

TOSHIBA

FILE No. A90-9613

SERVICE MANUAL

**SPLIT TYPE
AIR CONDITIONER**

CEILING TYPE

RAV-132C-PE/RAV-132A-PE



CONTENTS

1. SPECIFICATION	3
2. CONSTRUCTION VIEWS	4
3. WIRING DIAGRAM	6
4. SPECIFICATIONS OF ELECTRICAL PARTS	8
5. REFRIGERANT PIPING DIAGRAM	9
6. PERFORMANCE CHARACTER	10
7. EXPLODED VIEWS AND PARTS LISTS	12

SUMMARY

- The units referred to within this manual conform with the protection requirements for Directives 89/336/EEC Electromagnetic Compatibility and 73/23/EEC Low Voltage.
- Operating conditions of units are as follows:

OUTDOOR TEMPERATURE	-2 a 43°C
ROOM TEMPERATURE	18 a 32°C
ROOM HUMIDITY	LESS THAN 80%

Note 1 : Cooling capacity is based on the following temperature conditions:
Indoor air inlet temperature 27°C DB, 19°C WB.
Outdoor air inlet temperature 35°C DB.

Note 2: For details on the Remote Controller and Control Circuits, refer to Service Manual A90-9504.

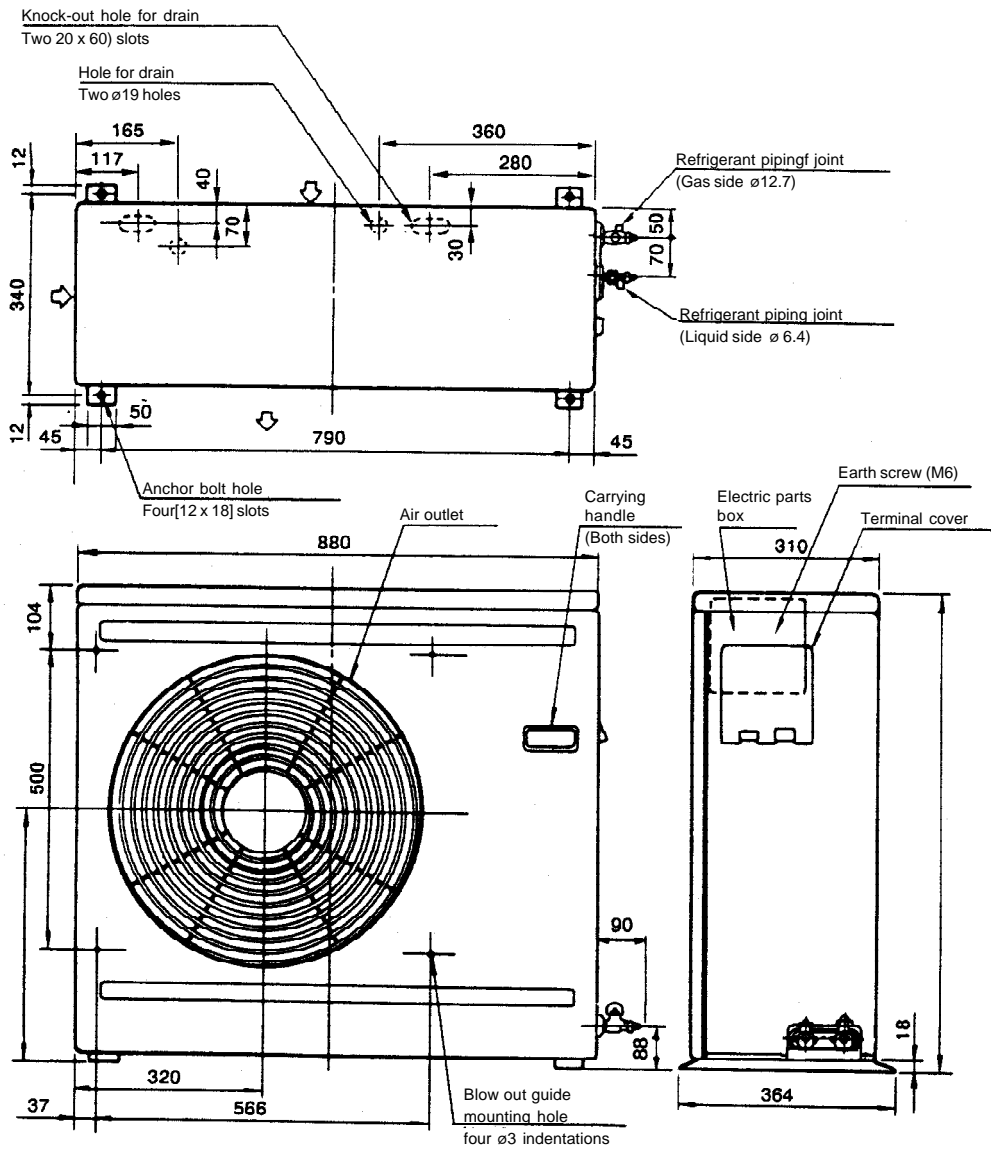
1. SPECIFICATION

ITEM	MODEL	RAV-132C-PE
Cooling capacity	kW	3,6
Power source	Phase	1
	V	220-240
	Hz	50
		COOLING
Power consumption	kW	2,1
Power factor	%	89
Running current	A	10,3
Starting current	A	60
Operating noise (SPL)	Indoor unit (high, med, low) dB(A)	41/38/35
