

WALL MOUNTED TYPE
ROOM AIR CONDITIONER
FOR EXTRA LOW TEMP. DISTRICT

SERVICE MANUAL

Indoor unit	Outdoor unit
ASU18RLF	AOU18RLXFWH
ASU24RLF	AOU24RLXFWH



CONTENTS

SPECIFICATIONS	1
DIMENSIONS	2
REFRIGERANT SYSTEM DIAGRAM	4
CIRCUIT DIAGRAM	5
PCB CIRCUIT DIAGRAM	6
ERROR DERECTION	8
PARTS (INDOOR UNIT)	9
PARTS (OUTDOOR UNIT)	15
ACCESSORIES	19

SPECIFICATIONS

ELECTRICAL DATA

Type		Extra low temp. heating	
Indoor unit		ASU18RLF	ASU24RLF
Outdoor unit		AOU18RLXFWH	AOU24RLXFWH
Power supply		Single phase 208/230V 60Hz	
COOLING	Capacity	18,000 Btu/h	22,000 Btu/h
	Power consumption	1.35 kW	1.76 kW
	EER	13.3 Btu/hW	12.5 Btu/hW
	Operating current	6.2 A	7.9 A
	Max ope. current	13.5 A	15.0 A
	Dehumidification	5.9 Pts/h 2.8 L/h	6.3 Pts/h 3.0 L/h
HEATING	Capacity	21,600 Btu/h	25,200 Btu/h
	Power consumption	1.75 kW	1.94 kW
	COP	12.3 Btu/hW	13.0 Btu/hW
	Operating current	7.8 A	8.6 A
	Max ope. current	14.5 A	15.5 A

DIMENSIONS

Indoor unit H x W x D	12-5/8 x 39-1/4 x 9 inch 320 x 998 x 228 mm
Outdoor unit H x W x D	32-3/4 x 35-3/8 x 13 inch 830 x 900 x 330 mm

WEIGHT

IU Net / Shipping	31 lbs / 40 lbs	14 kg / 18 kg
OU Net / Shipping	135 lbs / 150 lbs	61 kg / 68 kg

FAN MOTOR AND FAN REVOLUTION

IU Discrimination		MFD-50RON	
OU Discrimination		MFE-60TVT	
Indoor unit Cooling	High	1,260 rpm	1,480 rpm
	Medium	1,020 rpm	1,220 rpm
	Low	900 rpm	1,020 rpm
	Quiet	770 rpm	900 rpm
Indoor unit Heating	High	1,260 rpm	1,430 rpm
	Medium	1,020 rpm	1,220 rpm
	Low	900 rpm	1,020 rpm
	Quiet	790 rpm	900 rpm
Outdoor unit Cooling		620 rpm	800 rpm
Outdoor unit Heating		620 rpm	850 rpm

AIR CIRCULATION

Indoor unit Cooling	High	541 CFM 920 m ³ /h	659 CFM 1,120 m ³ /h
	Medium	435 CFM 740 m ³ /h	530 CFM 900 m ³ /h
	Low	365 CFM 620 m ³ /h	435 CFM 740 m ³ /h
	Quiet	306 CFM 520 m ³ /h	365 CFM 620 m ³ /h
Indoor unit Heating	High	541 CFM 920 m ³ /h	677 CFM 1,150 m ³ /h
	Medium	435 CFM 740 m ³ /h	530 CFM 900 m ³ /h
	Low	365 CFM 620 m ³ /h	435 CFM 740 m ³ /h
	Quiet	318 CFM 540 m ³ /h	365 CFM 620 m ³ /h
Outdoor unit Cooling		1,489 CFM 2,530 m ³ /h	2,001 CFM 3,400 m ³ /h
Outdoor unit Heating		1,489 CFM 2,530 m ³ /h	2,119 CFM 3,600 m ³ /h

NOISE LEVEL

Indoor unit Cooling	High	43 dB	49 dB
	Medium	37 dB	42 dB
	Low	33 dB	37 dB
Indoor unit Heating	High	44 dB	49 dB
	Medium	37 dB	42 dB
	Low	33 dB	37 dB
Outdoor unit Cooling		47 dB	54 dB
Outdoor unit Heating		50 dB	55 dB

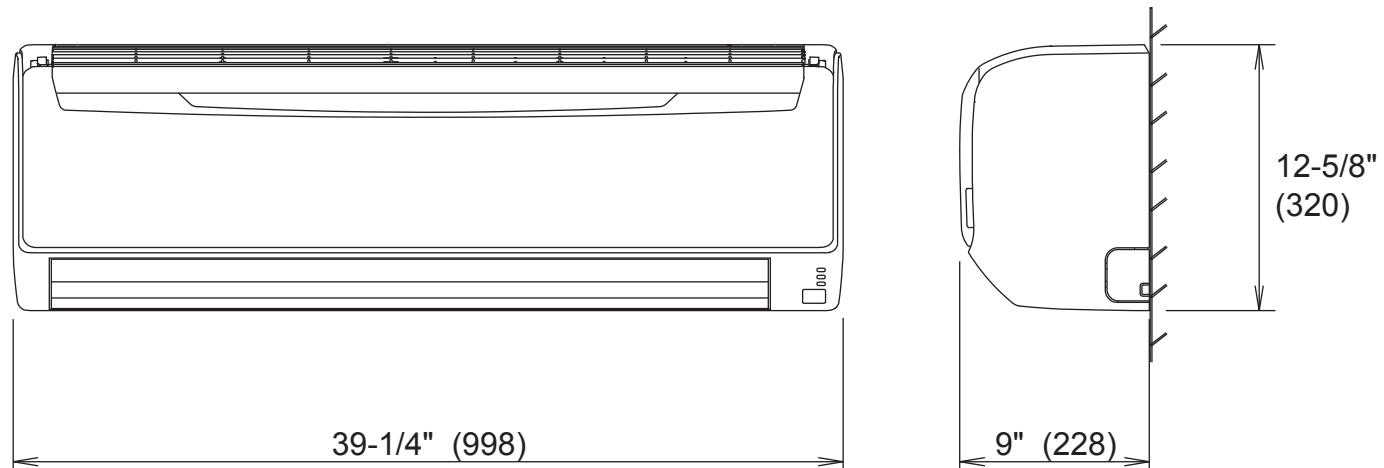
COMPRESSOR AND REFRIGERANT

Compressor type	Hermetic type, 6 pole, Single phase, DC inverter motor, Rotary	
Discrimination	N-TF30ND1A	
Weight (with oil)	34.2 lbs	15.3 kg
Precharged refrigerant	4 lbs 10 oz	2,100 g
Full charge	66 ft. 20 m	4 lbs 10 oz 2,100 g
	98 ft. 30 m	5 lbs 8 oz 2,500 g
	131 ft. 40 m	6 lbs 6 oz 2,900 g
	164 ft. 50 m	7 lbs 4 oz 3,300 g
Additional charge	0.43 oz/ft	40 g/m
Maximum piping height	98 feet	30 m
Refrigerant type	R410A	

DIMENSIONS

INDOOR UNIT

Unit : inch (mm)



Drain pipe diameter

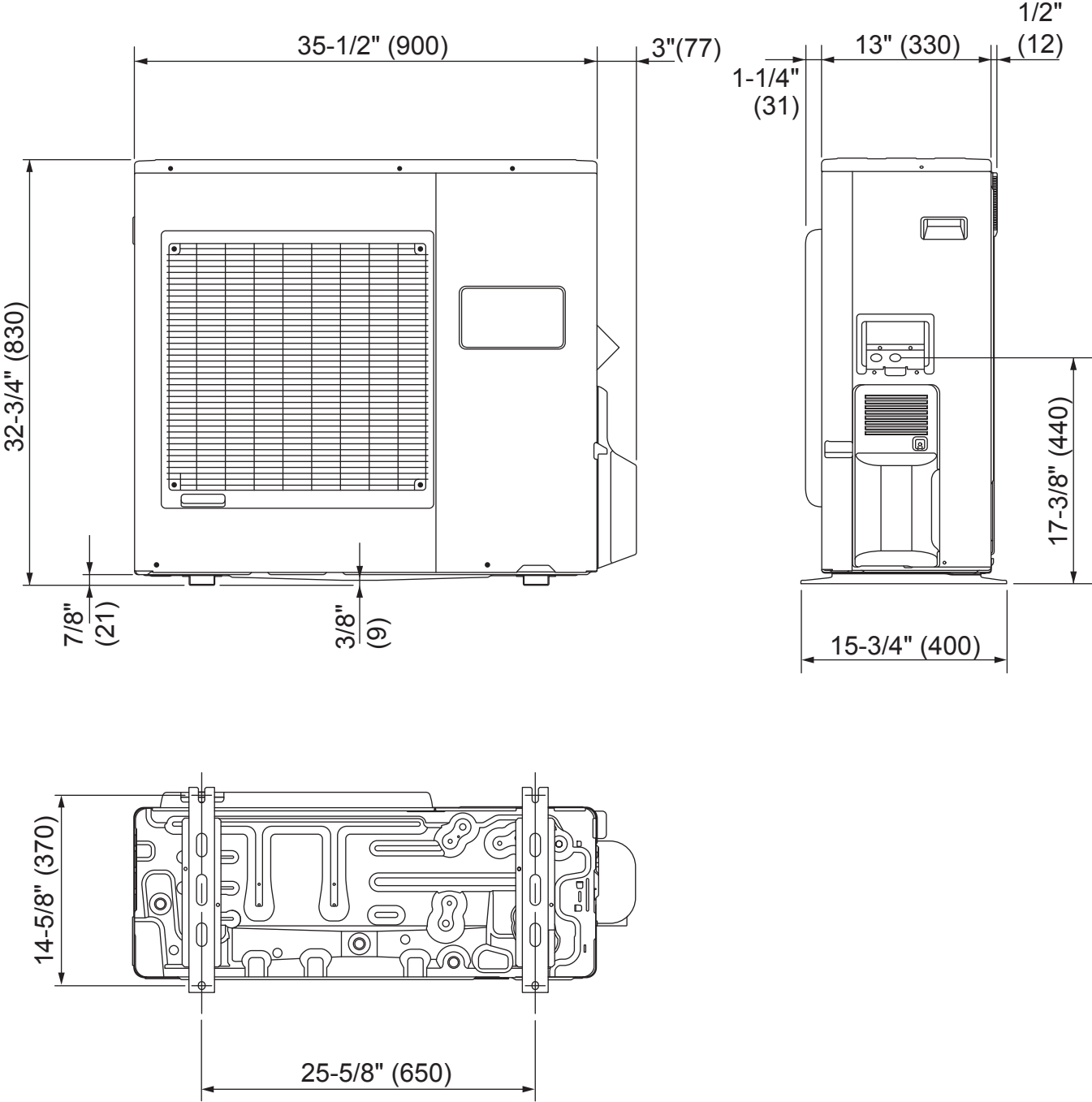
Inside : 5/8 inch (16 mm)

