

SPLIT TYPE
AIR CONDITIONER
CEILING TYPE (50Hz)

SERVICE MANUAL

Indoor unit	Outdoor unit
ABYA45LCT	AOYA45LBTL



CONTENTS

SPECIFICATIONS.....	1
DIMENSIONS	2
REFRIGERANT SYSTEM DIAGRAM.....	4
CIRCUIT DIAGRAM.....	5
INDOOR PCB CIRCUIT DIAGRAM.....	6
OUTDOOR PCB CIRCUIT DIAGRAM....	10
ERROR DETECTION.....	13
PARTS (INDOOR UNIT).....	17
PARTS (OUTDOOR UNIT).....	22
ACCESSORIES.....	26

SPECIFICATIONS

ELECTRICAL DATA

TYPE		Cooling & Heating
INDOOR UNIT		ABYA45LCT
OUTDOOR UNIT		AOYA45LBT
COOLING CAPACITY		12.5 kW
HEATING CAPACITY		14.0 kW
POWER SOURCE		230 V 50 Hz
RUNNING CURRENT	Cooling	17.0 A
	Heating	16.5 A
INPUT WATTS	Cooling	3.89 kW
	Heating	3.77 kW
E.E.R.	Cooling	3.21 kW/kW
	Heating	3.71 kW/kW
STARTING CURRENT		15.0 A
MOISTURE REMOVAL		4.5 L/hr
AIRCIRCULATION INDOOR		2,100 m3/h
AIRCIRCULATION OUTDOOR	Cooling	6,900 m3/h
	Heating	6,200 m3/h
MAXIMUM CURRENT		20.0 A

FAN MOTOR

INDOOR UNIT	Discrimination	MFH-45RV
	High speed	1,200 r.p.m.
	Middle speed	1,000 r.p.m.
	Low speed	830 r.p.m.
	Quiet	680 r.p.m.
OUTDOOR UNIT (cool / heat)	Discrimination	MFE-60TVT
	Upper fan	850 r.p.m.
	Lower fan	750 r.p.m.

NOISE LEVEL

INDOOR UNIT	High speed	49 dB
	Middle speed	45 dB
	Low speed	39 dB
	Quiet	34 dB
OUTDOOR UNIT	Cooling	55 dB
	Heating	56 dB

COMPRESSOR AND REFRIGERANT

TYPE		Hermetic type, Inverter, 4 poles, 3 phase, DC motor, Twin Rotary
DISCRIMINATION		DA420A3F-21ZA
WEIGHT (with oil)		23.7 kg
REFRIGERANT TYPE		R410A
PRECHARGED REFRIGERANT		3,350 g
MAX PIPE LENGTH		50 m
MAX PIPE HEIGHT		30 m
FULL CHARGE	Pipe length 20 m	3,350 g
	30 m	3,850 g
	40 m	4,350 g
	50 m	4,850 g
ADDITIONAL CHARGE		50 g/m

DIMENSIONS

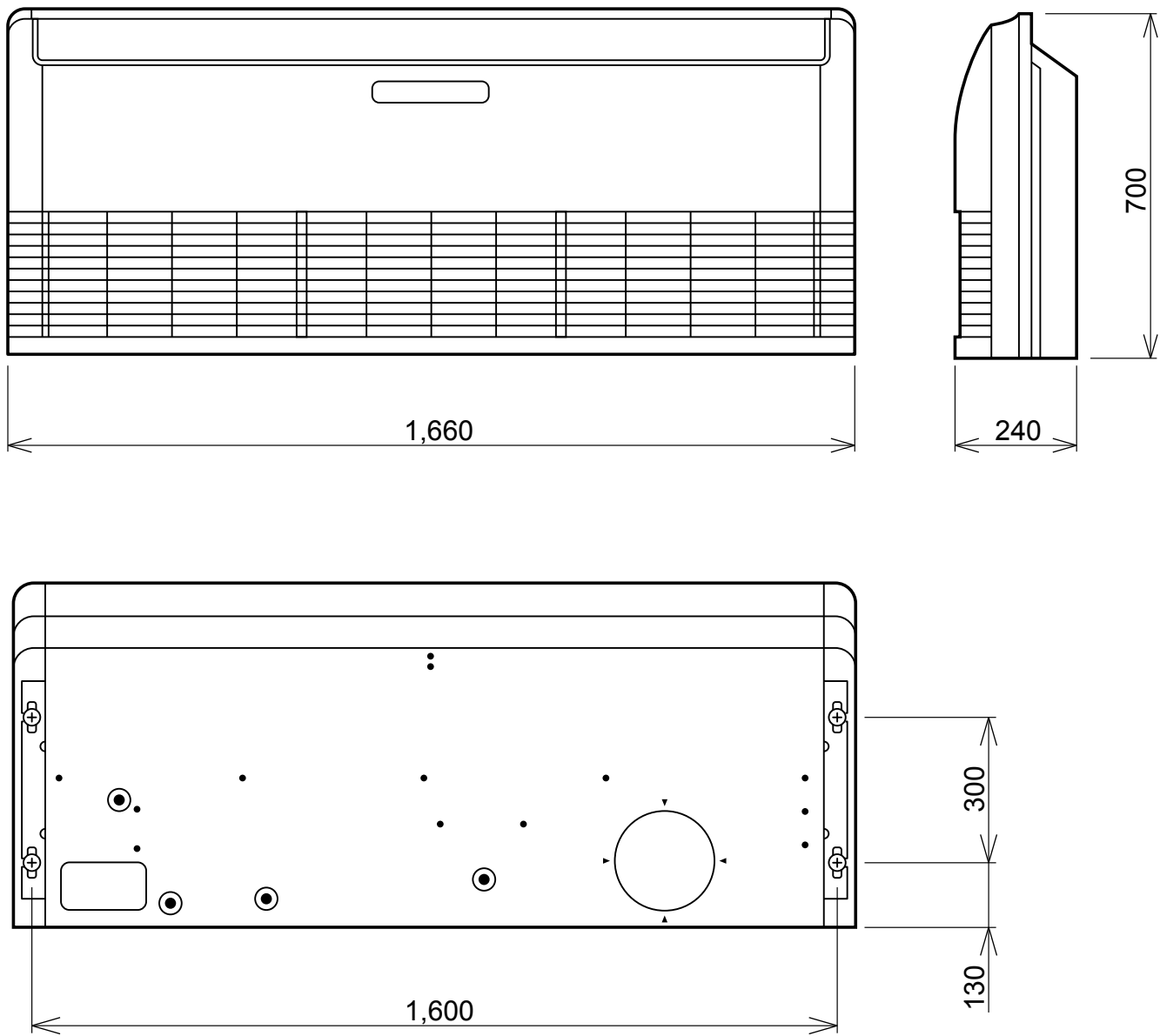
INDOOR UNIT	H x W x D	240 x 1,660 x 700 mm
OUTDOOR UNIT	H x W x D	1,290 x 900 x 330 mm

WEIGHT

INDOOR UNIT	Gross / Net	58 kg / 46 kg
OUTDOOR UNIT	Gross / Net	107 kg / 98 kg

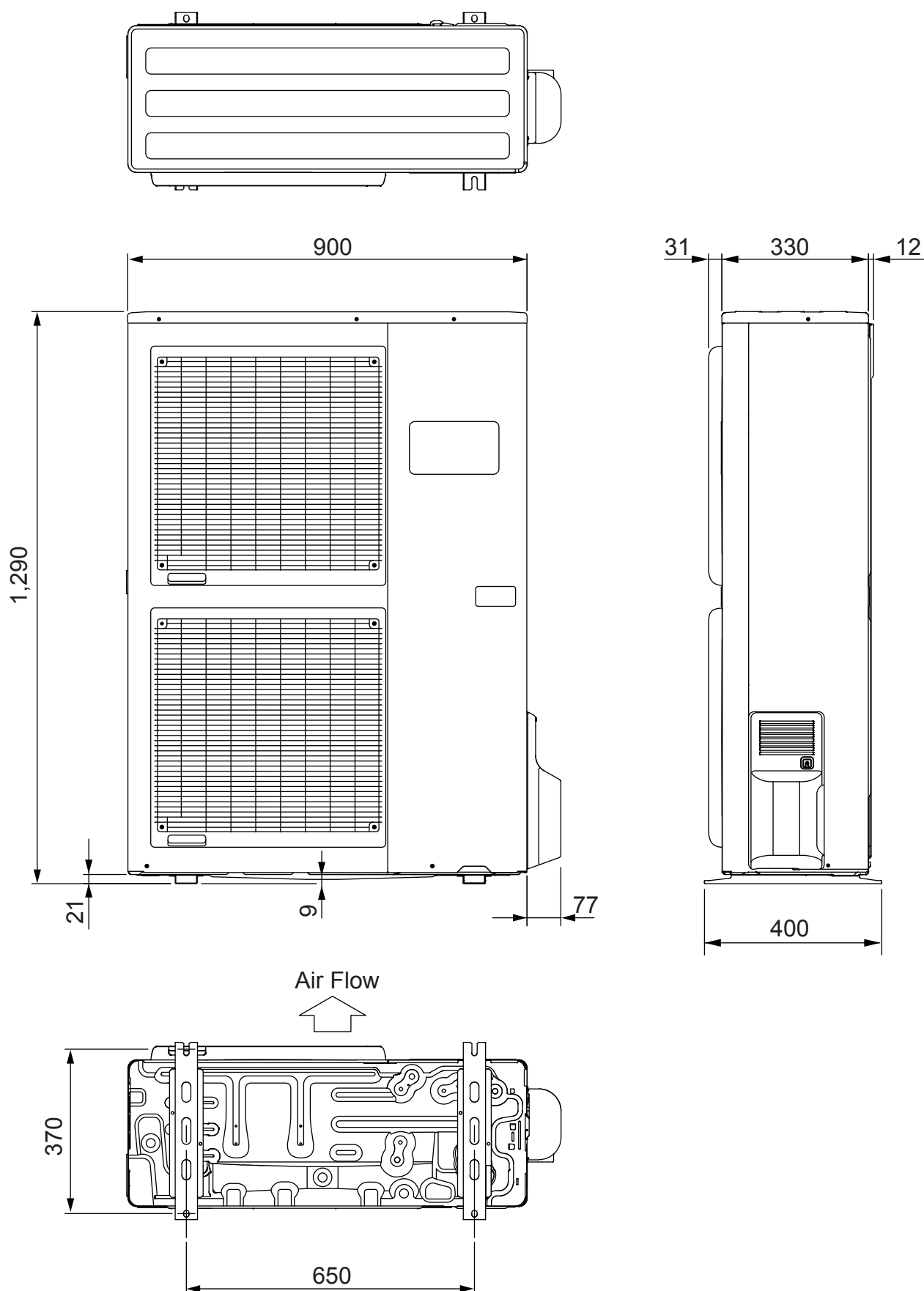
DIMENSIONS

INDOOR UNIT
(Unit : mm)

