

TOSHIBA

FILE NO. A13-9702
SUPPLEMENT

SERVICE MANUAL

AIR-CONDITIONER

SPLIT (CONSOLE TYPE)

RAV-162LH-E
RAV-262LH-E

SPLIT (FLOOR-STANDING TYPE)

RAV-362FH-E
RAV-462FH-E

– SUMMARY –

Use this supplement together with the original service manual File No. 300-806, 300-794 and A90-9503, 9607

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Be sure to refer to the service manual shown in the table below for other information.

MODEL NAME	SERVICE MANUAL FILE NO.
RAV-162LH-E RAV-262LH-E	SERVICE DATA FILE NO. 300-806
RAV-362FH-E RAV-462FH-E	SERVICE DATA FILE NO. 300-794
OUTDOOR UNITS	A90-9503, A90-9607
REMOTE CONTROLLER	A90-9503

SUMMARY

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

TEMPERATURE	
OUTDOOR TEMPERATURE	-2 TO 43°C (COOL) -10 TO 21°C (HEAT)
ROOM TEMPERATURE	18 TO 32°C (COOL) 15 TO 29°C (HEAT)
ROOM HUMIDITY	LESS THAN 80% (COOL)

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: Heating Capacity is based on the following temperature conditions:
 Indoor air inlet temperature 20°C DB.
 Outdoor air inlet temperature 7°C DB, 6°C WB.

1. SPECIFICATIONS

ITEM	MODEL	RAV-162LH-E	
Cooling capacity	kW	4.5	
Heating capacity	kW	5.0	
Powersource	Phase	1	
	V	220-240	
	Hz	50	
		COOLING	HEATING
Power consumption	kW	2.3	2.2
Power factor	%	90	90
Running current	A	11.1	10.6
Starting current	A	60	
Operating noise (SPL)	Indoor unit (High, Med, Low) dB(A)	48/43/38	
	Outdoor unit dB(A)	50	
Refrigerant	Name of refrigerant	R-22	
	Charge volume kg	1.6	
	Add. volume (20-30m) g/m	35	
Refrigerant control		Capillary tube & Expansion valve	
Interconnection pipe	Larger side size mm	ø12.7	
	Coupler style	Flare	
	Smaller side size mm	ø6.4	
	Coupler style	Flare	
	Standard length m	7.5	
	Maximum pipe lengths *1 m	30	
	Maximum height difference If indoor unit heigher m	15	
	If outdoor unit heigher m	30	
Condensate drain pipe diameter	mm	ø20 (ID)	
INDOOR UNIT Model		RAV-162LH-E	
Appearance color		Silky mist (Munsell 1Y8.9/0.5)	
Dimensions	Height mm	630	
	Width mm	950	
	Depth mm	230	
Net weight	kg	32	
Heat exchanger type		Finned tube	
Indoor fan type		Centrifugal fan	
Air flow volume	m ³ /h	900	
Fan motor output	W	45	
Air filter		Washable	
OUTDOOR UNIT Model		RAV-162AH-PE	
Appearance colour		Bronze white (Munsell 6Y7.5/1)	
Dimensions	Height 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	PH250X3-4LS	
	Output kW	2.0	
Protective device		High pressure switch, Fuse, Crankcase heater, Overload relay, Bimetal thermostat	

Specifications are subject to change without notice.

* Note 1: These mean actual length.



ITEM		MODEL	RAV-262LH-E			
Cooling capacity		kW	7.1			
Heating capacity		kW	7.9			
Power source		Phase	1		3	
		V	220-240		380-415	
		Hz	50			
Power consumption			COOLING	HEATING	COOLING	HEATING
		kW	3.0	2.75	2.8	2.7
		%	88	87	86	85
		A	14.8	13.8	4.7	4.6
Starting current		A	80		25	
Operating noise (SPL)	Indoor unit	dB(A)	50/45/40			
	Outdoor unit	dB(A)	53			
Refrigerant		Name of refrigerant	R-22			
		Charge volume	2.35			
		Add. volume (20-30m)	60			
Refrigerant control			Capillary tube & Expansion valve			
Interconnection pipe	Larger side size	mm	ø15.9			
	Coupler style		Flare			
	Smaller side size	mm	ø6.4			
	Coupler style		Flare			
	Standard length	m	7.5			
	Maximum pipe lengths	*1 m	30			
	Maximum height difference if indoor unit higher	m	15			
	if outdoor unit higher	m	30			
Condensate drain pipe diameter		mm	ø20 (1D)			
INDOOR UNIT Model			RAV-262LH-E			
Appearance color			Silky mist (Munsell 1Y8.9/0.5)			
Dimensions	Height	mm	630			
	Width	mm	950			
	Depth	mm	230			
Net weight		kg	35			
Heat exchanger type			Finned tube			
Indoor fan type			Centrifugal fan			
Air flow volume		m³/h	1,080			
Fan motor output		W	70			
Air filter			Washable			
OUTDOOR UNIT Model			RAV-262AH-PE		RAV-262AH8-PE	
Appearance colour			Bronze white (Munsell 6Y7.5/1)			
Dimensions	Height	mm	790			
	Width	mm	880			
	Depth	mm	310			
Net weight		kg	80			
Heat exchanger type			Finned tube			
Outdoor fan type			Propeller fan			
Air flow volume		m³/h	3,000			
Fan motor output		W	63			
Compressor	Model		PH330X3-4MS		YH330X3-MS	
	Output	kW	2.2		2.2	
Protective device			High pressure switch, Fuse, thermostat, Crankcase heater, Inner overload relay		High pressure switch, Fuse, Overcurrent, relay, Crankcase heater, Thermostat, Return-Lock	

Specifications are subject to change without notice.

* Note 1: These mean actual length.