Outside : 1-3/32 inch (28 mm)

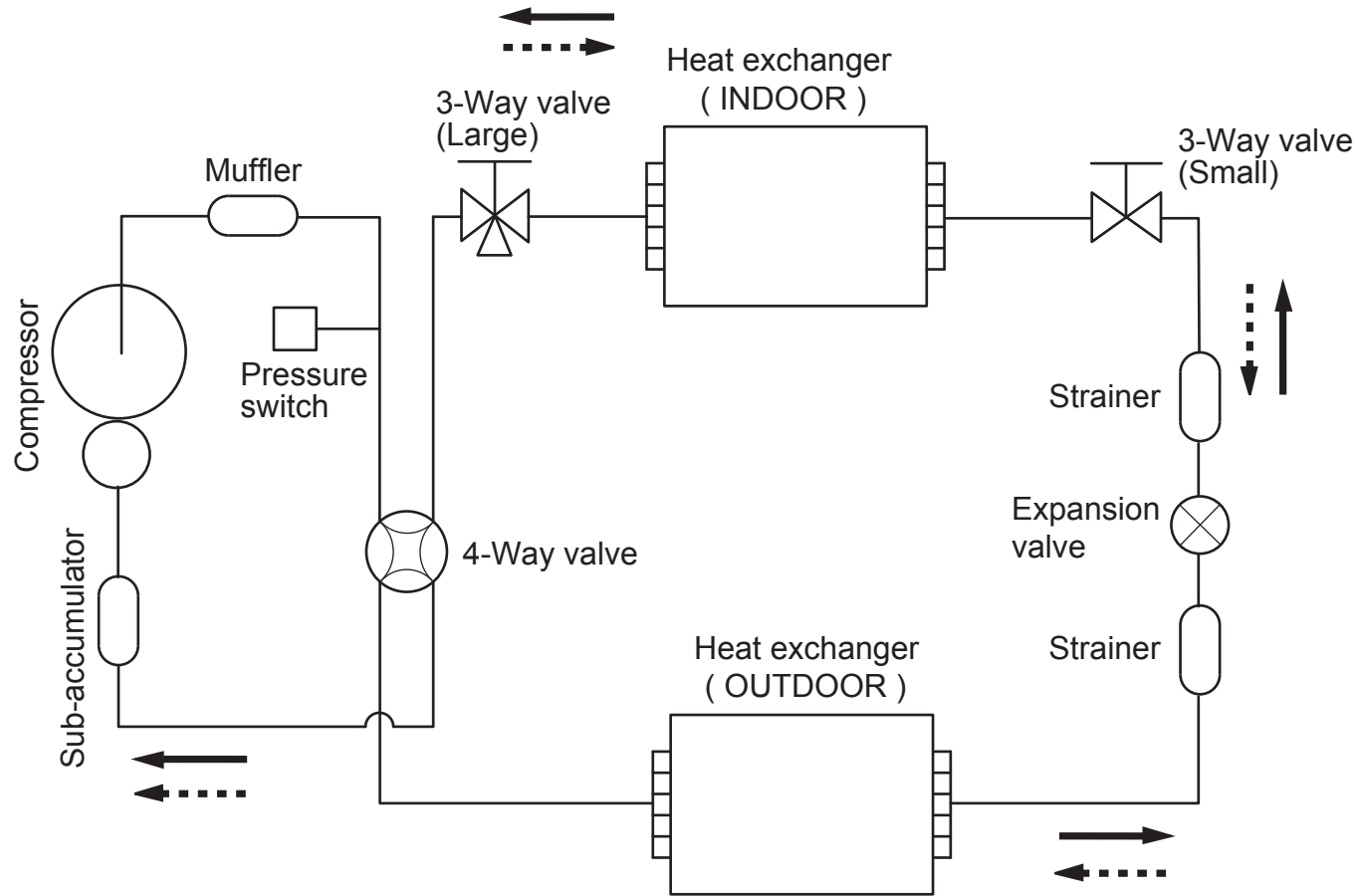
Liquid pipe diameter : 3/8 inch (9.52 mm)

Gas pipe diameter : 5/8 inch (15.88 mm)

OUTDOOR UNIT
Unit : inch (mm)



REFRIGERANT SYSTEM DIAGRAM

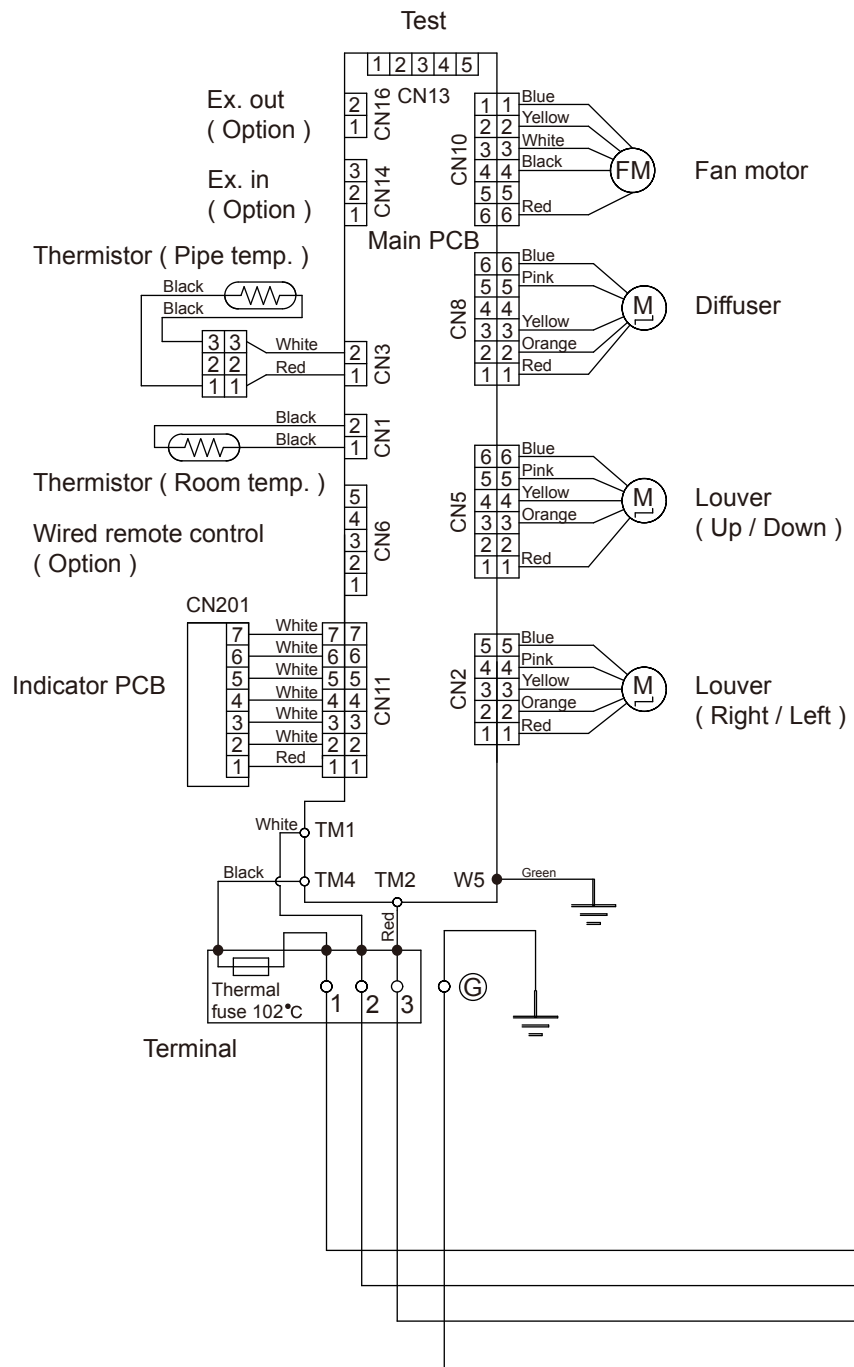


———→ Cooling flow
 - - - -> Heating flow

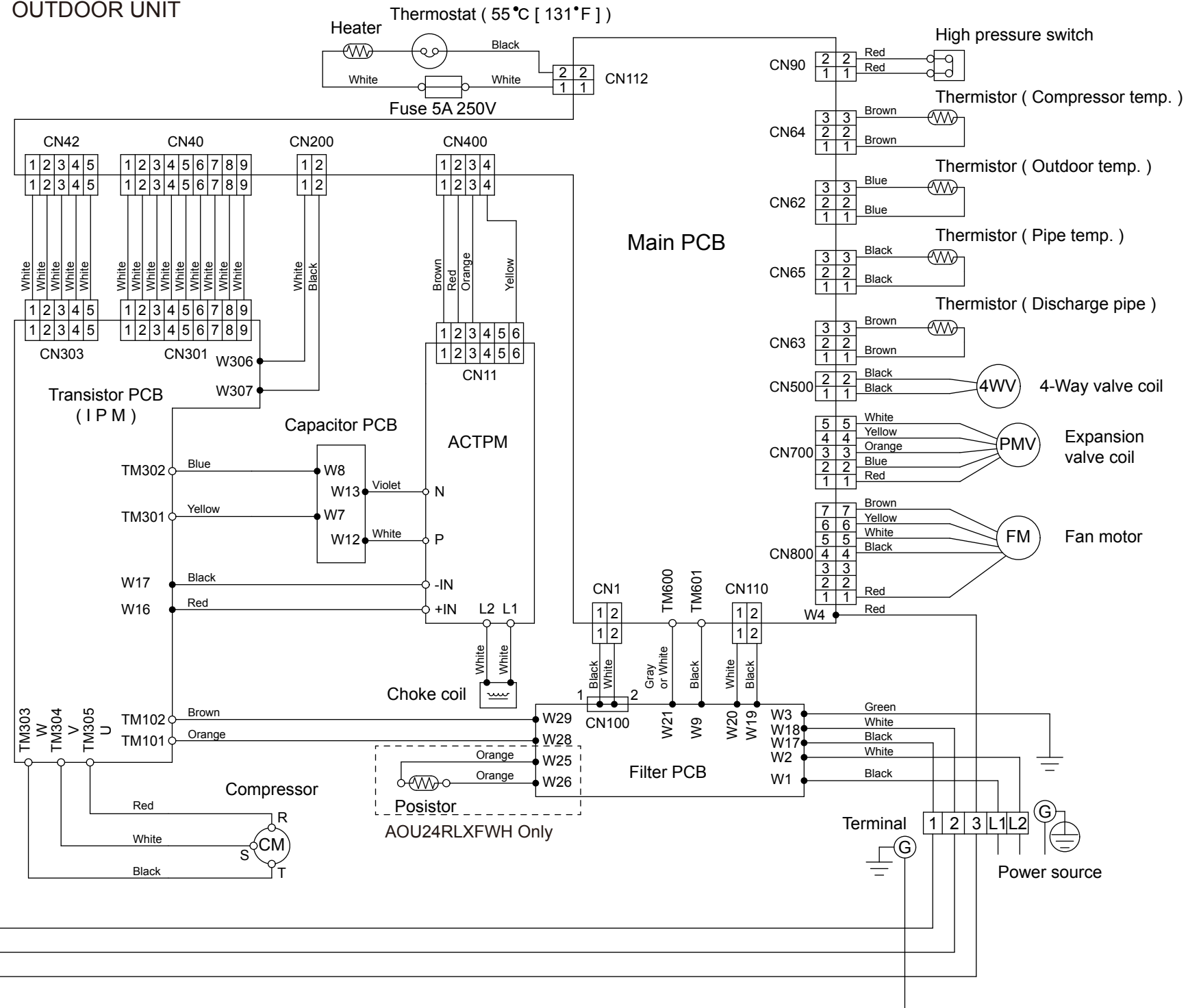
Refrigerant pipe diameter
 Liquid : 3/8" (9.52 mm)
 Gas : 5/8" (15.88 mm)

