HITACHI

JCH-WH **NO.0125E**

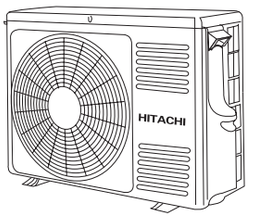
RAC-18WPE
RAC-25WPE
RAC-35WPE
RAC-42WPE
RAC-50WPE
RAC-25NPE
RAC-35NPE

SERVICE MANUAL

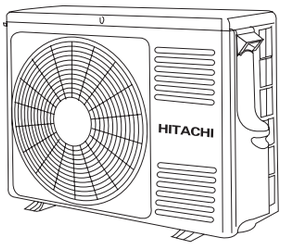
TECHNICAL INFORMATION

FOR SERVICE PERSONNEL ONLY

OUTDOOR UNIT



RAC-18WPE
RAC-25WPE
RAC-35WPE
RAC-25NPE
RAC-35NPE



RAC-42WPE
RAC-50WPE

REFER TO THE FOUNDATION MANUAL

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SPECIFICATIONS

TYPE			DC INVERTER									
			OUTDOOR UNIT	OUTDOOR UNIT	OUTDOOR UNIT	OUTDOOR UNIT		OUTDOOR UNIT		OUTDOOR UNIT	OUTDOOR UNIT
MODEL			RAC-18WPE	RAC-25WPE	RAC-35WPE	RAC-25NPE (RAD-25RPE)	RAC-25NPE (RAI-25RPE)	RAC-35NPE (RAD-35RPE)	RAC-35NPE (RAI-35RPE)	RAC-42WPE	RAC-50WPE
POWER SOURCE			1 PHASE,50Hz,220-230V	1 PHASE,50Hz,220-230V	1 PHASE,50Hz,220-230V	1 PHASE,50/60Hz,220-240V		1 PHASE,50/60Hz,220-240V		1 PHASE,50Hz,220-230V	1 PHASE,50Hz,220-230V
COOLING	TOTAL INPUT (W)		419 (250~1,010)	549 (250~1,290)	941 (250~1,460)	595 (250~1,290)		945 (250~1,460)	875 (250~1,460)	1,120 (300~1,700)	1,471 (300~2,100)
	TOTAL AMPERES (A)		2.46-2.35	3.08-2.95	4.81-4.60	2.50-2.73		3.98-4.34	3.68-4.02	5.10-4.88	6.69-6.40
	CAPACITY	(KW)	2.00 (0.90~2.5)	2.50 (0.90~3.10)	3.50 (0.90~4.00)	2.50(0.9~3.0)		3.50(0.9~4.0)		4.20 (1.70~5.00)	5.00 (1.90~5.20)
		(B.T.U./h)	6,820 (3,070~8,530)	8,530 (3,070~10,580)	11,940 (3,070~13,650)	8,530(3,070~10,230)		11,940(3,070~13,650)		14,330 (5,800~17,060)	17,060 (6,480~17,740)
HEATING	TOTAL INPUT (W)		519 (250~970)	733 (250~1500)	1,000 (250~1,700)	875 (250~1,500)		1,260 (250~1,920)	1,230 (250~1,920)	1,317 (500~2,100)	1,558 (500~2,750)
	TOTAL AMPERES (A)		2.93-2.81	3.87-3.71	5.11-4.89	3.68-4.02		5.30-5.79	5.18-5.65	5.99-5.73	7.09-6.78
	CAPACITY	(KW)	2.50 (0.90~3.20)	3.40 (0.90~4.40)	4.20 (0.90~5.00)	3.50(0.9~5.5)	3.50(0.9~5.0)	4.80 (0.9~6.6)		5.40 (1.70~6.00)	6.00 (2.20~7.30)
		(B.T.U./h)	8,530 (3,070~10,920)	11,600 (3,070~15,010)	14,330 (3,070~17,060)	11,940(3,070~18,760)	11,940(3,070~17,060)	16,370(3,070~22,510)		18,430 (5,800~20,470)	20,470 (7,510~24,910)
DIMENSIONS (mm)		W	750(+65)※	750(+65)※	750(+65)※	750(+65)※		750(+65)※		792(+85)※	792(+85)※
		H	548	548	548	548		548		600	600
		D	288(+27.5)※	288(+27.5)※	288(+27.5)※	288(+27.5)※		288(+27.5)※		299(+47)※	299(+47)※
NET WEIGHT		(Kg)	32.5	32.5	32.5	32.5		32.5		39	39

※ Afterinstallation

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

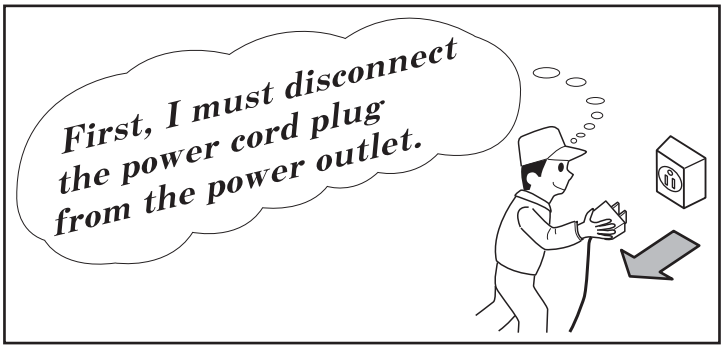
ROOM AIR CONDITIONER

OUTDOOR UNIT

Johnson Controls-Hitachi Air Conditioning Wuhu Co., Ltd.

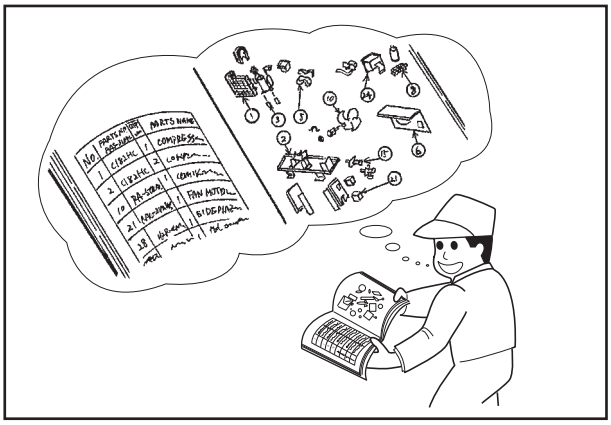
SAFETY DURING REPAIR WORK

1. In order to disassemble and repair the unit in question, be sure to disconnect the power cord plug from the power outlet before starting the work.



2. If it is necessary to replace any parts, they should be replaced with respective genuine parts for the unit, and the replacement must be effected in correct manner according to the instructions in the Service Manual of the unit.

> If the contacts of electrical parts are defective, replace the electrical parts without trying to repair them



3. After completion of repairs, the initial state should be restored.

4. Lead wires should be connected and laid as in the initial state.

5. Modification of the unit by the user himself should absolutely be prohibited.

6. ' ools and measuring instruments for use in repairs or inspection should be accurately calibrated in advance.

7. In installing the unit having been repaired, be careful to prevent the occurrence of any accident such as electrical shock, leak of current, or bodily injury due to the drop of any part.

8. ' o check the insulation of the unit, measure the insulation resistance between the power cord plug and grounding terminal of the unit.
   The insulation resistance should be 1MΩ or more as measured by a 500V DC megger.

9. The initial location of installation such as window, floor or the other should be checked for being safe enough to support the repaired unit again.
   If it is found not so strong and safe, the unit should be installed at the initial location after reinforced or at a new location.

10. Any inflammable object must not be placed about the location of installation.

11. Check the grounding to see whether it is proper or not, and if it is found improper, connect the grounding terminal to the earth.



WORKING STANDARDS FOR PREVENTING BREAKAGE OF SEMICONDUCTORS

1. Scope

The standards provide for items to be generally observed in carrying and handling semiconductors in relative manufactures during maintenance and handling thereof. (They apply the same to handling of abnormal goods such as rejected goods being returned.)

2. Object parts

(1) Microcomputer

(2) Integrated circuits (I.C.)

(3) Field effective transistor (F.E.T.)

(4) P.C. boards or the like to which the parts mentioned in (1) and (2) of this paragraph are equipped.

3. Items to be observed in handling

(1) Use a conductive container for carrying and storing of parts. (Even rejected goods should be handled in the same way.)

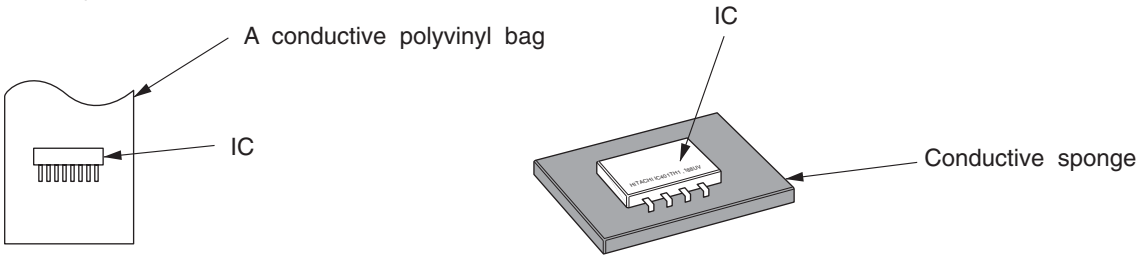


Fig. 1 Conductive container

(2) When any part is handled uncovered (in counting, packing and the like), the handling person must always use himself as a body earth. (Make yourself a body earth by passing one M ohm earth resistance through a ring or bracelet.)

(3) Be careful not to touch the parts with your clothing when you hold a part even if a body earth is being taken.

(4) Be sure to place a part on a metal plate with grounding.

(5) Be careful not to fail to turn off power when you repair the printed circuit board. At the same time, try to repair the printed circuit board on a grounded metal plate.

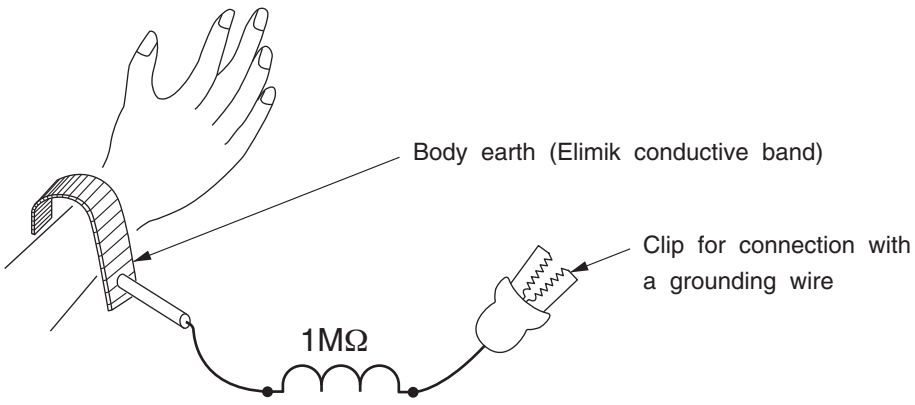


Fig. 2 Body earth

(6) Use a three wire type soldering iron including a grounding wire.

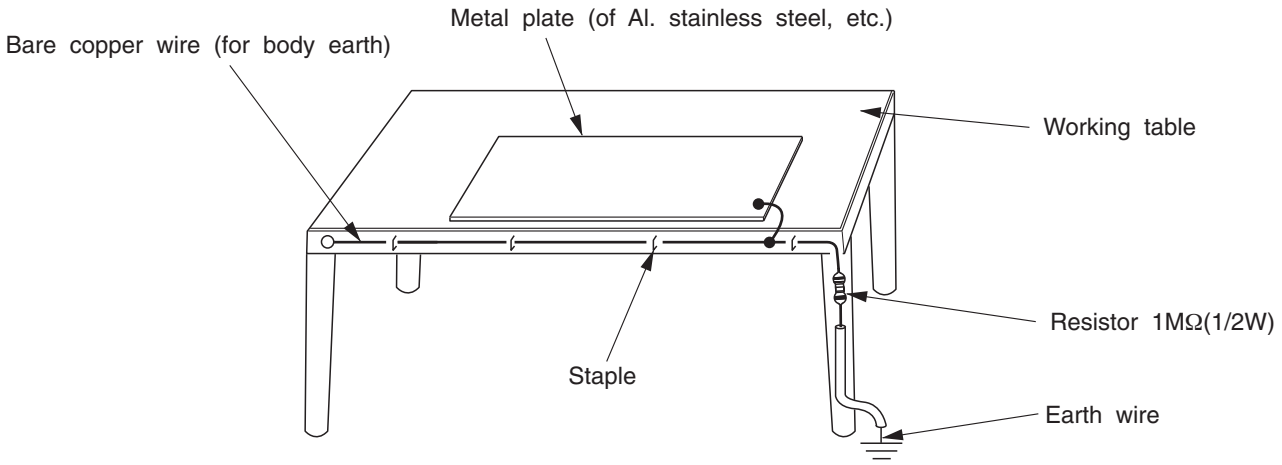


Fig.3 Grounding of the working table

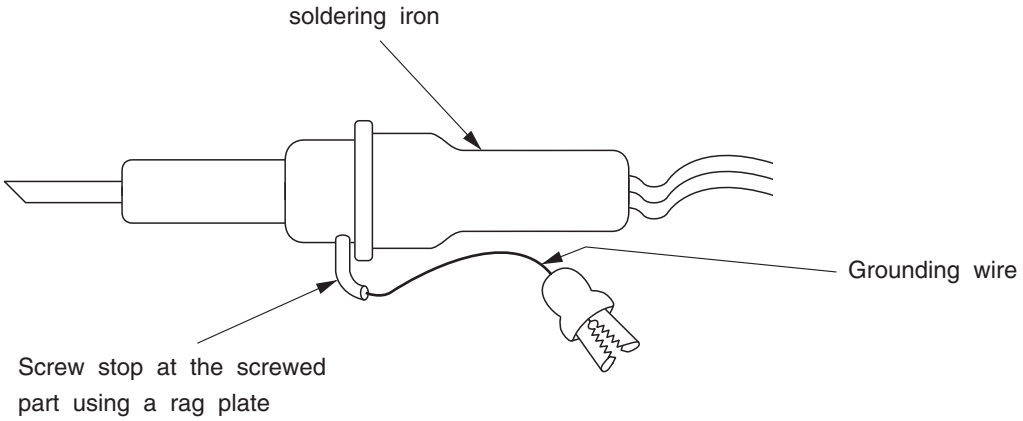


Fig.4 Grounding a solder iron

Use a high insulation mode (100V, 10MΩ or higher) when ordinary iron is to be used.

(7) In checking circuits for maintenance, inspection, or some others, be careful not to have the test probes of the measuring instrument short circuit a load circuit or the like.

⚠ CAUTION

1. In quiet or stop operation, slight flowing noise of refrigerant in the refrigerating cycle is heard occasionally, but this noise is not abnormal for the operation.

2. When it thunders near by, it is recommend to stop the operation and turn off the circuit breaker for safety.

3. In the event of power failure,the room air conditioner will restare automatically in the previously selected mode once the power is restored. In the event of power failure during TIMER operation, the room air comditioner will not start automatically. Re-press ON/OFF button after 3 minutes from when the unit off or power recovery.

4. If the room air conditioner is stopped by adjusting thermostat, or missoperation, and re-start in a moment, there is occasion that the cooling and heating operation does not start for 3 minutes, it is not abnormal and this is the result of the operation of IC delay circuit. This IC delay circuit ensures that there is no danger of blowing fuse or damaging parts even if operation is restarted accidentally.

5. This room air conditioner should not be used at the cooling operation when the outside temperature is below -10°C (14°F).

6. This room air conditioner (the reverse cycle) should not be used when the outside temperature is below –15°C (5°F).
   If the reverse cycle is used under this condition, the outside heat exchanger is frosted and efficiency falls.

7. When the outside heat exchanger is frosted, the frost is melted by operating the hot gas system, it is not trouble that at this time fan stops and the vapour may rise from the outside heat exchanger.

SPECIFICATIONS

MODEL		RAC-18/25/35WPE	RAC-25/35NPE	RAC-42/50WPE
FAN MOTOR		47W (DC120~380V)		
FAN MOTOR CAPACITOR		NO		
FAN MOTOR PROTECTOR		NO		
COMPRESSOR		GSD088SKQA6JK6		GTD130UKQA 8JT6
COMPRESSOR MOTOR CAPACITOR		NO		
OVERLOAD PROTECTOR		YES(INTERNAL)		
OVERHEAT PROTECTOR		YES		
FUSE (for MICROPROCESSOR)		15A, 2A, 3A, 3.15A		25A, 2A, 3A, 3.15A
POWER RELAY		HF161F		
POWER SWITCH		NO		
TEMPORARY SWITCH		NO		
SERVICE SWITCH		YES		
TRANSFORMER		YES		
VARISTOR		TVR10471,ERZVA9V431		
NOISE SUPPRESSOR		YES		
THERMOSTAT		YES(IC)		
REMOTE CONTROL SWITCH (LIQUID CRYSTAL)		NO		
REFRIGERANT CHARGING VOLUME (Refrigerant R32)	UNIT	870g	860g	1050g
	PIPES (MAX. 20m) (MIN. 3m)	WITHOUT REFRIGERANT BECAUSE COUPLING IS FLARE TYPE.		

Figure showing the installation of Outdoor unit

MODEL RAC-18WPE
RAC-25WPE
RAC-35WPE
RAC-25NPE
RAC-35NPE

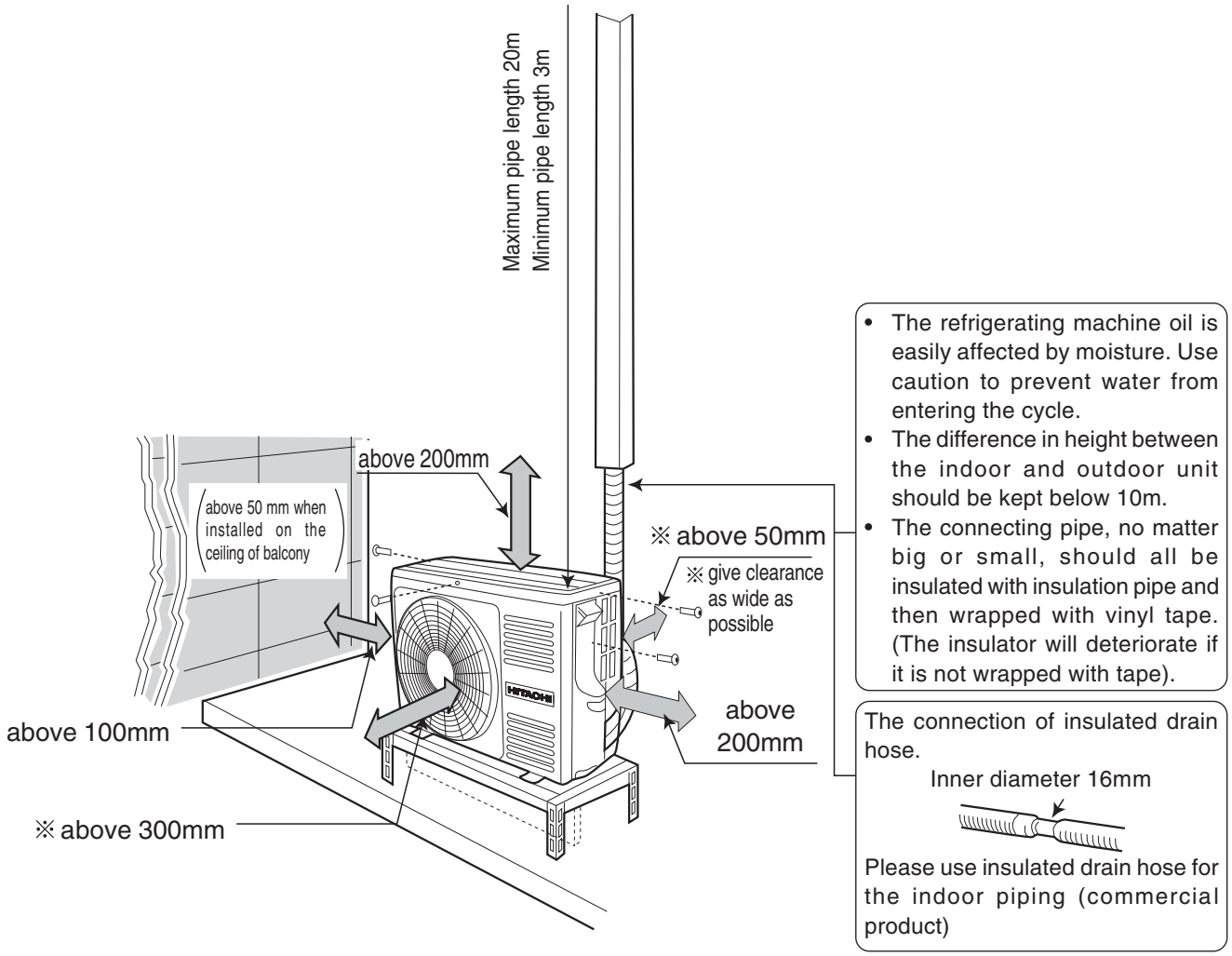
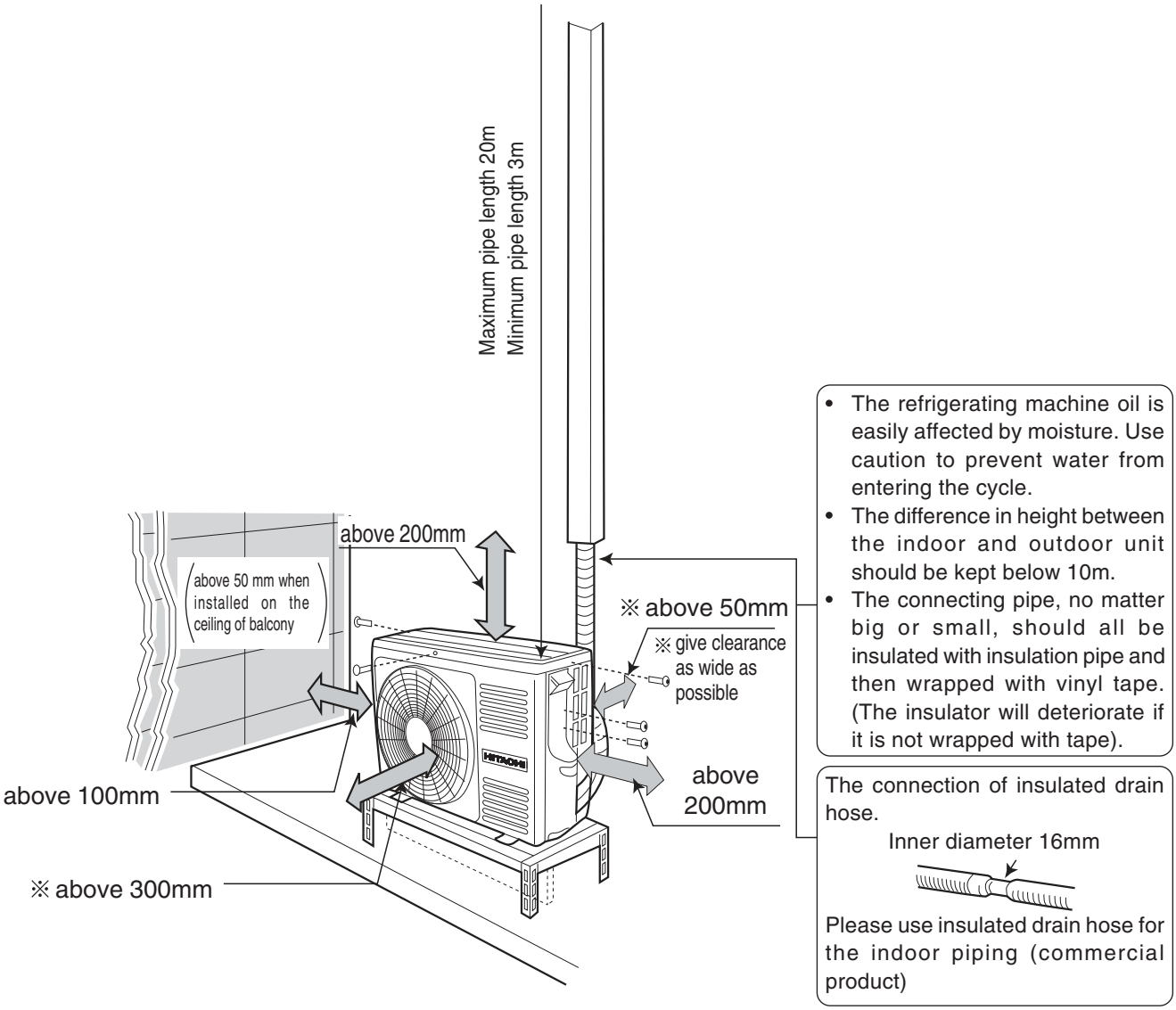


Figure showing the installation of Outdoor unit

MODEL RAC-42WPE
RAC-50WPE



- The refrigerating machine oil is easily affected by moisture. Use caution to prevent water from entering the cycle.
- The difference in height between the indoor and outdoor unit should be kept below 10m.
- The connecting pipe, no matter big or small, should all be insulated with insulation pipe and then wrapped with vinyl tape. (The insulator will deteriorate if it is not wrapped with tape).

The connection of insulated drain hose.

Inner diameter 16mm

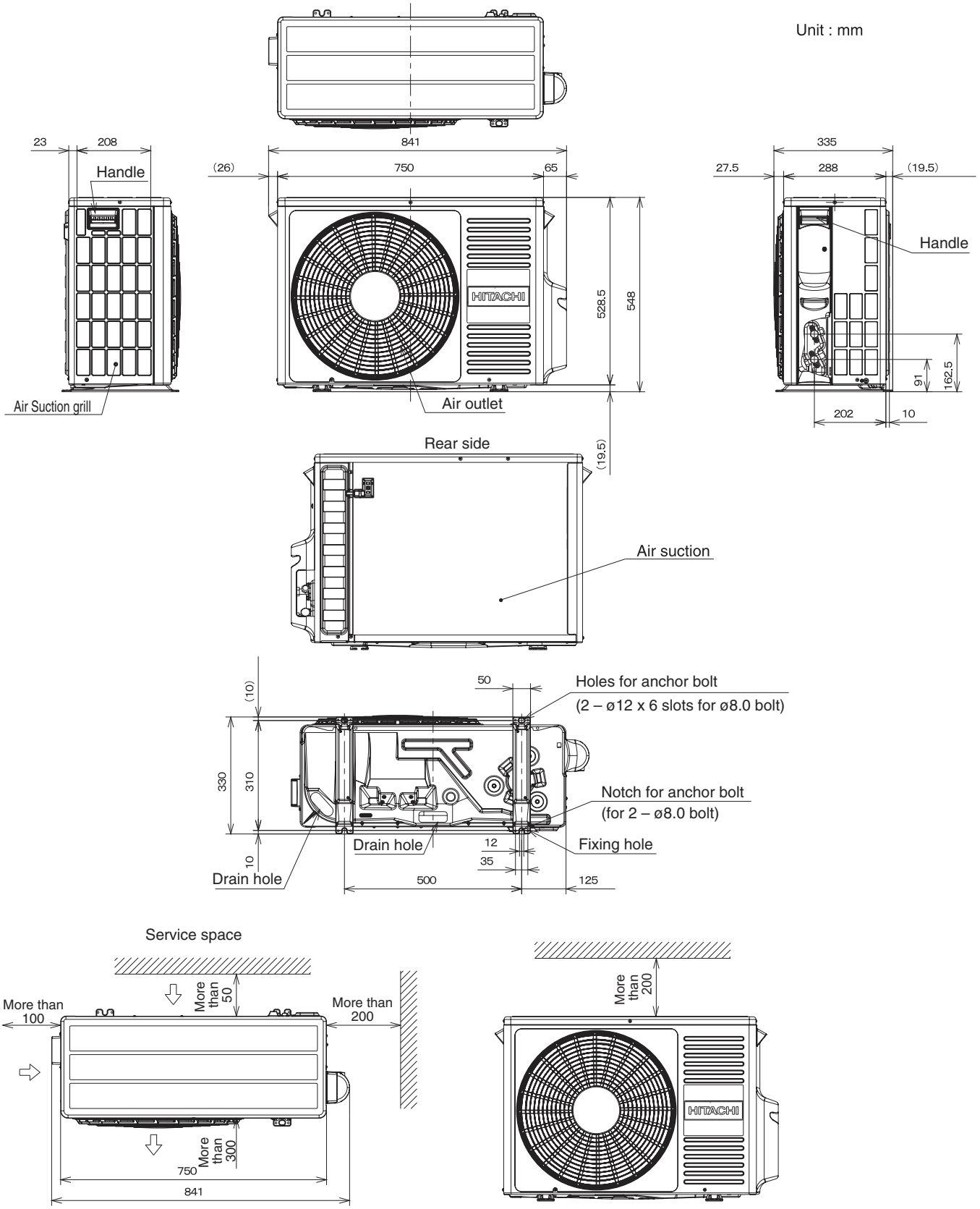
Please use insulated drain hose for the indoor piping (commercial product)

CONSTRUCTION AND DIMENSIONAL DIAGRAM

MODEL RAC-18/25/35WPE
RAC-25/35NPE

OUTDOORUNIT

Unit : mm



NOTE:

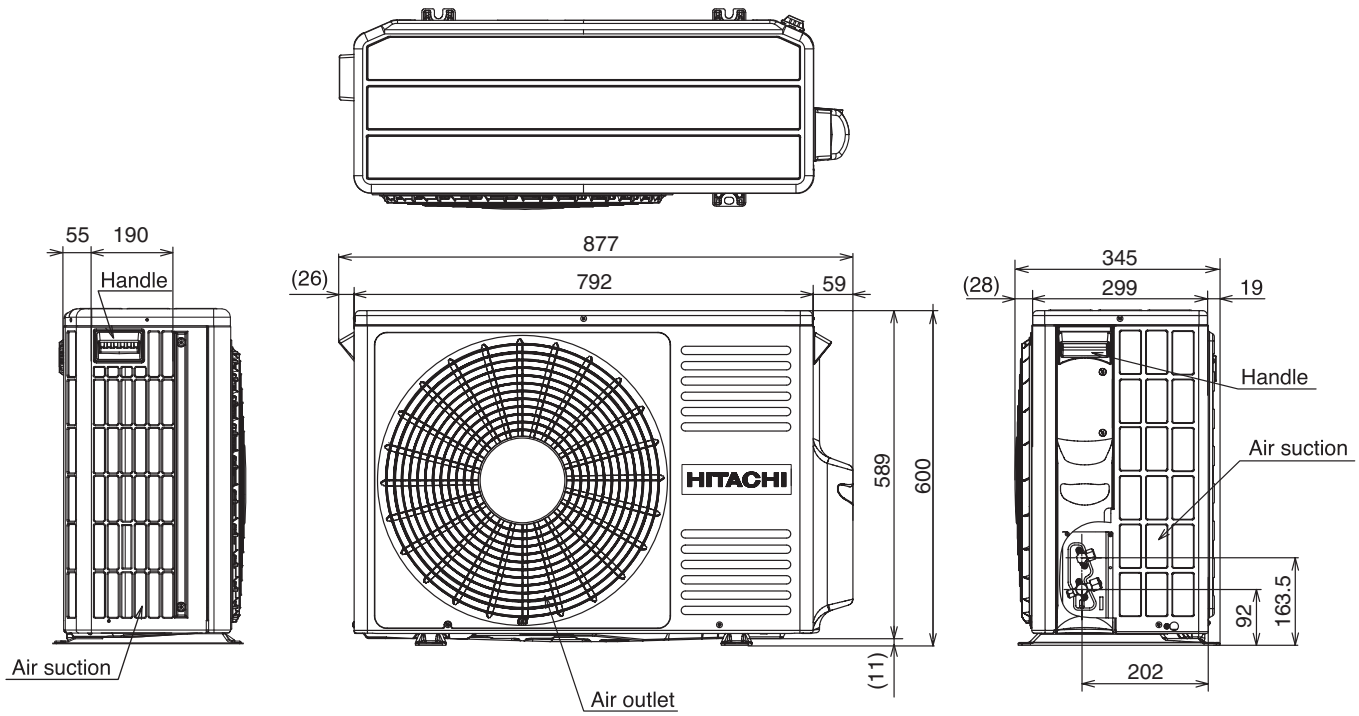
1.For outdoor unit installation , allow at least 2 sides of space around the unit ensure ventilation flue.
2.The connecting pipe , should all the insulated with insulation pipe.
3.Piping length is within 20m.
4.Height different of the piping between the indoor unit and outdoor unit should be within 10m.

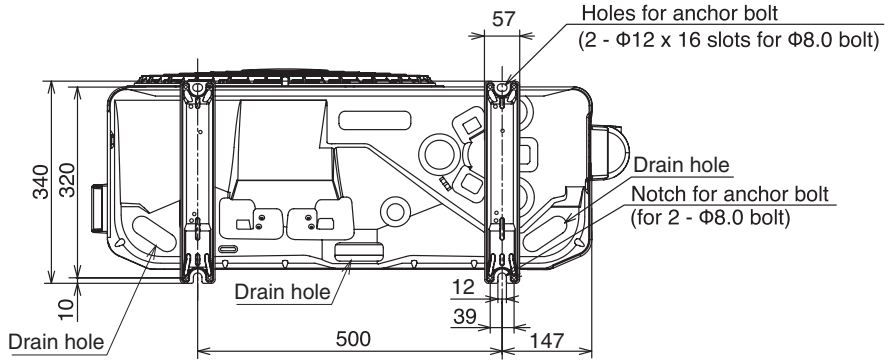
CONSTRUCTION AND DIMENSIONAL DIAGRAM

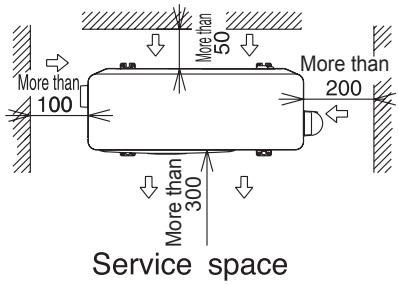
MODEL RAC-42WPE/50WPE

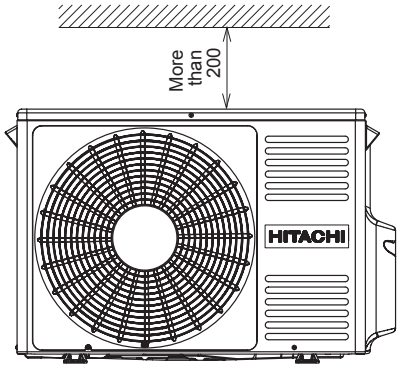
OUTDOORUNIT

Unit : mm









NOTE:

1.For outdoor unit installation , allow at least 2 sides of space around the unit ensure ventilation flue.

2.The connecting pipe , should all the insulated with insulation pipe.

3.Piping length is within 20m.

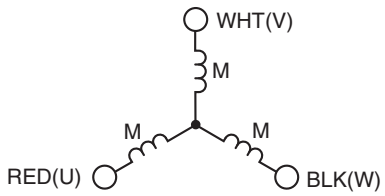
4.Height different of the piping between the indoor unit and outdoor unit should be within 10m.

