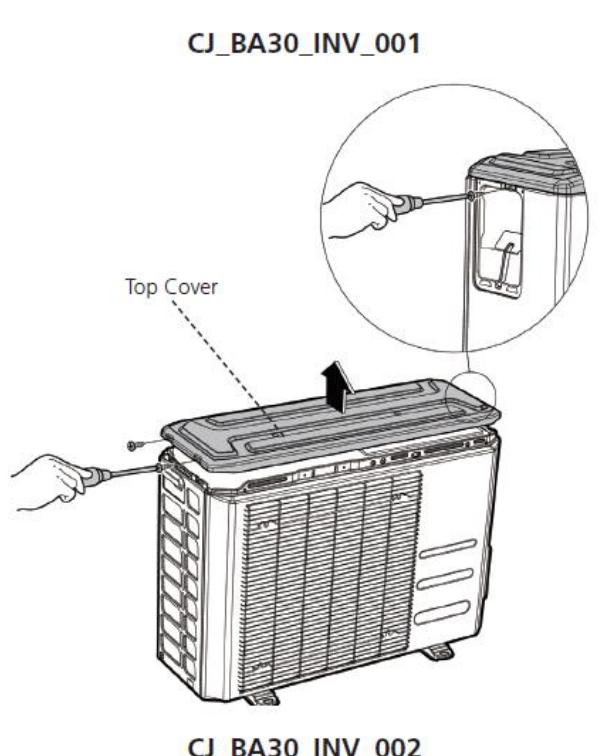
Procedure	Illustration
1) Rotate the fixed wire clockwise indicated in right image (see CJ_AB_INV_032).	 CJ_AB_INV_032
2) Pull up the drain hose to remove it (see CJ_AB_INV_033).	 CJ_AB_INV_033

Note: This section is for reference only. Actual unit appearance may vary.

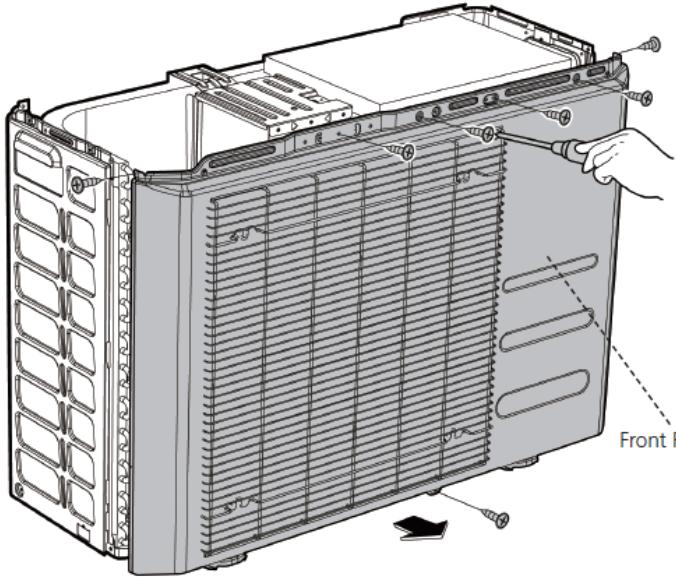
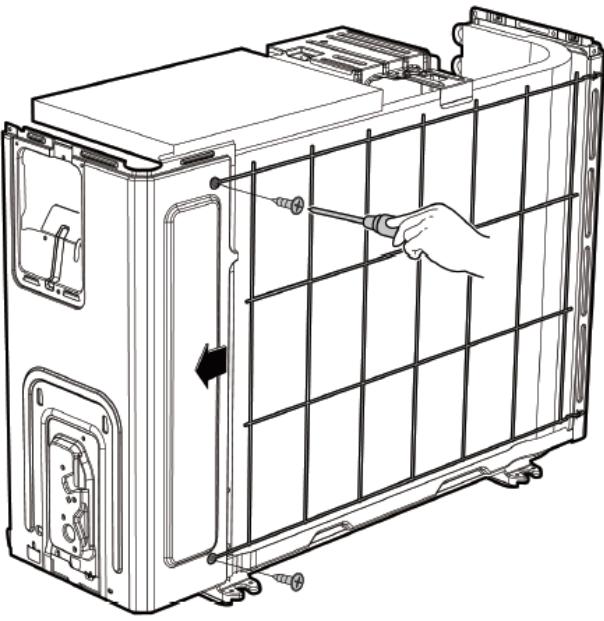
10.2 Outdoor Unit

10.2.1 Removing the Panel Plate

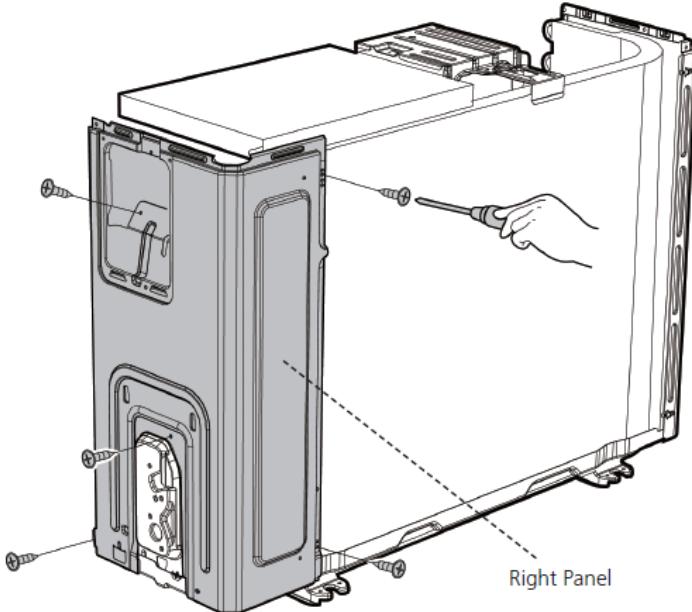
For models: 9H49YOMII

Procedure	Illustration
<ol style="list-style-type: none">1) Turn off the air conditioner and the power breaker.2) Remove the screws of the big handle and then remove the big handle (3 screws) (see CJ_BA30_INV_001).	 <p>CJ_BA30_INV_001</p>
<ol style="list-style-type: none">3) Remove the screws of the top cover and then remove the top cover (3 screws). One of the screws is located underneath the big handle (see CJ_BA30_INV_002).	 <p>CJ_BA30_INV_002</p>

Note: This section is for reference only. Actual unit appearance may vary.

