

Friedrich[®]

SPLIT TYPE
ROOM AIR CONDITIONER
**FLOOR CONSOLE /
UNDER CEILING**
DUAL type (60Hz)

SERVICE MANUAL

Models

Indoor unit Outdoor unit

MS24Y3F MR24UY3F



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SPECIFICATIONS

TYPE	Cool and Heat
INDOOR UNIT	MS24Y3F
OUTDOOR UNIT	MR24UY3F
COOLING CAPACITY	22,200 / 22,200 BTU/h
HEATING CAPACITY	24,200 / 24,200 BTU/h

ELECTRICAL DATA

POWER SOURCE	230 V / 208 V
FREQUENCY	1 ϕ 60 Hz
RUNNING CURRENT (Cool)	9.8 A / 10.9 A
RUNNING CURRENT (Heat)	10.2 A / 11.3 A
INPUT WATTS (Cool)	2.25 kW / 2.25 kW
INPUT WATTS (Heat)	2.33 kW / 2.33 kW
E.E.R. (Cool)	2.89 / 2.89 kW/kW
E.E.R. (Heat)	3.05 / 3.05 kW/kW
MOISTURE REMOVAL	3.5 l/hr
AIR CIRCULATION-High	880 m ³ /hr

COMPRESSOR

TYPE	Hermetic type, 4 poles, Inverter, Twin Rotary
DISCRIMINATION	TNB220FPBM9
REFRIGERANT	R410A 4 lb 3 oz (1,900 g)

FAN MOTOR

POWER SOURCE	230 V	
INDOOR UNIT (Cool / Heat)	DISCRIMINATION	MFA-24PPT
	HIGH-SPEED	1,180 / 1,100 r.p.m.
	MED-SPEED	1,000 / 1,000 r.p.m.
	LOW-SPEED	900 / 900 r.p.m.
OUTDOOR UNIT (Cool / Heat)	DISCRIMINATION	MFE-45ROM
	HIGH- SPEED	850 / 900 r.p.m.

DIMENSIONS

INDOOR UNIT	H x W x D	7-7/8" x 39-1/8" x 25-7/8" inch (199 x 990 x 655 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	37 kg / 28 kg
OUTDOOR UNIT	Gross / Net	70 kg / 64 kg

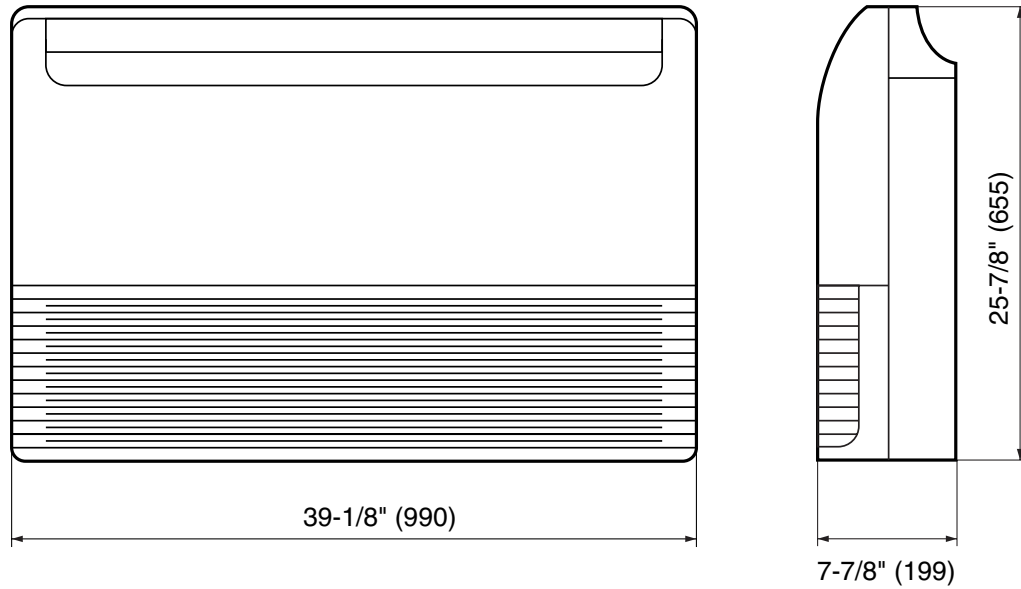
REFRIGERANT CHARGE (R410A)

FULL CHARGE AMOUNT	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 REFRIGERANT			0.424 oz / ft. (40 g / m)

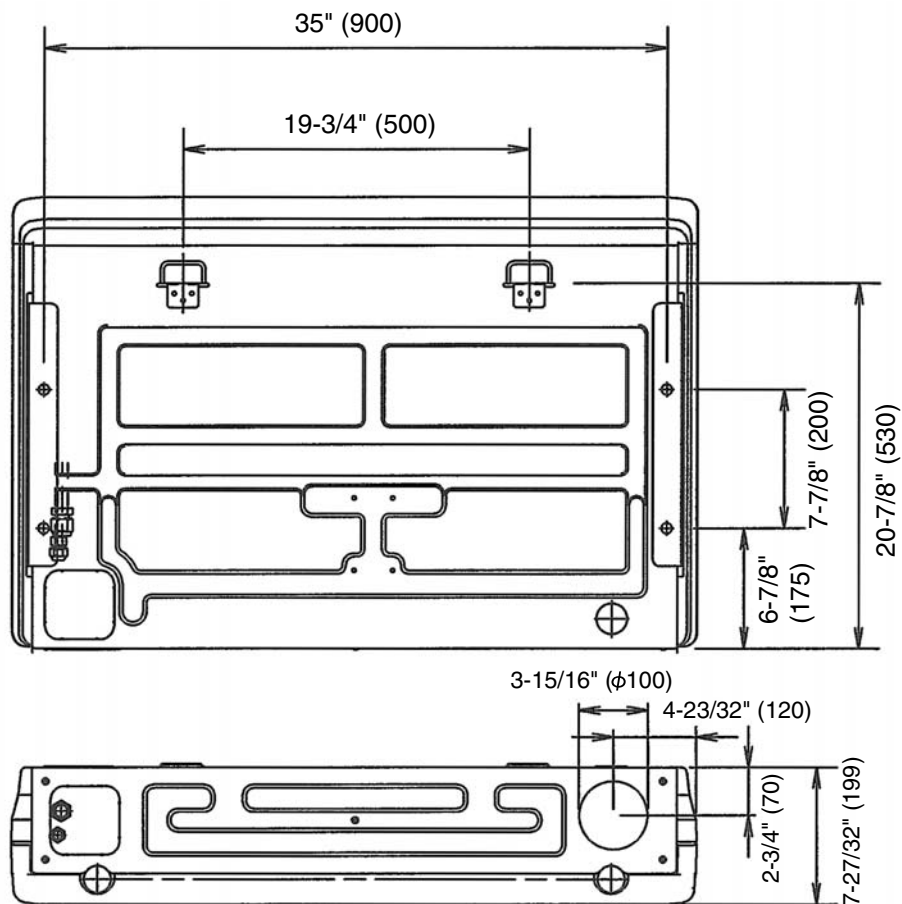
OUTLINE AND DIMENSIONS

INDOOR UNIT

Unit : inch (mm)

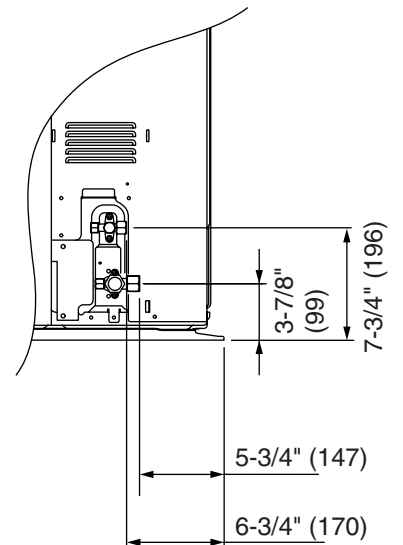
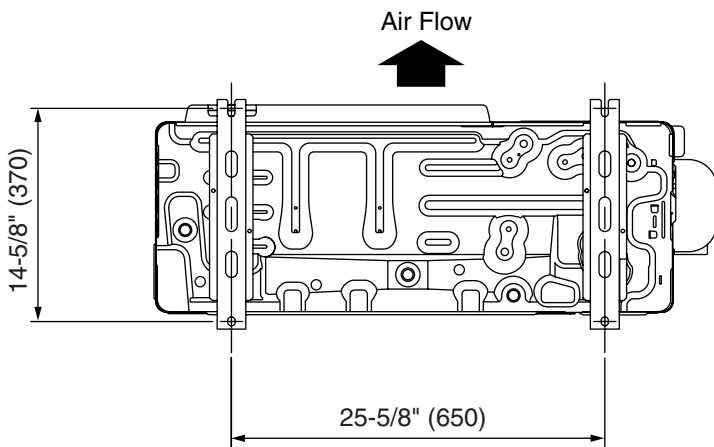
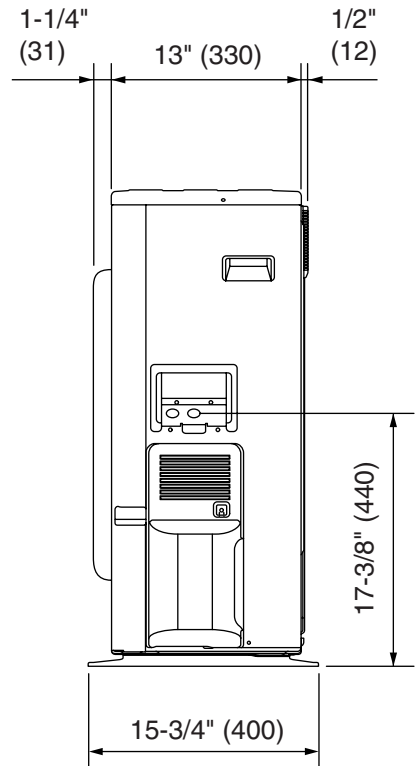
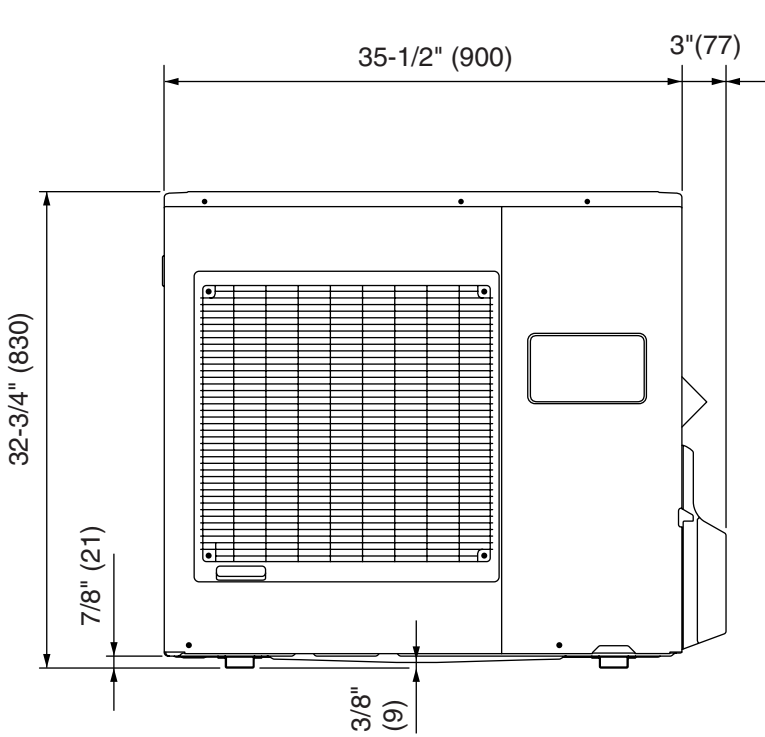
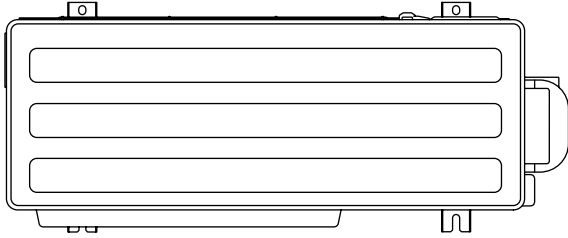