MAIN PARTS COMPONENT

THERMOSTAT (Room temperature Thermistor)

FAN MOTOR

Fan Motor Specifications

MODEL	RAC-18/25/35WPE RAC-25/35NPE
POWER SOURCE	DC : 120 - 380V
OUTPUT	47W
CONNECTION	

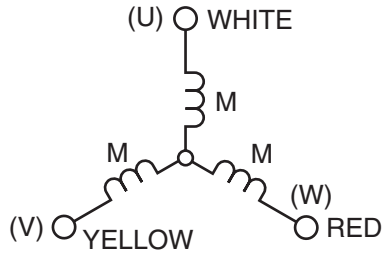
BLU : BLUE	YEL : YELLOW	BRN : BROWN	WHT : WHITE
GRY : GRAY	ORN : ORANGE	GRN : GREEN	RED : RED
BLK : BLACK	PNK : PINK	VIO : VIOLET	

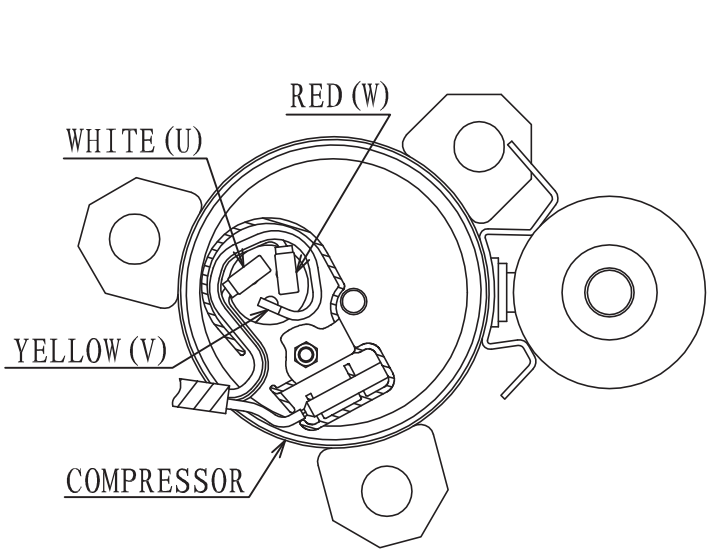
MAIN ELECTRIC COMPONENTS FOR OUTDOOR UNIT

PARTS NAME	RESISTANCE VALUE(Ω)	APPLICABLE MODELS
COIL(REVERSING VALVE)	2780Ω (0)˚C	RAC-18/25/35/42/50WPE RAC-25/35NPE
COIL(EXPANSION VALVE)	46Ω/PHASE (AT 20 ˚C)	RAC-18/25/35/42/50WPE RAC-25/35NPE
REACTOR	15 (mH) 226 mΩ MAX (20 °C)	RAC-18/25/35WPE RAC-25/35NPE
	5.3 (mH) 67 mΩ MAX (20 °C)	RAC-42/50WPE

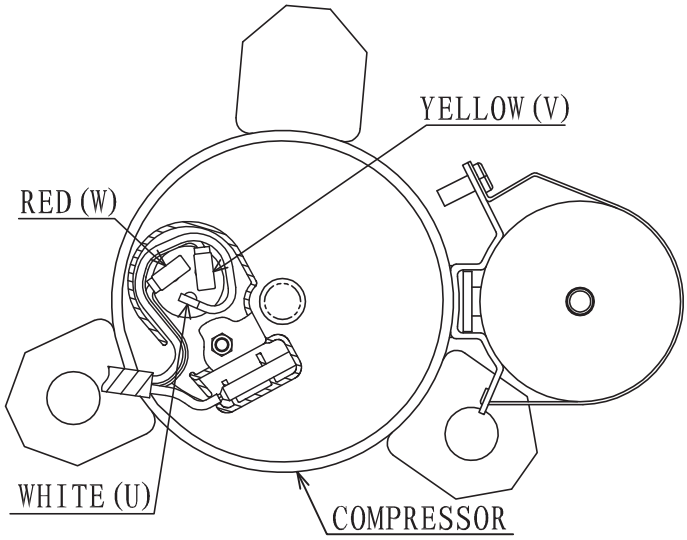
COMPRESSOR MOTOR

Compressor Motor Specifications

MODEL		RAC-18/25/35WPE RAC-25/35NPE	RAC-42/50WPE
COMPRESSOR TYPE		GSD088SKQA6JK6	GTD130UKQA8JT6
POWER SOURCE		220 - 350 V	220 - 350 V
OUTPUT		840W	1350W
CONNECTION			
RESISTANCE VALUE (Ω)	20˚C	2M= 2.167	2M= 1.354
	75˚C	—	—



RAC-18/25/35WPE
RAC-25/35NPE



RAC-42/50WPE

⚠CAUTION

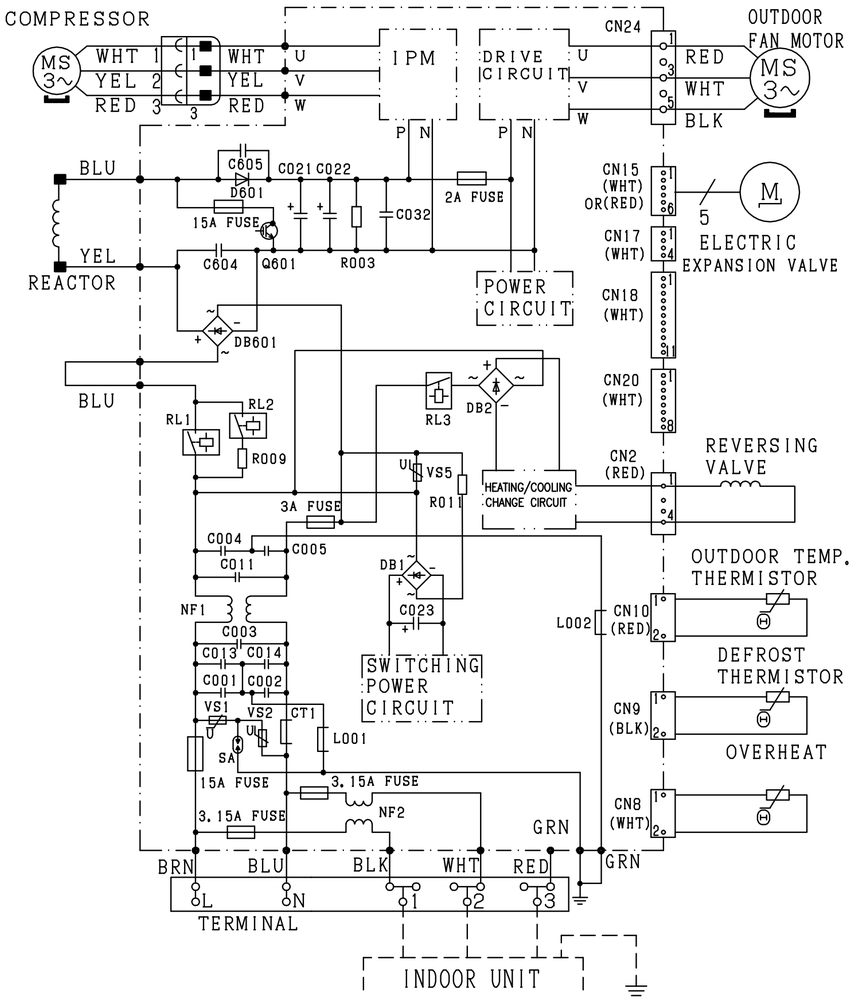
When the refrigerating cycle has been operated for a long time with the capillary tubes clogged or crushed or with too little refrigerant, check the color of the refrigerating machine oil inside the compressor. If the color has been changed conspicuously, replace the compressor.

OUTDOOR UNIT

MODEL RAC-18/25/35WPE
RAC-25/35NPE

WIRING DIAGRAM

BLU:BLUE RED:RED
BLK:BLACK WHT:WHITE
BRN:BROWN YEL:YELLOW
GRN:GREEN GRY:GRAY

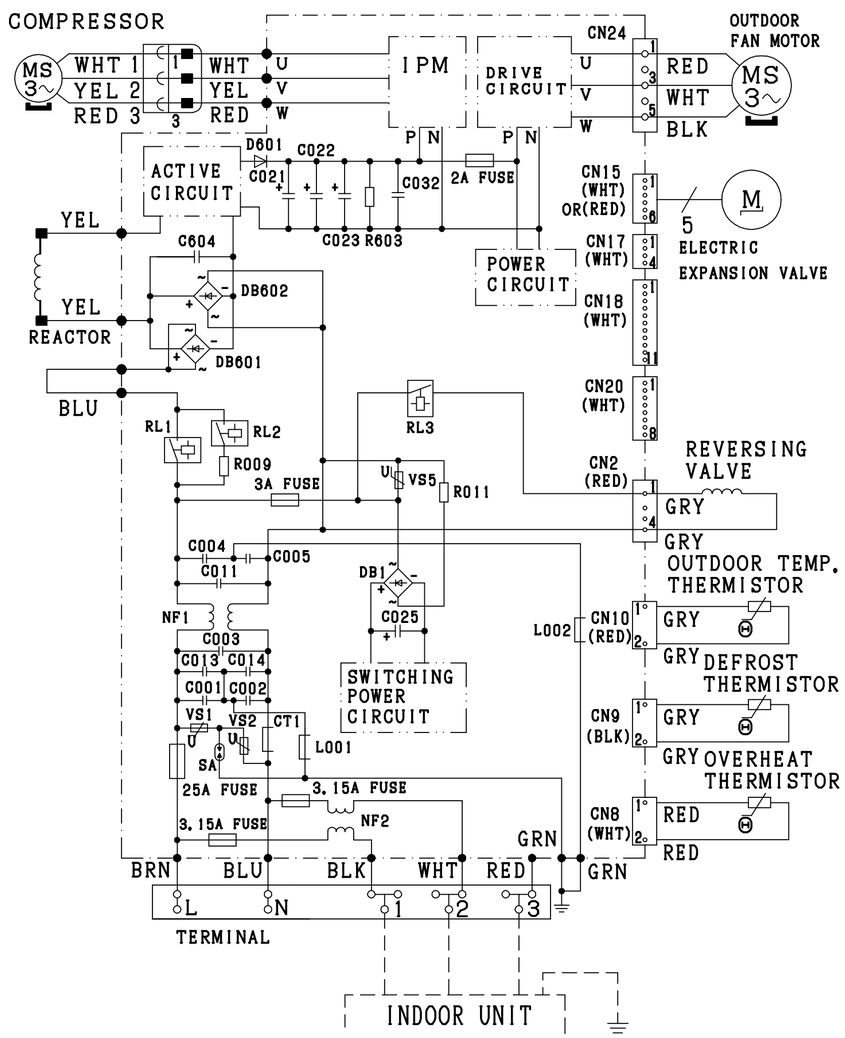


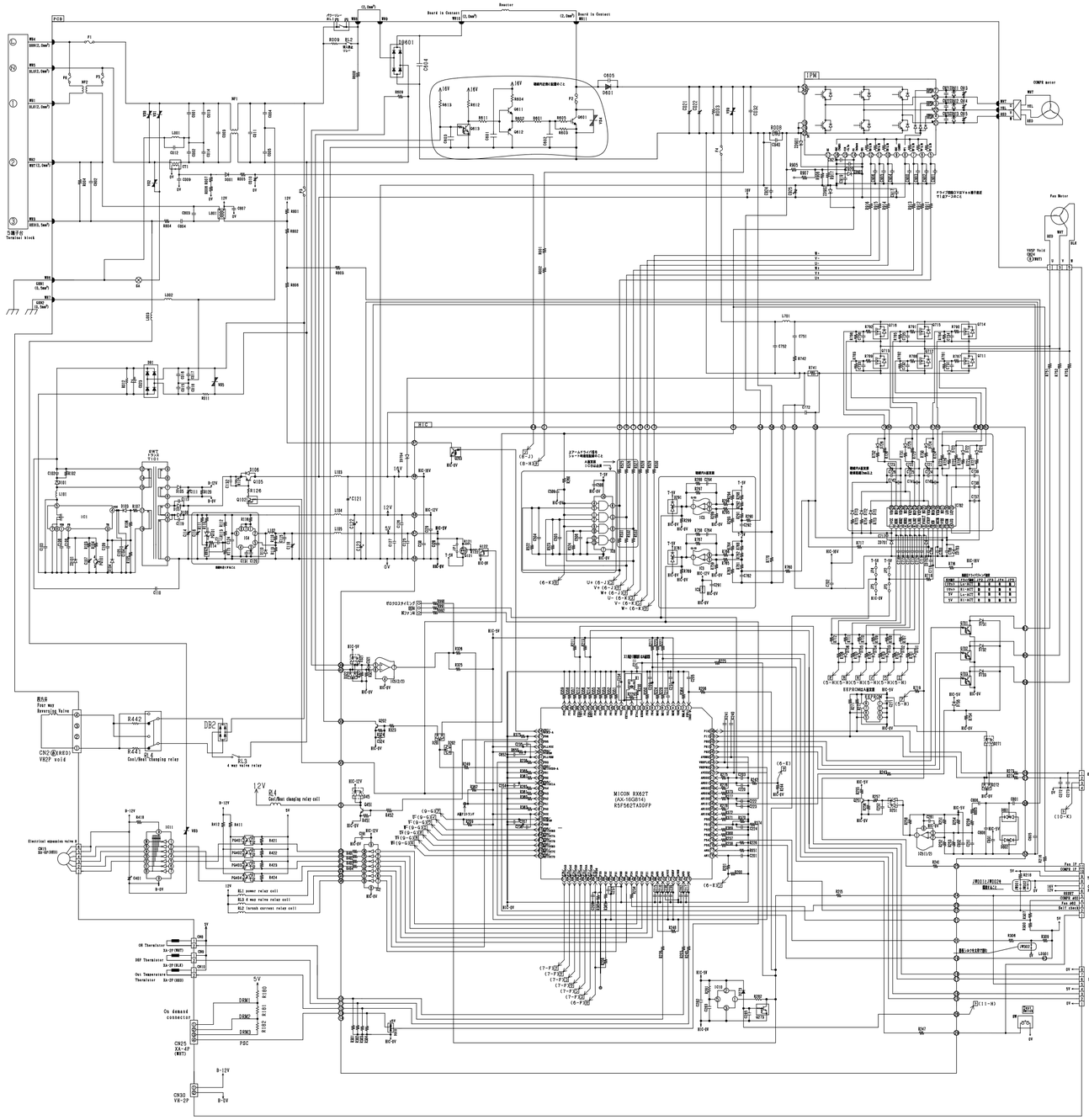
OUTDOOR UNIT

MODEL RAC-42/50WPE

WIRING DIAGRAM

BLU:BLUE RED:RED
BLK:BLACK WHT:WHITE
BRN:BROWN YEL:YELLOW
GRN:GREEN GRY:GRAY





M-PCB

抵抗 Resistance

記号 Symbol	定格/Rating	型式/Type	備考 Remarks
R001	180K 5W ㎝	A M	14
R002	180K 5W ㎝	A M	14
R003	470K 5W ㎝	A M	11
R004	470K 5W ㎝	A M	24
R005	1.5K 1W ㎝	A M	50
R006	1K 1%	A M	49
R007	1K 1%	A M	46
R008	2mΩ 5%	H M	7
R009	100 5%	H M	6
R011	2.2Ω 5%	H M	9
R012	1MΩ 5%	A M	
R102	100K 5%	C R M	10
R103	1K 5%	A M	38
R104	1.8K 5%	A M	19
R105	39K 5%	A M	20
R106	68K 5%	A M	21
R107	JUMPER	A M	
R110	1K 5%	A M	38
R111	2.2K 5%	A M	22
R112	3.3K 1%	A M	23
R113	5.1K 1%	A M	25
R114	470 5%	A M	26
R115	10K 1%	A M	27
R116	6.62K 2%	A M	28
R118	8.2K 1%	A M	29
R119	2.7K 1%	A M	30
R120	20K 5%	A M	12
R125	10K 5%	A M	42
R126	3K 5%	A M	45
R180	0Ω	A M	
R181	0Ω	A M	
R182	0Ω	A M	
R216	100 5%	A M	35
R218	1K 5%	A M	36
R300	5.1K 5%	A M	40
R306	10K 5%	A M	42
R307	1K 5%	A M	38
R309	10K 5%	A M	42
R411	7.5K 5%	A M	41
R412	7.5K 5%	A M	41
R418	JUMPER	A M	
R421	47K 5%	A M	20
R422	47K 5%	A M	20
R423	47K 5%	A M	20
R424	47K 5%	A M	20
R441	1.5K 5%	A M	5
R442	1.5K 5%	A M	5
R601	20 5%	A M	33
R602	20 5%	A M	33
R603	20K 5%	A M	12
R604	510 5%	A M	37
R605	24 5%	A M	34
R608	360K 1%	A M	13
R609	360K 1%	A M	13
R611	100 5%	A M	35
R612	5.1K 5%	A M	40
R613	10K 5%	A M	42
R741	0.24 5%	1 R M	8
R742	JUMPER	A M	
R751	430K 1%	A M	16
R752	430K 1%	A M	16
R753	430K 1%	A M	16
R781	10K 5%	A M	42
R782	10K 5%	A M	42
R783	10K 5%	A M	42
R784	10K 5%	A M	42
R785	10K 5%	A M	42
R786	10K 5%	A M	42
R787	100 5%	A M	35
R788	100 5%	A M	35
R789	100 5%	A M	35
R790	100 5%	A M	35
R791	100 5%	A M	35
R792	100 5%	A M	35
R801	680 5%	A M	18
R802	180 5%	A M	38
R803	820 1%	A M	48
R804	47 5%	A M	15
RB06	510 5%	A M	17
R905	100 1%	A M	47
R906	3.65K 1%	A M	51
R907	2K 5%	A M	39
R911	10 5%	A M	31
R912	10 5%	A M	31
R913	10 5%	A M	31
R914	10 5%	A M	31
R915	10 5%	A M	31
R916	10 5%	A M	31
R917	75 1%	A M	45

キャパシタ Capacitor

記号 Symbol	定格/Rating	型式/Type	備考 Remarks
C102	2200p 1kV	C P M	53
C103	220p 2kV	C P M	52
C104	100 50	C R M	55
C105	0.15 50	C A M	81
C106	1 50	C A M	63
C107	22 25	C A M	66
C108	0.047 50	C A M	67
C109	15p 50	C A M	60
C110		C R M	
C111	470 25	C A M	74
C113		C R M	
C114	470 25	C A M	74
C115	470p 50	C A M	77
C116	470 25	C A M	75
C117	0.1 50	C A M	81
C118	330 16	C A M	78
C119		C R M	
C120	330p 50	C A M	70
C121	100 25	C A M	69
C122	25	C R M	
C123	100 10	C A M	69
C124	0.15 50	C A M	81
C125	0.15 50	C A M	81
C126	0.15 50	C A M	81
C127	0.15 50	C A M	81
C131		C A M	
C132	47 16	C A M	
C001	0.01 4k	C R M	57
C002	0.01 4k	C R M	57
C003	0.68 4k	C R M	70
C004	0.01 4k	C R M	57
C005	0.01 4k	C R M	57
C009	0.1 50	C A M	81
C010	100 25	C A M	69
C011	4.3 16	C R M	71
C012	47 16	C A M	
C013	0.01 4k	C R M	57
C014	0.01 4k	C R M	57
C015	4.7 25	C R M	71
C016	4.7 25	C R M	
C021	375 400	D R M	58
C022	375 400	D R M	58
C023	68 450	D R M	73
C032	0.1 450	F R M	72
C272	100 50	C A M	82
C273	100 50	C A M	82
C401	100 25	D R M	64
C601		C R M	
C602	0.022 50	C A M	85
C603	2200 50	C A M	85
C604	0.01 4k	C R M	57
C605	4700 4k	C R M	56
C731	220 50	C A M	87
C732	220 50	C A M	87
C733	220 50	C A M	87
C734	220 50	C A M	87
C735	220 50	C A M	87
C736	220 50	C A M	87
C751	0.01 4k	C R M	54
C752		C R M	
C772	0.15 50	C A M	81
C802	4700 4k	C R M	56
C803	330 50	P R M	76
C804	0.1 450	F R M	60
C805	0.1 50	C A M	81
C807	0.1 50	C A M	81
C900	0.1 50	C A M	81
C901	680p 50	C A M	84
C902	680p 50	C A M	84
C903	680p 50	C A M	84
C904	680p 50	C A M	84
C905	680p 50	C A M	84
C906	680p 50	C A M	84
C913	33 25	C R M	61
C914	33 25	C R M	61
C915	33 25	C R M	61
C917		C A M	
C919	0.022 50	C A M	86
C920	0.15 50	C A M	81
C921	0.15 50	C A M	81
C922	0.15 50	C A M	81
C923	0.15 50	C A M	81
C924	0.15 50	C A M	81
C925	220 25	C R M	63
C927	220 50	C A M	87
C940	4.7 50	C A M	

ダイオード Diode

記号 Symbol	型式/Type	備考 Remarks
D101	BAR60J	94
D103		92
D104	RB721Q	118
D105	RL22	99
D106	1SS131-TTZ	104
D107	DIN1.25U	90
D108	EL1Z	118
D110	AK04	126
D001	1N4148S-A5	93
DB2	S1WB60	90
D601	D3SL60	97
D81	D2SB60A	95
D9601	LN2GX960	96

ツェナーダイオード Zener diode

記号 Symbol	型式/Type	備考 Remarks
ZD101	1SS181ZA-TE	100
ZD704	RZK052B2	101
ZD901	RZK052B2	101
ZD902	RZK052B2	101
ZD903		101
ZD911		101
ZD912		101
ZD913		101

トランジスタ Transistor

記号 Symbol	型式/Type	備考 Remarks
Q102	KRC107-AT	119
Q105	RTA20-T-AT/P	113
Q601	DTC433NCHZGS	111
Q611	RTA20-T-AT/P	113
Q612	RTA20-T-AT/P	113
Q613	KRC105-AT	114
Q711	2SP50N02F	115
Q712	2SP50N02F	115
Q713	2SP50N02F	115
Q714	2SP50N02F	115
Q715	2SP50N02F	115
Q716	2SP50N02F	115

IC

記号 Symbol	型式/Type	備考 Remarks
IC1	M1P41408	98
IC4	NJM2903	95
IC11	TD62003AP	107
REG2	R1A43-K-AT/PC	99
IPM	PSS15B4-CE(15A)	99

インダクタ Inductor

記号 Symbol	型式/Type	備考 Remarks
L001	JUMPER	54
L002	JUMPER	
L003	JUMPER	
L101	JUMPER	
L102	82H100M-3D1H	120
L103	JUMPER	
L104	JUMPER	
L105	JUMPER	
L701	JUMPER	
LB01	IF-TRANS	121
T101	RNMP4309	125
CT1	619-1299CT	106
NF1	6MM01414G	126
NF2	6MM03900	130

サージ吸収素子 Surge absorbers

記号 Symbol	型式/Type	備考 Remarks
VB1	ERZV4V043	133
VB2	ERZV4V431	136
VB3	ERZV4V471	138
VB4	ERZV4V431	133
VB5	ERZV4V431	133
VB8	450NR-120	135
VB9	450NR-120	
SA	D8S7-102MP	139
SW1	EE1201-C	140

LED

記号 Symbol	型式/Type	備考 Remarks
L930	SLR-342YCT31	93

ホトカプラ Photo coupler

記号 Symbol	型式/Type	備考 Remarks
PQ101	TLV-8170HA	117
PQ401	TLV-8170HA	117
PQ402	TLV-8170HA	117
PQ403	TLV-8170HA	117
PQ404	TLV-8170HA	117

リレー Relay

記号 Symbol	型式/Type	備考 Remarks
RL1	G4A-1A-PE	122
RL2	ALD12801	118
RL3	ALD12801	118
RL4	G5V-2	97

ヒューズ Fuse

記号 Symbol	型式/Type	備考 Remarks
F1	154xs-2	142
F2	250T3150A017	142
F3	3A-FUSE-WE1	142
F4	2A-FUSE-WE1	142
F5	3.15A-FUSE	142
F6	3.15A-FUSE	142

ヒューズクリップ Fuse Clip

記号 Symbol	型式/Type	備考 Remarks
-	EKPM1075	142
-	EKPM1076	142

コネクタ Connector

記号	型式/コメント	備考 Remarks
CN2	VH 2P(/4)	1
CN8	XA 2P	1
CN9	XA 2P	1
CN10	XA 2P	1
CN15	XA 6P	1
CN17	PH 4P	1
CN18	PH 11P	1
CN20	PH 8P	1
CN24	VH 3P(/5)	1
CN25	XA 4P	1
CN30	VH 2P	1

スイッチ Switch

記号 Symbol	型式/Type	備考 Remarks
SW	EVQP2A01K	119

ジャンパー Jumper

記号 Symbol	用/種 Extra/Pkg	型式/Type	備考 Remarks
JW001	0/Exist	A M	
JW020	0/Exist	A M	
JW922	0/No	A M	

HIC-PCB

抵抗 Resistance

記号 Symbol	定格/Rating	型式/Type	備考 Remarks
R191	10K 5%	C R	1
R192	5.1K 5%	C R	1
R200	10K 1%	C R	1
R201	510 5%	C R	1
R203	100 5%	C R	1
R206	5.1K 5%	C R	1
R208	10K 5%	C R	1
R209	10K 5%	C R	1
R211	10K 5%	C R	1
R212	390 5%	C R	1
R213	10K 5%	C R	1
R214	390 5%	C R	1
R215	10K 5%	C R	1
R217	10K 5%	C R	1
R223	10K 5%	C R	1
R224	390 5%	C R	1
R225	10K 5%	C R	1
R226	10K 5%	C R	1
R227	390 5%	C R	1
R228	390 5%	C R	1
R229	10K 5%	C R	1
R230	330 5%	C R	1
R234	100 5%	C R	1
R236	4.7K 5%	C R	1
R237	4.7K 5%	C R	1
R239	100 5%	C R	1
R240	100 5%	C R	1
R241	100 5%	C R	1
R242	100 5%	C R	1
R243	100 5%	C R	1
R244	10K 5%	C R	1
R247	100 5%	C R	1
R248	100 5%	C R	1
R249	4.7K 5%	C R	1
R251	4.7K 5%	C R	1
R252	10K 5%	C R	1
R253	10K 5%	C R	1
R254	10K 5%	C R	1
R255	10K 5%	C R	1
R256	10K 5%	C R	1
R257	1K 5%	C R	1
R258	4.7K 5%	C R	1
R259	4.7K 5%	C R	1
R260	510 5%	C R	1
R265	100 5%	C R	1
R271	5.1K 5%	C R	1
R272	10K 5%	C R	1
R273	10K 5%	C R	1
R274	10K 5%	C R	1
R275	10K 5%	C R	1
R276	390 5%	C R	1
R277	10K 5%	C R	1
R278	10K 5%	C R	1
R279	390 5%	C R	1
R280	4.7K 5%	C R	1
R281	4.7K 5%	C R	1
R282	10K 5%	C R	1
R288		C R	
R289		C R	
R290	24 5%	C R	1
R291	11K 1%	C R	1
R292	11K 1%	C R	1
R293	11K 1%	C R	1
R294	11K 1%	C R	1
R295	0	C R	1
R296	0	C R	1
R297	22K 1%	C R	1
R298	24 5%	C R	1
R299	10K 1%	C R	1
R301	3.74K 1%	C R	1
R302	8.87K 1%	C R	1
R303	8.87K 1%	C R	1
R304	1K 1%	C R	1
R305	10K 5%	C R	1
R311	6K 1%	C R	1
R312	6K 1%	C R	1
R313	6.98K 1%	C R	1
R324	34.8K 1%	C R	1
R325	10K 5%	C R	1
R326	0	C R	1
R350	10K 5%	C R	1
R351	10K 5%	C R	1
R352	10K 5%	C R	1
R353	10K 5%	C R	1
R354	10K 5%	C R	1
R355	10K 5%	C R	1
R356	10K 5%	C R	1
R357	10K 5%	C R	1
R358	10K 5%	C R	1
R359	10K 5%	C R	1
R360	10K 5%	C R	1
R361	10K 5%	C R	1
R362	10K 5%	C R	1
R363	10K 5%	C R	1
R364	10K 5%	C R	1
R365	10K 5%	C R	1
R366	10K 5%	C R	1
R367	10K 5%	C R	1
R368	10K 5%	C R	1
R369	10K 5%	C R	1
R370	10K 5%	C R	1
R371	10K 5%	C R	1
R372	10K 5%	C R	1
R373	10K 5%	C R	1
R374	10K 5%	C R	1
R375	10K 5%	C R	1
R401	10K 5%	C R	1
R402	10K 5%	C R	1
R450	10K 5%	C R	1
R451	10K 5%	C R	1
R452	5.1k 5%	C R	1
R522	10K 5%	C R	1
R523	10K 5%	C R	1
R524	10K 5%	C R	1
R525	430 5%	C R	1
R526	430 5%	C R	1
R527	430 5%	C R	1
R528	430 5%	C R	1
R529	430 5%	C R	1
R530	430 5%	C R	1
R531	0	C R	1
R532	0	C R	1
R533	0	C R	1
R650	10K 5%	C R	1
R651	10K 5%	C R	1
R701	5.9K 1%	C R	1
R702	1.5K 1%	C R	1
R703	1.5K 1%	C R	1
R704	1.5K 1%	C R	1
R705	1.5K 1%	C R	1
R706	1.5K 1%	C R	1
R707	1.5K 1%	C R	1
R708	1.5K 1%	C R	1
R709	1.5K 1%	C R	1
R710	10K 5%	C R	1
R711	10K 5%	C R	1
R712	10K 5%	C R	1
R713	10K 5%	C R	1
R714	10K 5%	C R	1
R715	10K 5%	C R	1
R716	10K 5%	C R	1
R717	10K 5%	C R	1
R718	10K 5%	C R	1
R719	0	C R	1
R721	24 5%	C R	1
R722	24 5%	C R	1
R723	24 5%	C R	1
R724	24 5%	C R	1
R725	24 5%	C R	1
R726	100 5%	C R	1
R727	100 5%	C R	1
R728	100 5%	C R	1
R729	100 5%	C R	1
R730	100 5%	C R	1
R731	100 5%	C R	1
R732	100 5%	C R	1
R733	100 5%	C R	1
R734	100 5%	C R	1
R735	100 5%	C R	1
R736	100 5%	C R	1
R737	100 5%	C R	1
R738	100 5%	C R	1
R739	100 5%	C R	1
R740	100 5%	C R	1
R741	100 5%	C R	1
R742	100 5%	C R	1
R743	100 5%	C R	1
R744	100 5%	C R	1
R745	100 5%	C R	1
R746	100 5%	C R	1
R747	100 5%	C R	1
R748	100 5%	C R	1
R749	100 5%	C R	1
R750	100 5%	C R	1
R751	100 5%	C R	1
R752	100 5%	C R	1
R753	100 5%	C R	1
R754	11K 1%	C R	1
R755		C R	
R756		C R	
R757	24 5%	C R	1
R758		C R	
R759		C R	
R760	24 5%	C R	1
R761	24 5%	C R	1
R762	100 5%	C R	1
R763	100 5%	C R	1
R764	100 5%	C R	1
R765	100 5%	C R	1
R766	100 5%	C R	1
R767	100 5%	C R	1
R768	24 5%	C R	1
R769	24 5%	C R	1
R770		C R	
R805	0	C R	1
R991	100 5%	C R	1
R992	100 5%	C R	1

キャパシタ Capacitor

記号 Symbol	定格/Rating	型式/Type	備考 Remarks
C120	0.1 16	C C	1
C190	0.1 50	C C	1
C192	0.1 50	C C	1
C193	0.1 50	C C	1
C191	0.1 25	C C	1
C201	0.1 16	C C	1
C202	0.1 16	C C	1
C203	470p 50	C C	1
C204	470p 50	C C	1
C205	470p 50	C C	1
C206	0.1 16	C C	1
C207	0.1 16	C C	1
C208	0.1 16	C C	1
C209	0.1 16	C C	1
C210	0.047 25	C C	1
C211	0.047 25	C C	1
C215	0.1 16	C C	1
C216	0.1 16	C C	1
C217	0.1 16	C C	1
C220	0.01 50	C C	1
C223	0.1 16	C C	1
C224	0.1 16	C C	1
C231	0.1 16	C C	1
C234	0.1 16	C C	1
C235	0.1 16	C C	1
C236	0.1 16	C C	1
C237	0.1 16	C C	1
C238	0.1 16	C C	1
C239	0.1 16	C C	1
C240	0.1 16	C C	1
C241	0.1 16	C C	1
C271	0.1 16	C C	1
C281	0.1 16	C C	1
C282	0.1 16	C C	1
C283	3.3 10	C C	1
C285	0.1 16	C C	1
C291	0.1 50	C C	1
C292	0.047 25	C C	1
C294		C C	
C321	0.033 50	C C	1
C324	100p 50	C C	1
C503	100p 50	C C	1
C504	100p 50	C C	1
C505	100p 50	C C	1
C506	100p 50	C C	1
C508	0.1 16	C C	1
C509	0.1 16	C C	1
C652		C C	
C703	0.33 50	C C	1
C704	0.33 50	C C	1
C730	100p 50	C C	1
C739	100p 50	C C	1
C740	100p 50	C C	1
C741	100p 50	C C	1
C742	100p 50	C C	1
C762	0.1 25	C C	1
C763		C C	
C803	0.022 50	C C	1
C804		C C	
C808	47p 50	C C	1
C931	0.1 16	C C	1
C932	0.1 16	C C	1

ダイオード Diode

記号 Symbol	型式/Type	備考 Remarks
D201	ERB16-06J	1
D202	ERB16-06J	1
D203	ERB16-06J	1
D204	ERB16-06J	1
D227	ERB16-06J	1
D228	ERB16-06J	1
D229	ERB16-06J	1
D247	EM401	1
D701		
D702		
D703		
D704		
D705		
D706		
D711	D1FK60	1
D712	D1FK60	1
D713	D1FK60	1
D721	1SS355TW	1
D722	1SS355TW	1
D723	1SS355TW	1
D724	1SS355TW	1
D725	1SS355TW	1
D726	1SS355TW	1
D731	1SS355TW	1
D732	1SS355TW	1
D733	1SS355TW	1
D735	1SS355TW	1
D761	ERB16-06J	1
D801	ERB16-06J	1
D802	ERB16-06J	1

IC

記号 Symbol	型式/Type	備考 Remarks
IC2	BA2903F-E2	1
IC5	NJM2903M	1
IC6	NJM2903M	1
IC8	74AC02SPW	1
IC10	R5F21B44SP	1
IC702	AZ1084CM-2	1
EPROM	27C020-70FVG	1
MICOM	RX62T	1

ツェナーダイオード Zener diode

記号 Symbol	型式/Type	備考 Remarks
ZD701		
ZD702		
ZD703		
ZD704		

トランジスタ Transistor

記号 Symbol	型式/Type	備考 Remarks
Q121	2SB1132T-E	1
Q122	2SA1162GRTE	1
Q202	RTC081256R	1
Q203	RTC081256R	1
Q251	RTC081256R	1
Q273	EN1102TE	1
Q451	2SD2414K-E	1
Q701	2SC1468RTL	1
Q702	2SC1468RTL	1
Q703	2SC1468RTL	1