ITEM	MODEL	RAV-362FH-E		RAV-462FH-E	
Cooling capacity	kW	10.0		12.5	
Heating capacity	kW	10.8		13.8	
Power source	Phase	3		3	
	V	380-415		380-415	
	Hz	50		50	
		COOLING	HEATING	COOLING	HEATING
Power consumption	kW	4.2	4.0	5.15	4.9
Power factor	%	89	86	87	88
Running current	A	6.8	6.7	8.5	8.0
Starting current	A	42		50	
Operating noise (SPL)	Indoor unit (High, Med, Low) dB (A)	51/46/41		54/49/44	
	Outdoor unit dB (A)	55		55	
Refrigerant	Name of refrigerant	R-22		R-22	
	Charge volume kg	3.4		3.9	
	Add. volume (20-50m) g/m	50		50	
Refrigerant control		Capillary tube & Expansion valve		Capillary tube & Expansion valve	
Interconnection pipe	Larger side size 1* mm	ø19 (ø22)		ø19 (ø22)	
	Coupler style	Flare		Flare	
	Smaller side size mm	ø9.5		ø9.5	
	Coupler style	Flare		Flare	
	Standard length m	7.5		7.5	
	Maximum pipe lengths m	50		50	
	Maximum height difference If indoor unit higher m	20		20	
	If outdoor unit higher m	50		50	
Condensate drain pipe diameter	mm	ø20 (ID)		ø20 (ID)	
INDOOR UNIT Model		RAV-362FH-E		RAV-462FH-E	
Appearance color		Silky mist (Munsell 1Y8.9/0.5)		Silky mist (Munsell 1Y8.9/0.5)	
Dimensions	Height mm	1,750		1,750	
	Width mm	600		600	
	Depth mm	390		390	
Net weight	kg	65		65	
Heat exchanger type		Finned tube		Finned tube	
Indoor fan type		Centrifugal fan		Centrifugal fan	
Air volume	m³/h	1,920		2,160	
Fan motor output	W	110		160	
Air filter		Washable		Washable	
OUTDOOR UNIT Model		RAV-363AH8-PE		RAV-463AH8-PE	
Appearance colour		Bronze white (Munsell 6Y7.5/1)		Bronze white (Munsell 6Y7.5/1)	
Dimensions	Height mm	1,240		1,240	
	Width mm	930		930	
	Depth mm	385		385	
Net weight	kg	101		109	
Heat exchanger type		Finned tube		Finned tube	
Outdoor fan type		Propeller fan		Propeller fan	
Air flow volume	m³/h	6,000		6,000	
Fan motor output	W	39+63		39+63	
Compressor	Model	ZR49K3-TFD		ZR61K3-TFD	
	Output kW	3.0		3.75	
Protective device		High pressure switch, Fuse, Reverse Phase Protector, Crankcase heater, Inner overload relay, Delivery temperature sensor.		High pressure switch, Fuse, Reverse Phase Protector Crankcase heater, Inner overload relay, Delivery temperature sensor.	

Specifications are subject to change without notice.

* Note 1: (ø22) should be used when the length of pipe exceeds 30m.

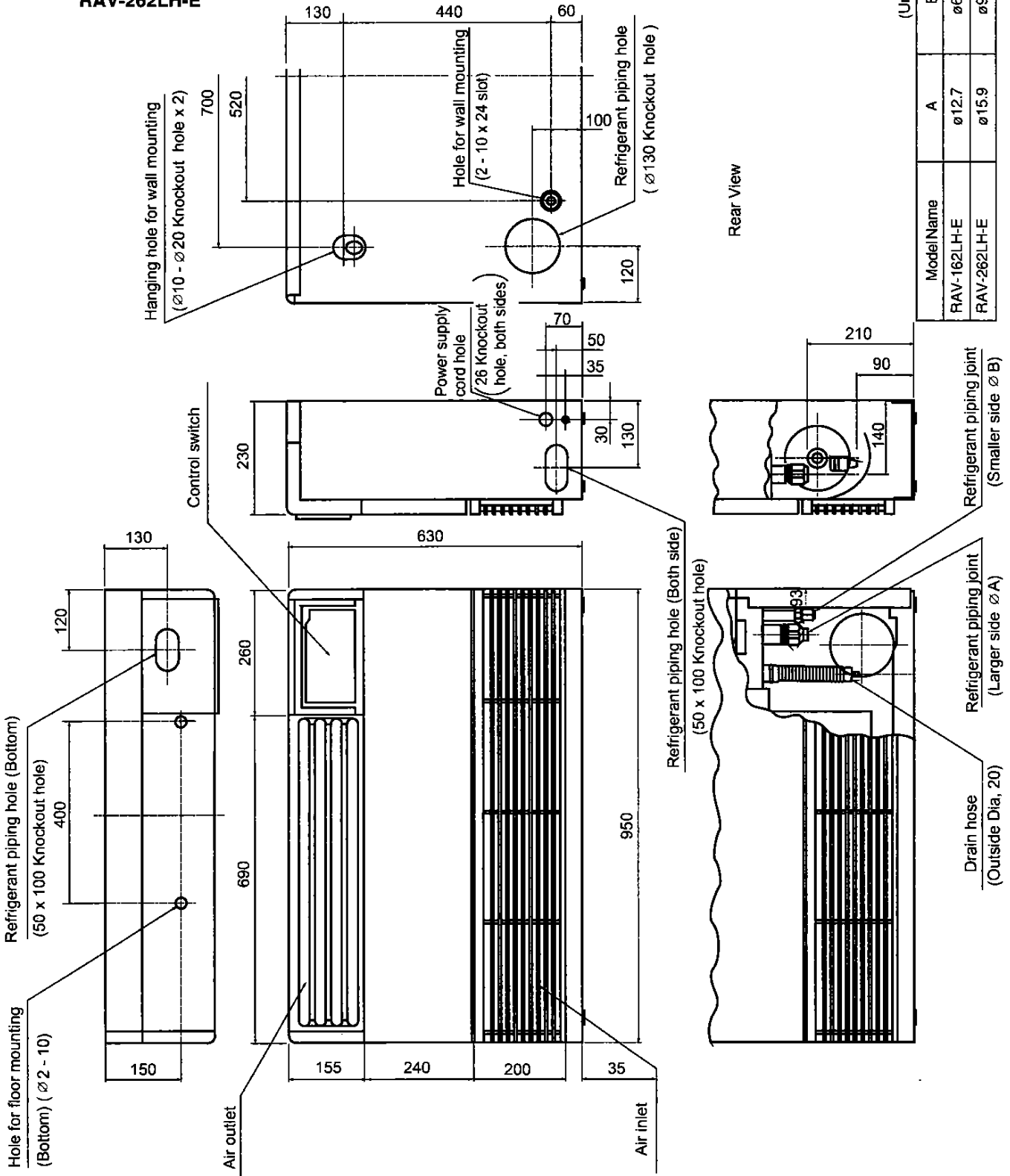
Metric / Imperial Pipe Comparisons

Diameter (mm)	6.4	9.5	12.7	15.9	19	22
Nominal Diameter (inch)	1/4	3/8	1/2	5/8	3/4	7/8