(rear view)

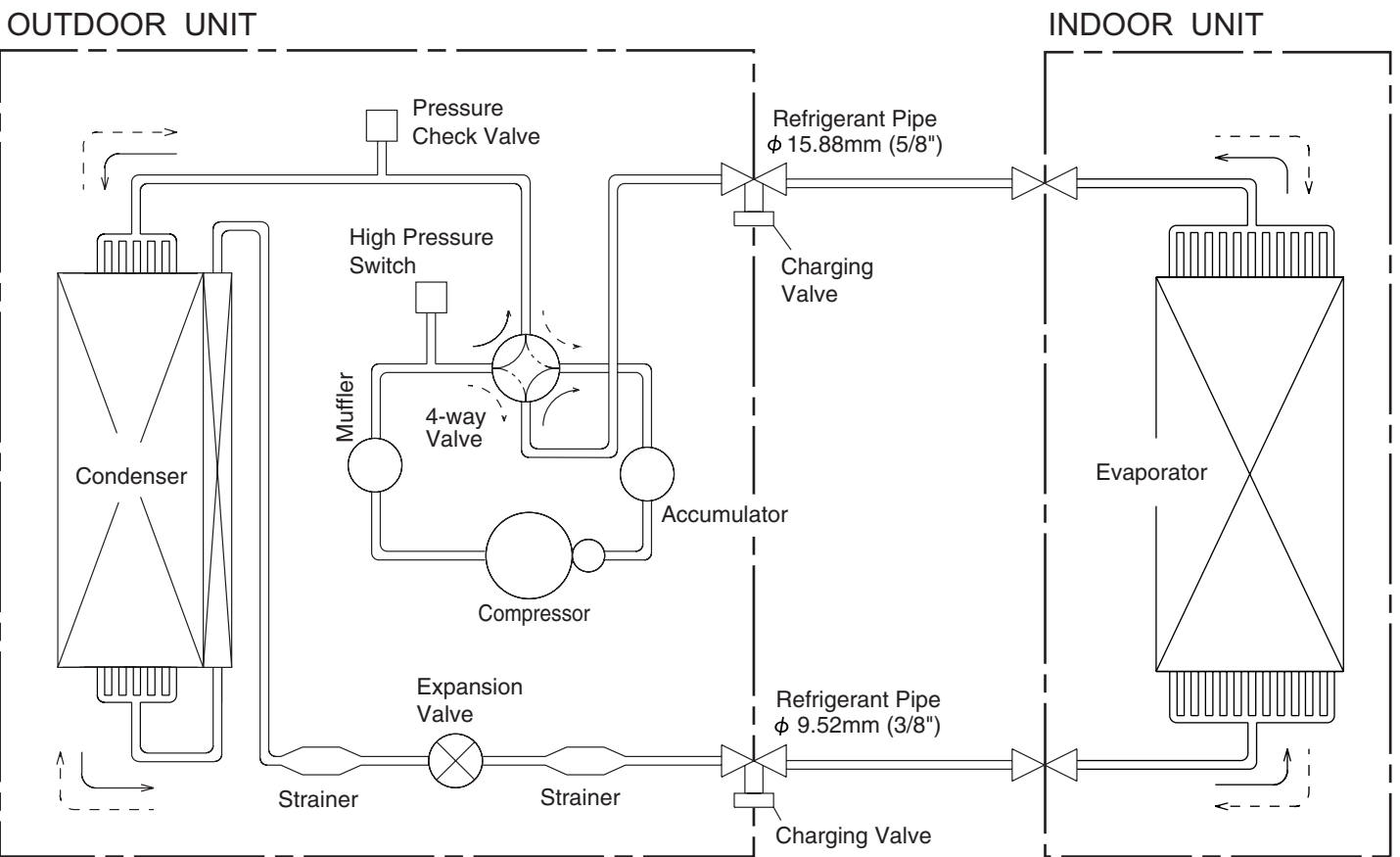


OUTDOOR UNIT

Unit : inch (mm)