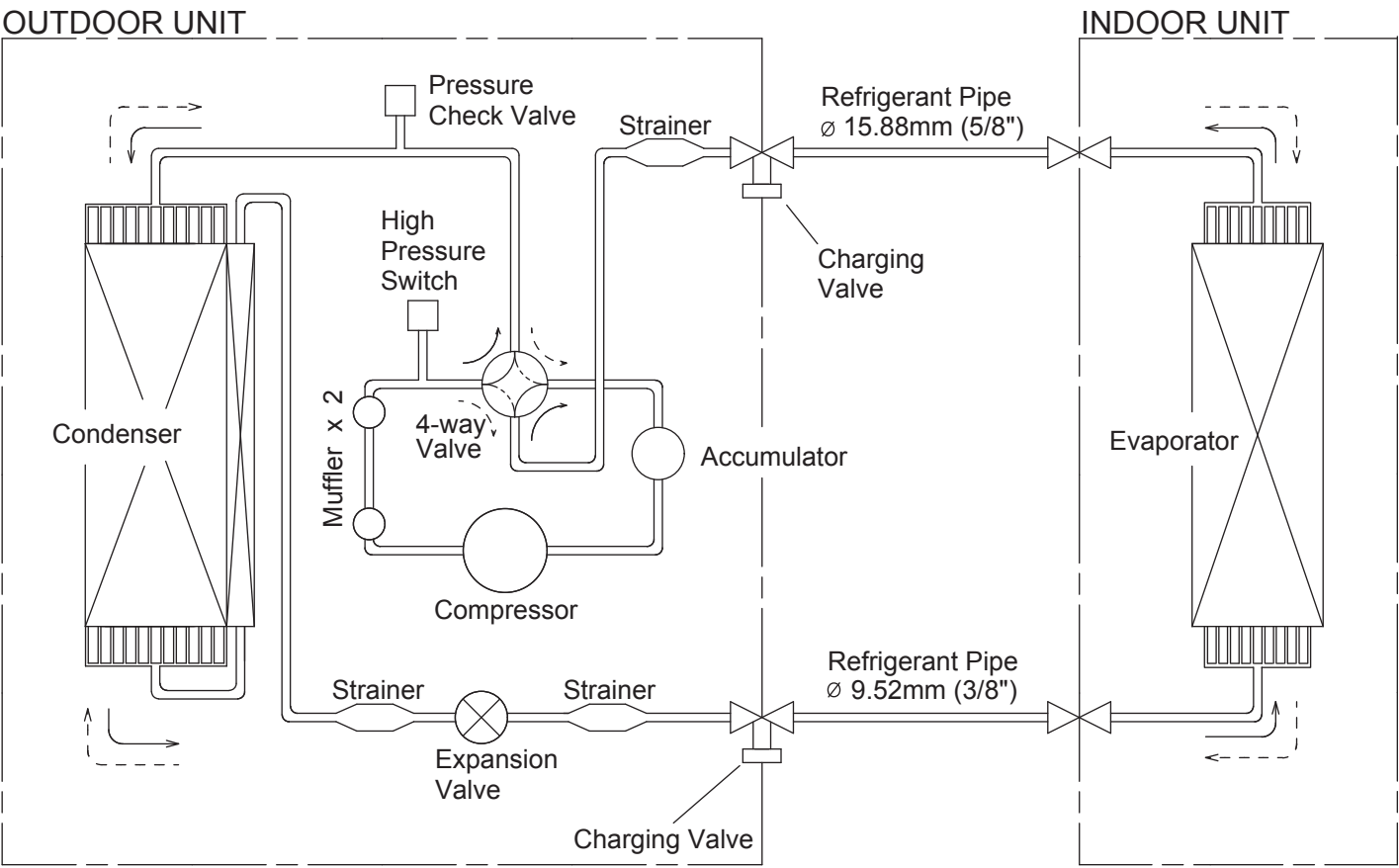


OUTDOOR UNIT

(Unit : mm)