2. CONSTRUCTION VIEWS

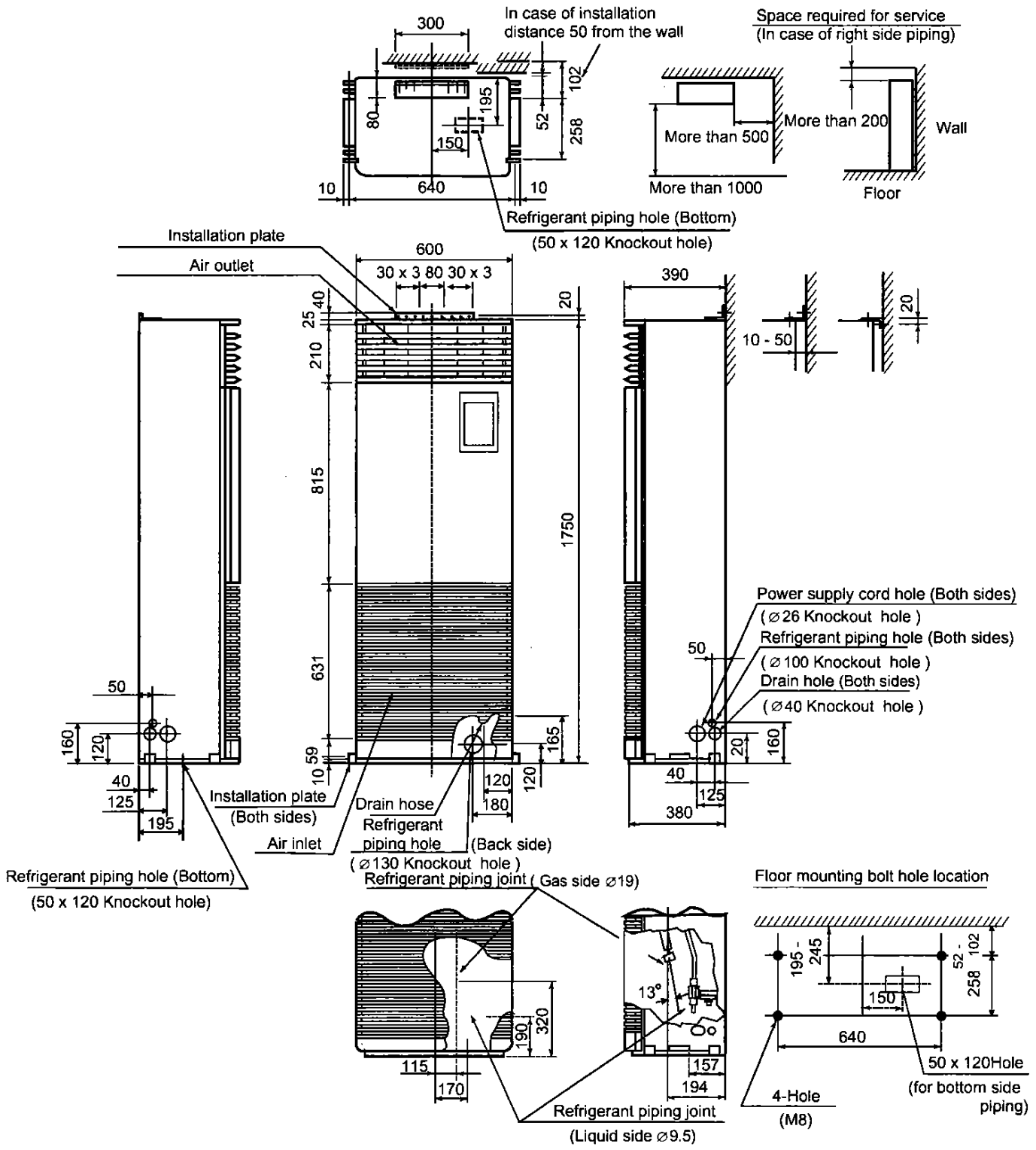
2.1 Indoor unit RAV-162LH-E RAV-262LH-E



(Unit: mm)

