



**F R I E D R I C H**

SPLIT TYPE  
AIR CONDITIONER  
CASSETTE TYPE (60Hz)

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# **SERVICE MANUAL**

Indoor unit    Outdoor unit  
MC24Y3F      MR24UY3F



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# SPECIFICATIONS

## ELECTRICAL DATA

TYPE		COOLING & HEATING
INDOOR UNIT		MC24Y3F
OUTDOOR UNIT		MR24UY3F
COOLING CAPACITY		22,200 / 22,200 BTU/h
HEATING CAPACITY		24,200 / 24,200 BTU/h
POWER SOURCE		1 $\phi$ 230 / 208 V 60Hz
RUNNING CURRENT	COOLING	9.2 / 10.1 A
	HEATING	10.4 / 11.4 A
INPUT WATTS	COOLING	2.10 / 2.10 kW
	HEATING	2.37 / 2.37 kW
E.E.R.	COOLING	3.10 / 3.10 kW/kW
	HEATING	3.00 / 3.00 kW/kW
STARTING CURRENT		9.5 A
MOISTURE REMOVAL		6.3 Pts/h (3.0 l/hr)
AIRCIRCULATION HIGH		617cfm (1,050 m <sup>3</sup> /hr)

## COMPRESSOR AND REFRIGERANT

TYPE	Total enclosed type, 4 poles, Inverter, Twin Rotary	
DISCRIMINATION	TNB220FPBM9	
PRECHARGED REFRIGERANT	4 lb 3 oz, 1,900 g	
REFRIGERANT TYPE	R410A	
MAX PIPE LENGTH	164 ft (50 m)	
MAX PIPE HEIGHT	98 ft (30 m)	
FULL CHARGE	Pipe length 49 ft. (15 m)	4 lb 3 oz (1,900 g)
	66 ft. (20 m)	4 lb 10 oz (2,100 g)
	98 ft. (30 m)	5 lb 8 oz (2,500 g)
	131 ft. (40 m)	6 lb 6 oz (2,900 g)
	164 ft. (50 m)	7 lb 5 oz (3,300 g)
ADDITIONAL CHARGE	0.424 oz / ft. (40 g / m)	

## FAN MOTOR

INDOOR UNIT (Cool / Heat)	Discrimination	MFA-24RPT
	High speed	490 r.p.m. / 440 r.p.m.
	Middle speed	430 r.p.m. / 380 r.p.m.
	Low speed	360 r.p.m. / 330 r.p.m.
	Super low	- / 250 r.p.m.
OUTDOOR UNIT (Cool / Heat)	Discrimination	MFE-45ROM
	High speed	850 r.p.m. / 900 r.p.m.

## NOISE LEVEL

INDOOR UNIT	High speed	45 dB
	Middle speed	43 dB
	Low speed	38 dB
OUTDOOR UNIT	Cool	53 dB
	Heat	55 dB

## DIMENSIONS

INDOOR UNIT	H x W x D	9-3/4" x 32-3/4" x 32-3/4" inch (246 x 830 x 830 mm)
OUTDOOR UNIT	H x W x D	32-3/4" x 35-1/2" x 13" inch (830 x 900 x 330 mm)

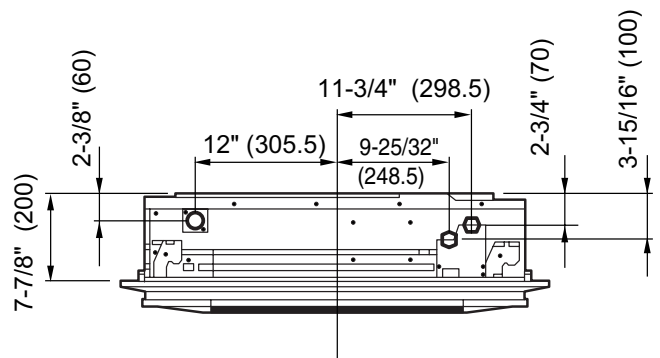
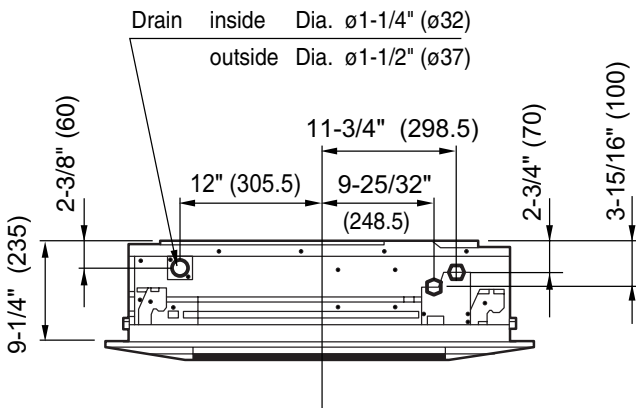
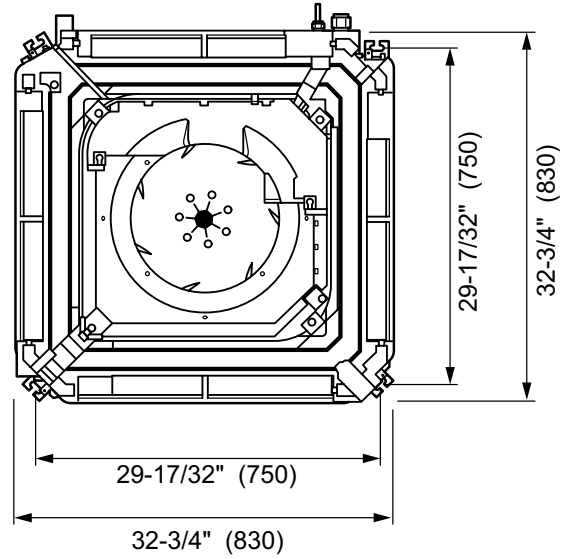
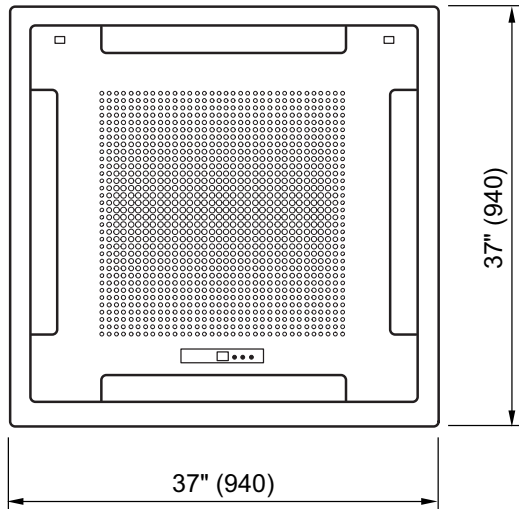
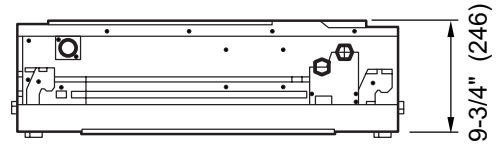
## WEIGHT

INDOOR UNIT	Gross / Net	97 lb / 75 lb (44 kg / 34 kg)
OUTDOOR UNIT	Gross / Net	154 lb / 141 lb (70 kg / 64 kg)

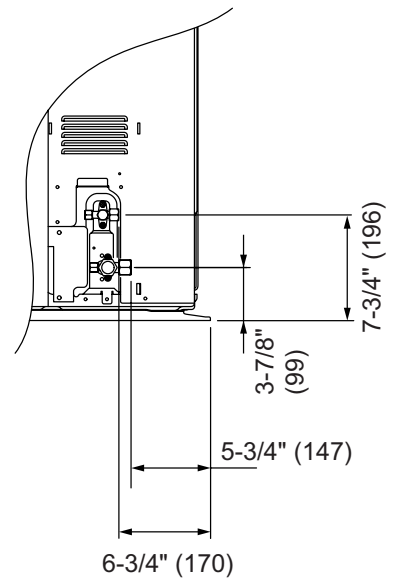
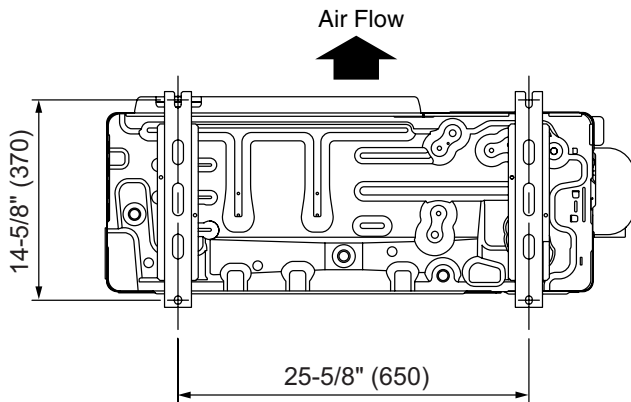
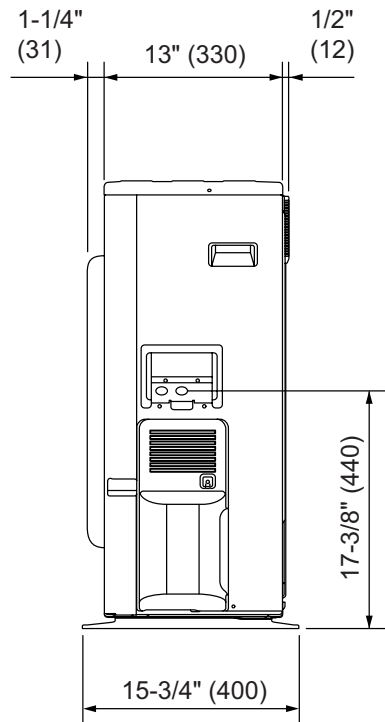
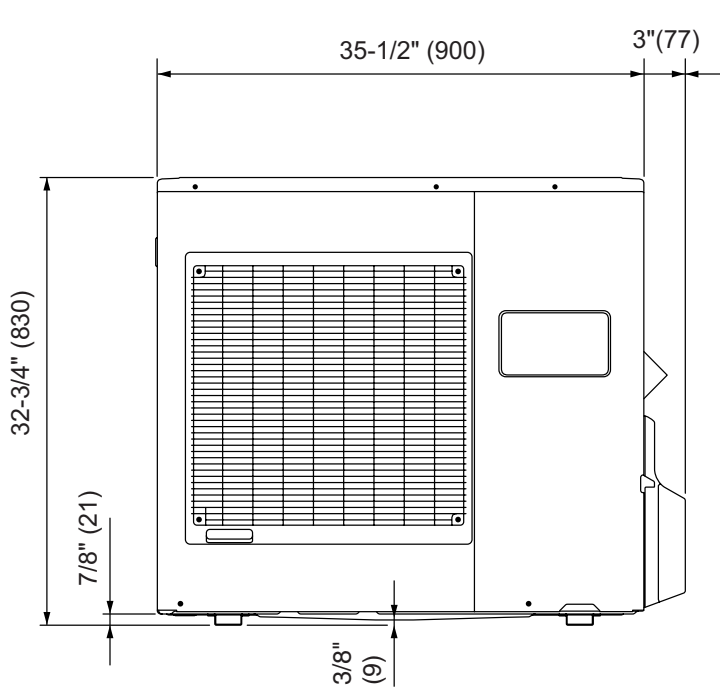
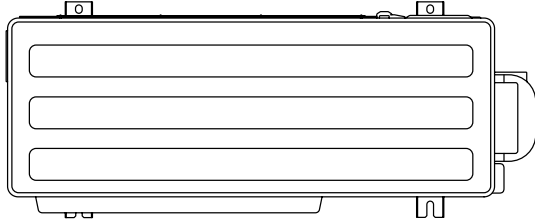
# DIMENSIONS