REFRIGERANT SYSTEM DIAGRAM

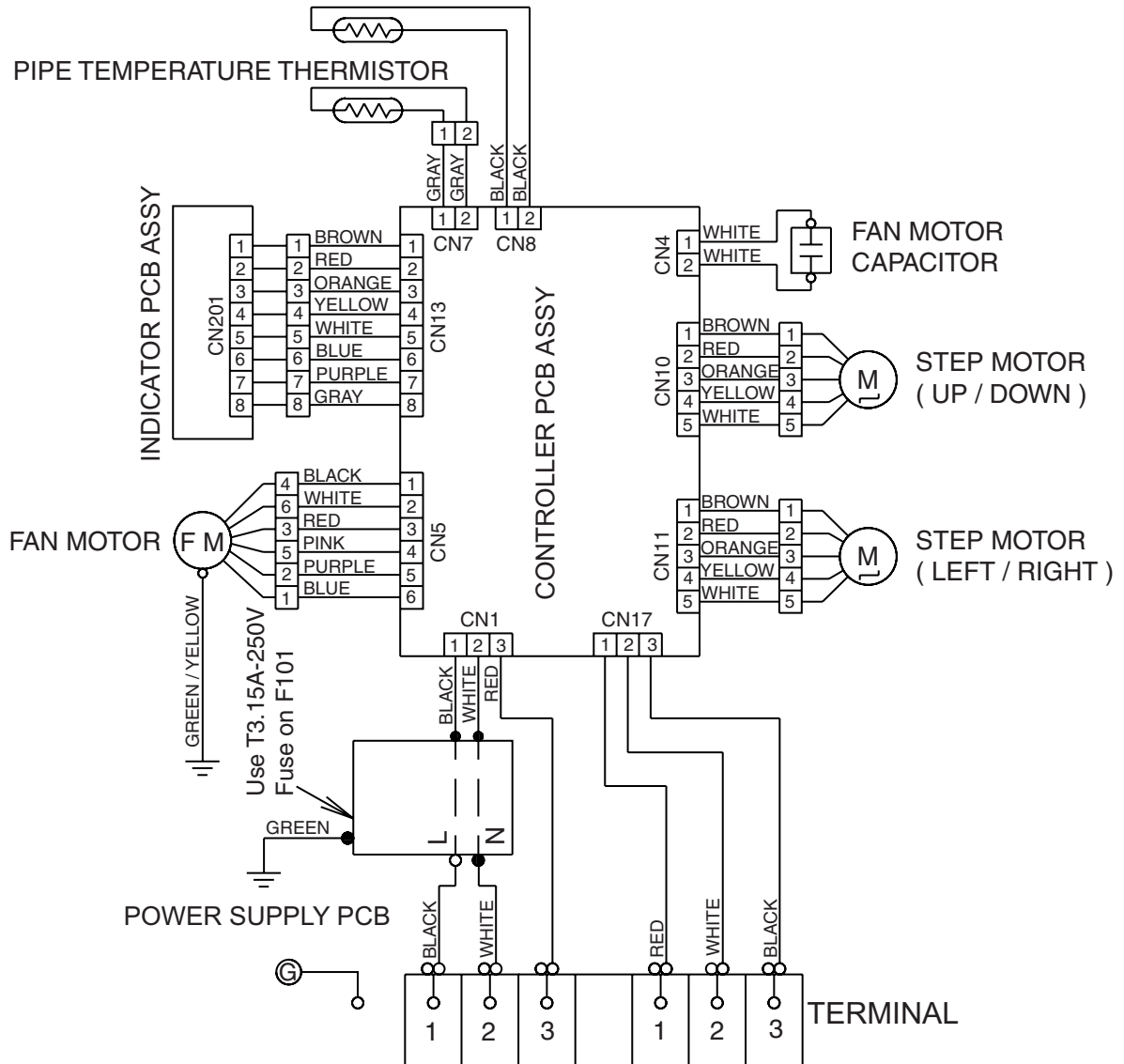


CIRCUIT DIAGRAM

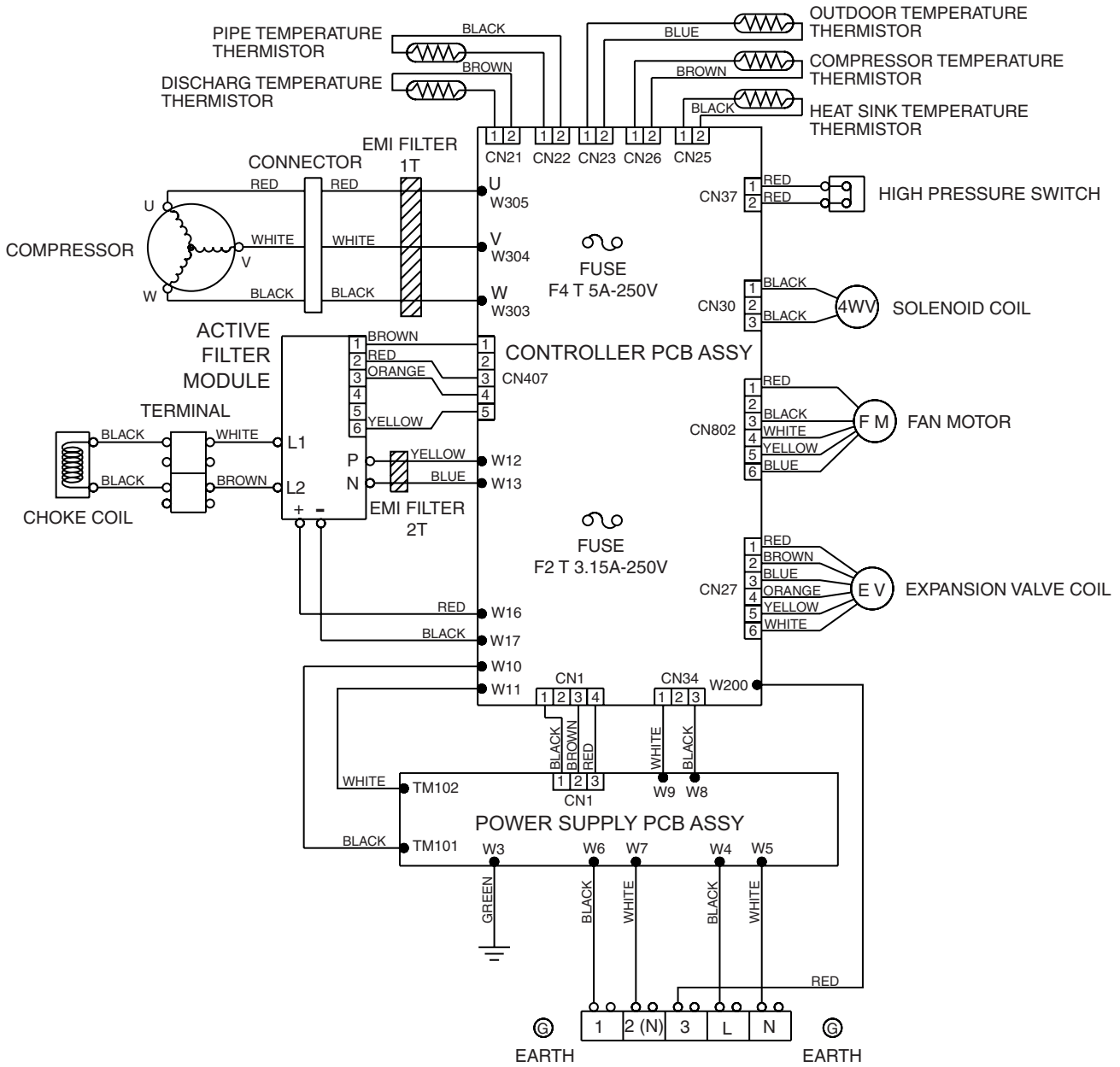
INDOOR UNIT

ROOM TEMPERATURE THERMISTOR

PIPE TEMPERATURE THERMISTOR

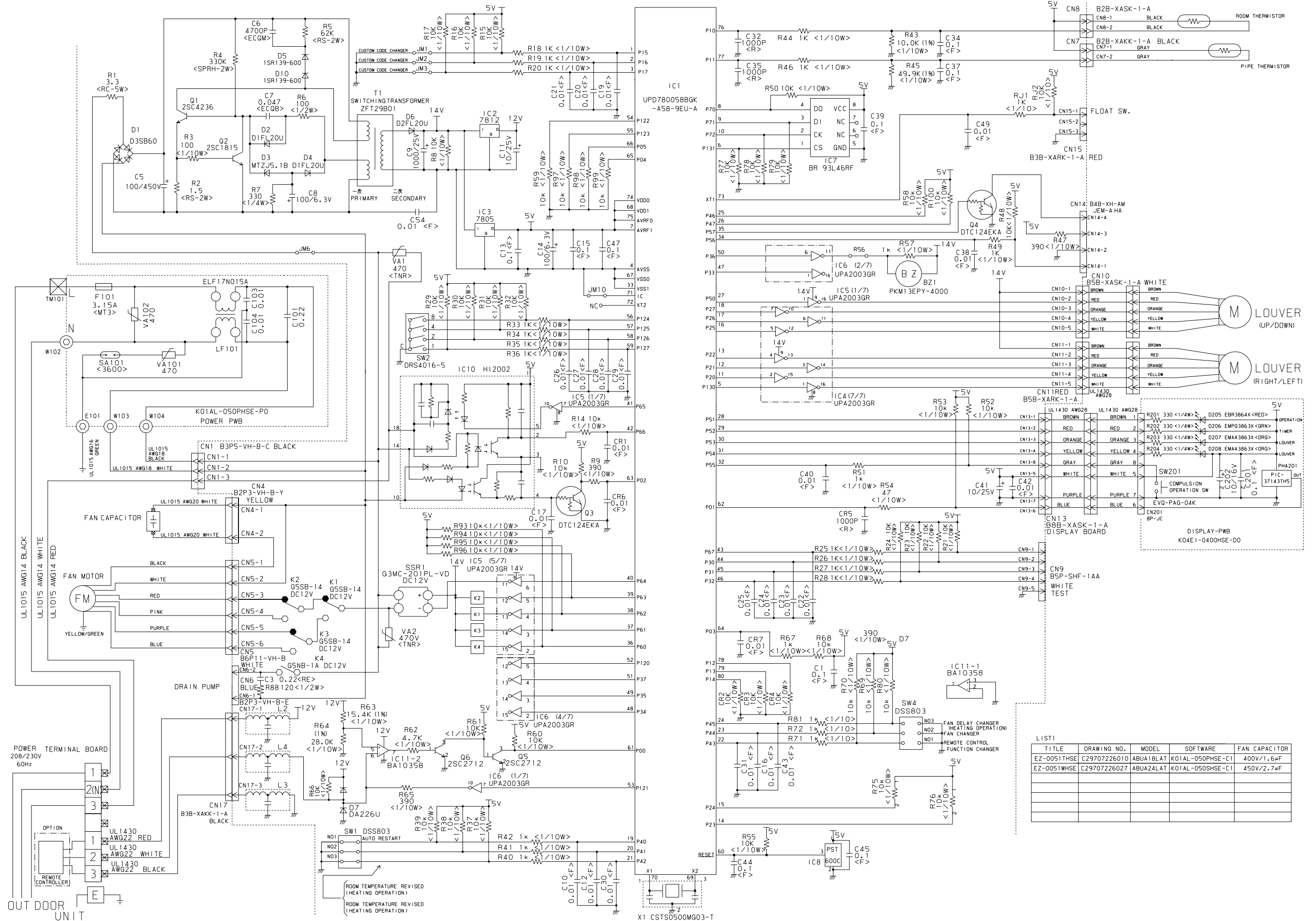


OUTDOOR UNIT



INDOOR PCB CIRCUIT DIAGRAM

CONTROLLER PCB ASSY K01AL-050SHSE-C1



LIST1

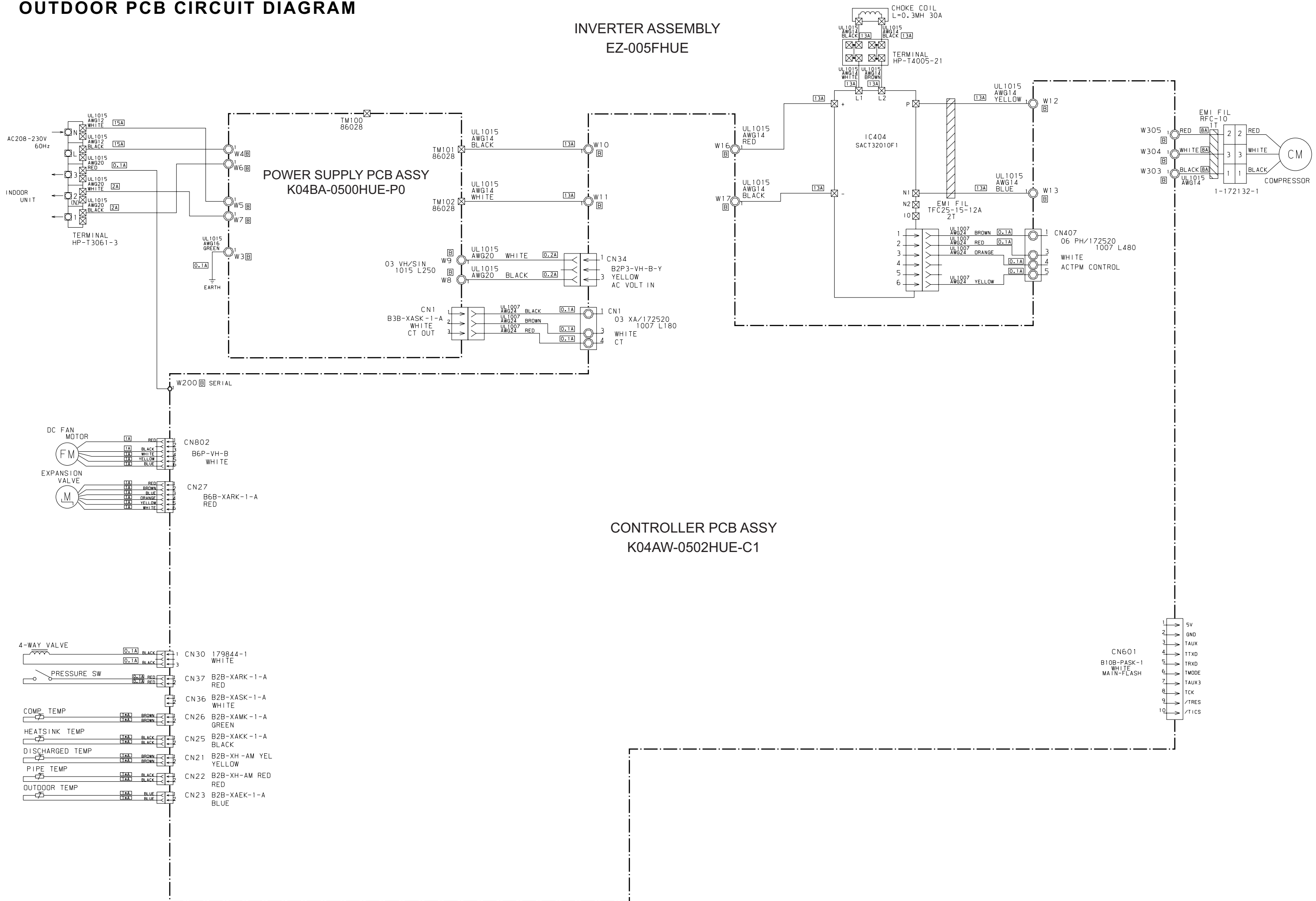
TITLE	DRAWING NO.	MODEL	SOFTWARE	FAN CAPACITOR
EZ-0051THSE	C29707226010	ABUA18LAT	K01AL-050PHSE-C1	400V/1.6μF
EZ-0051WHSE	C29707226027	ABUA24LAT	K01AL-050SHSE-C1	450V/2.7μF