REFRIGERANT SYSTEM DIAGRAM

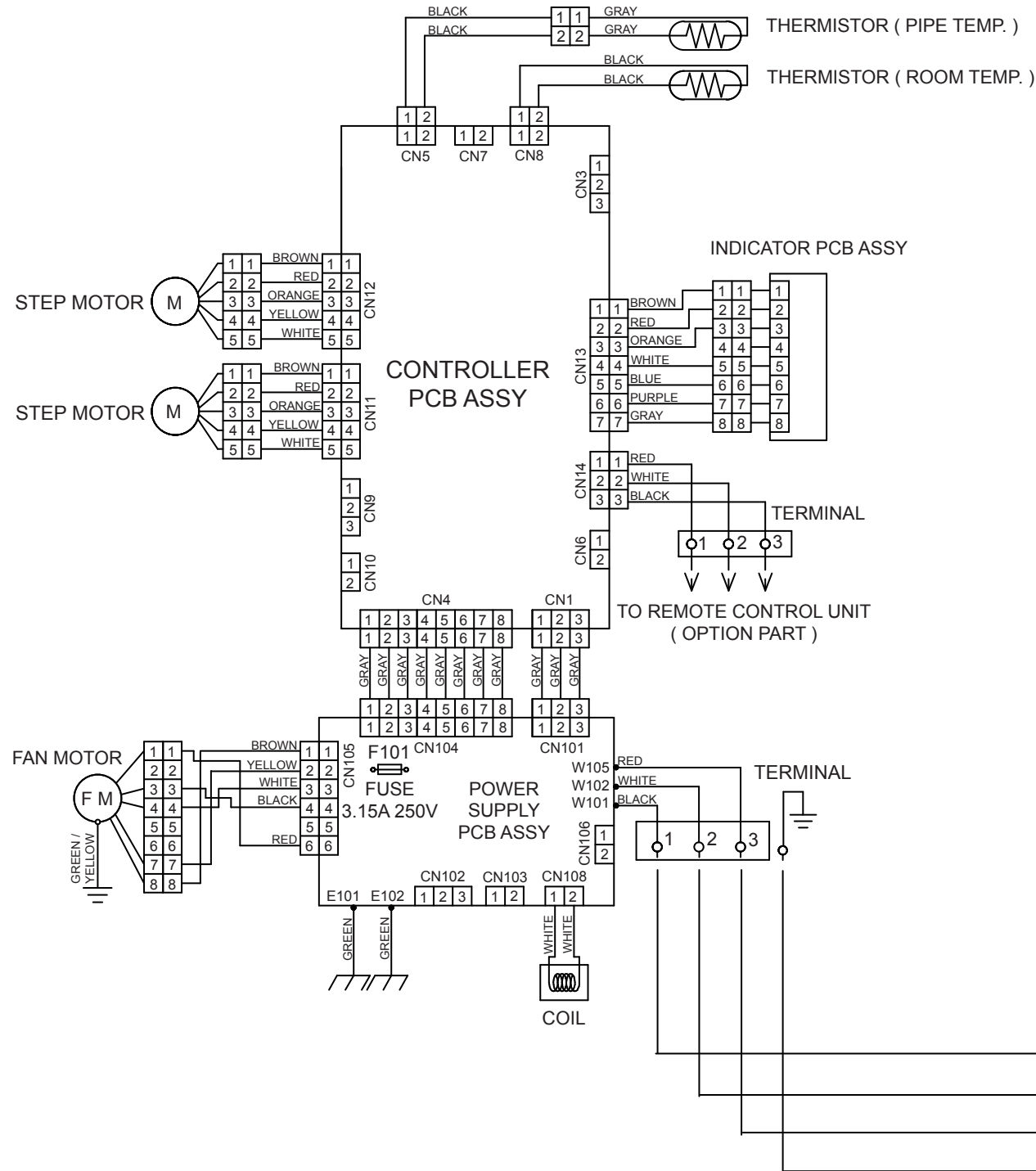


Refrigerant direction

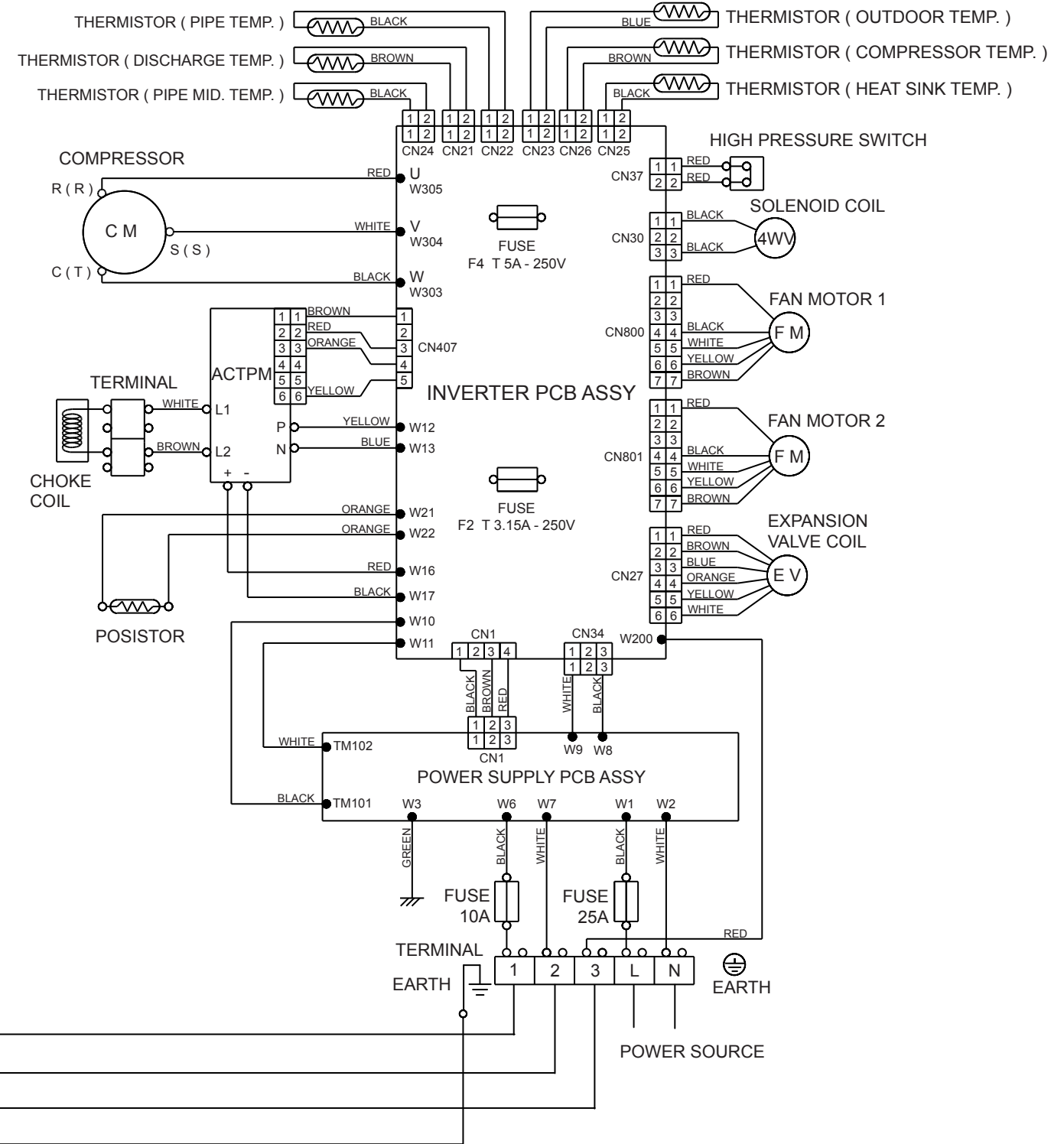
- > : Cool
- - -> : Heat

CIRCUIT DIAGRAM

INDOOR UNIT



OUTDOOR UNIT



PCB Circuit Diagrams

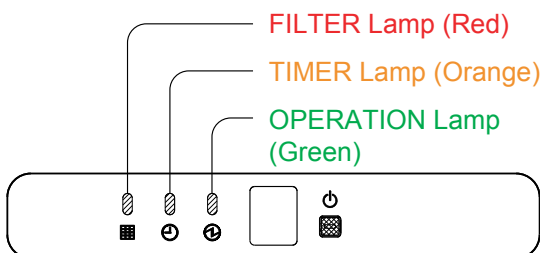
not available at time of publication

ERROR DETECTION

INDOOR UNIT

Troubleshooting with the indoor display

Error is displayed on the wired and wireless remote control.



Lamps show error contents by flashing as follows.

OPERATION Lamp	TIMER Lamp	FILTER Lamp	Error contents
off	2 times	off	Indoor signal error
off	3 times	off	
off	4 times	off	
off	5 times	off	
off	8 times	off	Wired remote controller abnormal
2 times	2 times	off	Indoor room temperature sensor error
2 times	3 times	off	Indoor heat exchanger temperature sensor (middle) error
2 times	4 times	off	Indoor heat exchanger temperature sensor (inlet) error
2 times	6 times	off	Float switch operated
3 times	2 times	off	Outdoor discharge pipe temperature sensor error
3 times	3 times	off	Outdoor heat exchanger temperature sensor (outlet) error
3 times	4 times	off	Outdoor temperature sensor error
3 times	7 times	off	Heat sink thermistor (Inverter) error
3 times	8 times	off	Compressor temperature sensor error
3 times	off	2 times	2-way valve temperature sensor error
3 times	off	3 times	3-way valve temperature sensor error
3 times	off	4 times	Outdoor heat exchanger temperature sensor (middle) error
3 times	off	5 times	Heat sink thermistor (P.F.C) error
4 times	2 times	off	Indoor manual auto switch abnormal
4 times	4 times	off	Power supply frequency detection error
5 times	2 times	off	IPM protection
5 times	3 times	off	CT error
5 times	5 times	off	Compressor location error
5 times	6 times	off	Outdoor fan error
5 times	7 times	off	Connected indoor unit abnormal
5 times	8 times	off	Outdoor unit computer communication error
5 times	off	2 times	Inverter error
6 times	2 or 3 times	off	Indoor fan abnormal
7 times	2 times	off	Discharge temperature error
7 times	3 times	off	Excessive high pressure protection on cooling
7 times	4 times	off	4-way valve abnormal
7 times	5 times	off	Pressure switch abnormal, Pressure sensor abnormal
7 times	6 times	off	Compressor temperature error
7 times	7 times	off	Low pressure error
8 times	2 or 3 times	off	Active filter abnormal
8 times	4 times	off	P.F.C. circuit error
8 times	6 times	off	P.F.C. PCB error
9 times	2 times	off	Refrigerant circuit address set-up error
9 times	3 times	off	Master unit, Slave unit set-up error
9 times	4 times	off	Connected indoor number set-up error

Flash means "0.5 second on / 0.5 second off".

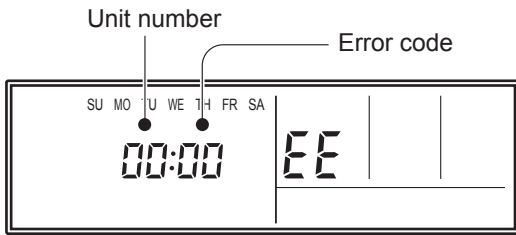
REMOTE CONTROL (option)

Troubleshooting at the remote control LCD

This is possible only on the wired remote control.

Self-diagnosis

If an error occurs, the following display will be shown.
("EE" will appear in the set room temperature display.)



Ex. Self-diagnosis

If "CO" appears in the unit number display, there is a remote control error.
Refer to the installation instruction sheet included with the remote control.

Error code	Error contents
01 13 26 27	Indoor signal error
00	Wired remote controller abnormal
02	Indoor room temperature sensor error
04	Indoor heat exchanger temperature sensor (middle) error
28	Indoor heat exchanger temperature sensor (inlet) error
09	Float switch operated
0c	Outdoor discharge pipe temperature sensor error
06	Outdoor heat exchanger temperature sensor (outlet) error
0A	Outdoor temperature sensor error
0E	Heat sink thermistor (Inverter) error
15	Compressor temperature sensor error
1d	2-way valve temperature sensor error
1E	3-way valve temperature sensor error
29	Outdoor heat exchanger temperature sensor (middle) error
2d	Heat sink thermistor (P.F.C.) error
20	Indoor manual auto switch abnormal
2A	Power supply frequency detection error
17	IPM protection
18	CT error
1A	Compressor location error
1b	Outdoor fan error
1F	Connected indoor unit abnormal
1c	Outdoor unit computer communication error
2E	Inverter error
12	Indoor fan abnormal
0F	Discharge temperature error
24	Excessive high pressure protection on cooling
2c	4-way valve abnormal
16	Pressure switch abnormal, Pressure sensor abnormal
2b	Compressor temperature error
2F	Low pressure error
19	Active filter abnormal
25	P.F.C. circuit error
30	Refrigerant circuit address set-up error
31	Master unit, Slave unit set-up error
32	Connected the indoor number set-up error
33	P.F.C. PCB error

OUTDOOR UNIT LED

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

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 (outlet) sensor
4 flash	Outdoor temperature sensor
5 flash	Outdoor heat exchanger temperature (mid) sensor
6 flash	Discharge pipe temperature abnormal
7 flash	Compressor temperature sensor
8 flash	Heat sink temperature sensor
9 flash	Pressure switch abnormal
10 flash	Compressor temperature 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 repeat	Protect operation
1 sec. on/ 1 sec. off repeat	Pump down operation
off	No error

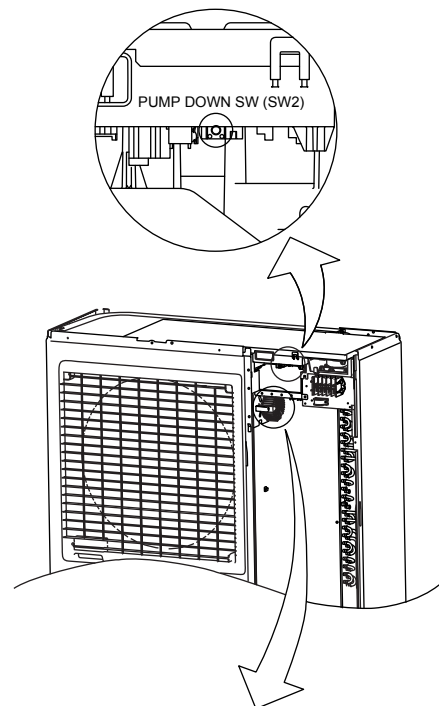
SPECIAL INSTALLATION SETTING

PUMP DOWN (Refrigerant collecting operation)

Perform the following procedures to collect the refrigerant when moving the indoor unit or 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 starts flashing.) (1 sec. on / 1 sec. off repeated)
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.



