

SERVICE MANUAL



Models

Indoor unit

RD-45LA

RD-45LA

RD-54LA

Outdoor unit

RO-45LA

RO-45LB

RO-54LA

CONTENTS

SPECIFICATIONS	1
OUTLINE AND DIMENSIONS	2
REFRIGERANT SYSTEM DIAGRAM	4
CIRCUIT DIAGRAM	5
PCB CIRCUIT DIAGRAM	6
ERROR CONTENTS	10
DISASSEMBLY ILLUSTRATION	12
PARTS LIST	18
STANDARD ACCESSORIES	20

SPECIFICATIONS

TYPE	Cooling & Heating	Colling & Heating
INDOOR UNIT	RD-45LA	RD-54LA
OUTDOOR UNIT	RO-45LA	RO-54LA
COOLING CAPACITY rated / max (kW)	12.5 / 14.0	14.0 / 15.0
HEATING CAPACITY rated / max (kW)	14.0 / 18.0	16.0 / 19.0

ELECTRICAL SPECIFICATIONS

POWER SUPPLY (V)		230	
FREQUENCY (Hz)		50	
RUNNING CURRENT rated / max (A)	COOLIING	18.9 / 22.6	23.6 / 25.9
	HEATING	16.7 / 22.5	20.6 / 25.9
INPUT rated / max (kW)	COOLIING	4.30 / 5.15	5.36 / 5.90
	HEATING	3.80 / 5.15	4.70 / 5.90
EER rated / max (kW / kW)	COOLIING	2.91	2.55
	HEATING	3.68	3.40
MOISTURE REMOVAL (ℓ/hr)		3.0	4.0
AIR CIRCULATION - Hi (m³/hr)		3,500	

COMPRESSOR

TYPE		Hermetic type, 2 poles, 3-phase, Induction motor, DC Scroll	
DISCRIMINATION		ANB33FCMMT	
REFRIGERANT	R410 (g)	3,400	

FAN MOTOR

INDOOR UNIT	DISCRIMINATION	MFA-60NTFS
	HI-SPEED (r.p.m.)	1,300
	MED-SPEED (r.p.m.)	1,150
	LO-SPEED (r.p.m.)	990
OUTDOOR UNIT	DISCRIMINATION	MFE-60PO
	HI-SPEED (r.p.m.)	850 (up Fan) / 750 (down Fan)

DIMENSIONS

INDOOR UNIT	H x W x D (mm)	400 x 1,050 x 500
OUTDOOR UNIT	H x W x D (mm)	1,290 x 900 x 330

INDOOR UNIT	NET / GROSS (kg)	50 / 55
OUTDOOR UNIT	NET / GROSS (kg)	105 / 112

REFRIGERANT CHARGE (R410A)

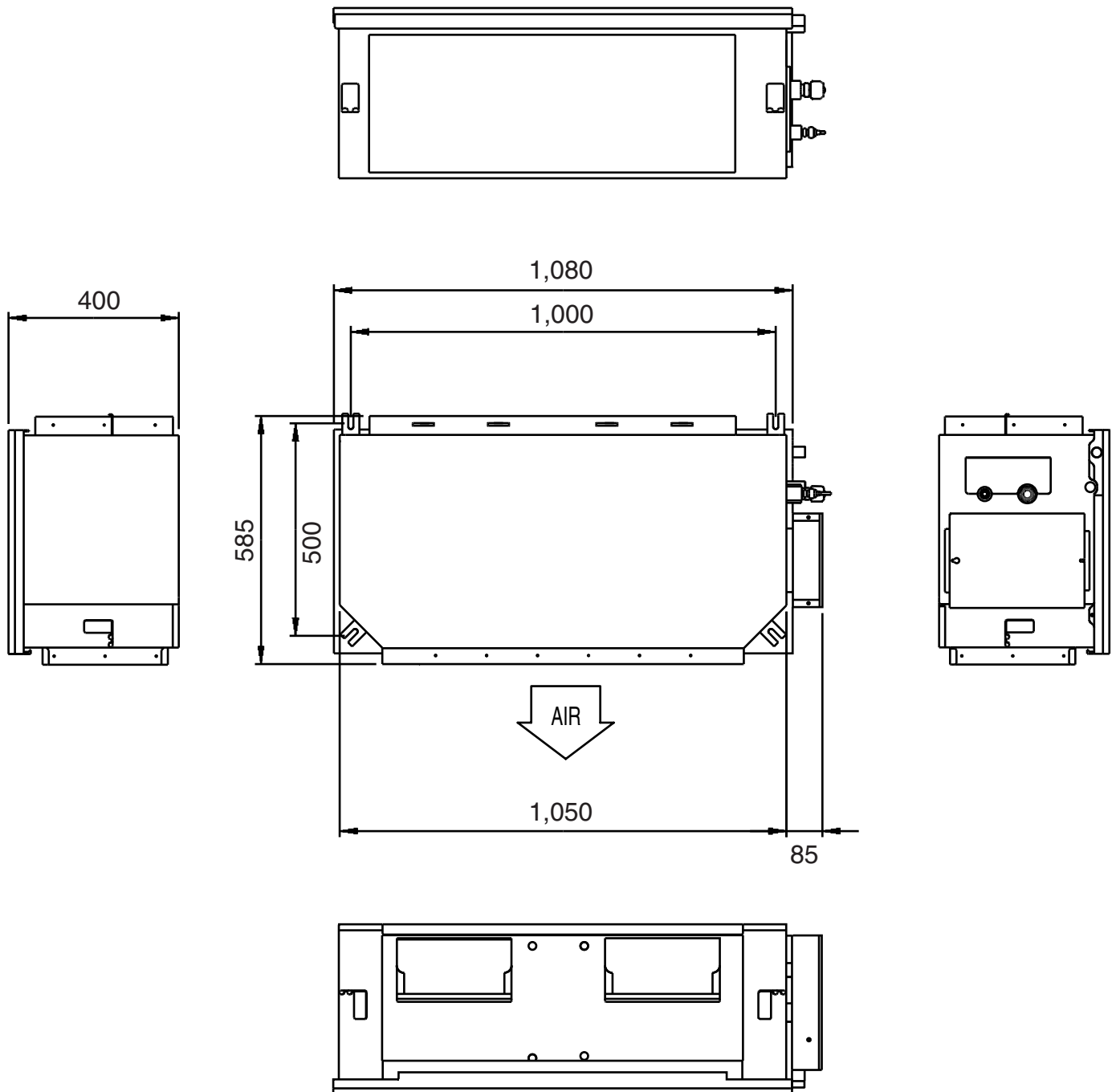
FULL CHARGE AMOUNT	PIPE LENGTH	20.0 m	3,400 g
		30.0 m	3,800 g
		40.0 m	4,200 g
		50.0 m	4,600 g
		60.0 m	5,000 g
		70.0 m	5,400 g
ADDITIONAL CHARGE			40 g / m
CHARGELESS			20 m
MAX PIPE LENGTH			70 m
MAX ELEVATION			30 m

OUTLINE AND DIMENSIONS

(Unit : mm)