OUTDOOR PCB CIRCUIT DIAGRAM

INVERTER ASSEMBLY EZ-005FHUE

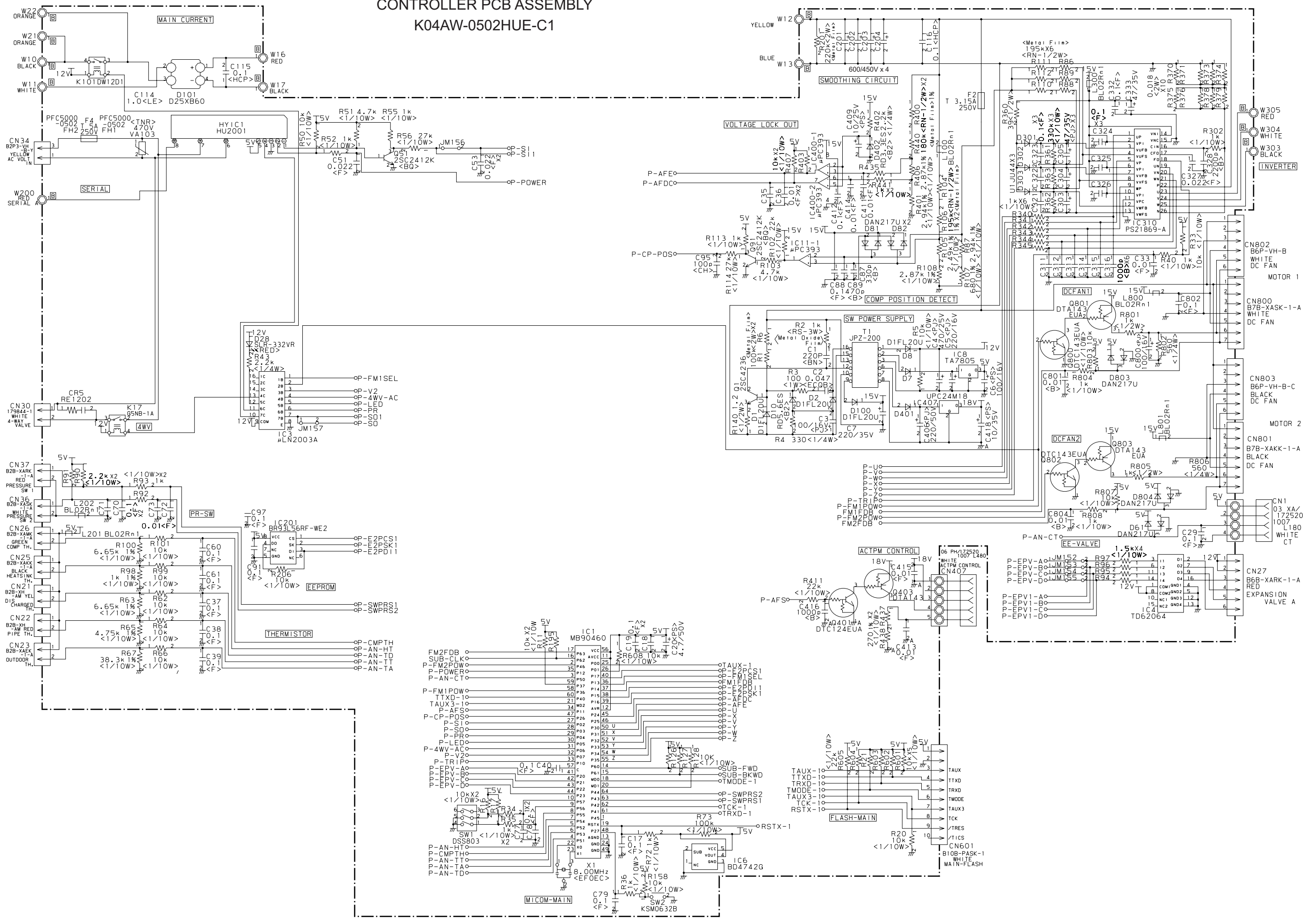
POWER SUPPLY PCB ASSY K04BA-0500HUE-P0

CONTROLLER PCB ASSY K04AW-0502HUE-C1



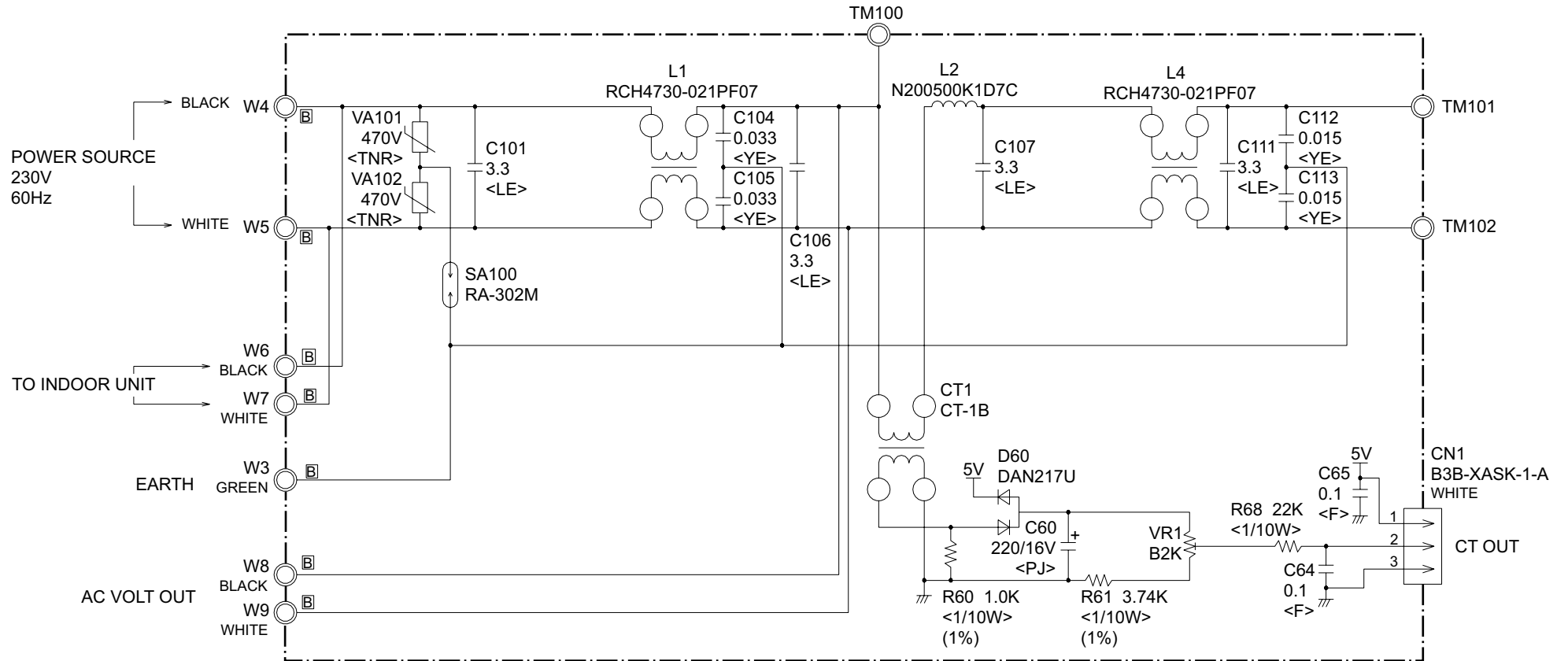
OUTDOOR UNIT

CONTROLLER PCB ASSEMBLY
K04AW-0502HUE-C1



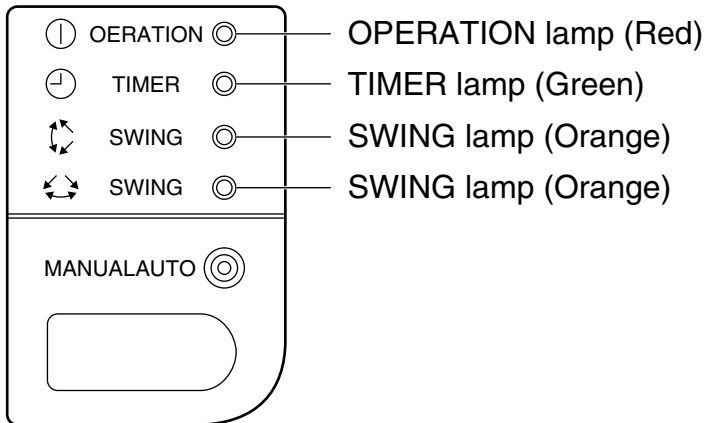
OUTDOOR UNIT

POWER SUPPLY PCB ASSEMBLY
K04BA-0500HUE-P0



ERROR CONTENTS

(Indoor unit)



Operation can be checked by lighting and flashing of the display section OPERATION, , and TIMER lamps.

Perform judgment in accordance with the following.

• TEST RUNNING

When the air conditioner is run by pressing the remote control unit test run button, the OPERATION and TIMER lamps flash slowly at the same time.

• ERROR

The OPERATION, TIMER, and SWING lamps operate as follows (Table) according to the error contents.

Error contents	Error display		
	OPERATION (RED)	TIMER (GREEN)	SWING (ORANGE)
Indoor unit circuit board error	○	○	—
Indoor unit room temperature sensor wire opened	2 times ●	○	—
Indoor unit room temperature sensor wire short circuited	2 times ●	○	○
Indoor unit piping sensor wire opened	3 times ●	○	—
Indoor unit piping sensor short circuited	3 times ●	○	○
Indoor unit fan error	6 times ●	○	—
Outdoor unit circuit board error	5 times ●	○	○
Miswiring between outdoor unit and indoor unit	5 times ●	○	—
Outdoor unit discharge temperature sensor error	○	5 times ●	—
Outdoor unit piping sensor error	○	3 times ●	—
Outdoor unit outdoor temperature sensor error	○	4 times ●	—

○ : Fast flashing ● : Slow flashing — : Off

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:

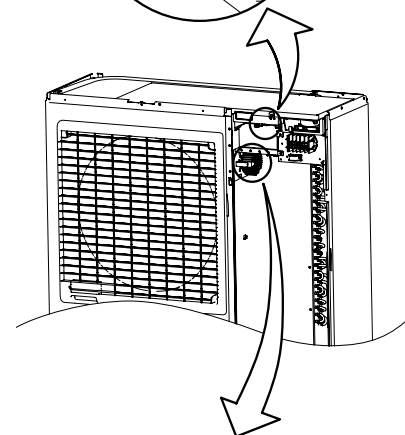
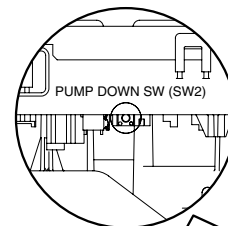
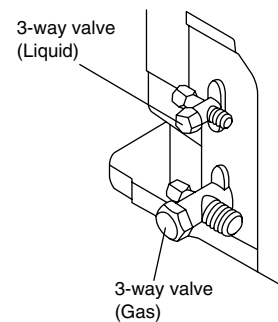
①	Press the PUMP DOWN switch on the outdoor unit. (The LED on the outdoor unit circuit board lights.)
②	The pump down operation (cooling operation) begins right away. After operation starts, close the three-way valve (liquid).
③	After 2 - 3 minutes, operation stops. Close the three-way valve (gas) within 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.