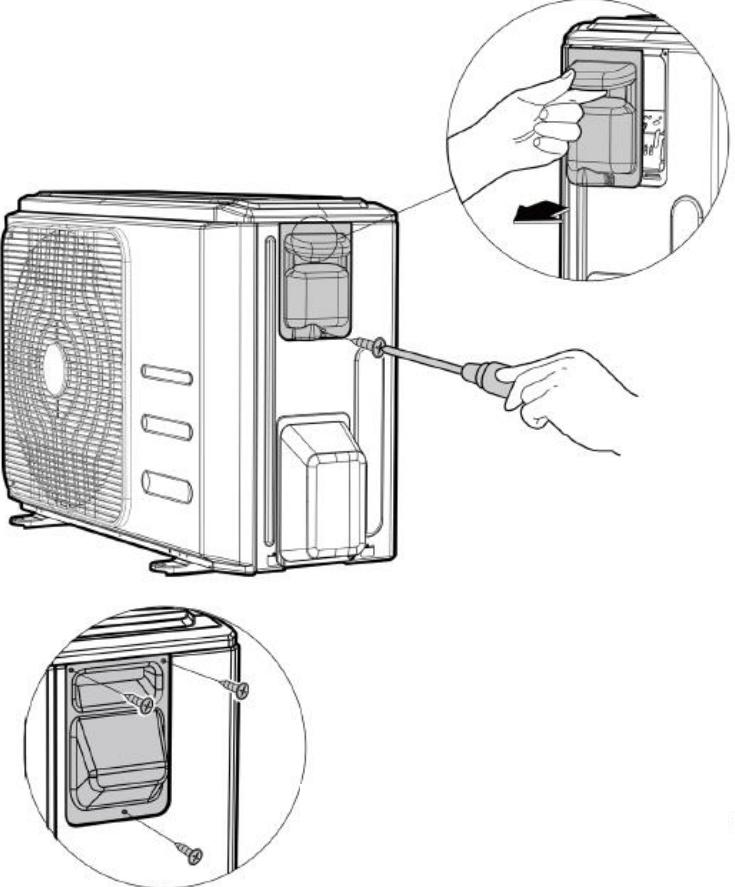
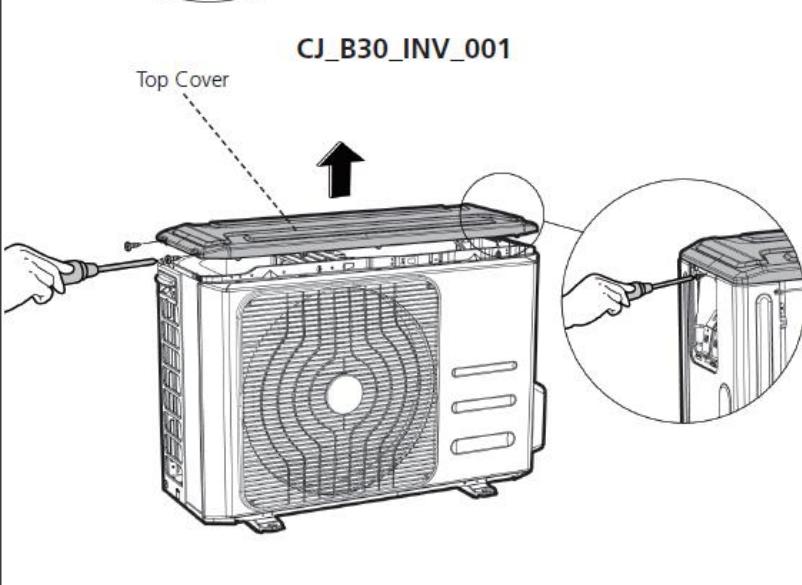
Procedure	Illustration
<p>4) Remove the screws of the front panel and then remove the front panel (7 screws) (see CJ_BA30_INV_003).</p>	 <p style="text-align: center;">CJ_BA30_INV_003</p>
<p>5) Remove the screws of the rear net and then remove the rear net (2 screws) (see CJ_BA30_INV_004).</p>	 <p style="text-align: center;">CJ_BA30_INV_004</p>

Note: This section is for reference only. Actual unit appearance may vary.

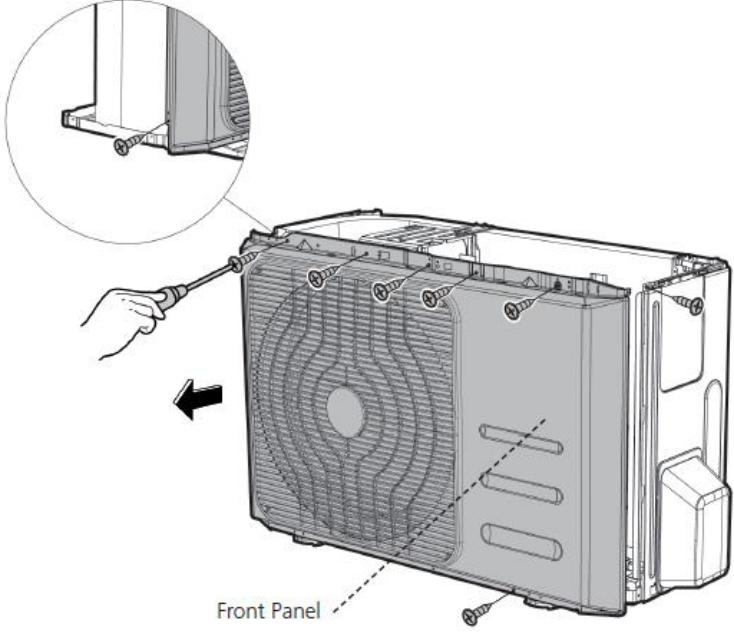
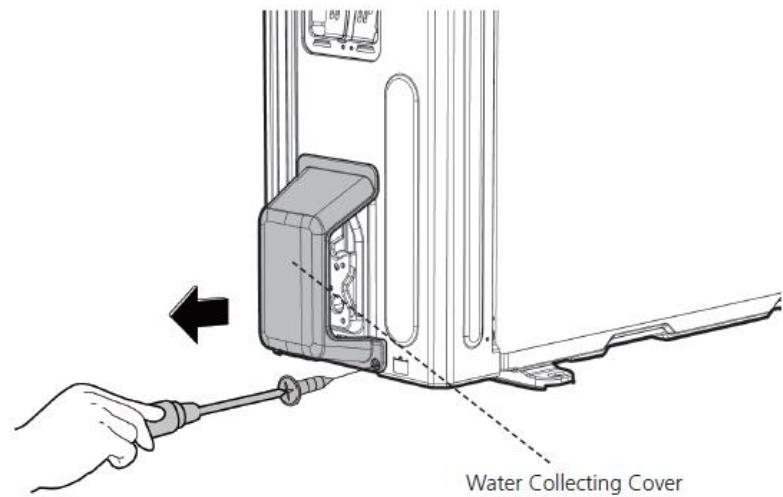
Procedure	Illustration
6) Remove the screws of the right panel and then remove the right panel (5 screws) (see CJ_BA30_INV_005).	 <p data-bbox="948 925 1188 956">CJ_BA30_INV_005</p>

Note: This section is for reference only. Actual unit appearance may vary.

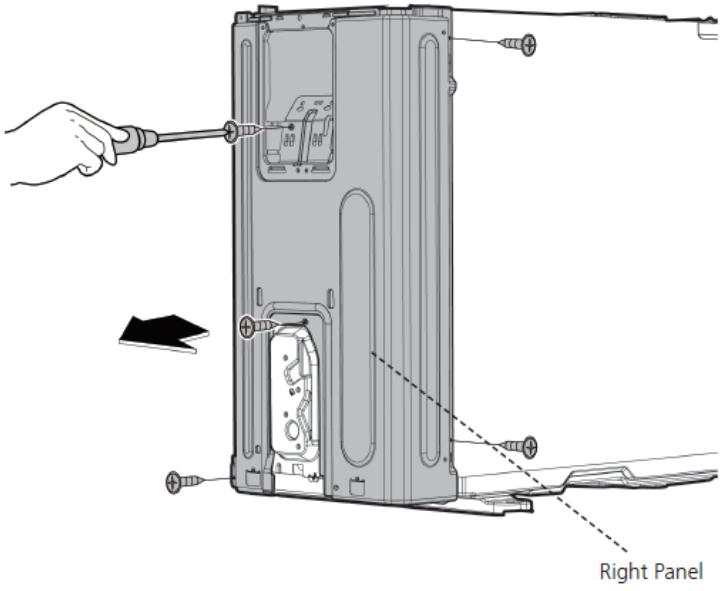
For models: 12H49YOMI, 12H49ZOMI, 18H49ZOMI

Procedure	Illustration
<ol style="list-style-type: none">1) Turn off the air conditioner and the power breaker.2) Remove the screws of the big handle and then remove the big handle (3 screws) (see CJ_B30_INV_001).	
<ol style="list-style-type: none">3) Remove the screws of the top cover and then remove the top cover (3 screws). One of the screws is located underneath the big handle (see CJ_B30_INV_002).	 <p data-bbox="964 1216 1188 1248">CJ_B30_INV_001</p> <p data-bbox="801 1258 899 1284">Top Cover</p> <p data-bbox="964 1828 1188 1860">CJ_B30_INV_002</p>