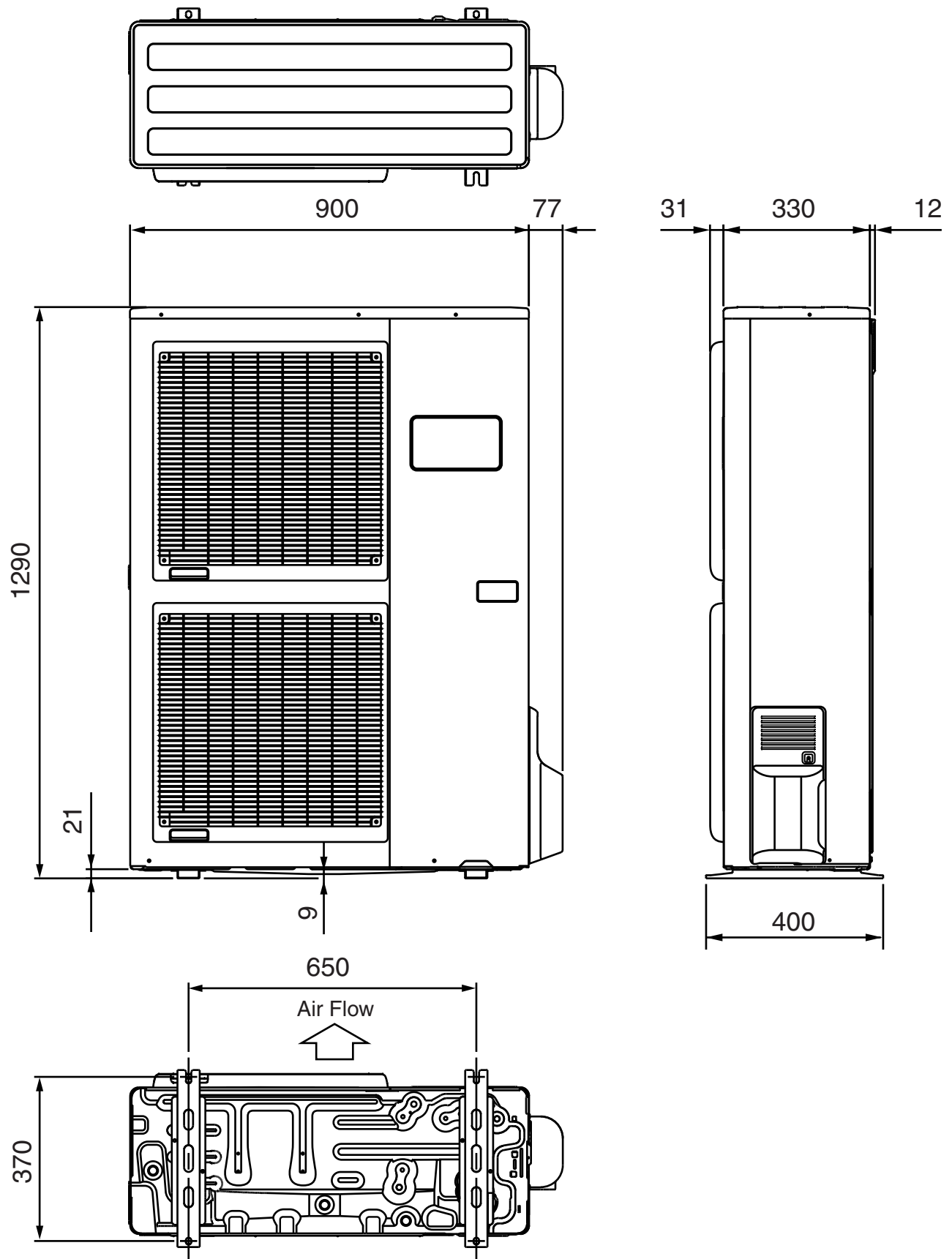
INDOOR UNIT

Models : RD-45LA, RD-54LA

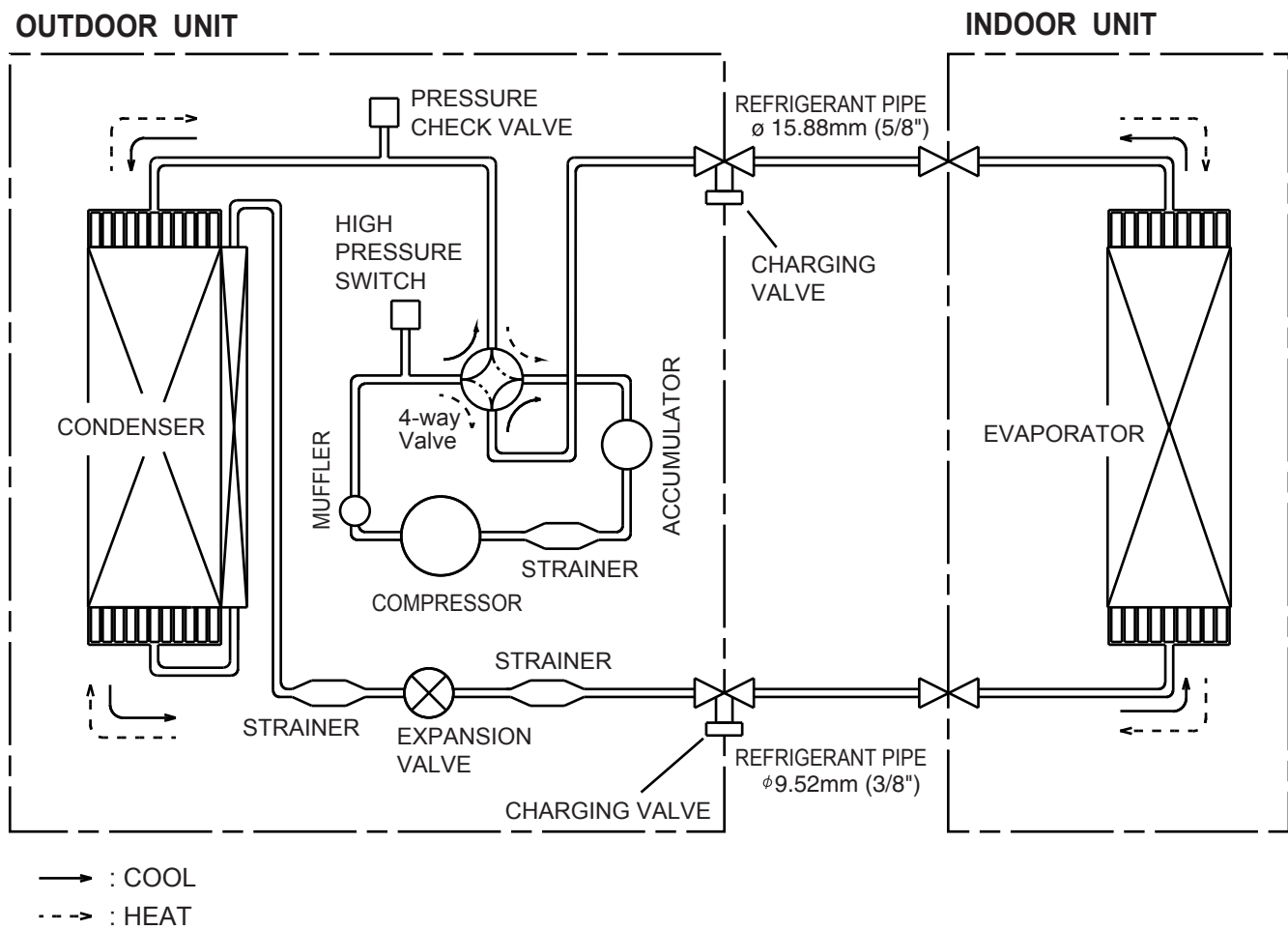


OUTDOOR UNIT (Unit : mm)

Models : RO-45LA
RO-45LB
RO-54LA



REFRIGERANT SYSTEM DIAGRAM



**Models : RD-45LA / RO-45LA
RD-45LA / RO-45LB
RD-54LA / RO-54LA**

The diagram illustrates the electrical connections for a power PCB, which interfaces with a transformer, a main PCB, and various peripheral components. The power PCB is the central hub, receiving power from the transformer and distributing it to the fan motor, relays, and other components. The main PCB handles the remote control signals and provides additional power to the fan motor and relays.

Legend:

- GREEN: Ground
- PURPLE: Fan Motor (FM)
- RED: Power
- BLACK: Ground
- WHITE: Ground
- YELLOW: Ground
- GRAY: Remote Control Unit (RCU)
- GRAY: Thermistor (Room Temp.)
- GRAY: Thermistor (Pipe Temp.)

