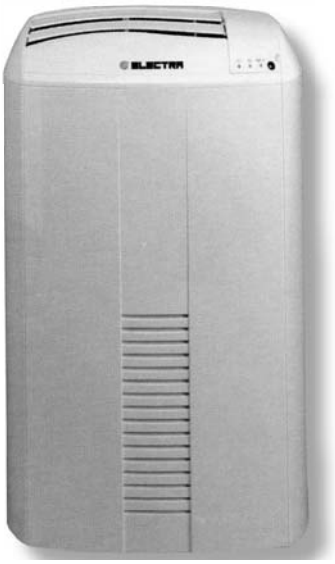
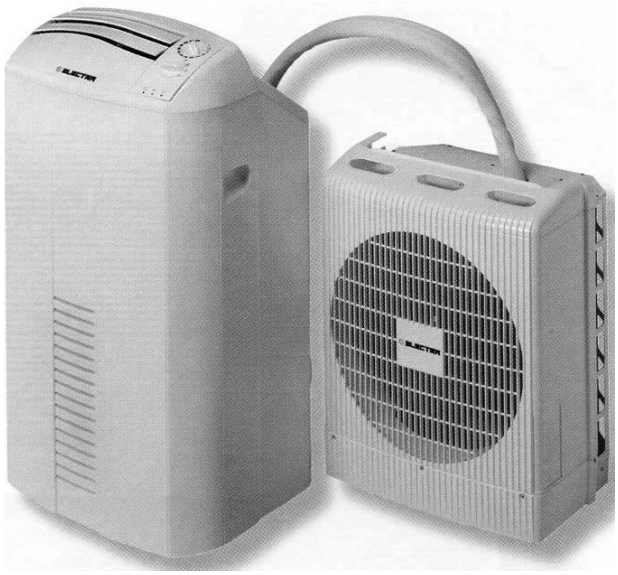
ELECTRA

Service Manual

Mobile Series

Indoor Units	Outdoor Units
Monoblock 7	N/A
SP 11	SP 11
SP 16	SP 16





REFRIGERANT	
R410A	COOLING ONLY HEAT PUMP

JANUARY 2005

CONTENTS

LIST OF EFFECTIVE PAGES

Note: Changes in the pages are indicated by a “Revision#” in the footer of each effected page (when none indicates no changes in the relevant page). All pages in the following list represent effected/ non effected pages divided by chapters.

Dates of issue for original and changed pages are:

Original ..... 0 ..... 15 December 2004

Total number of pages in this publication is 131 consisting of the following:

Page No.	Revision No. #		Page No.	Revision No. #		Page No.	Revision No. #

- Zero in this column indicates an original page.

*Due to constant improvements please note that the data on this service manual can be modified with out notice.
**Photos are not contractual

Table of Contents

1. INTRODUCTION

1.1 General

The Mobile range comprise the ST (cooling only) and RC (heat pump) models, as follows:

Model / Mode	Monoblock 7 R410A		SP11 R410A		SP16 R410A	
	M	E	M	E	M	E
Cooling Only	√	√	√	√	√	√
Heat Pump	N/A	N/A	N/A	√	N/A	√
Electric Heater	N/A	√	N/A	N/A	N/A	N/A

* E – Electronic / Remote control Type.
* M –Electro Mechanical control.

The split type units consists indoor and outdoor unit, interconnected by a flexible hose.
The mobiles indoor units are equipped with four castors for easy mobility.
The electronic models are equipped with a Microprocessor control system, giving the user a choice of local or remote control operation, as well as precise temperature setting and control,

1.2 Main Features

The Mobile series benefits from the most advanced technological innovations, namely:

- Easy mobility.
- Easy installation, (no spacial installation is Required).
- R410A .
- Microprocessor control (Electronic model only).
- High COP.
- Automatic vertical treated air sweep (Electronic only).
- Pre charged refrigerant system.
- High reliability quick connectors for split models which enables temporary separation between indoor and outdoor units for a fix installation type (optional).
- Compact dimensions.

1.3 Filtration

The Mobile series presents several types of air filters:

- Easily accessible, and re-usable pre-filters (mesh)
- Carbon and electrostatic filter (optional)

1.4 Control

Electronic model: a microprocessor indoor controller, and an infrared remote control, supplied as standard, provides complete operating function and programming.

Mechanical model: Electro mechanical control .

For further details please refer to the Installation and Operation Manual, Appendix A.

1.5 Inbox Documentation

Each unit is supplied with its own installation and operation manuals.

2. PRODUCT DATA SHEET

2.1 R410A

Model Indoor Unit				**Monoblock 7 R410A**
Model Outdoor Unit				**N/A**
Installation Method of Pipe				N/A
Characteristics			**Units**	**Cooling**
Capacity (1)			Btu/hr	7850
			kW	2.30
Power input (1)			kW	0.95
EER (Cooling) or COP(Heating) (1)			W/W	2.42
Energy efficiency class				B
Power supply			V/Ph/Hz	220-240V/Single/50Hz
Rated current			A	4.3
Starting current			A	17
Circuit breaker rating			A	10
INDOOR	Fan type & quantity			Centrifugalx1
	Fan speeds	H/M/L	RPM	1390/1280/1170
	Air flow (2)	H/M/L	m3/hr	275/257/234
	External static pressure	Min-Max	Pa	0
	Sound power level (3)	H/M/L	dB(A)	63/62.5/61.5
	Sound pressure level (4)	H/M/L	dB(A)	49/48/47
	Moisture removal		l/hr	0.9
	Condensate drain tube I.D		mm	11.5
	Dimensions	WxHxD	mm	470x800x360
	Weight		kg	32
	Package dimensions	WxHxD	mm	550*450*935
	Packaged weight		kg	37.5
	Units per pallet		units	8
	Stacking height		units	2 levels
OUTDOOR	Refrigerant control			Capillary tube
	Compressor type, model			Rotary,Sanyo C-1RV096H1A
	Fan type & quantity			N/A
	Fan speeds	H/L	RPM	N/A
	Air flow	H/L	m3/hr	N/A
	Sound power level	H/L	dB(A)	N/A
	Sound pressure level (4)	H/L	dB(A)	N/A
	Dimensions	WxHxD	mm	N/A
	Weight		kg	N/A
	Package dimensions	WxHxD	mm	N/A
	Packaged weight		kg	N/A
	Units per pallet		Units	N/A
	Stacking height		units	N/A
	Refrigerant type			R410A
	Refrigerant chargless distance		kg/m	0.51kg
	Additional charge per 1 meter		g/m	N/A
	Connections between units	Liquid line	In.(mm)	N/A
		Suction line	In.(mm)	N/A
		Max.tubing length	m.	N/A
		Max.height difference	m.	N/A
Operation control type				Remote control or Rotary switch control
Heating elements			kW	2 (Electronic model only)
Others				

(1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN 14511.
(2) Airflow in ducted units; at nominal external static pressure.
(3) Sound power in ducted units is measured at air discharge.
(4) Sound pressure level measured at 1 meter distance from unit.