インダクタ Inductor

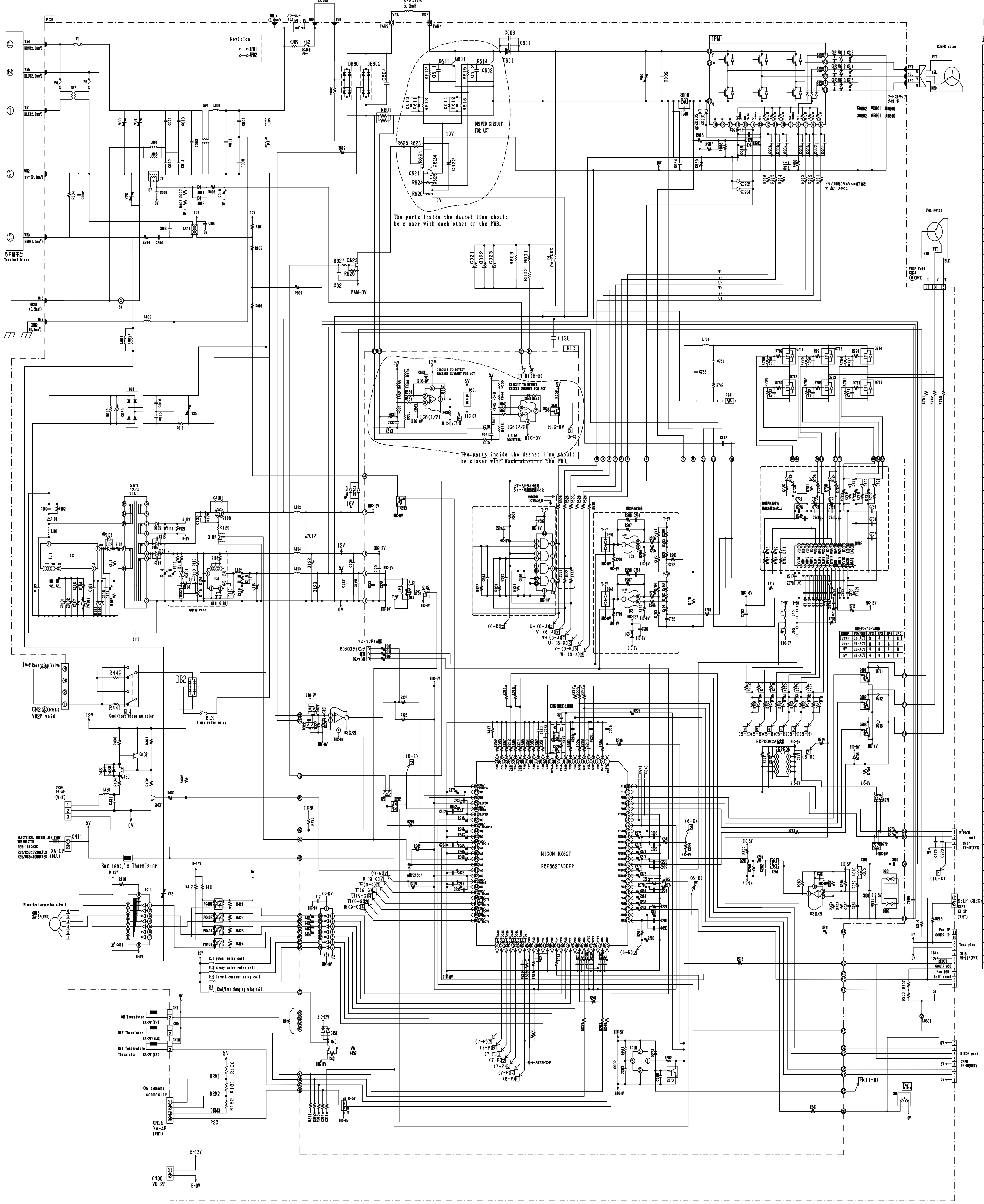
記号 Symbol	型式/Type	備考 Remarks
L201		

振動子 Oscillator

記号 Symbol	型式/Type	備考 Remarks
X1	CSTCE16M0	1

ジャンパー Jumper

記号 Symbol	用/種 Extra/Pkg	型式/Type	備考 Remarks
JP1	0/Exist	C R	1
JP2	0/No	C R	1
JP3	0/Exist	C R	1
JP4	0/Exist	C R	1
JP5	0/No	C R	1



M-PCB

抵抗 Resistance

記号 Symbol	定格/Rating 抵抗(Ω)	許容差	電力(W)	実装形態	実装基板	実装面	品#	備考 Remarks
R001	180K	0.5%	1/2	A	M		14	
R002	180K	0.5%	1/2	A	M		14	
R004	470K	5%	1/4	A	M		24	
R005	1.96K	1%	1/6	A	M		50	
R006	1K	1%	1/6	A	M		49	
R007	20	1%	1/6	A	M		46	
R008	25m	5%	10	H	M		7	
R009	100	5%	10	H	M		6	
R011	2.2	5%	5	H	M		9	
R012	1M	5%	1/4	A	M		/	
R102	100K	5%	2	R	M		10	SPR
R103	1K	5%	1/6	A	M		38	
R104	1.8K	5%	1/6	A	M		19	
R105	47K	5%	1/6	A	M		20	
R106	68K	5%	1/6	A	M		21	
R107	JUMPER			A	M			
R110	1K	5%	1/6	A	M		38	
R111	2.2K	5%	1/6	A	M		22	
R112	33K	1%	1/6	A	M		23	
R113	5.1K	1%	1/6	A	M		25	
R114	470	5%	1/2	A	M		26	
R115	10K	1%	1/6	A	M		27	
R116	0.62	2%	1/4	A	M		28	
R118	8.2K	0.5%	1/6	A	M		29	
R119	2.7K	0.5%	1/6	A	M		30	
R120	20K	5%	1/6	A	M		12	
R125	100K	5%	1/10	C	M	B	62	1608
R126	100K	5%	1/10	C	M	B	62	1608
R180	1K	1%	1/10	C	M		45	1608 △△
R181	1K	1%	1/10	C	M		45	1608 △△
R182	1K	1%	1/10	C	M		45	1608 △△
R216	100	5%	1/6	A	M		54	
R218	1K	5%	1/6	A	M		38	
R300	5.1K	5%	1/6	A	M		40	
R307	1K	5%	1/6	A	M		38	
R411	7.5K	5%	1/8	C	M	B	41	2012
R412	7.5K	5%	1/8	C	M	B	41	2012
R441	1.3K	5%	2	A	M		5	△
R442	1.3K	5%	2	A	M		5	△
R418	JUMPER			A	M			
R421	47K	5%	1/10	C	M	B	44	1608
R422	47K	5%	1/10	C	M	B	44	1608
R423	47K	5%	1/10	C	M	B	44	1608
R424	47K	5%	1/10	C	M	B	44	1608
R430	5.1K	5%	1/4	A	M		59	
R431	10K	5%	1/6	A	M		60	
R432	3K	5%	1/4	A	M		58	
R433	4.7	5%	1/4	A	M		53	
R434	JUMPER	5%	1/6	A	M			
R435	15K	5%	1/6	A	M		61	
R601	12.5m	5%	10	H	M		33	
R603	470K	5%	1/2	A	M		11	
R608	360K	1%	1/4	A	M		13	
R609	360K	1%	1/4	A	M		13	
R611	5.1	5%	1/4	A	M		37	
R612	20K	5%	1/6	A	M		12	
R613	75	5%	1/4	A	M		43	
R614	5.1	5%	1/4	A	M		37	
R615	20K	5%	1/6	A	M		12	
R616	75	5%	1/4	A	M		43	
R620	1.5K	5%	1/2	A	M		34	
R621	JUMPER			A	M			
R623	300	5%	1/6	A	M		56	
R624	1.5K	5%	1/2	A	M		34	
R625	680	5%	1/6	A	M		57	
R626	1.2K	5%	1/10	C	M	B	206	1608
R627	330	5%	1/4	A	M		55	
R741	0.24	2%	1	R	M		8	
R742	JUMPER			A	M			
R751	430K	1%	1/2	A	M		16	
R752	430K	1%	1/2	A	M		16	
R753	430K	1%	1/2	A	M		16	
R781	10K	5%	1/10	C	M	B	42	1608
R782	10K	5%	1/10	C	M	B	42	1608
R783	10K	5%	1/10	C	M	B	42	1608
R784	10K	5%	1/10	C	M	B	42	1608
R785	10K	5%	1/10	C	M	B	42	1608
R786	10K	5%	1/10	C	M	B	42	1608
R787	100	5%	1/10	C	M	B	35	1608
R788	100	5%	1/10	C	M	B	35	1608
R789	100	5%	1/10	C	M	B	35	1608
R790	100	5%	1/10	C	M	B	35	1608
R791	100	5%	1/10	C	M	B	35	1608
R792	100	5%	1/10	C	M	B	35	1608
R801	680	5%	1/4	A	M		18	
R802	180	5%	1/6	A	M		36	
R803	820	1%	1/6	A	M		48	
R804	47	5%	1/2	A	M		15	
R806	510	5%	1/4	A	M		17	
R860	22	5%	1/4	C	M	B	52	3216
R861	22	5%	1/4	C	M	B	52	3216
R862	22	5%	1/4	C	M	B	52	3216
R901	22	5%	1/4	C	M	A	52	3216
R905	100	1%	1/10	C	M	B	205	1608
R906	402	1%	1/8	C	M	B	208	2125
R907	2K	5%	1/10	C	M	B	207	1608
R911	51	5%	1/10	C	M	A	31	1608
R912	51	5%	1/10	C	M	B	31	1608
R913	51	5%	1/10	C	M	B	31	1608
R914	51	5%	1/10	C	M	B	31	1608
R915	51	5%	1/10	C	M	B	31	1608
R916	51	5%	1/10	C	M	B	31	1608
R917								

キャパシタ Capacitor

記号 Symbol	定格/Rating 容量(μF)	耐圧(V)	特性	実装形態	実装基板	実装面	品#	備考 Remarks
C102	1000p	1k	C	P	M		67	
C103	220p	2k	C	P	M		66	
C104	100	50	D	R	M		69	
C105	0.1	50	C	A	M		94	
C106	1	50	C	A	M		77	
C107	22	25	D	R	M		80	
C108	0.047	50	C	A	M		81	
C109	15p	50	C	A	M		82	
C110	/	AC250	C	R	M		/	
C111	470	25	D	R	M		88	
C113			C	R	M			
C114	470	25	D	R	M		88	
C115	470p	50	C	A	M		91	
C116	470	50	D	R	M		89	
C117	0.1	50	C	A	M		94	
C118	330	16	D	R	M		92	
C119	/		C	R	M			
C120	330p	50	C	A	M		93	
C121	100	25	D	R	M		102	
C122	/	25	D	R	M			
C123	100	10	D	R	M		103	
C124	0.1	50	C	A	M		94	FB
C125	0.1	50	C	C	M	B	95	FB 1608
C126	0.1	50	C	C	M	B	95	FB 1608
C127	0.1	50	C	C	M	B	95	FB 1608
C130	/	50	C	A	M		/	
C131	/	50	C	A	M		/	
C132	0.1	50	C	C	M	B	/	FB 1608
C001	0.01	AC250	C	R	M		71	
C002	0.01	AC250	C	R	M		71	
C003	0.68	AC310	F	H	M		84	
C004	0.01	AC250	C	R	M		71	
C005	0.01	AC250	C	R	M		71	
C009	0.1	50	C	A	M		94	
C010	100	50	D	R	M		76	
C011	3.3	AC310	F	H	M		85	
C012	/	/	C	R	M		/	
C013	0.01	AC250	C	R	M		71	
C014	0.01	AC250	C	R	M		71	
C015	4700p	AC250	C	R	M		74	
C016	4700p	AC250	C	R	M		74	
C017	4700p	AC250	C	R	M		74	
C018	4700p	AC250	C	R	M		74	
C021	500	450	D	H	M		72	
C022	500	450	D	H	M		72	
C023	500	450	D	H	M		72	
C025	68	450	D	H	M		87	
C032	0.1	450	F	H	M		86	
C272	100p	50	C	A	M		96	CH
C273	100p	50	C	A	M		96	CH
C401	100	25	D	R	M		78	
C431	/	25	C	A	M			
C601	2200p	AC	C	P	M		73	FB
C603	2200p	AC	C	P	M		73	
C604	0.01	AC	C	R	M		68	FB
C611	/	50	C	A	M			
C612	/	50	C	A	M			
C621	100p	50	C	C	M	B	64	CH 1608
C622	47	25	D	H	M		65	
C731	220p	50	C	C	M	B	101	CH 1608
C732	220p	50	C	C	M	B	101	CH 1608
C733	220p	50	C	C	M	B	101	CH 1608
C734	220p	50	C	C	M	B	101	CH 1608
C735	220p	50	C	C	M	B	101	CH 1608
C736	220p	50	C	C	M	B	101	CH 1608
C751	0.01	AC	C	R	M		68	FB
C752	/	/	C	R	M		/	
C772	0.1	50	C	C	M	B	95	FB 1608
C802	4700p	AC250	C	R	M		70	FB
C803	0.022	50	F	R	M		90	
C804	0.1	AC310	F	H	M		83	
C805	0.1	50	C	C	M	B	95	FB 1608
C807	0.1	50	C	C	M	B	95	FB 1608
C900	0.1	50	C	C	M	B	95	FB 1608
C901	680p	50	C	C	M	B	98	CH 1608
C902	680p	50	C	C	M	B	98	CH 1608
C903	680p	50	C	C	M	B	98	CH 1608
C904	680p	50	C	C	M	B	98	CH 1608
C905	680p	50	C	C	M	B	98	CH 1608
C906	680p	50	C	C	M	B	98	CH 1608
C913	33	25	D	R	M		75	
C914	33	25	D	R	M		75	
C915	33	25	D	R	M		75	
C917	/		R	A	M			
C919	0.022	50	C	C	M		100	FB
C920	0.1	50	C	C	M	B	95	FB 1608
C921	0.1	50	C	C	M	B	95	FB 1608
C922	0.1	50	C	C	M	B	95	FB 1608
C923	0.1	50	C	C	M	B	95	FB 1608
C924	0.1	50	C	C	M	B	95	FB 1608
C925	220	25	D	R	M		79	
C927	220p	50	C	C	M	B	101	CH 1608
C940	0.1	50	C	C	M	B	95	FB 1608 △

LED

記号 Symbol	型 式/Type	実装形態	実装基板	品#	備考 Remarks
LD301	SLR-342VC	R	M	114	RED

ダイオード Diode

記号 Symbol	型 式/Type	実装形態	実装基板	実装面	品#	備考 Remarks
D101	SARS01	A	M		110	
D102	DA2JF23	C	M	B	/	
D103	D1NL20U	A	M		109	
D104	RB721Q	A	M		122	
D105	D2S63	A	M		115	
D107	D1NL20U	A	M		109	
D108	EL1Z	A	M		121	
D109	DB2J314	C	M	B	186	
D110	AK04	A	M		123	
D001	1SS133/1SS120	A	M		108	
D002	DA3X101K	C	M	B	/	
D430	1SS133/1SS120	A	M		108	
D431	DA3X101K	C	M	B	/	
D601	D3OL60	H	M		113	
D611	1SS133/1SS120	A	M		108	
D612	1SS133/1SS120	A	M		108	
D613	DA3X101K	C	M	B	/	
D614	DA3X101K	C	M	B	/	
D860	D1NK60	A	M		118	
D861	D1NK60	A	M		118	
D862	D1NK60	A	M		118	
DB1	D2SB60A	H	M		111	
DB2	S1NB60	C	M		107	
DB601	D25XB60	H	M		112	
DB602	D25XB60	H	M		112	

ツェナーダイオード Zener diode

記号 Symbol	型 式/Type	実装形態	実装基板	実装面	品#	備考 Remarks
ZD101	CDMJZJ4.3C	A	M		116	
ZD102	/	C	M			ZD101パ
ZD704	TFZ-22B	C	M	B	/	
ZD705	BZX55B22	A	M		117	ZD704パ
ZD901	TFZ-22B	C	M	B	/	
ZD902	TFZ-22B	C	M	B	/	
ZD903	TFZ-22B	C	M	B	119	
ZD904	BZX55B22	A	M		117	ZD902パ
ZD905	BZX55B22	A	M		117	ZD901パ
ZD911	TFZ-22B	C	M	B	119	
ZD912	TFZ-22B	C	M	B	119	
ZD913	TFZ-22B	C	M	B	119	

トランジスタ Transistor

記号 Symbol	型 式/Type	実装形態	実装基板	実装面	品#	備考 Remarks
Q102	DTC123YK	C	M	B	125	
Q105	RRR040P03TL	C	M	B	124	
Q430	KTA200-Y-A	R	M		130	
Q431	KTC3198-GR	R	M		132	
Q432	KTA200-Y-A	R	M		130	
Q601	GT30J126	H	M		128	
Q602	GT30J126	H	M		128	
Q621	2SJ496	R	M		133	
Q623	KTC200-Y	R	M		134	
Q624	2SC1214CTZ	R	M		135	
Q625	2SA673CTZ	R	M		136	
Q711	P5F50NP2F	H	M		138	
Q712	P5F50NP2F	H	M		138	
Q713	P5F50NP2F	H	M		138	
Q714	P5F50NP2F	H	M		138	
Q715	P5F50NP2F	H	M		138	
Q716	P5F50NP2F	H	M		138	

IC

記号 Symbol	型 式/Type	実装形態	実装基板	実装面	品#	備考 Remarks
IC1	MIP4140S	H	M		141	
IC4	NJM2392D	H	M		140	
IC11	TD62083AP	H	M		142	
REG2	KIA431-A-AT/PC	R	M		143	
IPM	[illegible]	H	M		137	

インダクタ Inductor

記号 Symbol	型 式/Type	実装形態	実装基板	実装面	品#	備考 Remarks
L001	JUMPER	A	M		191	
L002	JUMPER	A	M			
L003	JUMPER	A	M			
L003A	NLCV32T4R7	C	M	B	152	3225
L004	NORMAL COIL	H	M		189	
L005	JUMPER	A	M		190	
L006	[illegible]	A	M		191	
L101	JUMPER	A	M			
L102	RCH108NP-331K	H	M		153	
L103	JUMPER	A	M			
L104	JUMPER	A	M			
L105	JUMPER	A	M			
L430	JUMPER	A	M			
L701	JUMPER	A	M			
L801	IF-TRANS	H	M		148	
T101	RRMF14389	H	M		146	△
CT1	[illegible]	H	M		147	
NF1	RRMH14149	H	M		150	△
NF2	RRMH3900	H	M		151	

サージ吸収素子 Surge absorbers

記号 Symbol	型 式/Type	実装形態	実装基板	品#	備考 Remarks
VS1	ERZVA9V431	R	M	158	
VS2	ERZVA9V431	R	M	158	
VS3	ERZVA5V471	R	M	159	
VS5	ERZVA9V431	R	M	158	
VS8	450NR-12D	H	M	157	
VS9	450NR-12D	H	M	/	
SA	[illegible]	R	M	160	
SK1	RE1201-C	H	M	161	

ホトカプラ Photo coupler

記号 Symbol	型 式/Type	実装形態	実装基板	品#	備考 Remarks
PQ101	LTV-817CHA	H	M	120	
PQ401	LTV-817CHA	H	M	120	
PQ402	LTV-817CHA	H	M	120	
PQ403	LTV-817CHA	H	M	120	
PQ404	LTV-817CHA	H	M	120	

リレー Relay

記号 Symbol	型 式/Type	実装形態	実装基板	品#	備考 Remarks
RL1	G4A-1A-PE	H	M	105	
RL2	ALD112B01	H	M	106	
RL3	ALD112B01	H	M	106	
RL4	G5V-2	H	M	104	

ヒューズ Fuse

記号 Symbol	型 式/Type	実装形態	実装基板	品#	備考 Remarks
F1	25Aヒューズ	H	M	163	
F3	3A-FUSE-WE	H	M	165	
F4	2A-FUSE-WE	H	M	166	
F5	3.15A-FUSE	H	M	164	
F6	3.15A-FUSE	H	M	164	

ヒューズクリップ Fuse Clip

記号 Symbol	型 式/Type	実装形態	実装基板	品#	備考 Remarks
F5, F6用	[illegible]	H	M	168	
F1用	[illegible]	H	M	167	

コネクタ Connector

記号	型式	実装形態	実装基板	品番	備考
CN2	VH 2P(/4)	H	M	170	赤
CN8	XA 2P	H	M	171	白
CN9	XA 2P	H	M	172	黒
CN10	XA 2P	H	M	173	赤
CN11	XA 2P	H	M	179	青
CN15	XA 6P	H	M	174	白
CN17	PH 4P	H	M	175	白
CN18	PH 11P	H	M	177	白
CN20	PH 8P	H	M	176	白
CN24	VH 3P(/5)	H	M	178	白
△ CN25	XA 4P	H	M	169	白
CN26	PA 3P	H	M	180	白
CN27	XH 2P	H	M	181	白
△ CN30	VH 2P	H	M	182	白

スイッチ Switch

記号 Symbol	型 式/Type	実装形態	実装基板	品#	備考 Remarks
SW	EVQPAE07K	H	M	155	

ジャンパー Jumper

記号 Symbol	有/無 Exist/No	実装形態	実装基板	実装面	品#	備考 Remarks
JP01	無/No	/	M	/	/	
JP02	無/No	/	M	/	/	
CJ101	無/No	/	M	B		

タブ端子 250TAB

記号 Symbol	図番 Dwg./No	実装形態	実装基板	実装面	品#	備考 Remarks
TAB3	RRPJ2142	R	M	A	192	
TAB4	RRPJ2142	R	M	A	192	

HIC-PCB

抵抗 Resistance

記号 Symbol	定格/Rating 抵抗(Ω)	許容差	電力(W)	実装形態	実装基板	実装面	品#	備考 Remarks
R121	10K	5%	1/16	C	HIC	B	12	1005
R122	5.1K	5%	1/16	C	HIC	B	16	1005
R200	10K	1%	1/16	C	HIC	A	13	1005
R201	510	5%	1/16	C	HIC	A	7	1005
R203	100	5%	1/16	C	HIC	B	8	1005
R206	5.1K	5%	1/16	C	HIC	B	16	1005
R208	10K	5%	1/16	C	HIC	B	12	1005
R209	10K	5%	1/16	C	HIC	B	12	1005
R211	10K	5%	1/16	C	HIC	A	12	1005
R212	390	5%	1/16	C	HIC	A	17	1005
R213	10K	5%	1/16	C	HIC	A	12	1005
R214	390	5%	1/16	C	HIC	A	17	1005
R215	100	5%	1/16	C	HIC	B	8	1005
R217	10K	5%	1/16	C	HIC	A	12	1005
R223	10K	5%	1/16	C	HIC	A	12	1005
R224	390	5%	1/16	C	HIC	A	17	1005
R225	5.1K	5%	1/16	C	HIC	B	16	1005
R226	10K	5%	1/16	C	HIC	B	12	1005
R227	10K	5%	1/16	C	HIC	A	12	1005
R228	390	5%	1/16	C	HIC	A	17	1005
R229	/	/	/	C	HIC	A	/	1005
R230	330	5%	1/16	C	HIC	A	48	1005
R234	100	5%	1/16	C	HIC	B	8	1005
R236	2.2K	5%	1/16	C	HIC	B	18	1005
R237	2.2K	5%	1/16	C	HIC	B	18	1005
R238	1K	5%	1/16	C	HIC	B	21	1005
R239	100	5%	1/16	C	HIC	B	8	1005
R240	100	5%	1/16	C	HIC	B	8	1005
R241	100	5%	1/16	C	HIC	B	8	1005
R242	160	5%	1/16	C	HIC	B	24	1005
R243	100	5%	1/16	C	HIC	B	8	1005
R244	3.32K	1%	1/16	C	HIC	B	25	1005
R247	100	5%	1/16	C	HIC	A	8	1005
R248	10K	5%	1/16	C	HIC	A	12	1005
R249	2.2K	5%	1/16	C	HIC	A	18	1005
R251	7.15K	1%	1/16	C	HIC	A	27	1005
R252	10K	1%	1/16	C	HIC	A	13	1005
R253	10K	1%	1/16	C	HIC	A	13	1005
R254	10K	1%	1/16	C	HIC	A	13	1005
R255	2K	5%	1/16	C	HIC	B	20	1005
R256	10K	5%	1/16	C	HIC	B	12	1005
R257	3K	5%	1/16	C	HIC	B	28	1005
R258	2.2K	1%	1/16	C	HIC	B	29	1005
R259	1K	5%	1/16	C	HIC	A	21	1005
R260	510	5%	1/16	c	HIC	B	7	1005
R265	100	5%	1/16	C	HIC	B	8	1005
R271	5.1K	5%	1/16	C	HIC	A	16	1005
R272	5.1K	5%	1/16	C	HIC	A	16	1005
R273	390	5%	1/16	C	HIC	A	17	1005
R274	390	5%	1/16	C	HIC	A	17	1005
R275	100	5%	1/16	C	HIC	A	8	1005
R276	100	5%	1/16	C	HIC	A	8	1005
R277	100	5%	1/16	C	HIC	A	8	1005
R278	100	5%	1/16	C	HIC	A	8	1005
R281	510K	5%	1/16	C	HIC	B	40	1005
R282	1K	5%	1/16	C	HIC	B	21	1005
R288	/	/	/	C	HIC	A	/	1005
R289	/	/	/	C	HIC	A	/	1005
R290	24	5%	1/16	C	HIC	A	35	1005
R291	5.11K	1%	1/16	C	HIC	A	36	1005
R292	5.11K	1%	1/16	C	HIC	A	36	1005
R293	5.11K	1%	1/16	C	HIC	A	36	1005
R294	5.11K	1%	1/16	C	HIC	A	36	1005
R295	Chip JUMPER	5%	1/16	C	HIC	A	38	1005
R296	Chip JUMPER	5%	1/16	C	HIC	A	38	1005
R297	12.1k	1%	1/16	C	HIC	A	51	1005
R298	24	5%	1/16	C	HIC	A	35	1005
R299	10K	1%	1/16	C	HIC	A	13	1005
R301	3.74K	0.5%	1/16	C	HIC	B	42	1005
R302	3.01K	0.5%	1/16	C	HIC	B	43	1005
R303	3.01K	0.5%	1/16	C	HIC	B	43	1005
R304	1K	1%	1/16	C	HIC	B	23	1005 △
R305	10K	5%	1/16	C	HIC	A	12	1005
R311	12.7K	1.0%	1/16	C	HIC	B	52	1005
R321	1.8K	1%	1/16	C	HIC	B	44	1005
R322	1.8K	1%	1/16	C	HIC	B	44	1005
R325	10K	5%	1/16	C	HIC	A	12	1005
R326	Chip JUMPER	5%	1/16	C	HIC	A	38	1005
R350	10K	5%	1/16	C	HIC	A	12	1005
R351	10K	5%	1/16	C	HIC	A	12	1005
R352	10K	5%	1/16	C	HIC	A	12	1005
R353	10K	5%	1/16	C	HIC	A	12	1005
R354	10K	5%	1/16	C	HIC	A	12	1005
R355	10K	5%	1/16	C	HIC	A	12	1005
R356	10K	5%	1/16	C	HIC	A	12	1005
R357	10K	5%	1/16	C	HIC	A	12	1005
R358	10K	5%	1/16	C	HIC	A	12	1005
R359	10K	5%	1/16	C	HIC	A	12	1005
R360	10K	5%	1/16	C	HIC	B	12	1005
R361	10K	5%	1/16	C	HIC	A	12	1005
R362	10K	5%	1/16	C	HIC	A	12	1005
R364	10K	5%	1/16	C	HIC	B	12	1005
R365	10K	5%	1/16	C	HIC	B	12	1005
R366	10K	5%	1/16	C	HIC	B	12	1005
R367	10K	5%	1/16	C	HIC	B	12	1005
R368	10K	5%	1/16	C	HIC	B	12	1005
R369	10K	5%	1/16	C	HIC	B	12	1005
R370	10K	5%	1/16	C	HIC	B	12	1005
R371	10K	5%	1/16	C	HIC	B	12	1005
R372	10K	5%	1/16	C	HIC	B	12	1005
R373	10K	5%	1/16	C	HIC	A	12	1005
R374	1K	5%	1/16	C	HIC	B	21	1005
R375	10K	5%	1/16	C	HIC	B	12	1005
R401	1K	5%	1/16	C	HIC	B	21	1005
R402	1K	5%	1/16	C	HIC	B	21	1005
R403	1K	5%	1/16	C	HIC	B	21	1005
R404	1K	5%	1/16	C	HIC	B	21	1005
R436	5.1K	5%	1/16	C	HIC	A	16	1005
R437	10K	5%	1/16	C	HIC	A	12	1005
R451	10K	5%	1/16	C	HIC	B	12	1005
R452	5.1K	5%	1/16	C	HIC	B	16	1005
R522	10K	5%	1/16	C	HIC	B	12	1005
R523	10K	5%	1/16	C	HIC	B	12	1005
R524	10K	5%	1/16	C	HIC	B	12	1005
R525	430	5%	1/16	C	HIC	B	45	1005
R526	430	5%	1/16	C	HIC	B	45	1005
R527	430	5%	1/16	C	HIC	B	45	1005
R528	430	5%	1/16	C	HIC	A	45	1005
R529	430	5%	1/16	C	HIC	A	45	1005
R530	430	5%	1/16	C	HIC	A	45	1005
R531	Chip JUMPER	5%	1/16	C	HIC	B	38	1005
R532	Chip JUMPER	5%	1/16	C	HIC	B	38	1005
R533	Chip JUMPER	5%	1/16	C	HIC	B	38	1005
R630	24	5%	1/16	C	HIC	A	35	1005
R631	5.11K	1%	1/16	C	HIC	A	36	1005
R632	5.11K	1%	1/16	C	HIC	A	36	1005
R633	5.11K	1%	1/16	C	HIC	A	36	1005
R634	5.76K	1%	1/16	C	HIC	A	31	1005
R635	24	5%	1/16	C	HIC	A	35	1005
R636	24	5%	1/16	C	HIC	A	35	1005
R637	21.5K	1%	1/16	C	HIC	A	32	1005
R638	24	5%	1/16	C	HIC	A	35	1005
R639	10K	1%	1/16	C	HIC	A	13	1005
R640	24	5%	1/16	C	HIC	A	35	1005
R641	3.3K	1%	1/16	C	HIC	A	33	1005
R642	5.11K	1%	1/16	C	HIC	A	36	1005
R643	5.11K	1%	1/16	C	HIC	A	36	1005
R644	5.11K	1%	1/16	C	HIC	A	36	1005
R645	CHIP JUMPER	5%	1/16	C	HIC	A	38	1005
R646	CHIP JUMPER	5%	1/16	C	HIC	A	38	1005
R647	51K	1%	1/16	C	HIC	A	34	1005
R648	24	5%	1/16	C	HIC	A	35	1005
R649	43.2k	1%	1/16	C	HIC	A	47	1005
R650	5.1K	1%	1/16	C	HIC	A	22	1005
R651	1K	5%	1/16	C	HIC	B	21	1005
R652	510	5%	1/16	C	HIC	A	7	1005
R653	24	5%	1/16	C	HIC	A	35	1005
R654	24	5%	1/16	C	HIC	A	35	1005
R655	24	5%	1/16	C	HIC	A	35	1005
R656	24	5%	1/16	C	HIC	A	35	1005
R657	20K	5%	1/16	C	HIC	A	19	1005
R701	1.5K	5%	1/16	C	HIC	B	41	1005
R702	1.5K	5%	1/16	C	HIC	B	41	1005
R703	1.5K	5%	1/16	C	HIC	B	41	1005
R704	1.5K	5%	1/16	C	HIC	B	41	1005
R705	1.5K	5%	1/16	C	HIC	B	41	1005
R706	1.5K	5%	1/16	C	HIC	B	41	1005
R707	20K	5%	1/16	C	HIC	B	19	1005
R708	20K	5%	1/16	C	HIC	B	19	1005
R709	20K	5%	1/16	C	HIC	B	19	1005
R710	20K	5%	1/16	C	HIC	B	19	1005
R711	20K	5%	1/16	C	HIC	B	19	1005
R712	20K	5%	1/16	C	HIC	B	19	1005
R713	10	5%	1/4	C	HIC	B	49	3216
R714	10	5%	1/4	C	HIC	B	49	3216
R715	10	5%	1/4	C	HIC	B	49	3216
R716	1M	5%	1/10	C	HIC	B	50	1608
R717	1K	5%	1/16	C	HIC	A	21	1005
R718	Chip JUMPER	5%	1/16	C	HIC	B	38	1005
R719	Chip JUMPER	5%	1/16	C	HIC	B	38	1005
R721	2K	5%	1/16	C	HIC	A	20	1005
R722	2K	5%	1/16	C	HIC	A	20	1005
R723	2K	5%	1/16	C	HIC	A	20	1005
R724	2K	5%	1/16	C	HIC	A	20	1005
R725	2K	5%	1/16	C	HIC	A	20	1005
R726	2K	5%	1/16	C	HIC	A	20	1005
R727	100	5%	1/16	C	HIC	A	8	1005
R728	100	5%	1/16	C	HIC	A	8	1005
R729	100	5%	1/16	C	HIC	A	8	1005
R730	100	5%	1/16	C	HIC	A	8	1005
R731	100	5%	1/16	C	HIC	A	8	1005
R732	100	5%	1/16	C	HIC	A	8	1005
R754	11K	1%	1/16	C	HIC	B	30	1005
R758	/	/	/	C	HIC	A	/	1005
R759	/	/	/	C	HIC	A	/	1005
R760	24	5%	1/16	C	HIC	A	35	1005
R761	5.11K	1%	1/16	C	HIC	A	36	1005
R762	5.11K	1%	1/16	C	HIC	A	36	1005
R763	5.11K	1%	1/16	C	HIC	A	36	1005
R764	5.11K	1%	1/16	C	HIC	A	36	1005
R765	Chip JUMPER	5%	1/16	C	HIC	A	38	1005
R766	Chip JUMPER	5%	1/16	C	HIC	A	38	1005
R767	18.7K	1%	1/16	C	HIC	A	46	1005
R768	24	5%	1/16	C	HIC	A	35	1005
R769	10K	1%	1/16	C	HIC	A	13	1005
R770	/	/	/	C	HIC	A	/	1005
R805	Chip JUMPER	5%	1/16	C	HIC	A	38	1005
R990	100	5%	1/16	C	HIC	A	8	1005
R991	100	5%	1/16	C	HIC	A	8	1005
R992	100	5%	1/16	C	HIC	A	8	1005