Components and Connections:

- Transformer:** Provides power to the power PCB. The primary is connected to the main power supply (E101). The secondary is connected to the power PCB via a 3.15A fuse.
- Power PCB:** Contains a 3.15A fuse, a 10A fuse, and a 100A fuse. It is connected to the main power supply (E101) and the main PCB. The power PCB also controls the fan motor (FM) and the relays.
- Main PCB:** Controls the remote control unit (RCU) and provides power to the fan motor (FM) and the relays. It is connected to the power PCB and the RCU.
- Fan Motor (FM):** A 100W motor that is controlled by the power PCB and the main PCB. It is connected to the power PCB via a 100A fuse.
- Relays:** Three relays are shown, each with a 10A fuse. They are controlled by the power PCB and the main PCB. The relays are connected to the power PCB via a 10A fuse.
- Remote Control Unit (RCU):** Receives signals from the main PCB and controls the fan motor (FM) and the relays. It is connected to the main PCB via a 10A fuse.
- Thermistors:** Two thermistors are shown, one for room temperature and one for pipe temperature. They are connected to the main PCB via a 10A fuse.

Wiring Details:

- The power PCB is connected to the main power supply (E101) via a 3.15A fuse.
- The power PCB is connected to the main PCB via a 10A fuse.
- The power PCB is connected to the fan motor (FM) via a 100A fuse.
- The power PCB is connected to the relays via a 10A fuse.
- The main PCB is connected to the RCU via a 10A fuse.
- The main PCB is connected to the thermistors via a 10A fuse.

OUTDOOR UNIT

The diagram illustrates the electrical wiring for the Outdoor Unit. Key components and connections include:

- Compressor:** Connected to the main PCB via a connector with Red, White, and Black wires.
- Fan Motors (FM):** Two fan motors are connected to the main PCB via connectors CN800 and CN801.
- Expansion Valve Coil (EV):** Connected to the main PCB via connector CN27.
- Sensors:** Five thermistors are connected to the main PCB: Discharge (Brown), Pipe (Black), Outdoor (Blue), Compressor (Brown), and Heat Sink (Black).
- Main Printed Circuit Board (PCB):** Features a fuse (F4 T 3.15A 250V) and various terminals (W305, W304, W303, W14, W15, W107, W108, W200, W8, W9, W3, W6, W7, W1, W2).
- Filter Board:** A secondary PCB with a 10A fuse and EMI filter, connected to the main PCB via connectors CN1 and CN34.
- EMI Filters:** Multiple EMI filters (1T, 2T, 3T) are used throughout the circuit to suppress electromagnetic interference.
- Power Source:** The unit is connected to a power source via a terminal block with terminals 1, 2 (N), 3, L, and N.

Models : RD-45LA
RD-54LA

RD-45LA : K03BZ-040BHSE-C1
RD-54LA : K03BZ-040AHSE-C1

The diagram shows the wiring for the 1000 Series Control Panel. It includes connections for a Room Temperature Thermistor, a Pipe Temperature Thermistor, and two Louver sensors (U/D and R/L). The wiring is organized into four main sections, each with a terminal block and a corresponding sensor.

- Room Temperature Thermistor:**
 - Terminal 1: BLACK
 - Terminal 2: BLACK
- Pipe Temperature Thermistor:**
 - Terminal 1: GRAY
 - Terminal 2: GRAY
- Louver (U / D):**
 - Terminal 1: CN7 B2B-XAKK-1-A BLACK
 - Terminal 2: CN11 B5B-XASK-1-A WHITE
- Louver (R / L):**
 - Terminal 1: CN12 B5B-XARK-1-A RED
 - Terminal 2: CN11 B5B-XASK-1-A WHITE

The diagram also shows the internal wiring of the control panel, including the connection of the thermistors to the control panel and the connection of the louvers to the control panel.

SW	Function	on	off
SW1-1	Fan changer	-	-
SW1-2	Fan changer	-	-
SW2-1	Room temp. revise (heating)	0 deg.	+4 deg.
SW2-2	Ex. signal function changer	pulse	edge
SW2-3	Auto restart	not auto	auto