	Outdoor unit dB(A)	52
Refrigerant	Name of refrigerant	R-22
	Charge volume kg	1,2
	Add. Volume (20-30m) g/m	35
Refrigerant Control		Capillary tube
Interconnection pipe	Larger side size mm	ø12,7 (1/2)
	Coupler style	Flare
	Smaller side size mm	ø6,4 (1/4)
	Coupler style	Flare
	Standard length m	7,5
	Maximum length (of one way) *1 m	30
	Maximum hieght difference	
	If indoor unit higher m	15
If outdoor unit higher m	30	
Condensate drain pipe diameter	mm	ø20 (ID)
INDOOR UNIT Model		RAV-132C-PE
Appearance colour		Silky mist
Dimensions	Hieght mm	188
	Width mm	1 030
	Depth mm	640
Net weight	kg	23
Heat exchanger type		Finned tube
Indoor fan type		Multi-blade fan
Air volume	m ³ /h	600
Fan motor output	W	34
Air filter		Washable
OUTDOOR UNIT Model		RAV-132A-PE
Appearance colour		Bronze white (Munsell 6Y7,5/1)
Dimensions	Hieght mm	740
	Width mm	880
	Depth mm	310
Net weight	kg	61
Heat exchanger type		Finned tube
Outdoor fan type		Propeller fan
Air flow volume	m ³ /h	2 700
Fan motor output	W	39
Compressor	Model	PH230X3-4LS
	Output kW	1,5
Protective device		Fuse, Crankcase heater, Overload relay

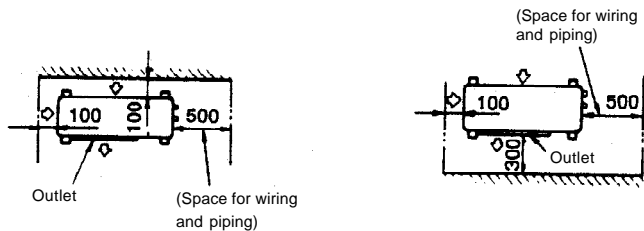
Specifications are subject to change without notice.

* Note 1: These mean actual length.