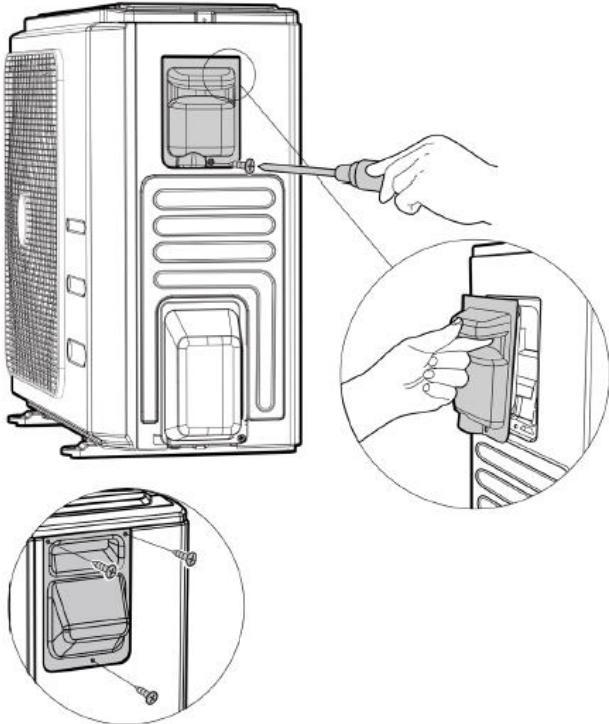
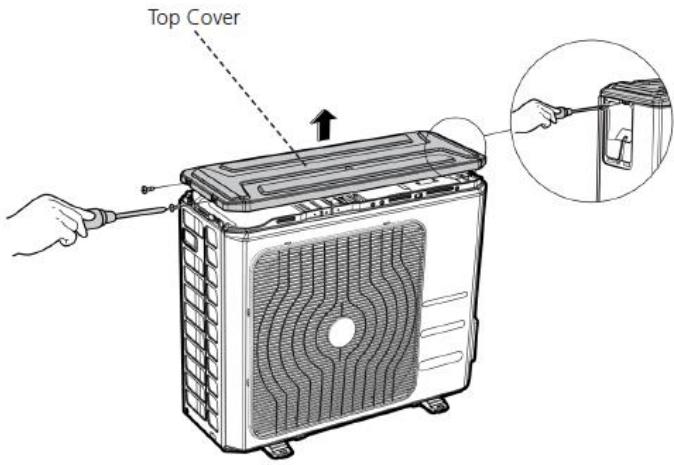
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
<p>4) Remove the screws of the front panel and then remove the front panel (8 screws) (see CJ_B30_INV_003).</p>	 <p style="text-align: center;">CJ_B30_INV_003</p>
<p>5) Remove the screws of water collecting cover and then remove the water collecting cover (1 screw) (see CJ_B30_INV_004).</p>	 <p style="text-align: center;">CJ_B30_INV_004</p>

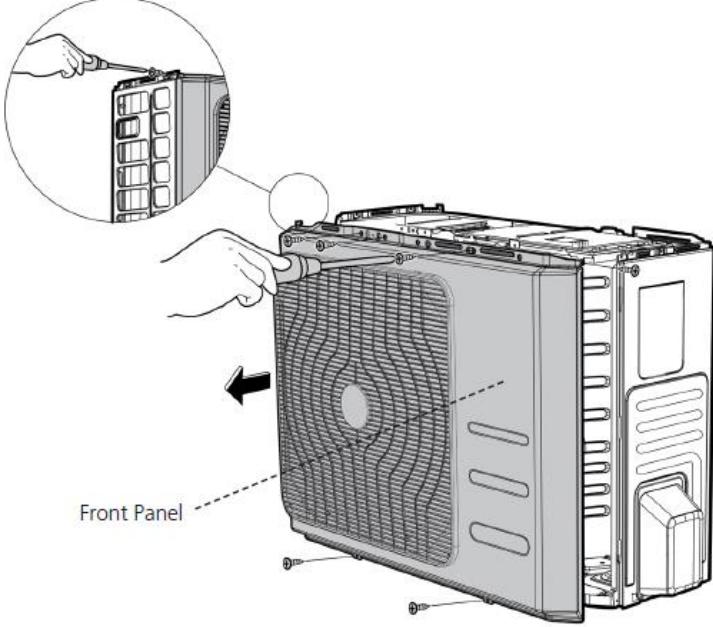
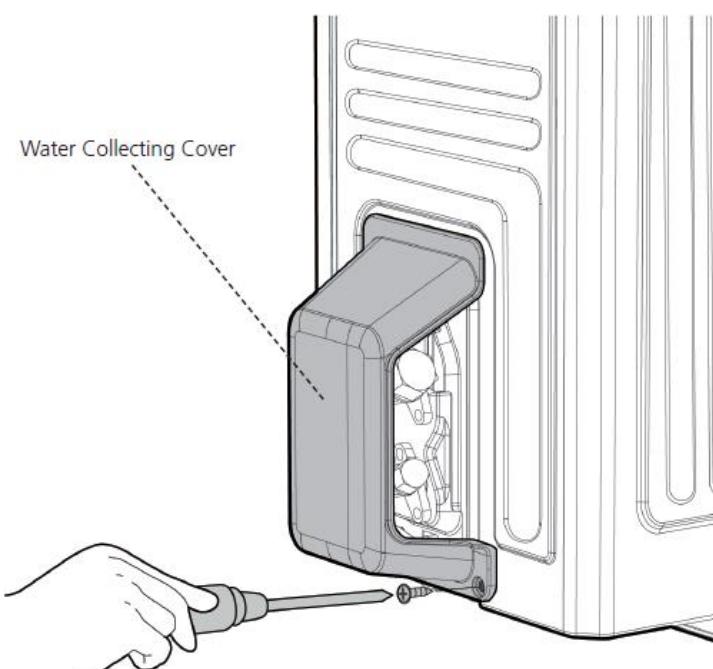
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
6) Remove the screws of the right panel and then remove the right panel (5 screws) (see CJ_B30_INV_005).	 <p data-bbox="964 834 1188 868">CJ_B30_INV_005</p>

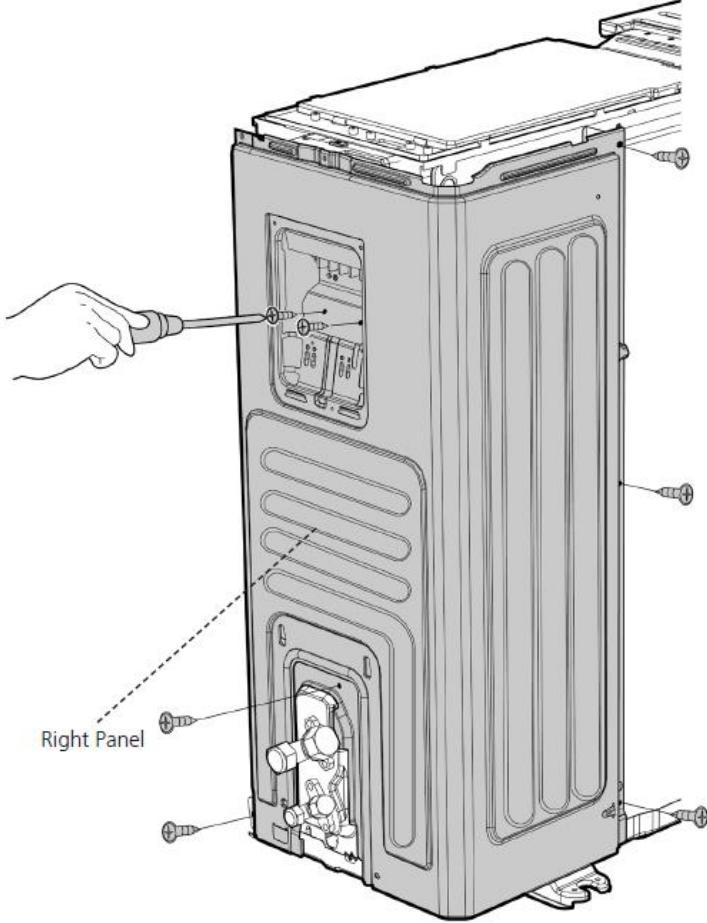
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
<ol style="list-style-type: none">1) Turn off the air conditioner and the power breaker.2) Remove the screws of the big handle and then remove the big handle (3 screws) (see CJ_CA30_INV_001).	 <p>The illustrations show the front view of the air conditioner unit. A hand uses a screwdriver to remove three screws from the base of a large handle on the right side. An inset shows a close-up of the handle being pulled away from the unit. Another inset shows a screw being removed from the handle's base.</p>
<ol style="list-style-type: none">3) Remove the screws of the top cover and then remove the top cover (3 screws). One of the screws is located underneath the big handle (see CJ_CA30_INV_002).	 <p>The illustration shows the side view of the air conditioner unit. A hand uses a screwdriver to remove three screws from the top edge. One screw is located under the big handle. An inset shows a close-up of the top cover being lifted upwards.</p> <p>CJ_CA30_INV_001</p> <p>CJ_CA30_INV_002</p>

Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
<p>4) Remove the screws of the front panel and then remove the front panel (7 screws) (see CJ_CA30_INV_003).</p>	 <p>CJ_CA30_INV_003</p>
<p>5) Remove the screws of water collecting cover and then remove the water collecting cover (1 screw) (see CJ_CA30_INV_004).</p>	 <p>CJ_CA30_INV_004</p>

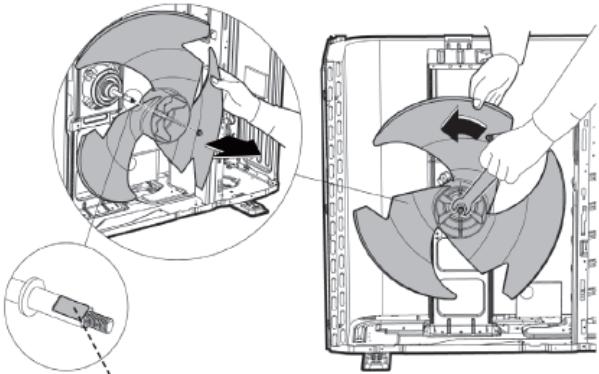
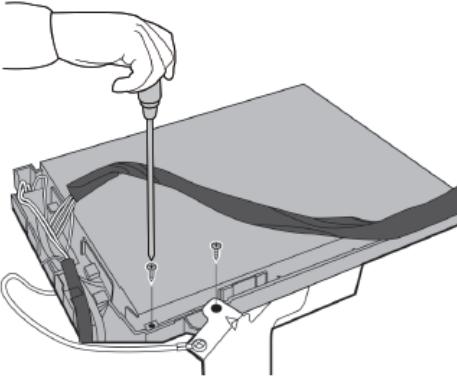
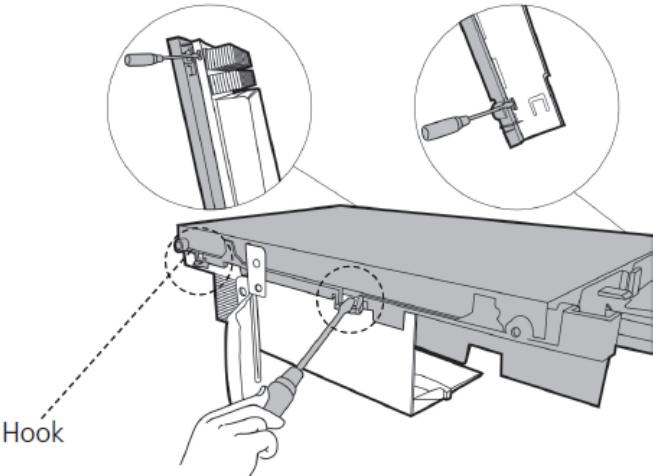
Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
6) Remove the screws of the right panel and then remove the right panel (6 screws) (see CJ_CA30_INV_005).	 <p>CJ_CA30_INV_005</p>

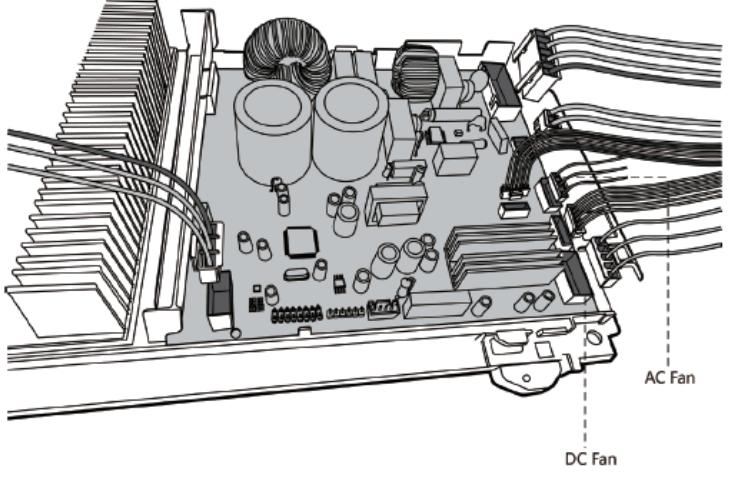
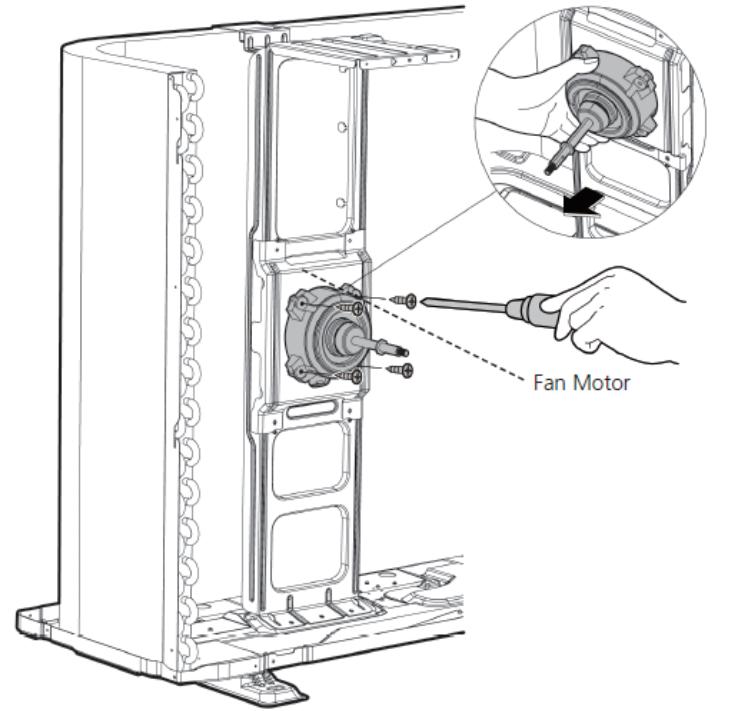
Note: This section is for reference only. Actual unit appearance may vary.