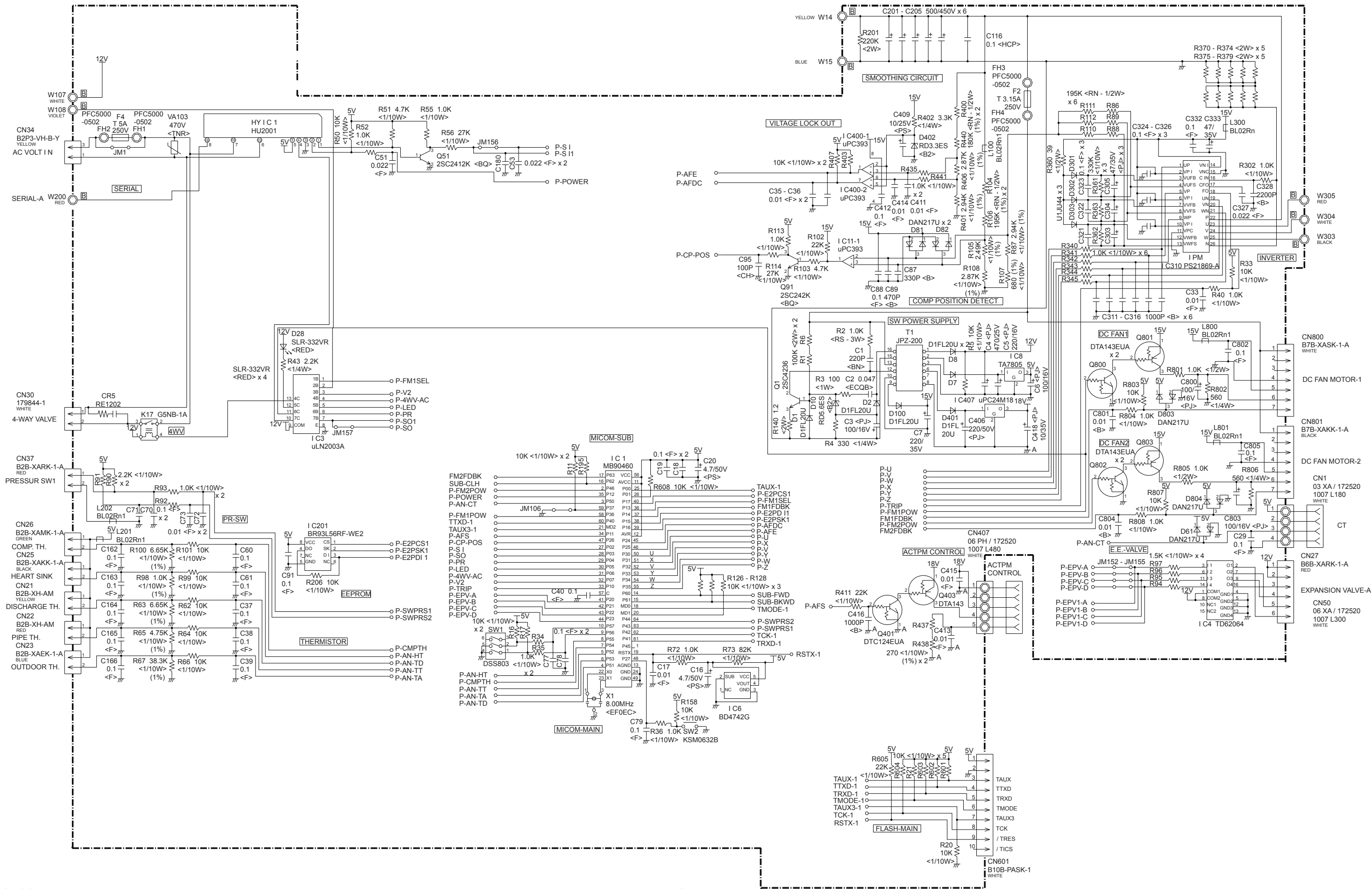
**Models : RO-45LA
RO-45LB
RO-54LA**

RO-45LA : EZ-0045HUE
RO-45LB : EZ-0045HUE
RO-54LA : EZ-0046HUE

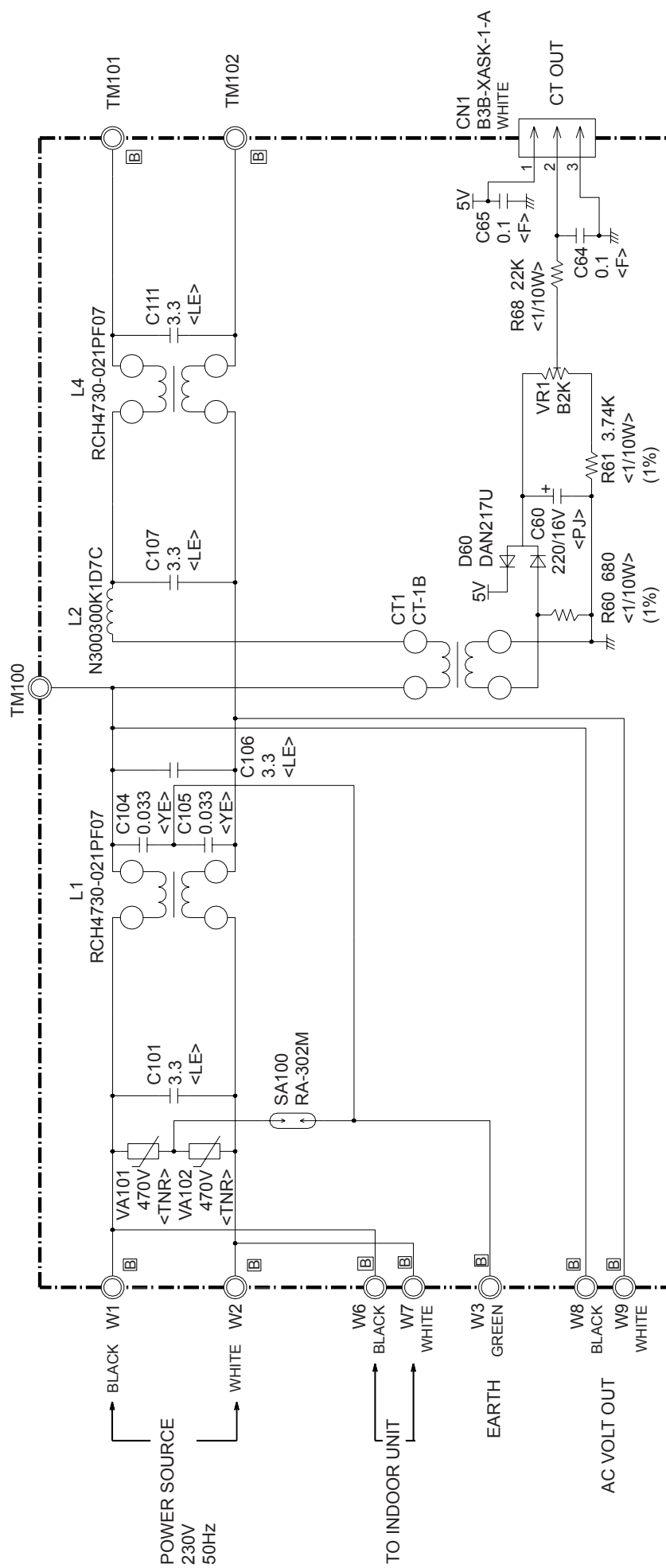


Models : RO-45LA
RO-45LB
RO-54LA

CONTROLLER PCB ASSEMBLY
RO-45LA : K04AW-0400HUE-C1
RO-45LB : K04AW-0500HUE-C1
RO-54LA : K04AW-0401HUE-C1



POWER SUPPLY PCB ASSEMBLY
K04BA-0400HUE-P0

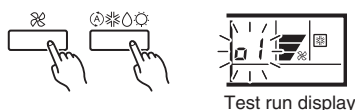


ERROR DISPLAY

CAUTION

Supply power to the crankcase heater for at least 12 hours before the start of operation in winter.

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



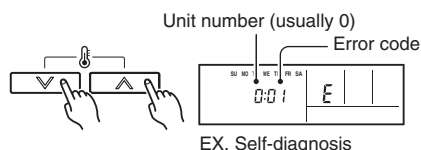
- (3) Press the start/stop button to stop the test run.

[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

- (1) Stop the air conditioner operation.
 - (2) Press the set temperature buttons Δ / ∇ simultaneously for 5 seconds or more to start the self-diagnosis.
- Refer to the following tables for the description of each error code.



- (3) Press the set temperature buttons Δ / ∇ simultaneously for 5 seconds or more to stop the self-diagnosis.

Error code	Error contents
00	Communication error (indoor unit $\longleftrightarrow$ remote controller)
01	Communication error (indoor unit $\longleftrightarrow$ outdoor unit)
02	Room temperature sensor open
03	Room temperature sensor short-circuited
04	Indoor heat exchanger temperature sensor open
05	Indoor heat exchanger temperature sensor short-circuited
06	Outdoor heat exchanger temperature sensor
08	Power source connection error
09	Float switch operated
0A	Outdoor temperature sensor
0c	Discharge pipe temperature sensor

Error code	Error contents
11	Model abnormal
12	Indoor fan abnormal
13	Outdoor signal abnormal
14	Outdoor EEPROM abnormal
15	Compressor temperature sensor
16	Pressure switch abnormal
17	IPM error
1A	Compressor cannot operate
1b	Outdoor fan abnormal

2. OUTDOOR UNIT LEDS

Heat & Cool model (reverse cycle) only

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

LED1	Error contents
1 flash	Communication error (Indoor unit $\rightarrow$ Outdoor unit)
2 flash	Discharge pipe temperature sensor
3 flash	Outdoor heat exchanger temperature sensor
4 flash	Outdoor temperature sensor
7 flash	Compressor temperature sensor
8 flash	Heatsink 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)
5 sec. ON/ 1 sec. OFF repeated	Protect operation
lighting	No error

PUMP DOWN (Refrigerant collecting operation)

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

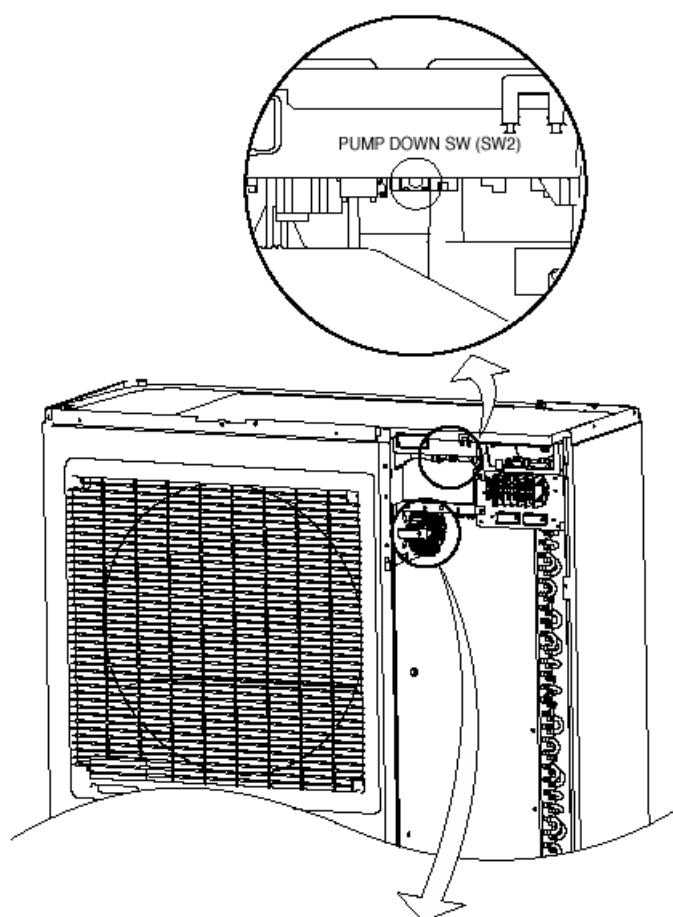
(1) Press the push-button switch (SW2) on the circuit board once. The LED on the circuit board starts flashing (one second ON/one second OFF). This indicates the start of PUMP DOWN operation.