## INDOOR UNIT

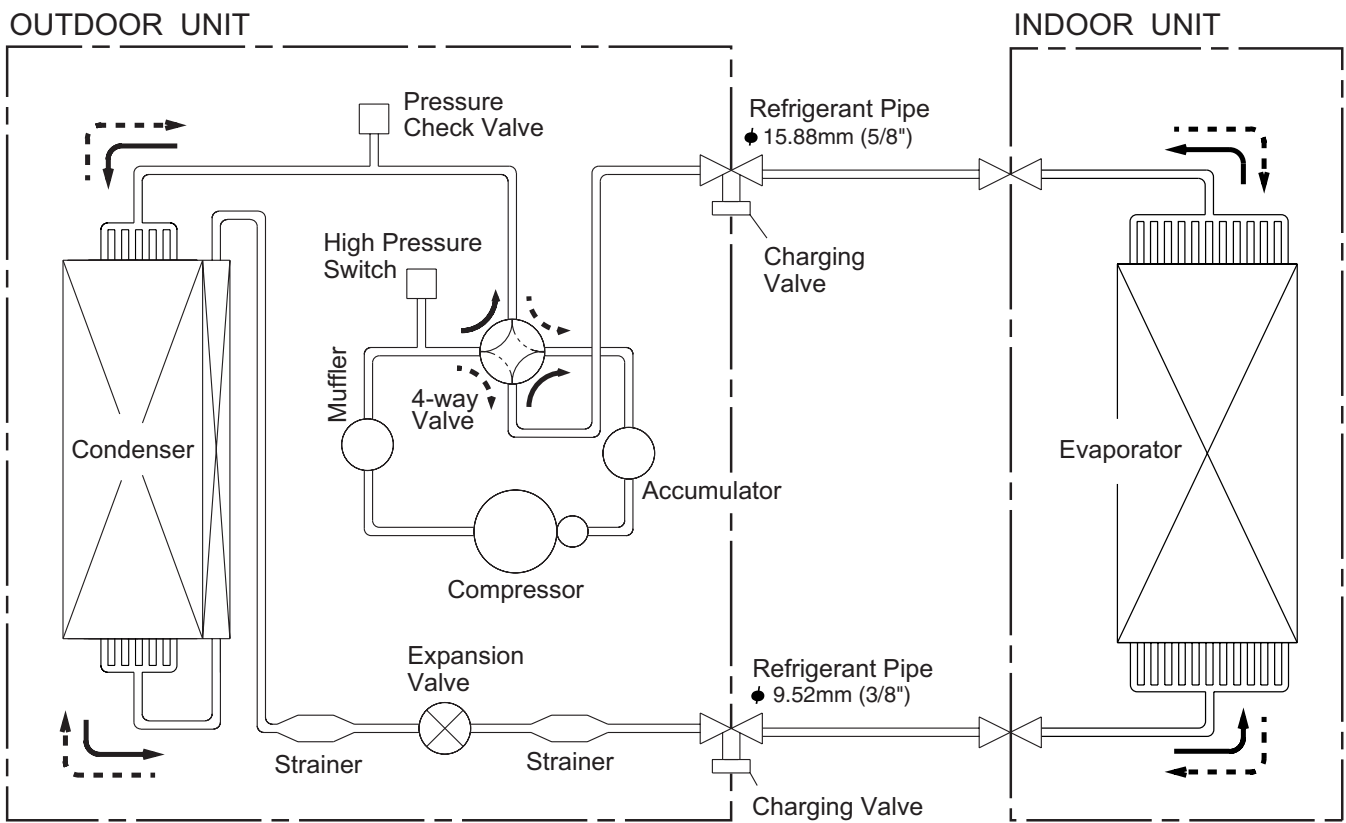
unit : inch (mm)



OUTDOOR UNIT  
unit : inch (mm)