10.2.2 Removing the Fan and Fan Motor

For models: 9H49YOMI, 12H49YOMI, 12H49ZOMI, 18H49ZOMI

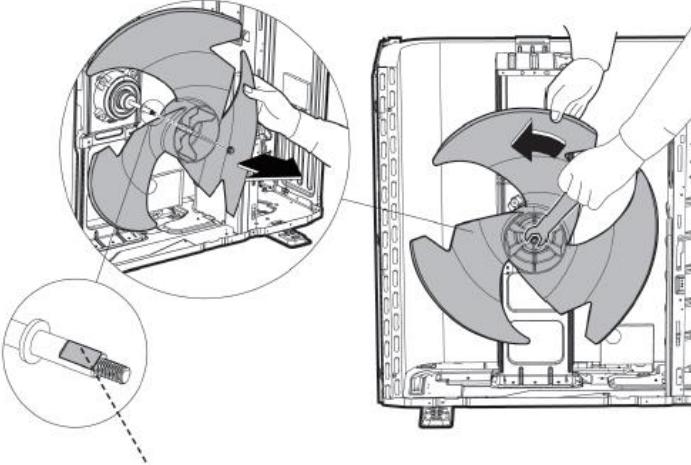
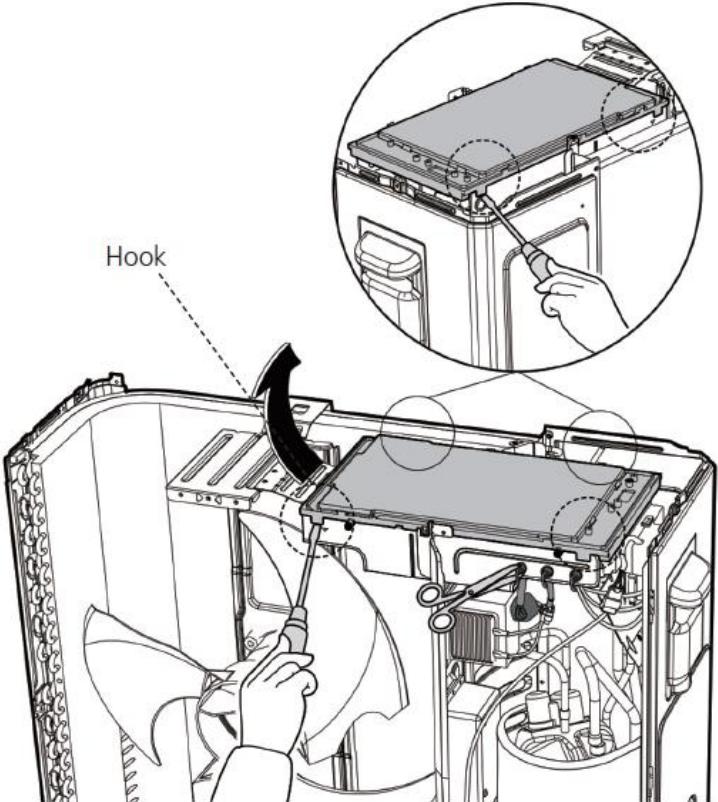
Procedure	Illustration
1) Remove the nut securing the fan with a spanner (see CJ_ODU_INV_001). 2) Remove the fan.	 <p>D-cut</p> <p>CJ_ODU_INV_001</p>
3) Remove the screws of the top cover. (2 screws) (see CJ_ODU_INV_002).	 <p>CJ_ODU_INV_002</p>
4) Unfix the hooks and then open the electronic control box cover (4 hooks) (see CJ_ODU_INV_003).	 <p>Hook</p> <p>CJ_ODU_INV_003</p>

Note: This section is for reference only. Actual unit appearance may vary.

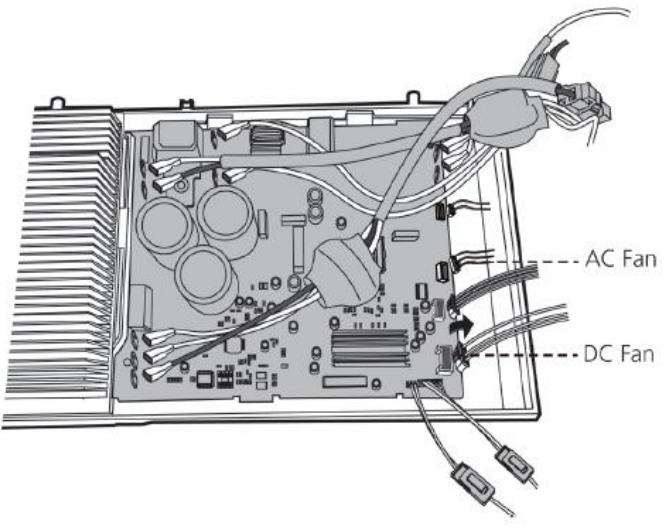
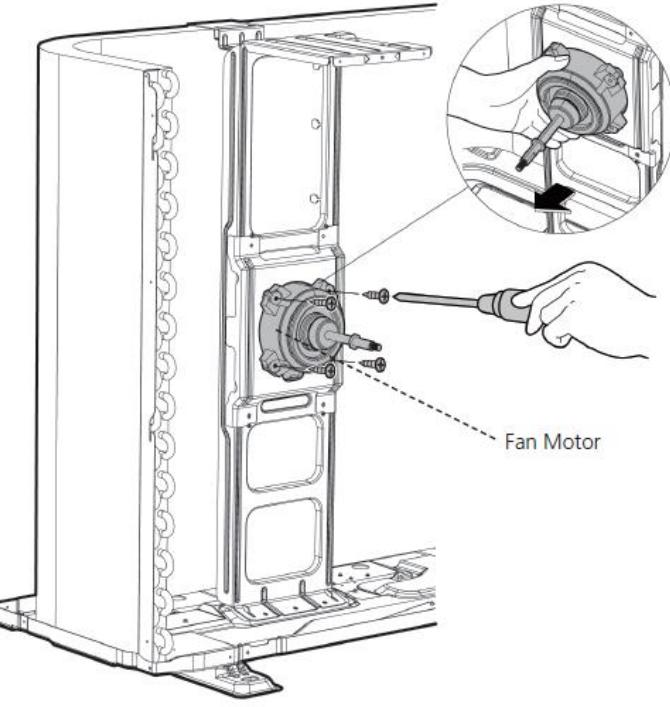
Procedure	Illustration
<p>5) Disconnect the connector for fan motor from the electronic control board (see CJ_ODU_INV_004).</p>	
<p>6) Remove the fixing screws of the fan motor (4 screws) (see CJ_ODU_INV_005).</p> <p>7) Remove the fan motor.</p>	 <p style="text-align: center;">CJ_ODU_INV_004</p> <p style="text-align: center;">CJ_ODU_INV_005</p>

Note: This section is for reference only. Actual unit appearance may vary.

For models: 24H47ZOMI

Procedure	Illustration
<ol style="list-style-type: none">1) Remove the nut securing the fan with a spanner (see CJ_ODU_INV_006).2) Remove the fan.	 <p>D-cut</p> <p>CJ_ODU_INV_006</p>
3) Unfix the hooks and then open the electronic control box cover (4 hooks) (see CJ_ODU_INV_007).	 <p>Hook</p> <p>CJ_ODU_INV_007</p>

Note: This section is for reference only. Actual unit appearance may vary.

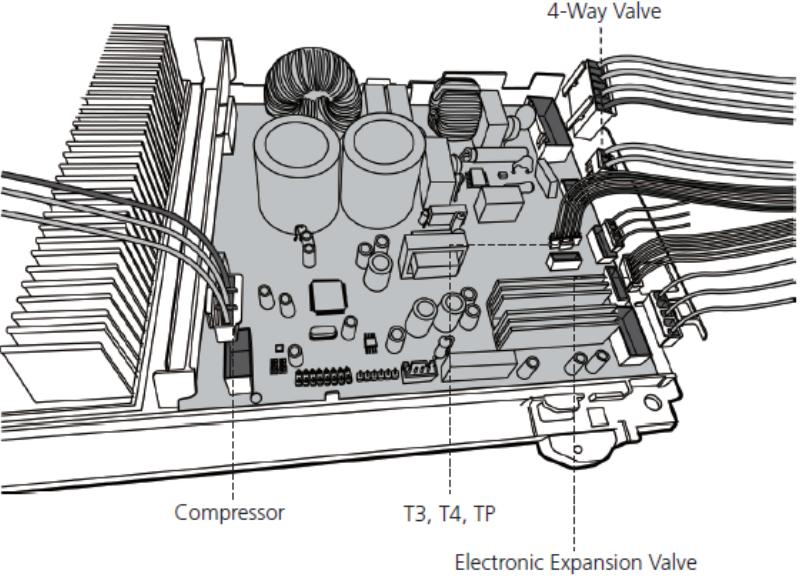
Procedure	Illustration
<p>4) Disconnect the connector for fan motor from the electronic control board (see CJ_ODU_INV_008).</p>	 <p style="text-align: center;">CJ_ODU_INV_008</p>
<p>5) Remove the fixing screws of the fan motor (4 screws) (see CJ_ODU_INV_009). 6) Remove the fan motor.</p>	 <p style="text-align: center;">CJ_ODU_INV_009</p>

Note: This section is for reference only. Actual unit appearance may vary.