When the switch is pressed while the compressor is in operation, PUMP DOWN operation starts automatically.

When the switch is pressed while the compressor is in stop, the compressor starts to operate automatically, and then move on to PUMP DOWN operation.

(2) PUMP DOWN operation continues for about 1 minute. When PUMP DOWN operation is completed, the compressor stops automatically. Then close the 2-way valve and 3-way valve within 1 minute.

(3) Turn the power off.

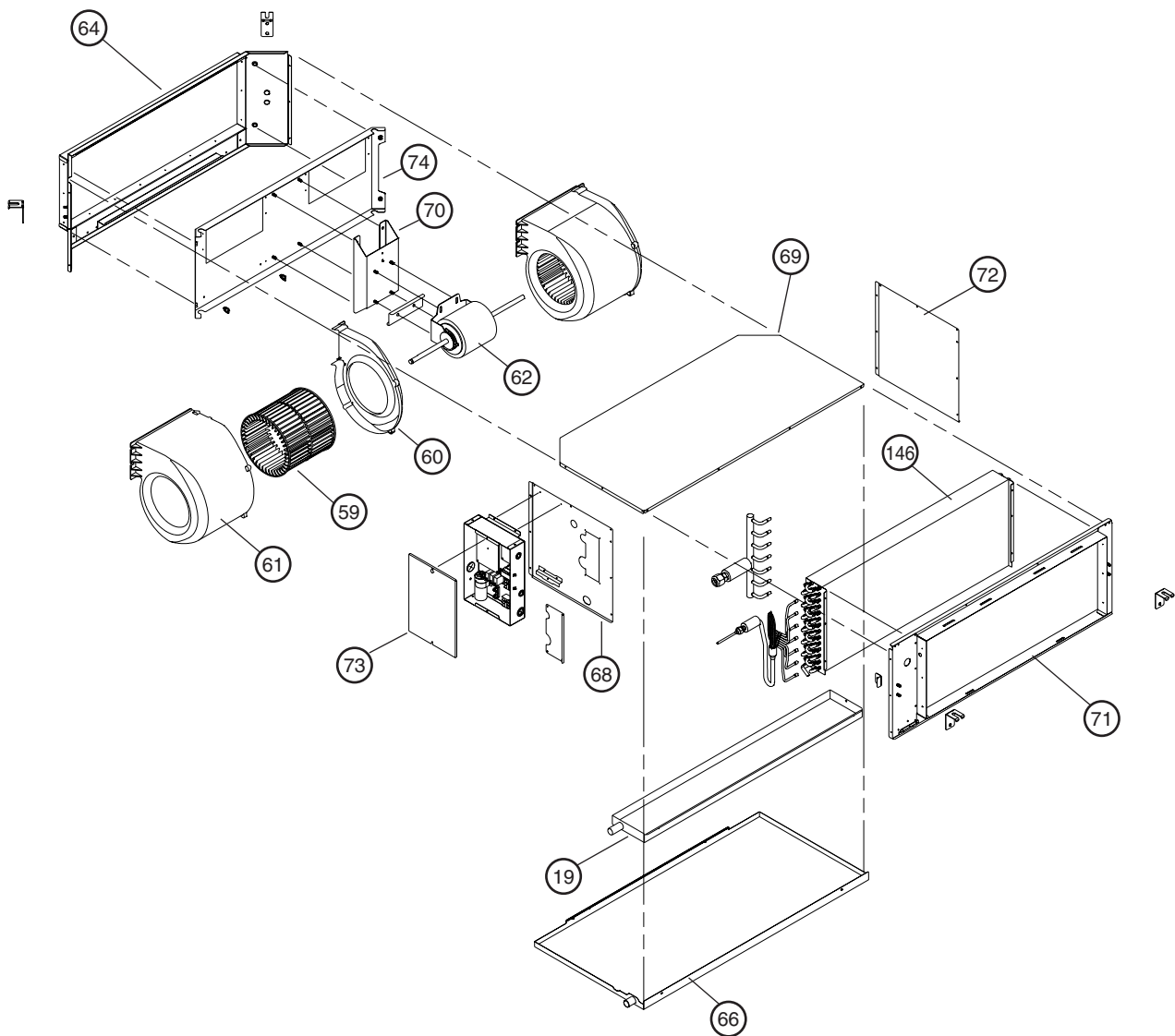


DANGER

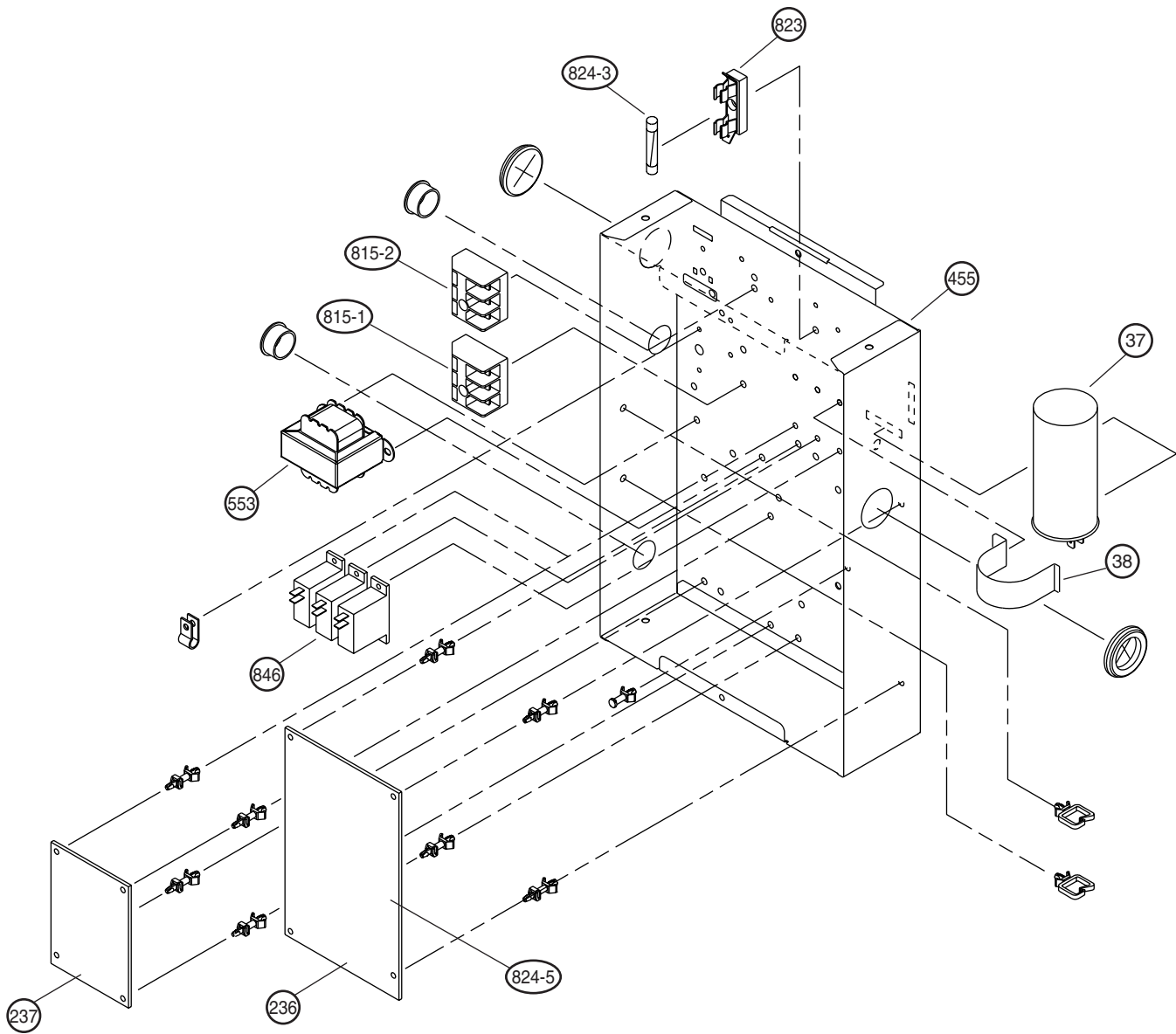
**This part (Choke coil) generates high voltages.
Never touch this part.**