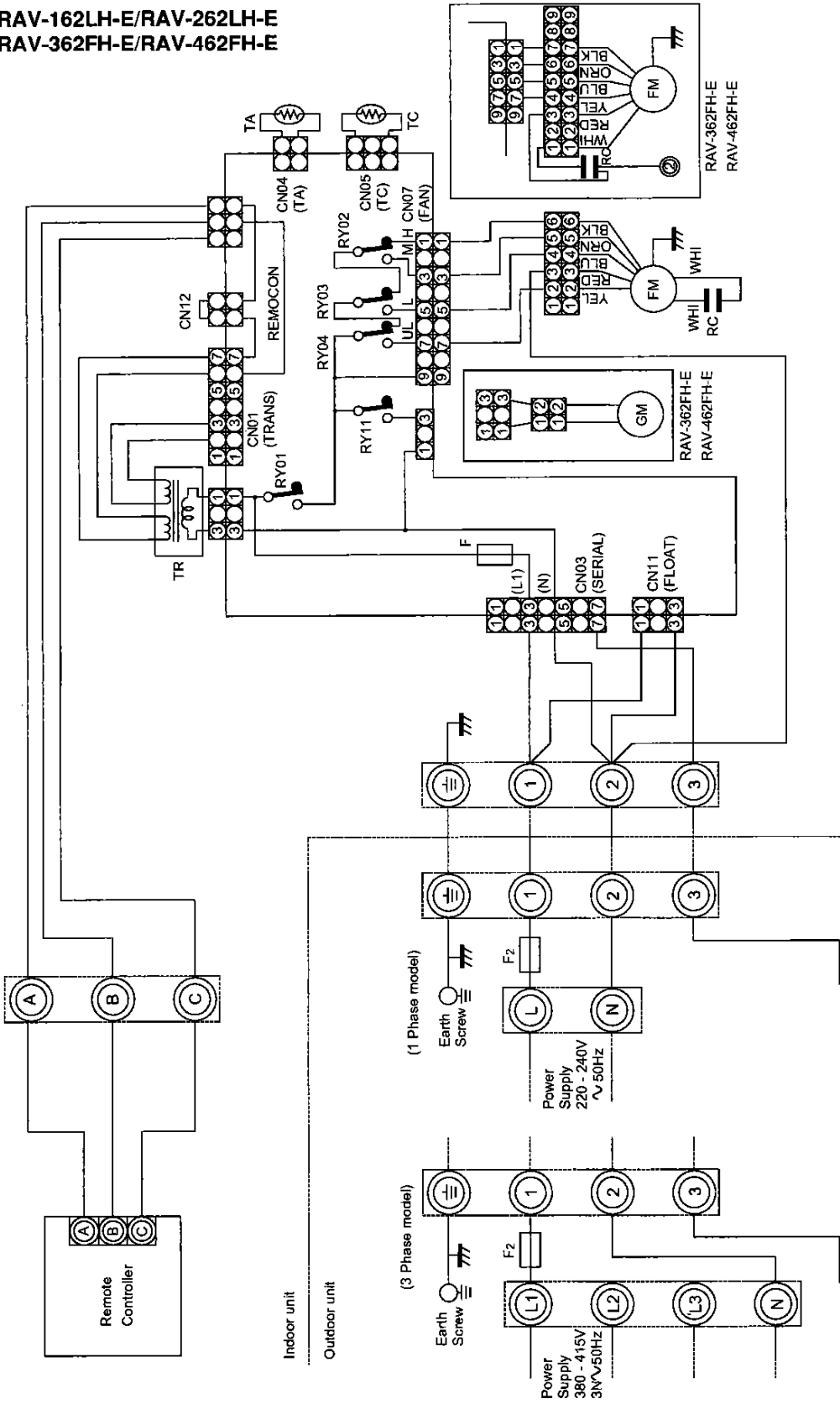
Model Name	A	B
RAV-162LH-E	ø12.7	ø6.4
RAV-262LH-E	ø15.9	ø9.5

RAV-362FH-E
RAV-462FH-E



3. WIRING DIAGRAM

RAV-162LH-E/RAV-262LH-E
RAV-362FH-E/RAV-462FH-E



Symbol	Name	Symbol	Name
FM	Fan Motor	RY01-11	Relay
RC	Running Capacitor	TC	Sensor
TR	Transformer	TA	Sensor
F	Fuse (PCB)	GM	Geared Motor

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

Do not operate the units with magnetic contactor pushed in.

4. SPECIFICATIONS OF ELECTRICAL PARTS

4.1 RAV-162LH-E

No.	PARTS NAME	TYPE	SPECIFICATIONS						
1	Indoor unit fan motor	AF-230-45-4G	Output (Rated) 45W, 4 pole, 220-240V, 1 phase, 50Hz						
2	Running capacitor for indoor fan motor	EVM45M205UF	AC450V, 2 μ F						
3	Transformer (Indoor unit)	ST-9586	187-264V						
4	Sensor for room temperature		Maximum input 38mA	°C	15	20	25	30	40
				k Ω	16.1	12.6	10.0	8.0	5.2
5	Indoor unit sensor for heat-exchanger temp.	DTN-C103J40	Maximum input 34mA	°C	-12	0	25	50	
				k Ω	62.29	32.82	10.0	3.59	

4.2 RAV-262LH-E

No.	PARTS NAME	TYPE	SPECIFICATIONS						
1	Indoor unit fan motor	AF-230-70-4L	Output (Rated) 70W, 4 pole, 220-240V, 1 phase, 50Hz						
2	Running capacitor for indoor fan motor	EEP2G205HQA105	AC400V, 2 μ F						
3	Transformer (Indoor unit)	ST-9586	187-264V						
4	Sensor for room temperature		Maximum input 38mA	°C	15	20	25	30	40
				k Ω	16.1	12.6	10.0	8.0	5.2
5	Indoor unit sensor for heat-exchanger temp.	DTN-C103J40	Maximum input 34mA	°C	-12	0	25	50	
				k Ω	62.29	32.82	10.0	3.59	

4.3 RAV-362FH-E

No.	PARTS NAME	TYPE	SPECIFICATIONS						
1	Indoor unit fan motor	AF-240-110R	Output (Rated) 110W, 6 pole, 220-240V, 1 phase, 50Hz						
2	Running capacitor for indoor fan motor	EFG40M405UF7	AC400V, 4 μ F						
3	Transformer (Indoor unit)	ST-9586	187-264V						
4	Geared motor	SGM-220-3	AC220-240V						
5	Sensor for room temperature		Maximum input 38mA	°C	15	20	25	30	40
				k Ω	16.1	12.6	10.0	8.0	5.2
6	Indoor unit sensor for heat-exchanger temp.	DTN-C103J40	Maximum input 34mA	°C	-12	0	25	50	
				k Ω	62.29	32.82	10.0	3.59	