Model Indoor Unit				**SP11 R410A**		
Model Outdoor Unit				**SP11 R410A**		
Installation Method of Pipe				Installed already or Quick connector		
Characteristics			**Units**	**Cooling only**	**Cooling**	**Heating**
Capacity (1)			Btu/hr	10300	10300	11600
			kW	3.02	3.02	3.4
Power input (1)			kW	0.977	0.977	0.95
EER (Cooling) or COP(Heating) (1)			W/W	3.09	3.09	3.58
Energy efficiency class				B	B	B
Power supply			V/Ph/Hz	220-240V/Single/50Hz		
Rated current			A	4.5	4.5	4.3
Starting current			A	18		
Circuit breaker rating			A	10		
INDOOR	Fan type & quantity			Centrifugalx1		
	Fan speeds	H/M/L	RPM	1280/1170/920		
	Air flow (2)	H/M/L	m3/hr	503/451/335		
	External static pressure	Min-Max	Pa	0		
	Sound power level (3)	H/M/L	dB(A)	62/60/57		
	Sound pressure level (4)	H/M/L	dB(A)	48/46/43		
	Moisture removal		l/hr	1.25		
	Condensate drain tube I.D		mm	11.5		
	Dimensions	WxHxD	mm	470x800x360		
	Weight		kg	33	34.5	
	Package dimensions	WxHxD	mm	650x860x550		
	Packaged weight		kg	55	56.5	
	Units per pallet		units	4		
	Stacking height		units	2 levels		
OUTDOOR	Refrigerant control			Capillary tube		
	Compressor type, model			Rotary, HITACHI ASG108CV-B7AT		
	Fan type & quantity			Propeller(direct) x 1		
	Fan speeds	H/L	RPM	1080		
	Air flow	H/L	m3/hr	N/A		
	Sound power level	H/L	dB(A)	69		
	Sound pressure level (4)	H/L	dB(A)	62		
	Dimensions	WxHxD	mm	440*540*320		
	Weight		kg	17		
	Package dimensions	WxHxD	mm	In the same package of INDOOR		
	Packaged weight		kg	See INDOOR		
	Units per pallet		Units	See INDOOR		
	Stacking height		units	See INDOOR		
	Refrigerant type			R410A		
	Refrigerant chargless distance		kg/m	0.99kg/3m	1.04kg/3m	
	Additional charge per 1 meter		g/m	N/A		
	Connections between units	Liquid line	In.(mm)	3/16(4.76)		
		Suction line	In.(mm)	1/2(12.7)		
		Tubing length	m.	3		
		Max.height difference	m.	1.6		
Operation control type				Remote control or Rotary switch control (5)		
Heating elements			kW	N/A		
Others						

(1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN 14511.
(2) Airflow in ducted units; at nominal external static pressure.
(3) Sound power in ducted units is measured at air discharge.
(4) Sound pressure level measured at 1 meter distance from unit.

Model Indoor Unit				**SP16 R410A**		
Model Outdoor Unit				**SP16 R410A**		
Installation Method of Pipe				Installed already or Quick connector		
Characteristics			**Units**	**Cooling only**	**Cooling**	**Heating**
Capacity (1)			Btu/hr	14230	14230	15660
			kW	4.17	4.17	4.59
Power input (1)			kW	1.544	1.544	1.387
EER (Cooling) or COP(Heating) (1)			W/W	2.70	2.70	3.31
Energy efficiency class				D	D	C
Power supply			V/Ph/Hz	220-240V/Single/50Hz		
Rated current			A	7.1	7.1	6.3
Starting current			A	28		
Circuit breaker rating			A	15		
INDOOR	Fan type & quantity			Centrifugalx1		
	Fan speeds	H/M/L	RPM	1360/1290/1126		
	Air flow (2)	H/M/L	m3/hr	433/401/356		
	External static pressure	Min-Max	Pa	0		
	Sound power level (3)	H/M/L	dB(A)	64/63.5/61		
	Sound pressure level (4)	H/M/L	dB(A)	51/50/48		
	Moisture removal		l/hr	1.8		
	Condensate drain tube I.D		mm	11.5		
	Dimensions	WxHxD	mm	470x800x360		
	Weight		kg	38	39.5	
	Package dimensions	WxHxD	mm	650x860x550		
	Packaged weight		kg	60	61.5	
	Units per pallet		units	4		
	Stacking height		units	2 levels		
OUTDOOR	Refrigerant control			Capillary tube		
	Compressor type, model			Rotary, Sanyo C-RV168H1A		
	Fan type & quantity			Propeller(direct) x 1		
	Fan speeds	H/L	RPM	1080		
	Air flow	H/L	m3/hr	N/A		
	Sound power level	H/L	dB(A)	69		
	Sound pressure level (4)	H/L	dB(A)	62		
	Dimensions	WxHxD	mm	440*540*320		
	Weight		kg	17		
	Package dimensions	WxHxD	mm	In the same package of INDOOR		
	Packaged weight		kg	See INDOOR		
	Units per pallet		Units	See INDOOR		
	Stacking height		units	See INDOOR		
	Refrigerant type			R410A		
	Refrigerant chargless distance		kg/m	1.13kg/3m	1.16kg/3m	
	Additional charge per 1 meter		g/m	N/A		
	Connections between units	Liquid line	In.(mm)	3/16(4.76)		
		Suction line	In.(mm)	1/2(12.7)		
		Tubing length	m.	3		
		Max.height difference	m.	1.6		
Operation control type				Remote control or Rotary switch control (5)		
Heating elements			kW	N/A		
Others						

(1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN 14511.
(2) Airflow in ducted units; at nominal external static pressure.
(3) Sound power in ducted units is measured at air discharge.
(4) Sound pressure level measured at 1 meter distance from unit.

3. RATING CONDITIONS

Standard conditions in accordance with ISO 5151.