⚠ DANGER

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

2. When the product is operating:

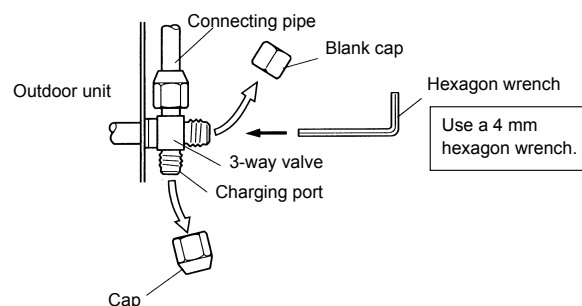
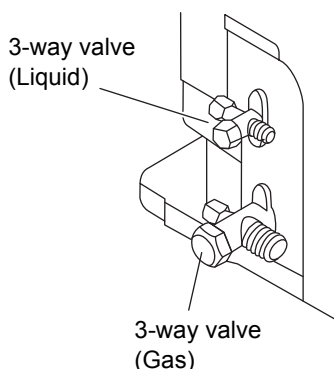
①	Press the PUMP DOWN switch on the outdoor unit. The LED on the outdoor unit circuit board starts flashing (1 sec. on / 1 sec. off repeated), and operation stops. At this point, recovery has not been completed, so do not close the three-way valves. (liquid and gas)
②	The pump down operation (cooling 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.

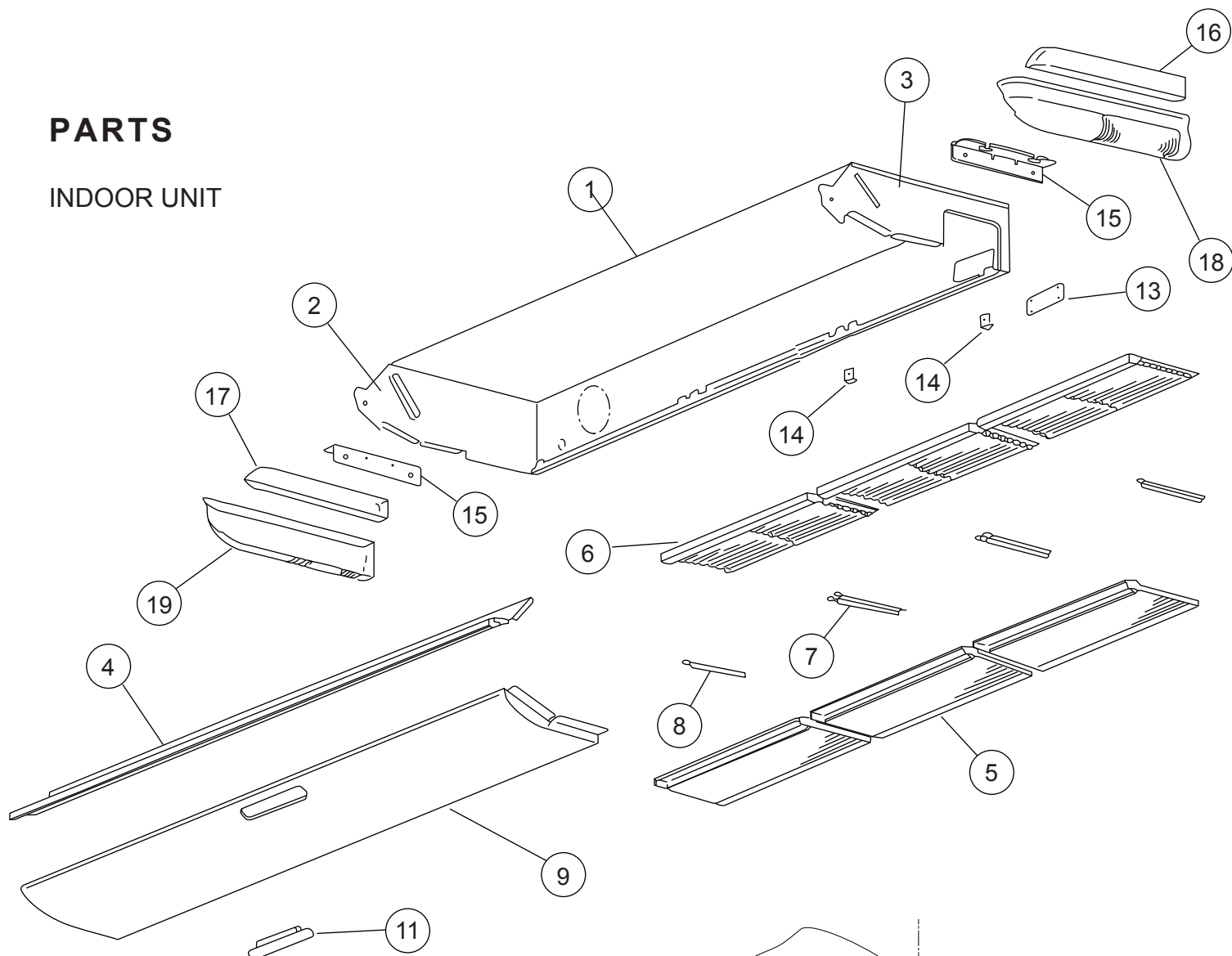
*When the start of the operation after pump down operation has been completed, temporarily disconnect the power supply after opening the closed valves (both liquid and gas). Reconnect the power supply after 2-3 minutes and be sure to perform a test operation for cooling.

		Tightening torque
Blank cap	6.35 mm (1/4 in.)	20 to 25 N-m (200 to 250 kgf-cm)
	9.52 mm (3/8 in.)	20 to 25 N-m (200 to 250 kgf-cm)
	12.70 mm (1/2 in.)	25 to 30 N-m (250 to 300 kgf-cm)
	15.88 mm (5/8 in.)	30 to 35 N-m (300 to 350 kgf-cm)
	19.05 mm (3/4 in.)	35 to 40 N-m (350 to 400 kgf-cm)
Charging port cap		10 to 12 N-m (100 to 120 kgf-cm)
Spindle (Hexagon wrench)		6 to 7 N-m (60 to 70 kgf-cm)