DISASSEMBLY ILLUSTRATION (Indoor Unit)

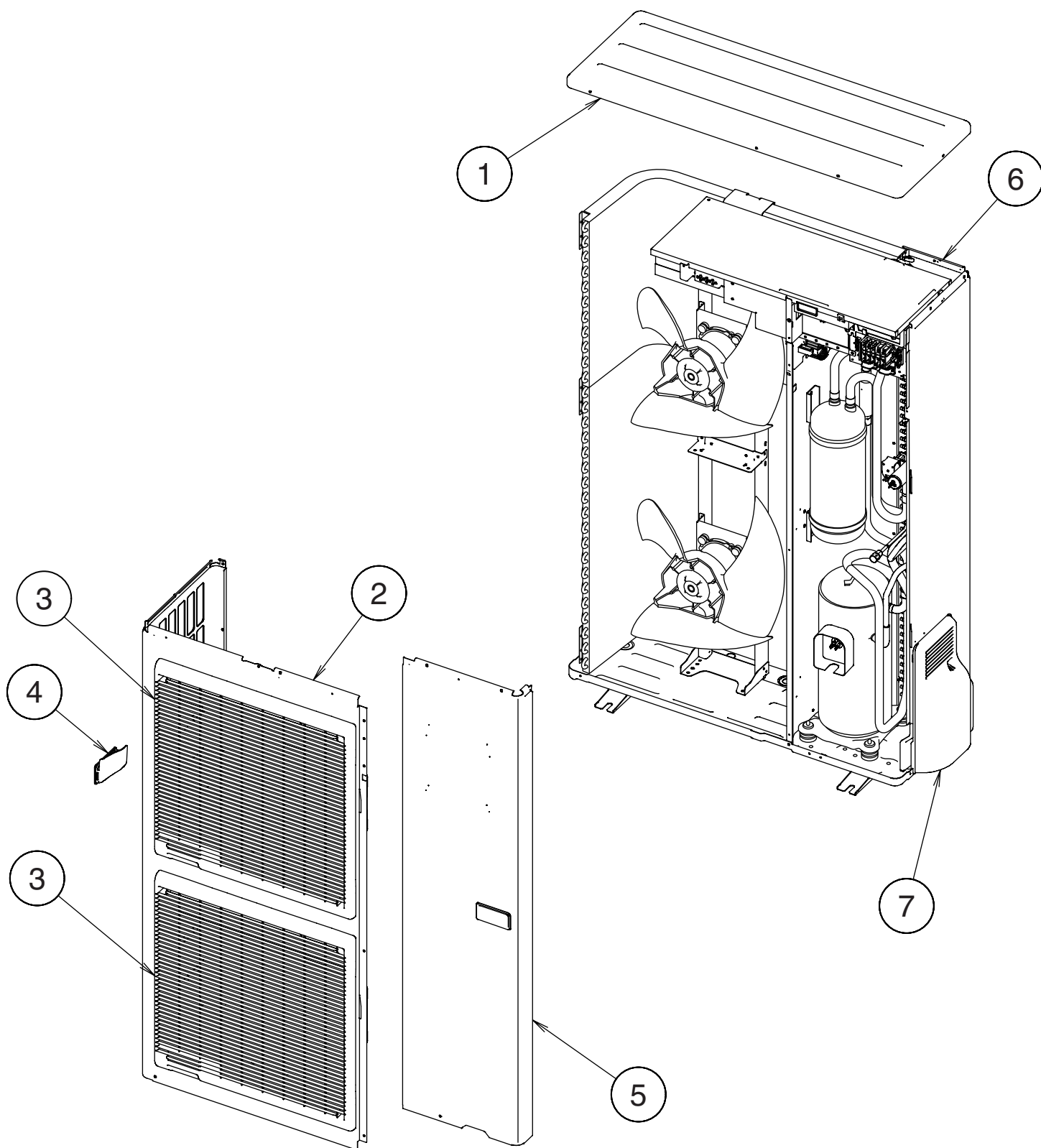
Models : RD-45LA, RD-54LA



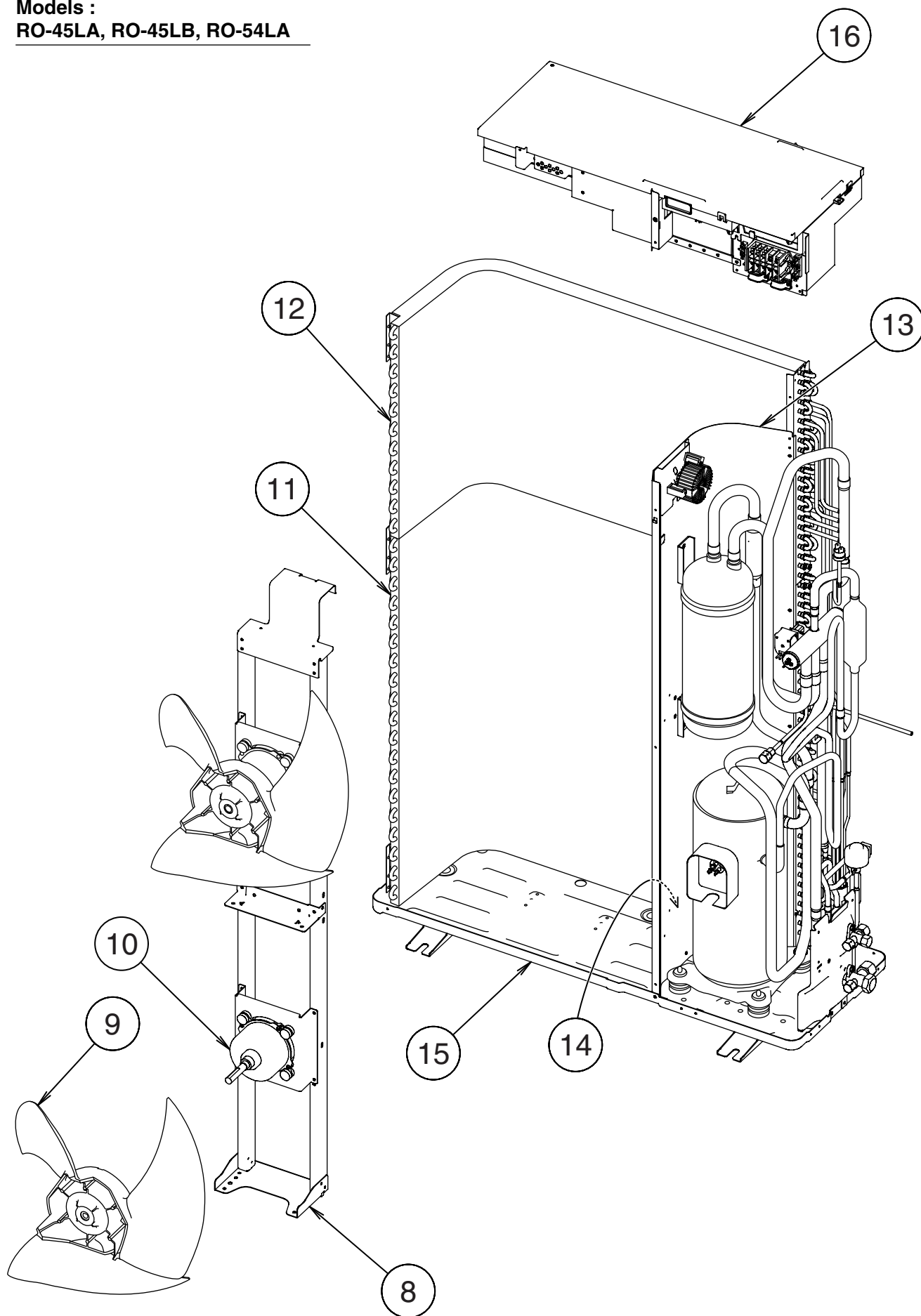
Models : RD-45LA, RD-54LA



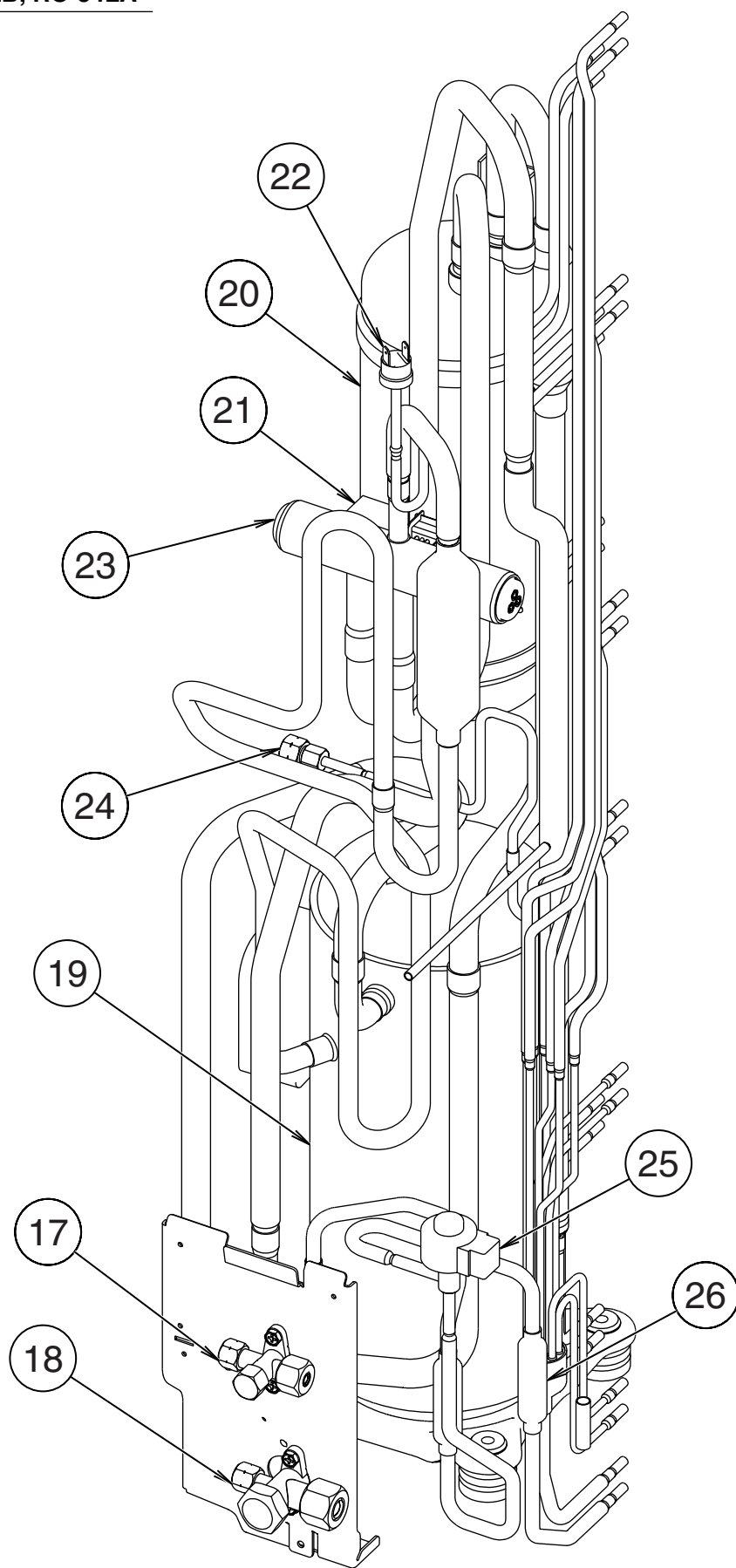
Models :
RO-45LA, RO-45LB, RO-54LA



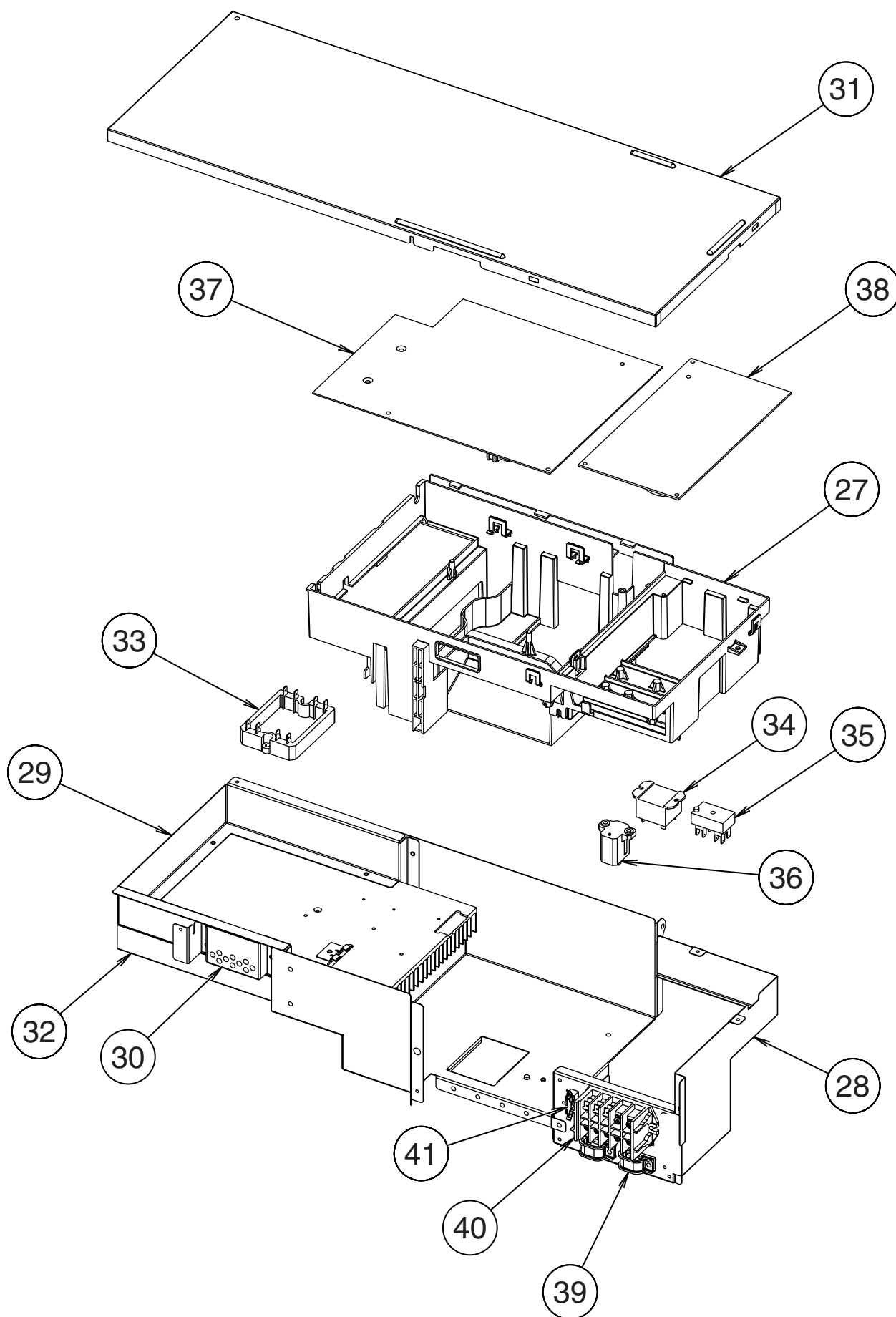
Models :
RO-45LA, RO-45LB, RO-54LA



Models :
RO-45LA, RO-45LB, RO-54LA



Models :
RO-45LA, RO-45LB, RO-54LA



PARTS LIST (Indoor unit)

Ref. No.	Description	Parts No.		Ord. Q'ty
		RD-45LA	RD-54LA	
19	DRAIN PAN ASSY	9372579015	9372579015	
37	CAPACITOR, PLASTIC	9900269111	9900269111	
38	CAPACITOR CLAMP	9308114006	9308114006	
59	SIROCCO FAN	9372059012	9372059012	
60	CASING B	9372058015	9372058015	
61	CASING A	9372057018	9372057018	
62	MOTOR, INDUCT	9601688013	9601688013	
64	KIT (PANEL FRONT SUB ASSY)	9372637012	9372637012	
66	DRAIN PAN SUB ASSY	9372582015	9372582015	
68	KIT (PANEL RIGHT SUB ASSY)	9372916018	9372916018	
69	PLATE TOP SUB ASSY	9372576014	9372576014	
71	KIT (PANEL REAR SUB ASSY)	9372636015	9372636015	
70	BRACKET MOTOR ASSY	9372037003	9372037003	
72	KIT (PANEL LEFT SUB ASSY)	9372581018	9372581018	
73	COVER BOX	9372061008	9372061008	
74	PANEL FAN ASSY	9372035009	9372035009	
146	EVAPORATOR ASSY	9372584057	9372584057	
236	POWER SUPPLY PCB ASSY	9705668058	9705668058	
237	CONTROLLER PCB ASSY	9705246119 (K03BZ-040BHSE-C1)	9705246102 (K03BZ-040AHSE-C1)	
455	CONTROL BOX ASSY	9372536001	9372536001	
553	TRANSFORMER (POWER)	9704129017	9704129017	
815-1	TERMINAL 3P	9306489045	9306489045	
815-2	TERMINAL 3P	9703345012	9703345012	
		0501454012	0501454012	
824-3	FUSE	0600222512	0600222512	
824-5	FUSE	0600315023	0600315023	
846	RELAY	9900294014	9900294014	
	THERMO. SPRING-A	313728262708	313728262708	
---	PIPE THERMISTOR	9703297113	9703297113	
---	ROOM THERMISTOR	9703299216	9703299216	
---	REMOTE CONTROLLER ASSY	9372266014	9372266014	