**2.2 Outdoor unit
RAV-132A-PE**



Space required for service



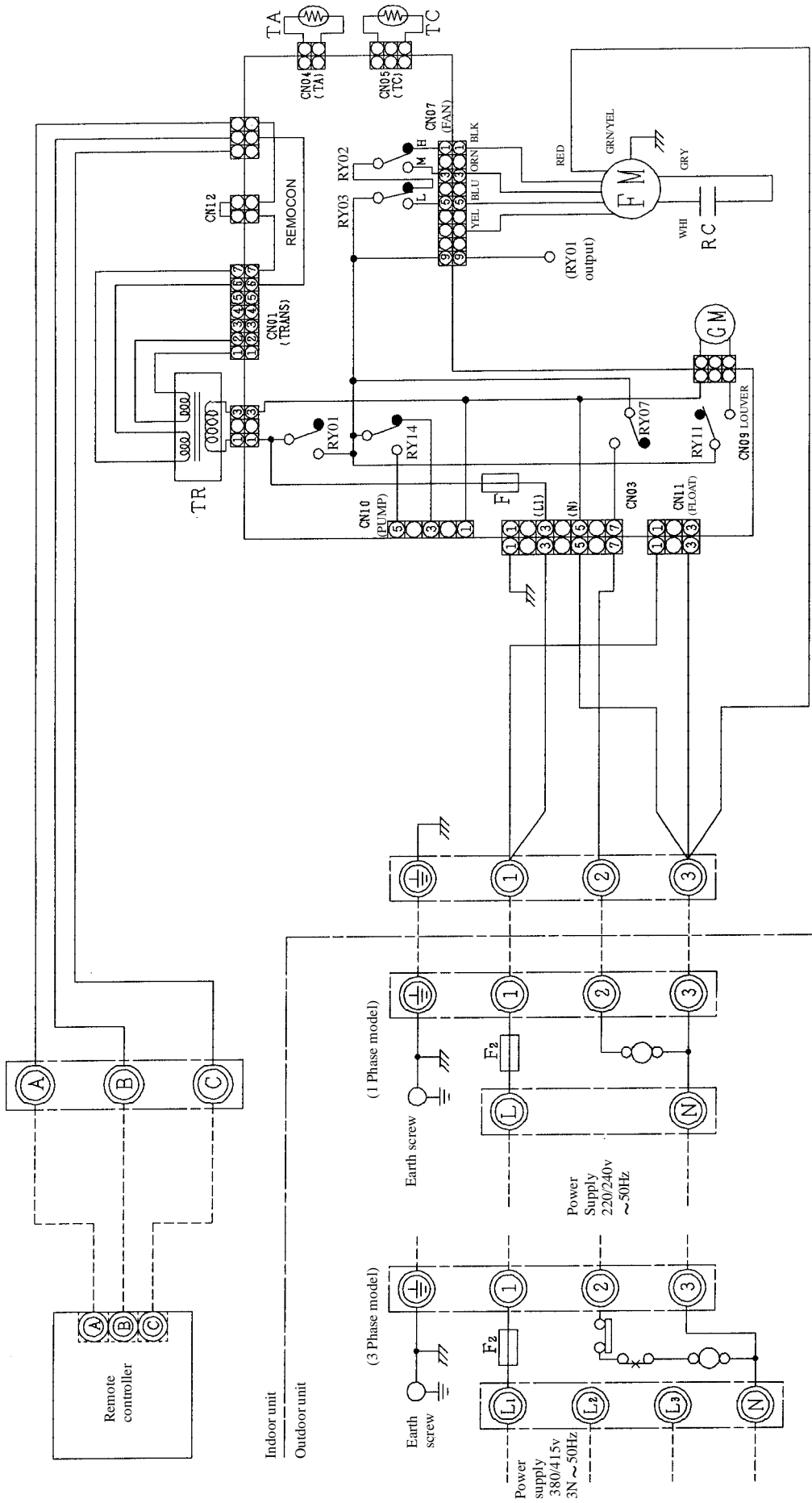
When installed with the inlet
faced to the wall side

When installed with the outlet
faced to the wall side

(Units: mm)