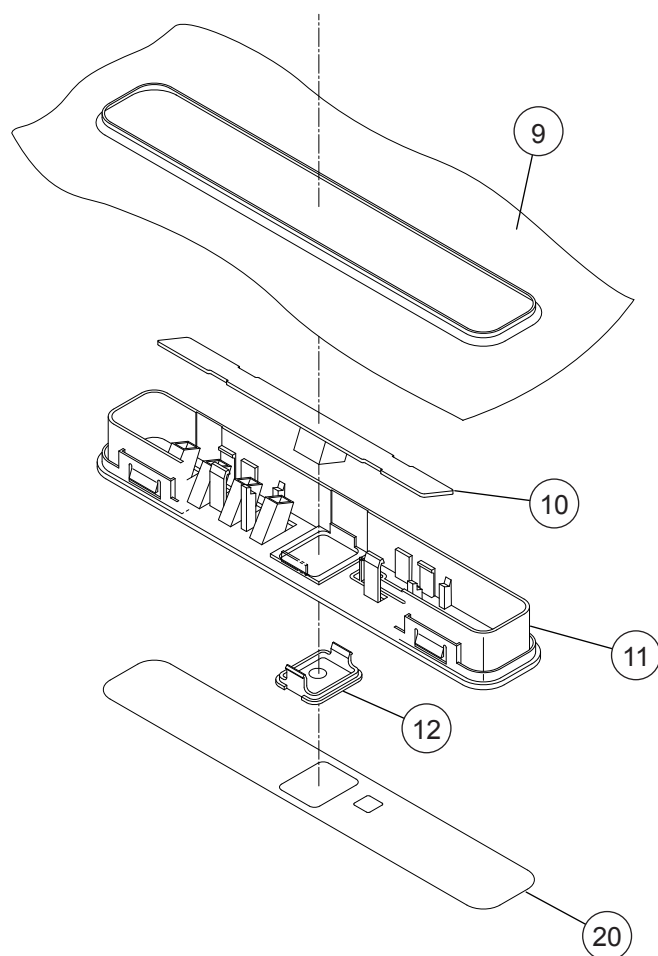


PARTS

INDOOR UNIT

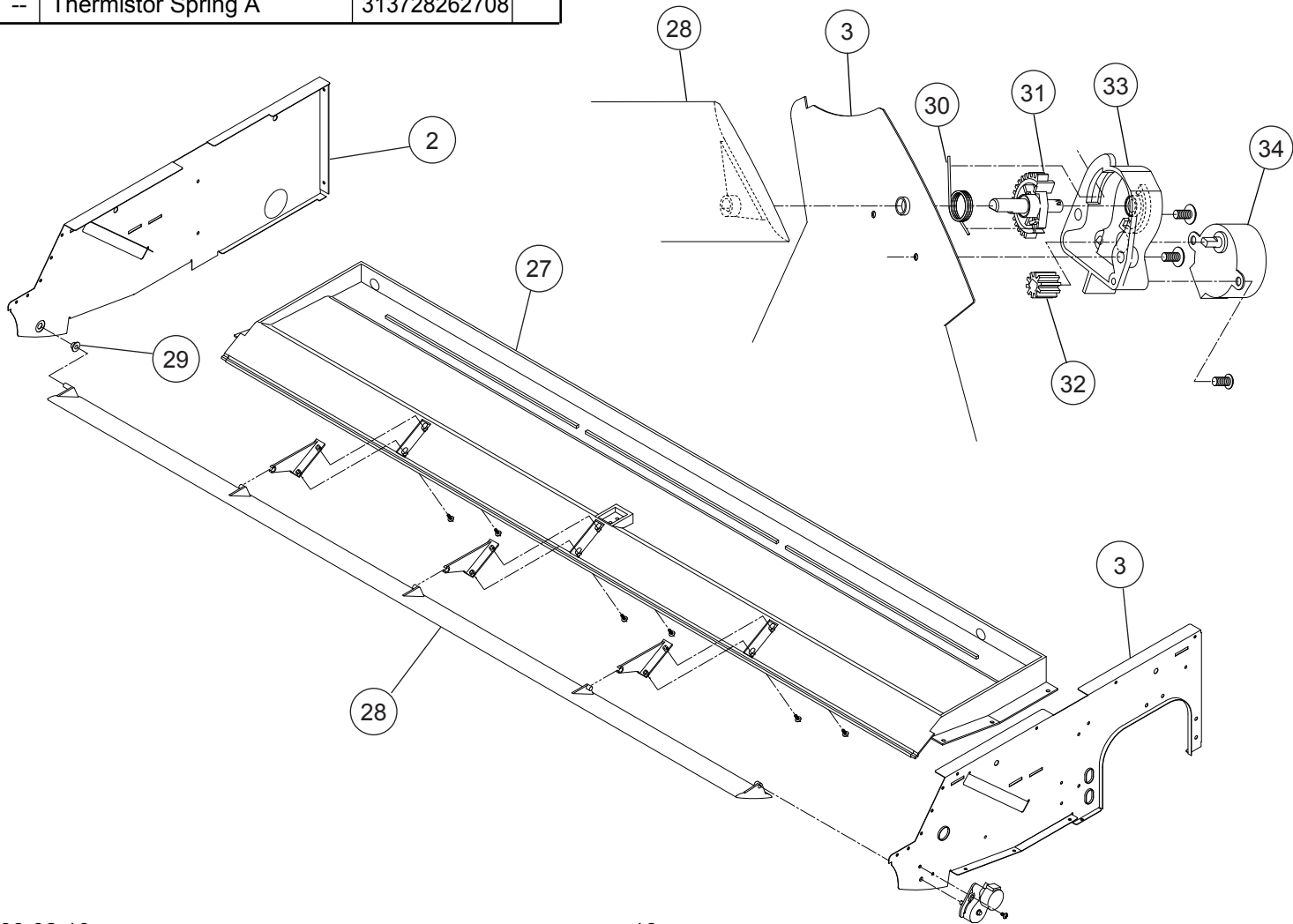
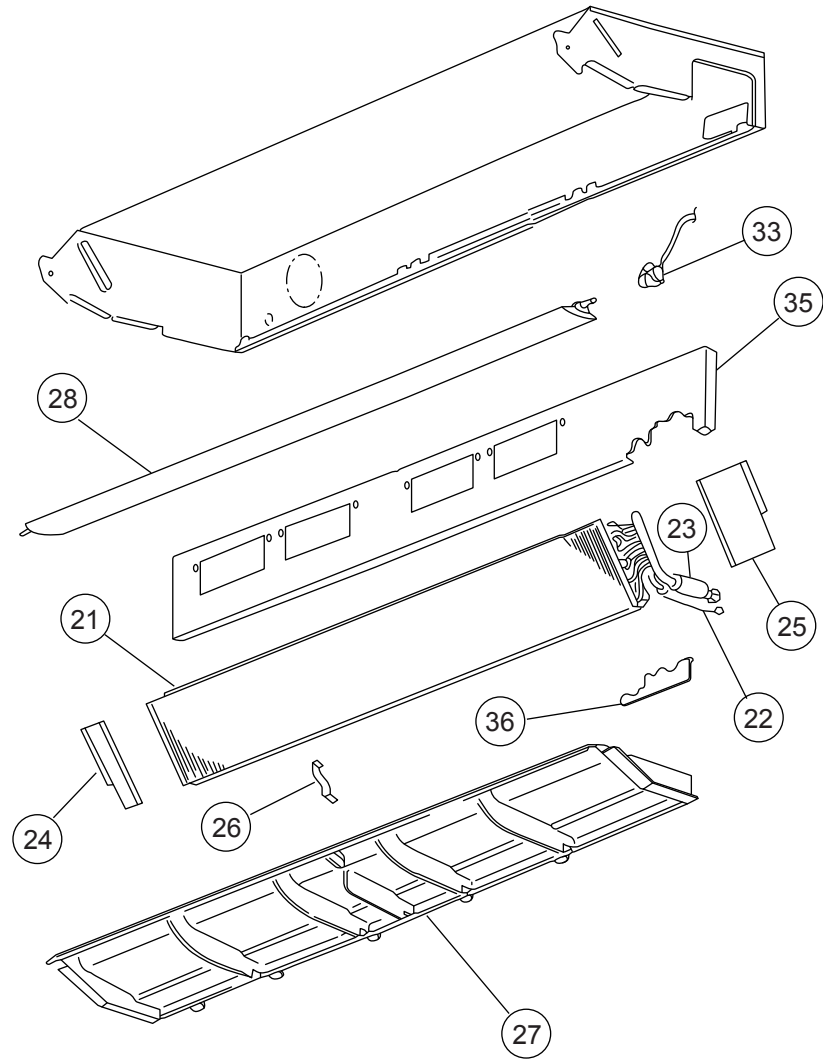


Ref.	Description	Part number
1	Kit (Base Sub Assy)	9371360010
2	Panel Left Sub Assy	9360427014
3	Kit (Panel Right Assy)	9371361017
4	Cover (Top)	9359737001
5	Intake Grille	9359738008
6	Air Filter	9359739005
7	Filter Guide R	9359692003
8	Filter Guide L	9359693000
9	Front Panel	9359734000
10	Indicator PCB Assy	9705891043
11	PCB Holder	9359736004
12	Receiver Cover	9359714002
13	Hole Cover	9359691006
14	Hinge Plate (Grille)	9359694007
15	Hanger Bracket	9359742005
16	Cover (Decoration) R	9359744009
17	Cover (Decoration) L	9359745006
18	Kit (Side Cover R)	9371364018
19	Kit (Side Cover L)	9371365015
20	Badge	9359735083

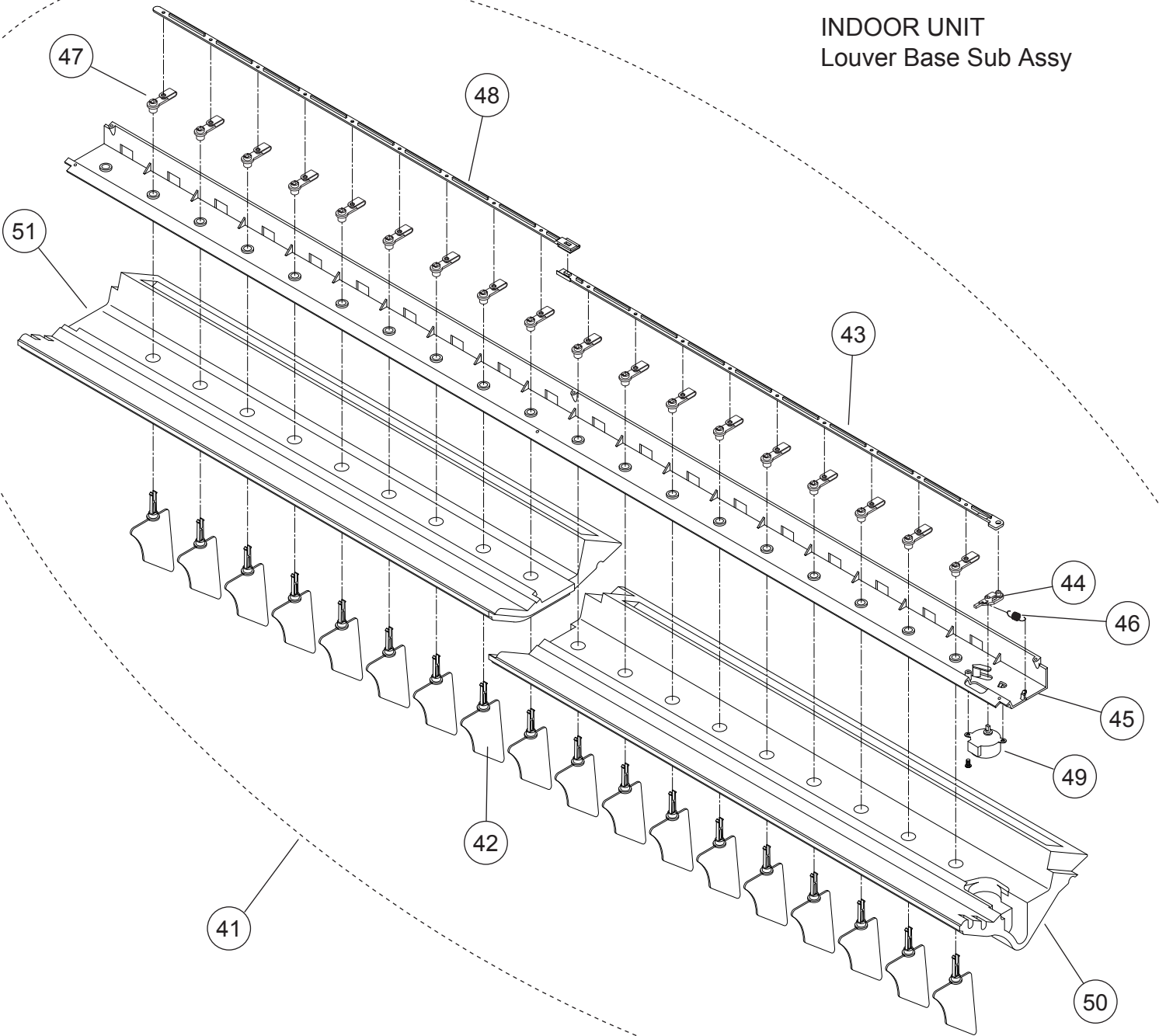


INDOOR UNIT
Drain pan, Flap

Ref.	Description	Part number
2	Panel Left Sub Assy	9360427014
3	Kit (Panel Right Assy)	9371361017
21	Evaporator Assy	9372585078
22	Distributor Assy	9371325378
23	Coupling Pipe Assy	9373038405
24	Kit (Panel pipe L) Sub Assy	9371362014
25	Kit (Panel pipe R) Sub Assy	9371363011
26	Reinforcement Metal	9359697008
27	Drain Pan Sub Assy	9360429018
28	Flap Assy	9359731009
29	Bushing	9359733003
30	Flap Spring	9359730002
31	Sector Gear	9359729006
32	Pinion Gear	9359728009
33	Motor Base	9359727002
34	Step Motor V	9900362010
35	Kit (Separate Wall Sub Assy)	9371366029
36	Pipe Fixture Metal	9359688006
--	Drain Cap	9358746004
--	Pipe Thermistor	9900022020
--	Thermistor Spring A	313728262708