When you order parts, please make a photocopy of this page and fill the number of the parts in the "Order" column.

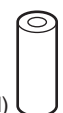
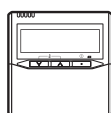
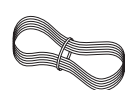
Outdoor unit

Ref. No.	Description	Parts No.			Ord. Q'ty
		RO-45LA	RO-45LB	RO-54LA	
1	Top Panel Sub Assy	9374417018	9374417018	9374417018	
2	Front Panel X	9374094028	9374094028	9374094028	
3	Fan Guard	9374330010	9374330010	9374330010	
4	Grip Side	9374173013	9374173013	9374173013	
5	Service Panel Sub Assy	9374415014	9374415014	9374415014	
6	Right Panel Sub Assy	9374416011	9374416011	9374416011	
7	Valve Cover	9374174010	9374174010	9374174010	
8	Motor Bracket Sub Assy	9374418015	9374418015	9374418015	
9	Propeller Fan Assy	9366378013	9366378013	9366378013	
10	Motor DC Brushless	9601882015	9601882015	9601882015	
11	Condenser A Assy	9374433018	9374433018	9374433018	
12	Condenser B Assy	9374434015	9374434015	9374434015	
13	Sepa Wall	9374135028	9374135028	9374135028	
14	Cap Foot	9374345014	9374345014	9374345014	
15	Base Assy	9374166022	9374166022	9374166022	
16	Inverter Assy	9705641020	9705641020	9705641020	
17	3-Way Valve Assy	9372205044	9372205044	9372205044	
18	3-Way Valve Assy	9372205075	9372205075	9372205075	
19	Compressor Assy	9374653010	9374653010	9374653010	
20	Accumulator Assy	9371615011	9371615011	9371615011	
21	Solenoid	9900165055	9900165055	9900165055	
22	Pressure Switch	9900186012	9900186012	9900186012	
23	4-Way Valve	9970035012	9970035012	9970035012	
24	Check Valve Assy	9374274017	9374274017	9374274017	
25	Coil (Expansion Valve)	9900190033	9900190033	9900190033	
26	Strainer Assy	9372524015	9372524015	9372524015	
27	Inverter Box A	9374603015	9374603015	9374603015	
28	Inverter Box B	9374625017	9374625017	9374625017	
29	Inverter Box C	9374605019	9374605019	9374605019	