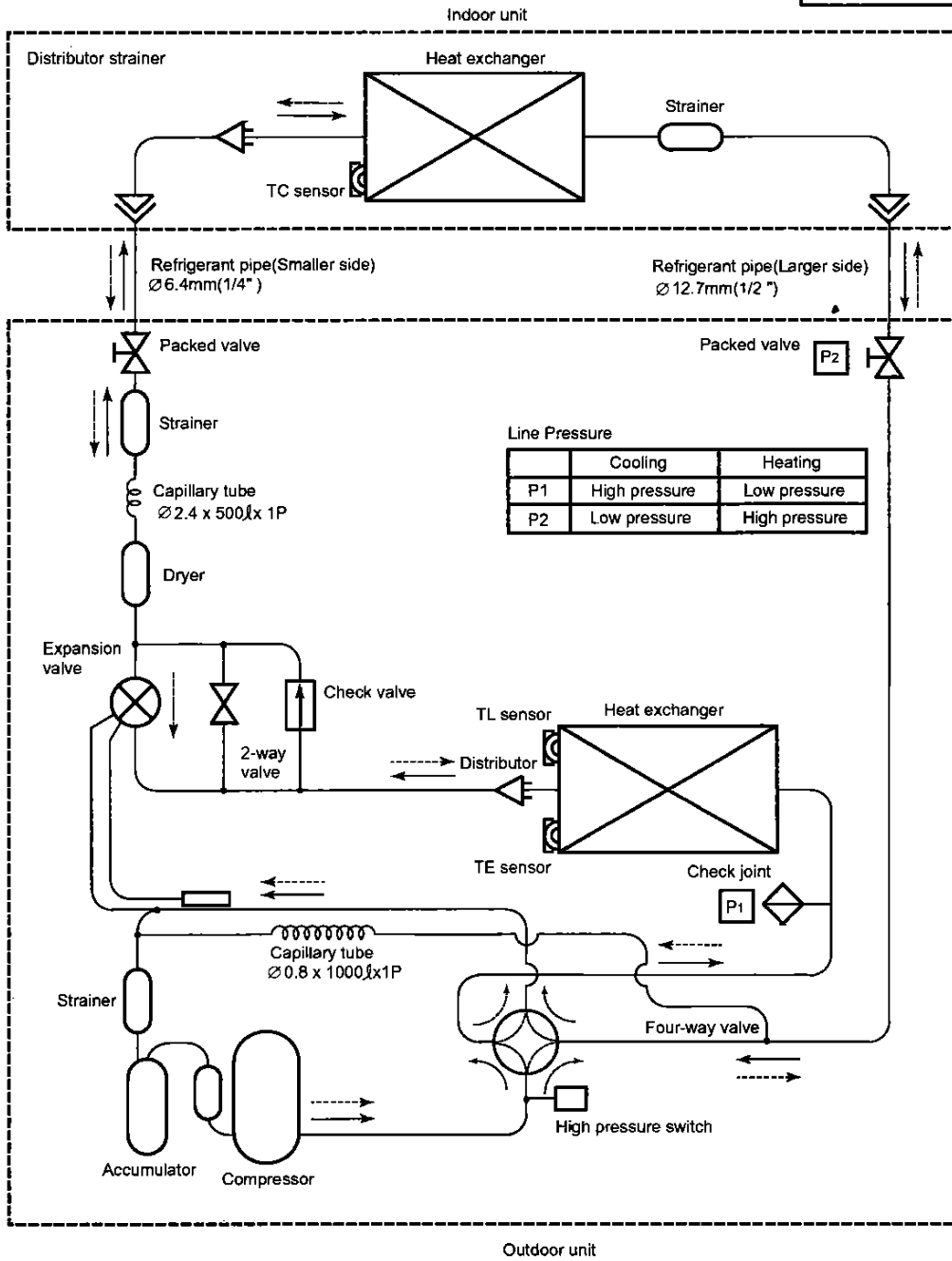
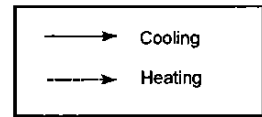
4.4 RAV-462FH-E

No.	PARTS NAME	TYPE	SPECIFICATIONS						
1	Indoor unit fan motor	AF-240-160L	Output (Rated) 160W, 6 pole, 220-240V, 1 phase, 50Hz						
2	Running capacitor for indoor fan motor	EFG40M405UF7	AC400V, 4 μ F						
3	Transformer (Indoor unit)	ST-9586	187-264V						
4	Geared motor	SGM-220-3	AC220-240V						
5	Sensor for room temperature		Maximum input 38mA	°C	15	20	25	30	40
				k Ω	16.1	12.6	10.0	8.0	5.2
6	Indoor unit sensor for heat-exchanger temp.	DTN-C103J40	Maximum input 34mA	°C	-12	0	25	50	
				k Ω	62.29	32.82	10.0	3.59	

5. REFRIGERANT PIPING DIAGRAM

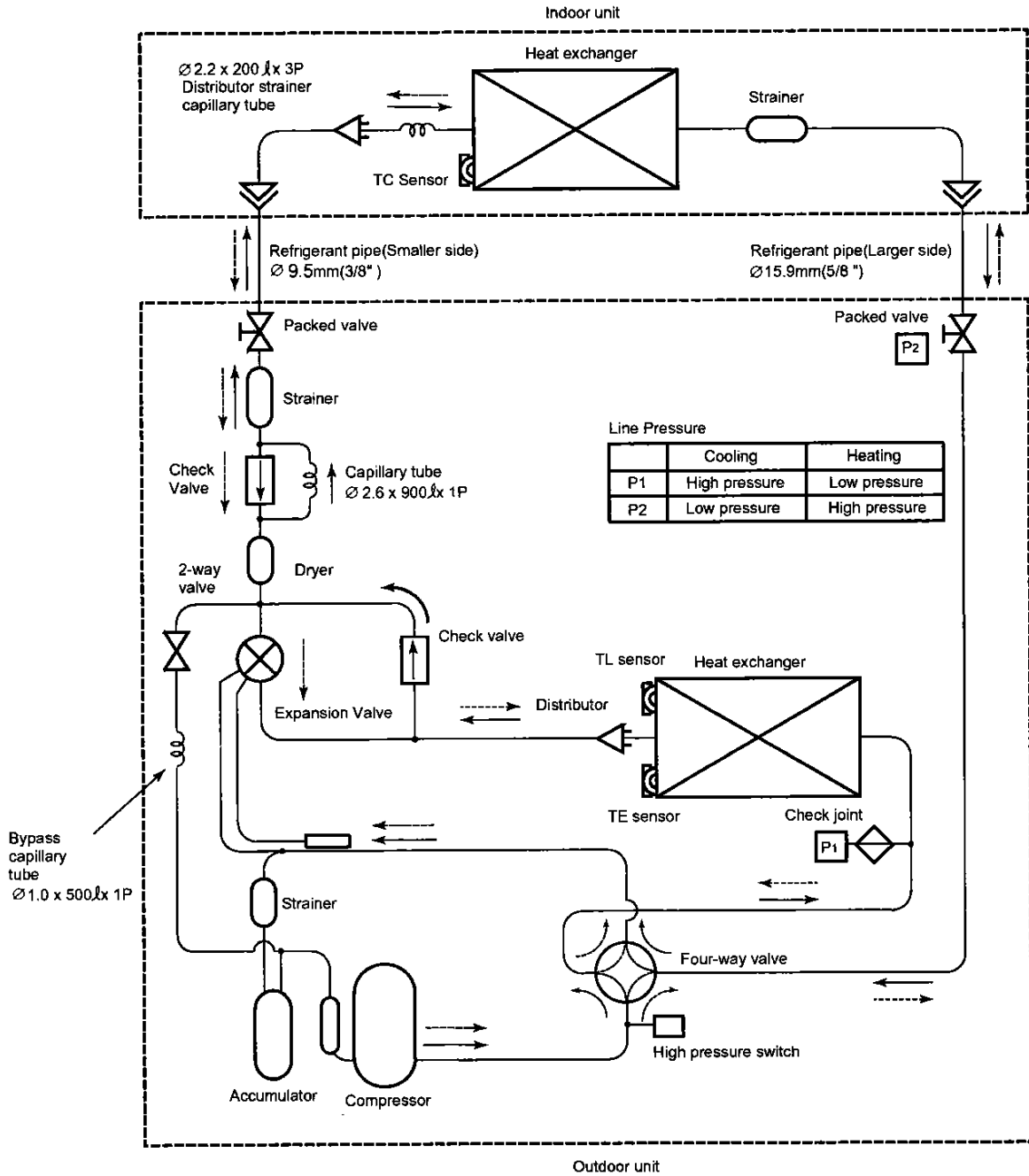
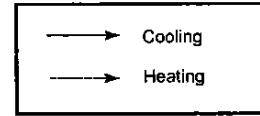
Indoor unit
RAV-162LH-E