キャパシタ Capacitor

記号 Symbol	定格/Rating 容量(μF)	耐圧(V)	特性	実装形態	実装基板	実装面	品#	備考 Remarks
C128	0.1	16	C	C	HIC	B	55	1005
C129	0.1	25	C	C	HIC	B	59	1608
C133	0.1	25	C	C	HIC	B	59	1608
C191	0.1	25	C	C	HIC	B	63	1608
C201	0.1	16	C	C	HIC	A	55	1005
C202	0.1	16	C	C	HIC	B	55	1005
C203	/	/	/	/	HIC	/	/	1005
C204	470p	50	C	C	HIC	A	60	CH 1005
C205	0.047	25	C	C	HIC	B	54	1005
C206	470p	50	C	C	HIC	B	60	CH 1005
C207	470p	50	C	C	HIC	A	60	CH 1005
C209	0.1	16	C	C	HIC	A	55	1005
C210	0.1	16	C	C	HIC	B	55	1005
C211	0.047	25	C	C	HIC	B	54	1005
C215	/	/	C	C	HIC	A	/	1005
C216	0.1	16	C	C	HIC	B	55	1005
C217	0.1	16	C	C	HIC	B	55	1005
C218	0.1	16	C	C	HIC	B	55	1005
C220	0.01	25	C	C	HIC	B	70	1005
C222	/	/	/	/	HIC	/	/	1005
C223	1000p	50	C	C	HIC	B	68	1005
C224	0.1	16	C	C	HIC	B	55	1005
C231	0.1	16	C	C	HIC	B	55	1005
C234	0.1	16	C	C	HIC	B	55	1005
C235	0.1	16	C	C	HIC	B	55	1005
C236	0.1	16	C	C	HIC	B	55	1005
C237	0.1	16	C	C	HIC	B	55	1005
C238	0.1	16	C	C	HIC	B	55	1005
C239	0.1	16	C	C	HIC	B	55	1005
C240	0.1	16	C	C	HIC	B	55	1005
C241	0.1	16	C	C	HIC	B	55	1005
C251	2200p	50	C	C	HIC	A	61	CH 1608
C252	0.068	25	C	C	HIC	B	62	1608
C271	0.1	16	C	C	HIC	A	55	1005
C281	0.1	16	C	C	HIC	B	55	1005
C282	0.1	16	C	C	HIC	A	55	1005
C283	0.22	16	C	C	HIC	B	57	1608
C285	0.1	16	C	C	HIC	A	55	1005
C291	0.1	25	C	C	HIC	A	59	1608
C292	0.047	25	C	C	HIC	A	54	1005
C294	/	/	/	/	HIC	/	/	1005
C321	0.033	50	C	C	HIC	B	65	1608
C430	0.1	16	C	C	HIC	A	55	1005
C432	0.1	16	C	C	HIC	B	55	1005
C504	100p	50	C	C	HIC	B	76	CH 1005
C505	100p	50	C	C	HIC	B	76	CH 1005
C506	100p	50	C	C	HIC	B	76	CH 1005
C508	0.1	16	C	C	HIC	B	55	1005
C509	220p	50	C	C	HIC	B	67	1005
C631	0.047	25	C	C	HIC	A	54	1005
C632	0.047	25	C	C	HIC	A	54	1005
C641	0.047	25	C	C	HIC	A	54	1005
C652	/	50	/	/	HIC	A	/	1005
C653	0.1	16	C	C	HIC	B	55	1005
C702	0.33	25	C	C	HIC	B	74	2125
C703	2200p	50	C	C	HIC	B	75	1005
C704	1000p	50	C	C	HIC	A	68	1005
C706	0.1	16	C	C	HIC	B	55	1005
C711	100p	50	C	C	HIC	A	73	CH 1608
C712	100p	50	C	C	HIC	A	73	CH 1608
C713	100p	50	C	C	HIC	A	73	CH 1608
C714	100p	50	C	C	HIC	A	73	CH 1608
C715	100p	50	C	C	HIC	A	73	CH 1608
C716	100p	50	C	C	HIC	A	73	CH 1608
C717	/	/	/	/	HIC	B	/	2125
C718	/	/	/	/	HIC	B	/	1608
C721	10	25	D	C	HIC	A	72	WR
C722	10	25	D	C	HIC	A	72	WR
C723	10	25	D	C	HIC	A	72	WR
C724	0.1	25	C	C	HIC	A	63	1608
C725	0.1	25	C	C	HIC	A	63	1608
C726	0.1	25	C	C	HIC	A	63	1608
C737	100p	50	C	C	HIC	B	73	1608
C738	100p	50	C	C	HIC	B	73	1608
C739	100p	50	C	C	HIC	B	73	1608
C740	100p	50	C	C	HIC	A	73	1608
C741	100p	50	C	C	HIC	A	73	1608
C742	100p	50	C	C	HIC	A	73	1608
C762	0.01	25	C	C	HIC	A	70	1005
C764	/	/	/	/	HIC	A	/	1005
C801	0.022	50	C	C	HIC	A	69	1608
C806	0.022	50	C	C	HIC	A	69	1608
C808	47p	50	C	C	HIC	A	66	CH 1005
C931	0.1	16	C	C	HIC	A	55	1005
C932	0.1	16	C	C	HIC	A	55	1005

ダイオード Diode

記号 Symbol	型 式/Type	実装形態	実装基板	実装面	品#	備考 Remarks
D201	KDS181-RTK/P	C	HIC	B	79	
D202	KDS181-RTK/P	C	HIC	B	79	
D251	KDS184-RTK/P	C	HIC	B	82	
D271	KDS184-RTK/P	C	HIC	B	82	
D272	KDS181-RTK/P	C	HIC	B	79	
D273	1SS352TPH3F	C	HIC	A	85	
D291	KDS226-RTK/P	C	HIC	A	83	
D310	KDS226-RTK/P	C	HIC	B	83	
D321	KDS184-RTK/P	C	HIC	B	82	
D322	KDS181-RTK/P	C	HIC	B	79	
D451	BAV70	C	HIC	B	78	
D631	KDS226-RTK/P	C	HIC	A	83	
D641	1SS352TPH3F	C	HIC	A	85	
D701	/	/	HIC	B	/	
D702	/	/	HIC	B	/	
D703	/	/	HIC	B	/	
D704	/	/	HIC	B	/	
D705	/	/	HIC	B	/	
D706	/	/	HIC	B	/	
D711	D1FK60	C	HIC	A	84	
D712	D1FK60	C	HIC	A	84	
D713	D1FK60	C	HIC	A	84	
D721	1SS355VM	C	HIC	B	80	
D722	1SS355VM	C	HIC	B	80	
D723	1SS355VM	C	HIC	B	80	
D724	1SS355VM	C	HIC	A	80	
D725	1SS355VM	C	HIC	A	80	
D726	1SS355VM	C	HIC	A	80	
D731	1SS355VM	C	HIC	B	80	
D732	1SS355VM	C	HIC	B	80	
D733	1SS355VM	C	HIC	B	80	
D735	1SS355VM	C	HIC	B	80	
D761	KDS226-RTK/P	C	HIC	A	83	
D801	KDS226-RTK/P	C	HIC	A	83	
D802	KDS226-RTK/P	C	HIC	A	83	

IC

記号 Symbol	型 式/Type	実装形態	実装基板	実装面	品#	備考 Remarks
IC2	BA12003BF-E2	S	HIC	B	101	
IC3	NJM2742M	S	HIC	A	102	
IC5	NJM2903E	S	HIC	A	105	
IC6	μPC4742G2	S	HIC	A	104	
IC8	74AHC08PW	S	HIC	A	106	
IC10	R3112N421C-TR	S	HIC	B	100	
IC702	6ED003L06-F2	S	HIC	A	103	
E²PROM	S-24C32CI-T8T1U3	S	HIC	A	99	
MICON	RX62T	S	HIC	A	97	

ツェナーダイオード Zener diode

記号 Symbol	型 式/Type	実装形態	実装基板	実装面	品#	備考 Remarks
ZD701	/	/	HIC	/	/	
ZD702	/	/	HIC	B	/	
ZD703	/	/	HIC	B	/	

トランジスタ Transistor

記号 Symbol	型 式/Type	実装形態	実装基板	実装面	品#	備考 Remarks
Q121	RQ5E035AT	C	HIC	B	92	
Q122	RN1115TE85L	C	HIC	B	93	
Q203	DTC143EEBTL	C	HIC	B	90	
Q251	KTC3875SGR	C	HIC	B	88	
Q273	RN1102TE	C	HIC	A	91	
Q451	2SC2411K-R	C	HIC	B	94	
Q641	RN1102TE	C	HIC	A	91	
Q701	DTC114EEBTL	C	HIC	A	89	
Q702	DTC114EEBTL	C	HIC	A	89	
Q703	DTC114EEBTL	C	HIC	A	89	

インダクタ Inductor

記号 Symbol	型 式/Type	実装形態	実装基板	実装面	品#	備考 Remarks
L810	/	/	HIC	/	/	

発振子 Oscillator

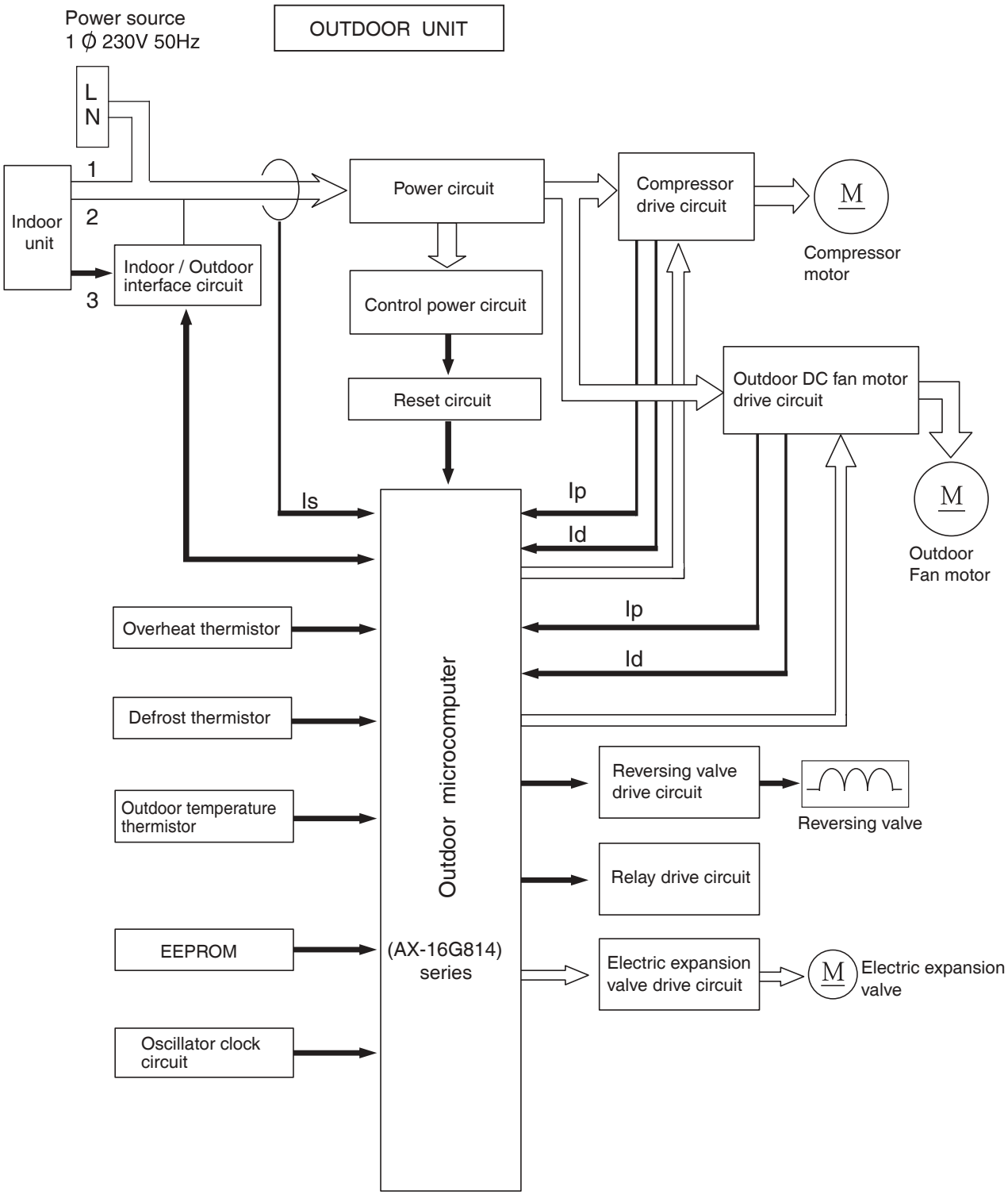
記号 Symbol	型 式/Type	実装形態	実装基板	実装面	品#	備考 Remarks
X1	CSTCE12M5G	C	HIC	A	96	12.5MHz

ジャンパー Jumper

記号 Symbol	有/無 Exist/No	実装形態	実装基板	実装面	品#	備考 Remarks
JP1	無/No	/	HIC	/	/	1005
JP2	無/No	/	HIC	/	/	1005
JP3	有/Exist	C	HIC	A	38	1005
JP4	有/Exist	C	HIC	A	38	1005
JP5	無/No	C	HIC	A	/	1005

BLOCK DIAGRAM

MODEL RAC-18/25/35/42/50WPE
RAC-25/35NPE

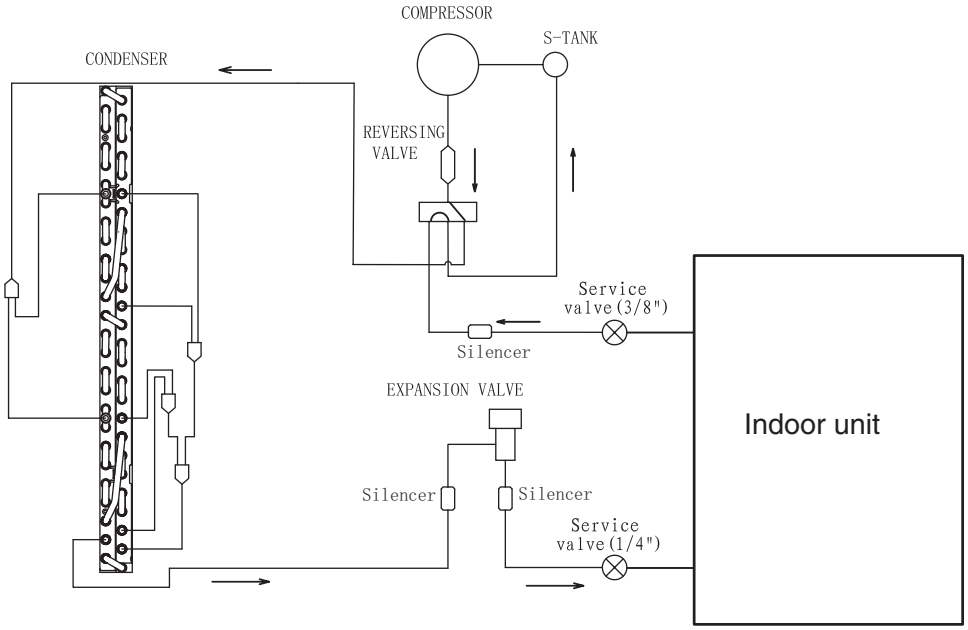


REFRIGERATING CYCLE DIAGRAM

MODEL RAC-18/25/35WPE
RAC-25/35NPE

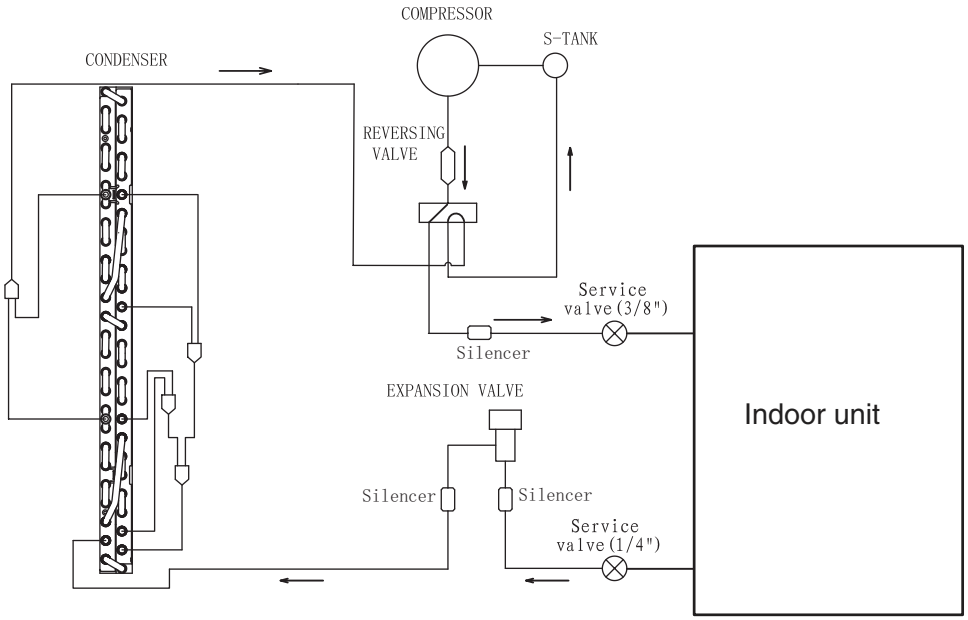
COOLING CYCLE

OUTDOOR UNIT



HEATING CYCLE

OUTDOOR UNIT

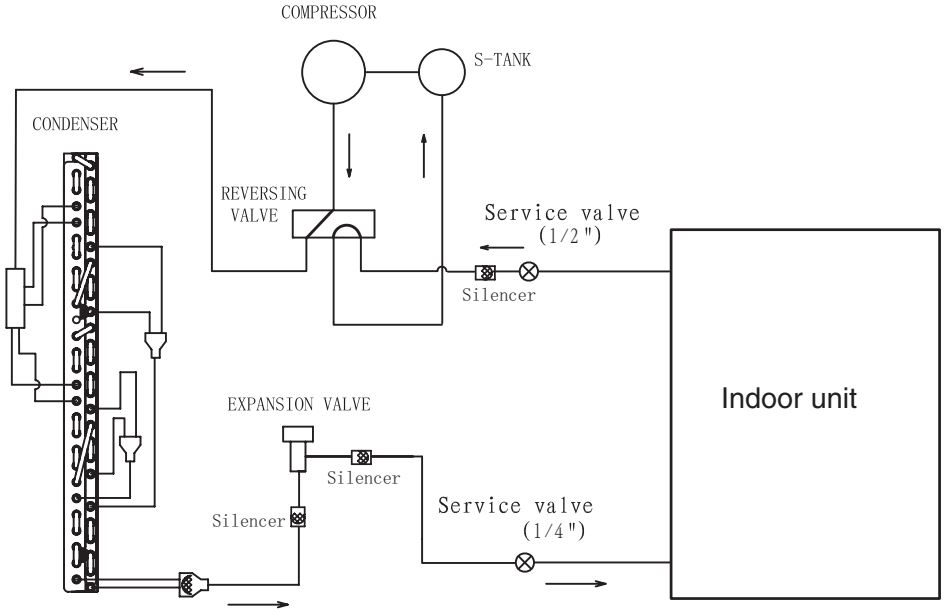


REFRIGERATING CYCLE DIAGRAM

MODEL RAC-42/50WPE

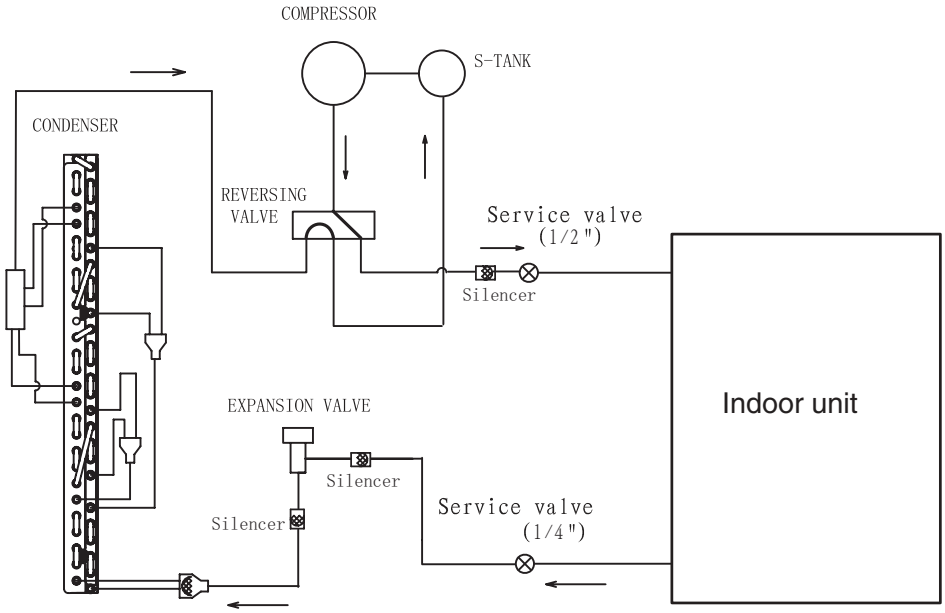
COOLING CYCLE

OUTDOOR UNIT



HEATING CYCLE

OUTDOOR UNIT



Procedure for Disassembly and Reassembly

OUTDOOR UNIT

MODEL RAC-18/25/35WPE
RAC-25/35NPE

1. Electrical parts

(1) Remove the service value cover lock screws and lower the cover to remove it.
(2) Remove the top cover lock screw and raise the cover to remove it.

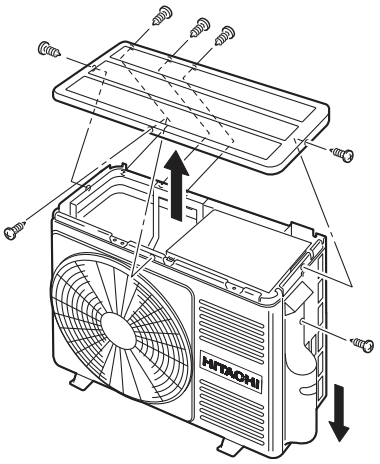


Fig. 1

(3) Remove the electrical box lock screw.
(4) Remove the terminal cover lock screw.

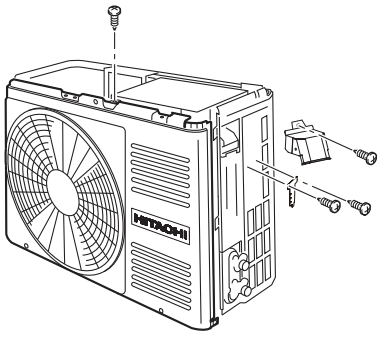


Fig. 2

(5) Remove each connector and earth cable from the lead wire. Then,remove the electrical box.

OUTDOOR UNIT

MODEL RAC-42/50WPE

1. Electrical parts

(1) Remove the service value cover lock screws and lower the cover to remove it.
(2) Remove the top cover lock screw and raise the cover to remove it.

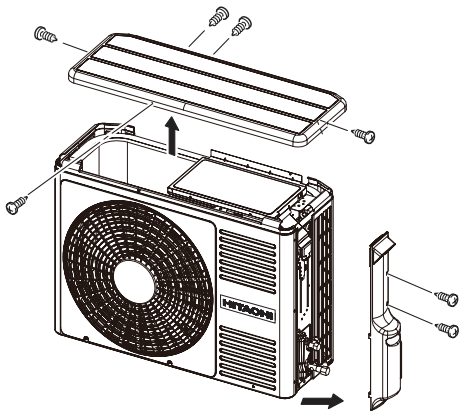


Fig. 3

(3) Remove the electrical box lock screw.
(4) Remove the terminal cover lock screw.

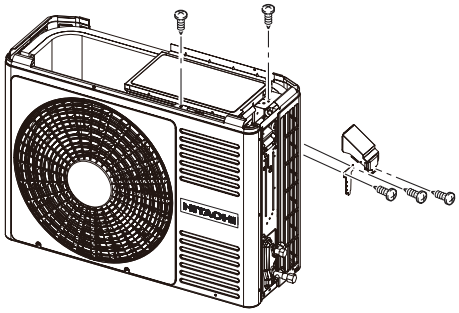


Fig. 4

(5) Remove each connector and earth cable from the lead wire. Then,remove the electrical box.

DESCRIPTION OF MAIN CIRCUIT OPERATION

MODEL RAC-18/25/35WPE
RAC-25/35NPE

1. Power Circuit

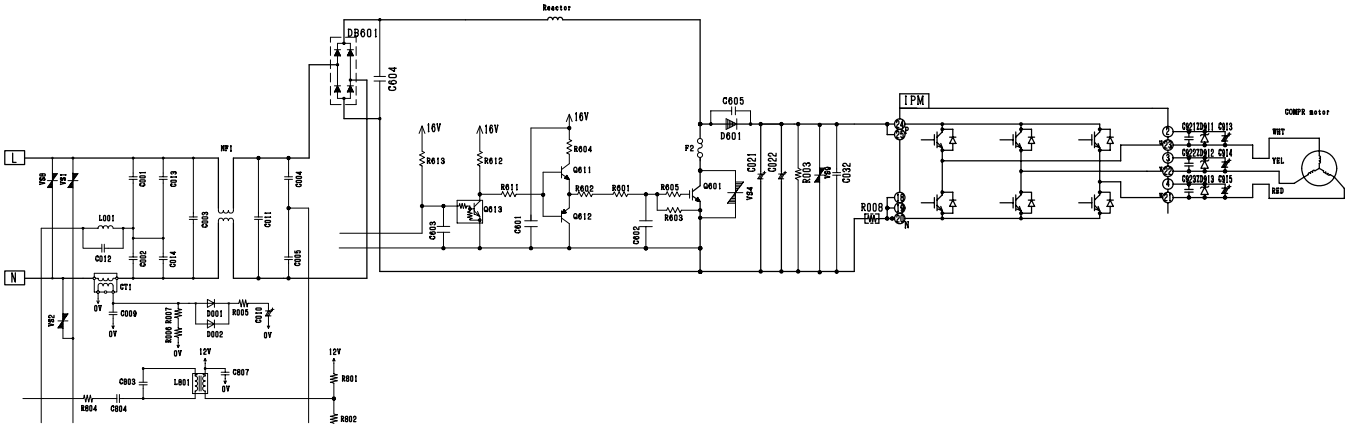


Fig 1-1

※ This circuit full-wave rectifies 230VAC applied between terminals L and N and boosts it to a required voltage with the IPM to create a DC voltage.

The voltage become 300-330V when the compressor is operated.

※ Main parts

（1） Intelligence Power Module (IPM)

A module that constitute by an inverter part.

（2） Diode Stack（DB601）

These rectify the 230VAC from terminal L and N to a DC power supply.

<Reference>

※ In case of Intelligence Power Module malfunction or connection failure immediately after compressor starts, its may stop due to error of [abnormal low speed], [switching failure],[Ip stop] and others.

<Reference>

※ If diode stack (DB601) are faulty, DC voltage may not be generated and the compressor may not operate at all. Also be aware that the 15A fuse might have blown.

(3) Smoothing capacitors (C021-C022,375μF ,420V)

※ This smoothes (averages) the voltage rectified by the diode stack.

(4) IGBT to improve efficiency (Q601)

※ It will improve the efficiency during compressor load become heavy when current flow thru the chopper period of Q601.

2. Power circuit (Low voltage)

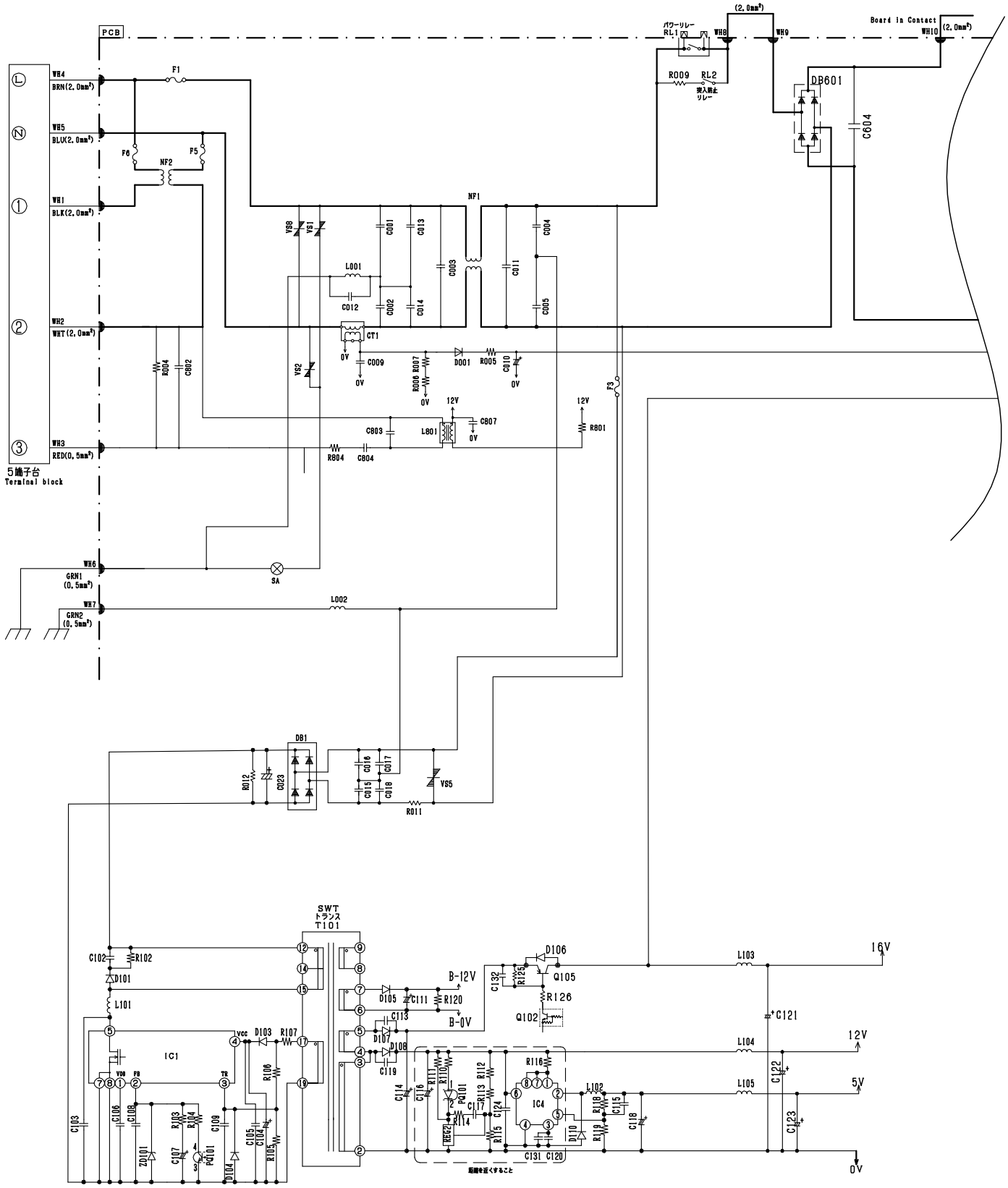


Fig. 2-1

- The 230V AC voltage is rectified to DC voltage (B-12V,16V,12V,5V) pass through switching control IC (ICI), switching transformer.
  (1) B-12V Power supply for electrical expansion valve.
  (2) 16V Power supply for IPM driver circuit of compressor and fan motor, IGBT action.
  (3) 12V Power supply for 4 way valve relay, power relay, inrush current relay,motor current amplification,
  (4) 5V Power supply for microcomputer, peripheral circuits.

Main parts

(1) C001,C002,C003,C004,C005,C011,C013,C014, NF1

These absorb electrical noise generated during operation of compressor and also absorb external noise entering from power line to protect electronic parts.

(2) Surge Absorber, Varistor1,2,5,8.

These absorbs external power surge.

(2) IC4
DC/DC convertor IC (DC12V → DC5V).

3. P.W.B. for power circuit

Voltage specification of power circuit as shown in below table.

〈Checking point〉

Output	Spec	Main load	Measuring point	Example of possible failure mode.
5V O/P	5 ± 0.4V	Micon, Thermistor	Tester⊕ : L105 (JUMPER) Tester⊖ : D110 (EARTH)	Outdoor not operate, no blinking indication
12V O/P	12 ± 0.5V	Micon, IC2, 3, 4 Relay circuit	Tester⊕ : L104 (JUMPER) Tester⊖ : D110 (EARTH)	Outdoor not operate, no blinking indication
16V O/P	$15.5^{+1.5V}_{-1.0V}$	IPM for Comp IPM for DC fan	Tester⊕ : L103 (JUMPER) Tester⊖ : D110 (EARTH)	Stop : LD301 3, 4 or 12 times blinking
B-12V O/P	$13^{+2.5V}_{-1.0V}$	Expansion valve	Tester⊕ : R120 (B-12V) Tester⊖ : R120 (B-0V)	Stop : LD301 5 times blinking

※ Power circuit for P.W.B. can consider normal if the result is satisfied with above specification.

4. Reversing valve (4-way valve) control circuit

- This model is equipped with a reversing valve (4-way Valve).
- The reversing valve (4-way Valve) "slides" the valve in the specified direction for each operating mode and switches the route of refrigerant and holds the route with a built-in permanent magnet.
- According to an operation command from the indoor unit microcomputer, the reversing valve (4-way Valve) control circuit applies current to the reversing valve (4-way Valve) coil in the specified direction, for each operating mode and slides the valve.
- Just before the compressor starts operation, the current is applied twice at the interval of 1 sec as shown in Fig. 4-1.
- During forced cooling operation, just after the forced cooling switch turns on, the current is applied twice at the interval of 1 sec as shown in Fig. 4-1.
- When the operation stops, the position of the valve before the stop is held.

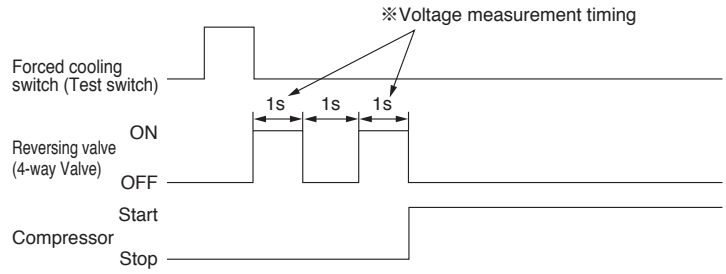


Fig. 4-1

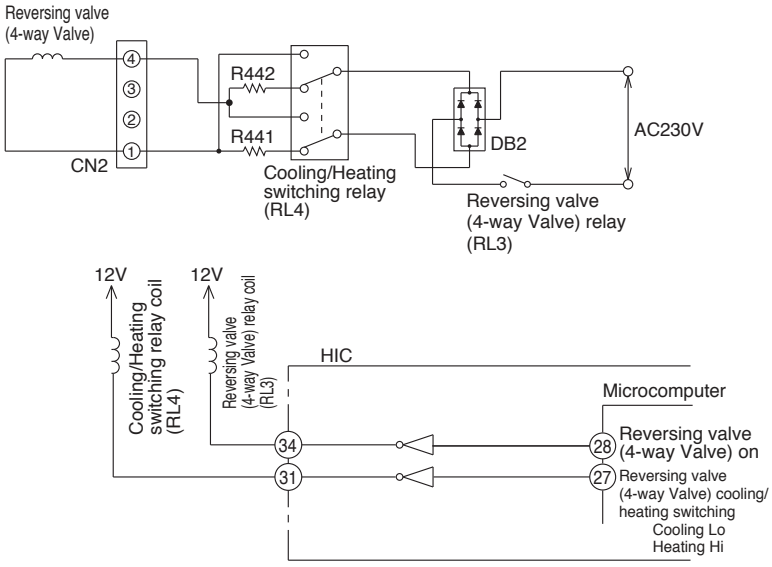


Fig. 4-2

- Before checking the application of current to the reversing valve (4-way Valve), disconnect the connector (CN2) and measure the resistance of both ends of the connector, to see if it is [2500Ω±10%]. Only when the resistance is normal, check the application of current using the following procedures.
  If the resistance is abnormal, it is caused by either; breakage of a lead wire, or failure of the reversing valve (4-way Valve).

- The voltage, when measured by a tester during the application of current to the reversing valve (4-way Valve) (when the voltage is measured)
  ※Switches the indoor unit to the "Ion Mist operation and air cleaning operation", and keep pressing the "Test switch" of the outdoor unit electrical part from 1 sec to below 5 sec (while the self-diagnosis lamp LED301 is on).
  Afterwards, when the "Test switch" is released, the application of current starts after 1 sec elapses. (Forced cooling operation)

Operating mode		Cooling operation (including forced cooling operation)	(Reference) Heating operation
Tester and CN2 terminal connection point		⊕ terminal of tester to CN2 pin ④ ⊖ terminal of tester to CN2 pin ①	⊕ terminal of tester to CN2 pin ① ⊖ terminal of tester to CN2 pin ④
Types of testers	Analog tester	The tester indicates about 80 VDC and returns to 0 V, and indicates about 80 VDC again.	The tester indicates about 160 VDC and returns to 0 V, and indicates about 160 VDC again.
	Digital tester	The tester indicates a large value for an instant and returns to 0 V, and indicates a large value again.	The tester indicates a large value for an instant and returns to 0 V, and indicates a large value again.

※In each operating mode, if the tester is reverse-connected to the CN2 terminal, the tester indicates a value on the – (negative) side.

- At the voltage measurement timing, when the voltage is measured with a tester, if the tester indicates the values as shown in the table above, the circuit is functioning normally. (Each tester indicates values differently. Since it is often difficult to read the values of a digital tester, it is recommended to measure voltage with an analog tester.)