3. WIRING DIAGRAM

3.1 RAV-132C-PE

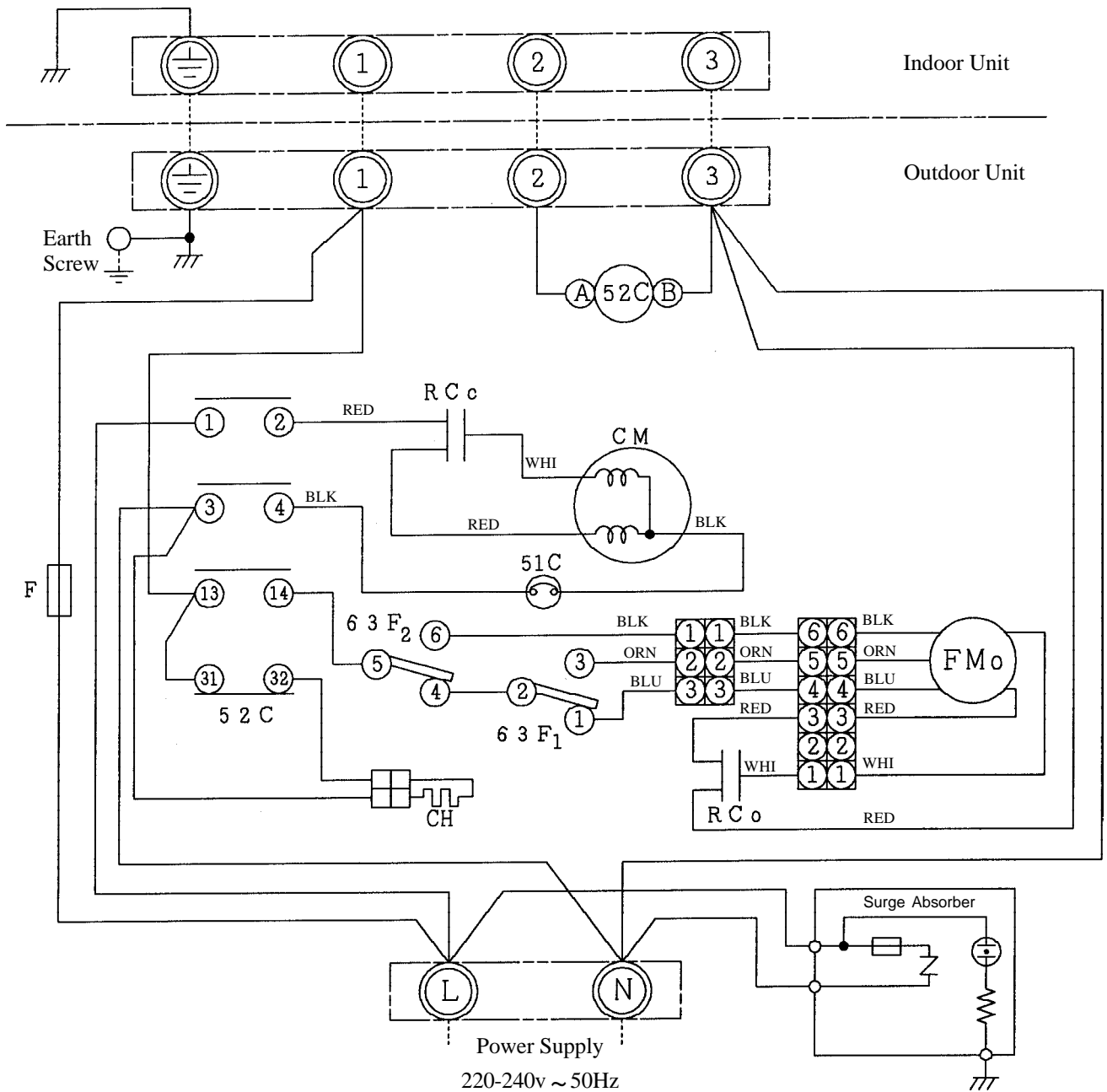


Symbol	Name	Symbol	Name
FM	Fan Motor	TC	Sensor
RC	Running Capacitor	RY01-RY14	Relay
TR	Transformer	GM	Geared Motor
TA	Sensor	F	Fuse (PCB)

© shows terminal block and figures show terminal numbers
 Broken lines show wiring at site

Do not operate the units with the magnetic contactor pushed in.

3.2 RAV-132A-PE



⊙ shows terminal block and figures show terminal numbers
 Broken lines show wiring at site

Do not operate the units with the magnetic contactor pushed in.

Symbol	Name	Symbol	Name
RCc	Running Capacitor (Comp.)	CM	Compressor
51C	Overload Relay	52C	Magnetic Contactor
63F _{1,2}	Pressure Switch (2-stage)	FMo	Fan Motor
RCo	Running Capacitor (Fan Motor)	CH	Crank case Heater
F	Fuse (T5A)		

4. SPECIFICATION OF ELECTRICAL PARTS

4.1 RAV-132C-PE

N°	PARTS NAME	TYPE	SPECIFICATIONS						
1	Indoor unit fan motor	SMF-230-34-4F	Output (rated) 34W, 4 pole, 230V, 1 phase, 50Hz.						
2	Running capacitor for indoor fan motor	EEP2W155HQA107	AC 400V, 1,5μF						
3	Transformer (Indoor unit)	ST-9586	187~264V						
4	Geared motor	MT8-3-6	AC 240V, 3W						
5	Sensor for room temperature		Maximum input 38mA	°C	15	20	25	30	40
				KΩ	16,1	12,6	10,0	8,0	5,2
6	Indoor unit sensor for heat exchanger temperature	DTN-C103J40	Maximum input 34mA	°C	-12	0	25	50	
				KΩ	62,29	32,82	10,0	3,59	