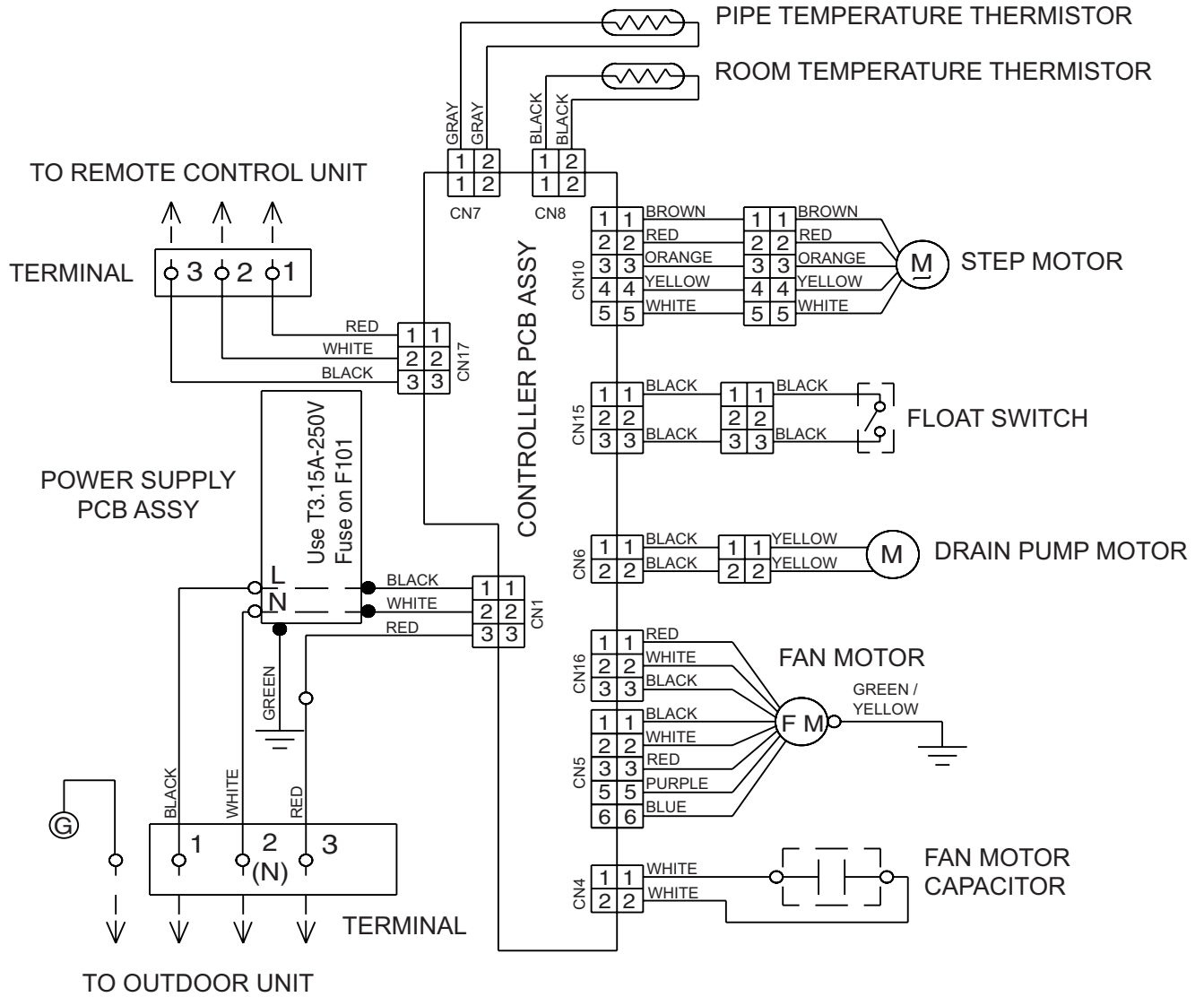
# REFRIGERANT SYSTEM DIAGRAM



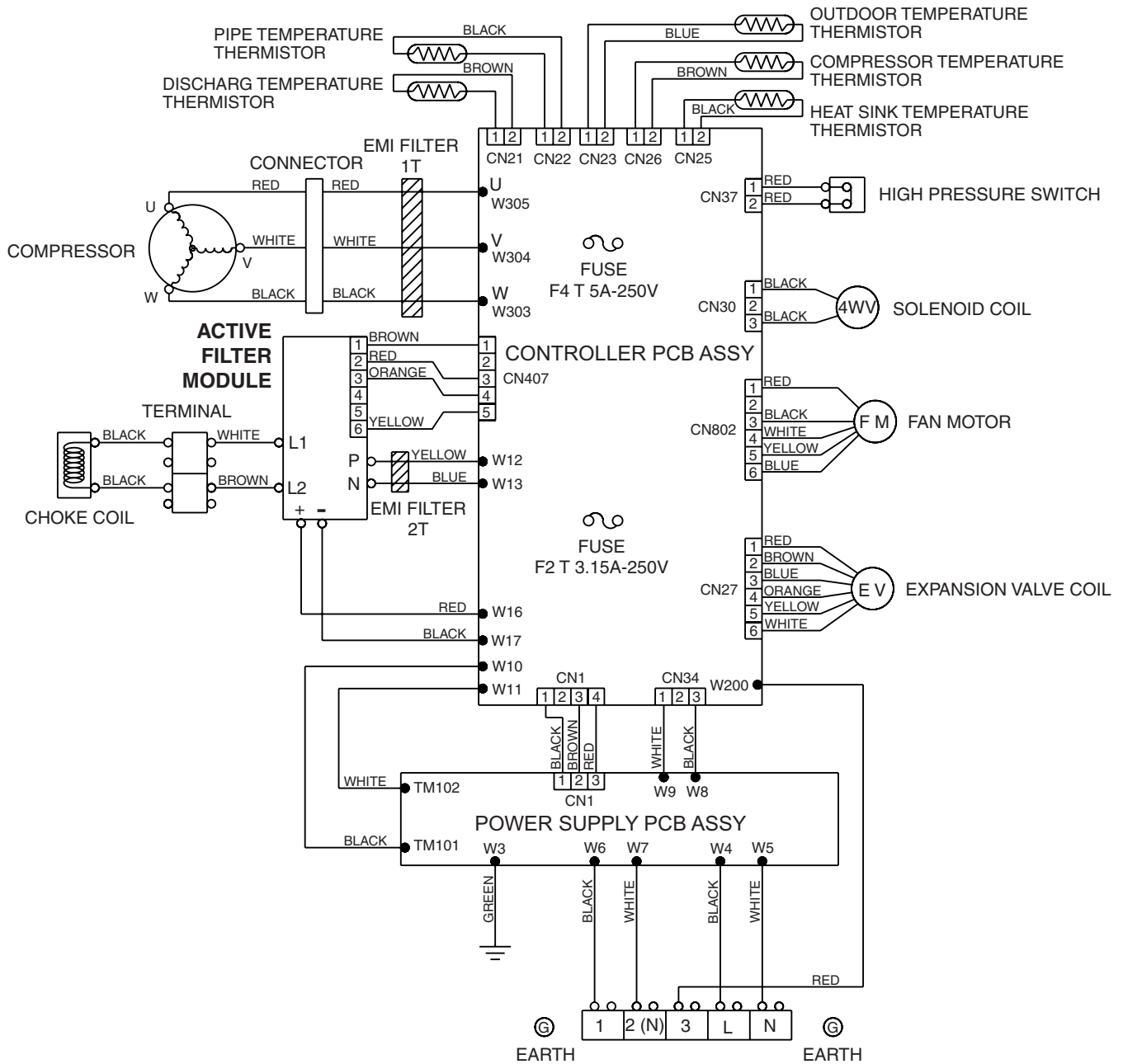
—→ : COOL  
 ---→ : HEAT

# CIRCUIT DIAGRAM

## INDOOR UNIT



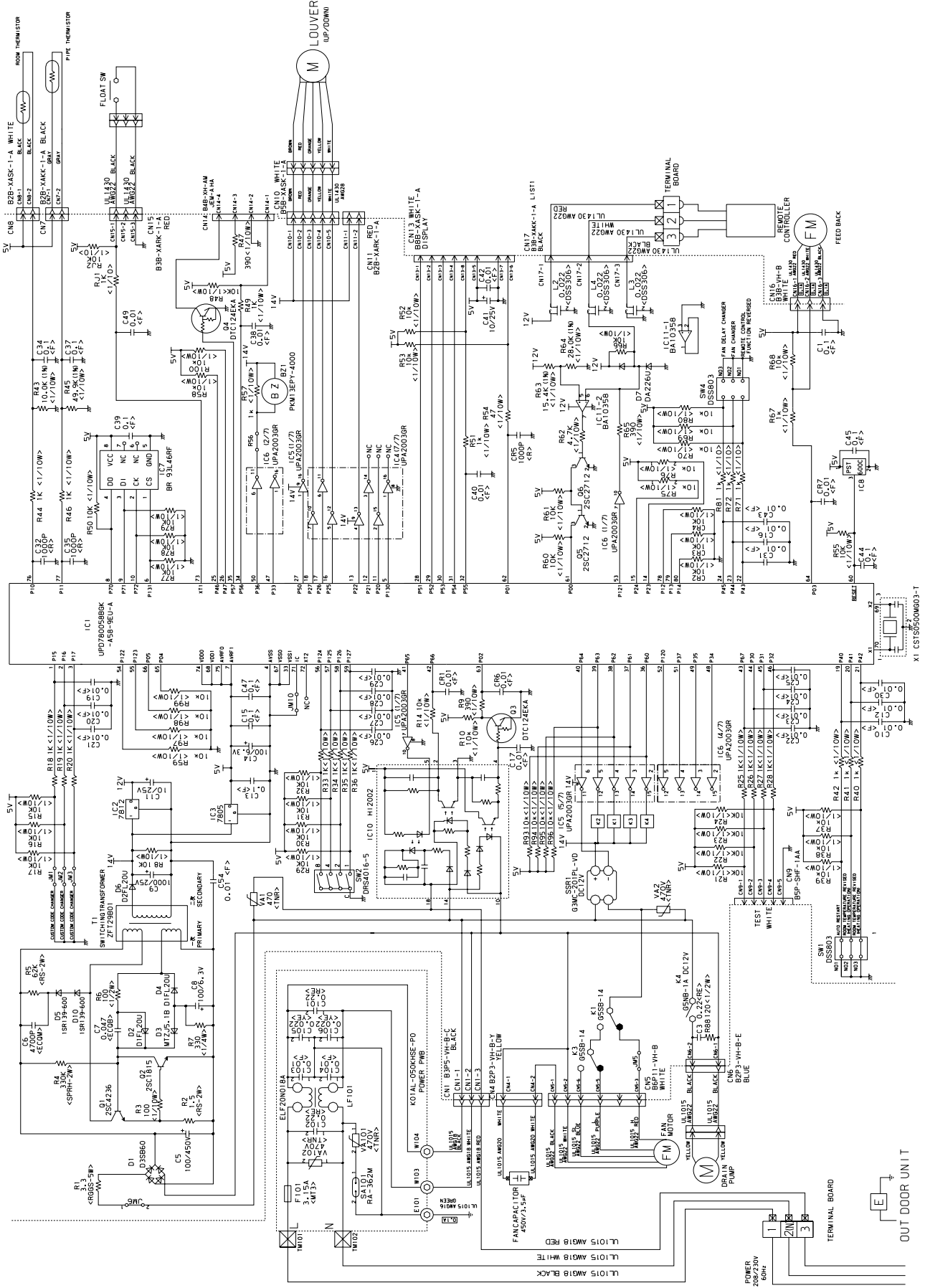
# OUTDOOR UNIT



# INDOOR PCB CIRCUIT DIAGRAM

Model : MC24Y3F

CONTROLLER PCB ASSEMBLY  
K01AL-050LHSE-C1

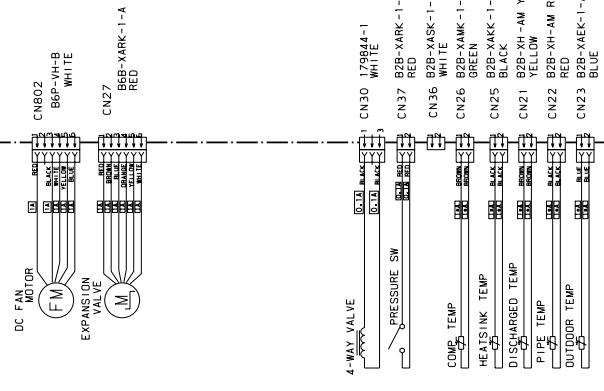
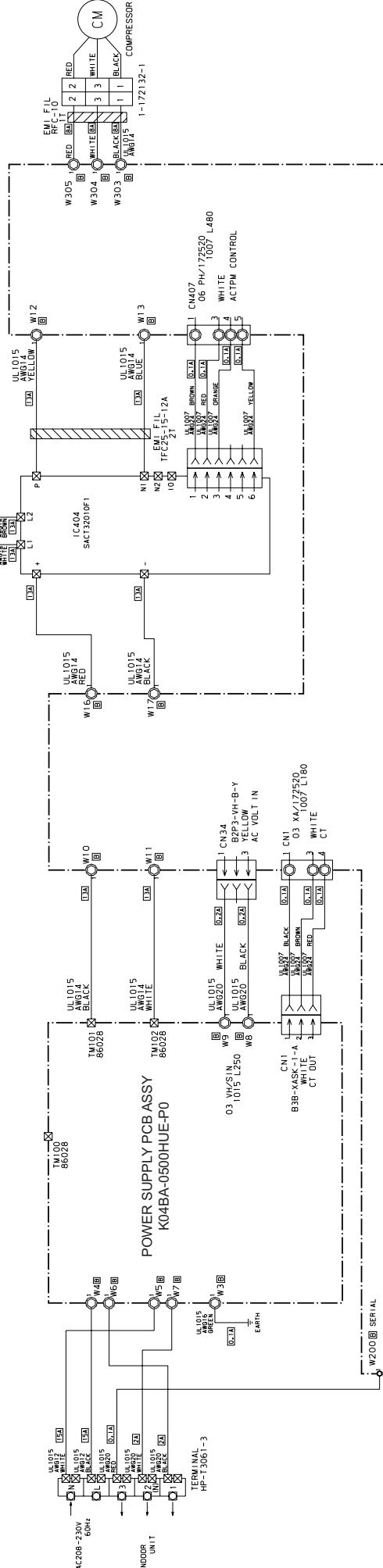