For Split unit

Cooling:
Indoor: 27°C DB 19°C WB
Outdoor: 35 °C DB

Heating:
Indoor: 20°C DB
Outdoor: 7°C DB 6°C WB

For monoblock (EN14511)

Standard condition: 35°C DB 24°C WB
Application condition: 27°C DB 19°C WB

3.1 Operating Limits

3.1.1 Monoblock 7

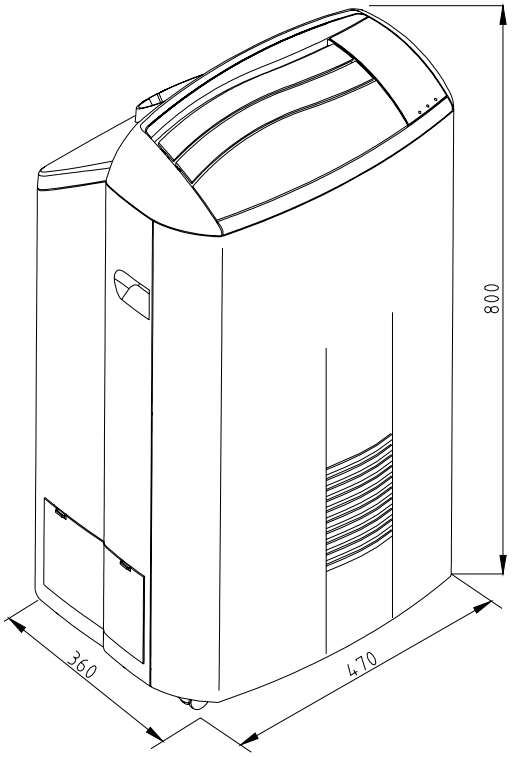
		Indoor
Cooling	Upper limit	35°C DB 24°C WB
	Lower limit	21°C DB 15°C WB
Voltage	1PH	198 – 264 V

3.1.2 SP11/16

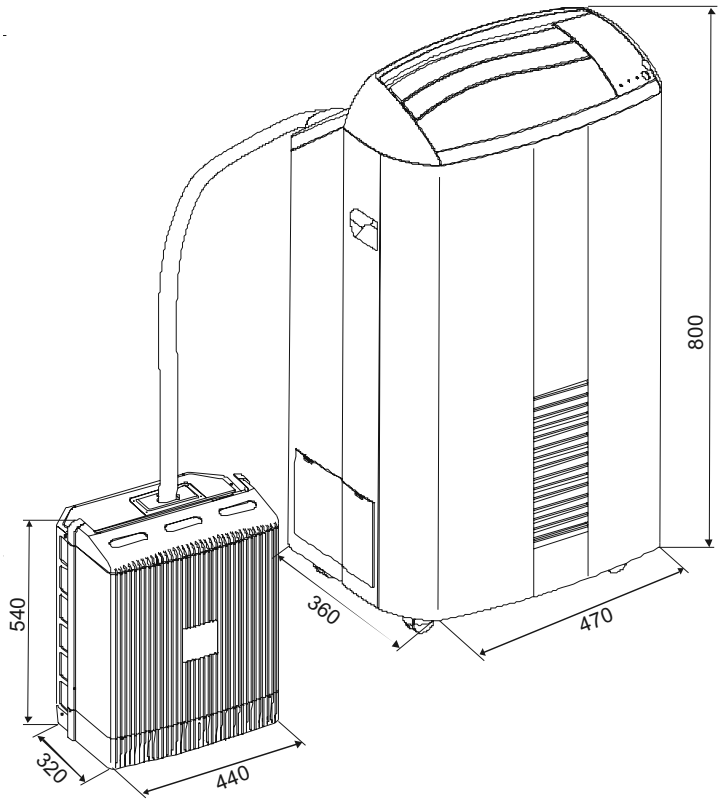
		Indoor	Outdoor
Cooling	Upper limit	32°C DB 23°C WB	46°C DB
	Lower limit	21°C DB 15°C WB	21°C DB
Heating	Upper limit	27°C DB	24°C DB 18°C WB
	Lower limit	10°C DB	-9°C DB -10°C WB
Voltage	1PH	198 – 264 V	

4. OUTLINE DIMENSIONS

4.1 Monoblock 7



4.2 SP 11/16



5. PERFORMANCE DATA & PRESSURE CURVES

5.1 Monoblock 7

5.1.1 Cooling Capacity (kW)

Entering Air WB/DB (°C)	15/21	17/24	19/27	21/29	23/32	24/35
TC	2.20	2.24	**2.30**	2.36	2.30	2.29
SC	1.38	1.41	**1.47**	1.42	1.38	1.56
PI	0.81	0.90	**0.95**	0.98	1.09	1.14

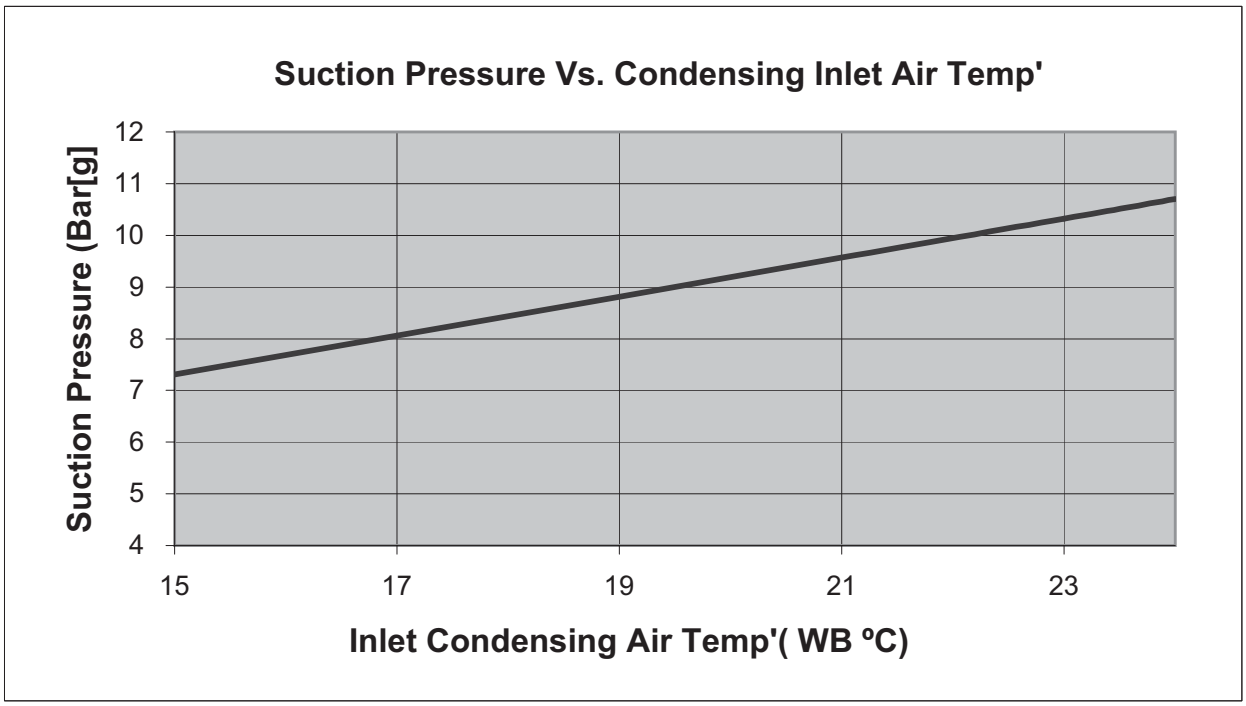
*indoor and outdoor air inlet temp' are equal for monoblock type