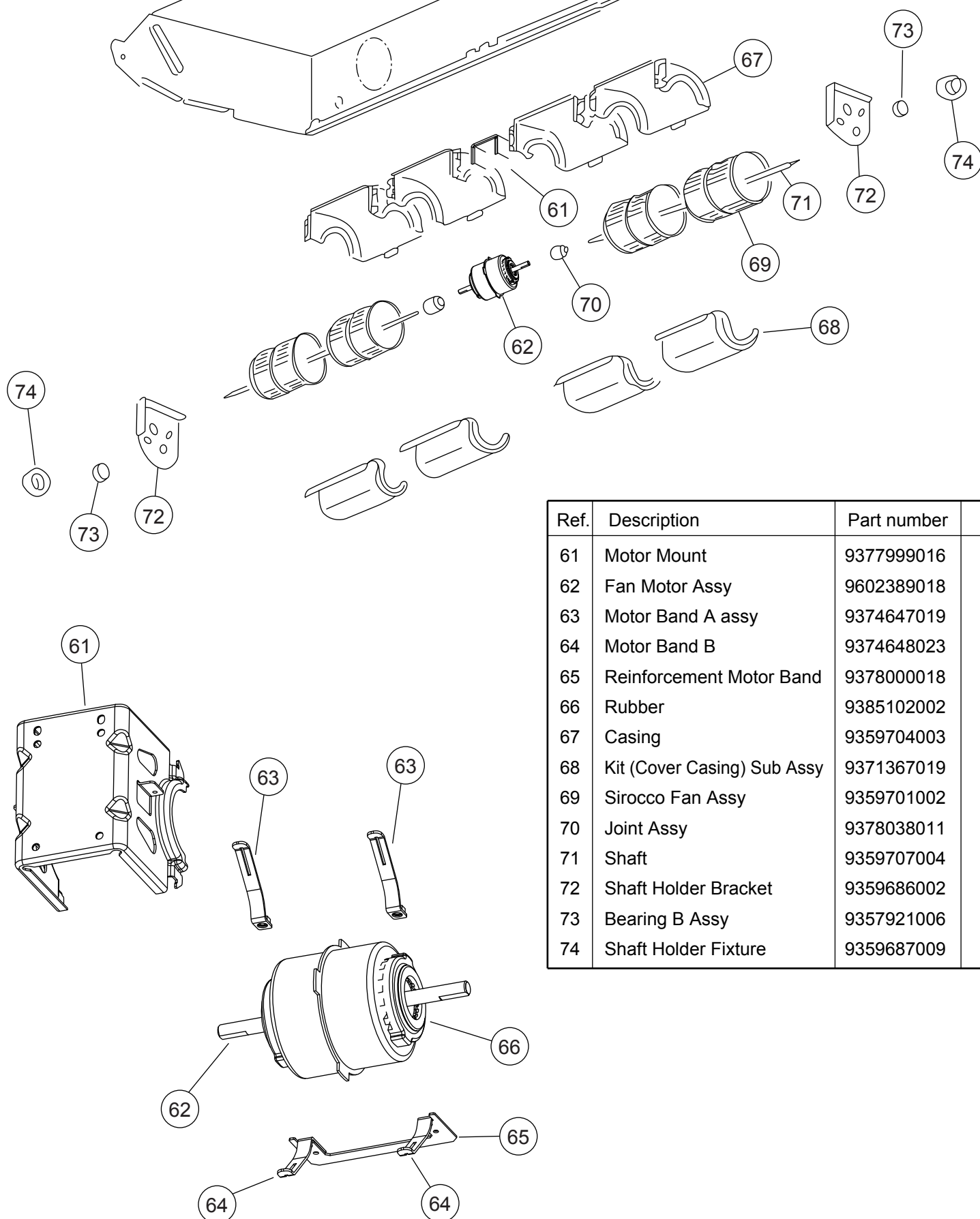


INDOOR UNIT
Louver Base Sub Assy



Ref.	Description	Part number	
41	Louver Base Sub Assy	9360432025	
42	Louver	9359719007	
43	Rod (Motor)	9359723004	
44	Louver Link	9359726005	
45	Louver Base	9359718000	
46	Louver Spring	9359720003	
47	Louver Stopper	9359724001	
48	Louver Rod	9359725008	
49	Step Motor H	9900297015	
50	Louver Insulation R	9359721000	
51	Louver Insulation L	9359722007	

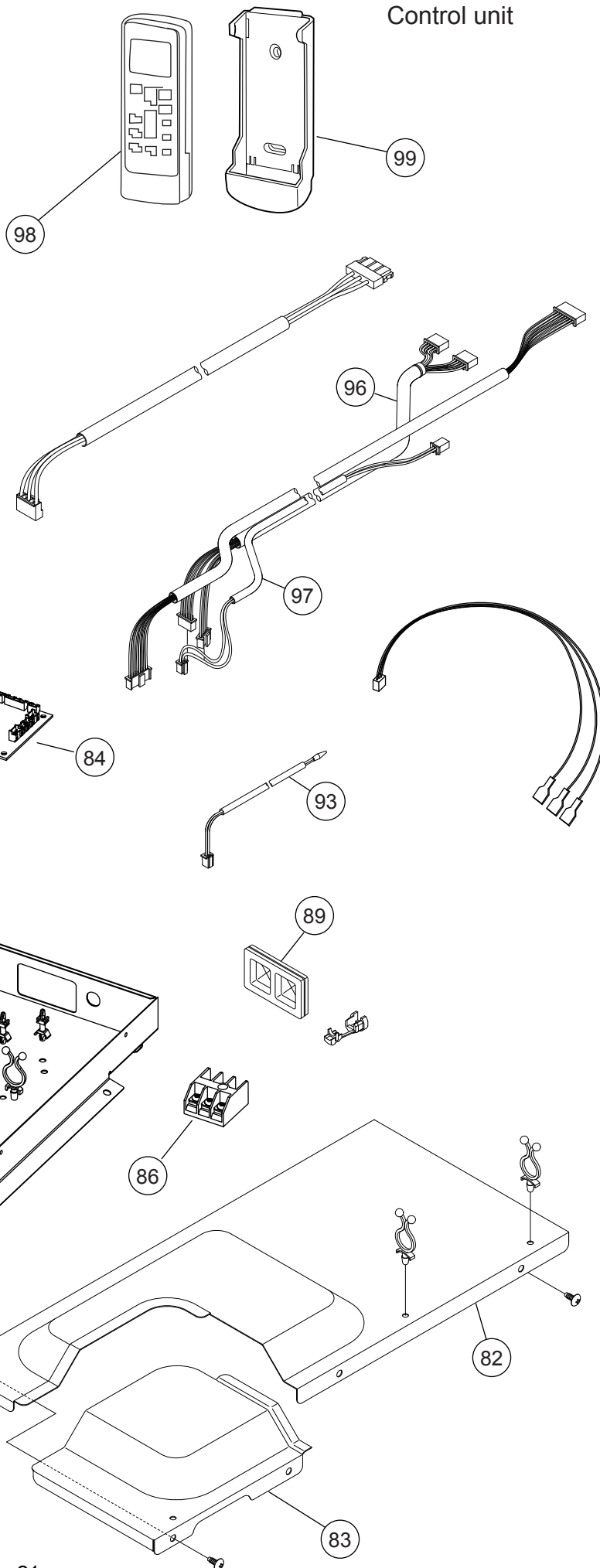
INDOOR UNIT Fan motor



Ref.	Description	Part number
61	Motor Mount	9377999016
62	Fan Motor Assy	9602389018
63	Motor Band A assy	9374647019
64	Motor Band B	9374648023
65	Reinforcement Motor Band	9378000018
66	Rubber	9385102002
67	Casing	9359704003
68	Kit (Cover Casing) Sub Assy	9371367019
69	Sirocco Fan Assy	9359701002
70	Joint Assy	9378038011
71	Shaft	9359707004
72	Shaft Holder Bracket	9359686002
73	Bearing B Assy	9357921006
74	Shaft Holder Fixture	9359687009