CIRCUIT DIAGRAM

INDOOR UNIT

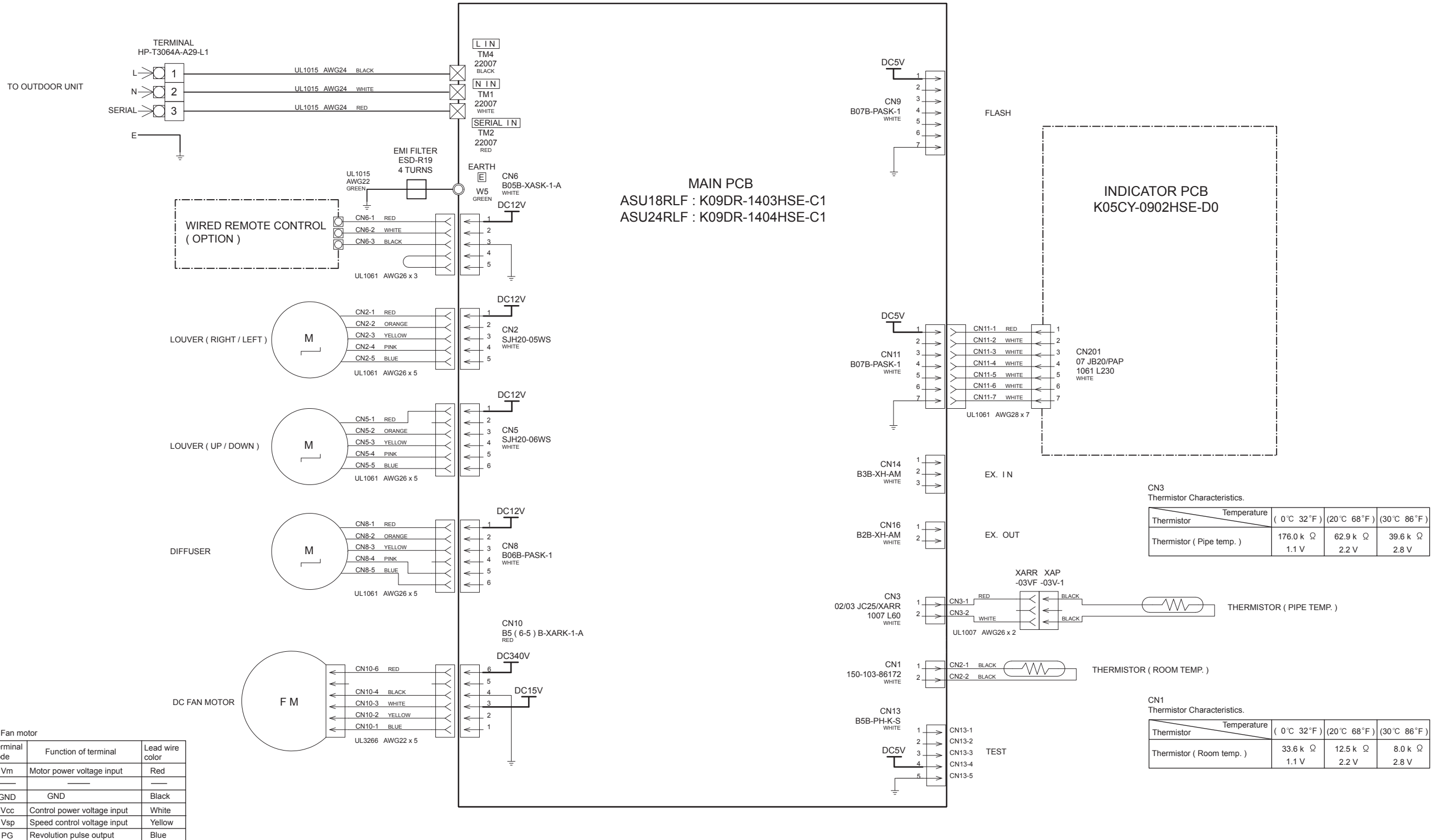


OUTDOOR UNIT



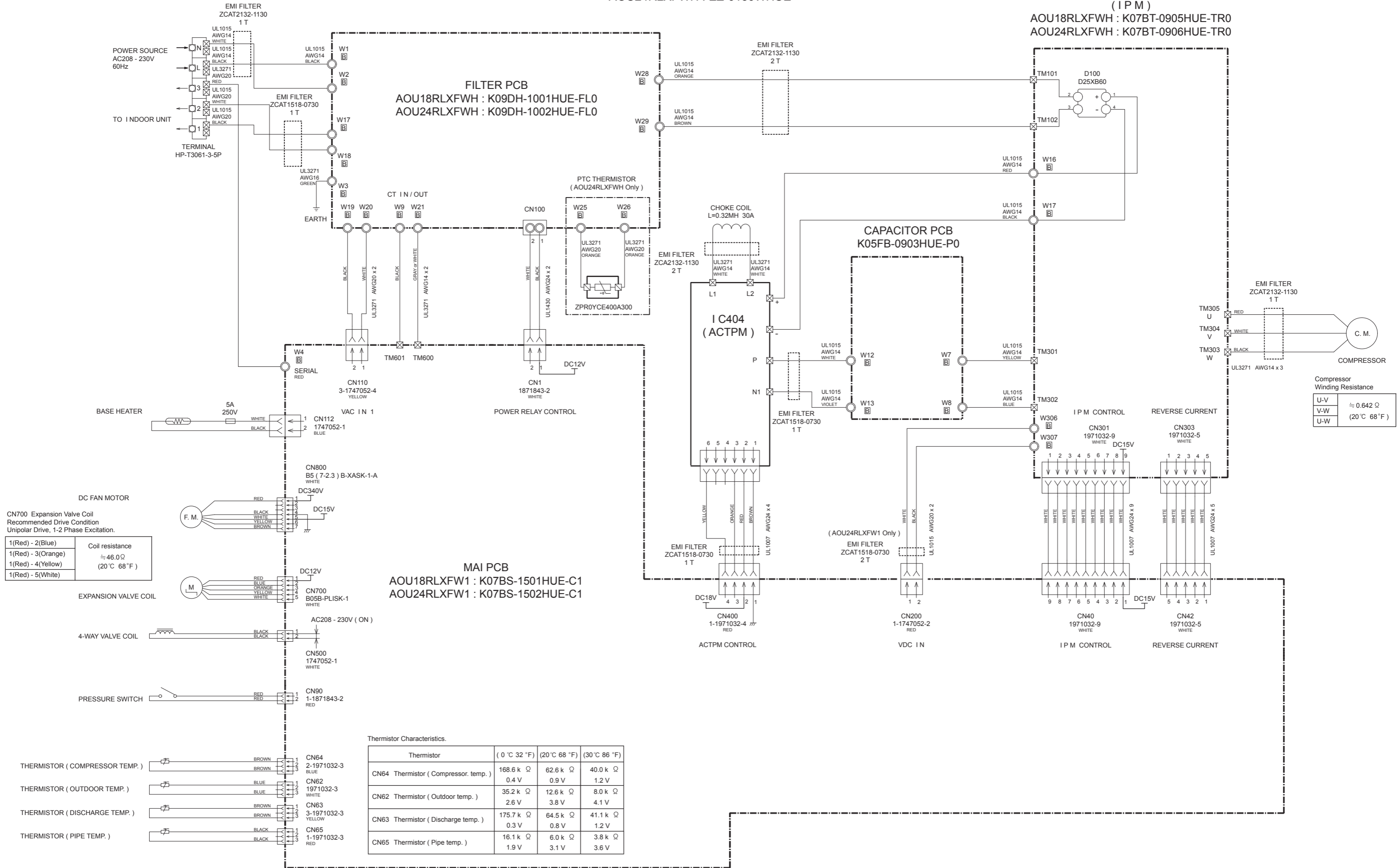
PCB CIRCUIT DIAGRAM

CONTROL UNIT
 ASU18RLF : EZ-0090DHSE
 ASU24RLF : EZ-0104HSE



INVERTER ASSEMBLY
 AOU18RLXFWH : EZ-0150THUE
 AOU24RLXFWH : EZ-0150WHUE

TRANSISTOR PCB
 (I P M)
 AOU18RLXFWH : K07BT-0905HUE-TR0
 AOU24RLXFWH : K07BT-0906HUE-TR0



Compressor Winding Resistance

U-V	≈ 0.642 Ω (20°C 68°F)
V-W	
U-W	

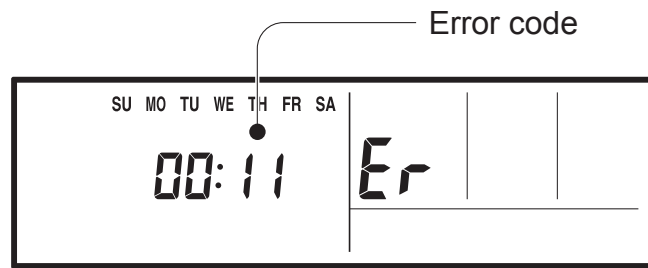
Thermistor Characteristics.

Thermistor	(0 °C 32 °F)	(20 °C 68 °F)	(30 °C 86 °F)
CN64 Thermistor (Compressor temp.)	168.6 k Ω 0.4 V	62.6 k Ω 0.9 V	40.0 k Ω 1.2 V
CN62 Thermistor (Outdoor temp.)	35.2 k Ω 2.6 V	12.6 k Ω 3.8 V	8.0 k Ω 4.1 V
CN63 Thermistor (Discharge temp.)	175.7 k Ω 0.3 V	64.5 k Ω 0.8 V	41.1 k Ω 1.2 V
CN65 Thermistor (Pipe temp.)	16.1 k Ω 1.9 V	6.0 k Ω 3.1 V	3.8 k Ω 3.6 V

ERROR DETECTION

If you use a wired type remote control, error codes will appear on the remote control display. If you use a wireless remote control, the lamp on the photodetector unit will output error codes by way of blinking patterns. See the lamp blinking patterns and error codes in the table below. An error display is displayed only during operation.