30	Inverter Box Duct	9374609017	9374609017	9374609017	
31	Inverter Box Cover	9374608010	9374608010	9374608010	
32	Heat Sink A	9374607013	9374607013	9374607013	
33	Act-Module	9704258014	9704258014	9704258014	
34	Relay	9900262013	9900262013	9900262013	
35	Terminal	9701971015	9701971015	9701971015	
36	Posistor	9704265012	9704265012	9704265012	
37	Inverter PCB Assy	9705642010	9705642065	9705642027	
38	Power PCB Assy	9705647015	9705647015	9705647015	
39	Clamp (Cord)	9356857009	9356857009	9356857009	
40	Terminal	9900184025	9900184025	9900184025	
41	Fuse	0600376116	0600376116	0600376116	
---	Expansion Valve	9900170028	9900170028	9900170028	
---	Thermistor (Dischage)	9704219084	9704219084	9704219084	
---	Thermistor (Heat Exchange)	9704220066	9704220066	9704220066	
---	Thermistor (Out Temp)	9703516078	9703516078	9703516078	

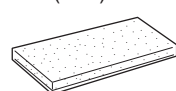
STANDARD ACCESSORIES

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

INDOOR UNIT ACCESSORIES

Name and Shape	Q'ty	Application
Special nut A (large flange) 	4	For suspending the indoor unit from ceiling
Special nut B (small flange) 	4	
Coupler heat insulation (large) 	1	For indoor side pipe joint (gas pipe)
Coupler heat insulation (small) 	1	For indoor side pipe joint (liquid pipe)
Binder 	1	For fixing the remote controller cord
Remote controller 	1	
Tapping screw (flush heads) 	2	For installing the remote controller
Remote controller cord 	1	For connecting the remote controller

OUTDOOR UNIT ACCESSORIES

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 	2	
Insulation (seal) 	1	For filling in a gap at the entrance of connection cords.

OPTIONAL PARTS

The following options are available.

- Long-life filter : UTD-LF60KA (P/N 9017230004).
- Simple remote controller : UTB-YPB (P/N 9077582006)
- Remote sensor : UTD-RS100 (P/N 9072619004)
- External control set : UTD-ECS5A (P/N 9077359004)