Outdoor unit
RAV-162AH-PE



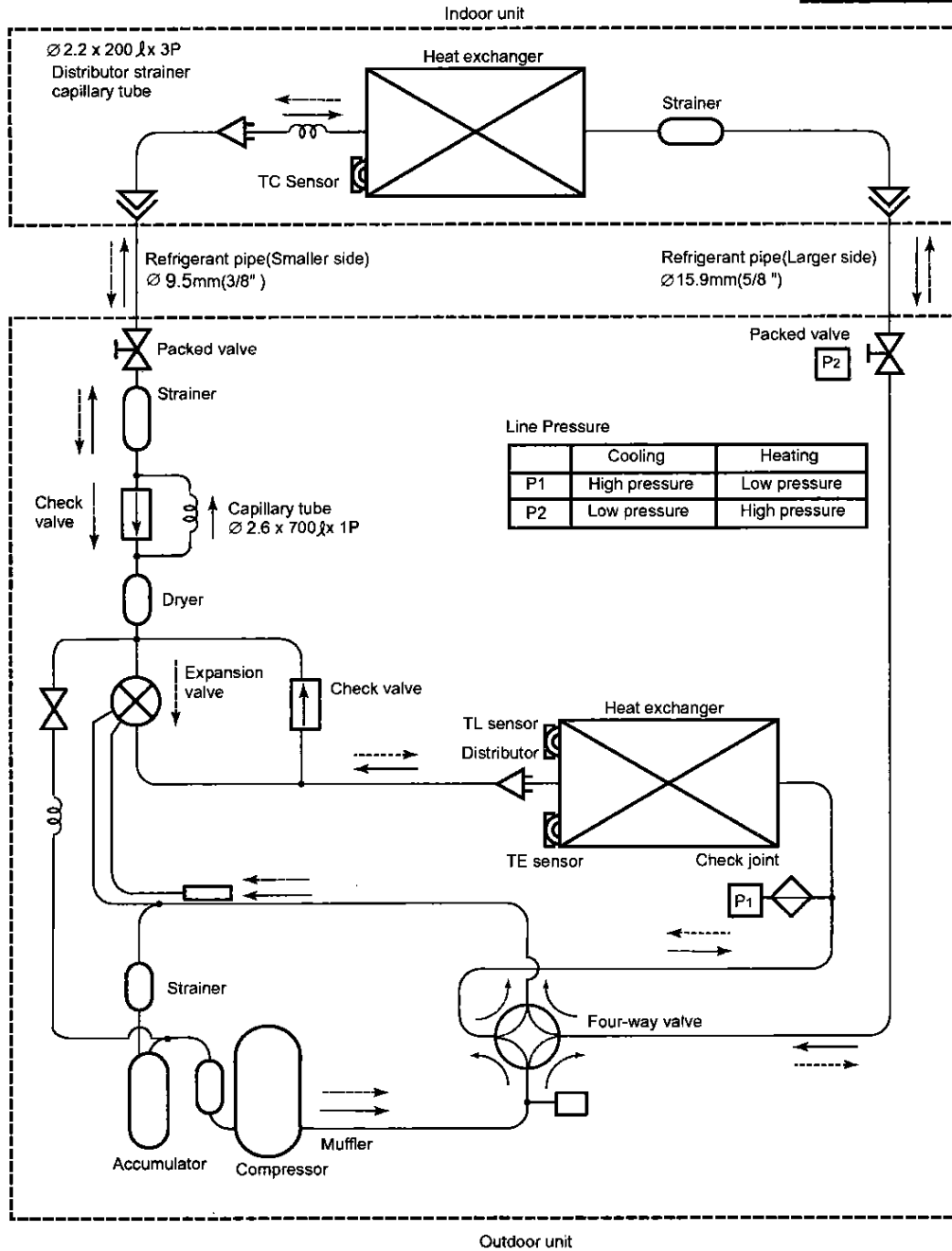
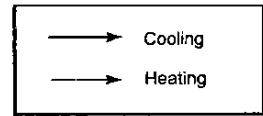
**Indoor unit
RAV-262LH-E**