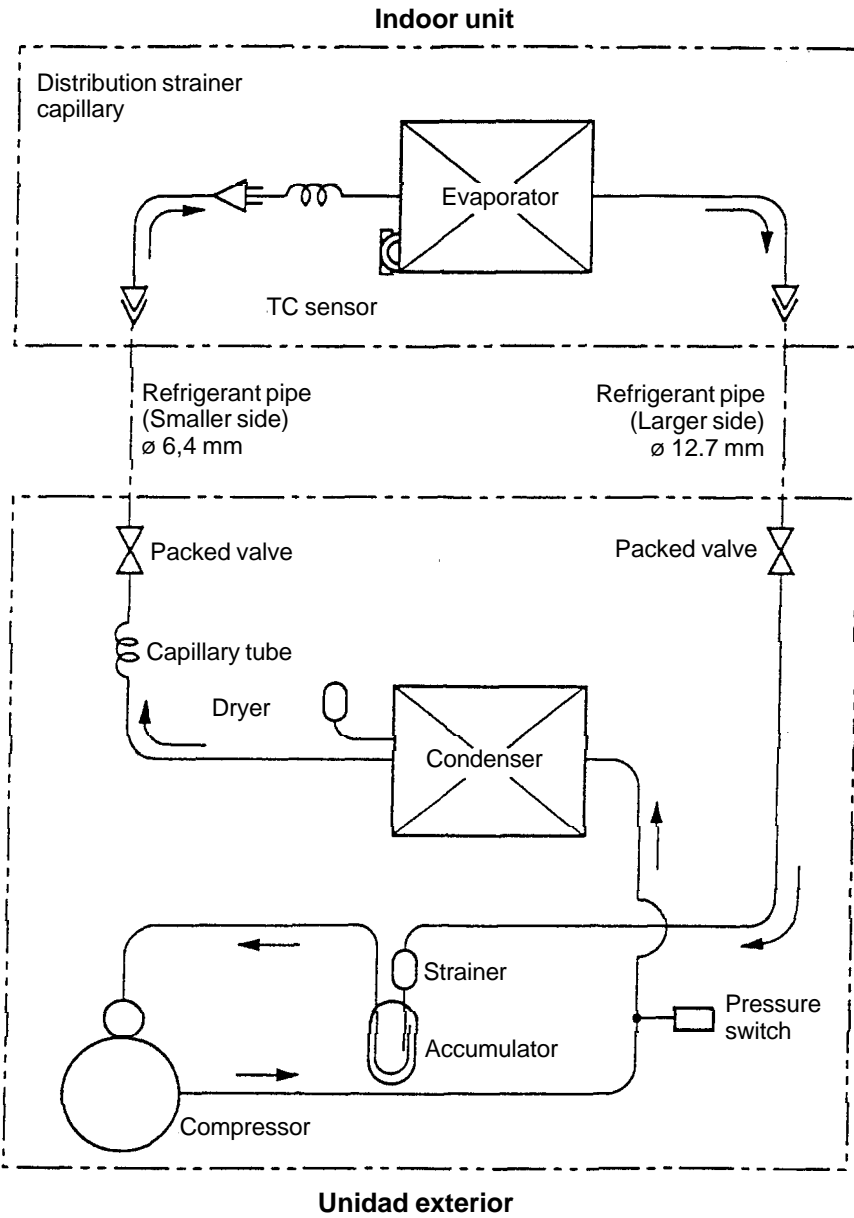
4.2 RAV-182A-PE

N°	PARTS NAME	TYPE	SPECIFICATIONS						
1	Compressor	PH230X3-4LS	Output (rated) 1,5kW, 2 pole, 220/240V, 1 phase 50Hz						
2	Indoor unit fan motor	SMF-230-39N-3	Output (rated) 39W, 6 pole, 230V, 1 phase, 50Hz.						
3	Running capacitor for outdoor fan motor	EEP2G405HQA114	AC 400V, 4μF						
4	Magnetic contactor	FMca-1S	AC 220~240V, 50Hz						
5	Pressure switch (2 stage)	ACB-2TBO4W	Tripping pressure 19kg/cm ² G, 21kg/cm ² G Resetting pressure 13kg/cm ² G, 15kg/cm ² G						
6	Crankcase heater		AC 240V, 28W						
7	Fuse		T5A						
8	Running capacitor for compressor	MT-44MP456W	AC 440V 45μF						
9	Overload relay	OL-177GM15	AC 240V. Tripping temperature: 165°C, Resetting temperature: 80°C						