Wired remote control display (Option)

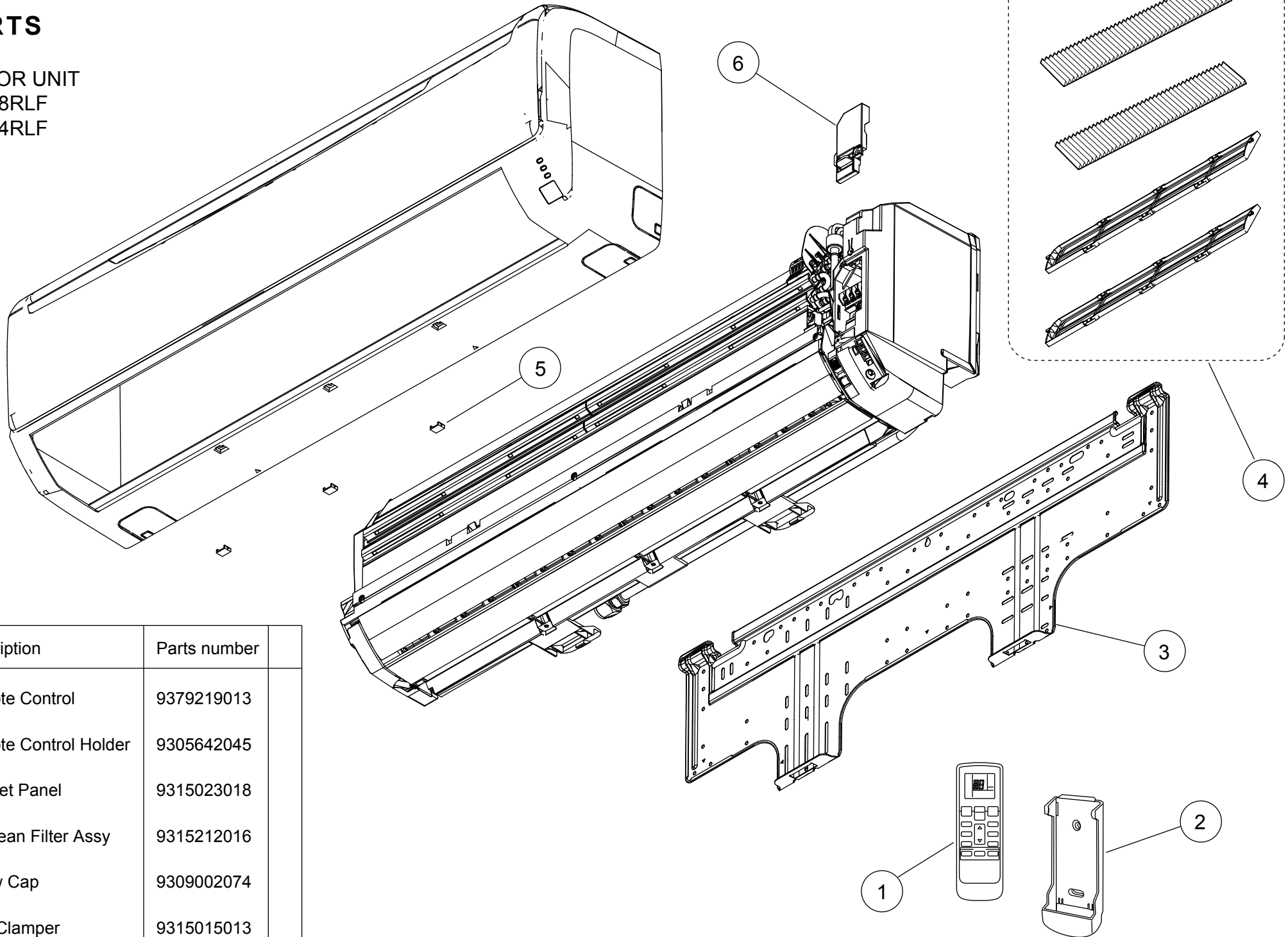


Error display			Wired remote control Error code	Mode	DESCRIPTION	Remark
OPERATION lamp (green)	TIMER lamp (orange)	ECONOMY lamp (green)				
● (1)	● (1)	◇	11	Communication	Serial communication error	•When the indoor unit cannot receive the signal from the branch unit •When the branch unit cannot receive the signal from the indoor unit
● (1)	● (2)	◇	12	Communication	Remote control communication error	•Wired remote control communication error
● (1)	● (5)	◇	15	Communication	Scan error	•Check operation incompleteness error (normally, operation disabled)
● (2)	● (1)	◇	21	Function setting	Initial setting error	•Wiring mistake
● (2)	● (2)	◇	22	Function setting	Indoor unit capacity error	•Indoor unit capacity error
● (2)	● (3)	◇	23	Function setting	Connection disabled (series error)	•Combination error
● (2)	● (4)	◇	24	Function setting	Connection unit number error	•Connection unit number error (indoor unit) •Connection unit number error (branch unit)
● (3)	● (2)	◇	32	Indoor unit	Indoor unit main PCB error	•Indoor unit PCB Model information error
● (3)	● (5)	◇	35	Indoor unit	Manual auto switch error	•Manual auto switch error
● (4)	● (1)	◇	41	Indoor unit	Room error	•Inlet thermistor error
● (4)	● (2)	◇	42	Indoor unit	Indoor unit Heat Ex. sensor error	•Indoor unit Heat Ex. Middle thermistor error
● (5)	● (1)	◇	51	Indoor unit	Indoor unit fan motor error	•Main fan motor lock error •Main fan motor revolution speed error
● (5)	● (3)	◇	53	Indoor unit	Water Drain error	•Drain pump error
● (5)	● (15)	◇	50	Indoor unit	Indoor unit error	•Indoor unit error
● (6)	● (2)	◇	62	Outdoor unit	Outdoor unit main PCB error	•Outdoor unit PCB Model information error •Outdoor unit PCB microcomputer communication error
● (6)	● (3)	◇	63	Outdoor unit	Inverter PCB error	•Inverter error
● (6)	● (4)	◇	64	Outdoor unit	Active filter error, PFC circuit error	•Voltage error stoppage permanently •Voltage error (can restore) •Over current protected operation stoppage permanently •PFC hardware error
● (6)	● (5)	◇	65	Outdoor unit	IPM error	•Trip terminal L error
● (6)	● (10)	◇	6A	Outdoor unit	Display panel error	•Microcomputers communication error
● (7)	● (1)	◇	71	Outdoor unit	Discharge thermistor error	•Discharge thermistor 1 error
● (7)	● (2)	◇	72	Outdoor unit	Compressor thermistor error	•Compressor thermistor 1 error
● (7)	● (3)	◇	73	Outdoor unit	Outdoor unit Heat Ex. Sensor error	•Outdoor unit Heat Ex. liquid thermistor error
● (7)	● (4)	◇	74	Outdoor unit	Outdoor thermistor error	•Outdoor thermistor error
● (7)	● (5)	◇	75	Outdoor unit	Suction Gas thermistor error	•Suction Gas thermistor error
● (7)	● (7)	◇	77	Outdoor unit	Heat sink thermistor error	•Heat sink thermistor error
● (8)	● (2)	◇	82	Outdoor unit	Sub-cool Heat Ex. gas thermistor error	•Sub-cool Heat Ex. gas inlet thermistor error •Sub-cool Heat Ex. gas outlet thermistor error
● (8)	● (3)	◇	83	Outdoor unit	Liquid pipe thermistor error	•Liquid pipe thermistor 1 error
● (8)	● (4)	◇	84	Outdoor unit	Current sensor error	•Current sensor 1 error (stoppage permanently)
● (8)	● (6)	◇	86	Outdoor unit	Pressure sensor error	•Discharge pressure sensor error •Suction pressure sensor error •High pressure switch 1 error
● (9)	● (4)	◇	94	Outdoor unit	Trip detection	•Trip detection
● (9)	● (5)	◇	95	Outdoor unit	compressor motor control error	•Rotor position detection error (stoppage permanently)
● (9)	● (7)	◇	97	Outdoor unit	Outdoor unit fan motor 1 error	•Duty error
● (9)	● (9)	◇	99	Outdoor unit	4-way valve error	•4-way valve error
● (10)	● (1)	◇	A1	Refrigerant system	Discharge temperature 1 error	•Discharge temperature 1 error
● (10)	● (3)	◇	A3	Refrigerant system	Compressor temperature error	•Compressor 1 temperature error
● (10)	● (5)	◇	A5	Refrigerant system	Pressure error 2	•Low pressure error
● (13)	● (2)	◇	J2	Branch box	Unit flow divider error	•EEPROM access error •Equipment type information error •Serial communication error to outdoor unit •Branch units serial communication error •Serial communication error to indoor unit •Liquid pipe thermistor error •Gas pipe thermistor error •Expansion valve full closure operation error •Remote controller communication error •Branch unit error

•Display mode ● : 0.5s ON / 0.5s OFF, () : Number of flashing ◇ : 0.1s ON / 0.1s OFF