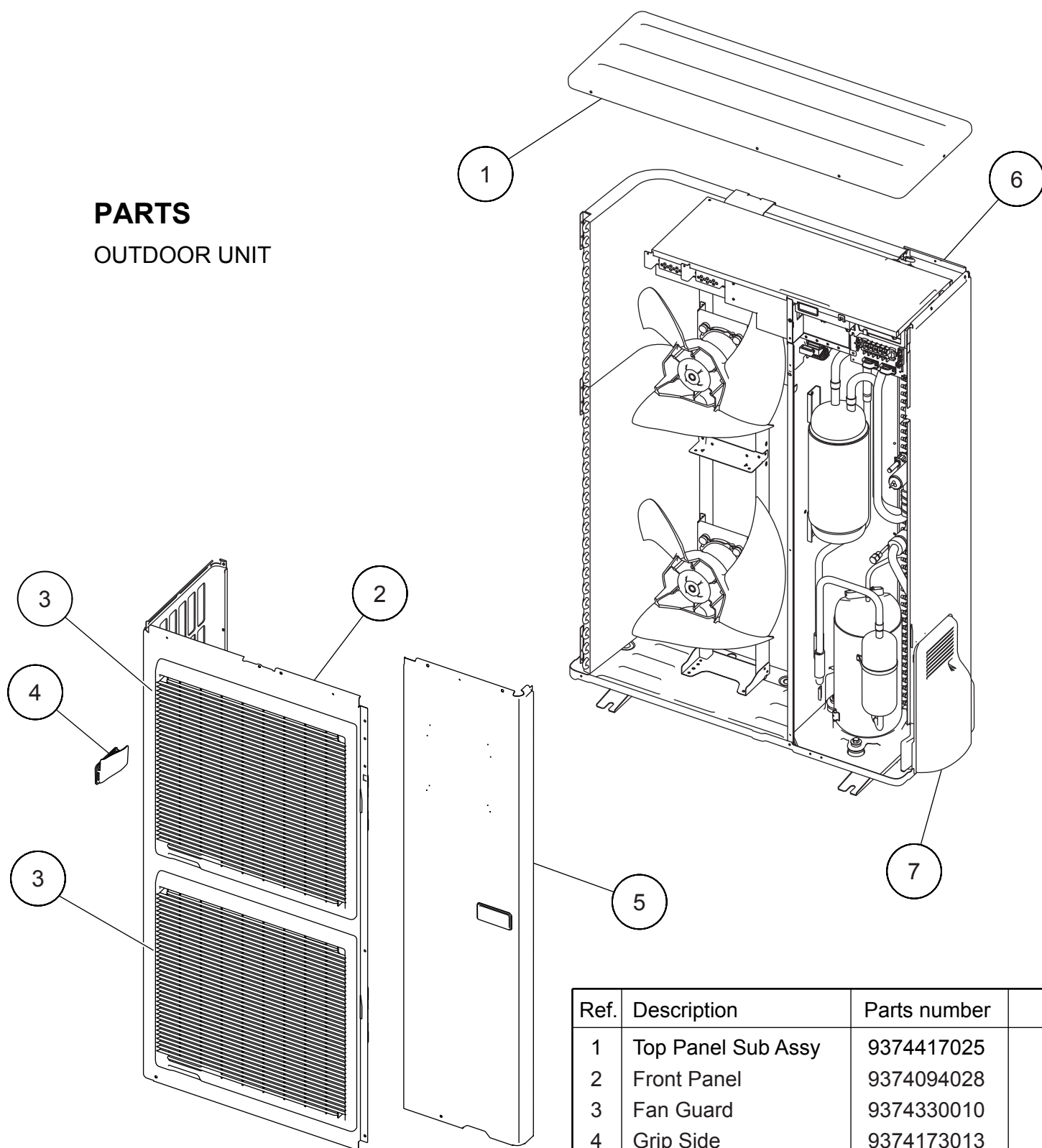
Ref.	Description	Part number
81	Control Box Assy	9377912015
82	Control Box A	9359712008
83	Control Box B	9359713005
84	Controller PCB Assy	9707393453
85	Power Supply PCB Assy	9707398168
86	Terminal 3P	9703345012
87	Terminal 3P	9306489045
88	Reactor Assy	9707457018
89	Rubber Bushing	9357376004
91	Cord Clamp A	9359820017
92	Cord Clamp B	9359821014
93	Room Thermistor	9703299025
94	Wire Assy (Connector)	9707442021
95	Wire Assy (Connector)	9703339028
96	Wire Assy (Connector)	9702319014
97	Wire Assy (Connector)	9702318017
98	Remote Control	9315885012
99	Remote Control Holder	9305642045

INDOOR UNIT Control unit



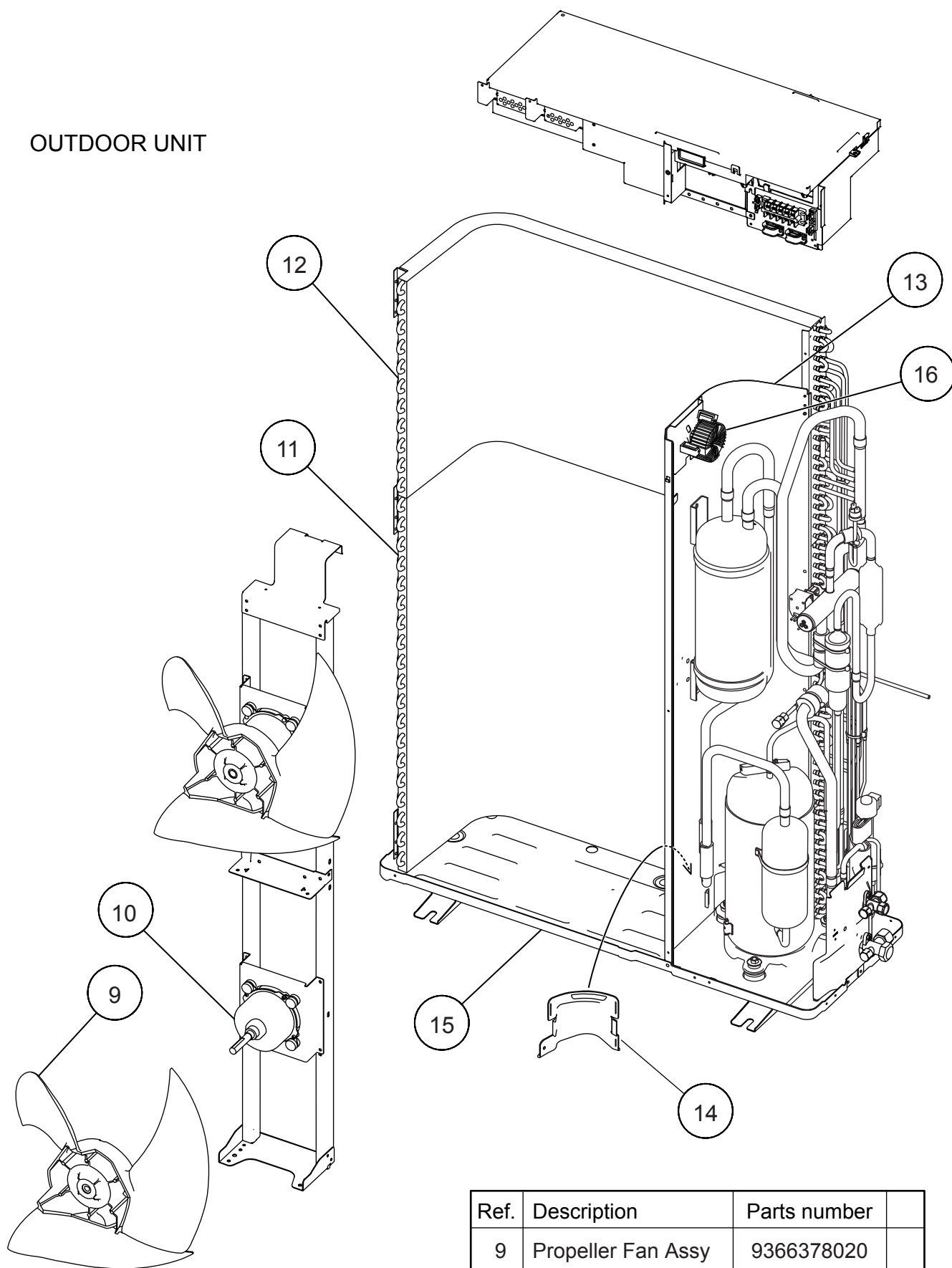
PARTS

OUTDOOR UNIT



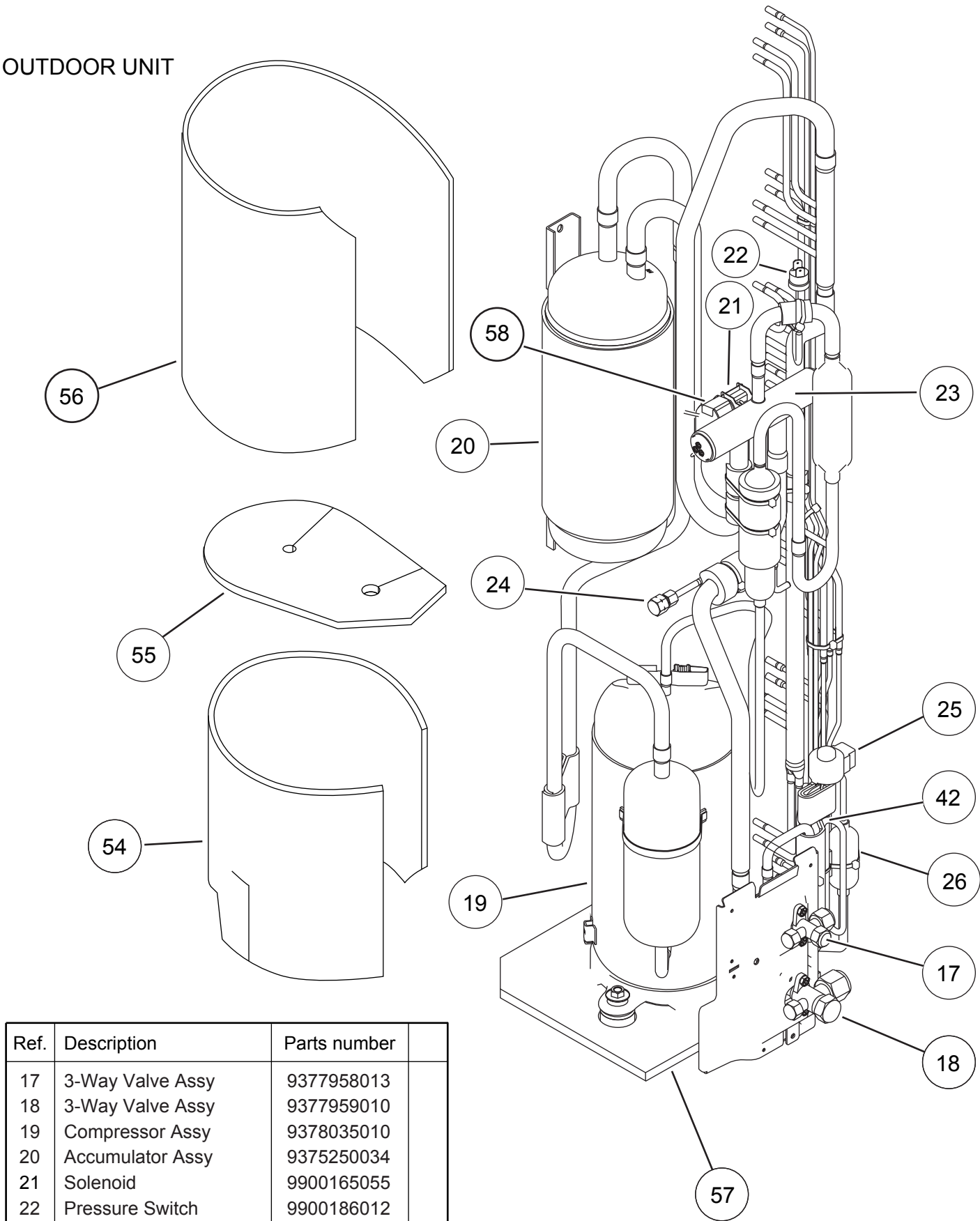
Ref.	Description	Parts number	
1	Top Panel Sub Assy	9374417025	
2	Front Panel	9374094028	
3	Fan Guard	9374330010	
4	Grip Side	9374173013	
5	Service Panel Sub Assy	9374415069	
6	Right Panel Sub Assy	9374416141	
7	Valve Cover	9374174010	
--	Emblem Rear	9351355005	