※Since the current is applied only twice in 1 sec, if the timing is missed, correct operations cannot be measured.

※If the main body of the reversing valve (4-way Valve) is functioning normally, it clicks twice synchronously with the voltage measurement timing.
If this sound is heard, the reversing valve (4-way Valve) is functioning normally.

※If the checking of the application of current becomes abnormal, it is a failure of an electrical part.

5. Temperature Detection Circuit

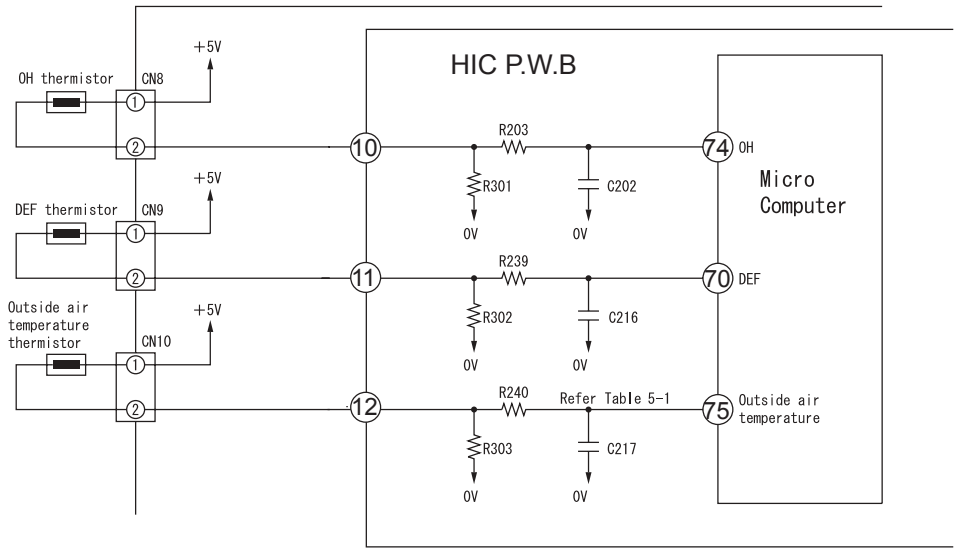


Fig.5-1

- OH thermistor circuit detect the temperature at the surface of compressor head, DEF thermistor circuit detect the defrosting operation temperature.
- A thermistor is a negative resistor element which has characteristics that the higher(lower) the temperature, the lower(higher) the resistance.
- When the compressor is heated, the resistance of the OH thermistor becomes low and ⊕ 5V is divided by OH thermistor and R301 and the voltage at pin ⑦④ of microcomputer.
- Compare the voltage at microcomputer pin ⑦④ and setting value stored inside. If the value exceed the set value, microcomputer will judge that the compressor is overheated and stop the operation.
- When frost is formed on the outdoor heat exchanger, the temperature at the exchanger drops abruptly. Therefore the resistance of the DEF thermistor becomes high and the voltage at pin ⑦⓪ of micro computer drops. If this voltage becomes lower than the set value stored inside, microcomputer will enter the defrost control.
- During defrost operation, the microcomputer will transfer the defrosting condition command to indoor unit via SDO pin of interface of IF transmission output.
- The microcomputer read the outdoor temperature by Outside Air thermistor and transfer it to the indoor unit, thus controlling the compressor rotation speed according to the set value in the EEPROM of indoor unit and switching the operation mode (outdoor fan on/off etc.) to DRY mode.
  Below table show the typical values of outdoor temperature in relation to the voltage.

Table 5-1

Outside Air Temperature (℃)	−10	0	10	20	30	40
Voltage at both side of R303 (V)	1.19	1.69	2.23	2.75	3.22	3.62

<Reference>

When the thermistor is open,open condition or disconnect, microcomputer pin⑦⓪⑦④⑦⑤are approx.0V;

When thermistor is shorted, they are approx.5V and LD301 will blink 7 times.

However, an error is detected when only the OH thermistor is shorted and will enter blinking mode after 12 minutes start the compressor operation.

6. Electric expansion valve circuit

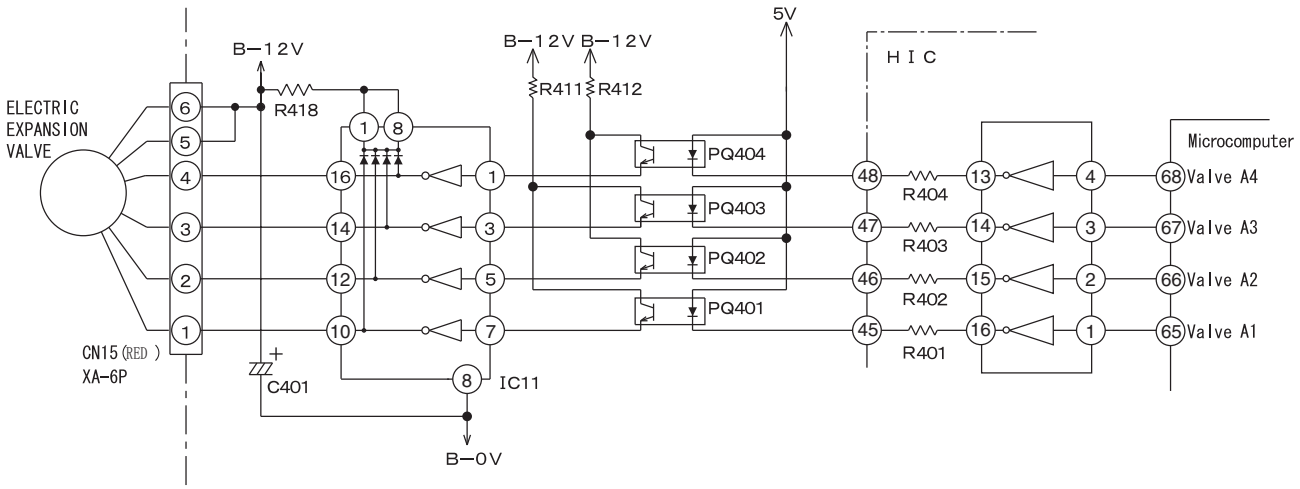


Fig. 6-1

- The electric expansion valve is driven by DC12V. Power is supplied to 1 or 2 phases of 4-phase winding to switch magnetic pole of winding in order to control the opening degree.
- Relationship between power switching direction of phase and open/close direction is shown below. When power is supplied, voltages at pins ④ to ① of CN15 are about 0.9V and 12V when no power is supplied. When power is reset, initial operation is performed for 10 or 20 seconds. During initial operation, measure all voltages at pin ④ to ① of CN15 by using a multimeter. If there is any pin with voltage that has not changed from 0.9V or 12V, expansion valve or microcomputer is broken.
- Fig. 6-2 shows logic waveform when expansion valve is operating.

Table 6-1

CN15 pin no.	Wire	Drive status							
		1	2	3	4	5	6	7	8
①	WHT	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
②	YEL	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
③	ORG	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
④	BLU	OFF	OFF	OFF	OFF	OFF	ON	ON	ON

Operation mode
1→2→3→4→5→6→7→8 VALVE CLOSE
8→7→6→5→4→3→2→1 VALVE OPEN

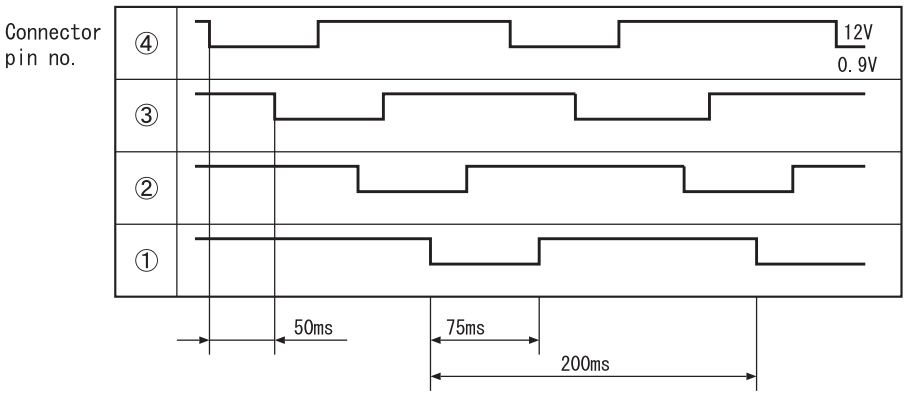


Fig. 6-2

With expansion valve control, opening degree is adjusted to stabilize target temperature by detecting compressor head temperature. The period of control is about once per 20 seconds and output a few pulse.

7. Outdoor DC fan motor control circuit

- This model is built with DC fan motor control circuit inside outdoor electrical unit.

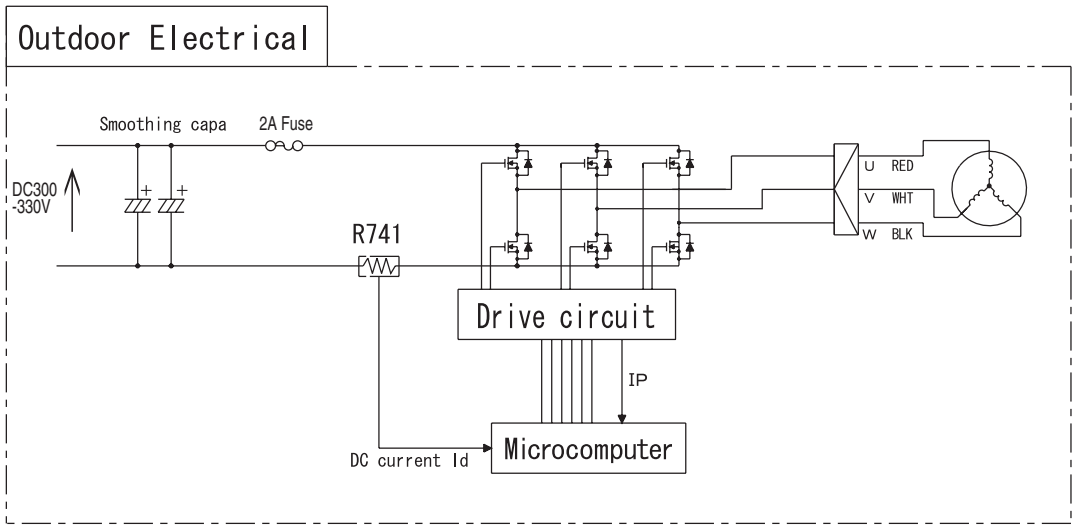


Fig 7-1

This DC fan motor is control by outdoor microcomputer that follow the operating instruction received from indoor microcomputer. The DC current that flow from R741 will presume actual operation speed and control the rotation to follow the operating instruction. Based on this DC current it will detect a over current and other fan motor failure.

(1) Fan motor speed controller during starting

Due to the interference of strong wind etc., operation movement is changed based on fan direction and rotation speed as shown below during starting of operation.

In addition, the fair wind is define as wind that blow to outside direction using Mouth Ring part.

At strong and contrary wind ... The rotational speed is not controlled as to protect the equipment and fan will rotate reversely depend on the wind. Automatically start when wind condition become weak.

At contrary wind ... The rotational speed is controlled in fair wind direction after it slowly reduce the speed and finally stop.

At fair wind ... The rotational speed is controlled as it is.

At strong fair wind ... The rotational speed is not controlled as to protect the equipment and fan will rotate reversely depend on the wind. Automatically start when wind condition become weak.

(2) Fan motor speed controller during unit operating

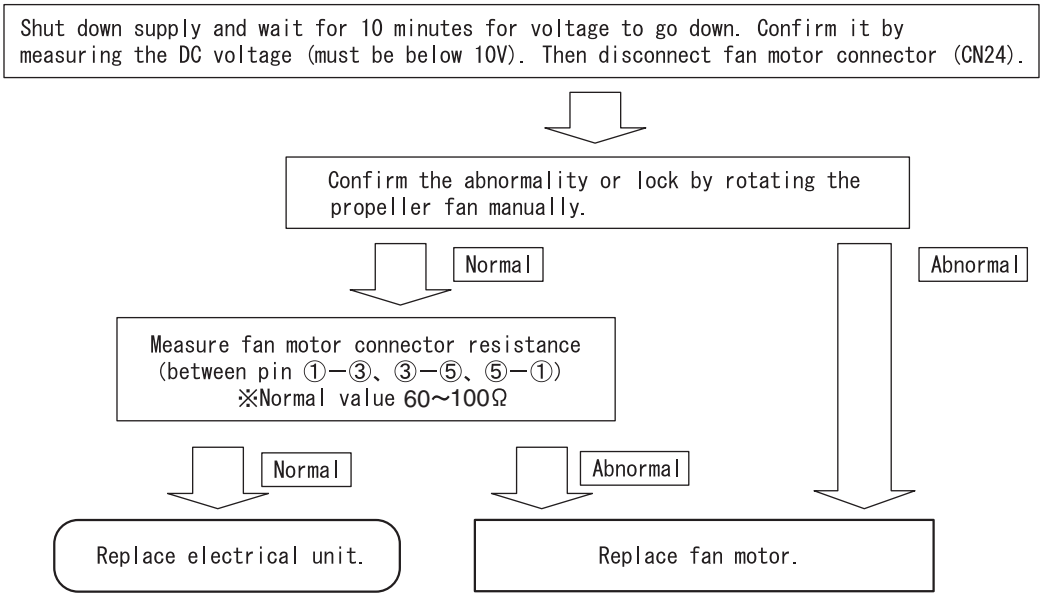
There is a case where fan rpm is reducing during rotating caused by interference of strong wind If this condition continue in long period, fan will stop rotating. (LD301 : 11 times blinking) The unit will restart according to control as per during start (1).

(3) Method of confirming self diagnosis LD301 lamp : 12 times blinking

If the unit stop and LD301 on the pwb blinking 12 times [fan lock stop is detected], follow below steps to confirm it.

1. Fan lock stop is detected when something has disturb the fan rotation by inserting material into propeller fan or ice has growing inside outdoor unit caused by snow.
   Remove it if found something is bloking the fan.
2. Confirmed that CN24 connector is securely inserted. Fan lock stop is detected also when connector is not properly inserted. Please securely insert if found any disconnection.
3. Fan lock stop also can be detected where strong wind blown surrounding the unit.
   Please confirm after restart the unit.(It may take few minutes to operate the compressor)
   It is not a malfunction of electrical unit or fan motor if the unit run continuesly after restart the unit.
4. Check fan motor condition as below procedure.

[Checking Fan Motor] procedure



5. Reconnect again fan motor connector (CN24).

※Please confirm above checking procedure if found 2Afuse blown.
If fan motor is broken, replace both electrical unit and fan motor.

Caution

※Beware of electric shock due to high voltage when conducting an operation check.
Power supply for DC fan motor and compressor is common (DC300-330V).

MODEL RAC-42/50WPE

1. Power Circuit

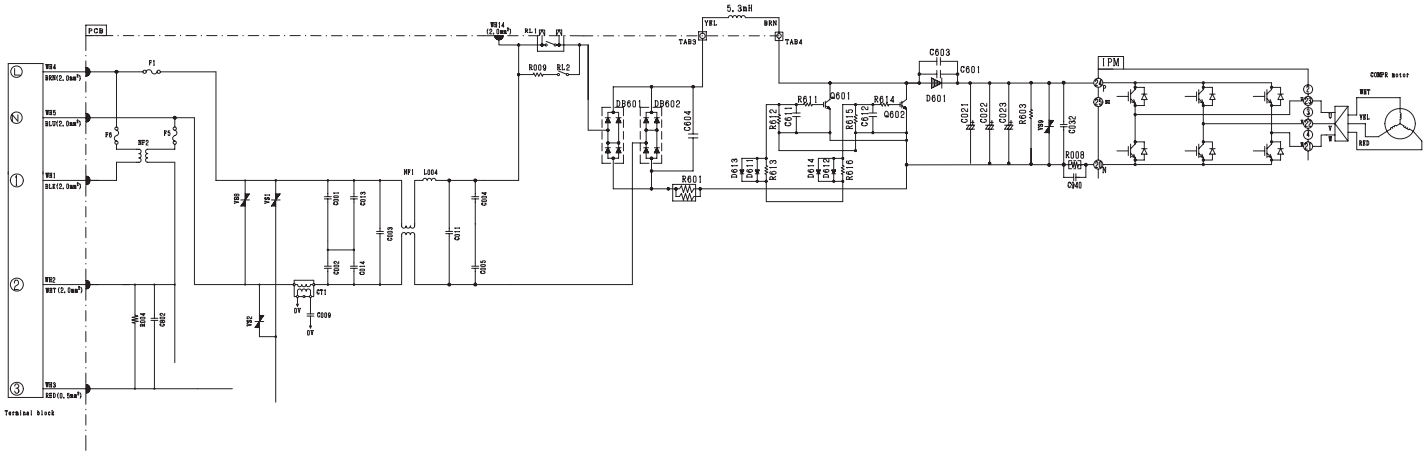


Fig 1-1

※ This circuit full-wave rectifies 230VAC applied between terminals L and N and boosts it to a required voltage with the IPM to create a DC voltage.

The voltage become 300-330V when the compressor is operated.

※ Importance component

（1） Intelligence Power Module (IPM)

A module that constitute by an inverter part.

（2） Diode Stack（DB601, DB602）

These rectify the 230VAC from terminal L and N to a DC power supply.

<Reference>

※ In case of Intelligence Power Module malfunction or connection failure immediately after compressor starts, its may stop due to error of [abnormal low speed], [switching failure],[Ip stop] and others.

<Reference>

※ If diode stack (DB601,DB602) are faulty, DC voltage may not be generated and the compressor may not operate at all. Also be aware that the 25A fuse might have blown.

(3) Smoothing capacitors (C021-C023,500μF,450V)

This smoothes (averages) the voltage rectified by the diode stack.

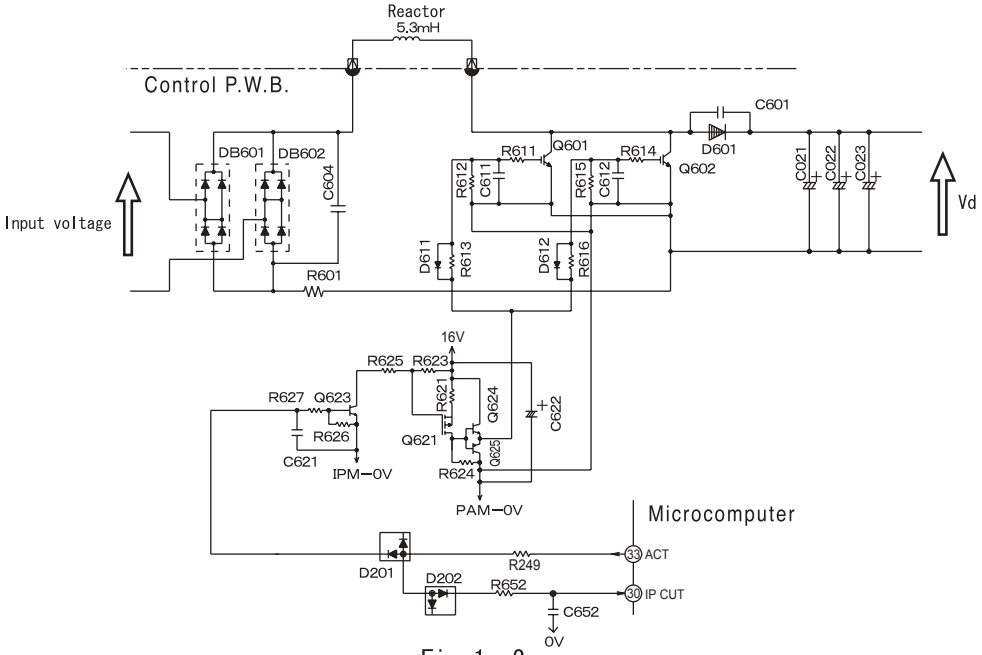


Fig.1—2

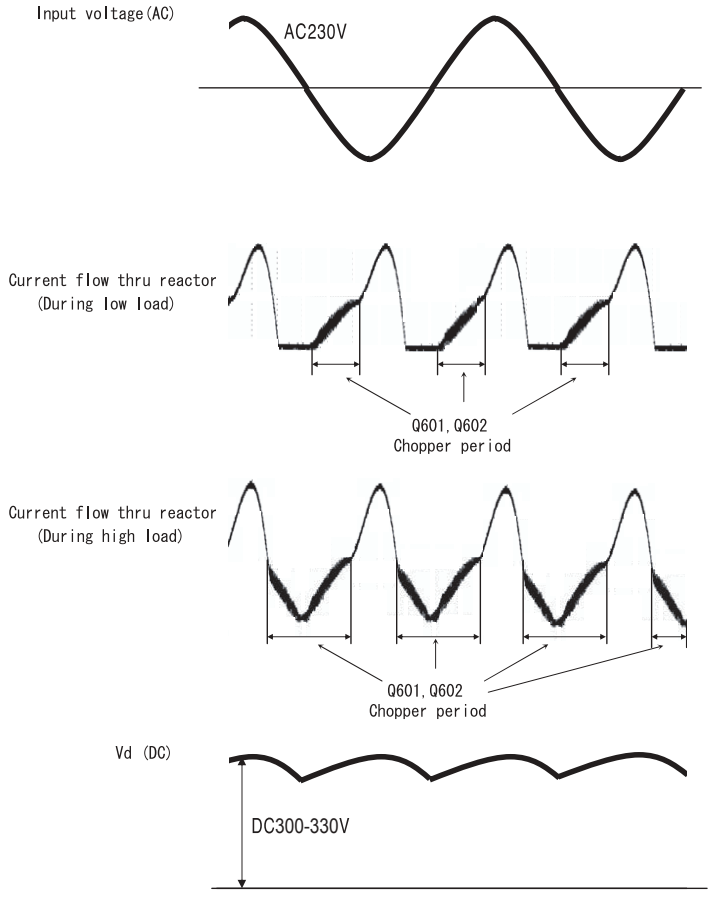


Fig.1—3

(4) IGBT to improve efficiency (Q601,Q602)

It will improve the efficiency during compressor load become heavy when current flow thru the chopper period of Q601,Q602.

2. Power circuit (Low voltage)

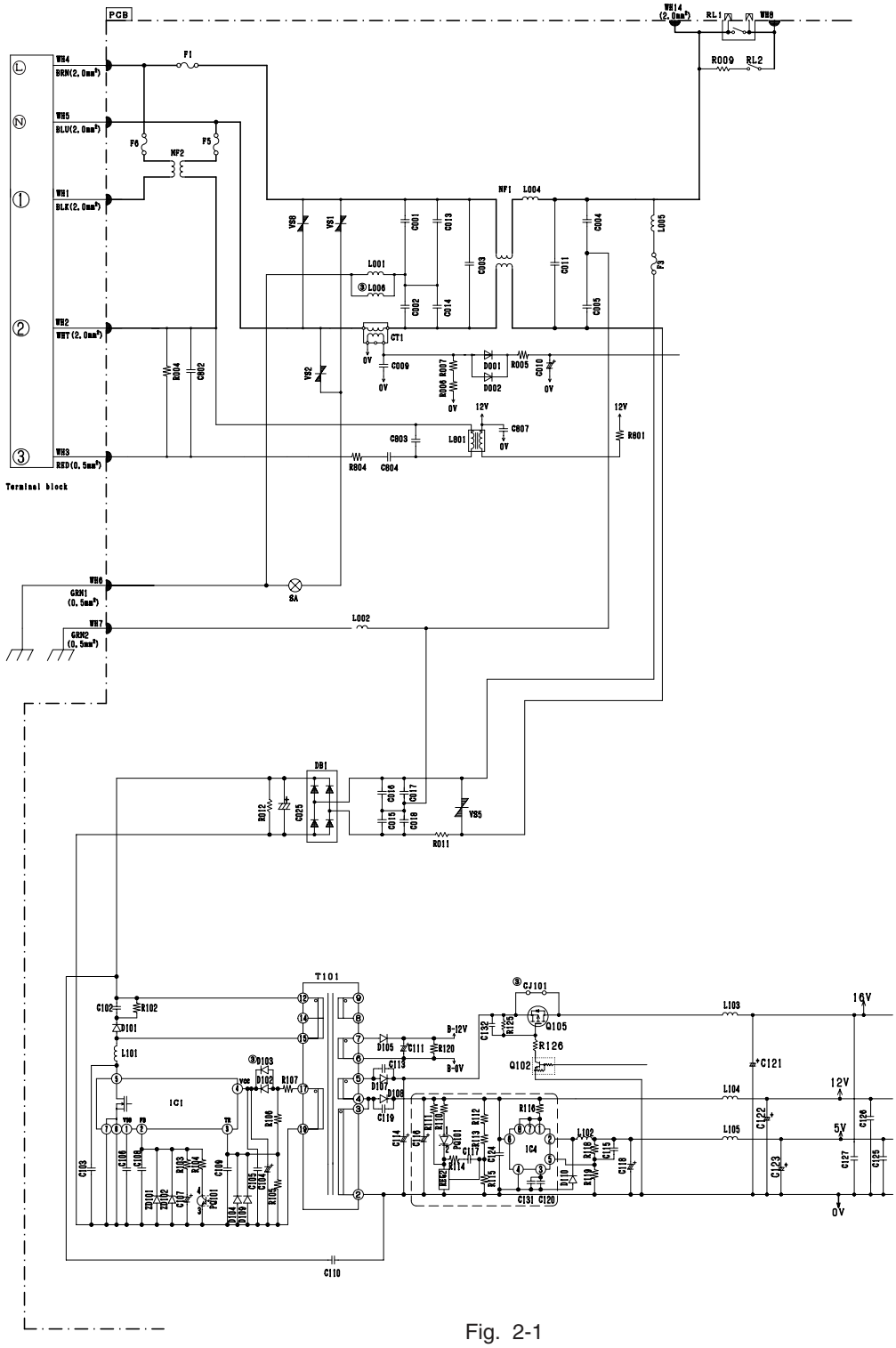


Fig. 2-1

- The 230V AC voltage is rectified to DC voltage (B-12V,16V,12V,5V) pass through switching control IC (ICI), switching transformer.
  (1) B-12V Power supply for electrical expansion valve.
  (2) 16V Power supply for IPM driver circuit of compressor and fan motor, IGBT action.
  (3) 12V Power supply for 4 way valve relay, power relay, inrush current relay,motor current amplification,
  (4) 5V Power supply for microcomputer, peripheral circuits.

Main parts

(1) C001,C002,C003,C004,C005,C011,C013,C014, NF1

These absorb electrical noise generated during operation of compressor and also absorb external noise entering from power line to protect electronic parts.

(2) Surge Absorber, Varistor1,2,5,8.

These absorbs external power surge.

(2) IC4
DC/DC convertor IC (DC12V → DC5V).

3. P.W.B. for power circuit

Voltage specification of power circuit as shown in below table.

〈Checking point〉

Output	Spec	Main load	Measuring point	Example of possible failure mode.
5V O/P	$5^{\pm 0.4}$V	Micon, Thermistor	Tester⊕ : L105 (JUMPER) Tester⊖ : D110 (EARTH)	Outdoor not operate, no blinking indication
12V O/P	$12^{\pm 0.5V}$	Micon, IC2, 3, 4 Relay circuit	Tester⊕ : L104 (JUMPER) Tester⊖ : D110 (EARTH)	Outdoor not operate, no blinking indication
16V O/P	$15.5^{+1.5V}_{-1.0V}$	IPM for Comp IPM for DC fan	Tester⊕ : L103 (JUMPER) Tester⊖ : D110 (EARTH)	Stop : LD301 3, 4 or 12 times blinking
B-12V O/P	$13^{+2.5V}_{-1.0V}$	Expansion valve	Tester⊕ : R418 (B-12V) Tester⊖ : C401 (“-”)	Stop : LD301 5 times blinking

※ Power circuit for P.W.B can consider normal if the result is satisfied with above specification.

4. Reversing valve (4-way valve) control circuit

- This model is equipped with a reversing valve (4-way Valve).
- The reversing valve (4-way Valve) "slides" the valve in the specified direction for each operating mode and switches the route of refrigerant and holds the route with a built-in permanent magnet.
- According to an operation command from the indoor unit microcomputer, the reversing valve (4-way Valve) control circuit applies current to the reversing valve (4-way Valve) coil in the specified direction, for each operating mode and slides the valve.
- Just before the compressor starts operation, the current is applied twice at the interval of 1 sec as shown in Fig. 4-1.
- During forced cooling operation, just after the forced cooling switch turns on, the current is applied twice at the interval of 1 sec as shown in Fig. 4-1.
- When the operation stops, the position of the valve before the stop is held.

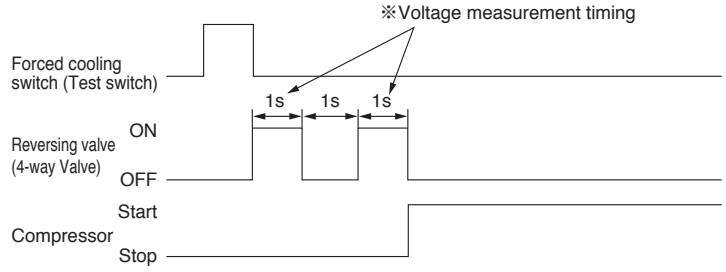


Fig. 4-1

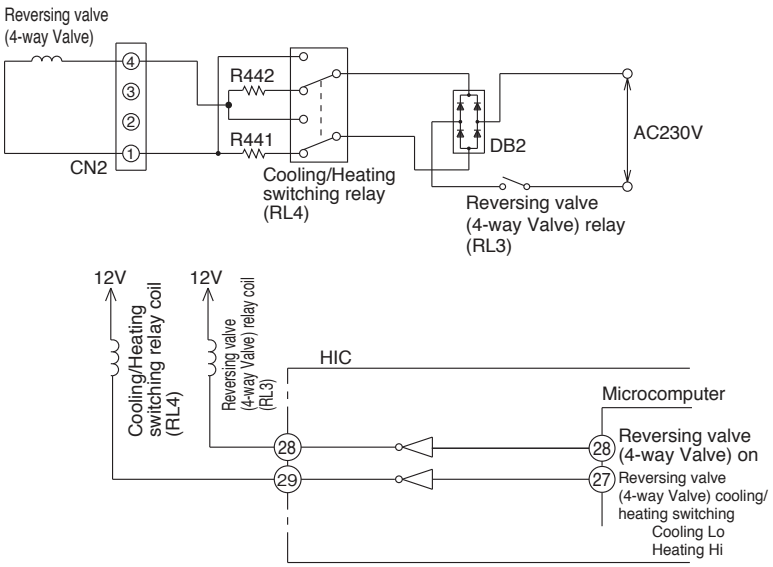


Fig. 4-2

- Before checking the application of current to the reversing valve (4-way Valve), disconnect the connector (CN2) and measure the resistance of both ends of the connector, to see if it is [2500Ω±10%]. Only when the resistance is normal, check the application of current using the following procedures.
  If the resistance is abnormal, it is caused by either; breakage of a lead wire, or failure of the reversing valve (4-way Valve).

- The voltage, when measured by a tester during the application of current to the reversing valve (4-way Valve) (when the voltage is measured)
  ※Switches the indoor unit to the "Ion Mist operation and air cleaning operation", and keep pressing the "Test switch" of the outdoor unit electrical part from 1 sec to below 5 sec (while the self-diagnosis lamp LED301 is on).
  Afterwards, when the "Test switch" is released, the application of current starts after 1 sec elapses. (Forced cooling operation)

Operating mode		Cooling operation (including forced cooling operation)	(Reference) Heating operation
Tester and CN2 terminal connection point		⊕ terminal of tester to CN2 pin ④ ⊖ terminal of tester to CN2 pin ①	⊕ terminal of tester to CN2 pin ① ⊖ terminal of tester to CN2 pin ④
Types of testers	Analog tester	The tester indicates about 80 VDC and returns to 0 V, and indicates about 80 VDC again.	The tester indicates about 160 VDC and returns to 0 V, and indicates about 160 VDC again.
	Digital tester	The tester indicates a large value for an instant and returns to 0 V, and indicates a large value again.	The tester indicates a large value for an instant and returns to 0 V, and indicates a large value again.

※In each operating mode, if the tester is reverse-connected to the CN2 terminal, the tester indicates a value on the – (negative) side.

- At the voltage measurement timing, when the voltage is measured with a tester, if the tester indicates the values as shown in the table above, the circuit is functioning normally. (Each tester indicates values differently. Since it is often difficult to read the values of a digital tester, it is recommended to measure voltage with an analog tester.)

※Since the current is applied only twice in 1 sec, if the timing is missed, correct operations cannot be measured.

※If the main body of the reversing valve (4-way Valve) is functioning normally, it clicks twice synchronously with the voltage measurement timing.
If this sound is heard, the reversing valve (4-way Valve) is functioning normally.

※If the checking of the application of current becomes abnormal, it is a failure of an electrical part.

5. Temperature Detection Circuit

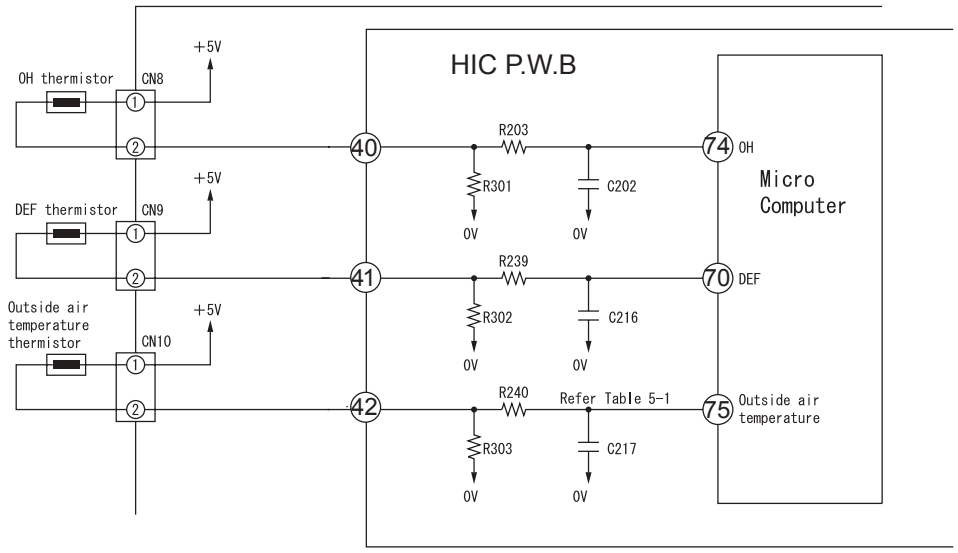


Fig. 5-1

- OH thermistor circuit detect the temperature at the surface of compressor head, DEF thermistor circuit detect the defrosting operation temperature.
- A thermistor is a negative resistor element which has characteristics that the higher(lower) the temperature, the lower(higher) the resistance.
- When the compressor is heated, the resistance of the OH thermistor becomes low and ⊕ 5V is divided by OH thermistor and R301 and the voltage at pin ⑦④ of microcomputer.
- Compare the voltage at microcomputer pin ⑦④ and setting value stored inside. If the value exceed the set value, microcomputer will judge that the compressor is overheated and stop the operation.
- When frost is formed on the outdoor heat exchanger, the temperature at the exchanger drops abruptly. Therefore the resistance of the DEF thermistor becomes high and the voltage at pin ⑦⓪ of micro computer drops. If this voltage becomes lower than the set value stored inside, microcomputer will enter the defrost control.
- During defrost operation, the microcomputer will transfer the defrosting condition command to indoor unit via SDO pin of interface of IF transmission output.
- The microcomputer read the outdoor temperature by Outside Air thermistor and transfer it to the indoor unit, thus controlling the compressor rotation speed according to the set value in the EEPROM of indoor unit and switching the operation mode (outdoor fan on/off etc.) to DRY mode.
  Below table show the typical values of outdoor temperature in relation to the voltage.