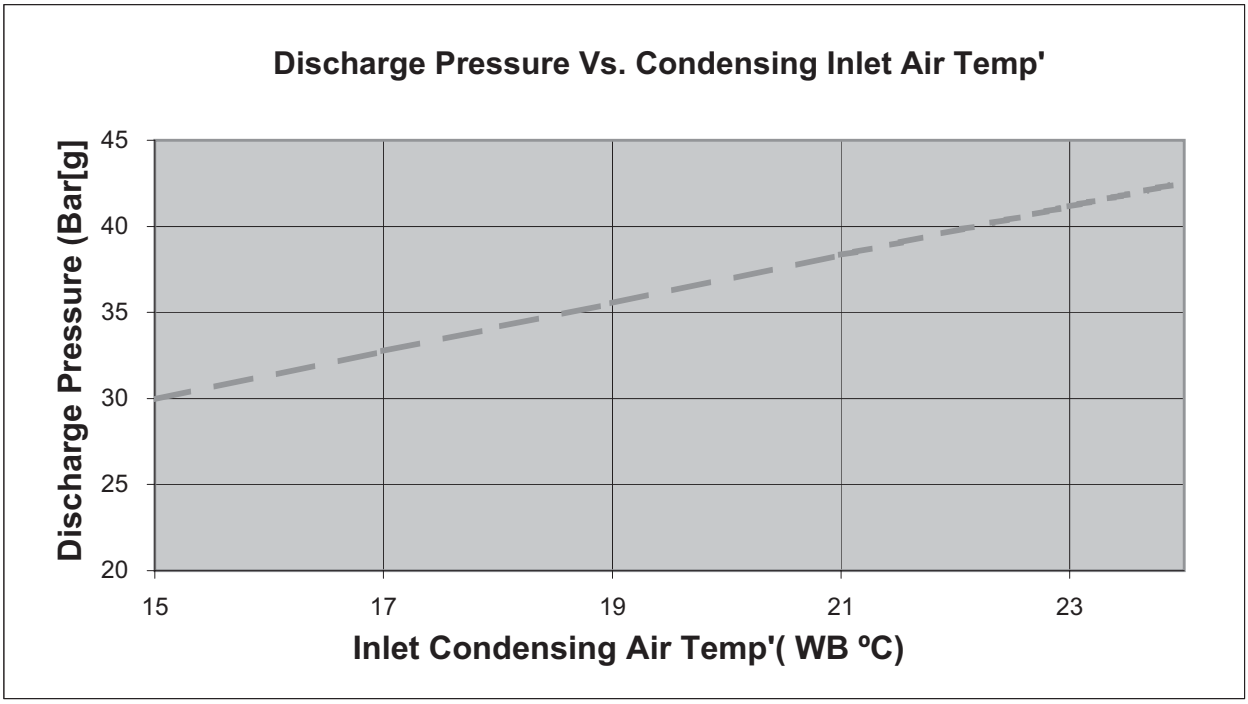
LEGEND

TC – Total Cooling Capacity, kW
SC – Sensible Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)

5.2 Pressure Curves

5.2.1 Cooling





5.3 SP11 R410A

5.3.1 Cooling Capacity (kW)

ENTERING AIR DB OU Coil(°C)	Data	ENTERING AIR WB/DB ID Coil(°C)				
		15/21	17/24	19/27	21/29	23/32
15	TC	3.18	3.30	3.37	3.45	3.51
	SC	2.09	2.18	2.26	2.32	2.36
	PI	0.69	0.70	0.70	0.70	0.70
20	TC	3.08	3.25	3.35	3.43	3.50
	SC	2.04	2.16	2.25	2.31	2.35
	PI	0.75	0.76	0.76	0.76	0.76
25	TC	2.91	3.15	3.31	3.41	3.49
	SC	1.99	2.11	2.23	2.29	2.34
	PI	0.82	0.82	0.83	0.83	0.84
30	TC	2.73	2.97	3.21	3.32	3.42
	SC	1.93	2.05	2.18	2.24	2.29
	PI	0.88	0.89	0.90	0.91	0.92
35	TC	2.52	2.74	**3.02**	3.17	3.32
	SC	1.83	1.97	**2.13**	2.19	2.23
	PI	0.95	0.96	**0.98**	0.99	0.99
40	TC	2.29	2.50	1.16	2.98	3.13
	SC	1.73	1.86	2.01	2.08	2.12
	PI	1.02	1.04	1.06	1.07	1.08
46	TC	1.99	2.18	2.39	2.64	2.85
	SC	1.59	1.71	1.84	1.90	1.94
	PI	1.12	1.13	1.16	1.18	1.19

LEGEND

TC – Total Cooling Capacity, kW
SC – Sensible Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

(1) Marked area is below standard operating limits.

5.3.2 Heating Capacity (kW)

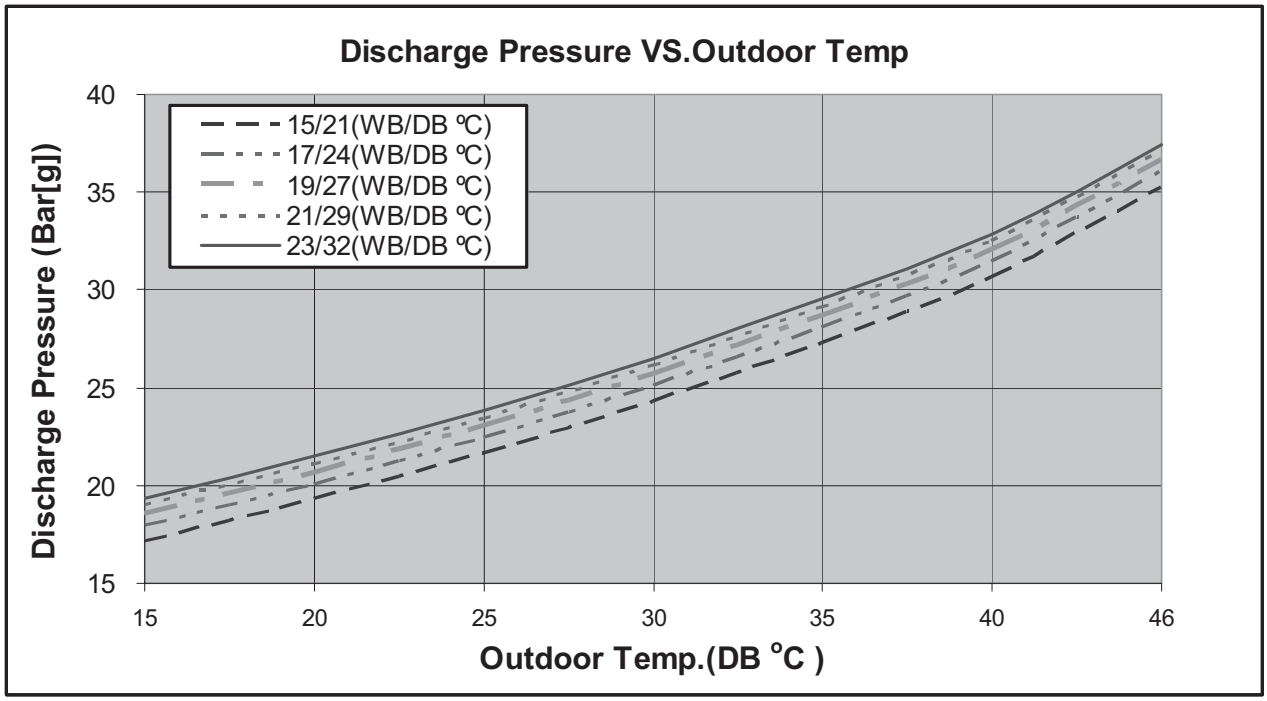
	ENTERING AIR DB ID COIL(°C)					
	15		20		25	
ENTERING WB OU COIL(°C)	TH	PI	TH	PI	TH	PI
-10	1.79	0.76	1.72	0.81	1.65	0.85
-7	1.92	0.78	1.85	0.82	1.79	0.87
-2	2.04	0.79	1.97	0.84	1.90	0.88
2	2.48	0.83	2.38	0.88	2.28	0.93
6	3.50	0.89	**3.40**	**0.95**	3.28	1.01
10	3.81	0.94	3.71	1.00	3.60	1.07
15	4.11	0.98	4.01	1.05	3.91	1.12
20	4.34	1.01	4.23	1.09	4.11	1.18