# OUTDOOR PCB CIRCUIT DIAGRAM

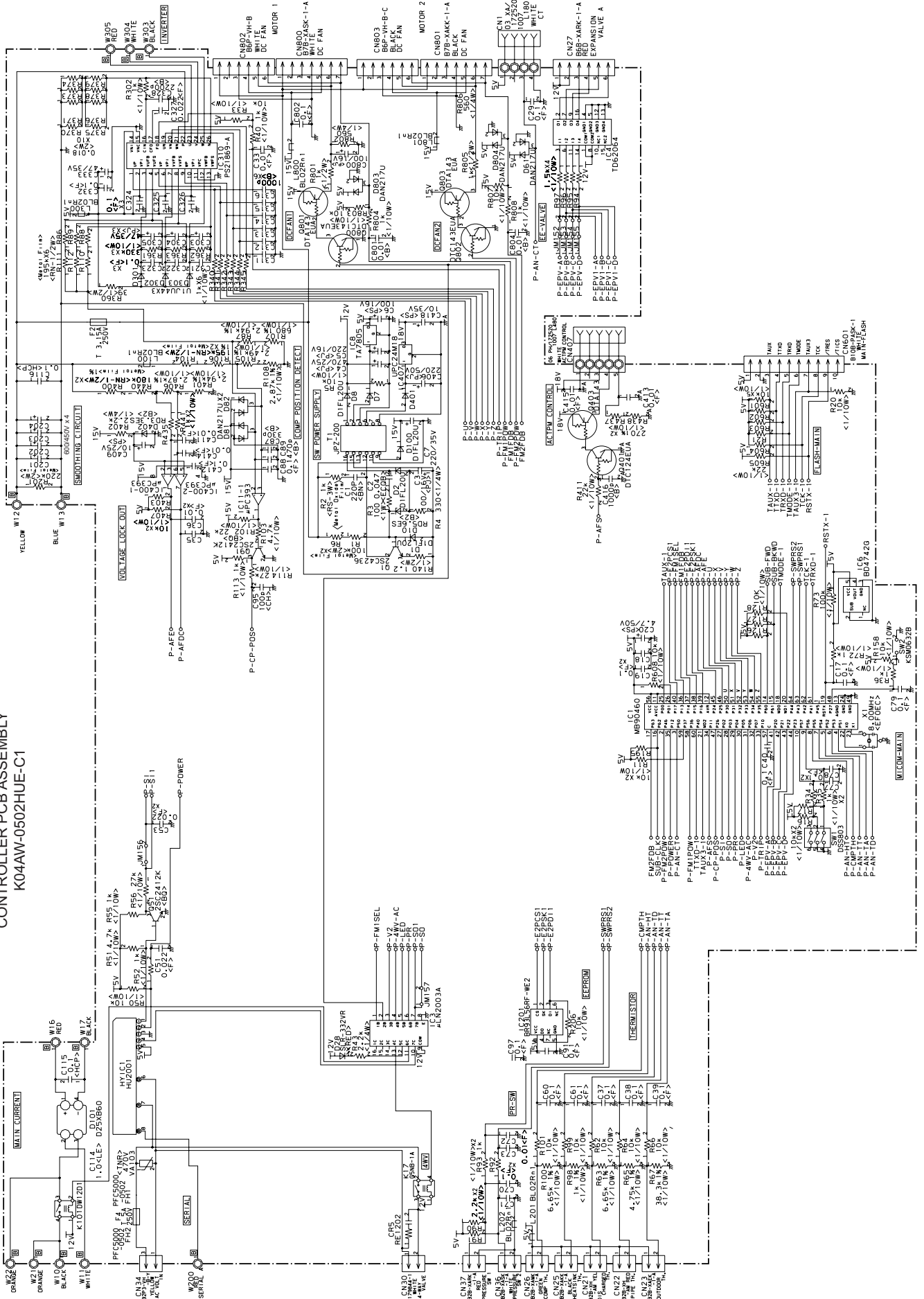
Model : MR24UY3F

## INVERTER ASSEMBLY EZ-005FHUE



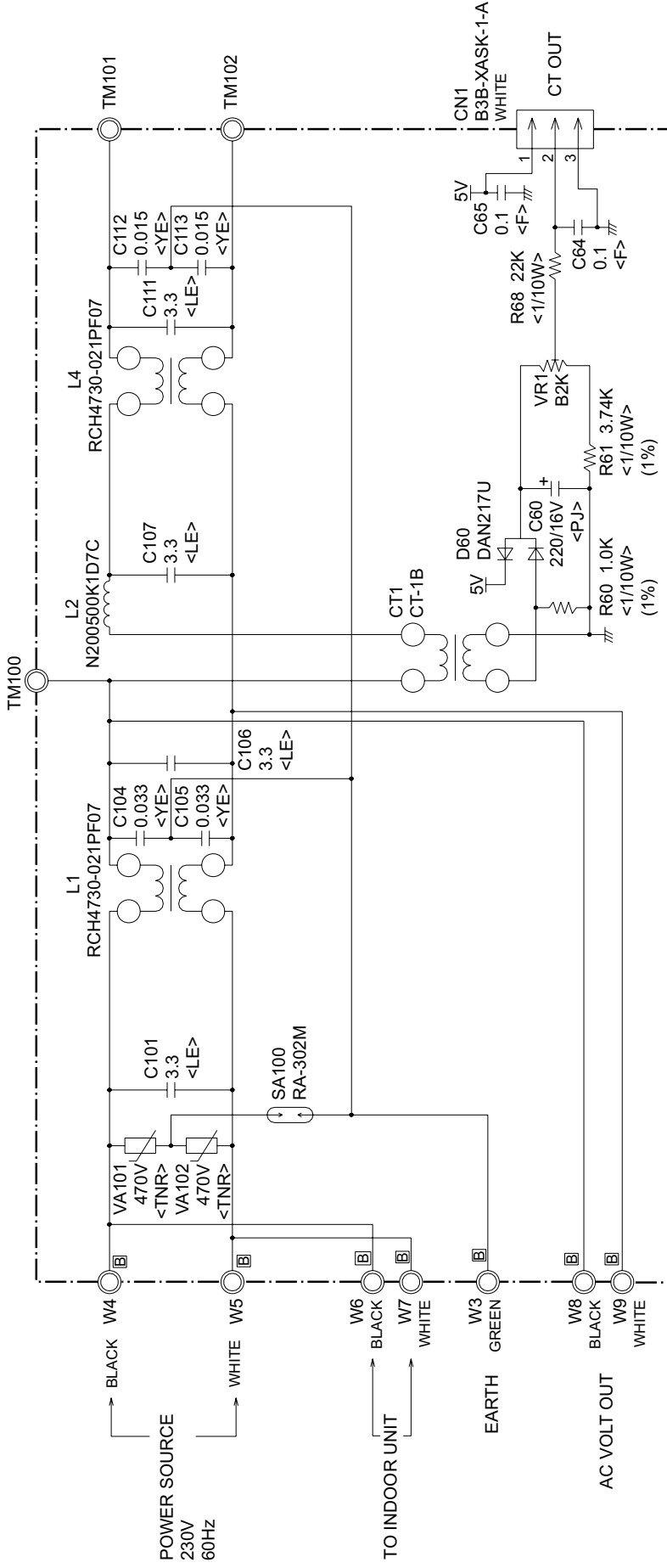
Model : MR24UY3F

### CONTROLLER PCB ASSEMBLY K04AW-0502HUE-C1



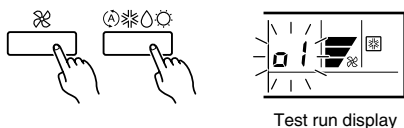
Model : MR24UY3F

POWER SUPPLY PCB ASSEMBLY  
K04BA-0500HUE-P0



# ERROR CONTENTS (indoor unit)

- Stop the air conditioner operation.
- Press the master control button and the fan control button simultaneously for 2 seconds or more to start the test run.



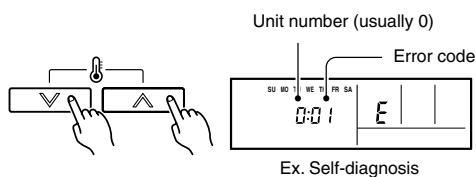
- Press the start/stop button to stop the test run.

## [SELF-DIAGNOSIS]

When the error indication "E:EE" is displayed, follow the following items to perform the self-diagnosis. "E:EE" indicates an error has occurred.

### 1. REMOTE CONTROLLER DISPLAY

- Stop the air conditioner operation.
- Press the set temperature buttons  $\wedge$  /  $\vee$  simultaneously for 5 seconds or more to start the self-diagnosis.  
Refer to the following tables for the description of each error code.



- Press the set temperature buttons  $\wedge$  /  $\vee$  simultaneously for 5 seconds or more to stop the self-diagnosis.

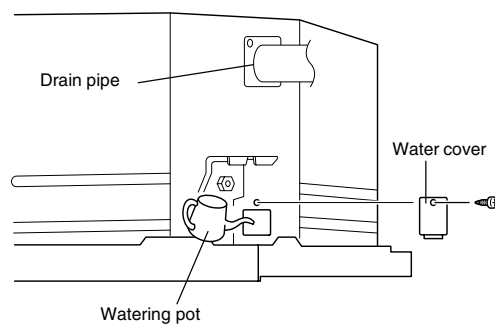
Error code	Error contents
<b>00</b>	Communication error (indoor unit ↔ remote controller)
<b>01</b>	Communication error (indoor unit ↔ outdoor unit)
<b>02</b>	Room temperature sensor open
<b>03</b>	Room temperature sensor short-circuited
<b>04</b>	Indoor heat exchanger temperature sensor open
<b>05</b>	Indoor heat exchanger temperature sensor short-circuited
<b>06</b>	Outdoor heat exchanger temperature sensor
<b>08</b>	Power source connection error
<b>09</b>	Float switch operated
<b>0A</b>	Outdoor temperature sensor
<b>0c</b>	Discharge pipe temperature sensor
<b>11</b>	Model abnormal
<b>12</b>	Indoor fan abnormal

Error code	Error contents
<b>13</b>	Outdoor signal abnormal
<b>14</b>	Excessive outdoor pressure (permanent stop)
<b>15</b>	Compressor temperature sensor
<b>16</b>	Pressure switch error
<b>17</b>	IPM error
<b>18</b>	CT error
<b>19</b>	Active filter module (AFM) error
<b>1A</b>	Compressor does not operate
<b>1b</b>	Outdoor unit fan error
<b>1c</b>	Communication error (inverter → multicontroller)
<b>1d</b>	2 way valve sensor error
<b>1E</b>	Expansion valve error
<b>1F</b>	Connection indoor unit error

### 2. CHECKING DRAINAGE

To check the drain, remove the water cover and fill with 2 to 3 of water as shown in figure.

The drain pump operates when operating in the cooling mode.



# ERROR CONTENTS (outdoor unit)

1. Make a TEST RUN in accordance with the installation instruction sheet for the indoor unit.

## 2. OUTDOOR UNIT LEDS

When a malfunction occurs in the outdoor unit, the LED on the circuit board lights to indicate the error. Refer to the following table for the description of each error according to the LED.

LED	Error contents
1 flash	Communication error (Indoor unit - Outdoor unit)
2 flash	Discharg pipe temperature sensor
3 flash	Outdoor heat exchanger temperature sensor
4 flash	Outdoor temperature sensor
7 flash	Compressor temperature sensor
8 flash	Heat sink temperature sensor
9 flash	Pressure switch abnormal
12 flash	IPM error
13 flash	Compressor rotor position cannot detect
14 flash	Compressor cannot operate
15 flash	Outdoor fan abnormal (upper fan)
16 flash	Outdoor fan abnormal (lower fan)
lighting	No error

## SPECIAL INSTALLATION SETTING

### PUMP DOWN (Refrigerant collecting operation)

Perform the following procedures to collect the refrigerant when moving the indoor unit or the outdoor unit.