Table 5-1

Outside Air Temperature (℃)	−10	0	10	20	30	40
Voltage at both side of R303 (V)	1.19	1.69	2.23	2.75	3.22	3.62

<Reference>

When the thermistor is open, open condition or disconnect, microcomputer pin⑦⓪⑦④⑦⑤are approx. 0V;

When thermistor is shorted, they are approx. 5V and LD301 will blink 7 times.

However, an error is detected when only the OH thermistor is shorted and will enter blinking mode after 12 minutes start the compressor operation.

6. Electric expansion valve circuit

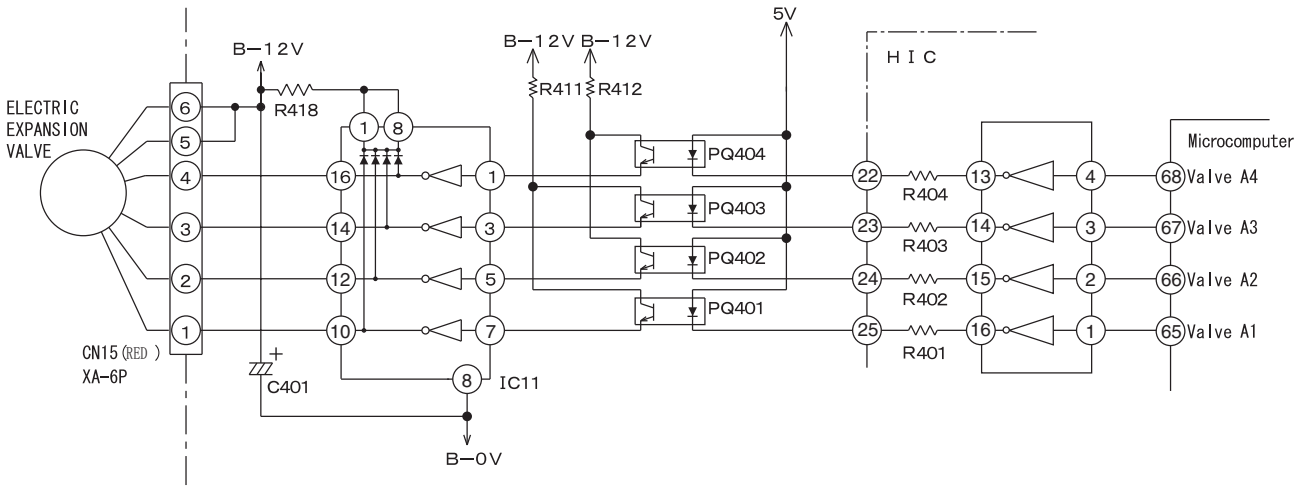


Fig. 6-1

- The electric expansion valve is driven by DC12V. Power is supplied to 1 or 2 phases of 4-phase winding to switch magnetic pole of winding in order to control the opening degree.
- Relationship between power switching direction of phase and open/close direction is shown below. When power is supplied, voltages at pins ④ to ① of CN15 are about 0.9V and 12V when no power is supplied. When power is reset, initial operation is performed for 10 or 20 seconds. During initial operation, measure all voltages at pin ④ to ① of CN15 by using a multimeter. If there is any pin with voltage that has not changed from 0.9V or 12V, expansion valve or microcomputer is broken.
- Fig. 5-2 shows logic waveform when expansion valve is operating.

Table 6-1

CN15 pin no.	Wire	Drive status							
		1	2	3	4	5	6	7	8
①	WHT	ON	ON	OFF	OFF	OFF	OFF	OFF	ON
②	YEL	OFF	ON	ON	ON	OFF	OFF	OFF	OFF
③	ORG	OFF	OFF	OFF	ON	ON	ON	OFF	OFF
④	BLU	OFF	OFF	OFF	OFF	OFF	ON	ON	ON

Operation mode
1→2→3→4→5→6→7→8 VALVE CLOSE
8→7→6→5→4→3→2→1 VALVE OPEN

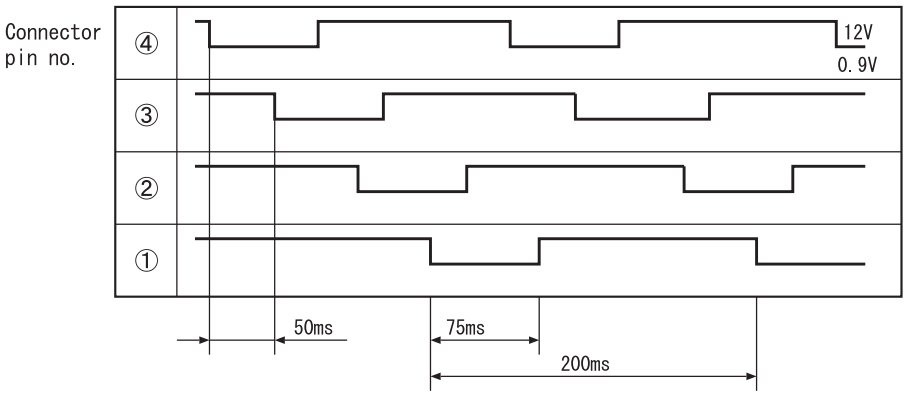


Fig. 6-2

With expansion valve control, opening degree is adjusted to stabilize target temperature by detecting compressor head temperature. The period of control is about once per 20 seconds and output a few pulse.

7. Outdoor DC fan motor control circuit

- This model is built with DC fan motor control circuit inside outdoor electrical unit.

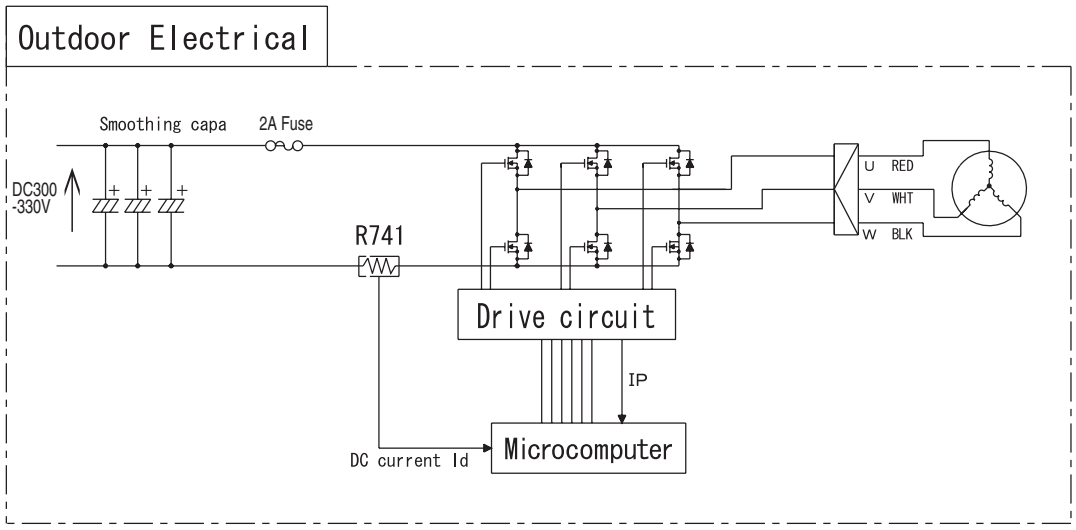


Fig 7-1

This DC fan motor is control by outdoor microcomputer that follow the operating instruction received from indoor microcomputer. The DC current that flow from R741 will presume actual operation speed and control the rotation to follow the operating instruction. Based on this DC current it will detect a over current and other fan motor failure.

(1) Fan motor speed controller during starting

Due to the interference of strong wind etc., operation movement is changed based on fan direction and rotation speed as shown below during starting of operation.

In addition, the fair wind is define as wind that blow to outside direction using Mouth Ring part.

At strong and contrary wind ... The rotational speed is not controlled as to protect the equipment and fan will rotate reversely depend on the wind. Automatically start when wind condition become weak.

At contrary wind ... The rotational speed is controlled in fair wind direction after it slowly reduce the speed and finally stop.

At fair wind ... The rotational speed is controlled as it is.

At strong fair wind ... The rotational speed is not controlled as to protect the equipment and fan will rotate reversely depend on the wind. Automatically start when wind condition become weak.

(2) Fan motor speed controller during unit operating

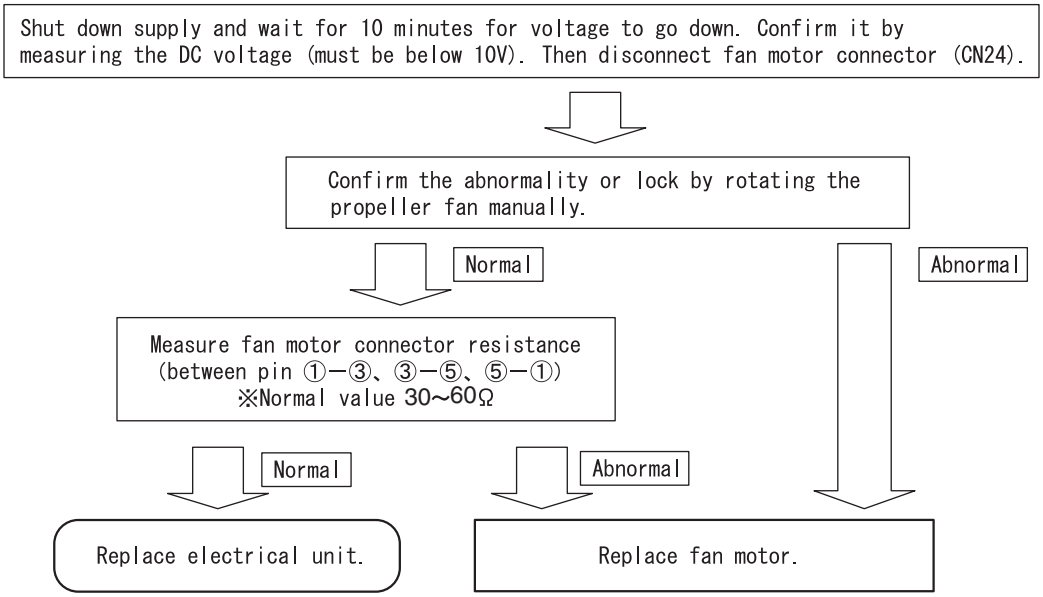
There is a case where fan rpm is reducing during rotating caused by interference of strong wind If this condition continue in long period, fan will stop rotating. (LD301 : 11 times blinking) The unit will restart according to control as per during start (1).

(3) Method of confirming self diagnosis LD301 lamp : 12 times blinking

If the unit stop and LD301 on the pwb blinking 12 times [fan lock stop is detected], follow below steps to confirm it.

1. Fan lock stop is detected when something has disturb the fan rotation by inserting material into propeller fan or ice has growing inside outdoor unit caused by snow.
   Remove it if found something is bloking the fan.
2. Confirmed that CN24 connector is securely inserted. Fan lock stop is detected also when connector is not properly inserted. Please securely insert if found any disconnection.
3. Fan lock stop also can be detected where strong wind blown surrounding the unit.
   Please confirm after restart the unit.(It may take few minutes to operate the compressor)
   It is not a malfunction of electrical unit or fan motor if the unit run continuesly after restart the unit.
4. Check fan motor condition as below procedure.

[Checking Fan Motor] procedure



5. Reconnect again fan motor connector (CN24).

※Please confirm above checking procedure if found 2Afuse blown.
If fan motor is broken, replace both electrical unit and fan motor.

Caution

※Beware of electric shock due to high voltage when conducting an operation check.
Power supply for DC fan motor and compressor is common (DC300-330V).

SERVICE CALL Q&A

Cooling operation

Q1 The compressor sometimes stops during cooling.

A1 Check if the heat exchanger of the indoor unit is covered with dew. Wait for 3 to 4 minutes until the dew disappears.

Cooling when the room temperature is low may cause the heat exchanger of the indoor unit to gather dew.

Dehumidification

Q1 The indoor unit produces a noise that goes "shaaahhh" during dehumidification.

A1 That is a noise produced by refrigerant flowing through the pipe.

Q2 Cold air comes out during a dehumidifying operation.

A2 To improve the dehumidification efficiency performs quiet fan operation. Therefore the air is cold and it is not a malfunction.

Q3 The operation does not stop even by setting the temperature higher than room temperature on the remote controller.

A3 It sets to perform dehumidifying operation by setting the temperature slightly lower than remote controller setting.

Heating operation

Q1 The product sometimes fails to produce a wind during heating.

A1 Defrosting is in progress. Wait 5 to 10 minutes until the dew on the outdoor unit disappears.

Q2 The product begins with a slight wind during heating even though set to "strong wind" or "weak wind."

A2 At the first of the heating, the product will run for 30 seconds with a slight wind. When set to strong wind, the product will begin with a slight wind operation, producing a weak wind for 30 seconds, and then switch to strong wind.

Q3 The product stops during heating even though it is set to "30℃."

A3 When heating is conducted despite the high outdoor temperature, the product may stop to protect its equipment.

Auto-fresh defrost

Q1 During heating, I turned off the product by using the START/STOP button. But the "operation lamp" is blinking and the outdoor unit is running.

A1 The "auto-fresh defrost" should be working. When stopped, the product will check its outdoor unit for dew and, if there is any dew, conduct defrosting and then stop operating.

Automatic operation

Q1 During an automatic run, switching the wind speed selector will not change the wind speed.

A1 The product will switch automatically to automatic wind speed. You cannot select strong or weak wind by remote control but you can select wind and quiet.

Q2 How is the automatic operation mode determined?

A2 According to the room temperature, heating or cooling operation is automatically selected. Refer to the basic operation section.

Common, etc.

Q1 In "automatic wind speed" mode, the indoor fan changes from strong wind to weak wind to slight wind.

A1 This does not abnormal. It is because the cold wind prevention is working.

In wind speed "automatic" mode, the product will sense the heat exchange temperature and, when the temperature goes down, the product will automatically switch to strong wind to weak wind to slight wind.

Q2 At operation startup, the outdoor unit becomes noisy.

A2 At operation startup, the product will set the rotation speed of the compressor to full power and increase its heating and cooling capacity, resulting in a slightly higher noise level. This is not a sign of a breakdown.

Q3 The outdoor unit sometimes changes in its noise.

A3 The difference between the thermometer temperature setting and room temperature will change the rotation speed of the compressor. This is not a sign of a breakdown.

Q4 There is a difference between the temperature setting and room temperature in room temperature control.

A4 The room structure, air stream, or other factor may cause a gap between the room temperature setting and actual room temperature. If there is any difference between the setting and the room temperature, adjust the temperature setting to match the living space to a comfortable temperature.

Q5 The product will not produce wind right after startup.

A5 After turning ON the power switch or breaker, setting the product to heating or dehumidification will activate a preliminary operation for 1 minute. At that time, heating will cause the operation lamp to blink. This is not a sign of a breakdown.

Q6 I performed internal cleaning, but didn't succeed in controlling the mold in the room.

A6 Internal cleaning will clean the inside of the indoor unit of the air-conditioner, thereby controlling mold generation. This will not control the mold in the room.

Wireless remote control

Q1 The timer will not become set.

A1 Have you set the product to the current time? The timer cannot be set unless it is set to the current time.

Q2 The current time display will disappear at once.

A2 The current time disappears 10 seconds later. The timer set display is given priority.

When set to the current time setting, the reading blinks for about 3 minutes.

Q3 I made a timer "reservation". But the time setting has disappeared.

A3 Is the time not past the reserved time?
The set time disappears when the current time reaches the reserved time.

Q4 I tried to set the "sleep" timer while the ON timer is reserved. But it will not set itself to a desired time.

A4 The time set in the "sleep" timer can be set with a time up to the time set with the ON timer. If the end time of the "sleep" timer is past the time set with the ON timer, you cannot make that setting.

Q5 I set the "sleep" timer during operation.But
① the indoor fan will not run (it will not produce wind)
② wind intensity will not change.

A5 ①This occurs when the room temperature and humidity have reached their settings during dehumidification and the air-conditioner is in a pause. The product will begin again to run within about 3 minutes.
②The product will run with the wind speed set to a "quiet" state.

Q6 I tried to change the setting with the "room temperature" button of the remote control unit in vain.

A6 You cannot make this setting when the product is in "air purification" mode. Moreover, you cannot set the product to a desired setting when quick laundry or dew control is being performed with the "auto" or "quick dehumidification" button.

Q7 The temperature setting field on the remote control unit displays
+1℃ or -1℃.

A7 The product will give a display when you operate the product in "auto" using the operation switch button. This can be controlled
within the range of±3 ℃.
The product will display +1℃ if the temperature is 1℃ higher than the room temperature in automatic setting.
The product will display -1℃ if the temperature is 1℃ lower than the room temperature in automatic setting.

Q8 The remote control unit will give no display in response to a push of the "vertical vane" button.

A8 The remote control unit displays nothing.

TROUBLE SHOOTING

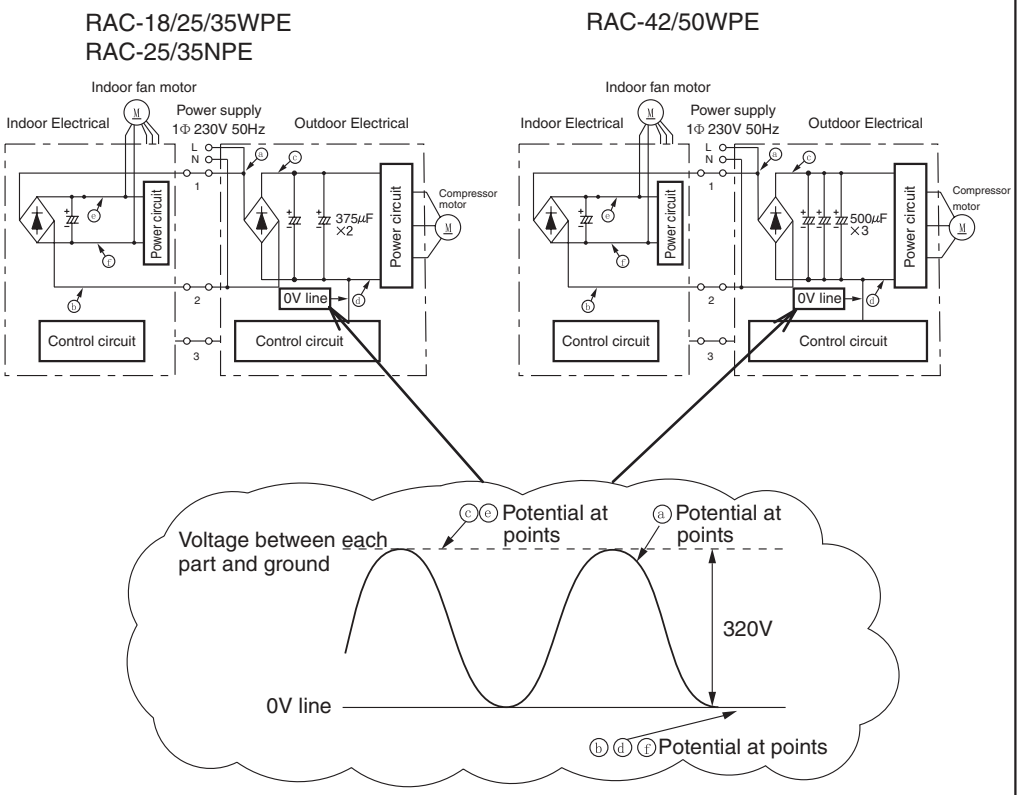
MODEL RAC-18/25/35/42/50WPE
RAC-25/35NPE

Inspection instructions

Warning

Note that the 0 V line of the outdoor electrical parts and the primary power circuit of the indoor electrical parts have voltages to ground as illustrated in the right-hand figure.

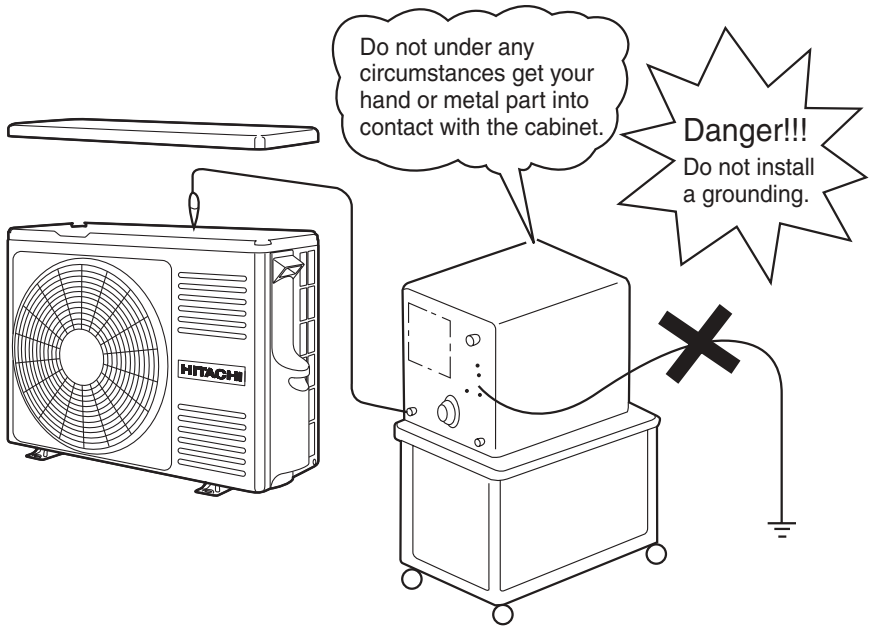




Warning

When conducting a check with an oscilloscope or something similar, do not ground the oscilloscope. Note that the oscilloscope will be subjected to voltages as illustrated in the figure above.





DISCHARGE, PROCEDURE AND POWER SHUT OFF METHOD FOR POWER CIRCUIT

⚠ WARNING

Caution

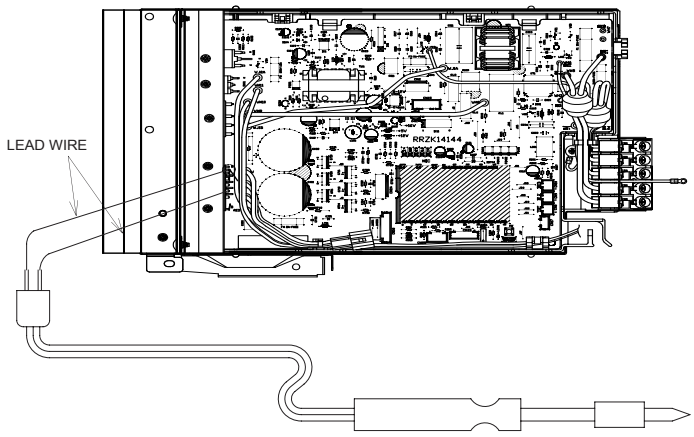
- Voltage of about 350 V is charged between the terminal of smoothing capacitors.
- During continuity check for each circuit part of the outdoor unit, be sure to discharge the smoothing capacitors.

Discharge Procedure

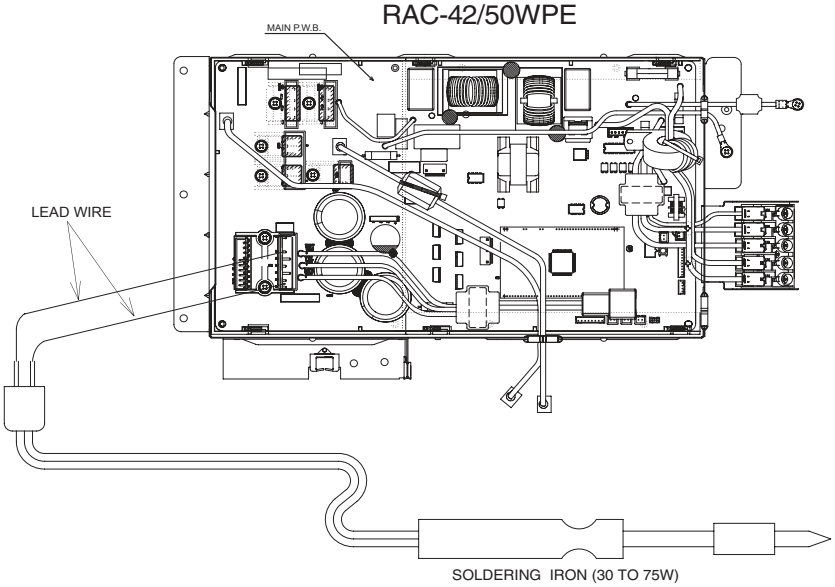
1. Turn off the power.
2. After power is turned off, wait for 10 minutes or more. Then, remove electrical parts cover and apply soldering iron of 30 to 75 W for 15 seconds or more to IPM(24) and IPM(20) terminals on the main P.W.B. as shown in the figure below, in order to discharge voltage in smoothing capacitor.

Do not use a soldering iron with transformer: Otherwise, thermal fuse inside transformer will be blown.

RAC-18/25/35WPE
RAC-25/35NPE



RAC-42/50WPE

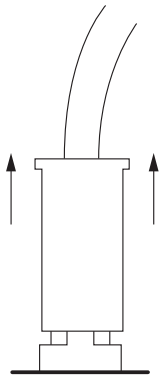


Other instructions

(1) Detaching and reattaching the receptacles for tab terminal

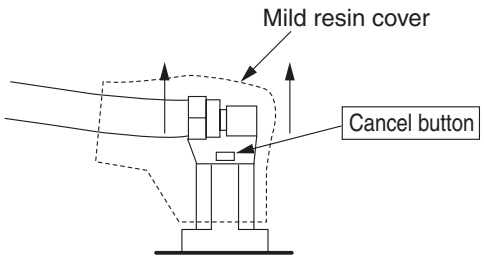
All the receptacles for connecting tab terminals are with a locking mechanism. Forcibly pulling any such receptacle without unlocking it will destroy it. Be on guard.
When reconnecting it, insert it securely all the way home.

· Receptacle types and how to unlock them



Vertical (with a resin case)

Hold the resin case and pull it out.



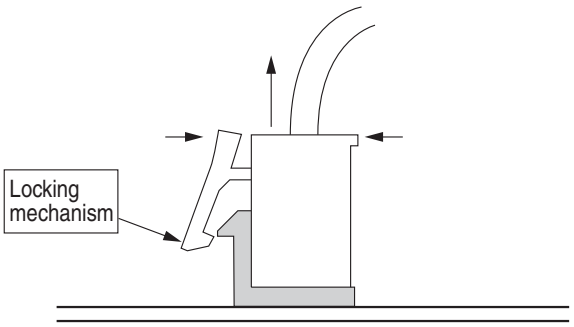
Horizontal (with a mild resin cover)

Hold the cancel button down on the mild resin cover while pulling it out.

(2) Detaching and reattaching the board connector

The product comes equipped with many board connectors provided with lock mechanism. Forcibly pulling any such part without unlocking it will destroy it. Be on guard. When reconnecting it, insert it securely all the way home.

Pinch the locking mechanism with your fingers and pull it out unlocked.



(3) Do not detach or reattach the connectors while energized

Do not under any circumstances detach or reattach the connectors while energized. That would destroy the board components and fan motor. For both the indoor and outdoor boards, ensure that the smoothing capacitor has discharged its electricity fully before you do your work.

Troubleshooting support

№	Function	Description
1	[Display on the outdoor unit side]	· The failure mode detected on the outdoor unit side is displayed by blinking the "LD301". Detecting a failure will stop the outdoor unit and keep blinking the LD301 until it is restarted. (The communication error will persist until the communication is reestablished.)
2	Self-diagnosis memory	· The failure modes detected on the indoor and outdoor unit sides are stored in the nonvolatile memory of the indoor unit and can be read later on. (The memory will remain even after power-off.) · The failure modes detected on the outdoor unit side are written in memory every time any such mode occurs. The failure mode can therefore be detected on the indoor unit side without waiting for the retry frequency to reach the display of the indoor unit lamp. Moreover, the normal self-diagnosis display function which rarely occurs will store and display failure modes that do not end up displaying the indoor unit lamp. (Any such mode may be unable to be stored if indoor or outdoor communications is in a failure.) · The product stores 5 last-stored failure modes. · There is a function for deleting memory. Once you clear the memory and run the product for several days, you can read the failure modes and check them, thereby detecting the less frequent failure phenomena. · Failure modes can be checked by both the blinking of the lamp of the indoor unit and the display of the remote control liquid crystal display.

※The "self-diagnosis function of the communication circuit" available in our conventional models is now incorporated as part of the normal self-diagnosis function. In the case of a failure in the communication circuit, you do not have to conduct a special operation and the operations can be automatically divided into 3 blinking operations and 12 blinking operations of the timer lamp. However, a strong external noise may have resulted in 12 times of blinking.

SELF-DIAGNOSIS LIGHTING MODE

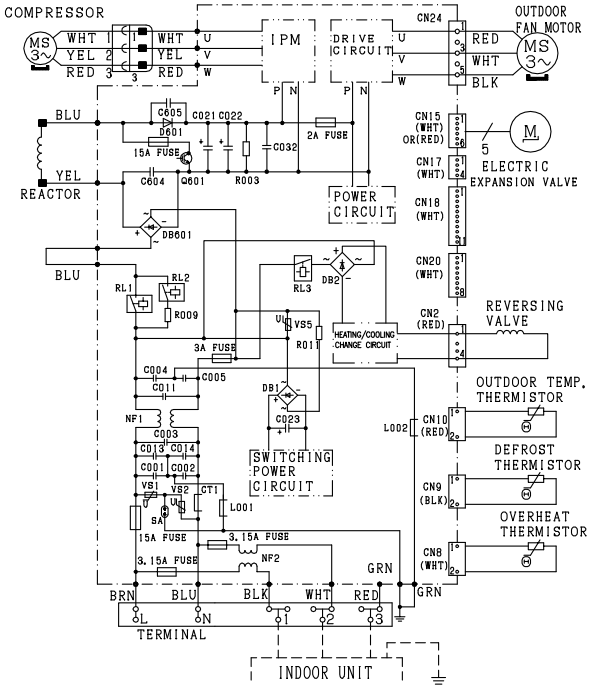
MODELRAC-18/25/35/WPE
RAC-25/35NPE

⚠ ⚠ DANGER(DC350V)

- CUT THE POWER SOURCE AND WAIT MORE THAN 10 MINUTES BEFORE SERVICE WORK.
- CONFIRM THE DC VOLTAGE AT THE MEASURING POINT SHOWN IN BELOW FIGURE MUST BE LESS THAN 10V.

WIRING DIAGRAM

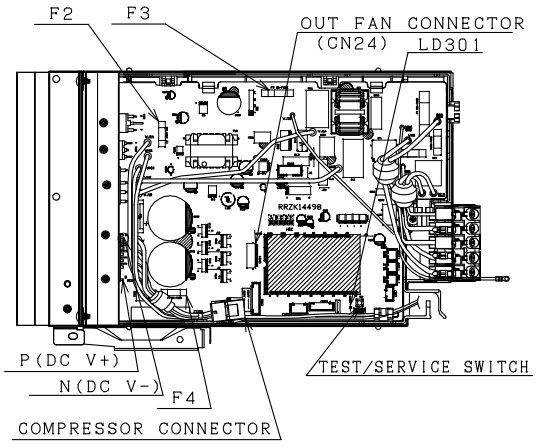
BLU:BLUE RED:RED
BLK:BLACK WHT:WHITE
BRN:BROWN YEL:YELLOW
GRN:GREEN GRY:GRAY



DURING STOP

SELF-DIAGNOSIS BLINKING MODE ▨:BLINK □:OFF

LD301 (RED)	SELF DIAGNOSIS CONTENTS	MAIN CHECK POINT	HOW TO REPAIR
□ OFF	NORMAL STOP (STOPPED BY INDOOR THERMO-STAT OR MAIN OPERATION OFF)	1. NO NEED TO CHECK ⟹	1. NOT ANY MALFUNCTION
▨ ONCE	RESET STOP	1. MICROPROCESSOR WAS REBOOTED ⟹	1. CHANGE ODU CONTROLLER
▨ 2 TIMES	PEAK CURRENT CUT	1. ODU CONTOROLLER DEFECTIVE ⇨ 2. COMPRESSOR ABNORMAL LOAD ⟹	1. CHANGE ODU CONTROLLER 2. CHECK THE COMPRESSOR
▨ 3 TIMES	ABNORMAL LOW SPEED ROTATION	1. ODU CONTROLLER DEFECTIVE ⇨ 2. COMPRESSOR ABNORMAL LOAD ⟹	1. CHANGE ODU CONTROLLER 2. CHECK THE COMPRESSOR
▨ 4 TIMES	SWITCHING FAILURE	1. COMPRESSOR CONNECTOR OPEN ⇨ 2. COMPRESSOR ABNORMAL LOAD ⟹ 3. ODU CONTROLLER DEFECTIVE ⟹	1. INSERT THE CONNECTOR 2. CHECK THE COMPRESSOR 3. CHANGE ODU CONTROLLER
▨ 5 TIMES	OVERLOAD LOWER LIMIT CUT	1. OBSTACLE SURROUND THE ODU MAY CAUSE ⟹ 2. OTHER CAUSE ⟹	1. REMOVE THE OBSTRUCTION 2. CHECK CYCLE PIPE
▨ 6 TIMES	OH THERMISTOR TEMPERATURE RISE	1. DUE TO OPEN CONNECTOR ⟹ 2. LEAKAGE OF REFRIGERANT ⟹ 3. OTHER CAUSE ⟹	1. INSERT THE CONNECTOR 2. CHECK THE CYCLE PIPE AND RECHARGE THE REFRIGERANT 3. CHANGE ODU CONTROLLER
▨ 7 TIMES	THERMISTOR ABNORMAL	1. CONNECTOR INSERT MISS ⟹ 2. OPEN CIRCUIT/SHORT CIR-CUIT OF THERMISTOR WIRE 3. ODU CONTROLLER DEFECTIVE ⟹	1. INSERT PROPERLY 2. CHANGE THE THERMISTOR 3. CHANGE ODU CONTROLLER
▨ 9 TIMES	COMMUNICATIONS ERROR	1. F CABLE MISS CONNECTION ⟹ 2. F CABLE DISCONNECTION ⟹ 3. ODU CONTROLLER DEFECTIVE ⟹ 4. IDU CONTROLLER DEFECTIVE ⟹	1. F CABLE CONNECT PROPERLY 2. CHANGE THE F CABLE 3. CHANGE ODU CONTROLLER 4. CHANGE IDU CONTROLLER
▨ 10 TIMES	ABNORMAL POWER SOURCE	1. REACTOR IS UNCONNECTED ⟹ 2. ABNORMAL AC INPUT: OUT OF THE RANGE (230±10%) ⟹ 3. AC INPUT IS NORMAL ⟹	1. CONNECT REACTOR PROPERLY 2. CONNECT TO NORMAL AC POWER SOURCE 3. CHANGE ODU CONTROLLER
▨ 11 TIMES	ODU FAN STOP BY STRONG REVERSE WIND	1. OUTDOOR FAN STOP BY STRONG REVERSE WIND ⟹	1. IT WILL RE-START AFTER THE WIND BECOME WEAK
▨ 12 TIMES	OUTDOOR FAN LOCK ERROR	1. OUTDOOR FAN STOP BY STRONG REVERSE WIND ⟹ 2. PROPELLER FAN LOCK ⟹ 3. OUTDOOR FAN MOTOR LOCK ⟹ 4. OUTDOOR FAN MOTOR OK ⟹	1. AUTOMATICALLY RE-START AFTER WIND BECOME WEAK 2. REMOVE THE OBSTRUCTION 3. CHANGE THE FAN MOTOR 4. CHANGE ODU CONTROLLER
▨ 13 TIMES	EEPROM READ ERROR	·CHANGE OUTDOOR UNIT CONTROLLER	
▨ 14 TIMES	ACTIVE VOLTAGE ABNORMAL	1. ABNORMAL OUTDOOR CONTROLLER ⟹ 2. ABNORMAL COMPRESSOR LOAD ⟹	1. CHANGE ODU CONTROLLER 2. CHECK THE COMPRESSOR
▨ 15 TIMES	CIRCUIT ABNORMAL	·CHANGE OUTDOOR UNIT CONTROLLER	
▨ 16 TIMES	HIGH LORD STOP	1. SERVICE VALVE CLOSE ⟹ 2. OBSTACLE SURROUND THE ODU MAY CAUSE ⟹ 3. CLOGGED FILTER IN INDOOR UNIT CAUSE. ⟹	1. CHECK SERVICE VALVE 2. REMOVE THE OBSTRUCTION 3. CHECK FILTER



※OTHERS CHECK POINTS

1. DIAGNOSIS FOR 『REVERSING VALVE OPERATION ERROR』 ;
⇒CHECK REVERSING VALVE WIRE CONNECTION EITHER WIRE BROKEN OR NOT, IF OK CHECK 3, 15A FUSE, IF BROKEN REPLACE FUSE OR ODU CONTROLLER.
2. 『WHEN DISPLAY THE COMMUNICATION ERROR OR THE OUTDOOR DO NOT RUN AT ALL』,
⇒PLEASE CHECK THE CONTINUITY OF THE INDOOR ⇔ OUTDOOR CONNECTING CORD(F CABLE).