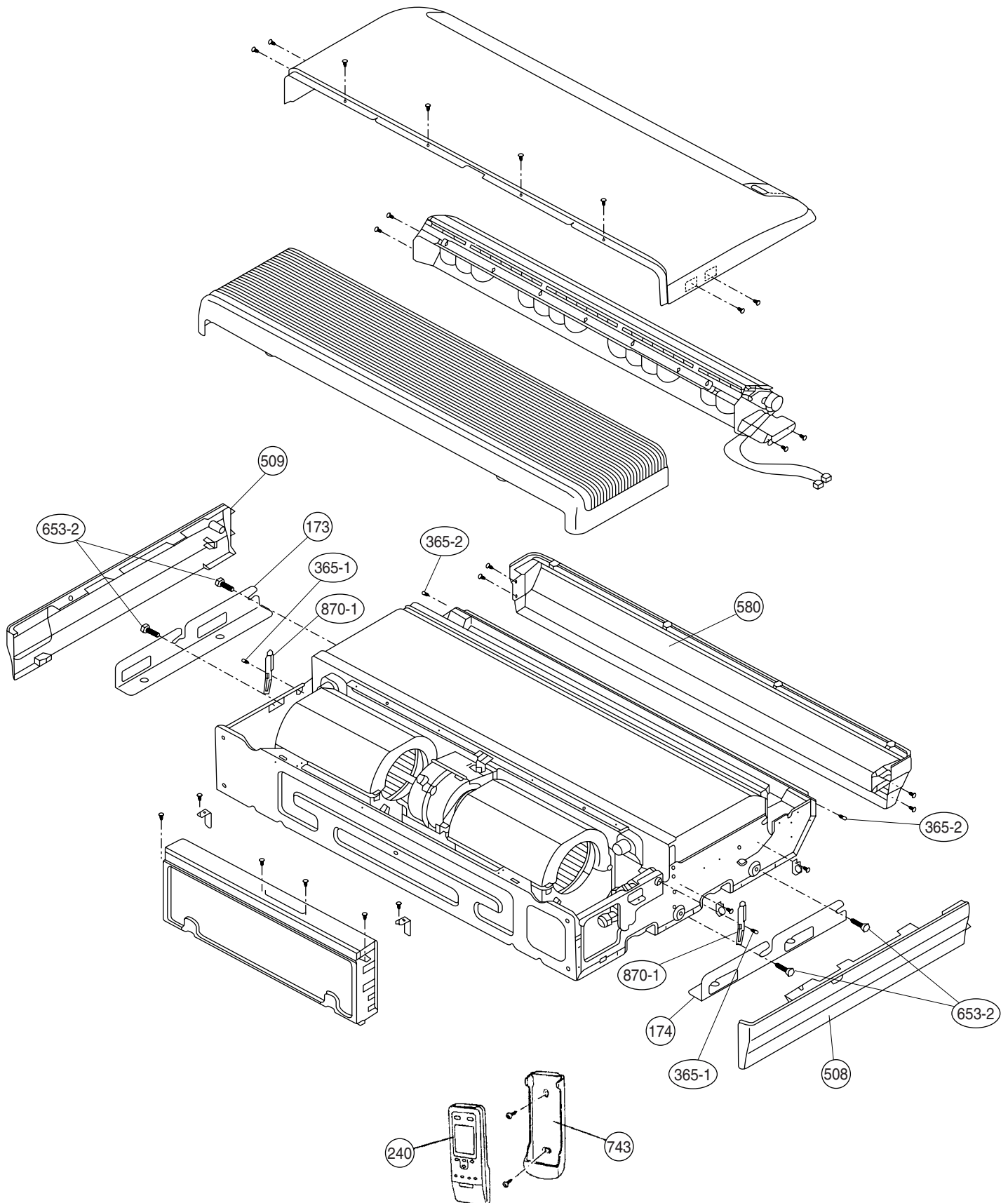


⚠ DANGER

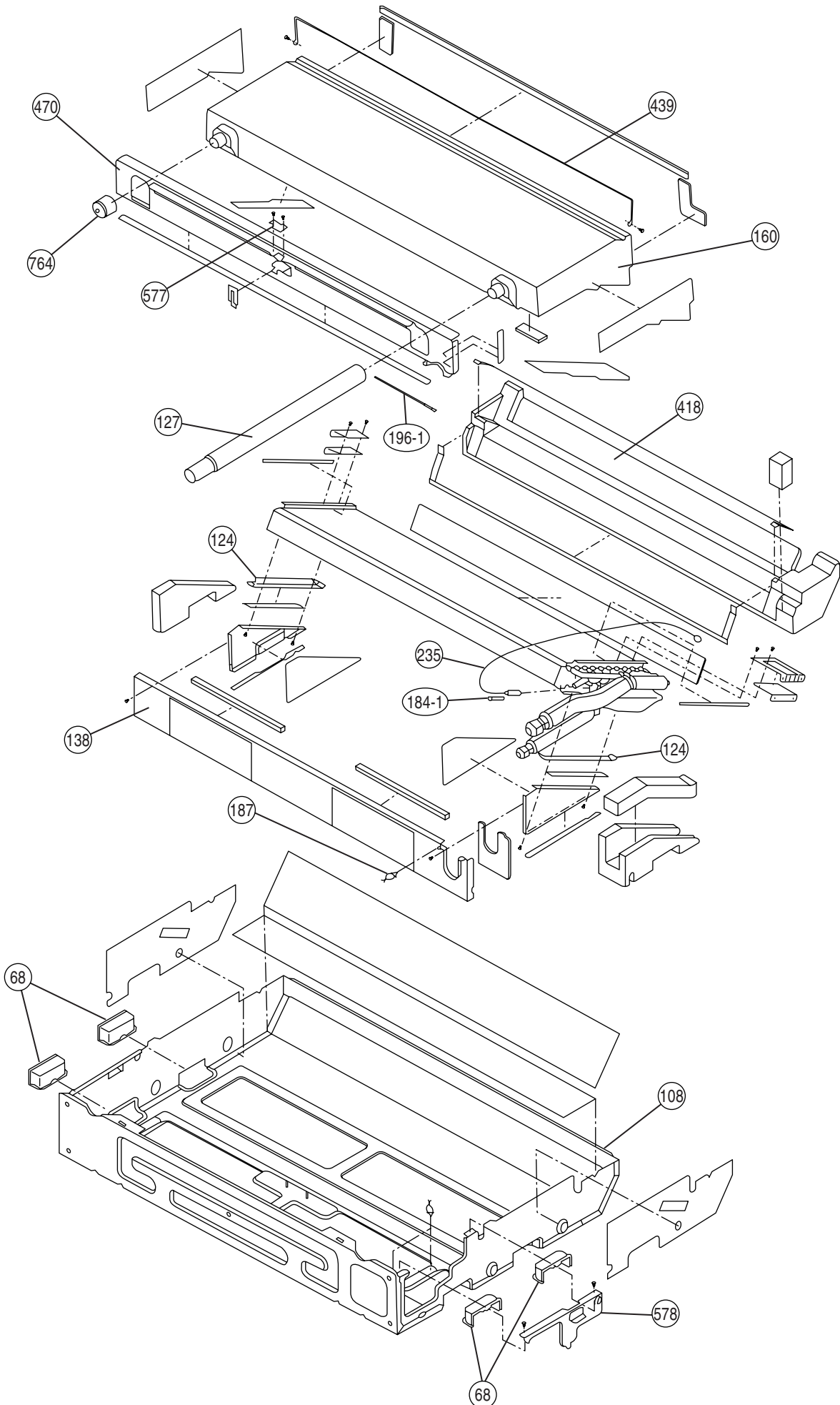
This part (Choke coil) generates high voltages. Never touch this part.