10.2.3 Accessing the Electrical parts (Antistatic gloves must be worn.)

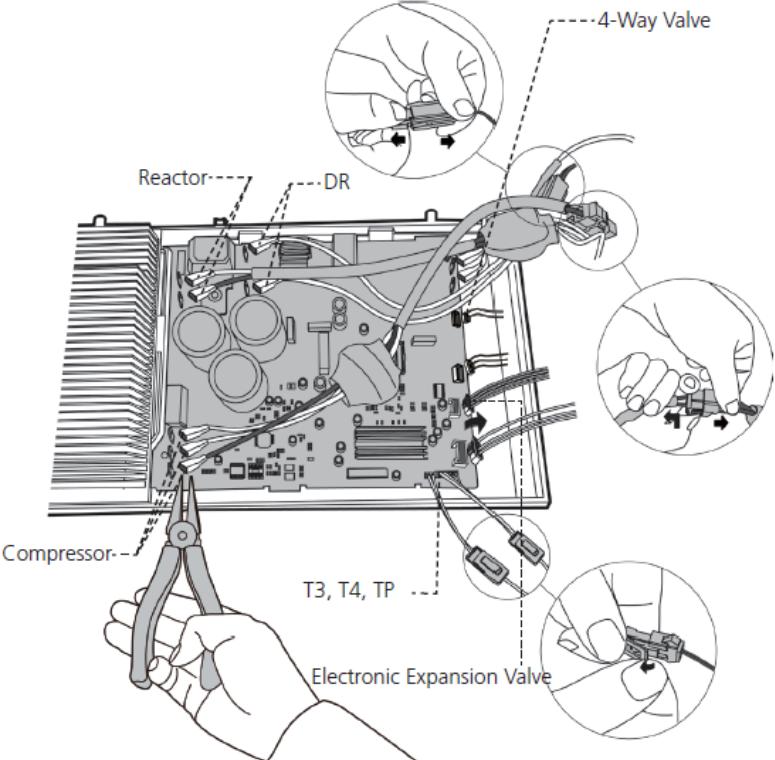
Note: Remove the penal plate, fan and fan motor (Refer to the sections 10.2.1 & 10.2.2 above) before disassembling.

For models: 9H49YOMI, 12H49YOMI, 12H49ZOMI, 18H49ZOMI

Procedure	Illustration
<ol style="list-style-type: none"> 1) Remove the connector for the compressor (see CJ_ODU_INV_010). 2) Pull out the two blue wires connected with the four way valve (CJ_ODU_INV_010). 3) Pull out connectors of the condenser coil temp. sensor(T3),outdoor ambient temp. sensor(T4) and discharge temp. sensor(TP) (CJ_ODU_INV_010). 4) Disconnect the electronic expansion valve wire (CJ_ODU_INV_010). 5) Then remove the electronic control box (see CJ_ODU_INV_010). 	 <p>CJ_ODU_INV_010</p>

Note: This section is for reference only. Actual unit appearance may vary.

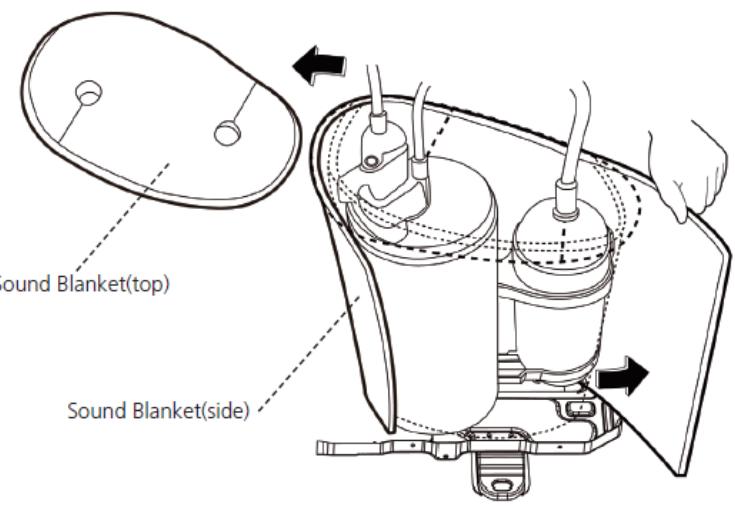
For models: 24H47ZOMI

Procedure	Illustration
<ol style="list-style-type: none">1) Remove the connector for the compressor (see CJ_ODU_INV_011).2) Pull out the two blue wires connected with the four way valve (see CJ_ODU_INV_011).3) Pull out connectors of the condenser coil temp. sensor(T3),outdoor ambient temp. sensor(T4) and discharge temp. sensor(T5) (see CJ_ODU_INV_011).4) Disconnect the electronic expansion valve wire (see Fig CJ_ODU_INV_011).5) Remove the connector for electric heaters (see Fig CJ_ODU_INV_011).6) Remove the connector for the DR and reactor (see Fig CJ_ODU_INV_011).7) Then remove the electronic control box (see Fig CJ_ODU_INV_011).	 <p>CJ_ODU_INV_011</p>

Note: This section is for reference only. Actual unit appearance may vary.

10.2.4 Removing the Sound Blanket

Note: Remove the panel plate, fan and fan motor, electrical parts (Refer to the sections 10.2.1, 10.2.2 & 10.2.3 above) before disassembling.

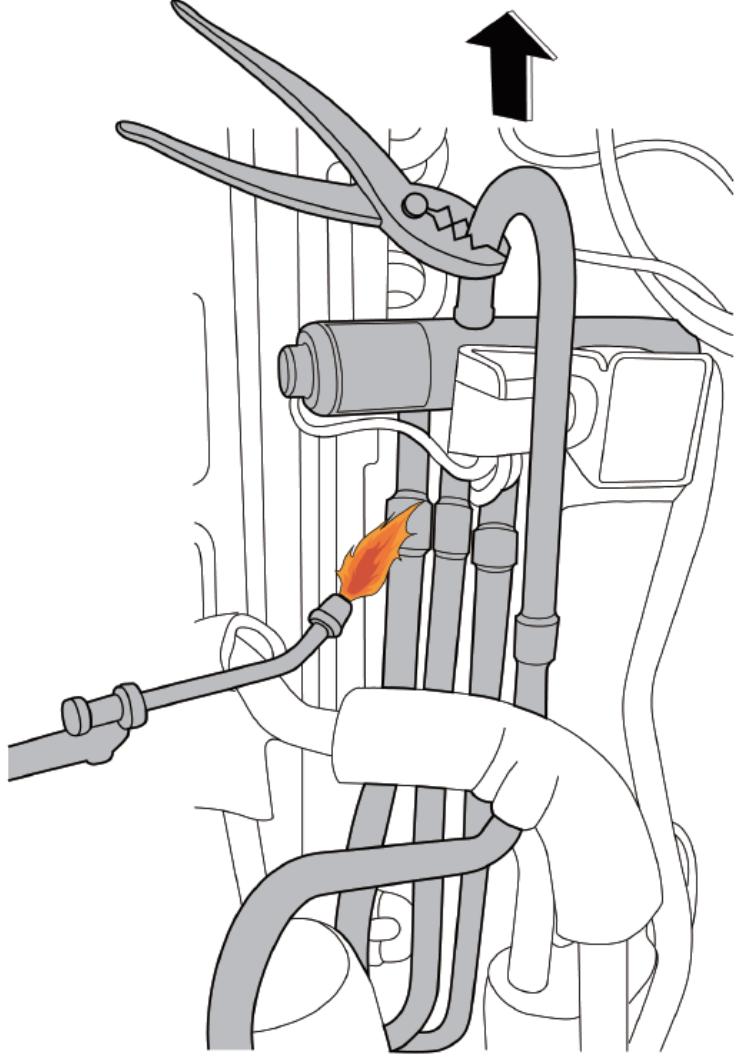
Procedure	Illustration
1) Remove the sound blanket (side and top) (see CJ_ODU_INV_012).	 <p>CJ_ODU_INV_012</p>

Note: This section is for reference only. Actual unit appearance may vary.