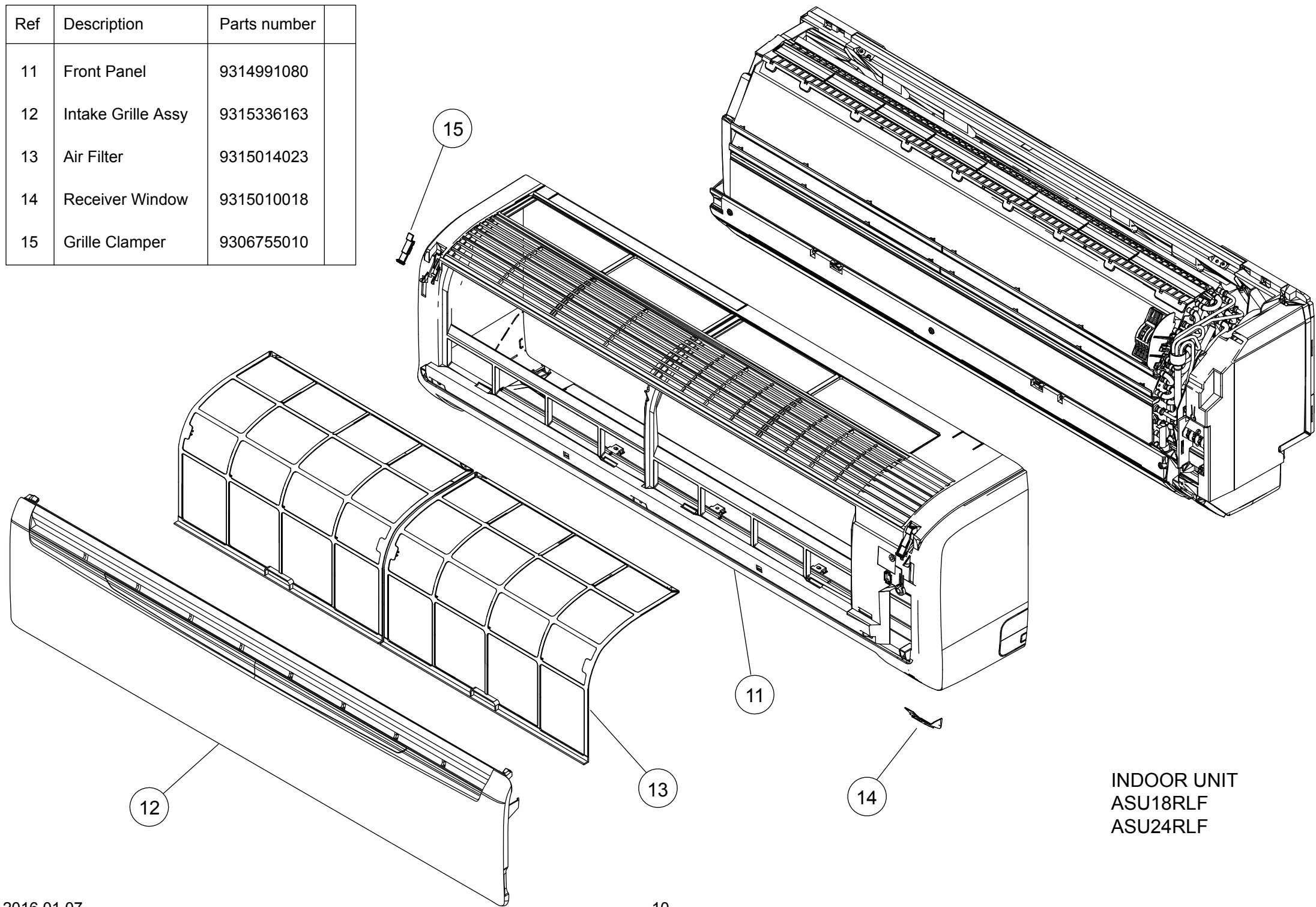
PARTS

INDOOR UNIT
ASU18RLF
ASU24RLF



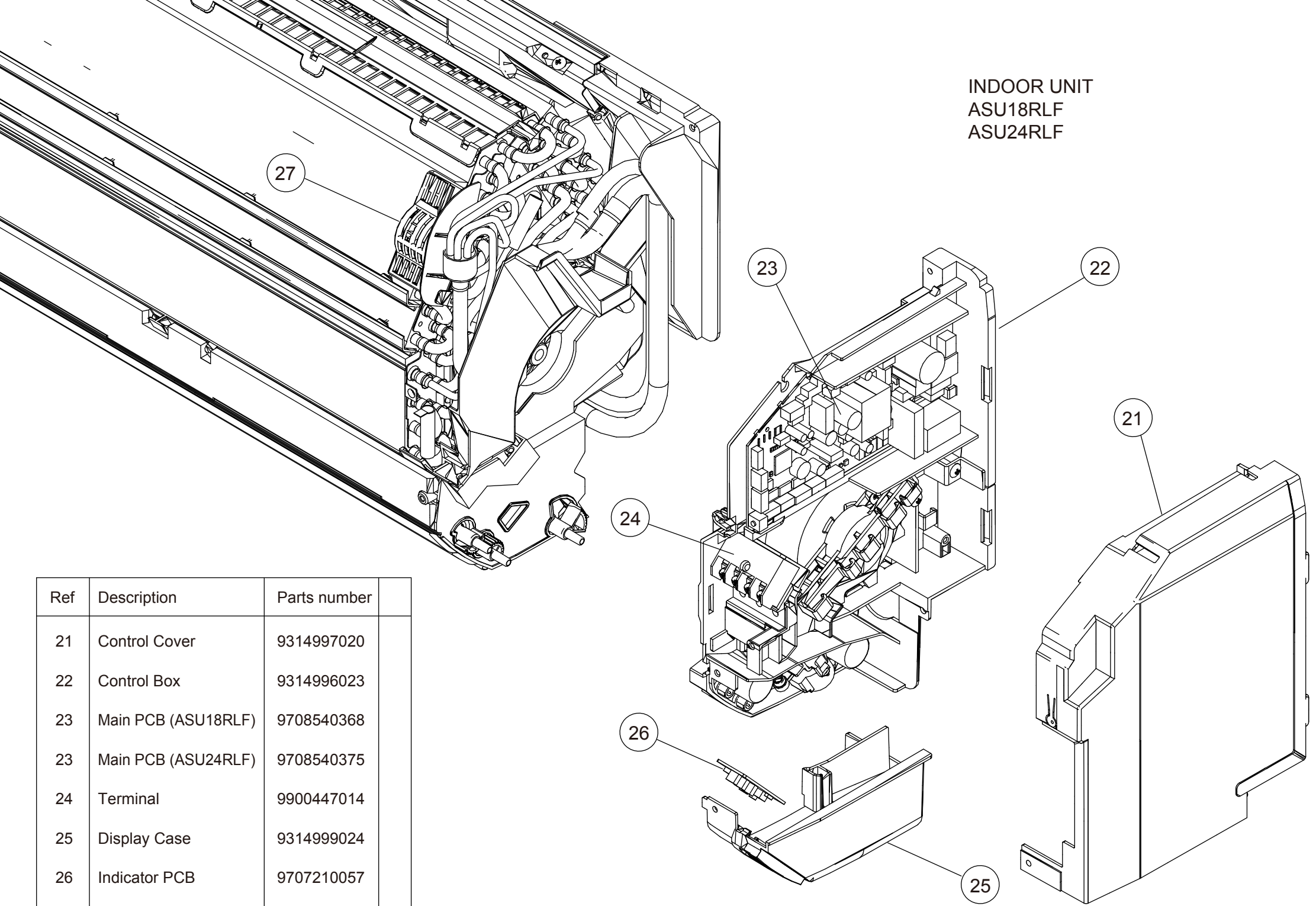
Ref	Description	Parts number
1	Remote Control	9379219013
2	Remote Control Holder	9305642045
3	Bracket Panel	9315023018
4	Air Clean Filter Assy	9315212016
5	Screw Cap	9309002074
6	Wire Clammer	9315015013

Ref	Description	Parts number
11	Front Panel	9314991080
12	Intake Grille Assy	9315336163
13	Air Filter	9315014023
14	Receiver Window	9315010018
15	Grille Clamper	9306755010



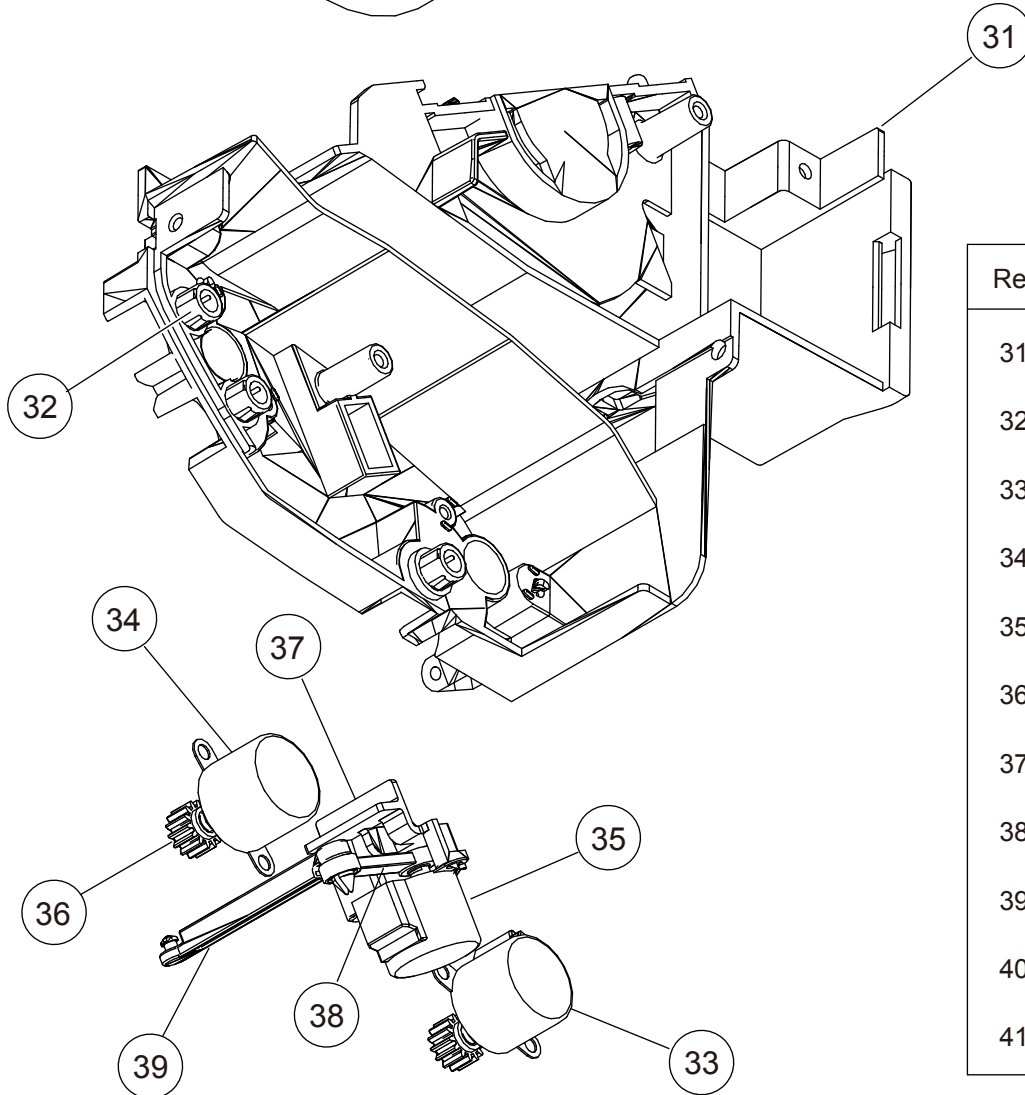
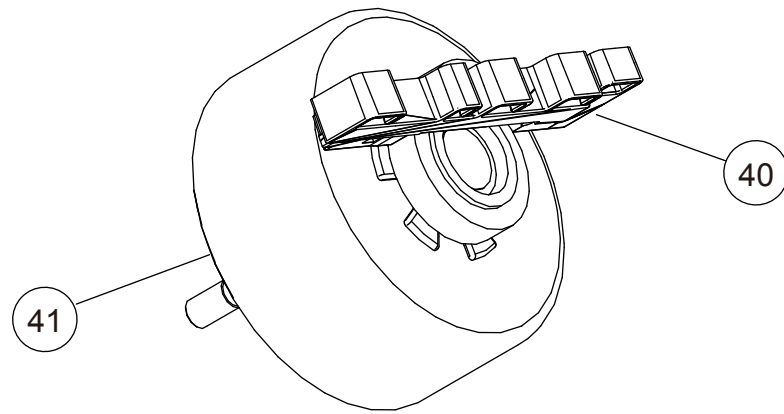
INDOOR UNIT
ASU18RLF
ASU24RLF