5. REFRIGERANT PIPING DIAGRAM

5.1 Indoor unit
RAV-132C-PE

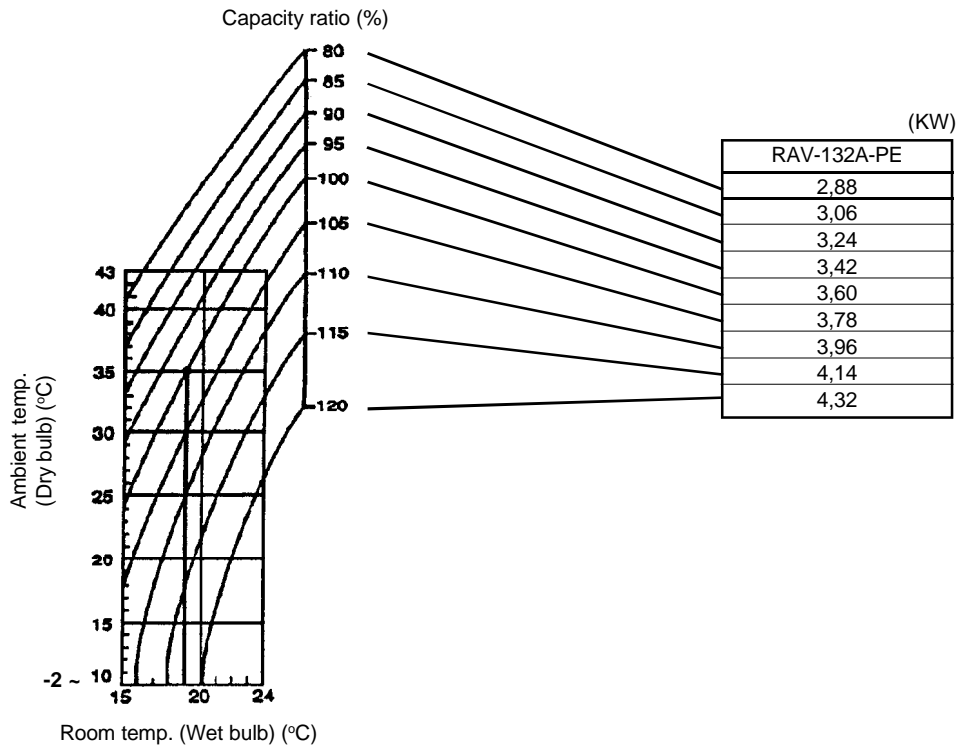
Outdoor unit
RAV-132A-PE



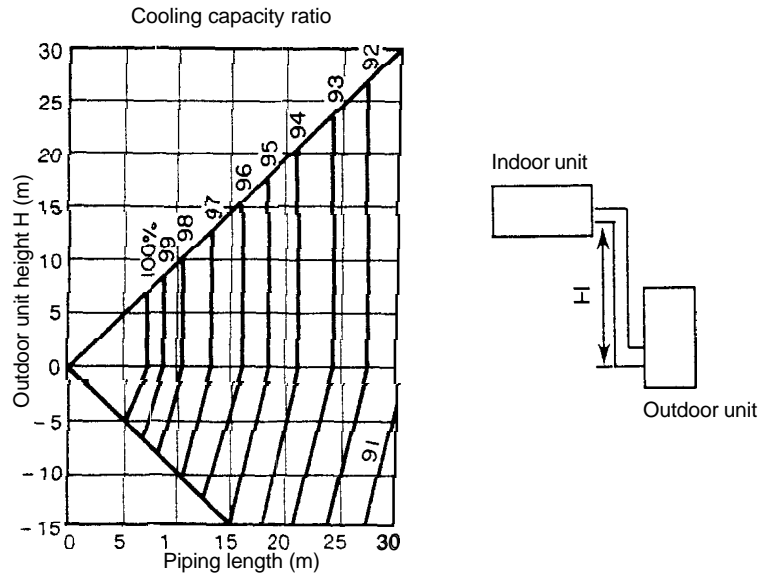
Indoor unit		Outdoor unit	
Model	Capillary	Model	Capillary
RAV-182B-PE	ID \varnothing 2,0 x 200L x 3P	RAV-182A-PE	ID \varnothing 2,4 x 600L x 1P