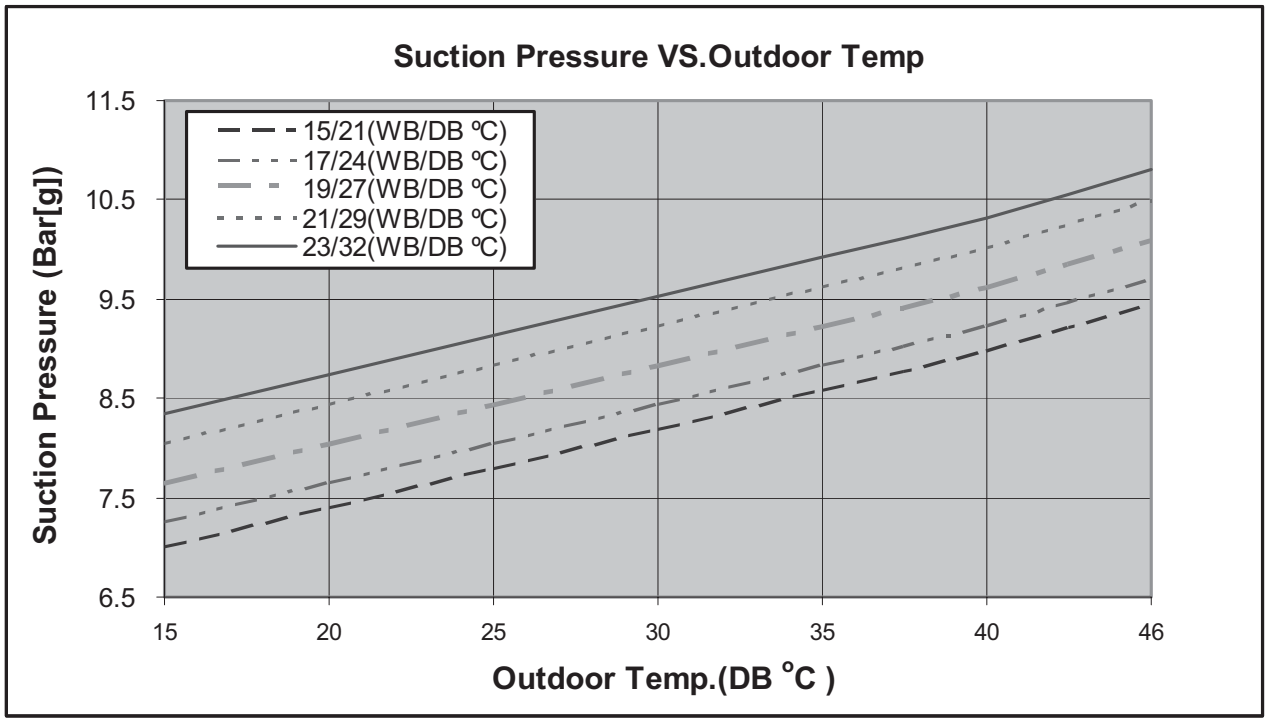
LEGEND

TH – Total Heating Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

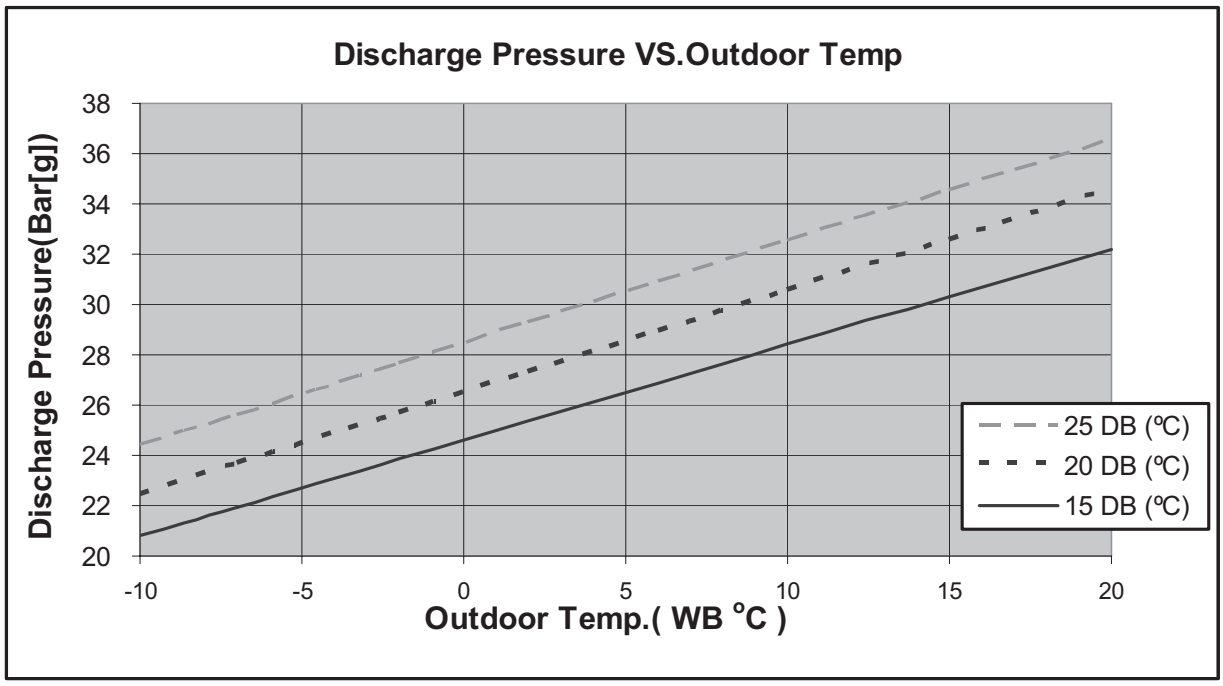
5.4 Pressure Curves

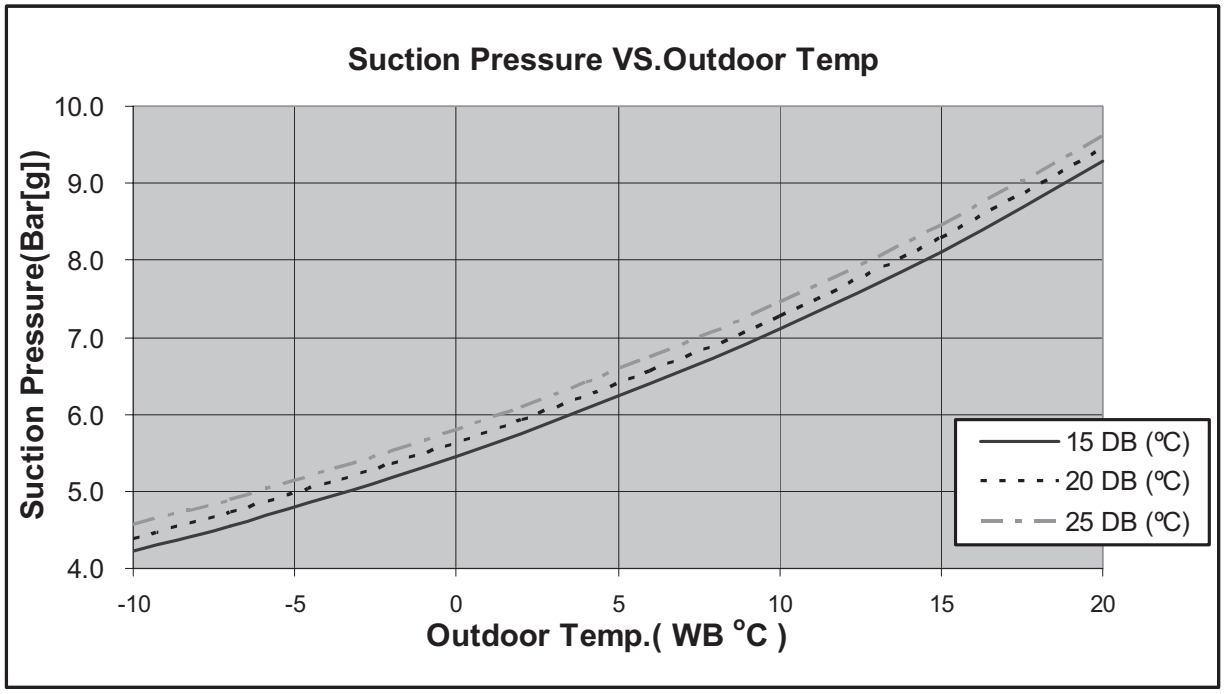
5.4.1 Cooling





5.4.2 Heating


Discharge Pressure VS.Outdoor Temp
Discharge Pressure(Bar[g])
38
36
34
32
30
28
26
24
22
20
-10
-5
0
5
10
15
20
Outdoor Temp.(WB °C)
25 DB (°C)
20 DB (°C)
15 DB (°C)


Suction Pressure VS.Outdoor Temp
Suction Pressure(Bar[g])
10.0
9.0
8.0
7.0
6.0
5.0
4.0
-10
-5
0
5
10
15
20
Outdoor Temp.(WB °C)
15 DB (°C)
20 DB (°C)
25 DB (°C)

5.5 SP16 R410A

5.5.1 Cooling Capacity (kW)

ENTERING AIR DB OU Coil(°C)	Data	ENTERING AIR WB/DB ID Coil(°C)				
		15/21	17/24	19/27	21/29	23/32
15	TC	4.40	4.55	4.66	4.77	4.84
	SC	2.64	2.76	2.86	2.94	2.99