DISASSEMBLY ASSEMBLY

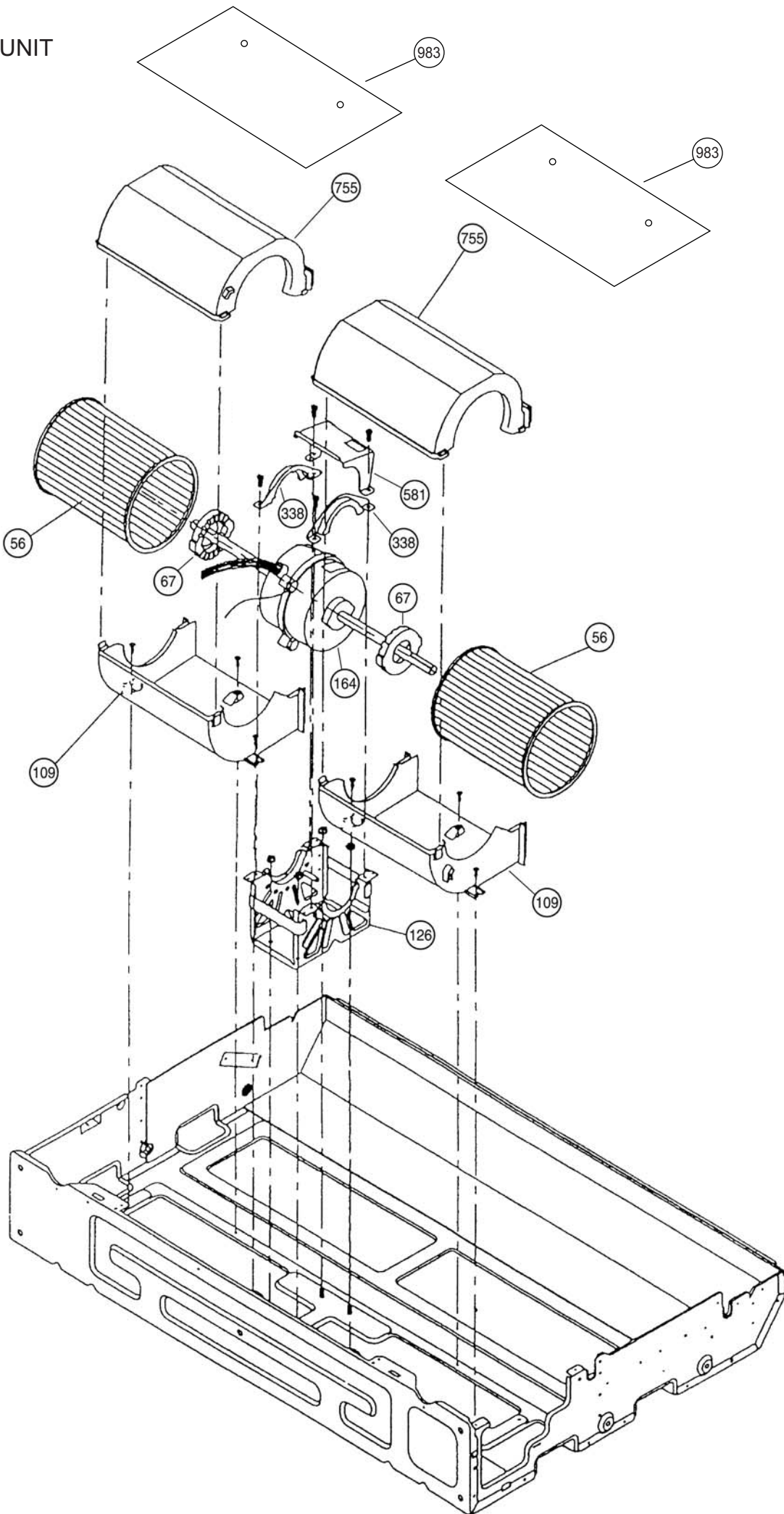
INDOOR UNIT



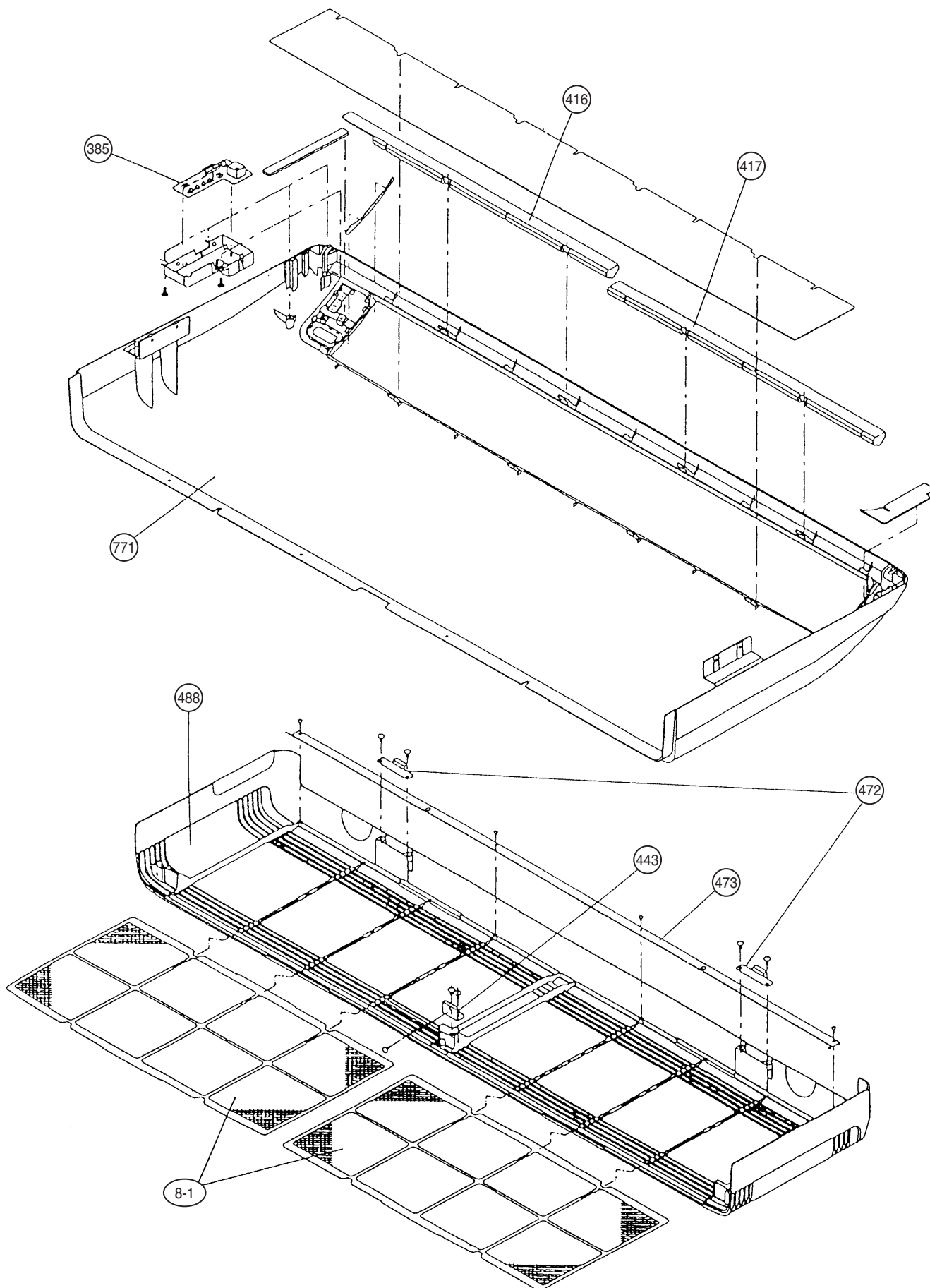
INDOOR UNIT



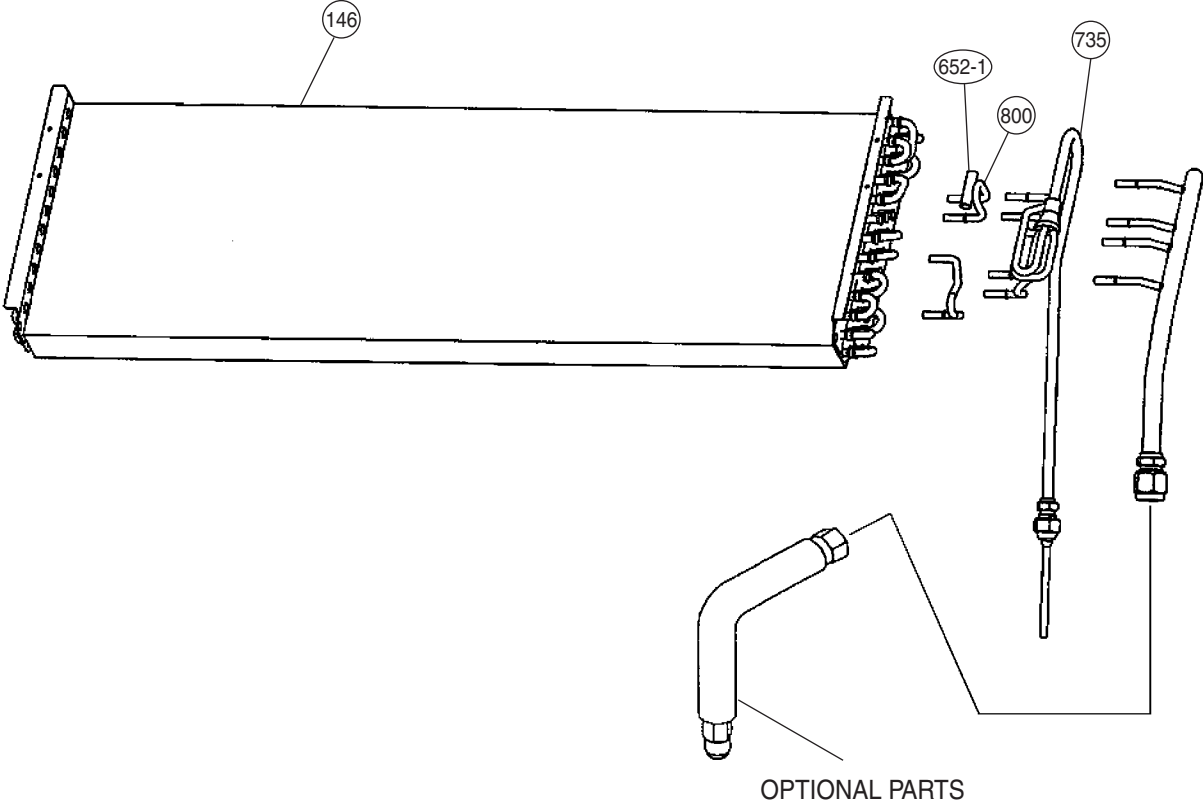
INDOOR UNIT



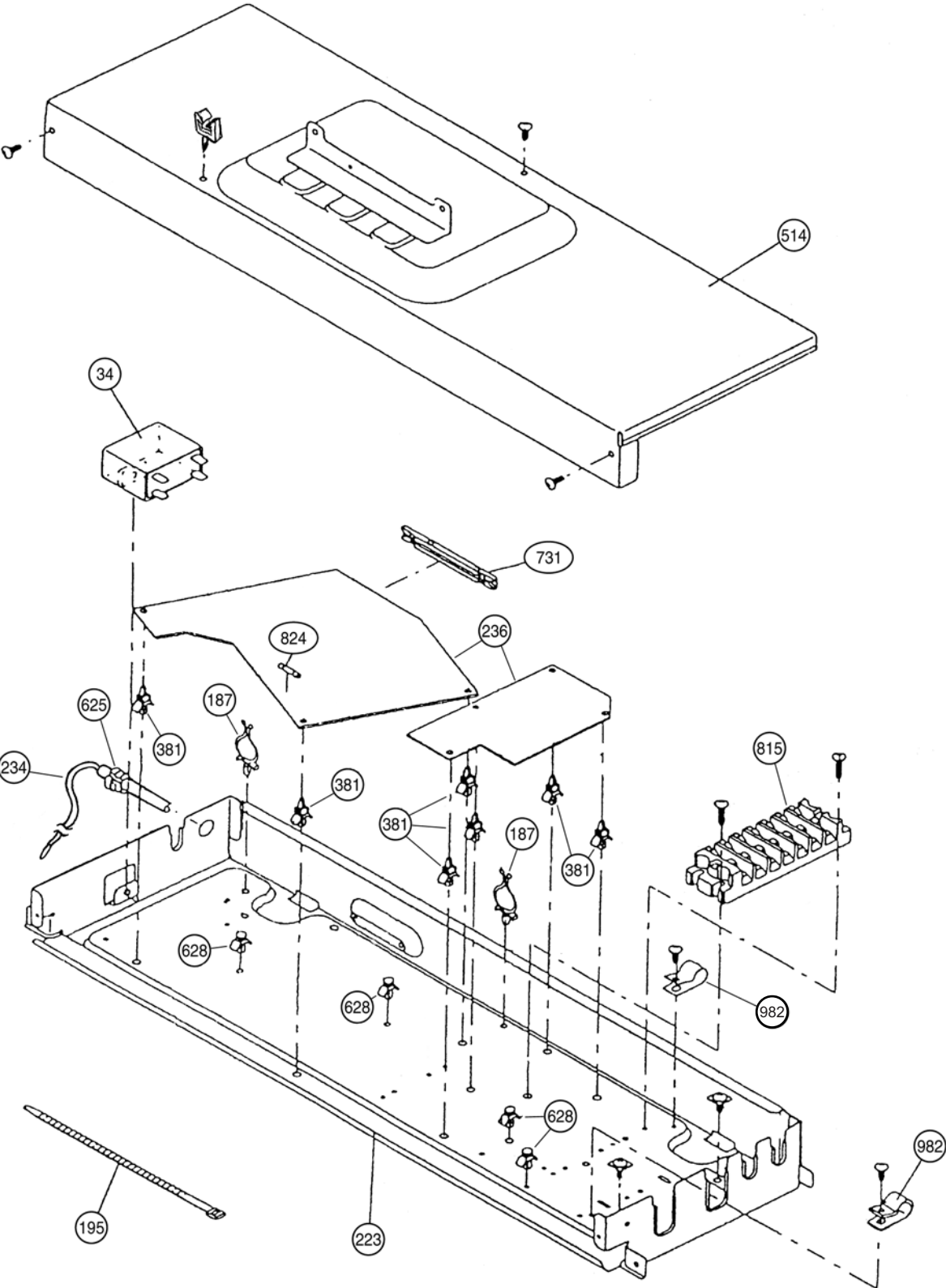
INDOOR UNIT



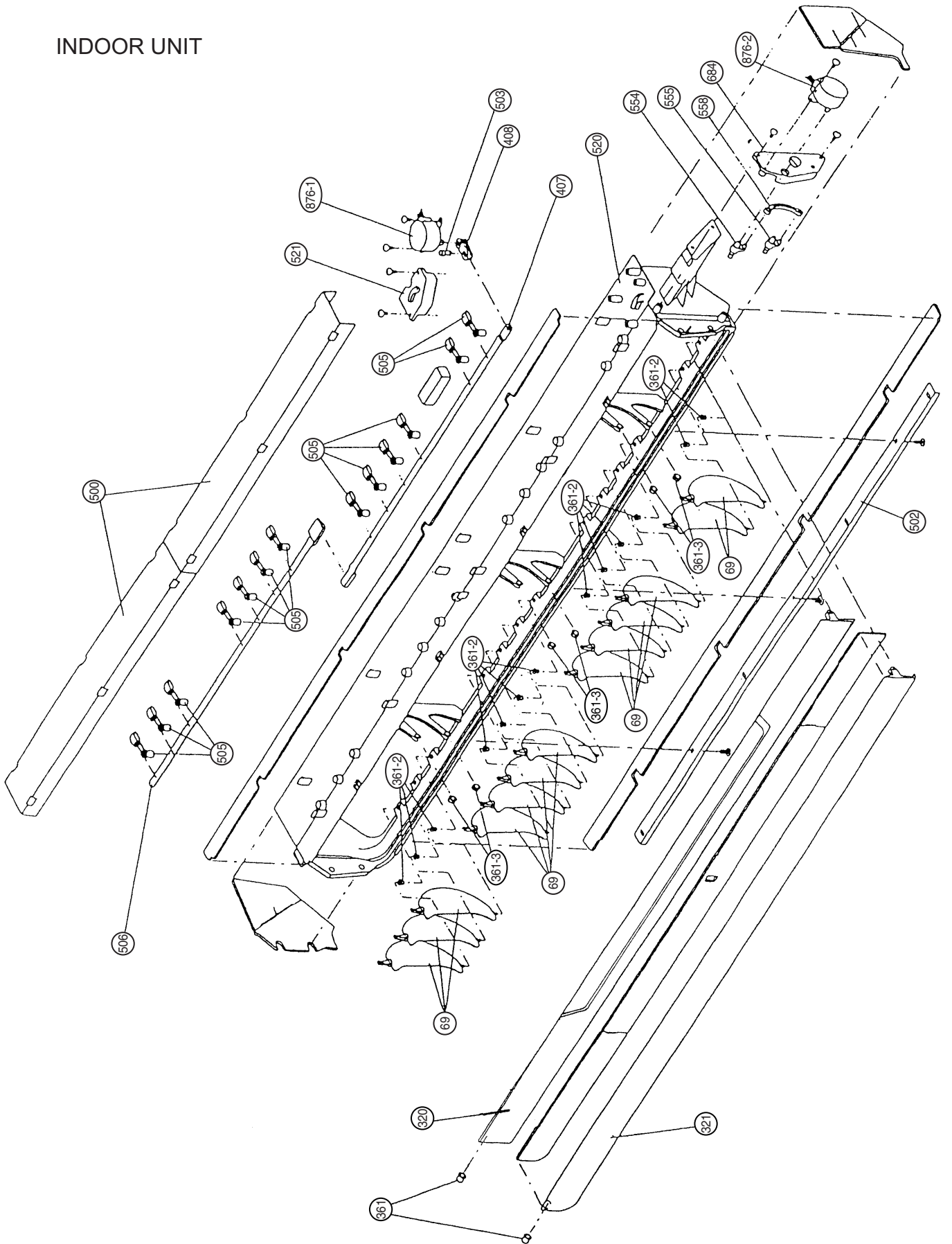
INDOOR UNIT



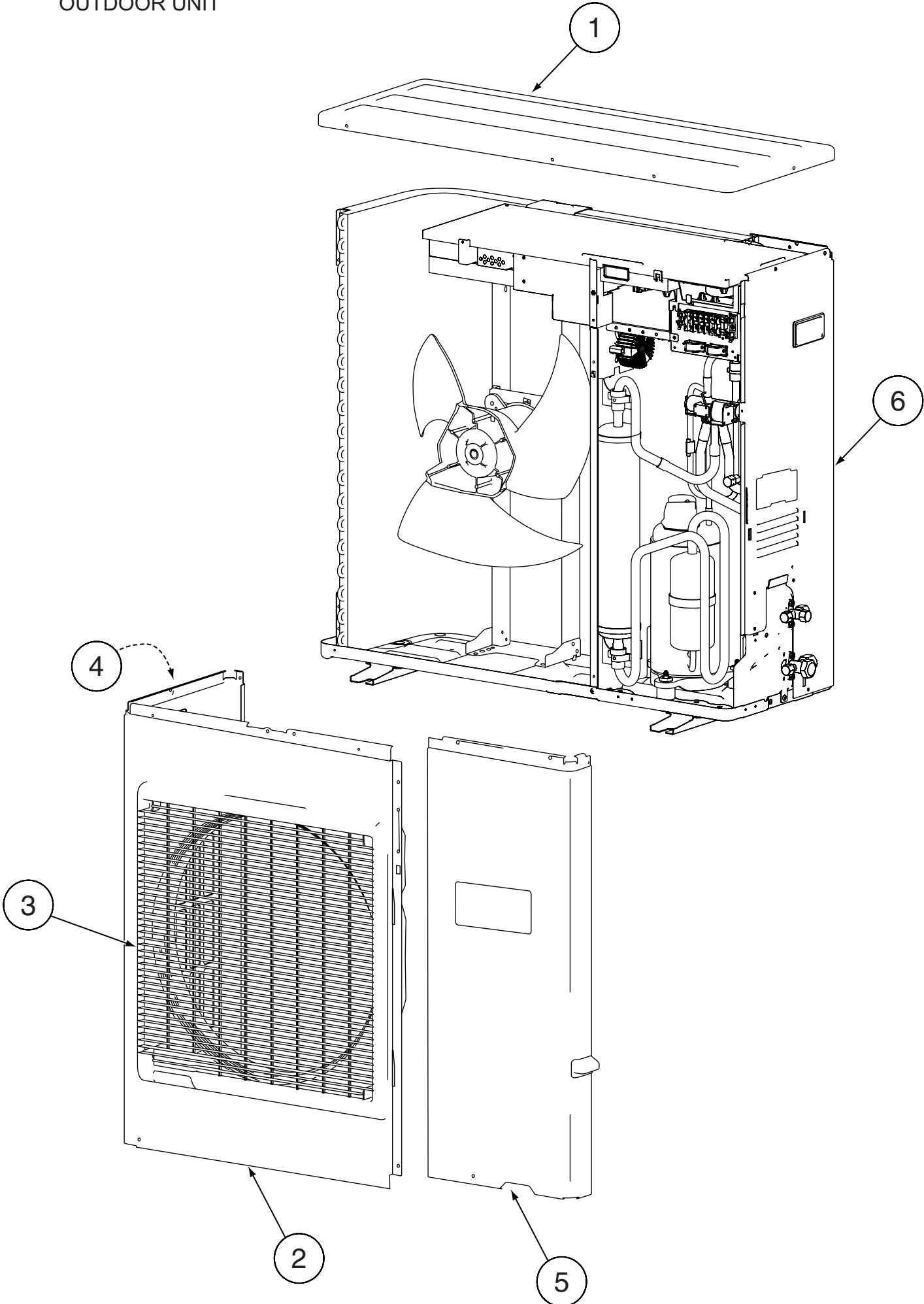
INDOOR UNIT



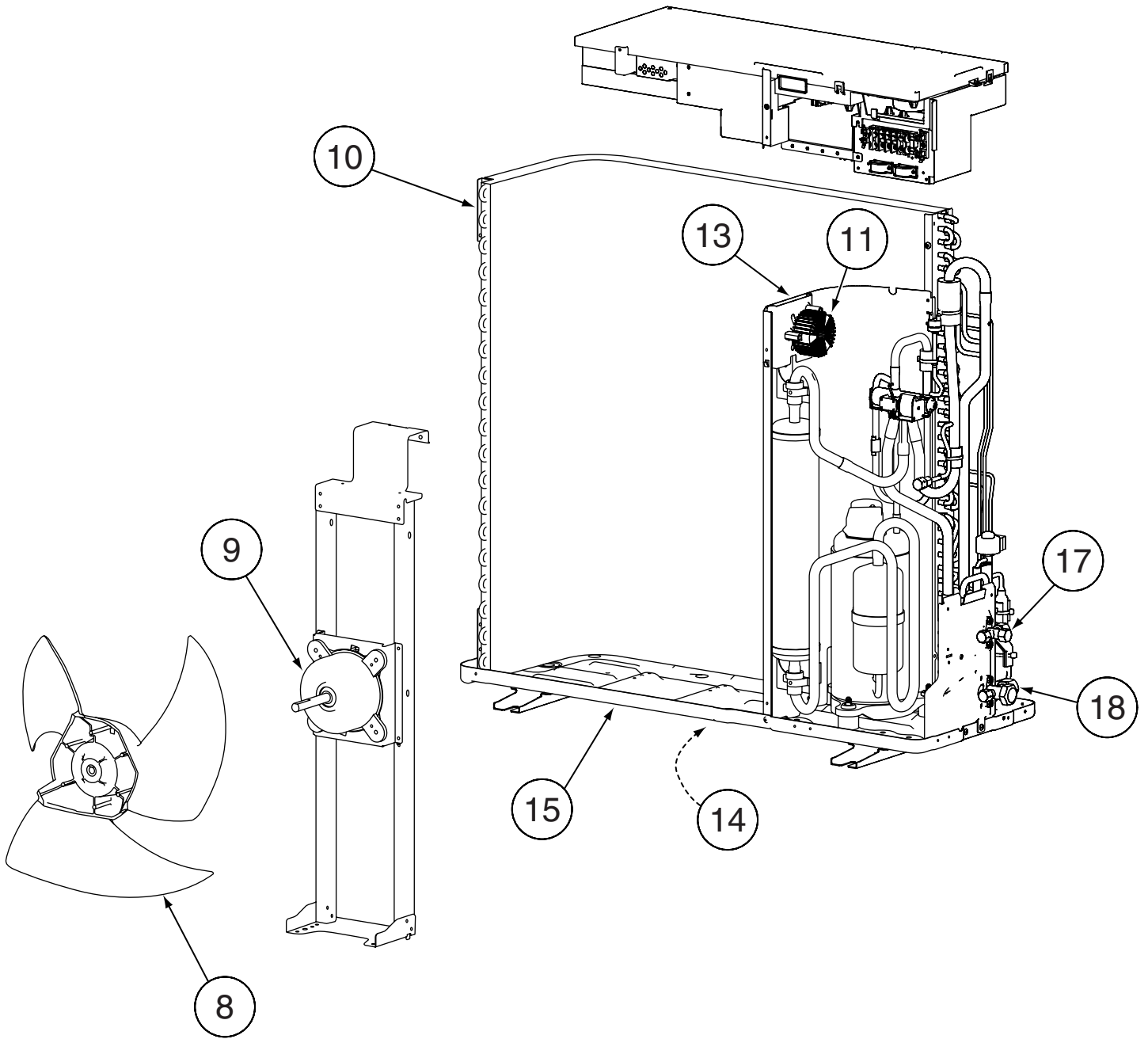
INDOOR UNIT



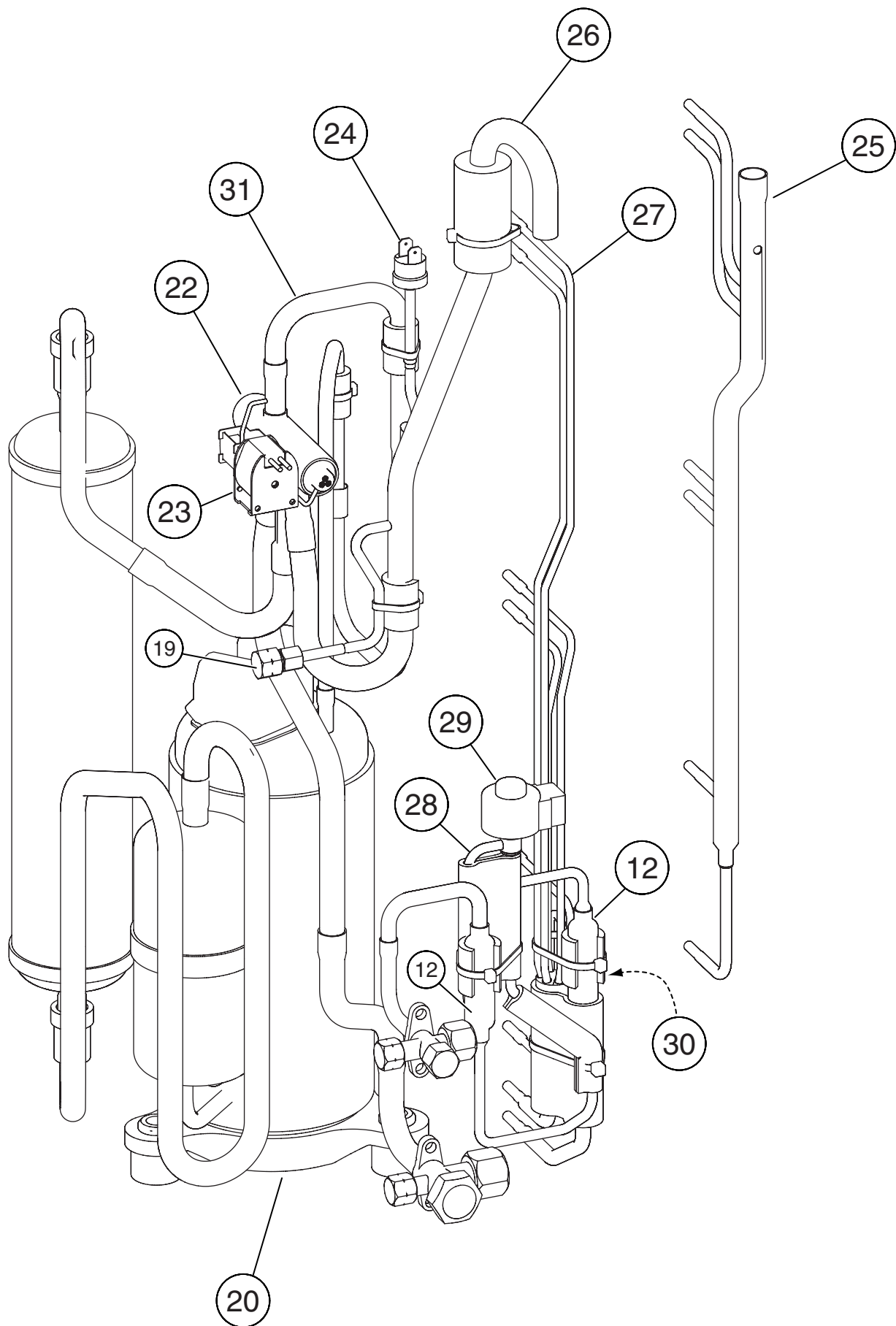
OUTDOOR UNIT



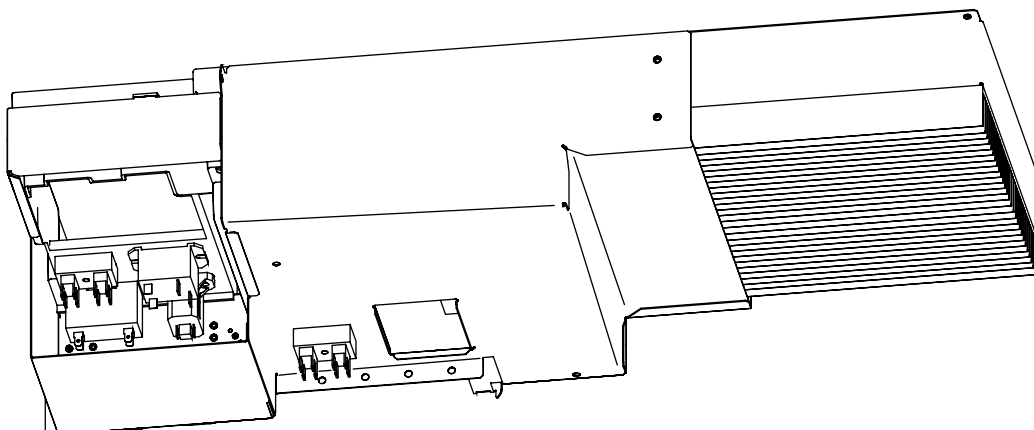
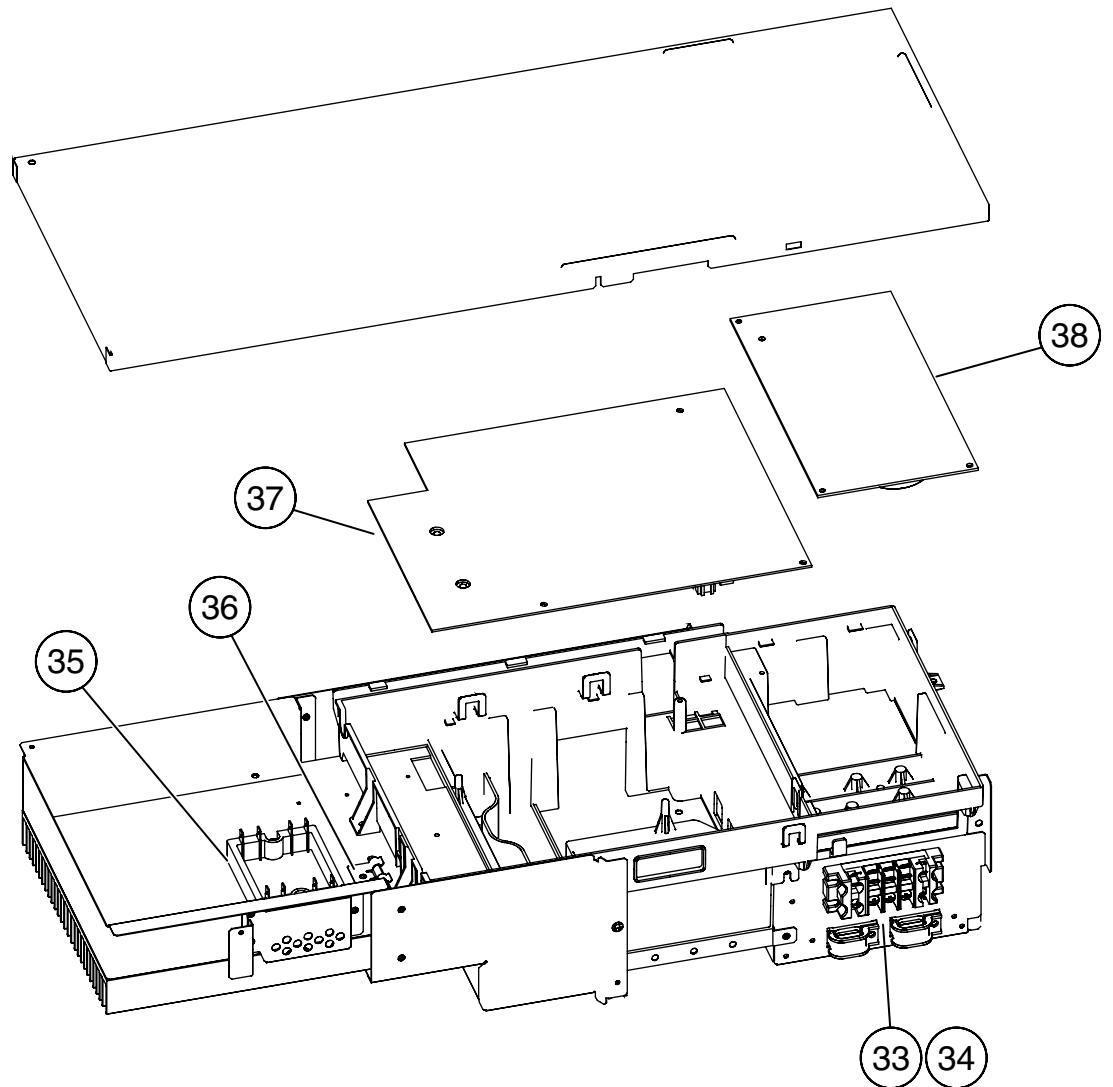
OUTDOOR UNIT



OUTDOOR UNIT



OUTDOOR UNIT



PARTS LIST

INDOOR UNIT

Ref. No	Description	Part No.	Ord. Q'ty	Ref. No	Description	Part No.	Ord. Q'ty
		MS24Y3F				MS24Y3F	
8-1	Air Filter	67220192		500	Protect Cover	67220242	
34	Capacitor (Fan Motor)	67220218		502	SupportStay	67220243	
56	Sirocco Fan Assy	67220193		503	LouverShaft	67220244	
67	Rubber (Vibration-proof)	67220219		505	LouverStopper	67220004	
68	Cap, Plastic	67220220		506	Louver Rod	67220007	
69	Louver	67220008		508	Cosmetic Panel-R	67220245	
108	Base Assy	67220013		509	Cosmetic Panel-L	67220246	
109	Casing, Plastic	67220002		514	Control Box Cover	67220247	
124	Kit (Dew Proof Plate)	67220221		520	Flap Base	67230058	
126	Motor Fixing Table Assy	67220222		521	LouverLink Cover	67220006	
127	Drain Hose Assy	67220015		554	Flap Link-Upper (Step Motor-V)	67220248	
138	Kit (Separate Wall-A)	67220215		555	Flap Link-Lower (Step Motor-V)	67220249	
146	EvaporatorAssy KB07	67220216		558	Motor Rod-A (Step Motor-V)	67220250	
160	Drain Pan Assy (Kit)	67220217		577	Catch TL-119	67220014	
164	Fan Motor Assy-IN	67220224		578	Base Bracket (Reinforcement Meta	67220251	
173	HangerBracket-L	67220228		580	Top Cover	67220001	
174	HangerBracket-R	67220225		581	Protector, Metal (Fan Motor)	67220252	
184-1	Thermistor Spring-A	67206400		625	Cord Bushing KR-51	67230030	
187	Clamp No. 1219	67220226		628	Locking Spacer-B	67207461	
195	Clamp SKB-100	67220227		652-1	Thermistor Holder Pipe	67206704	
196-1	Clamp SKB-3M	67207409		653-2	Bolt	67220253	
223	Control Box	67220229		684	Motor Base	67220254	
234	Thermistor Assy-Room	67203510		731	Holder (Guide Rail)	67200566	
235	Thermistor Assy-Pipe	67203511		735	Distributor Assy	67220255	
236	Controller PCB Assy (K01AL-050SHSE-C1)	67203712 (K01AL-050SHSE-C1)		743	Remote Control Unit Holder	67203202	