#### 1. When the product is stopped:

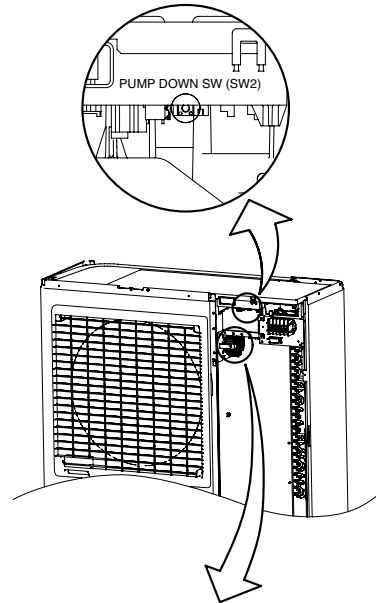
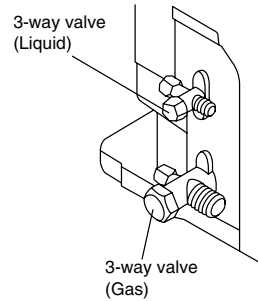
①	Press the PUMP DOWN switch on the outdoor unit. (The LED on the outdoor unit circuit board lights.)
②	The pump down operation (cooling operation) begins right away. After operation starts, close the three-way valve (liquid).
③	After 2 - 3 minutes, operation stops. Close the three-way valve (gas) within one minute after operations stops.
④	The LED will go out three minutes after it stops. Disconnect the power supply after confirming that the LED has gone out.

#### 2. When the product is operating:

①	Press the PUMP DOWN switch on the outdoor unit. The LED on the outdoor unit circuit board lights, and operation stops. At this point, recovery has not been completed, so do not close the two- and three-way valves.
②	The pump down operation (cooling operation) begins after three minutes. Close the three-way valve (liquid) after operation starts.
③	After 2 - 3 minutes, operation stops. Close the three-way valve (gas) within one minute after operations stops.
④	The LED will go out three minutes after it stops. Disconnect the power supply after confirming that the LED has gone out.

\*When the pump down operation is repeated, temporarily disconnect the power supply after opening the closed valves (both liquid and gas). Reconnect the power supply after 2 - 3 minutes and perform the pump down operation.

\*When the start of the operation after pump down operation has been completed, temporarily disconnect the power supply after opening the closed valves (both liquid and gas). Reconnect the power supply after 2-3 minutes and be sure to perform a test operation for cooling.

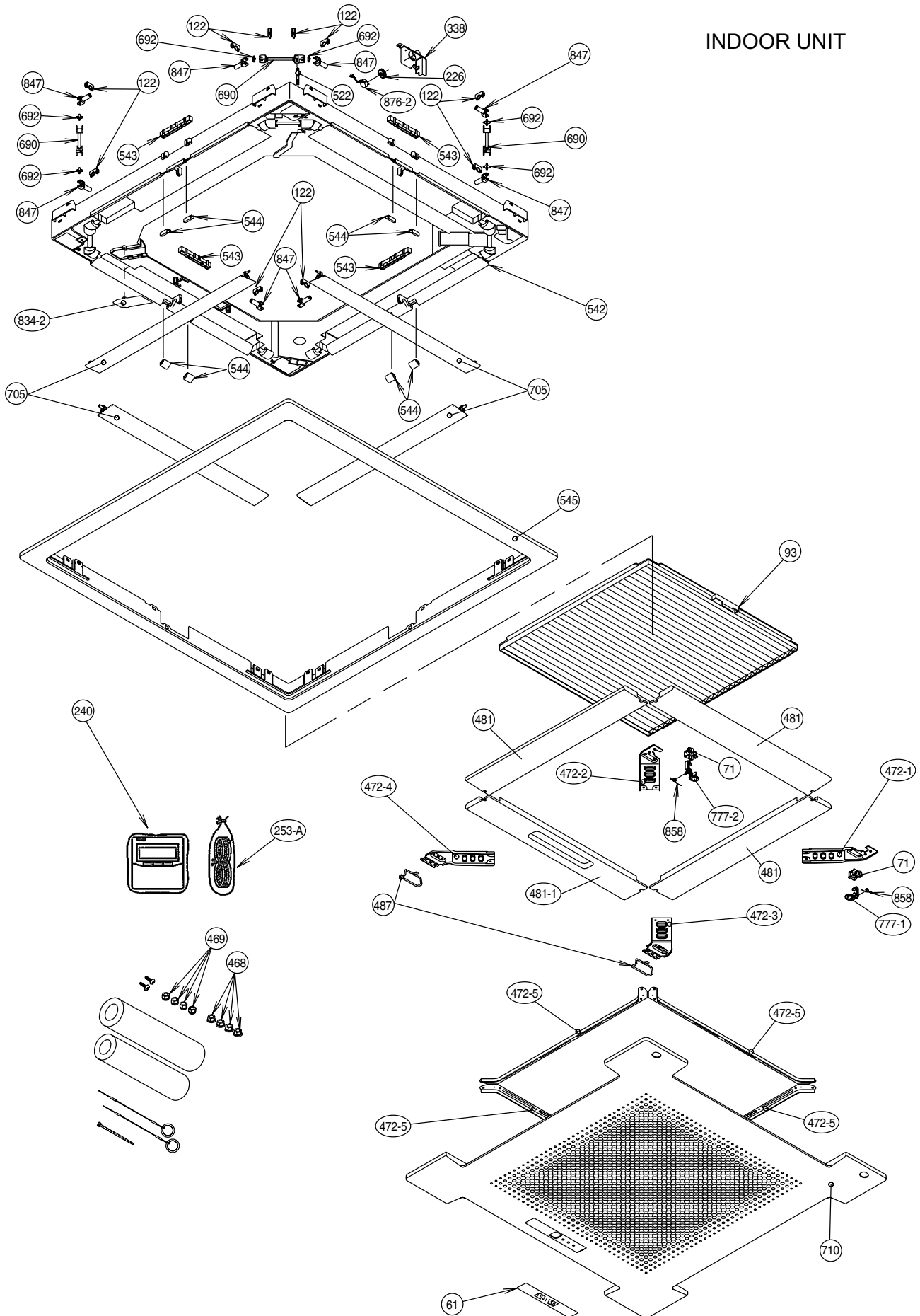


**⚠ DANGER**

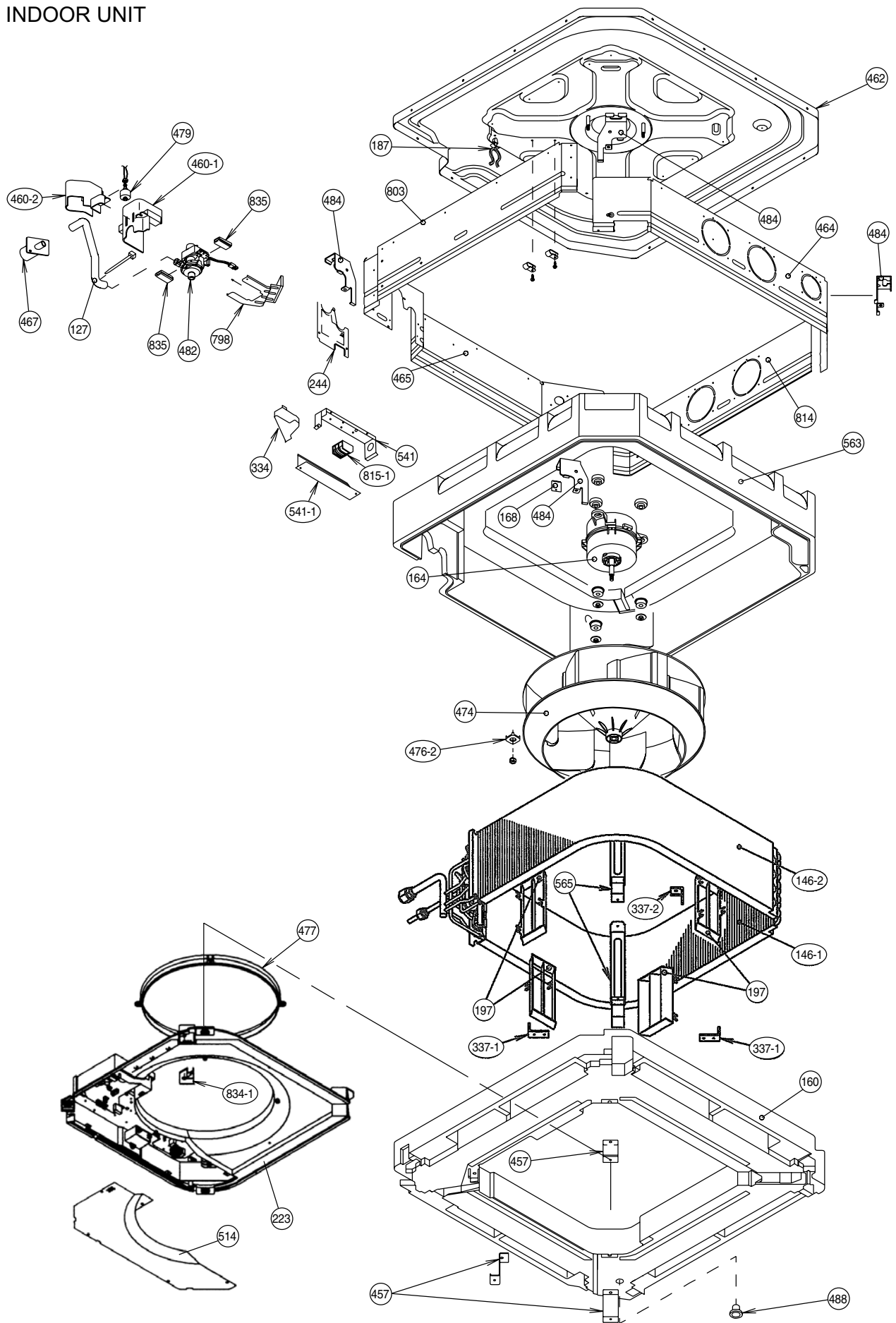
This part (Choke coil) generates high voltages. Never touch this part.