**Outdoor unit
RAV-262AH-PE**



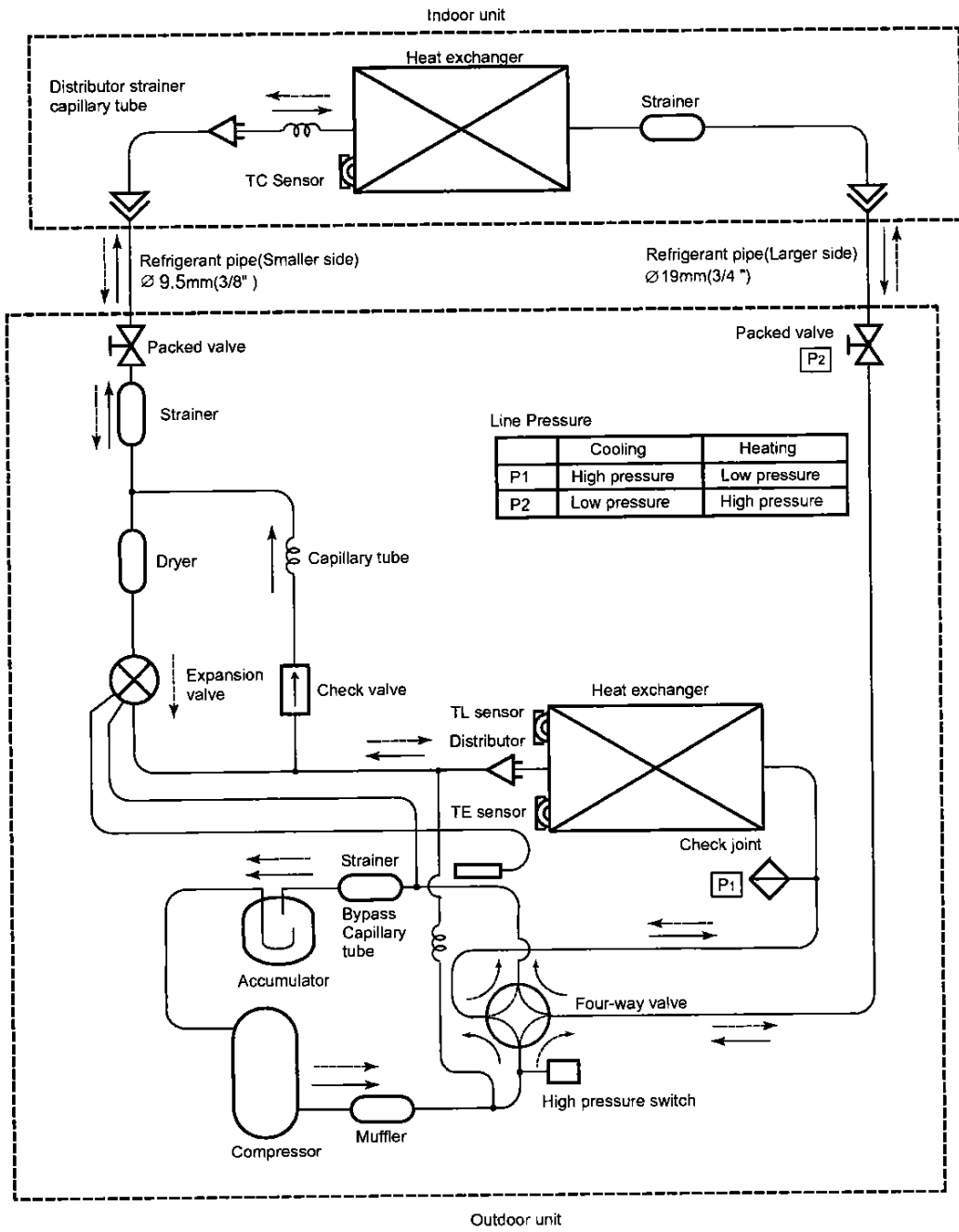
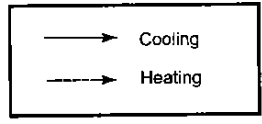
**Indoor unit
RAV-262LH-E**

**Outdoor unit
RAV-262AH&PE**



Indoor unit
RAV-362FH-E
RAV-462FH-E

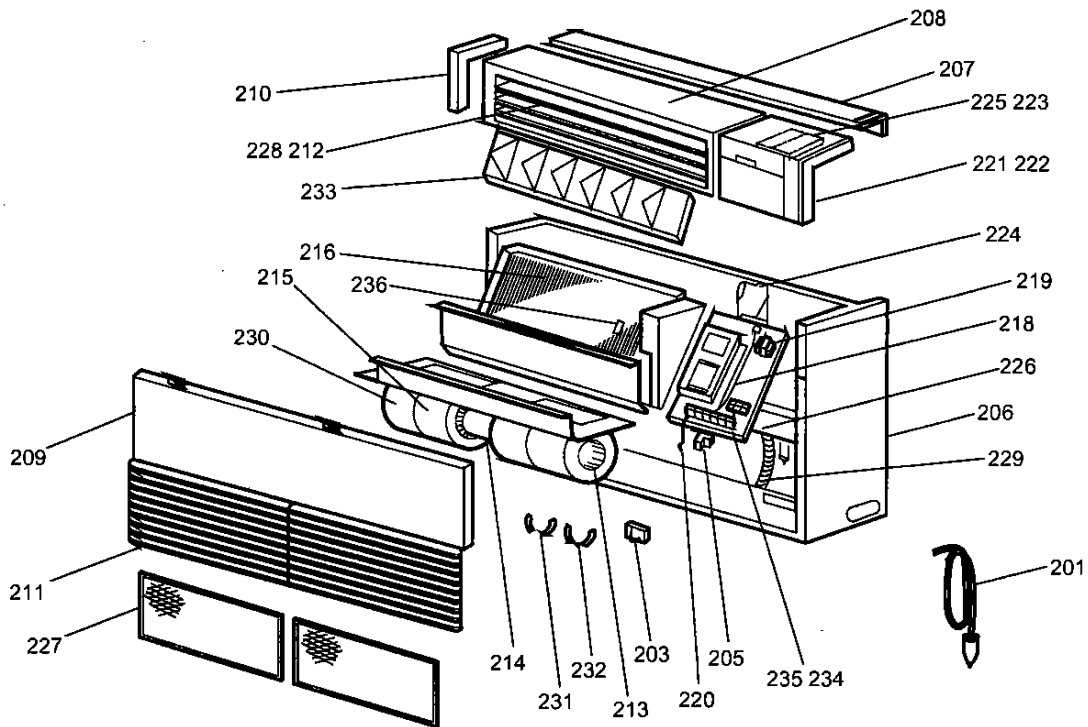
Outdoor unit
RAV-363AH8-PE
RAV-463AH8-PE



INDOOR UNIT		OUTDOOR UNIT		
MODEL	CAPILLARY	MODEL	MAIN CAPILLARY	BYPASS CAPILLARY
RAV-362FH-E	ID \varnothing 2 \times 300 ℓ \times 5P	RAV-363AH8-PE	ID \varnothing 2.4 \times 650 ℓ \times 1P	ID \varnothing 1.7 \times 1000 ℓ \times 1P
RAV-462FH-E	ID \varnothing 2 \times 300 ℓ \times 9P	RAV-463AH8-PE	ID \varnothing 3 \times 600 ℓ \times 1P	—