INDOOR UNIT
ASU18RLF
ASU24RLF



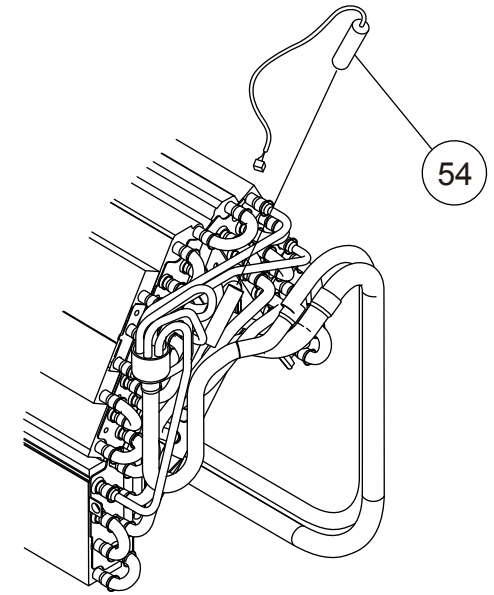
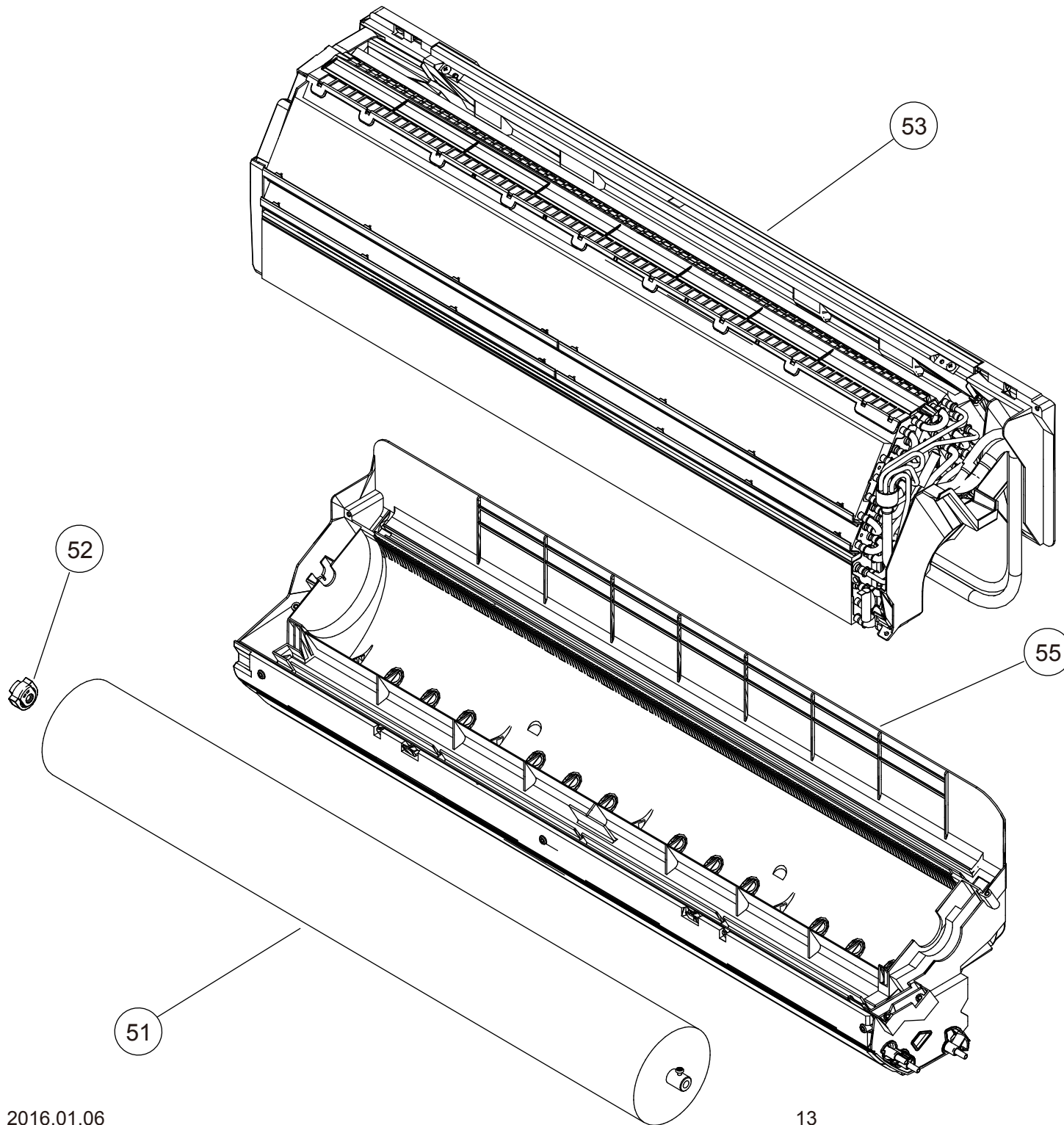
Ref	Description	Parts number
21	Control Cover	9314997020
22	Control Box	9314996023
23	Main PCB (ASU18RLF)	9708540368
23	Main PCB (ASU24RLF)	9708540375
24	Terminal	9900447014
25	Display Case	9314999024
26	Indicator PCB	9707210057
27	Room Thermistor Holder	9315252012

INDOOR UNIT
ASU18RLF
ASU24RLF



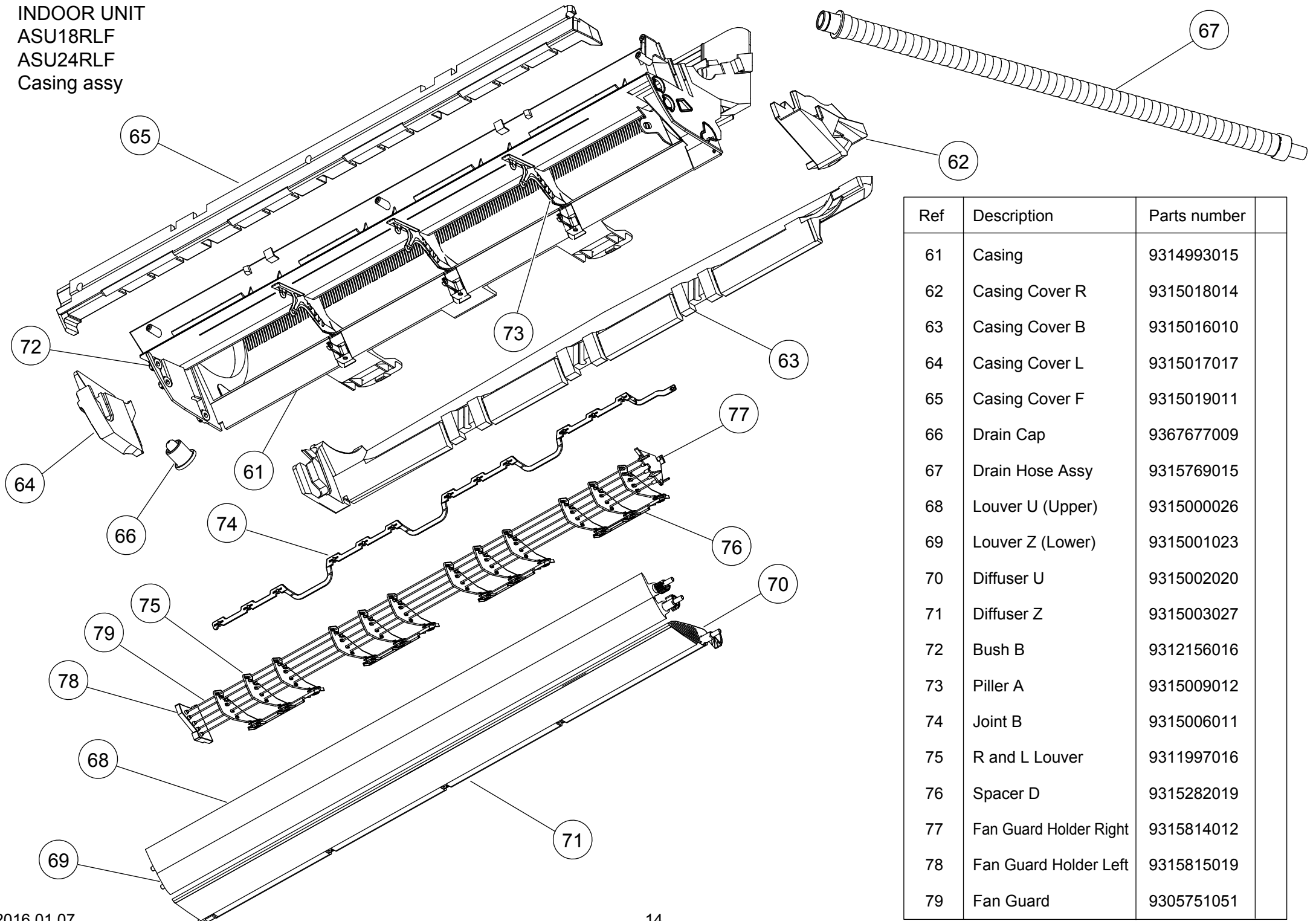
Ref	Description	Parts number
31	Motor Case	9314998027
32	Bush B	9312156016
33	Motor Step (Red)	9900384029
34	Motor Step (Green)	9900384036
35	Motor Step (Blue)	9900139063
36	Gear A	9309994003
37	Link Holder	9315007018
38	Link A	9315008015
39	Joint A	9315005014
40	Motor Clamper	9315012012
41	Fan Motor	9602784004