『OUTDOOR FAN MOTOR CHECK』DIAGNOSIS METHOD

1. PUT THE POWER OFF.
2. REMOVE THE OUTDOOR FAN MOTOR'S CONNECTOR FROM" CN24"
3. ROTATE THE FAN MOTOR BY HAND AND CHECK WHETHER THE FAN MOTOR IS LOCKED OR NOT.
4. MEASURE THE RESISTANCE BETWEEN EACH TERMINAL OF THE FAN MOTOR CONNECTOR. NORMAL RESISTANCE BETWEEN EACH TERMINAL: 60~100Ω

※INSERT THE FAN MOTOR'S CONNECTOR AFTER FINISHING STEPS 1 TO 4.

※OTHERS SELF-DIAGNOSIS CONTENTS REFER TO THE SERVICE MANUAL.

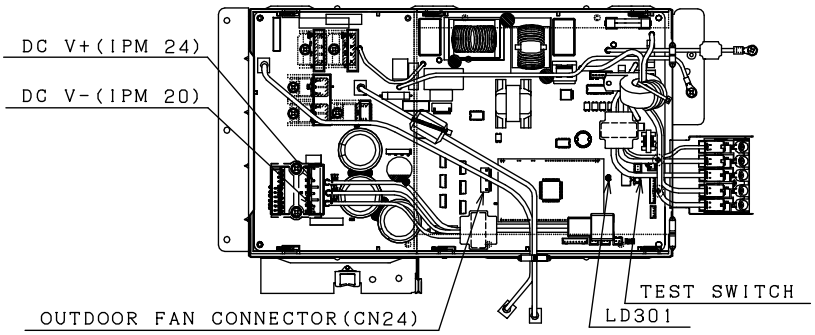
SELF-DIAGNOSIS LIGHTING MODE

MODEL RAC-42/50WPE

⚠ ⚡ DANGER(DC350V)

- CUT THE POWER SOURCE AND WAIT MORE THAN 10 MINUTES BEFORE SERVICE WORK.
- CONFIRM THE DC VOLTAGE AT THE MEASURING POINT SHOWN IN BELOW FIGURE MUST BE LESS THAN 10V.

DURING STOP	
LD301	CONTENTS
LIGHT	NORMAL OPERATION
2 SEC LIGHTING AND 0.3 SEC LIGHTS OUT REPETITION	OVERLOAD OPERATION(NORMAL OPERATION)

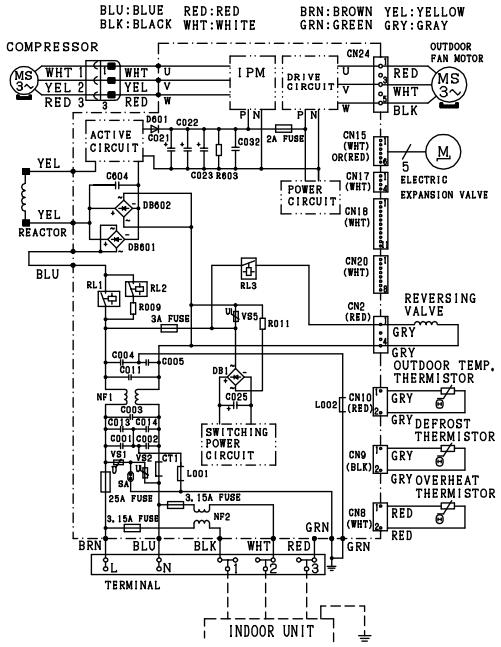


DURING STOP

SELF-DIAGNOSIS BLINKING MODE ▨:BLINK □:OFF

LD301 (RED)	SELF DIAGNOSIS CONTENTS	MAIN CHECK POINT	HOW TO REPAIR
□ OFF	NORMAL STOP (STOPPED BY INDOOR THERMO-STAT OR MAIN OPERATION OFF)	1. NO NEED TO CHECK ⟹	1. NOT ANY MALFUNCTION
▨ ONCE	RESET STOP	1. MICROPROCESSOR WAS REBOOTED ⟹	1. CHANGE ODU CONTROLLER
▨ 2 TIMES	PEAK CURRENT CUT	1. ODU CONTOROLLER DEFECTIVE ⇨ 2. COMPRESSOR ABNORMAL LOAD ⟹	1. CHANGE ODU CONTROLLER 2. CHECK THE COMPRESSOR
▨ 3 TIMES	ABNORMAL LOW SPEED ROTATION	1. ODU CONTROLLER DEFECTIVE ⟹ 2. COMPRESSOR ABNORMAL LOAD ⟹	1. CHANGE ODU CONTROLLER 2. CHECK THE COMPRESSOR
▨ 4 TIMES	SWITCHING FAILURE	1. COMPRESSOR CONNECTOR OPEN ⇨ 2. COMPRESSOR ABNORMAL LOAD ⟹ 3. ODU CONTROLLER DEFECTIVE ⟹	1. INSERT THE CONNECTOR 2. CHECK THE COMPRESSOR 3. CHANGE ODU CONTROLLER
▨ 5 TIMES	OVERLOAD LOWER LIMIT CUT	1. OBSTACLE SURROUND THE ODU MAY CAUSE ⟹ 2. OTHER CAUSE ⟹	1. REMOVE THE OBSTRUCTION 2. CHECK CYCLE PIPE
▨ 6 TIMES	OH THERMISTOR TEMPERATURE RISE	1. DUE TO OPEN CONNECTOR ⟹ 2. LEAKAGE OF REFRIGERANT ⟹ 3. OTHER CAUSE ⟹	1. INSERT THE CONNECTOR 2. CHECK THE CYCLE PIPE AND RECHARGE THE REFRIGERANT 3. CHANGE ODU CONTROLLER
▨ 7 TIMES	THERMISTOR ABNORMAL	1. CONNECTOR INSERT MISS ⟹ 2. OPEN CIRCUIT/SHORT CIR-CUIT OF THERMISTOR WIRE ⟹ 3. ODU CONTROLLER DEFECTIVE ⟹	1. INSERT PROPERLY 2. CHANGE THE THERMISTOR 3. CHANGE ODU CONTROLLER
▨ 9 TIMES	COMMUNICATIONS ERROR	1. F CABLE MISS CONNECTION ⟹ 2. F CABLE DISCONNECTION ⟹ 3. ODU CONTROLLER DEFECTIVE ⟹ 4. IDU CONTROLLER DEFECTIVE ⟹	1. F CABLE CONNECT PROPERLY 2. CHANGE THE F CABLE 3. CHANGE ODU CONTROLLER 4. CHANGE IDU CONTROLLER
▨ 10 TIMES	ABNORMAL POWER SOURCE	1. REACTOR IS UNCONNECTED ⟹ 2. ABNORMAL AC INPUT: OUT OF THE RANGE (230±10%) ⟹ 3. AC INPUT IS NORMAL ⟹	1. CONNECT REACTOR PROPERLY 2. CONNECT TO NORMAL AC POWER SOURCE 3. CHANGE ODU CONTROLLER
▨ 11 TIMES	ODU FAN STOP BY STRONG REVERSE WIND	1. OUTDOOR FAN STOP BY STRONG REVERSE WIND ⟹	1. IT WILL RE-START AFTER THE WIND BECOME WEAK
▨ 12 TIMES	OUTDOOR FAN LOCK ERROR	1. OUTDOOR FAN STOP BY STRONG REVERSE WIND ⟹ 2. PROPELLER FAN LOCK ⟹ 3. OUTDOOR FAN MOTOR LOCK ⟹ 4. OUTDOOR FAN MOTOR OK ⟹	1. AUTOMATICALLY RE-START AFTER WIND BECOME WEAK 2. REMOVE THE OBSTRUCTION 3. CHANGE THE FAN MOTOR 4. CHANGE ODU CONTROLLER
▨ 13 TIMES	EEPROM READ ERROR	·CHANGE OUTDOOR UNIT CONTROLLER	
▨ 14 TIMES	ACTIVE VOLTAGE ABNORMAL	1. ABNORMAL OUTDOOR CONTROLLER ⟹ 2. ABNORMAL COMPRESSOR LOAD ⟹	1. CHANGE ODU CONTROLLER 2. CHECK THE COMPRESSOR
▨ 15 TIMES	CIRCUIT ABNORMAL	·CHANGE OUTDOOR UNIT CONTROLLER	
▨ 16 TIMES	HIGH LORD STOP	1. SERVICE VALVE CLOSE ⟹ 2. OBSTACLE SURROUND THE ODU MAY CAUSE ⟹ 3. CLOGGED FILTER IN INDOOR UNIT CAUSE. ⟹	1. CHECK SERVICE VALVE 2. REMOVE THE OBSTRUCTION 3. CHECK FILTER

WIRING DIAGRAM



※ODU=OUTDOOR UNIT, IDU=INDOOR UNIT

『OUTDOOR FAN MOTOR CHECK』DIAGNOSIS METHOD

1. PUT THE POWER OFF.
2. REMOVE THE OUTDOOR FAN MOTOR'S CONNECTOR FROM"CN24".
3. ROTATE THE FAN MOTOR BY HAND AND CHECK WHETHER THE FAN MOTOR IS LOCKED OR NOT.
4. MEASURE THE RESISTANCE BETWEEN EACH TERMINAL OF THE FAN MOTOR CONNECTOR. NORMAL RESISTANCE BETWEEN EACH TERMINAL:30~60Ω

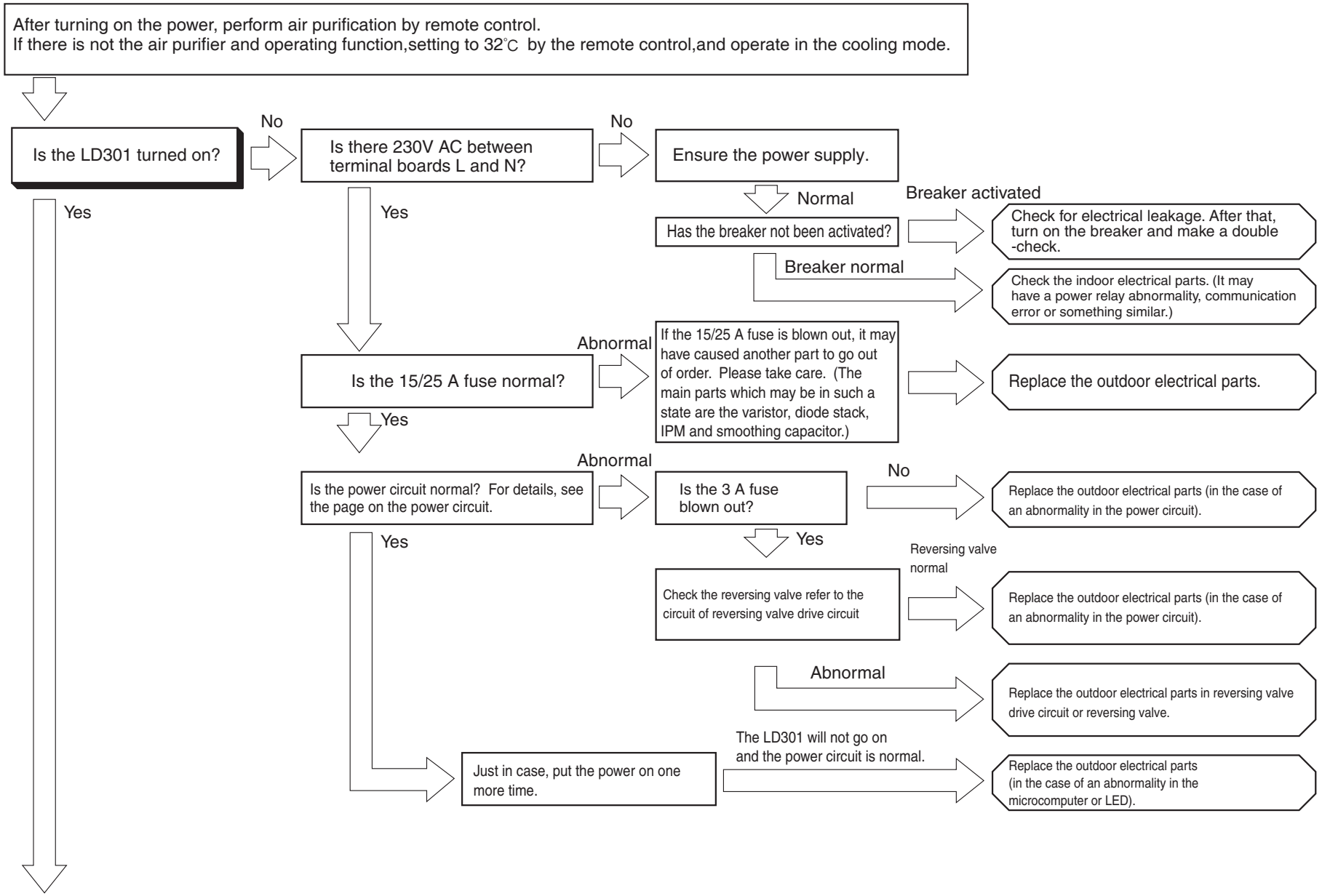
※INSERT THE FAN MOTOR'S CONNECTOR AFTER FINISHING STEPS 1 TO 4.

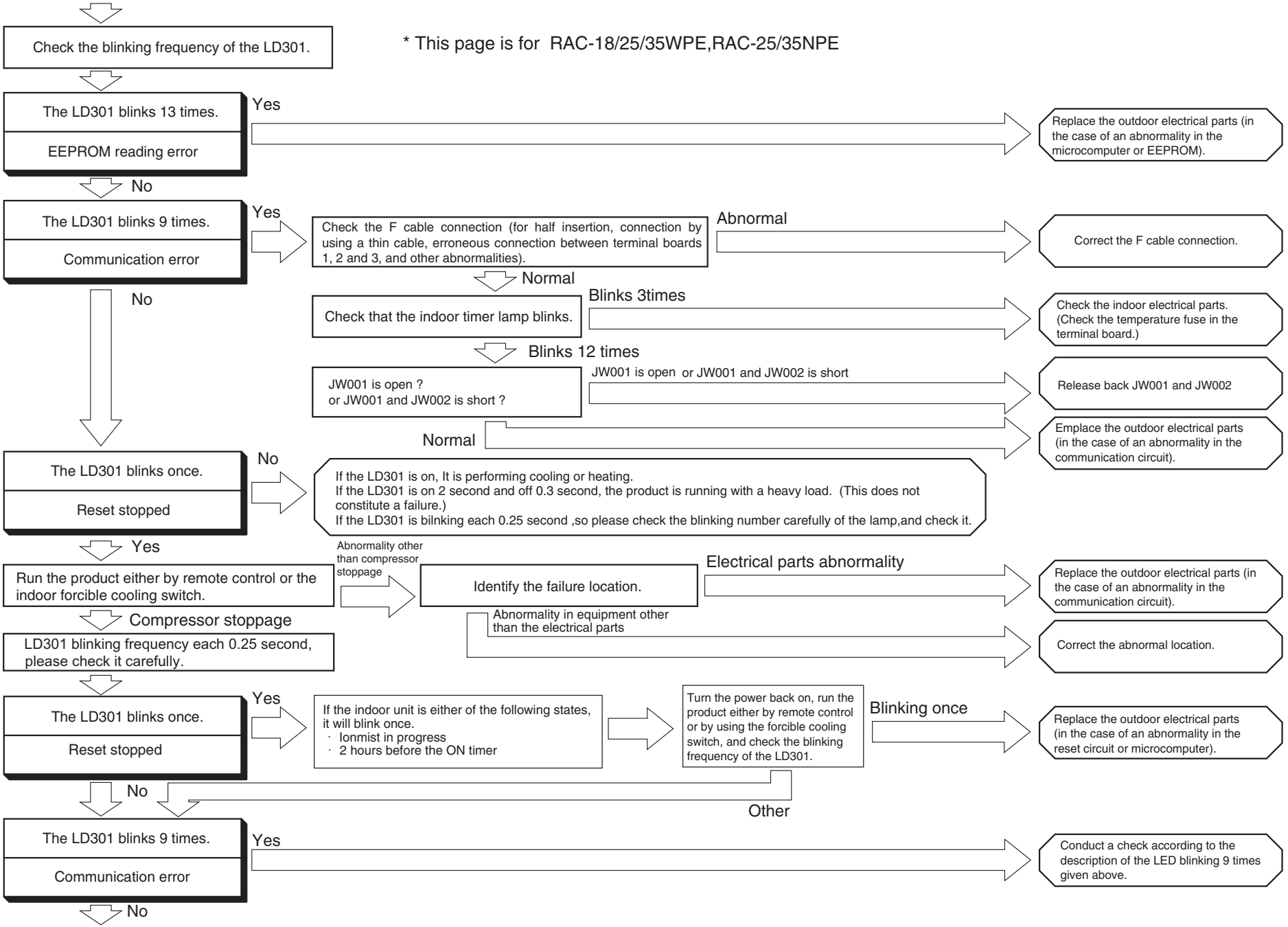
※OTHERS CHECK POINTS

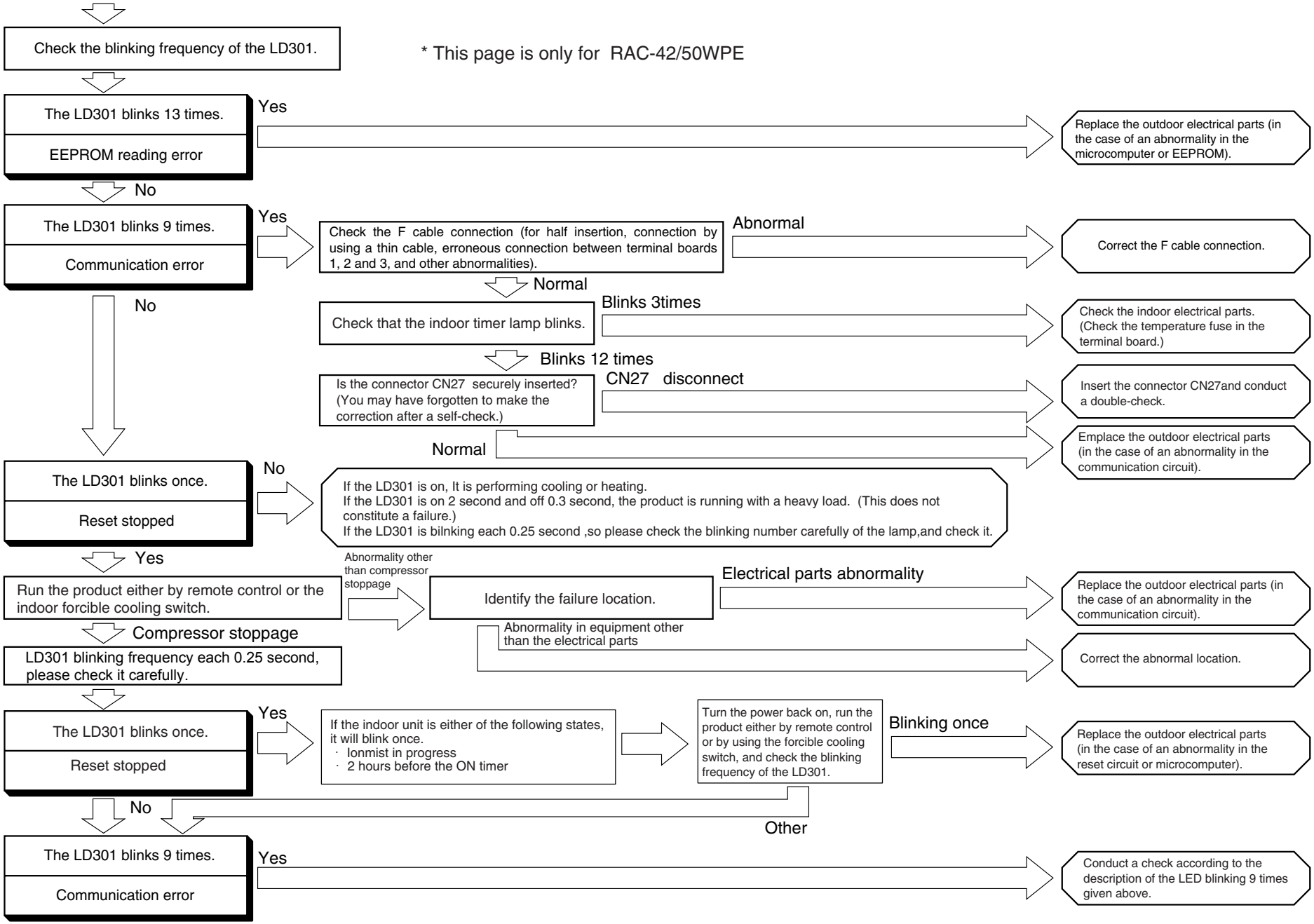
1. DIAGNOSIS FOR 『REVERSING VALVE OPERATION ERROR』 ;
⇒CHECK REVERSING VALVE WIRE CONNECTION EITHER WIRE BROKEN OR NOT. IF OK CHECK 3.15A FUSE. IF BROKEN REPLACE FUSE OR ODU CONTROLLER.
2. 『WHEN DISPLAY THE COMMUNICATION ERROR OR THE OUTDOOR DO NOT RUN AT ALL』.
⇒PLEASE CHECK THE CONTINUITY OF THE INDOOR ⇔ OUTDOOR CONNECTING CORD(F CABLE).

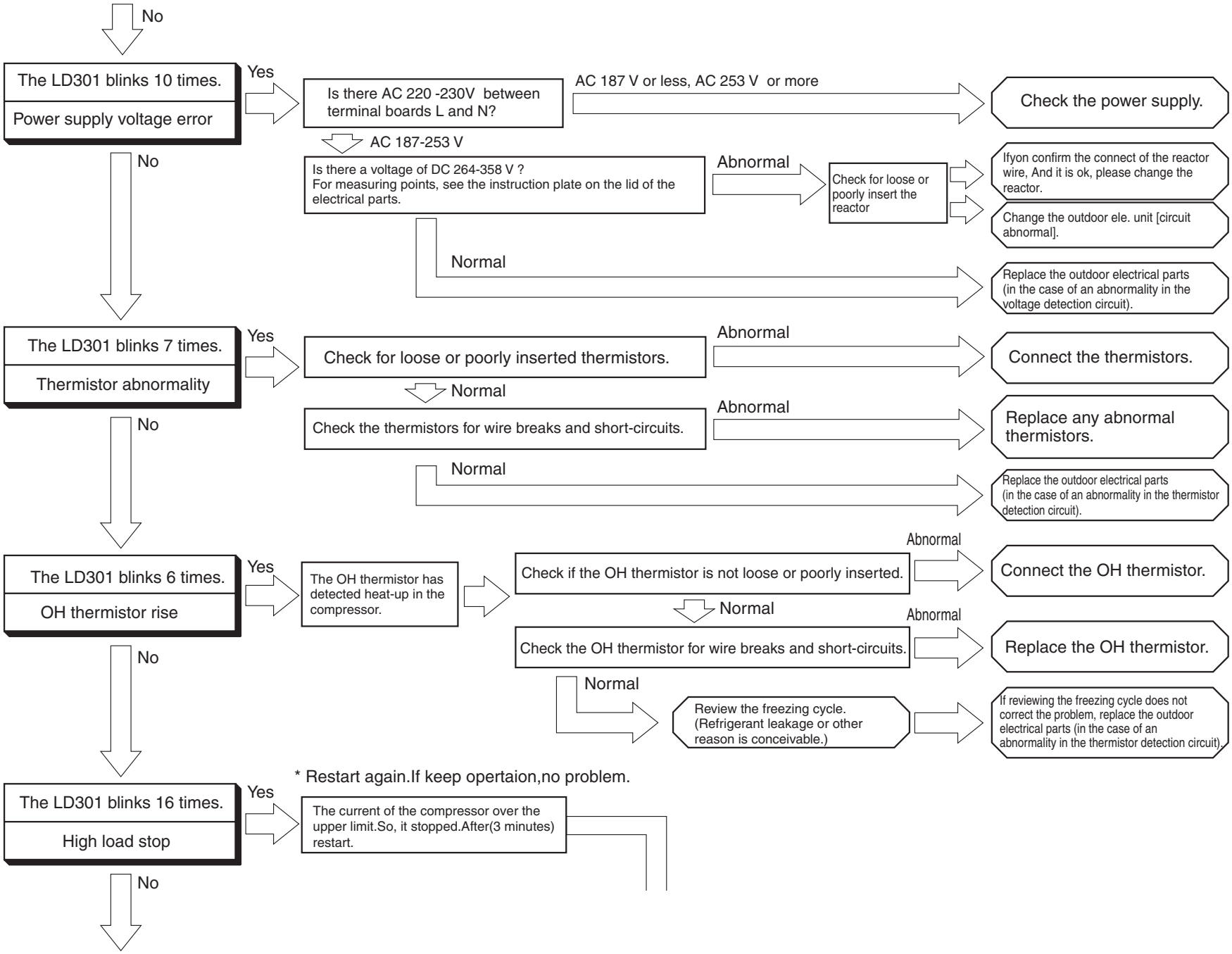
※OTHERS SELF-DIAGNOSIS CONTENTS REFER TO THE SERVICE MANUAL.

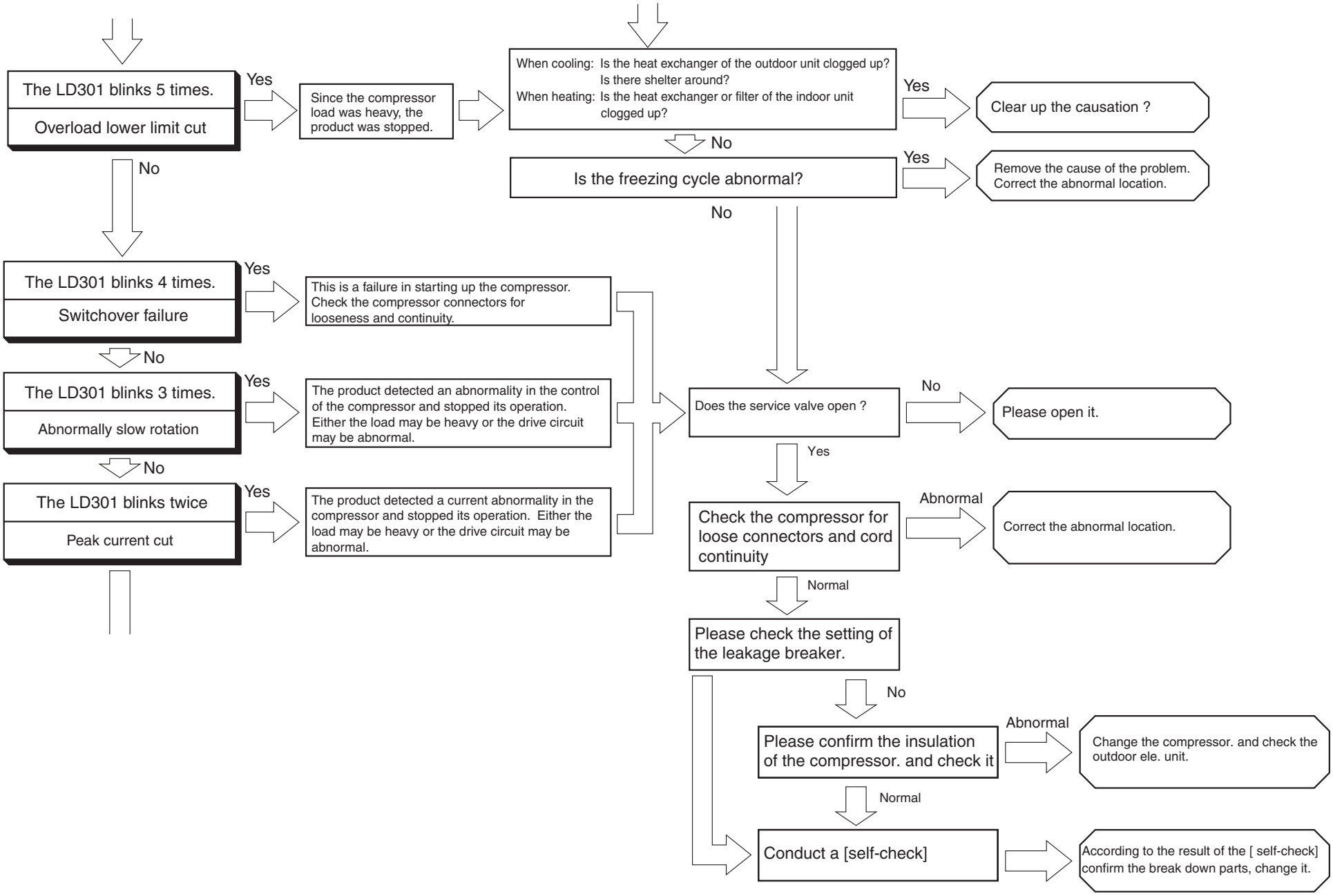
Checking the electrical parts of the outdoor unit

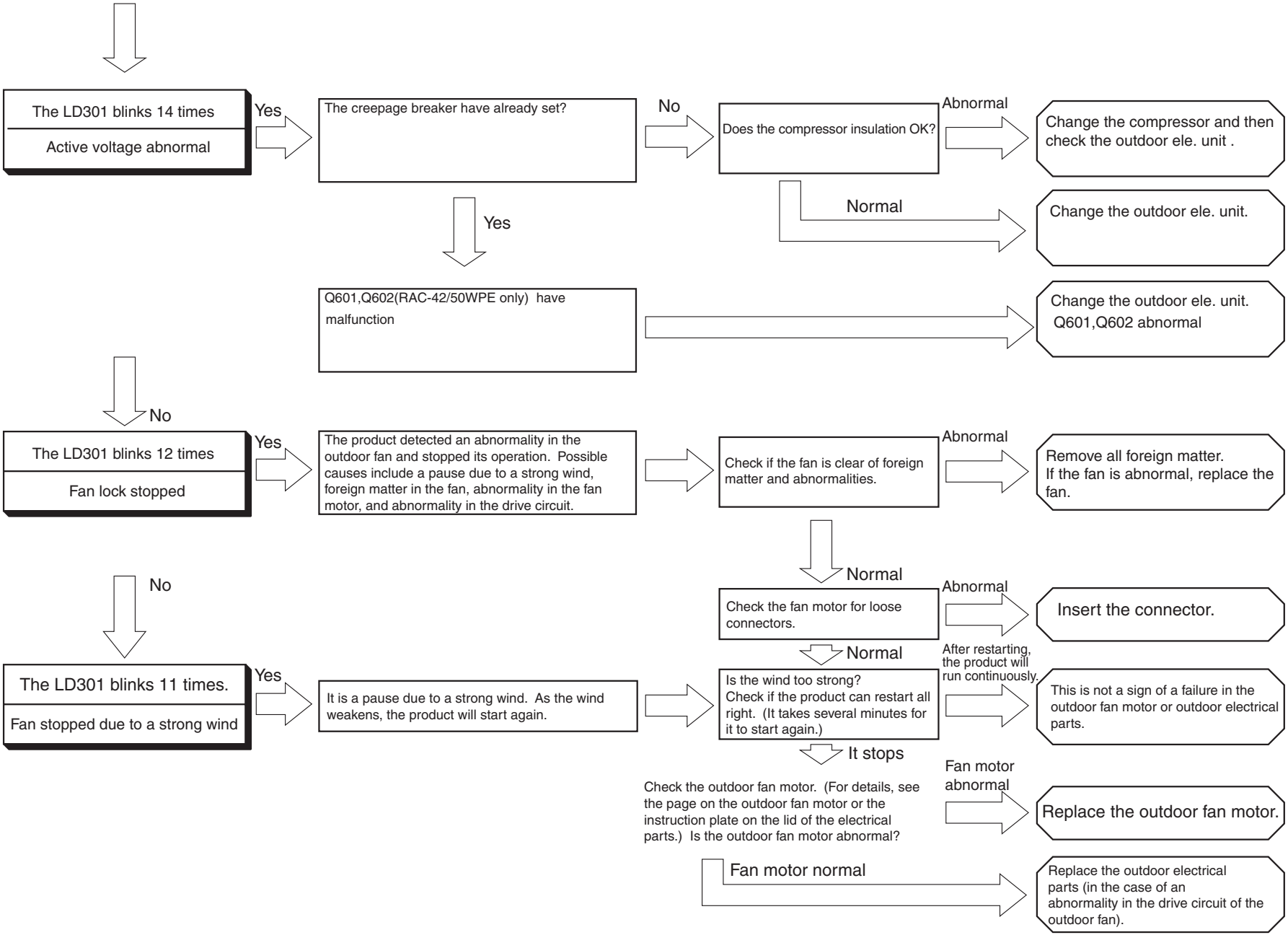



Check the blinking frequency of the LD301.
* This page is for RAC-18/25/35WPE,RAC-25/35NPE
The LD301 blinks 13 times.
EEPROM reading error
Yes
Replace the outdoor electrical parts (in the case of an abnormality in the microcomputer or EEPROM).
No
The LD301 blinks 9 times.
Communication error
Yes
Check the F cable connection (for half insertion, connection by using a thin cable, erroneous connection between terminal boards 1, 2 and 3, and other abnormalities).
Abnormal
Correct the F cable connection.
Normal
Check that the indoor timer lamp blinks.
Blinks 3times
Check the indoor electrical parts. (Check the temperature fuse in the terminal board.)
Blinks 12 times
JW001 is open ?
or JW001 and JW002 is short ?
JW001 is open or JW001 and JW002 is short
Release back JW001 and JW002
Normal
Emplace the outdoor electrical parts (in the case of an abnormality in the communication circuit).
No
The LD301 blinks once.
Reset stopped
If the LD301 is on, It is performing cooling or heating.
If the LD301 is on 2 second and off 0.3 second, the product is running with a heavy load. (This does not constitute a failure.)
If the LD301 is bilnking each 0.25 second ,so please check the blinking number carefully of the lamp,and check it.
Yes
Run the product either by remote control or the indoor forcible cooling switch.
Abnormality other than compressor stoppage
Identify the failure location.
Electrical parts abnormality
Replace the outdoor electrical parts (in the case of an abnormality in the communication circuit).
Abnormality in equipment other than the electrical parts
Correct the abnormal location.
Compressor stoppage
LD301 blinking frequency each 0.25 second, please check it carefully.
The LD301 blinks once.
Reset stopped
Yes
If the indoor unit is either of the following states, it will blink once.
· Ionmist in progress
· 2 hours before the ON timer
Turn the power back on, run the product either by remote control or by using the forcible cooling switch, and check the blinking frequency of the LD301.
Blinking once
Replace the outdoor electrical parts (in the case of an abnormality in the reset circuit or microcomputer).
No
Other
The LD301 blinks 9 times.
Communication error
Yes
Conduct a check according to the description of the LED blinking 9 times given above.
No


Check the blinking frequency of the LD301.
* This page is only for RAC-42/50WPE
The LD301 blinks 13 times.
EEPROM reading error
Yes
Replace the outdoor electrical parts (in the case of an abnormality in the microcomputer or EEPROM).
No
The LD301 blinks 9 times.
Communication error
Yes
Check the F cable connection (for half insertion, connection by using a thin cable, erroneous connection between terminal boards 1, 2 and 3, and other abnormalities).
Abnormal
Correct the F cable connection.
Normal
No
Check that the indoor timer lamp blinks.
Blinks 3times
Check the indoor electrical parts. (Check the temperature fuse in the terminal board.)
Blinks 12 times
Is the connector CN27 securely inserted? (You may have forgotten to make the correction after a self-check.)
CN27 disconnect
Insert the connector CN27and conduct a double-check.
Normal
Emplace the outdoor electrical parts (in the case of an abnormality in the communication circuit).
The LD301 blinks once.
Reset stopped
No
If the LD301 is on, It is performing cooling or heating.
If the LD301 is on 2 second and off 0.3 second, the product is running with a heavy load. (This does not constitute a failure.)
If the LD301 is bilnking each 0.25 second ,so please check the blinking number carefully of the lamp,and check it.
Yes
Run the product either by remote control or the indoor forcible cooling switch.
Abnormality other than compressor stoppage
Identify the failure location.
Electrical parts abnormality
Replace the outdoor electrical parts (in the case of an abnormality in the communication circuit).
Abnormality in equipment other than the electrical parts
Correct the abnormal location.
Compressor stoppage
LD301 blinking frequency each 0.25 second, please check it carefully.
The LD301 blinks once.
Reset stopped
Yes
If the indoor unit is either of the following states, it will blink once.
· Ionmist in progress
· 2 hours before the ON timer
Turn the power back on, run the product either by remote control or by using the forcible cooling switch, and check the blinking frequency of the LD301.
Blinking once
Replace the outdoor electrical parts (in the case of an abnormality in the reset circuit or microcomputer).
No
Other
The LD301 blinks 9 times.
Communication error
Yes
Conduct a check according to the description of the LED blinking 9 times given above.