# DISASSEMBLY ILLUSTRATION

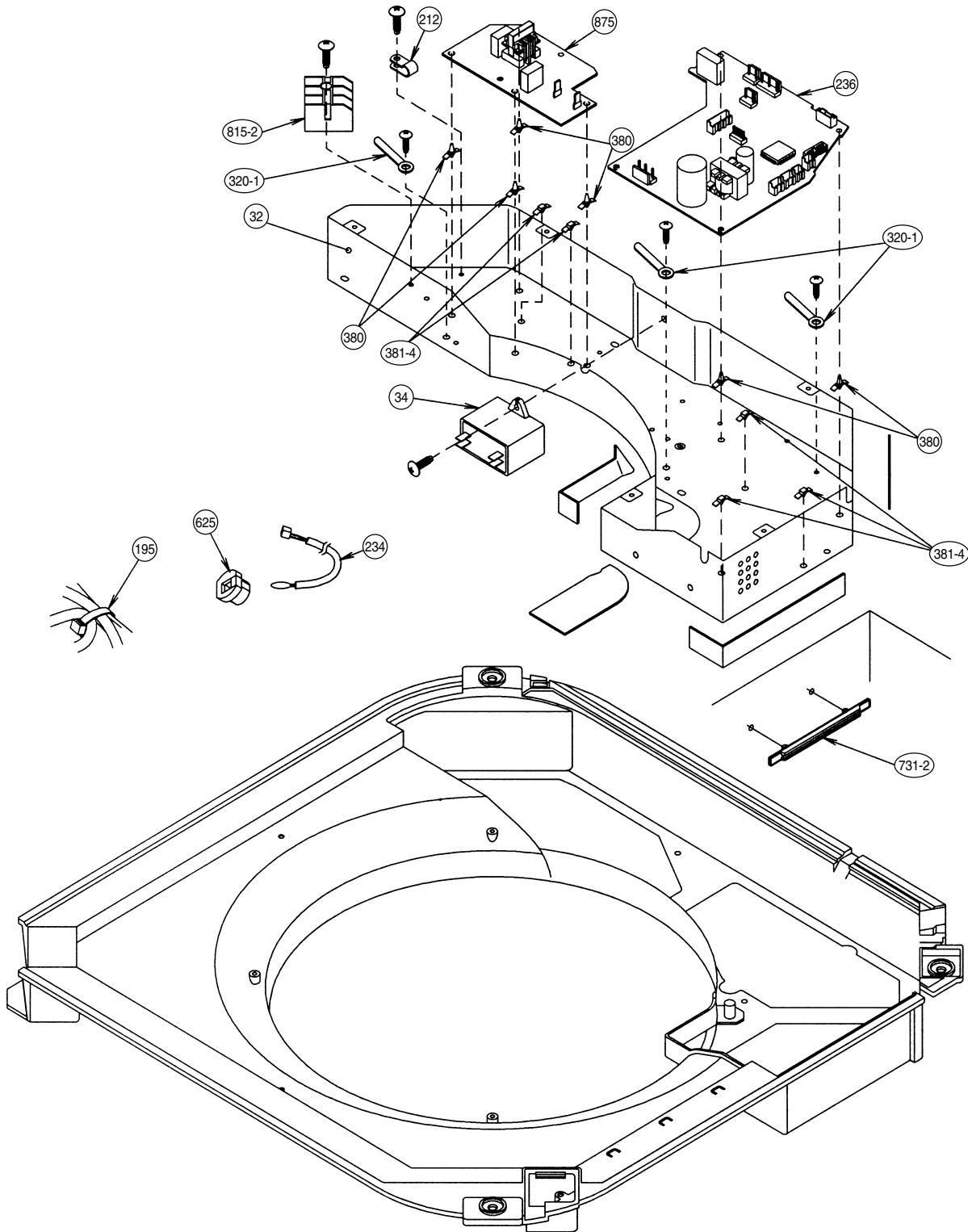
## INDOOR UNIT



# INDOOR UNIT

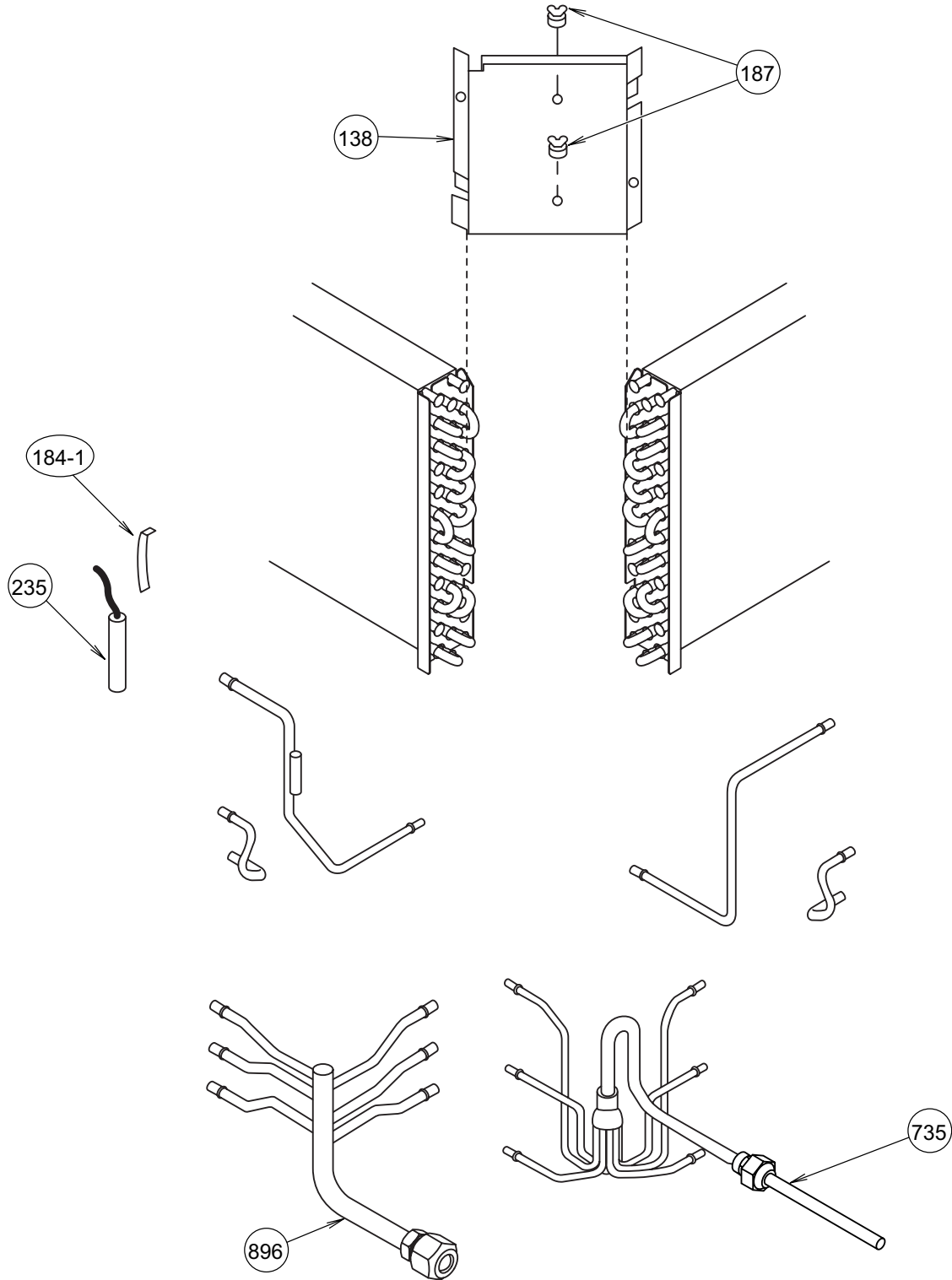


# INDOOR UNIT

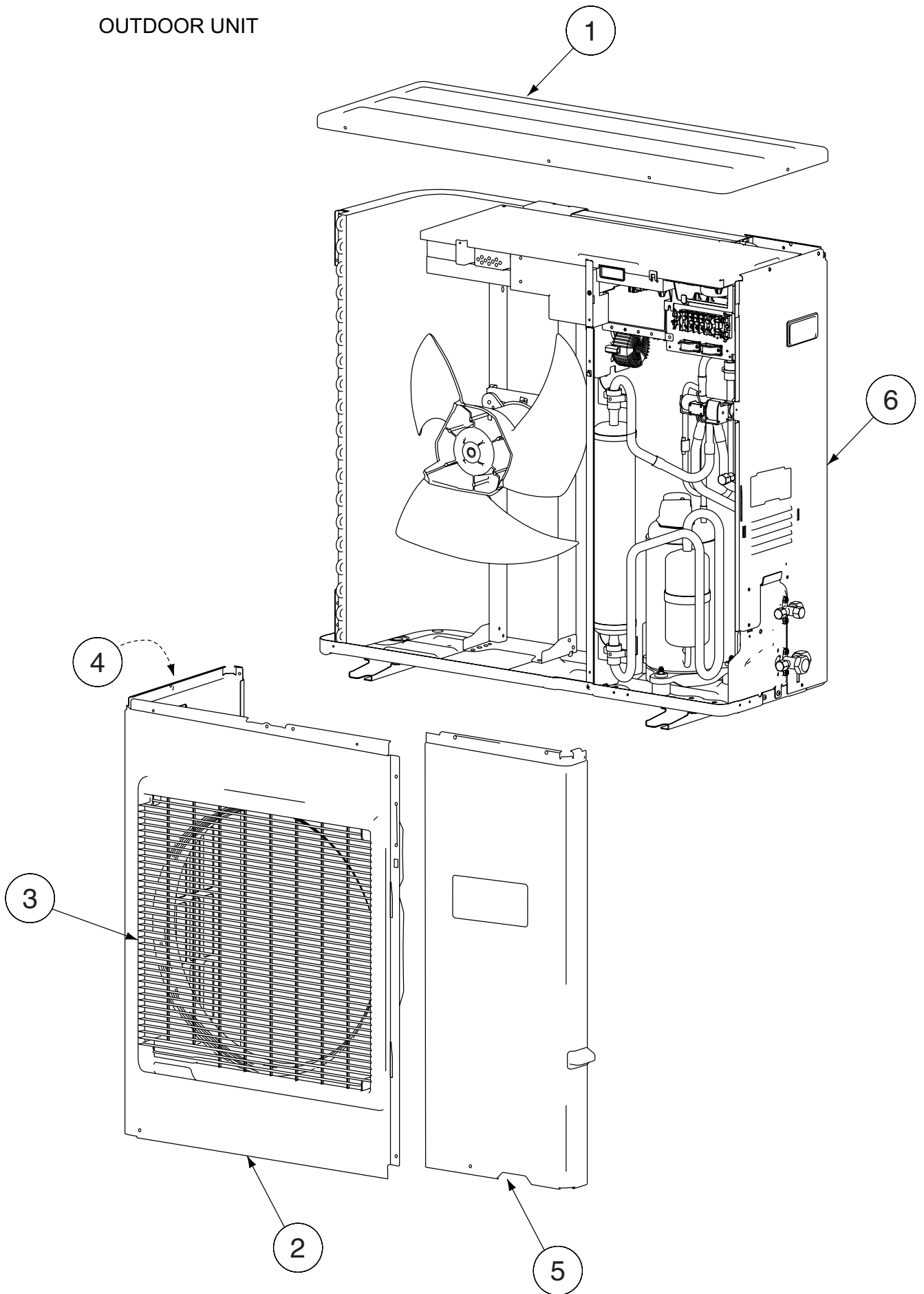




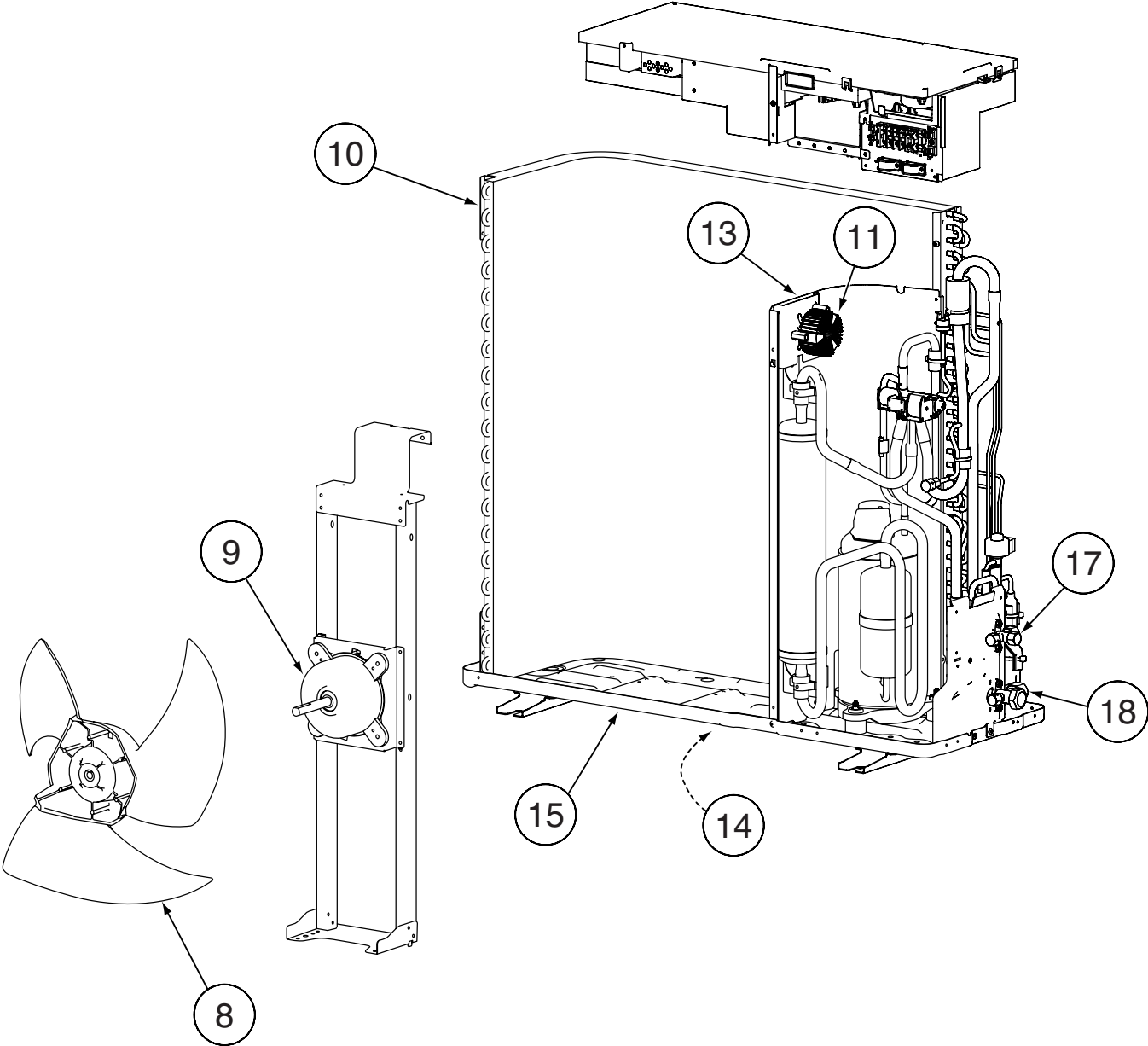
INDOOR UNIT



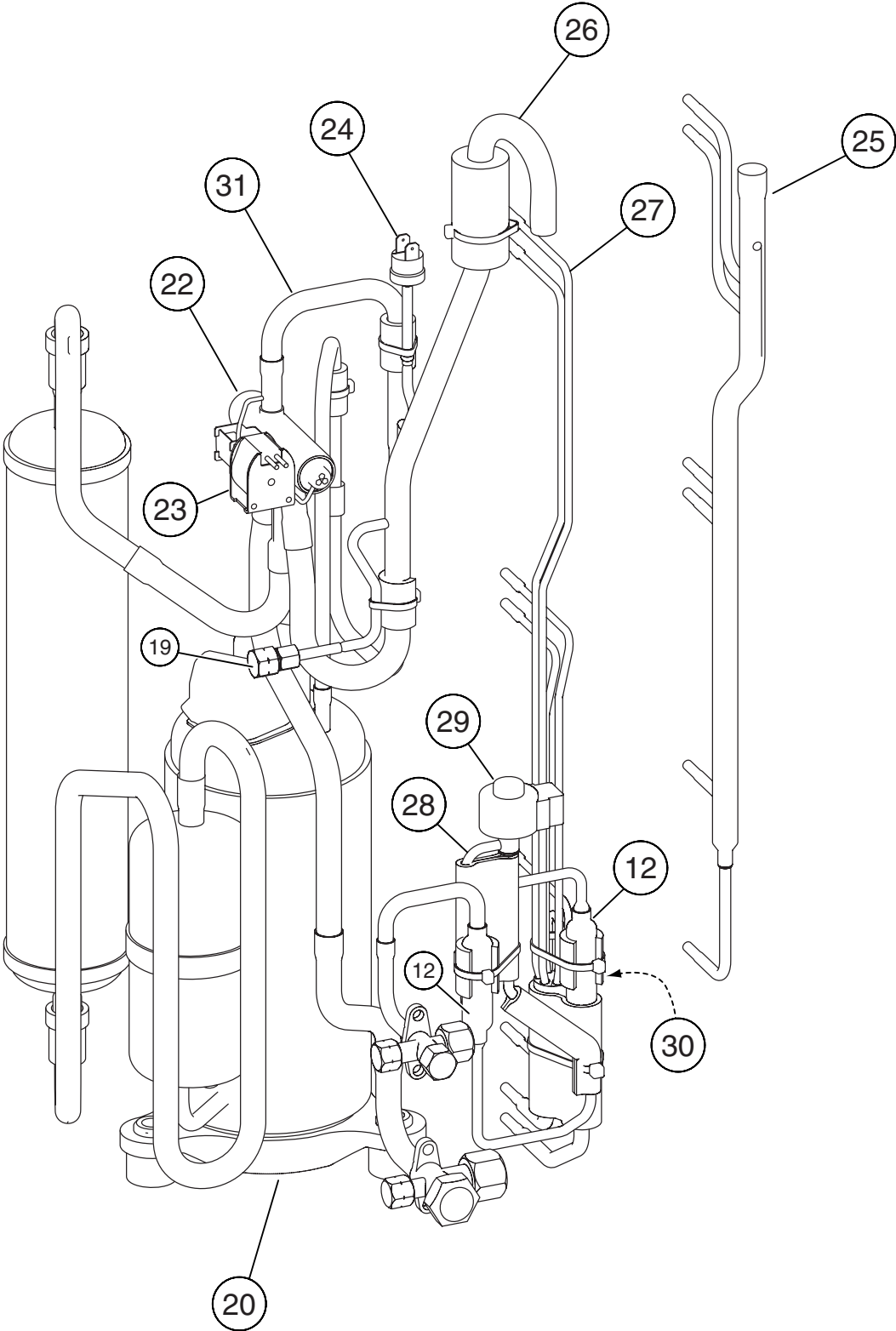
OUTDOOR UNIT



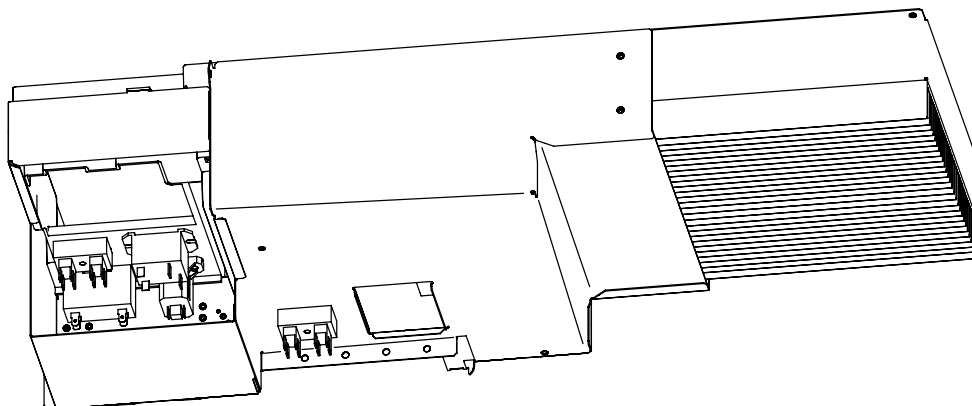
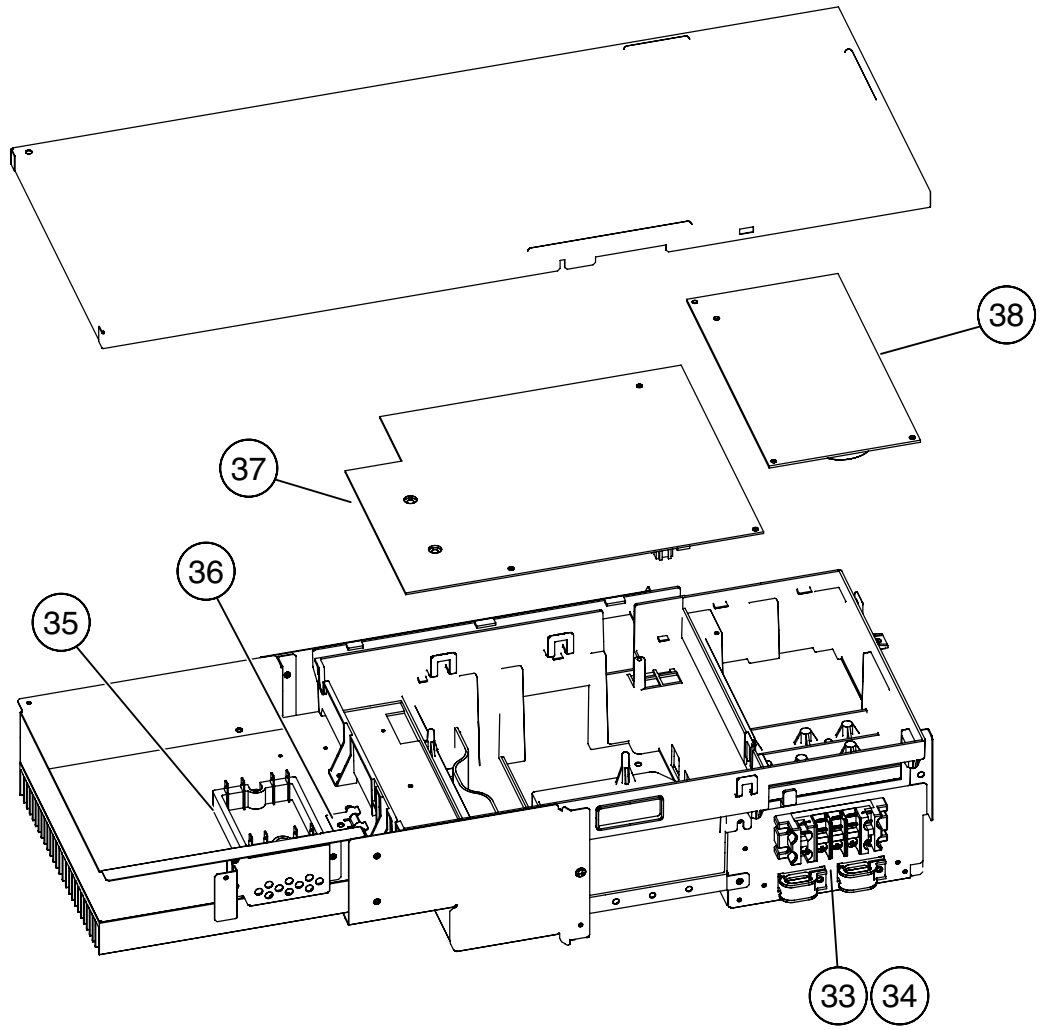
OUTDOOR UNIT



OUTDOOR UNIT



# OUTDOOR UNIT



# PARTS LIST

## INDOOR UNIT





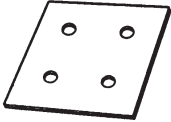
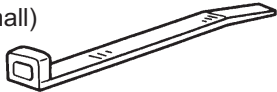

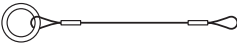
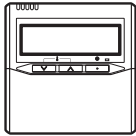
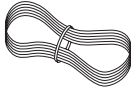
Ref.	Description	Part No.	Ref.	Description	Part No.
32	Control Box Assy	9368533007	472-3	RFM (Grille)-C	9362740005
34	Capacitor (Fan Motor)	9900270049	472-4	RFM (Grille)-D	9362741002
61	Decoration Plate	9371631028	472-5	RFM (Grille)-E	9362742009
71	Holder (Hook)	9362782005	474	Turbo Fan Assy	9362810012
93	Filter	9362766005	476-2	Washer (Turbo Fan)	9362756006
122	Holder (Louver Supporter)	9362799003	477	Bellmouth-B	9362774000
127	Drain Hose	9365074008	479	Float Switch	9900361020
138	Separate wall	9362793001	481	Insulation (Grille)-A	9362780001
146-1	Evaporator-A Assy	9373799030	481-1	Insulation (Grille)-B	9362781008
146-2	Evaporator-B Assy	9373800033	482	Pump Unit	9900360030
160	Kit (Drain Pan Sub Assy)	9370934014	484	Hook	9362736008
164	Motor, Induction	9601558026	487	Hinge Wire (Grille)	9362754002
168	Cabinet-E	9362735001	488	Drain Pan Plug	313005174654
184-1	Thermistor Spring-A	313728262708	514	Control Box Cover	9368524005
187	Clamp No. 1219	313361271706	522	Joint Gear	9362772006
195	Binder-C	313361275805	541	Terminal Base	9368529017
197	Wind Guide Board	9373444015	541-1	Terminal Cover	9368530006
212	Clamp NK-4N	313714328805	542	Panel Base	9362759014
223	Control Box	9368523015	543	Holder (Panel Frame)	9362761017
226	Motor Gear	9362764001	544	Holder (Panel Base)	9362760010