6. EXPLODED VIEWS AND PARTS LIST

6.1 Indoor unit RAV-162LH-E RAV-262LH-E

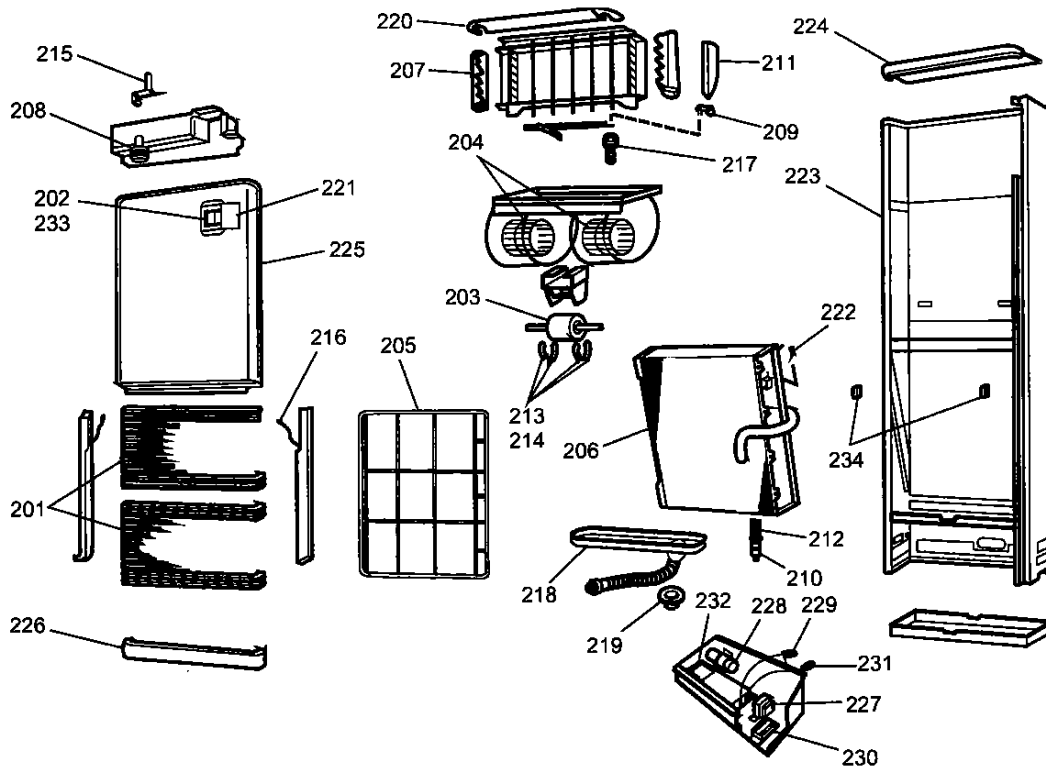


Location No.	Part No.	Description
201	43146432	Tube, Capillary
203	43055287	Capacitor, Plastic Film 2MFD, 400V (162LH-E)
203	43155082	Capacitor Electrolytic (262LH-E)
205	43063070	Holder, Cord
206	43100141	Cabinet, White
207	43100145	Cabinet, Upper, White
208	43100147	Outlet, White
209	43100143	Front Panel, White
210	43101323	Frame, White
211	43109314	Grille, Inlet, White
212	43109316	Grille, White
213	43120074	Fan, Centrifugal (162LH-E)
213	43120137	Fan, Centrifugal (262LH-E)
214	43121311	Motor, AC, 230V, 50Hz, Fan (162LH-E)
214	43121312	Motor, AC, 230V, 50Hz, Fan (262LH-E)
215	43126119	Fan Case, Right (262LH-E)
215	43723019	Fan Case, Right (162LH-E)
216	43144585	Evaporator (162LH-E)

Location No.	Part No.	Description
216	43144587	Evaporator (262LH-E)
218	4316V002	PC Board
219	43158141	Transformer, Power
220	43150118	Sensor
221	43101328	Panel, Control, White
222	43101325	Cover, Panel, Control, White
223	43162035	Cover (White)
224	43150119	Sensor
225	43169507	Remote Controller (White)
226	43172101	Drain Pan
227	43180280	Air-Filter
228	43196087	Bushing
229	43199028	Hose, Drain
230	43723020	Fan Case, Left
231	43039136	Band, Motor, Left
232	43039137	Band, Motor, Right
233	43109240	Grille
235	43160488	Terminal, Block, 4P
234	43160392	Terminal, Block, 3P
236	43019604	Holder, Sensor



6.2 Indoor unit
RAV-362FH-E
RAV-462FH-E



Location No.	Part No.	Description
201	43109310	Grille, Inlet, White
202	43169509	Remote Controller White
203	43121531	Motor, AC, 240V, 50Hz, Fan (362FH-E)
203	43121532	Motor, AC, 240V, 50Hz, Fan (462FH-E)
204	43120125	Fan, Centrifugal
205	43180238	Air-Filter
206	43144581	Evaporator (462FH-E)
206	43144582	Evaporator (362FH-E)
207	43139101	Clamp, Grille, White
208	43121270	Motor, AC, 220V, 50, 60Hz Louver
209	43139093	Connection Rod
210	43148088	Strainer (362FH-E)
210	43148088	Strainer (462FH-E)
211	43109207	Grille
212	43047527	Tube, Capillary
213	43039136	Band, Motor, Left
214	43039137	Band, Motor, Right

Location No.	Part No.	Description
215	43149202	Tube
216	43119360	String
217	43139094	Cap
218	43172090	Drain-Pan
219	43197136	Washer
220	43109312	Grille, Outlet, Horizontal, White
221	43101330	Cover, Panel, Control, White
222	43019604	Holder, Sensor
223	43102603	Cabinet, Back White
224	43100139	Plate, Top, White
225	43100168	Front Panel, White
226	43100154	Cabinet, Lower, White
227	43158141	Transformer, Power
228	43155090	Capacitor, Electrolytic
229	43150111	Sensor
230	43160488	Terminal, Block, 4P
231	43150098	Sensor
232	4316V002	PC Board
233	43162035	Cover White
234	43119367	Magnet-Catch