INDOOR UNIT
ASU18RLF
ASU24RLF

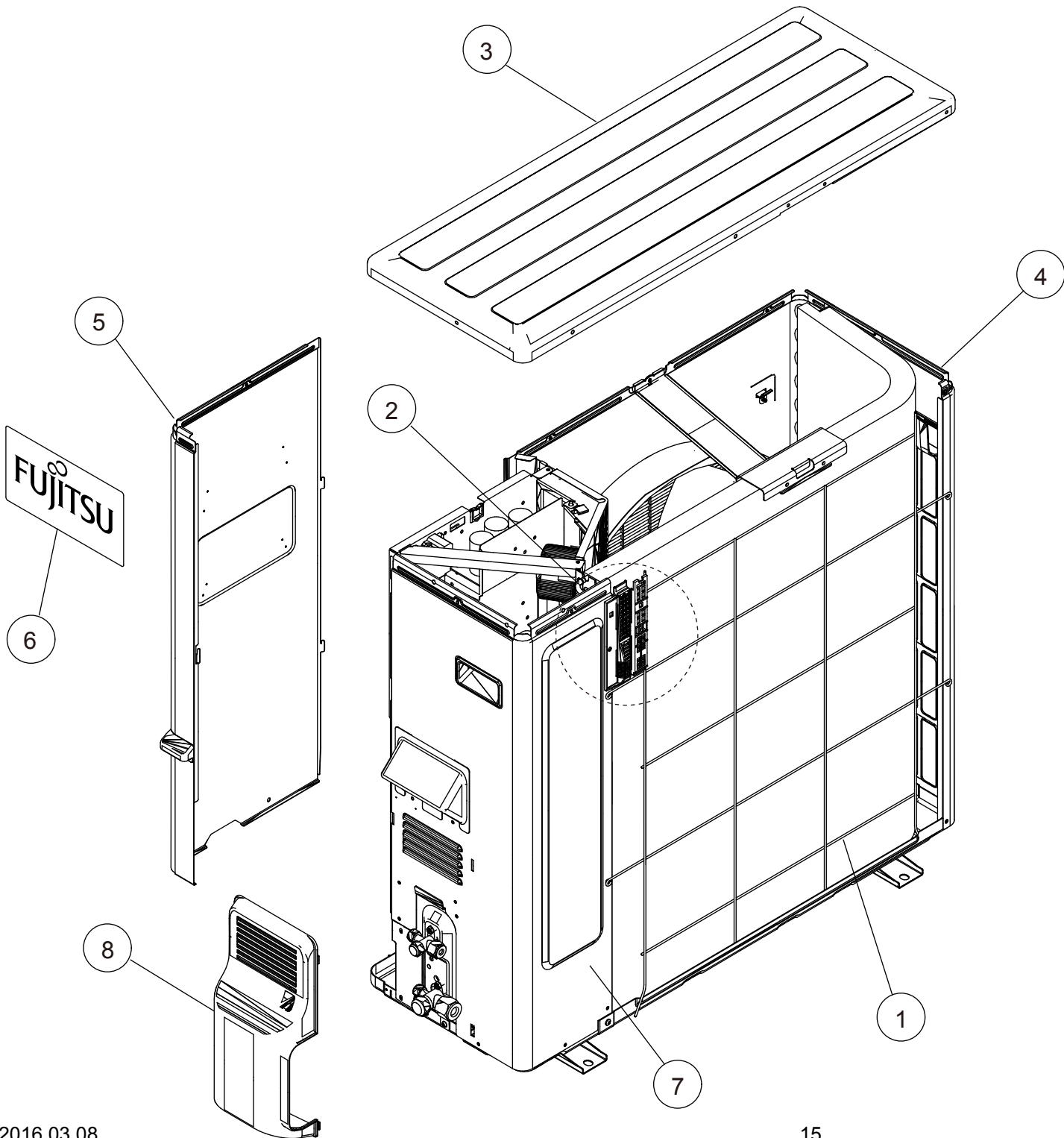


Ref	Description	Parts number
51	Crossflow Fan Assy	9315024015
52	Bearing C Assy	9306628017
53	Evaporator Total Assy (18)	9315338181
53	Evaporator Total Assy (24)	9315338174
54	Pipe Thermistor	9900551018
55	Casing Assy	9315331045

INDOOR UNIT
ASU18RLF
ASU24RLF
Casing assy



Ref	Description	Parts number
61	Casing	9314993015
62	Casing Cover R	9315018014
63	Casing Cover B	9315016010
64	Casing Cover L	9315017017
65	Casing Cover F	9315019011
66	Drain Cap	9367677009
67	Drain Hose Assy	9315769015
68	Louver U (Upper)	9315000026
69	Louver Z (Lower)	9315001023
70	Diffuser U	9315002020
71	Diffuser Z	9315003027
72	Bush B	9312156016
73	Pillar A	9315009012
74	Joint B	9315006011
75	R and L Louver	9311997016
76	Spacer D	9315282019
77	Fan Guard Holder Right	9315814012
78	Fan Guard Holder Left	9315815019
79	Fan Guard	9305751051

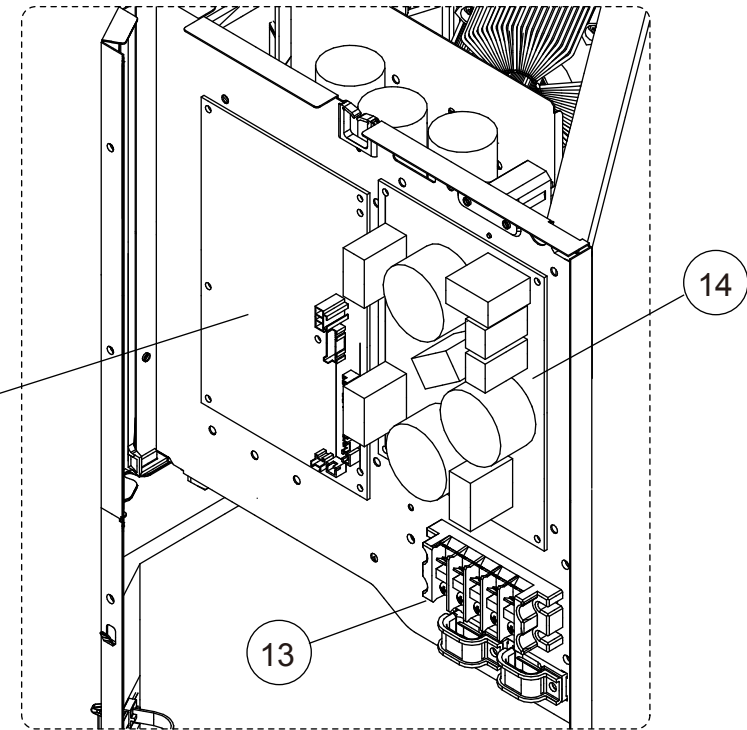
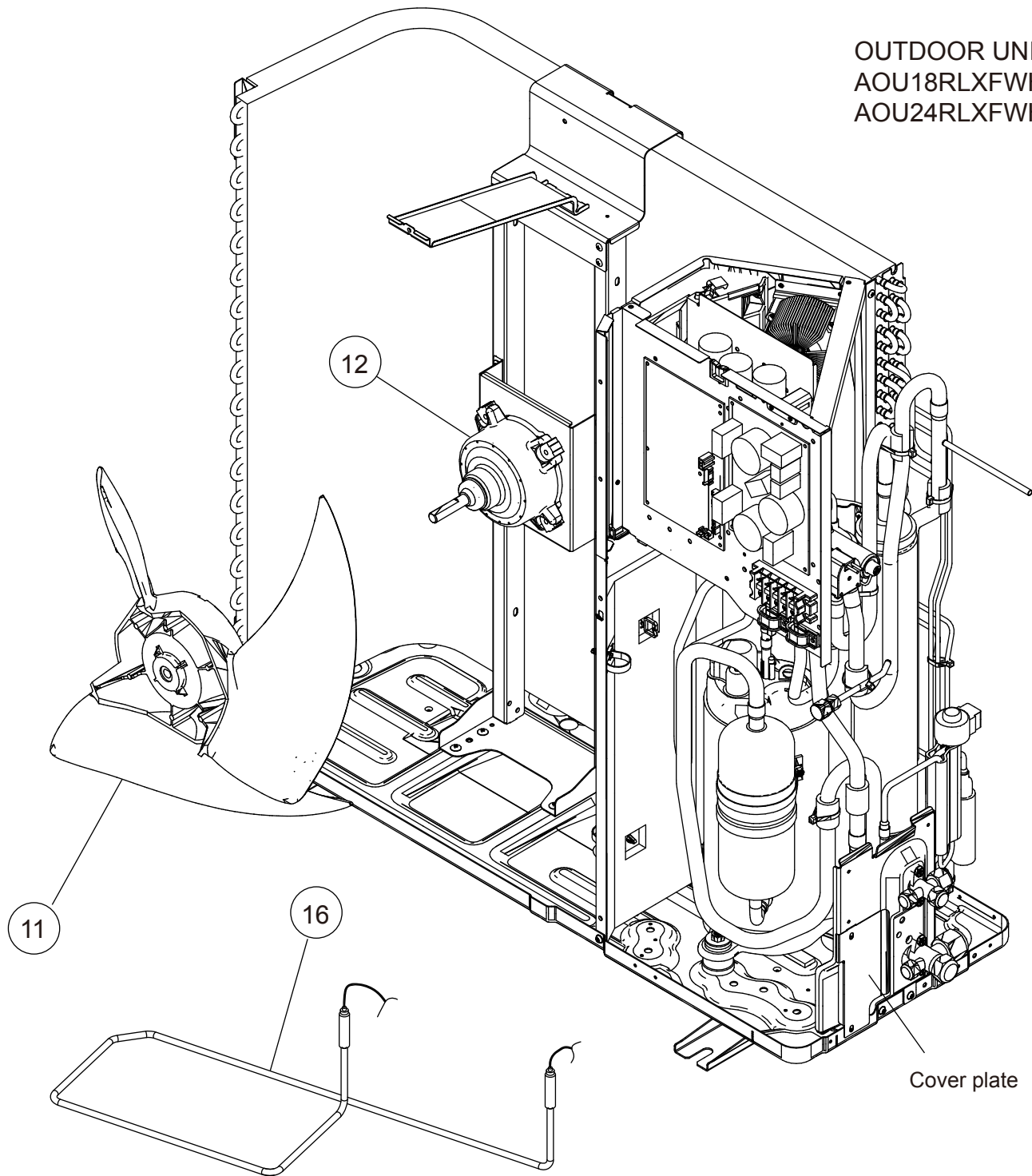


PARTS

OUTDOOR UNIT
 AOU18RLXFWH
 AOU24RLXFWH

Ref.	Description	Part number	
1	Protective Net	9375381011	
2	Thermo Holder	9375211011	
3	Top Panel Sub Assy	9374417032	
4	Front Panel Sub Assy	9374414079	
5	Service Panel Sub Assy	9374415052	
6	Emblem Rear	9351355005	
7	Right Panel Sub Assy	9374416134	
8	Valve Cover	9374174010	