6. PERFORMANCE CHARACTER

6.1 Cooling capacity



**6.2 Cooling capacity
RAV-132A-PE**



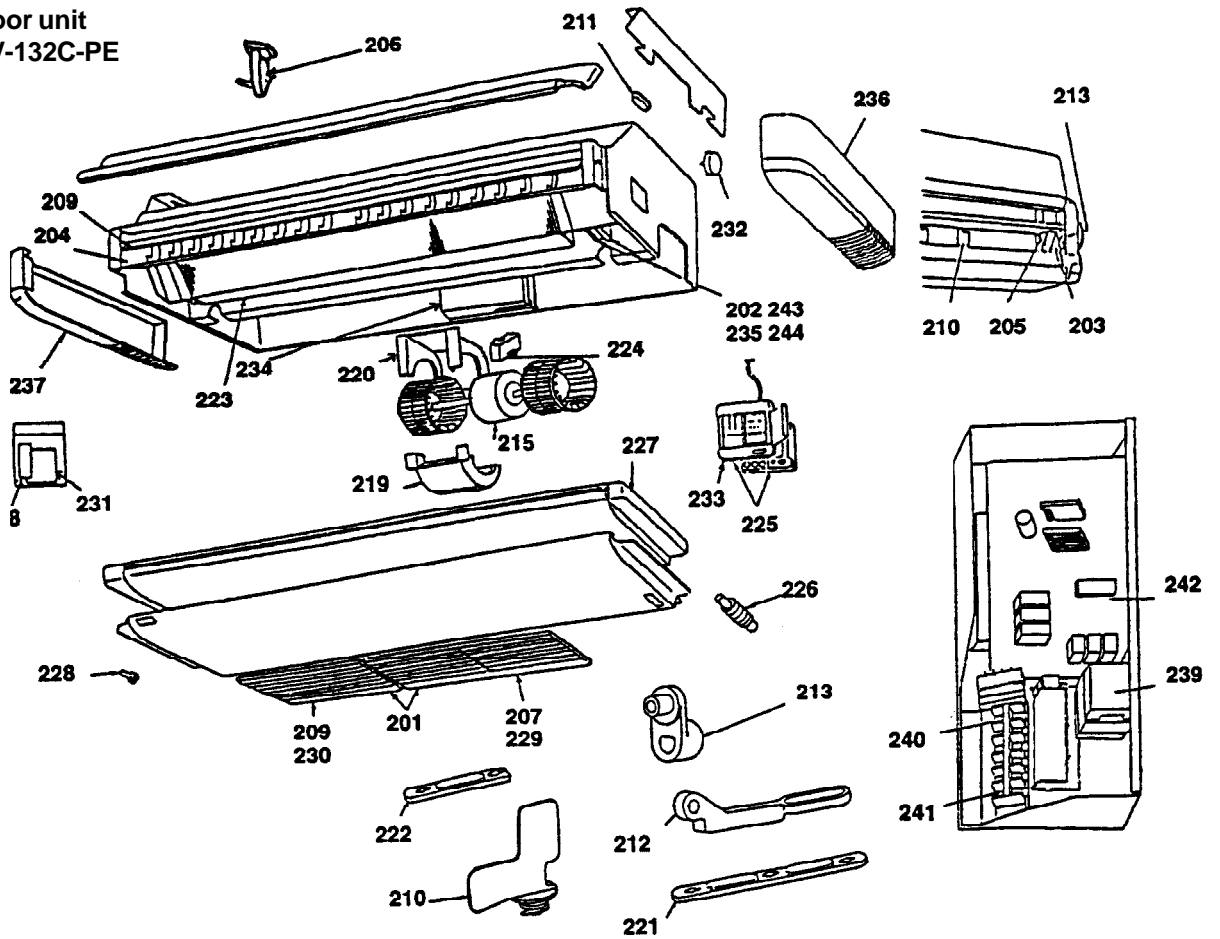
6.3 Piping length/additional refrigerant volume

Model	Piping length less than (m)	20	Additional amount of refrigerant at installation site (kg)					Recharge quantity (kg)						
			25	30	35	40	45	50	5	10	15	20	25	30
RAV-132A-PE	Filled at factory		0,15	0,35					0,95	1,05	1,10	1,20	1,35	1,55

- The amount of refrigerant put into the outdoor unit at the factory is equivalent to that which fills up 20m length of refrigerant pipe.
- If the length of pipe is 20m or less, addition of refrigerant at installation is unnecessary. If the length of the pipe exceeds 20m, add the refrigerant R-22.
- Overcharge or undercharge of refrigerant in the outdoor unit will cause malfunction of the compressor. The prescribed amount of the replenishment of refrigerant is shown in the table above. The permissible amount of refrigerant is the prescribed amount $\pm 50g$.