10.2.5 Removing the Four-way Valve

WARNING: Recover refrigerant from the refrigerant circuit before remove the four-way valve.

Note: Remove the panel plate, fan and fan motor, electrical parts (Refer to the sections 10.2.1, 10.2.2 & 10.2.3 above) before disassembling.

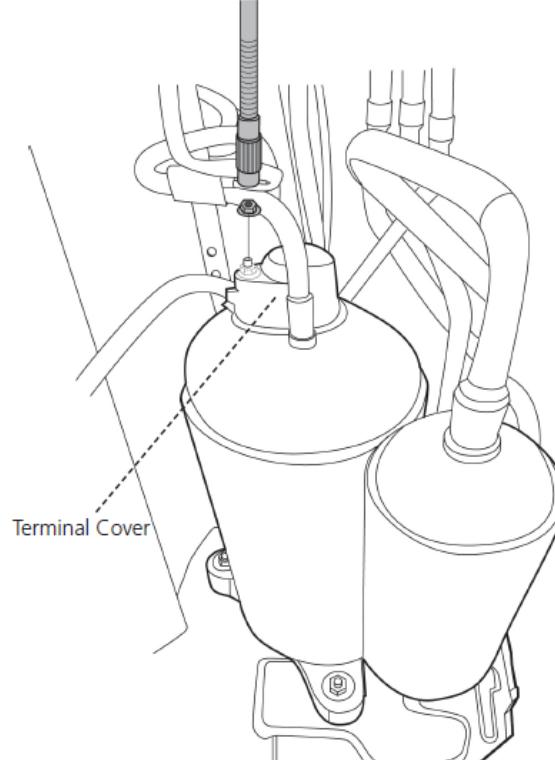
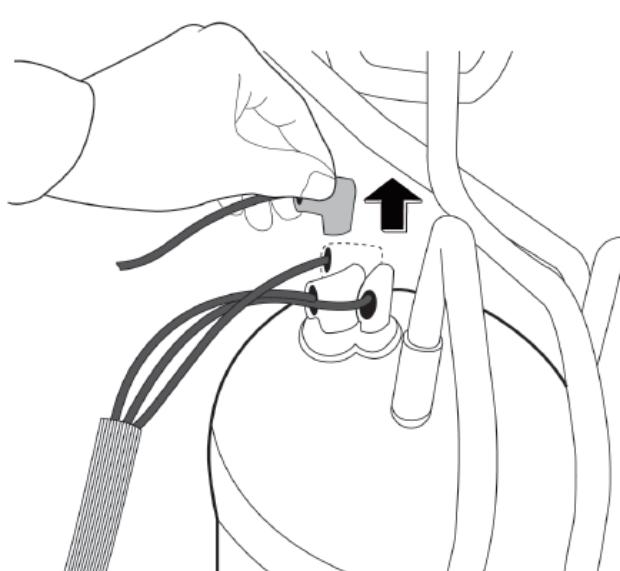
Procedure	Illustration
<ol style="list-style-type: none">1) Heat up the brazed parts and then detach the the four-way valve and the pipe (see CJ_ODU_INV_013).2) Remove the four-way valve assembly with pliers.	 <p>CJ_ODU_INV_013</p>

Note: This section is for reference only. Actual unit appearance may vary.

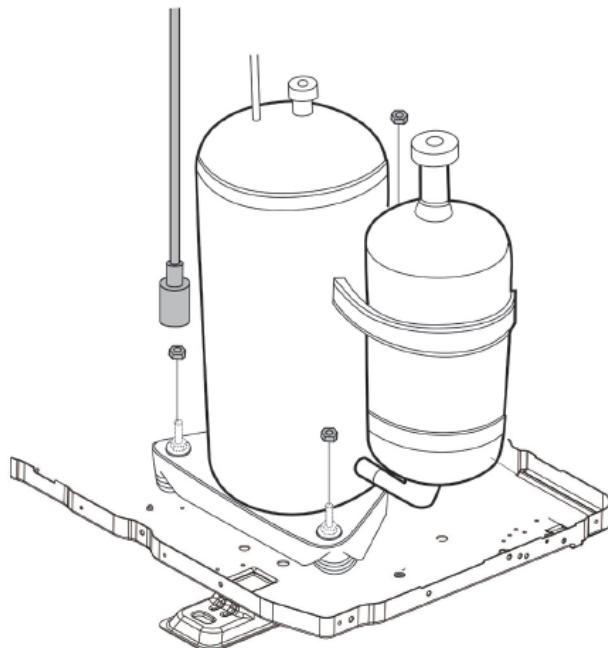
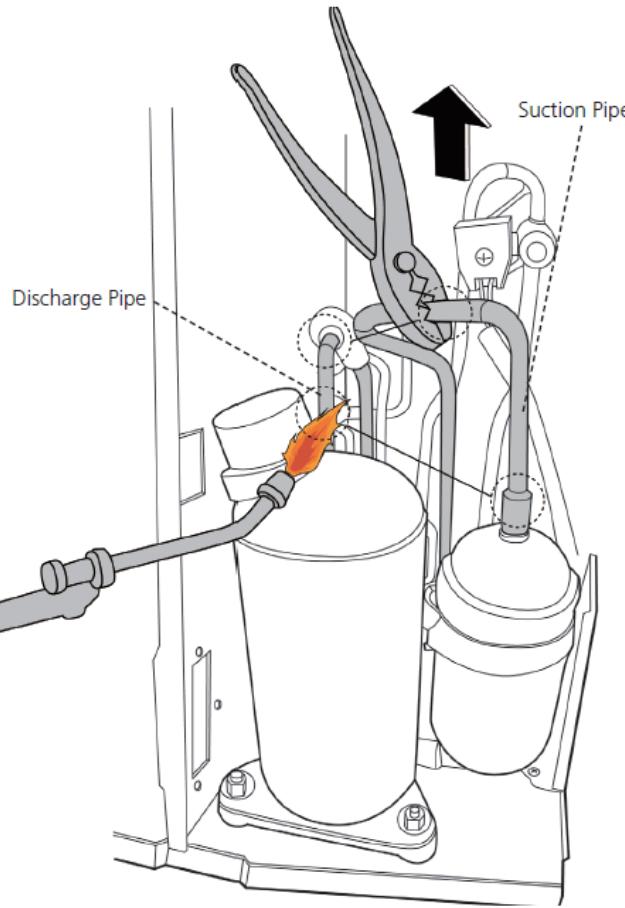
10.2.6 Removing the Compressor

WARNING: Recover refrigerant from the refrigerant circuit before remove the four-way valve.

Note: Remove the panel plate, fan and fan motor, electrical parts, sound blanket (Refer to the sections 10.2.1, 10.2.2, 10.2.3 and 10.2.4 above) before disassembling.

Procedure	Illustration
1) Remove the flange nut of terminal cover and remove the terminal cover (see CJ_ODU_INV_014).	 <p>CJ_ODU_INV_014</p>
2) Disconnect the connectors (see CJ_ODU_INV_015).	 <p>CJ_ODU_INV_015</p>

Note: This section is for reference only. Actual unit appearance may vary.

Procedure	Illustration
<p>3) Remove the hex nuts and washers securing the compressor, located on the bottom plate (see CJ_ODU_INV_016).</p>	 <p style="text-align: center;">CJ_ODU_INV_016</p>
<p>4) Heat up the brazed parts and then remove the discharge pipe and the suction pipe (see CJ_ODU_INV_017).</p> <p>5) Lift the compressor from the base pan assembly with pliers.</p>	 <p style="text-align: center;">CJ_ODU_INV_017</p>

Note: This section is for reference only. Actual unit appearance may vary.