OUTDOOR UNIT



Ref.	Description	Parts number	
9	Propeller Fan Assy	9366378020	
10	Motor DC Brushless	9602843015	
11	Condenser A Assy	9374433018	
12	Condenser B Assy	9374434015	
13	Separate Wall	9374629015	
14	Cap Foot	9374345014	
15	Base Assy	9374166046	
16	Coil Choke	9703458019	

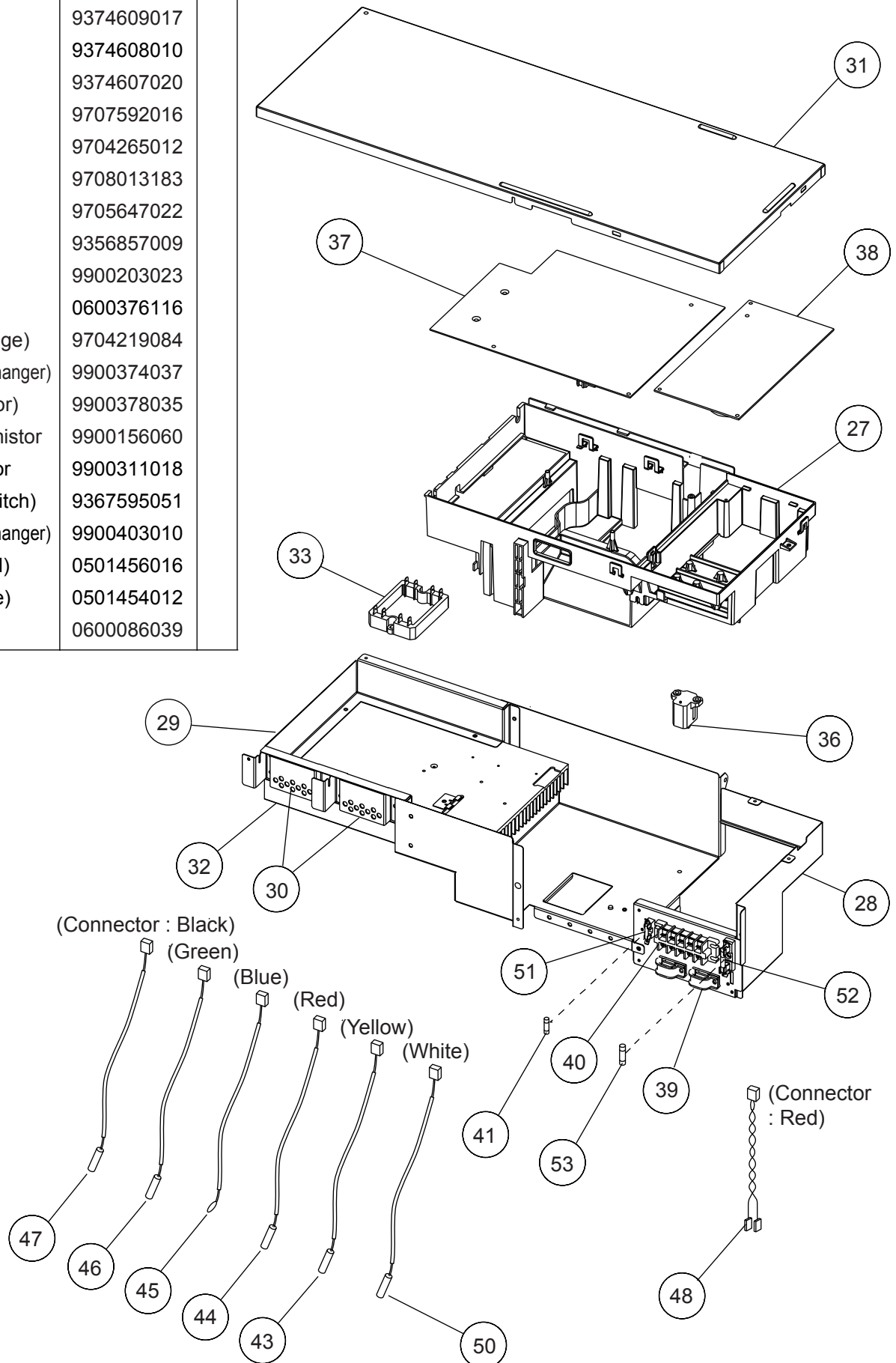
OUTDOOR UNIT



Ref.	Description	Parts number	
17	3-Way Valve Assy	9377958013	
18	3-Way Valve Assy	9377959010	
19	Compressor Assy	9378035010	
20	Accumulator Assy	9375250034	
21	Solenoid	9900165055	
22	Pressure Switch	9900186012	
23	4-Way Valve	9970035029	
24	Check Valve Assy	9374274017	
25	Coil (Expansion Valve)	9900197025	
26	Strainer Assy	9372524039	
42	Expansion Valve Assy	9370947175	
54	Compressor Cover A	9374430109	
55	Compressor Cover B	9374431106	
56	Compressor Cover C	9372067086	
57	Compressor Cover D	9375382025	
58	Solenoid	9900165055	

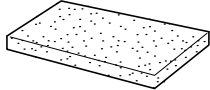
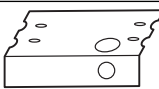
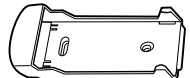
Ref.	Description	Parts number
27	Inverter Box A	9374603015
28	Inverter Box B	9374625017
29	Inverter Box C	9374605026
30	Inverter Box Duct	9374609017
31	Inverter Box Cover	9374608010
32	Heat Sink B	9374607020
33	ACTPM	9707592016
36	Posistor	9704265012
37	Inverter PCB Assy	9708013183
38	Power PCB Assy	9705647022
39	Clamp (Cord)	9356857009
40	Terminal	9900203023
41	Fuse (Small)	0600376116
43	Thermistor (Dischage)	9704219084
44	Thermistor (Heat Exchanger)	9900374037
45	Thermistor (Outdoor)	9900378035
46	Compressor Thermistor	9900156060
47	Heatsink Thermistor	9900311018
48	Wire (Pressure Switch)	9367595051
50	Thermistor (Heat Exchanger)	9900403010
51	Fuse Holder (Small)	0501456016
52	Fuse Holder (Large)	0501454012
53	Fuse (Large)	0600086039

OUTDOOR UNIT

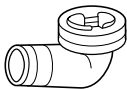
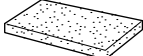


ACCESSORIES

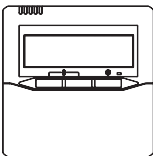
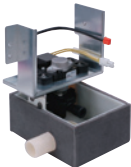
INDOOR UNIT

Name and Shape	Q'ty	Application	Part number
Drain hose insulation 	1	Adhesive type 70 x 230	9360464002
VT wire 	1	For fixing the drain hose L 280 mm	313806350303
Coupler heat insulator (large) 	2	For indoor side pipe joint (large pipe)	9378173569
Coupler heat insulator (small) 	1	For indoor side pipe joint (small pipe)	9378173521
Nylon fastener 	Large 4	For fixing the coupler heat insulator	9301501001
	Small 4		312300787605
Special nut A (large flange) 	4	For installing indoor unit	313005446653
Special nut B (small flange) 	4	For installing indoor unit	313005446759
Installation template 	1	For positioning the indoor unit	9360022004
Auxiliary pipe assembly 	1	For connecting the piping	9374714025
Remote control 	1	For air conditioner operation	9315885012
Remote control holder 	1	For installing remote control on the wall	9305642045
Battery 	2	For remote control	0600185541
Tapping screw 	2	For mounting the remote control holder	0700019036

OUTDOOR UNIT

Name and Shape	Q'ty	Application	Part number
Drain pipe 	1	For outdoor unit drain piping work	9303029015
Drain cap 	2		313166024302
Installation (seal) 	1	For filling in a gap at the entrance of connection cords	9374756018

OPTIONAL PARTS

Exterior	Parts name	Model No.	Summary
	Wired remote control	UTB-YUD	Unit control is performed by wired remote control
	Round duct	UTD-RF204	For Ceiling type
	Drain pump unit	UTR-DPB241	For Ceiling type

0902G3600