240	Remote Control Unit	37220230		755	Casing Cover	67220003	
320	Flap (Upper)-G	67230061		764	Drain Cap	67220256	
321	Flap (Lower)	67230062		771	Panel	67220257	
338	Motor Fixture	67200588		800	Bypass Pipe Assy	67220258	
361	Bushing	67210058					
361-2	Bushing-B, Plastic	67230060					
361-3	Bushing-C, Plastic	67230059					
365-1	Special Screw	67220231					
365-2	Special Screw	67220232					
381	Locking Spacer, KGLS-4S	67207460					
385	Indicator PCB Assy	67230056					
407	Motor Rod	67220233					
408	LouverLink	67220005					
416	Insulation (Panel)-A	67220234					
417	Insulation (Panel)-B	67220235					
418	Insulation (Flap Base)	67220236					
439	Drain Pan Wire	67220237					
443	Arm Bracket	67220238					
470	Separate Wall-B (Kit)	67220239					
472	Grille Support	67220240					
473	Filter Bracket	67220241					
488	Grill-G	67220000					


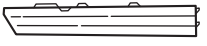

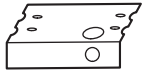
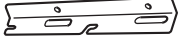
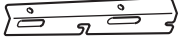
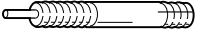



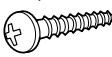

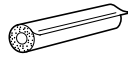




OUTDOOR UNIT

Ref. No	Description	Part No.	Ord.
		MR24UY3F	Q'ty
1	Top Panel Sub Assy	67201640	
2	Front Panel	67201601	
3	Fan Guard	67201602	
4	Grip Side	67201603	
5	Service Panel Sub Assy	67201688	
6	Right Panel	67201605	
8	Propeller Fan Assy	67201607	
9	Motor, Induction	67201608	
10	Condenser-A Assy	67201609	
11	CoilChoke	67201633	
12	Strainer Assy	67201611	
13	Separate Wall Assy	67201647	
14	Cap Foot	67201650	
15	Base Assy	67201648	
17	3-Way Valve Assy (3/8)	67201614	
18	3-Way Valve Assy (5/8)	67201615	
19	Check Joint Assy	67201616	
20	CompressorAssy	67201689	
22	4-Way Valve	67201619	
23	Solenoid	67201681	
24	Pressure Switch	67201621	
25	Inlet Pipe Cond A Assy	67201622	
26	Inlet Pipe Cond B Assy	67201690	
27	Outlet Pipe Cond A Assy	67201691	
28	Expansion Valve Assy	67201692	
29	Coil (Expansion Valve)	67201422	
30	Distributor	67201693	
31	Discharge Pipe A Assy	67201694	
33	Terminal2P	67201618	
34	Terminal5P	67201632	
35	ACTPM	67201627	
36	Holder Thermo	67201628	
37	Inverter PCB Assy	67201695	
38	Power PCB Assy	67201696	
----	Fuse 3.15A-250V	67201697	
----	Thermistor (Outdoor Temp.)	67201686	
----	Heat Exchanger Thermistor	67201698	