7. EXPLODED VEIWS AND PARTS LIST

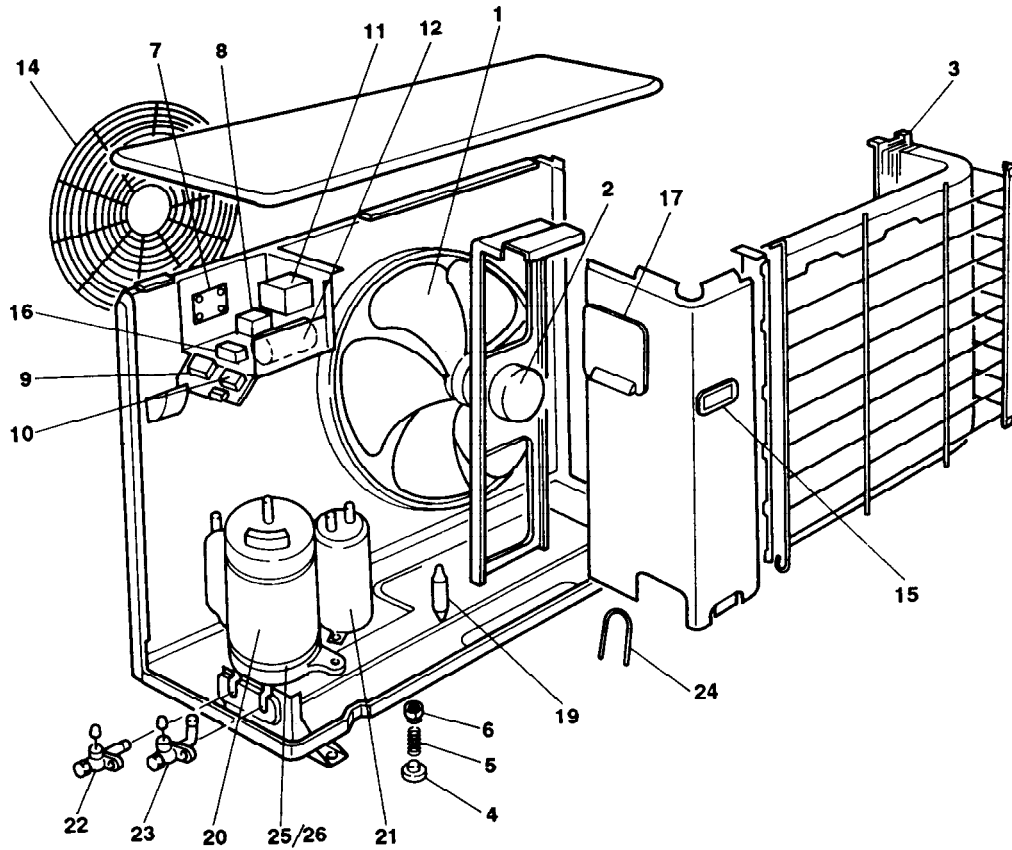
7.1 Indoor unit RAV-132C-PE



Location No.	Part No	Description
201	43107214	Hinge
202	43107215	Sensor Fix Plate
203	43107216	Spring
204	43107223	Grille shaft Left
205	43107222	Grille Shaft Right
208	43109322	Inlet Grille Small
209	43109324	H grille ASM
210	43109329	Vertical Grille
211	43119373	Bolt Cover
212	43119393	Shaft Holder
213	43119394	Lever
214	43120172	Fan, Sirocco
215	43A21013	Fan Motor
219	43126127	Fan Case Lower
220	43126128	Fan Case Upper
221	43139098	Connect Bar
222	43A39001	Connect Bar
223	43A44009	ASM Evaporator
224	43155101	MF Capacitor

Location No.	Part No	Description
225	43A69004	Remote Control
226	43170197	ASM Hose
227	43172121	ASM Drain Pan
228	43179107	Plug
230	43180284	Air Filter Large
231	43A88004	Manual
232	43A21008	Geared Motor
233	43A62001	Cover, Remocon
234	43150148	TA Sensor
235	43A50002	TC Sensor
236	43102624	Side Cover Right ASM
237	43102625	Side Cover Left ASM
238	43117812	H PLate
239	43A58002	Transformer
240	43A60002	Terminal 3P
241	43A60001	Terminal 4P
242	43A69005	PC Board
243	43A47004	ASM Distributor
244	43047492	Capillary Tube 1.7 Dia

**7.2 Outdoor Unit
RAV-132A-PE**



Location No.	Part No.	Description
1	43120156	Fan, Propeller
2	43A21012	Motor, Fan
3	43143642	Condenser
4	43049132	Base, Spring, B
5	43149198	Spring, Buffer
6	43149212	Base, Spring A
7	43169584	Surge Absorber
8	43A49002	Pressure Switch, 2 Stage
9	43A60003	Terminal, 2P
10	43A60001	Terminal, 4P
11	43152334	Magnetic Contactor
12	43155115	Capacitor, Plastic Film

Location No.	Part No.	Description
14	43A19001	Guard, Fan
15	43119368	Hanger
16	43155080	Capacitor, Plastic Film
17	43162027	Cover, Electric Parts
19	43145098	Dryer
20	43041837	Compressor PH230X3-4LS
21	43148105	Accumulator
22	43146454	Packed Valve 1/4 IN
23	43146406	Packed Valve 1/2 IN
24	43A47013	Capillary Tube
25	43157167	Heater, Crankcase
26	43193043	Spring

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