No
The LD301 blinks 10 times.
Power supply voltage error
Yes
Is there AC 220 -230V between terminal boards L and N?
AC 187 V or less, AC 253 V or more
Check the power supply.
AC 187-253 V
No
Is there a voltage of DC 264-358 V ?
For measuring points, see the instruction plate on the lid of the electrical parts.
Abnormal
Check for loose or poorly insert the reactor
Ifyon confirm the connect of the reactor wire, And it is ok, please change the reactor.
Change the outdoor ele. unit [circuit abnormal].
Normal
Replace the outdoor electrical parts (in the case of an abnormality in the voltage detection circuit).
The LD301 blinks 7 times.
Thermistor abnormality
Yes
Check for loose or poorly inserted thermistors.
Abnormal
Connect the thermistors.
Normal
No
Check the thermistors for wire breaks and short-circuits.
Abnormal
Replace any abnormal thermistors.
Normal
Replace the outdoor electrical parts (in the case of an abnormality in the thermistor detection circuit).
The LD301 blinks 6 times.
OH thermistor rise
Yes
The OH thermistor has detected heat-up in the compressor.
Check if the OH thermistor is not loose or poorly inserted.
Abnormal
Connect the OH thermistor.
Normal
No
Check the OH thermistor for wire breaks and short-circuits.
Abnormal
Replace the OH thermistor.
Normal
Review the freezing cycle. (Refrigerant leakage or other reason is conceivable.)
If reviewing the freezing cycle does not correct the problem, replace the outdoor electrical parts (in the case of an abnormality in the thermistor detection circuit).
* Restart again.If keep opertaion,no problem.
The LD301 blinks 16 times.
High load stop
Yes
The current of the compressor over the upper limit.So, it stopped.After(3 minutes) restart.
No


The LD301 blinks 5 times.
Overload lower limit cut
Yes
Since the compressor load was heavy, the product was stopped.
When cooling: Is the heat exchanger of the outdoor unit clogged up? Is there shelter around?
When heating: Is the heat exchanger or filter of the indoor unit clogged up?
Yes
Clear up the causation ?
No
Is the freezing cycle abnormal?
Yes
Remove the cause of the problem. Correct the abnormal location.
No
No
The LD301 blinks 4 times.
Switchover failure
Yes
This is a failure in starting up the compressor. Check the compressor connectors for looseness and continuity.
No
The LD301 blinks 3 times.
Abnormally slow rotation
Yes
The product detected an abnormality in the control of the compressor and stopped its operation. Either the load may be heavy or the drive circuit may be abnormal.
No
The LD301 blinks twice
Peak current cut
Yes
The product detected a current abnormality in the compressor and stopped its operation. Either the load may be heavy or the drive circuit may be abnormal.
Does the service valve open ?
No
Please open it.
Yes
Check the compressor for loose connectors and cord continuity
Abnormal
Correct the abnormal location.
Normal
Please check the setting of the leakage breaker.
No
Please confirm the insulation of the compressor. and check it
Abnormal
Change the compressor. and check the outdoor ele. unit.
Normal
Conduct a [self-check]
According to the result of the [self-check] confirm the break down parts, change it.


The LD301 blinks 14 times
Active voltage abnormal
Yes
The creepage breaker have already set?
No
Does the compressor insulation OK?
Abnormal
Change the compressor and then check the outdoor ele. unit .
Normal
Change the outdoor ele. unit.
Yes
Q601,Q602(RAC-42/50WPE only) have malfunction
Change the outdoor ele. unit. Q601,Q602 abnormal
No
The LD301 blinks 12 times
Fan lock stopped
Yes
The product detected an abnormality in the outdoor fan and stopped its operation. Possible causes include a pause due to a strong wind, foreign matter in the fan, abnormality in the fan motor, and abnormality in the drive circuit.
Check if the fan is clear of foreign matter and abnormalities.
Abnormal
Remove all foreign matter. If the fan is abnormal, replace the fan.
Normal
No
Check the fan motor for loose connectors.
Abnormal
Insert the connector.
Normal
The LD301 blinks 11 times.
Fan stopped due to a strong wind
Yes
It is a pause due to a strong wind. As the wind weakens, the product will start again.
Is the wind too strong? Check if the product can restart all right. (It takes several minutes for it to start again.)
After restarting, the product will run continuously.
This is not a sign of a failure in the outdoor fan motor or outdoor electrical parts.
It stops
Check the outdoor fan motor. (For details, see the page on the outdoor fan motor or the instruction plate on the lid of the electrical parts.) Is the outdoor fan motor abnormal?
Fan motor abnormal
Replace the outdoor fan motor.
Fan motor normal
Replace the outdoor electrical parts (in the case of an abnormality in the drive circuit of the outdoor fan).

CHECKING THE REFRIGERATING CYCLE (JUDGING BETWEEN GAS LEAKAGE AND COMPRESSOR DEFECTIVE)

1. Troubleshooting procedure (No operation, No heating, No cooling)

Connect U,V,W phase leads to the power module again and operate the air conditioner.

Is the self-diagnosis lamp mode as shown on the right?

Self-diagnosis lamp \ Lighting mode	Blinks 2 times	Blinks 3 times	Blinks 4 times	Blinks 5 times	Blinks 6 times	Blinks 8times
LD301	▨	▨	▨	▨	▨	▨
Time until the lamp lights	Approx. 10 seconds			Approx. 10 seconds	Within Approx. 30 seconds	Approx. 10 seconds
Possible malfunctioning part	Compressor				Gas leakage	Compressor

▨ Blinking □ off

YES

Outdoor air temperature (℃)	Charge port pressure MPa(G) {kgf/cm²(G)}
50	2.96 {30.14}
45	2.62 {26.72}
40	2.31 {23.58}
35	2.03 {20.73}
30	1.78 {18.14}
25	1.55 {15.79}
20	1.34 {13.66}
15	1.15 {11.74}
10	0.98 {10.02}
5	0.83 { 8.48}
0	0.70 { 7.10}
−5	0.58 { 5.89}
−10	0.47 { 4.81}

(R32)
The values above are the theoretical ones.

Stop to operate and check the gas pressure in balancing mode.

Normal

- Checking the IPM (main P.W.B.)

When the self-diagnosis lamp lights in the same condition as above.

Error (Gas leaking)

Gas leaks.
Repair and seal refrigerant.

The compressor is defective. Replace it and seal refrigerant.
(If the compressor checker for an inverter type air conditioner is available, re-check using it.)

Perform a final check of operation.

How to run the product with the outdoor unit test switch

If the indoor electrical parts is out of order and if you wish to run the outdoor unit

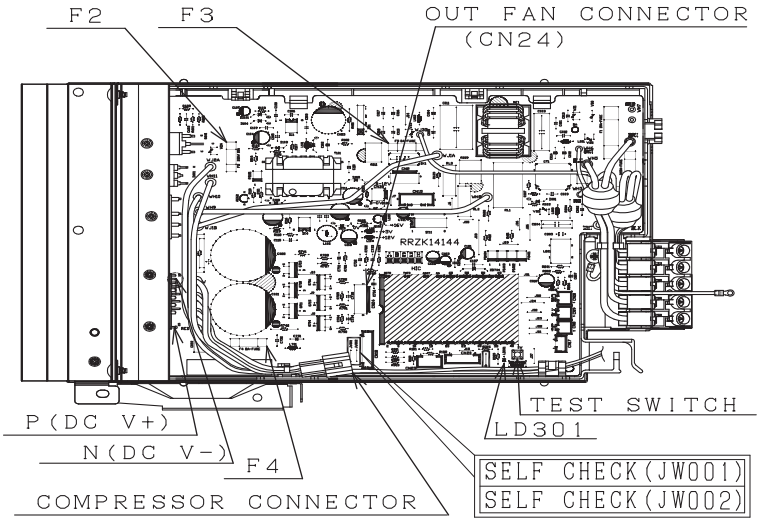
1. Turn on the outdoor terminal boards L and N (220-230 V AC).
2. Confirm that the "LD301" blinks once from the terminal side of the outdoor unit. Afterwards (when about 30 sec elapses after the power turns on), confirm that the "LD301" changes to blinking 9 times (communication error).
3. When the "LD301" is blinks 9 times, if you press the test switch, the "LD301" lights up.

If you release your finger from the test switch within 1 sec to 5 sec after pressing the switch, the forced cooling operation starts.
※(If you press the test switch for 5 sec or longer, the self-check diagnosis starts. In this case, turn the power off and start the procedure from 1 again.)

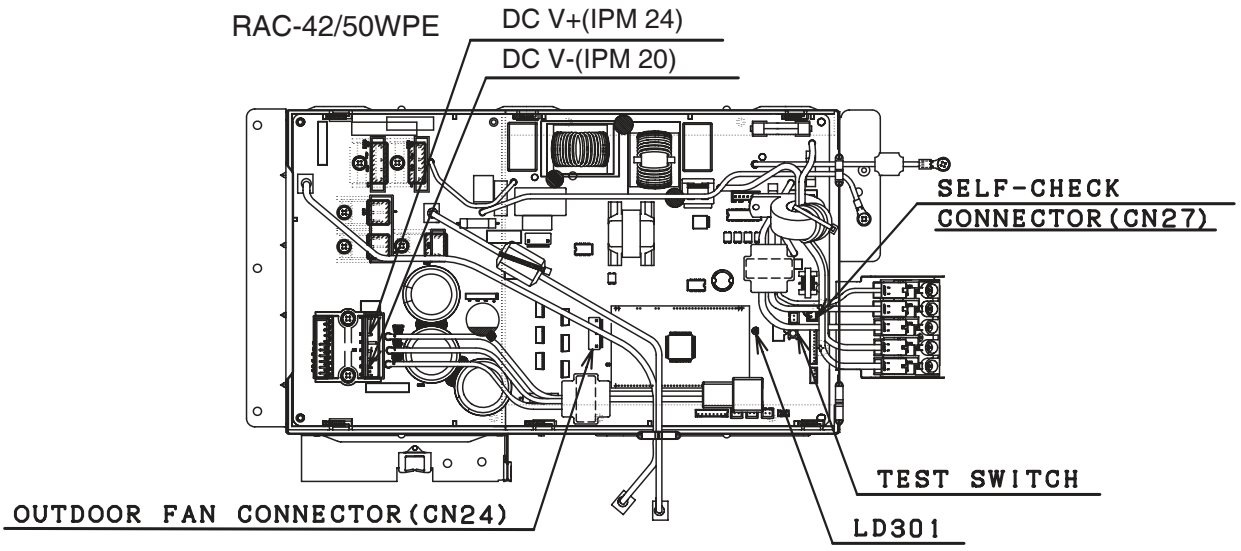
※(For the initialization of the expansion valve, it may take 1 min until the operation starts.)

4. When you press the test switch again for 1 sec or longer, the unit stops the operation.

RAC-18/25/35WPE
RAC-25/35NPE



RAC-42/50WPE



※Cautions

1. Applying power directly to the outdoor unit will cause a rush current to stress the outdoor unit. Therefore, if the indoor unit is not out of order, do not use the method descried in 2).
2. Before making the connections, be sure to turn off the breaker.
3. Do not under any circumstances run the product for more than 5 minutes.
4. Doing work with the compressor connector removed will cause the LD301 to blink 4 times. It will not start.
5. For another test run, turn off the breaker and turn it back on. (The test switch is accepted only once after power-on. After operation by remote control, it is not accepted.)
6. When the operation with the test switch is over, turn off the breaker and set the connectors back.

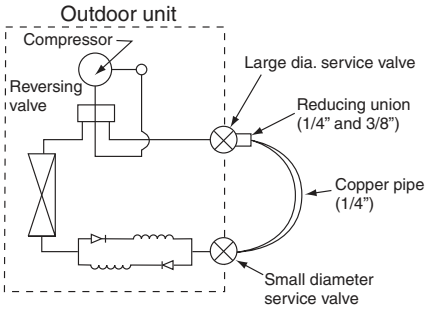
HOW TO OPERATE THE OUTDOOR UNIT INDEPENDENTLY

RAC-18/25/35WPE
RAC-25/35NPE

1. Connect the large dia. pipe side and small dia. pipe side service valve using a pipe.

Connect the small diameter service valve and the large diameter service valve using the reducing union and copper pipe as shown on the right.

Charge refrigerant of 300g after vacuuming (※1)



Parts to be prepared

(1) Reducing union
1/4" (6.35 mm)
3/8" (9.52 mm)
(2) Copper pipe (1/4" and 3/8")

Do not operate for more than 5 minutes

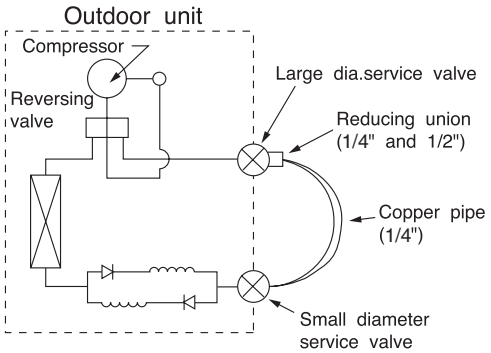
The operation method is the same as "How to operate using the connector to servicing the outdoor unit".
※1 The charging amount of 300g is equivalent to the load in normal operation.

RAC-42/50WPE

1. Connect the large dia. pipe side and small dia. pipe side service valves using a pipe.

Connect the small diameter service value and the large diameter service valve using the reducing union and copper pipe as shown on the right.

Charge refrigerant of 300g after vacuuming (※1)



Parts to be prepared

(1) Reducing union
1/4" (6.35mm)
1/2" (12.7mm)
(2) Copper pipe (1/4" and 1/2")
(3) Shorting leads
2 leads approx. 10 cm long with alligator clip or IC clip

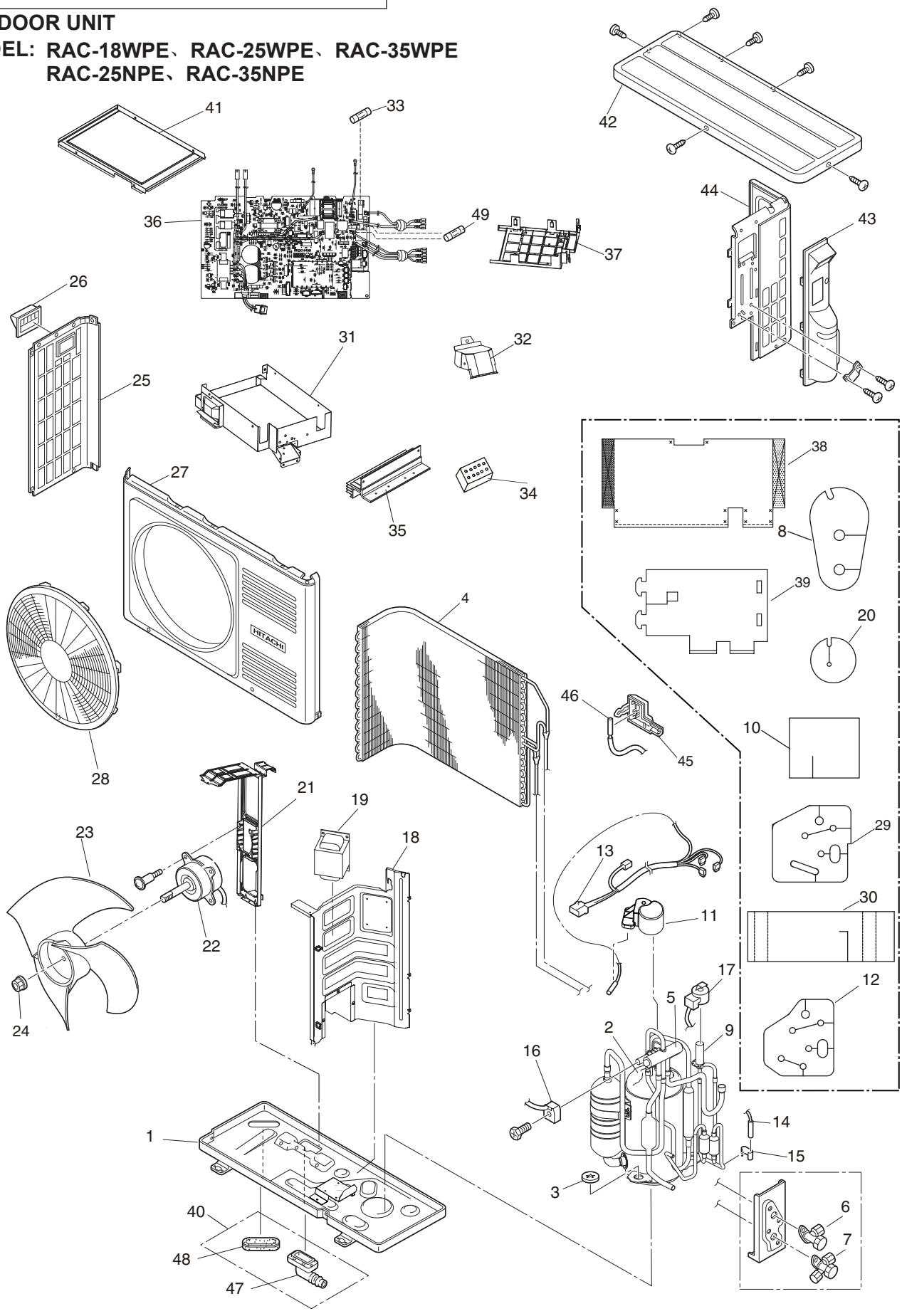
Do not operate for 5 minutes or more.

The operation method is the same as "How to operate using the connector to servicing the outdoor unit".
※1 The charging amount of 300g is equivalent to the load in normal operation.

PARTS LIST AND DIAGRAM

OUTDOOR UNIT

MODEL: RAC-18WPE、RAC-25WPE、RAC-35WPE
RAC-25NPE、RAC-35NPE



INDOOR UNIT

NO	JCH-WH PARTS NO			Q'TY/ UNIT	PARTS NAME
	RAC-18WPE	RAC-25WPE	RAC-35WPE		
1		HWRAC-35WPC A01		1	BASE
2		HWRAC-18WED A02		1	COMPRESSOR
3		HWRAC-25YH4 A04		3	PUSH NUT
4		HWRAC-18WPD A01		1	CONDENSER
5		HWRAC-18WPD A02		1	REVERSING VALVE
6		HWRAC-50WEA A06		1	2S-VALVE
7		HWRAC-10GH5 A03		1	3S-VALVE
8		HWRAC-SX10HAK A09		1	SOUND PROOF COVER ASSEMBLY
9		HWRAC-18WPD A03		1	ELECTRIC EXPANSION VALVE
10		HWRAC-25WXA A04		1	SOUND PROOF COVER ASSEMBLY
11		HWRAC-18WEB A07		1	O.L.R COVER
12		HWRAC-18WPD A04		1	SOUND PROOF COVER ASSEMBLY
13		HWRAC-18WED A06		1	CONNECTING CORD(COMP)
14		HWRAC-E10H2 A09		1	THERMISTOR (DEFROST)
15		HWRAC-25WX8 A02		1	THERMISTOR SUPPORT
16		HWRAC-25WXD A09		1	COIL(REVERSING VALVE)
17		HWRAC-50WED A07		1	COIL(EXPANSION VALVE)
18		HWRAC-18WPD A05		1	PARTITION
19		HWRAC-18WED A07		1	REACTOR 1
20		HWRAC-35WPB A05		1	SOUND PROOF COVER ASS'Y
21		HWRAC-14EH4 A08		1	FAN MOTOR SUPPORT
22		HWRAC-50WED A10		1	FAN MOTOR
23		HWRAC-18WED A09		1	PROPELLER FAN
24		HWRAC-50NX2 A25		1	NUT (PROPELLER.FAN)
25		HWRAC-25YH4 A25		1	SIDE COVER (L)
26		HWRAC-25YH4 A26		1	HANDLE
27		HWRAC-35WPC A08		1	FRONT COVER
28		HWRAC-E14H3 909		1	DISCHARGE GRILL
29		HWRAC-18WPD A06		1	SOUND PROOF COVER ASS'Y
30		HWRAC-18WPD A07		1	SOUND PROOF COVER ASS'Y
31		HWRAC-35WPC A09		1	ELECTRIC PARTS PLATE
32		HWRAC-18WPD A08		1	TERMINAL COVER
33		HWRAC-18WPD A09		1	FUSE (15A)
34		HWRAC-50WED A16		1	TERMINAL BOARD (5P)
35		HWRAC-25YHA5 A21		1	HEAT SINK (REGURATOR1)
36	HWRAC-18WPE A01	HWRAC-25WPE A01	HWRAC-35WPE A01	1	P.W.B(CONTROL)
37		HWRAC-35WPC A11		1	SUPPORT(P.W.B CONTROL)
38		HWRAC-18WPD A11		1	SOUND PROOF COVER ASS'Y
39		HWRAC-18WPD A12		1	SOUND PROOF COVER ASS'Y
40		HWRAC-25YH4 A48		1	BUSH ASSEMBLY
41		HWRAC-18WPD A13		1	ELECTRIC PARTS COVER
42		HWRAC-14EH4 A16		1	TOP COVER
43		HWRAC-18WPD A14		1	SERVICE VALVE COVER
44		HWRAC-E14H3 915		1	SIDE COVER (R)
45		HWRAC-14EH4 A15		1	COVER(OUT DOOR THERMISTOR)
46		HWRAC-E14H3 914		1	THERMISTOR(OUTDOOR TEMPERATURE)
47		HWRAC-25YH4 A50		1	DRAIN PIPE
48		HWRAC-25YH4 A49		1	BUSH
49		HWRAC-25WXD A11		2	FUSE(3.15A)

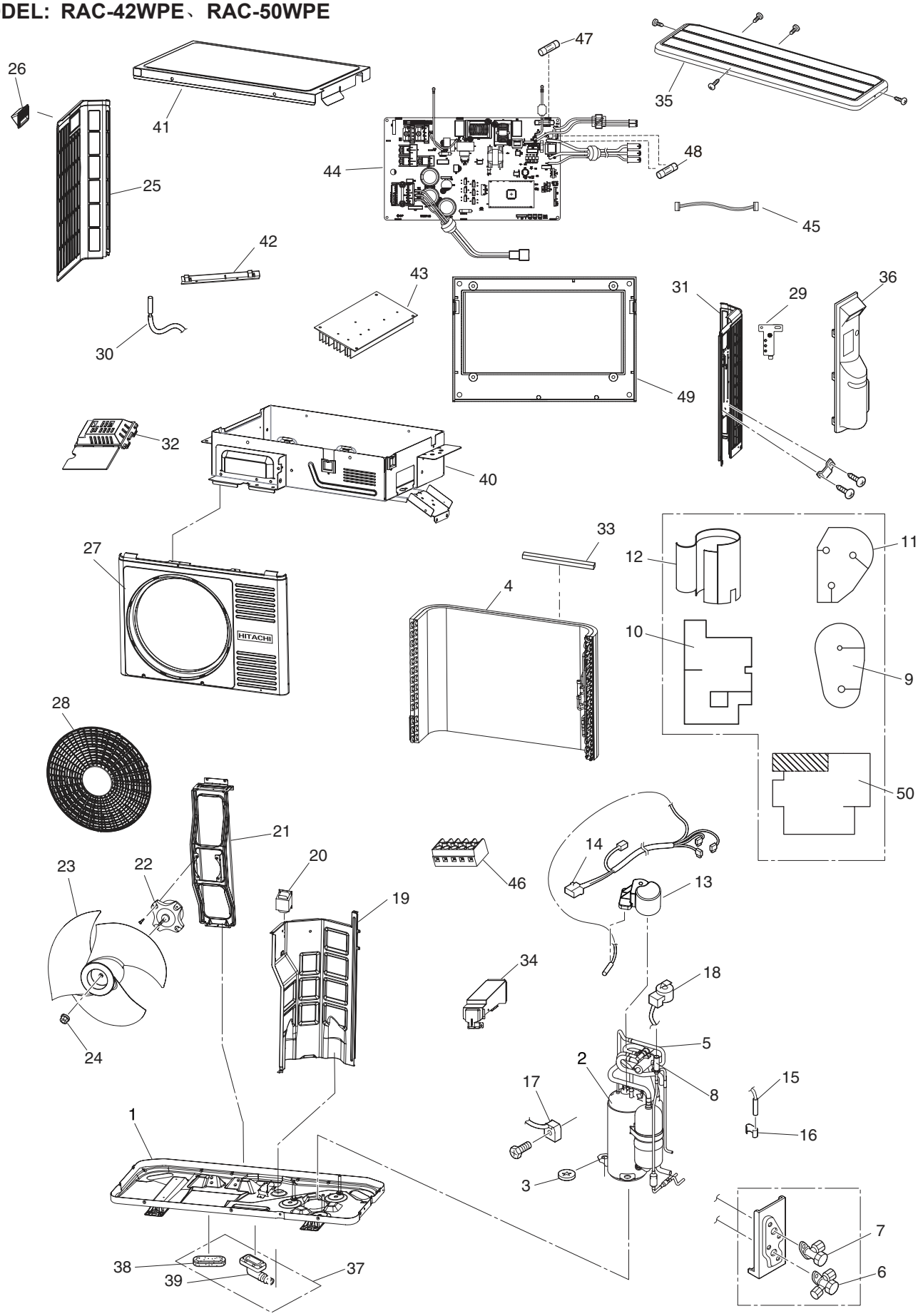
INDOOR UNIT

NO	JCH-WH PARTS NO		Q'TY/ UNIT	PARTS NAME
	RAC-25NPE	RAC-35NPE		
1	HWRAC-35WPC A01		1	BASE
2	HWRAC-18WED A02		1	COMPRESSOR
3	HWRAC-25YH4 A04		3	PUSH NUT
4	HWRAC-18WPD A01		1	CONDENSER
5	HWRAC-18WPD A02		1	REVERSING VALVE
6	HWRAC-50WEA A06		1	2S-VALVE
7	HWRAC-10GH5 A03		1	3S-VALVE
8	HWRAC-SX10HAK A09		1	SOUND PROOF COVER ASSEMBLY
9	HWRAC-18WPD A03		1	ELECTRIC EXPANSION VALVE
10	HWRAC-25WXA A04		1	SOUND PROOF COVER ASSEMBLY
11	HWRAC-18WEB A07		1	O.L.R COVER
12	HWRAC-18WPD A04		1	SOUND PROOF COVER ASSEMBLY
13	HWRAC-18WED A06		1	CONNECTING CORD(COMP)
14	HWRAC-E10H2 A09		1	THERMISTOR (DEFROST)
15	HWRAC-25WX8 A02		1	THERMISTOR SUPPORT
16	HWRAC-25WXD A09		1	COIL(REVERSING VALVE)
17	HWRAC-50WED A07		1	COIL(EXPANSION VALVE)
18	HWRAC-18WPD A05		1	PARTITION
19	HWRAC-18WED A07		1	REACTOR 1
20	HWRAC-35WPB A05		1	SOUND PROOF COVER ASS'Y
21	HWRAC-14EH4 A08		1	FAN MOTOR SUPPORT
22	HWRAC-50WED A10		1	FAN MOTOR
23	HWRAC-18WED A09		1	PROPELLER FAN
24	HWRAC-50NX2 A25		1	NUT (PROPELLER.FAN)
25	HWRAC-25YH4 A25		1	SIDE COVER (L)
26	HWRAC-25YH4 A26		1	HANDLE
27	HWRAC-35WPC A08		1	FRONT COVER
28	HWRAC-E14H3 909		1	DISCHARGE GRILL
29	HWRAC-18WPD A06		1	SOUND PROOF COVER ASS'Y
30	HWRAC-18WPD A07		1	SOUND PROOF COVER ASS'Y
31	HWRAC-35WPC A09		1	ELECTRIC PARTS PLATE
32	HWRAC-18WPD A08		1	TERMINAL COVER
33	HWRAC-18WPD A09		1	FUSE (15A)
34	HWRAC-50WED A16		1	TERMINAL BOARD (5P)
35	HWRAC-25YHA5 A21		1	HEAT SINK (REGURATOR1)
36	HWRAC-25NPE A01	HWRAC-35NPE A01	1	P.W.B(CONTROL)
37	HWRAC-35WPC A11		1	SUPPORT(P.W.B CONTROL)
38	HWRAC-18WPD A11		1	SOUND PROOF COVER ASS'Y
39	HWRAC-18WPD A12		1	SOUND PROOF COVER ASS'Y
40	HWRAC-25YH4 A48		1	BUSH ASSEMBLY
41	HWRAC-18WPD A13		1	ELECTRIC PARTS COVER
42	HWRAC-14EH4 A16		1	TOP COVER
43	HWRAC-18WPD A14		1	SERVICE VALVE COVER
44	HWRAC-E14H3 915		1	SIDE COVER (R)
45	HWRAC-14EH4 A15		1	COVER(OUT DOOR THERMISTOR)
46	HWRAC-E14H3 914		1	THERMISTOR(OUTDOOR TEMPERATURE)
47	HWRAC-25YH4 A50		1	DRAIN PIPE
48	HWRAC-25YH4 A49		1	BUSH
49	HWRAC-25WXD A11		2	FUSE(3.15A)

PARTS LIST AND DIAGRAM

OUTDOOR UNIT

MODEL: RAC-42WPE、RAC-50WPE



OUTDOOR UNIT

NO	JCH-WH PARTS NO		Q'TY/ UNIT	PARTS NAME
	RAC-42WPE	RAC-50WPE		
1	HWRAC-50WPC A01		1	BASE
2	HWRAC-50WED A01		1	COMPRESSOR
3	HWRAC-50NX2 A04		3	PUSH NUT
4	HWRAC-50WEC A01		1	CONDENSER
5	HWRAC-42WPD A01		1	REVERSING VALVE
6	HWRAC-50WEA A05		1	SERVICE VALVE
7	HWRAC-50WEA A06		1	SERVICE VALVE
8	HWRAC-50WED A03		1	ELECTRIC EXPANSION VALVE
9	HWRAC-50WED A04		1	SOUND PROOF
10	HWRAC-50WPC A04		1	SOUND PROOF
11	HWRAC-50WEC A07		2	SOUND PROOF
12	HWRAC-42WPD A02		1	SOUND PROOF
13	HWRAC-25WXD A08		1	O.L.R COVER
14	HWRAC-50WEA A12		1	CONNECTING CORD(COMP)
15	HWRAC-50NX2 A16		1	THERMISTOR (DEFROST)
16	HWRAC-50NX2 A17		1	THERMISTOR SUPPORT
17	HWRAC-25WXD A09		1	COIL(REVERSING VALVE)
18	HWRAC-50WED A07		1	COIL(EXPANSION VALVE)
19	HWRAC-50WED A08		1	PARTITION
20	HWRAC-50WED A09		1	REACTOR
21	HWRAC-50WEB A02		1	FAN MOTOR SUPPORT
22	HWRAC-42WPD A03		1	FAN MOTOR
23	HWRAC-50WEC A12		1	PROPELLER FAN
24	HWRAC-50NX2 A25		1	NUT (PROPELLER FAN)
25	HWRAC-50NX2 A26		1	SIDE COVER (L)
26	HWRAC-50NX2 A27		1	HANDLE
27	HWRAC-50WED A11		1	FRONT COVER
28	HWRAC-50WEC A14		1	DISCHARGE GRILL
29	HWRAC-50WEA A14		1	EARTH-PLATE
30	HWRAC-E14H3 914		1	THERMISTOR(OUTDOOR TEMPERATURE)
31	HWRAC-50WED A12		1	SIDE COVER (R)
32	HWRAC-18WSPA A24		1	TC-COVER
33	HWRAC-50WEC A15		1	H-SHEET
34	HWRAC-50WEC A16		1	TERMINAL COVER
35	HWRAC-SX18HAK A28		1	TOP COVER
36	HWRAC-50WED A13		1	SERVICE VALVE COVER
37	HWRAC-50NX2 A36		1	BUSH ASSEMBLY
38	HWRAC-50NX2 A37		2	BUSH
39	HWRAC-50NX2 A38		1	DRAIN PIPE
40	HWRAC-50WEC A17		1	ELECTRIC PARTS PLATE
41	HWRAC-50WED A14		1	ELECTRIC PARTS COVER
42	HWRAC-50WEB A07		2	SUPPORT2 (P.W.B.)
43	RAC-1F50KVY014		1	HEAT SINK
44	HWRAC-42WPE A01	HWRAC-50WPE A01	1	P.W.B.(MAIN)
45	HWRAC-50WEB A11		2	CORD(REACTOR)
46	HWRAC-50WED A16		1	TERMINAL BOARD (5P)
47	HWRAC-50WED A17		1	FUSE (25A)
48	HWRAC-25WXD A11		2	FUSE (3.15A)
49	HWRAC-50WEB A13		1	SUPPORT1(P.W.B.)
50	HWRAC-25WXD A04		1	SOUND PROOF

HITACHI

RAC-18WPE
RAC-25WPE
RAC-35WPE
RAC-42WPE
RAC-50WPE
RAC-25NPE
RAC-35NPE

JCH-WH NO.0125E