----	Thermistor (Discharge)	67201635	
----	Compressor Thermistor	67201637	
----	Thermistor	67201430	
----	Heatsink Thermistor	67201685	
----	Transformer	67201699	
----	Varistor	67201700	
----	Arrester	67201701	
----	Relay	67201702	
----	Relay	67201703	
----	Switch Push	67201704	
----	Switch Slide	67201705	
----	Drain Pipe Assy	67201706	
----	Drain Cap	67201707	

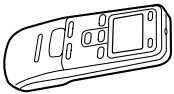
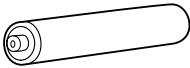
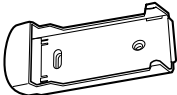

STANDARD ACCESSORIES

The following installation parts are furnished. Use them as required.

INDOOR UNIT ACCESSORIES

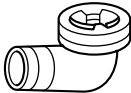
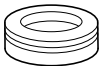
Name and Shape	Q'ty	Application	Part No.
Cosmetic Panel-L 	1		9358536018
Cosmetic Panel-R 	1		9358535011
Tapping screw (φ 4 x 10) 	2		0700009037
Installation template 	1	For positioning the indoor unit. For under ceiling type.	9359107002
Hanger bracket (left) 	1	For suspending the indoor unit from ceiling.	9358596005
Hanger bracket- (right) 	1		9358595008
Anchor bolt (M12) 	4		313806339400
Special nut 	4		
Spring washer 	4		
Wall bracket 	2	For suspending the indoor unit on the wall.	9358597002
Tapping screw (φ 4 x 20) 	6	For fixing the wall bracket.	0700076107
Coupler heat insulator (large) 	1	For indoor side pipe joint. (Large pipe)	9350716012
Coupler heat insulator (small) 	1	For indoor side pipe joint. (Small pipe)	313209328104
Nylon fastener 	1	For fixing the drain hose.	312300787605
Drain hose 	1		9359242000
Insulation (drain hose) 	1	Adhesive type 70 x 230	9359225003
VT wire 	1	For fixing the drain hose L 280 mm	313806350303

REMOTE CONTROL UNIT

Name and Shape	Q'ty	Application	Part No.
Remote control unit 	1	Use for air conditioner operation (AR-JW5)	9371190051
Battery (penlight) 	2	For remote control unit	0600185534
Remote control unit holder 	1	Use are remote control unit holder	9305642014
Tapping screw (φ 3 x 12) 	2	For remote control unit holder installation	0700019098

Wired remote controller unit is also available
: UTB-UUB (Parts No. 9075887004)

OUTDOOR UNIT ACCESSORIES

Name and Shape	Q'ty	Application	Part No.
Drain pipe 	1	For outdoor unit drain piping work (May not be supplied, depending on the model)	9303029015
Drain cap 	5		313166024302

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