11. Specifications

11.1. Specifications of 115V units

(Thermal Zone - Sea Breeze) Indoor / Outdoor			244-1501-E, 244-1501-C 9H49YIMI, 9H49YOMI	244-1502-E, 244-1502-C 12H49YIMI, 12H49YOMI
AHRI Reference Number (Sea Breeze / Thermal Zone)			202576832 / 202576833	202576826 / 202576827
Power supply		Ph-V-Hz	115V, 1Ph, 60Hz	115V, 1Ph, 60Hz
Cooling	Capacity	Btu/h	9000	12000
	Input	W	782	1020
	Rated current	A	6.8	8.87
	EER	Btu/w	11.5	10.5
	SEER	Btu/w	19	19
Heating	Capacity	Btu/h	10000	12000
	Input	W	925	1026
	Rated current	A	8.1	8.93
	COP	W/W	3.11	3.43
	HSPF (region IV)	Btu/w	10	9.5
MINIMUM CIRCUIT AMPACITY		A	15	15
MAX.FUSE		A	15	15
Compressor	Model		KSK103D33UEZ3	KSK103D33UEZ3
	Type		Rotary	Rotary
	Brand		GMCC	GMCC
	Capacity	W	3100	3100
	Input	W	790	790
	Rated current (RLA)	A	11.5	6.8
	Heating Belt		Yes	Yes
Refrigerant oil/oil charge		ml	ESTER OIL VG74 310 ± 15 ml	ESTER OIL VG74 310 ± 15 ml
Indoor fan motor	Model		ZKFP-20-8-113	ZKFP-20-8-113
	Brand		Welling	Welling
	Input	W	35.2	35.2
	Output	W	20	20
	RLA	A	0.25	0.25
Speed (Hi/Mi/Lo)		r/min	1050/850/600	1100/850/750
Indoor air flow (Hi/Mi/Lo)		CFM	247/182/129	294/212/171
Indoor noise level (Hi/Mi/Lo)		dB(A)	38/32/25	38/30/28
Indoor unit	Dimension(W*D*H)	inch	28.43x7.36x11.42	31.57x7.44x11.69
	Packing (W*D*H)	inch	31.10x10.63x14.76	34.45x11.22x14.76
	Net/Gross weight	lbs.	17.2/22.7	18.96/24.91
Outdoor fan motor	Model		ZKFN-34-8-1-3	ZKFN-34-8-1-3
	Input	W	58	58
	Output	W	34	34
	RLA	A	0.4	0.4
	Winding Resistance	Ω	77.3	77.3
Speed		r/min	850/650	800/650
Outdoor air flow		CFM	1176.47	1176.47
Outdoor noise level		dB(A)	52	55
Outdoor unit	Dimension(W*D*H)	inch	30.31x11.81x21.85	31.50x13.11x21.81
	Packing (W*D*H)	inch	35.43x13.58x23.43	36.22x15.35x24.21
	Net/Gross weight	lbs.	66.8/71.87	70.33/76.28
Refrigerant type		g	R410A/850	R410A/840
Refrigerant type		oz	R410A/30	R410A/29.63
Refrigerant pre-charge		ft	25	25
Additional charge for each ft		oz	0.161	0.161
Design pressure		PSIG	550/340	550/340
Refrigerant piping	Liquid side/ Gas side	inch	1/4" / 3/8"	1/4" / 1/2"
	Max. refrigerant pipe length	ft	82	82
	Max. difference in level	ft	33	33
Wire Size / No. of Conductors			14 AWG / 4C (Recommended)	14 AWG / 4C (Recommended)
Electrical Shock Protection			I	I
Thermostat type			Remote Control	Remote Control
Wall Control (Optional)			YES	YES
Indoor selection range - remote	Indoor (cooling/ heating)	°F	62~90/32~86	62~90/32~86
Outdoor unit operating temperature range	Outdoor (cooling/heating)	°F	5~122/5~86	5~122/5~86
Application area (cooling standard)		sq.ft	129-189	172-252

11.2. Specifications of 208-230V units

(Thermal Zone - Sea Breeze) Indoor / Outdoor		244-1503-E, 244-1503-C 12H49ZIMI, 12H49ZOMI	244-1504-E, 244-1504-C 18H49ZIMI, 18H49ZOMI	244-1505-E, 244-1505-C 24H47ZIMI, 24H47ZOMI
AHRI Reference Number (Sea Breeze / Thermal Zone)		202576824 / 202576825	202576828 / 202576829	202576830 / 202576831
Power supply	Ph-V-Hz	208-230V, 1Ph, 60Hz	208-230V, 1Ph, 60Hz	208-230V, 1Ph, 60Hz
Cooling	Capacity	Btu/h	12000	18000
	Input	W	1065	1645
	Rated current	A	4.5	7.35
	EER	Btu/w	11.0	11.0
	SEER	Btu/w	19	19
Heating	Capacity	Btu/h	12000	18000
	Input	W	1025	1700
	Rated current	A	4.3	7.4
	COP	W/W	3.43	3.1
	HSPF (region IV)	Btu/w	9.5	10.0
MINIMUM CIRCUIT AMPACITY		A	15	15
MAX.FUSE		A	15	20
Compressor	Model		KSK103D33UEZ3	KTM240D57UMT
	Type		Rotary	Rotary
	Brand		GMCC	GMCC
	Capacity	W	3100	4370
	Input	W	790	1135
	Rated current (RLA)	A	6.8	10.0
	Heating Belt		Yes	Yes
	Refrigerant oil/oil charge	ml	VG74 / 310 ± 15 ml	VG74 / 440
Indoor fan motor	Model		ZKFP-20-8-6-7	ZKFP-30-8-3
	Brand		Welling	Welling
	Input	W	50	36
	Output	W	20	30
	RLA	A	0.25	0.4
Speed (Hi/Mi/Lo)		r/min	1100/900/750	1100/800/750
Indoor air flow (Hi/Mi/Lo)		CFM	324/282/212	450/393/262
Indoor noise level (Hi/Mi/Lo)		dB(A)	38/32/24	43/35/30.5
Indoor unit	Dimension(W*D*H)	inch	31.57x7.44x11.69	37.99x8.46x12.56
	Packing (W*D*H)	inch	34.45x11.22x14.76	41.14x12.01x16.14
	Net/Gross weight	lbs.	18.96/24.91	24.03/32.19
Outdoor fan motor	Model		ZKFN-34-8-1-3	ZKFN-34-8-1-3
	Input	W	58	58
	Output	W	34	34
	RLA	A	0.4	0.5
	Winding Resistance	Ω	77.3	77.3
	Speed	r/min	800/750/650	800/750/650
Outdoor air flow		CFM	1176	1176
Outdoor noise level		dB(A)	55	57.5
Outdoor unit	Dimension(W*D*H)	inch	31.50x13.11x21.81	31.50x13.11x21.81
	Packing (W*D*H)	inch	36.22x15.35x24.21	36.22x15.35x24.21
	Net/Gross weight	lbs.	67.02/72.75	79.81/85.76
Refrigerant type		g	R410A/840	R410A/1250
Refrigerant type		oz	R410A/29.63	R410A/44.09
Refrigerant pre-charge		ft	25	25
Additional charge for each ft		oz	0.161	0.161
Design pressure		PSIG	550/340	550/340
Refrigerant piping	Liquid side/ Gas side	inch	1/4" / 1/2"	1/4" / 1/2"
	Max. refrigerant pipe length	ft	82	98
	Max. difference in level	ft	33	66
Wire Size / No. of Conductors			14 AWG / 4C (Recommended)	14 AWG / 4C (Recommended)
Electrical Shock Protection			I	I
Thermostat type			Remote Control	Remote Control
Wall Control (Optional)			YES	YES
Indoor selection range - remote	Indoor (cooling/ heating)	°F	62~90/32~86	62~90/32~86
Outdoor unit operating temperature range	Outdoor (cooling/heating)	°F	5~122/5~86	5~122/5~86
Application area (cooling standard)		sq.ft	172-252	251-368
				330-484