	PI	1.09	1.09	1.10	1.10	1.10
20	TC	4.25	4.48	4.62	4.73	4.83
	SC	2.59	2.73	2.85	2.93	2.98
	PI	1.19	1.19	1.19	1.20	1.20
25	TC	4.02	4.34	4.57	4.71	4.82
	SC	2.53	2.68	2.83	2.91	2.96
	PI	1.28	1.29	1.30	1.31	1.32
30	TC	3.76	4.10	4.43	4.58	4.72
	SC	2.45	2.60	2.76	2.84	2.90
	PI	1.38	1.40	1.41	1.43	1.44
35	TC	3.48	3.78	**4.17**	4.38	4.59
	SC	2.33	2.49	**2.70**	2.78	2.83
	PI	1.49	1.52	**1.54**	1.55	1.56
40	TC	3.17	3.45	1.16	4.11	4.33
	SC	2.19	2.36	2.55	2.64	2.69
	PI	1.61	1.63	1.66	1.68	1.70
46	TC	2.75	3.00	3.30	3.65	3.93
	SC	2.02	2.16	2.33	2.41	2.46
	PI	1.76	1.78	1.82	1.85	1.87

LEGEND

TC – Total Cooling Capacity, kW
SC – Sensible Capacity, kW
PI – Power Input, kWה
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

(1) Marked area is below standard operating limits.