234	Room Thermistor	9703299025	545	Panel Frame	9362758017
235	Pipe Temp. Thermistor	9703297014	563	Inner Box	9362797009
236	Controller PCB Assy (K01AL-05L1HSE-C1)	9705914230	565	Evaporator Holder Assy	9362802024
240	Remote Control Unit	9372266144	625	Cord Bushing	9359240006
244	Pipe Cover Assy	9362819015	690	Joint-A	9362773003
253-A	Wire Assy	9372714010	692	Joint Shaft	9362771009
320-1	Wire Clamp Metal	313483219905	705	Louver Assy	9362836012
334	Wire Cover	9370624007	710	Intake Grille	9362767019
337-1	RFM (Eva. )-A	9362749008	731-2	Holder	0600241018
337-2	RFM (Eva. )-B	9362750004	735	Distributor Assy	9371325040
338	Motor Holder	9362765008	777-1	Hook (Grille)-A	9362779012
380	Locking Spacer	313209391403	777-2	Hook (Grille)-B	9362778015
381-4	Spacer	0600118075	798	Drain Pump Holder	9362753005
457	RFM (Drain Pan)	9362757003	803	Cabinet-D	9362792004
460-1	Pump Cover-A	9362775007	814	Cabinet-C	9362791007
460-2	Pump Cover-B	9362776004	815-1	Terminal-3P	9306489083
462	Panel (Top) Assy	9362806022	815-2	Terminal-3P	9703345012
464	Cabinet-A Assy	9362807012	834-1	Cover (Wire)-A	9362789004
465	Cabinet-B Assy	9362808019	834-2	Cover (Wire)-B	9362788007
467	Drain Port	9362786003	835	Cushion (Pump)	9362777001
468	M10 Nut-A (Large)	313005446653	847	Louver Supporter	9362770019
469	M10 Nut-B (Small)	313005446759	858	Spring (Grille)	9362755009
472-1	RFM (Grille)-A	9362738002	875	Power Supply PCB Assy	9704561329
472-2	RFM (Grille)-B	9362739009	876-2	Motor, Step	9900362027
			896	Coupling Pipe Assy	9371333038

## OUTDOOR UNIT

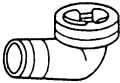

Ref.	Description	Part No.
1	Top Panel Sub Assy	9374417025
2	Front Panel	9374094066
3	Fan Guard	9374330010
4	Grip Side	9374173013
5	Service Panel Sub Assy	9374415038
6	Right Panel	9374095148
8	Propeller Fan Assy	9366378020
9	Motor, Induction	9602114016
10	Condenser-A Assy	9374433148
11	Coil Choke	9900366018
12	Strainer Assy	9372524015
13	Separate Wall Assy	9375226015