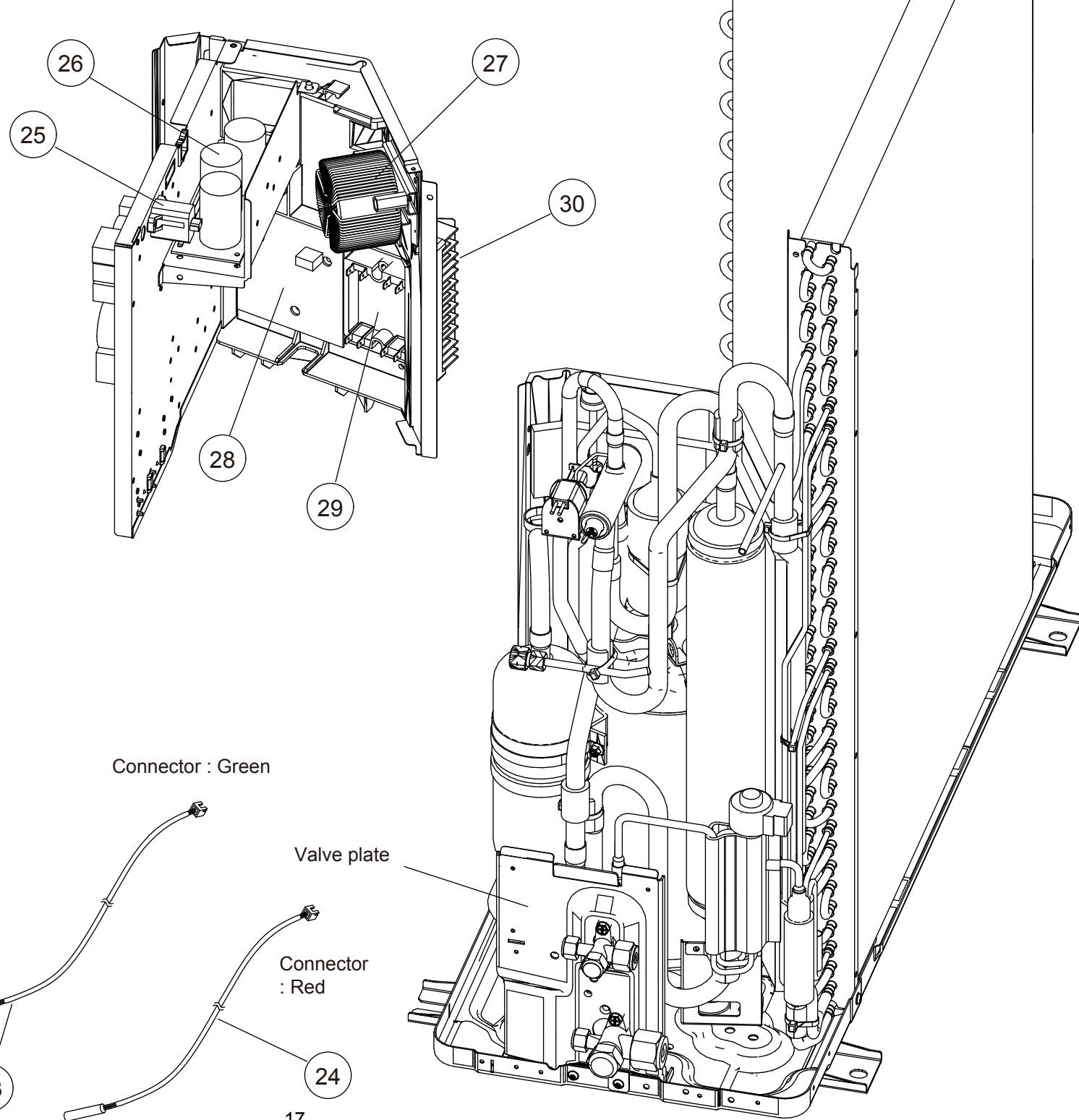
OUTDOOR UNIT
 AOU18RLXFWH
 AOU24RLXFWH



Ref.	Description	Part number
11	Propeller Fan Assy	9366378020
12	Fan Motor	9602843015
13	Terminal	9900203023
14	Filter PCB (AOU18RLXFWH)	9708513065
14	Filter PCB (AOU24RLXFWH)	9708513072
15	Main PCB (AOU18RLXFWH)	9708511764
15	Main PCB (AOU24RLXFWH)	9708511771
16	Heater Unit Assy	9900888015

OUTDOOR UNIT
 AOU18RLXFWH
 AOU24RLXFWH

Ref.	Description	Part number
21	Discharge Thermistor	9900461003
22	Outdoor Thermistor	9900463007
23	Compressor Thermistor	9900466015
24	Heat Exchanger Thermistor	9900514013
25	PTC Thermistor (AOU24)	9704265012
26	Capacitor PCB (AOU18)	9709894033
26	Capacitor PCB (AOU24)	9709894040
27	Choke Coil	9900223014
28	Transistor PCB (AOU18)	9708512174
28	Transistor PCB (AOU24)	9708512181
29	ACTPM	9707592016
30	Heatsink	9378530010



Connector : Green

Valve plate

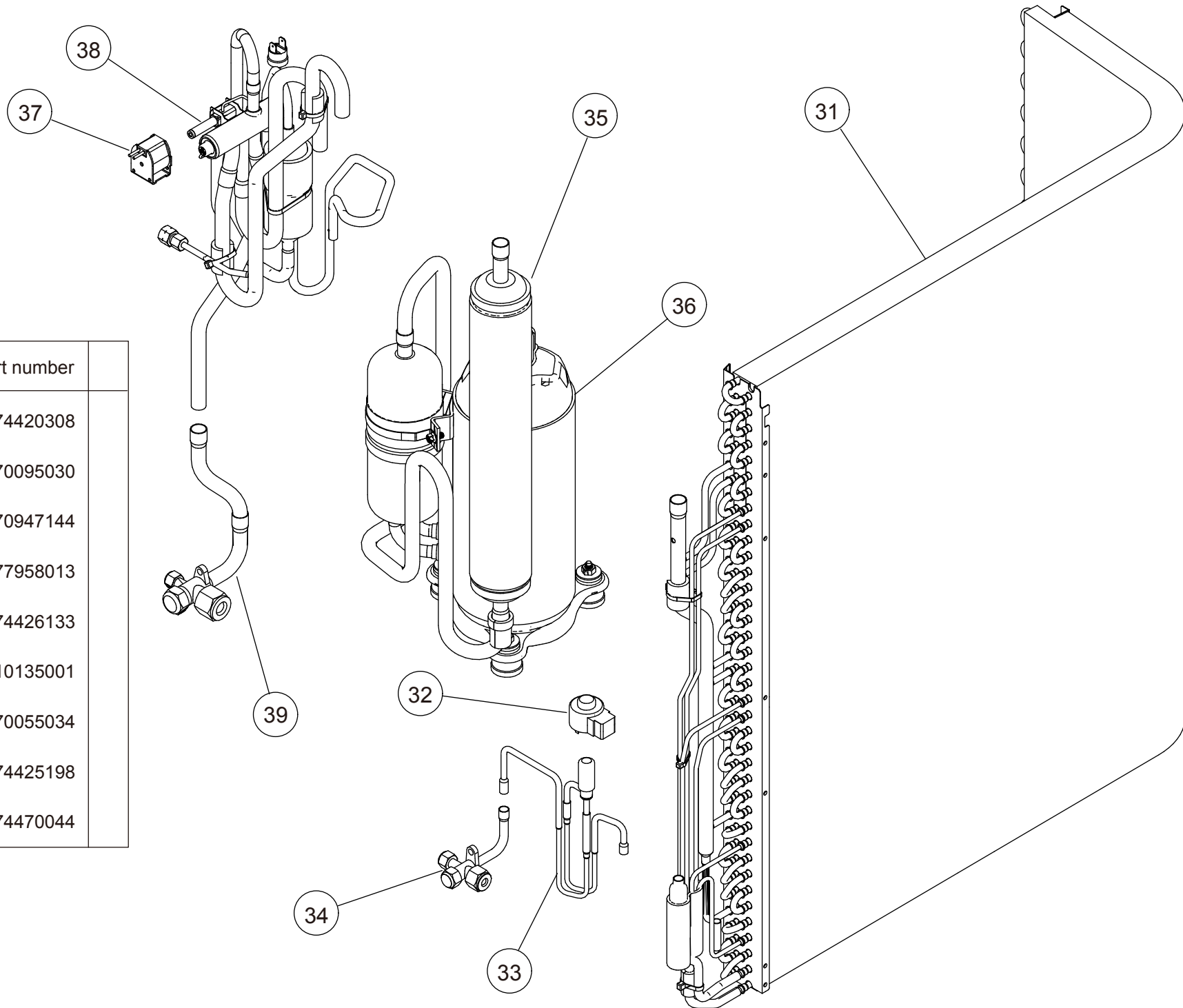
Connector : Red

Connector : Orange

Connector : Blue

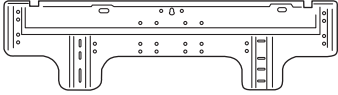
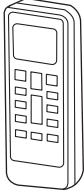
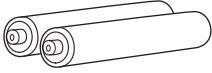


OUTDOOR UNIT
 AOU18RLXFWH
 AOU24RLXFWH

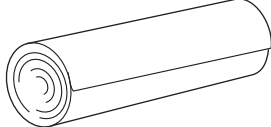
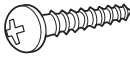

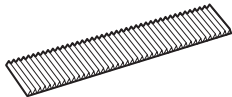
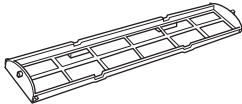
Ref.	Description	Part number
31	Condenser A Sub Assy	9374420308
32	Expansion Valve Coil	9970095030
33	Expansion Valve Assy	9370947144
34	3-way Valve Assy	9377958013
35	Accumulator Sub Assy	9374426133
36	Compressor	9810135001
37	Solenoid	9970055034
38	4-way Valve Assy	9374425198
39	3-way Valve Sub Assy	9374470044



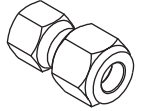
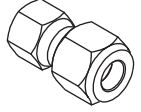
ACCESSORIES

INDOOR UNIT

<p>Wall hook bracket 9315023018 1 piece</p> 
<p>Remote control 9379219013 1 piece</p> 
<p>Battery (penlight) 0600185541 2 pieces shrink pack</p> 
<p>Remote control holder 9305642045 1 piece</p> 
<p>Drain hose insulation 9361756007 1 piece</p> 

<p>Cloth tape 9310519004 1 piece</p> 
<p>Tapping screw (big) M4x 25mm 0700076046 8 pieces</p> 
<p>Tapping screw (small) 0700019036 2 pieces</p> 
<p>Air cleaning filter</p> <p>Electric filter 9312153060</p> <p>Ion deodorant filter 9311925071</p> 
<p>Air cleaning filter frame 9368568009 2 pieces</p> 

OUTDOOR UNIT

<p>Adapter G assy 1/2 in. (12.70 mm) -> 5/8 in. (15.88 mm) 9374749034 1 piece</p>  <p>(AOU18RLXFW1 only)</p>
<p>Adapter E assy 1/4 in. (6.35 mm) -> 3/8 in. (9.52 mm) 9374749010 1 piece</p> 

Adapter is necessary in the connection of the indoor unit. For more information, refer to the installation manual included with the indoor unit.

1602G4497