5.5.2 Heating Capacity (kW)

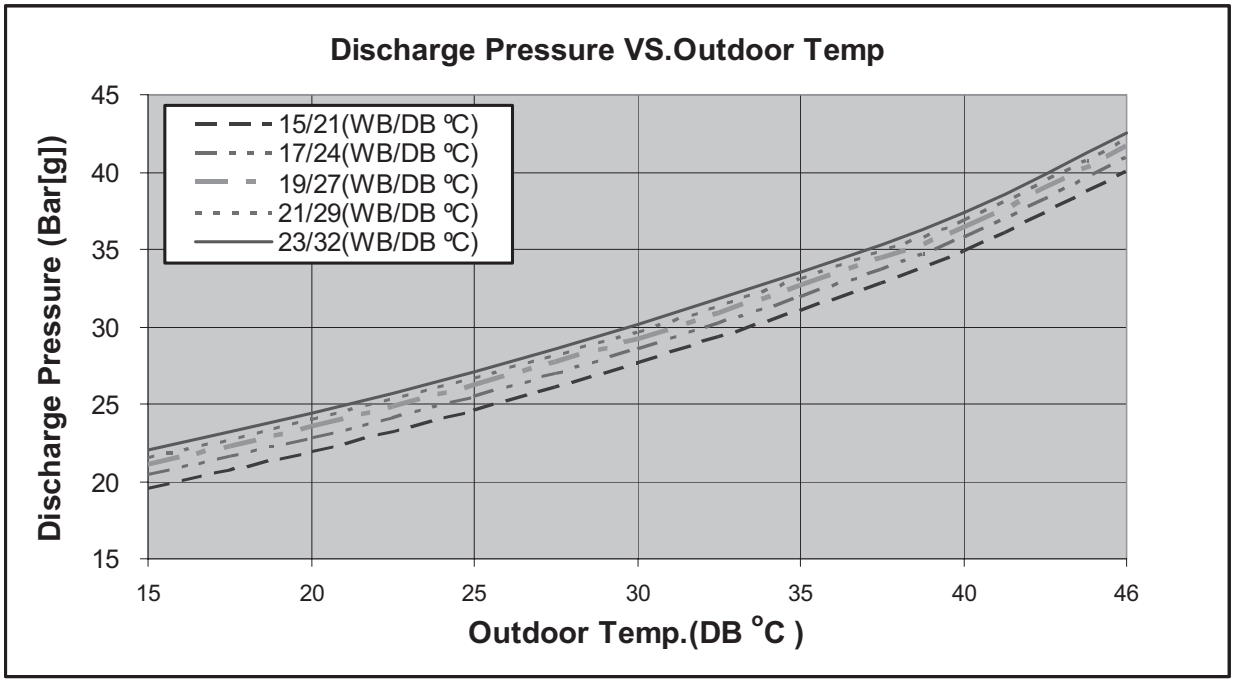
	ENTERING AIR DB ID COIL(°c)					
	15		20		25	
ENTERING WB OU COIL(°C)	TH	PI	TH	PI	TH	PI
-10	2.41	1.11	2.32	1.18	2.23	1.24
-7	2.59	1.14	2.50	1.20	2.41	1.26
-2	2.75	1.15	2.66	1.22	2.57	1.29
2	3.35	1.21	3.21	1.28	3.08	1.36
6	4.73	1.30	**4.59**	**1.39**	4.43	1.47
10	5.14	1.37	5.00	1.46	4.87	1.56
15	5.55	1.43	5.42	1.54	5.28	1.64
20	5.85	1.47	5.71	1.60	5.55	1.72

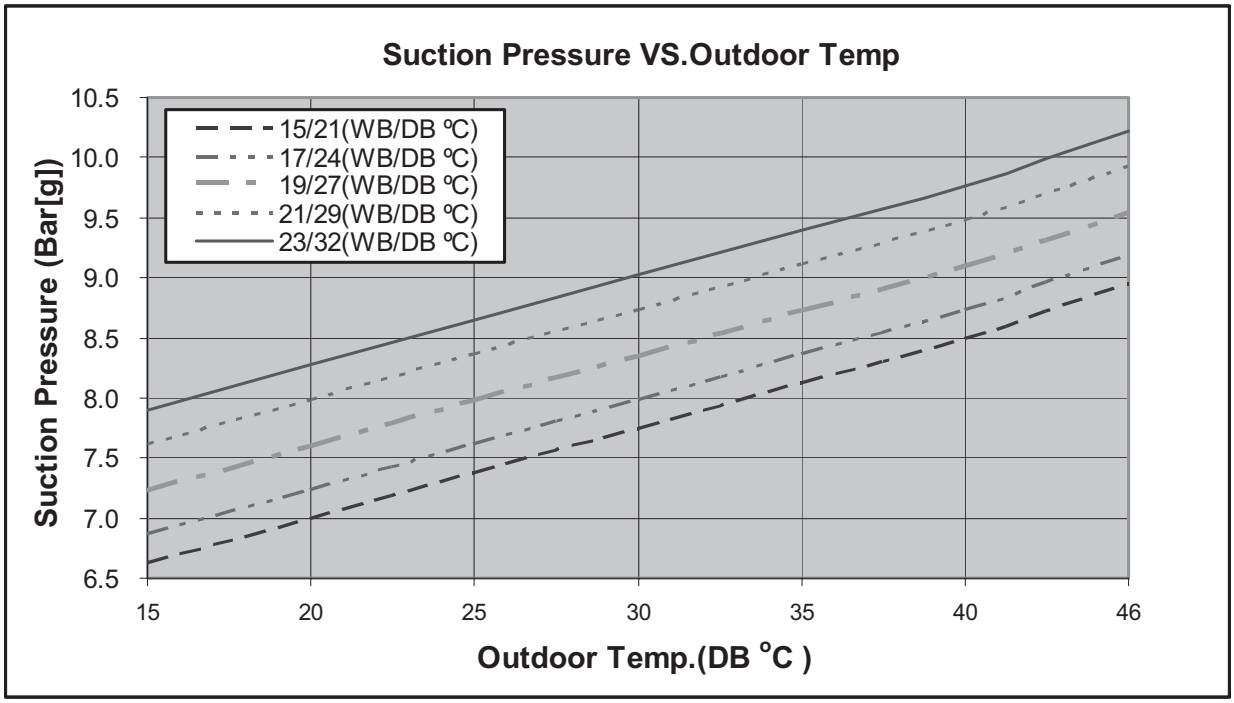
LEGEND

TH – Total Heating Capacity, kW
PI – Power Input, kW
WB – Wet Bulb Temp., (°C)
DB – Dry Bulb Temp., (°C)
ID – Indoor
OU – Outdoor