14	Cap Foot	9374345014
15	Base Assy	9374166183
17	3-Way Valve Assy (3/8)	9372205044
18	3-Way Valve Assy (5/8)	9372205075
19	Check Joint Assy	9372802038
20	Compressor Assy	9373711018
22	4-Way Valve	9900164010
23	Solenoid	9900165055
24	Pressure Switch	9900186012
25	Inlet Pipe Cond A Assy	9373461067
26	Inlet Pipe Cond B Assy	9373463054
27	Outlet Pipe Cond A Assy	9374266050
28	Expansion Valve Assy	9370947113
29	Coil (Expansion Valve)	9900057039
30	Distributor	9369128004
31	Discharge Pipe A Assy	9372264140
33	Terminal 2P	9701971015
34	Terminal 5P	9900203023
35	ACTPM	9703457012
36	Holder Thermo	9372797013
37	Inverter PCB Assy	9705642089
38	Power PCB Assy	9705647046
----	Fuse 3.15A-250V	0600239534
----	Thermistor (Outdoor Temp.)	9900378035
----	Heat Exchanger Thermistor	9900374013
----	Thermistor (Discharge)	9704219114
----	Compressor Thermistor	9900156022
----	Thermistor	9900041014
----	Heatsink Thermistor	9900311018
----	Transformer	9702334024
----	Varistor	0000361224
----	Arrester	0600280147
----	Relay	9900117016
----	Relay	9900007010
----	Switch Push	9703476013
----	Switch Slide	9701392018
----	Drain Pipe Assy	9303029015
----	Drain Cap	313166024302

## ACCESSORIES

### INDOOR UNIT

Name and Shape	Q'ty	Application
Coupler heat insulation 	2	For indoor side pipe joint
Tapping Screw (flush heads) 	2	For installing the remote controller
Special nut A (large flange) 	4	For installing indoor unit
Special nut B (small flange) 	4	For installing indoor unit
Template 	1	For ceiling hole cutting
Binder (small) 	1	For fixing the remote controller cord
Blower cover insulation 	2	For discharged air
Hook wire 	2	For installing intake grille
Remote control 	1	
Remote control cord 	1	For connecting the remote controller

### OUTDOOR UNIT

Name and Shape	Q'ty	Application
Drain pipe 	1	For outdoor unit drain piping work (May not be supplied, depending on the model.)
Drain cap 	5	



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