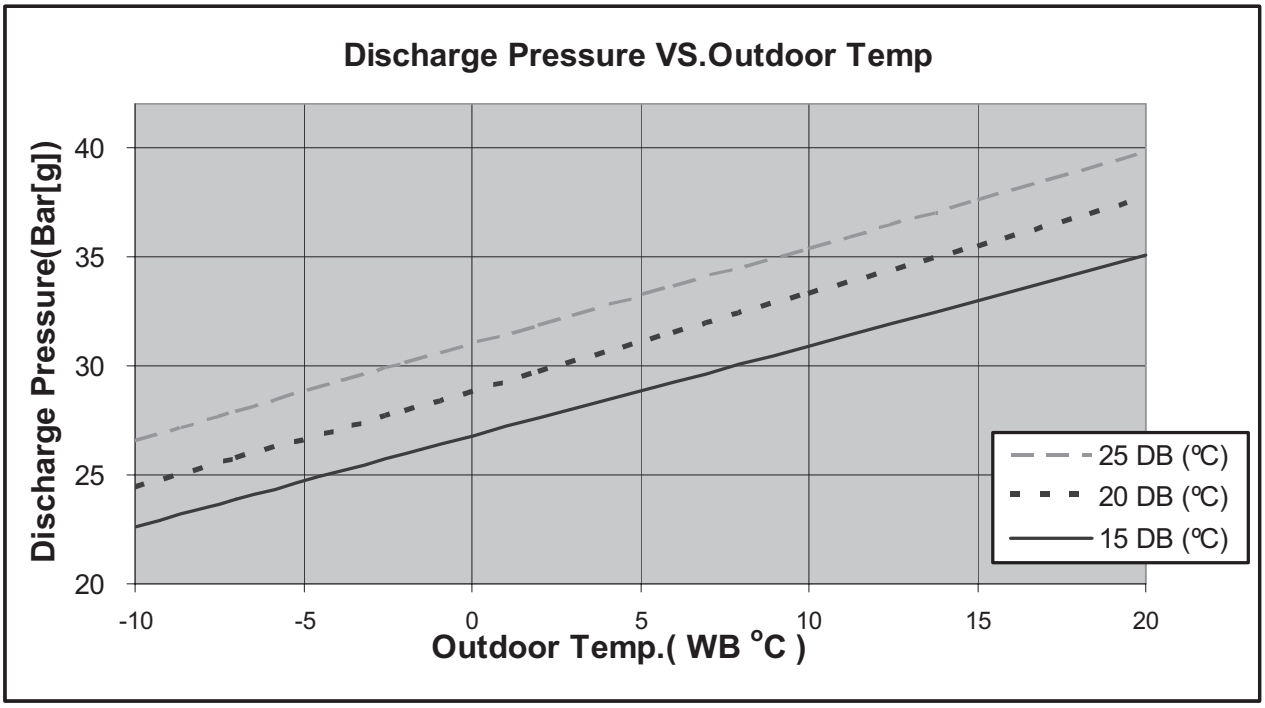
5.6 Pressure Curves

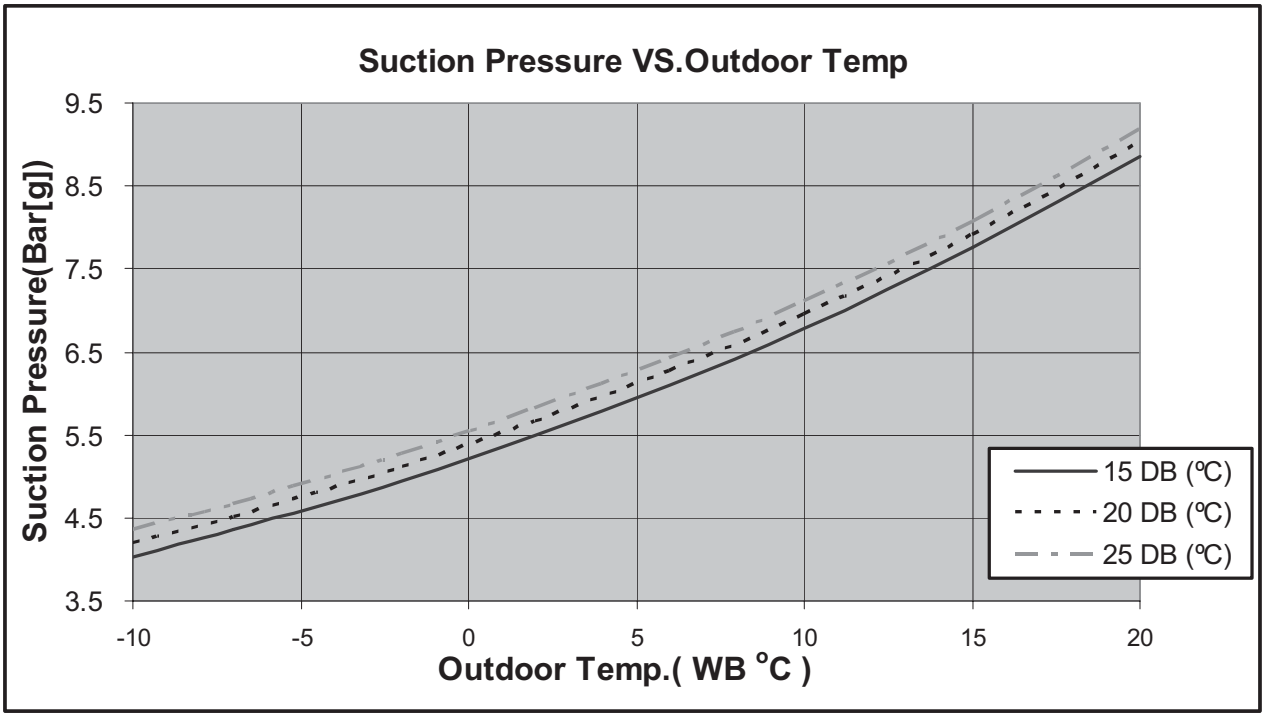
5.6.1 Cooling





5.6.2 Heating


Discharge Pressure VS.Outdoor Temp
Discharge Pressure(Bar[g])
40
35
30
25
20
-10
-5
0
5
10
15
20
Outdoor Temp.(WB °C)
25 DB (°C)
20 DB (°C)
15 DB (°C)


Suction Pressure VS.Outdoor Temp
Suction Pressure(Bar[g])
9.5
8.5
7.5
6.5
5.5
4.5
3.5
-10
-5
0
5
10
15
20
Outdoor Temp.(WB °C)
15 DB (°C)
20 DB (°C)
25 DB (°C)

6. SOUND LEVEL CHARACTERISTICS

6.1 Sound Pressure Level

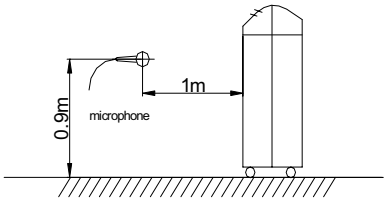
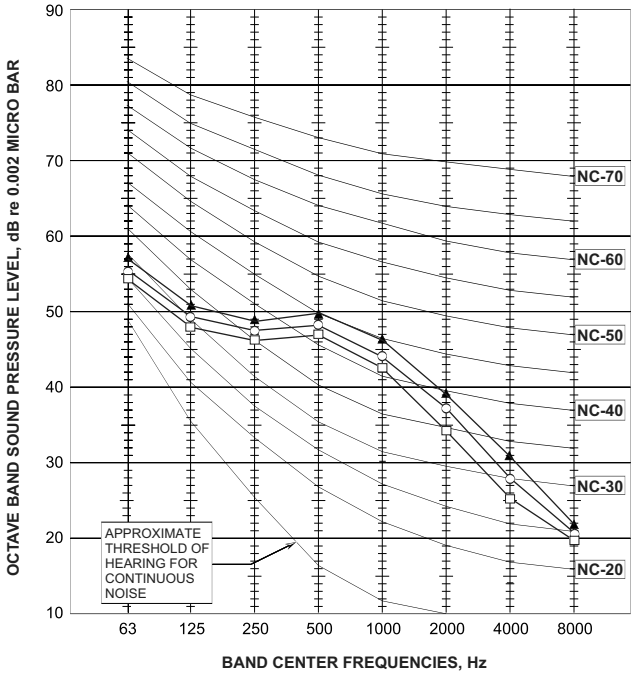


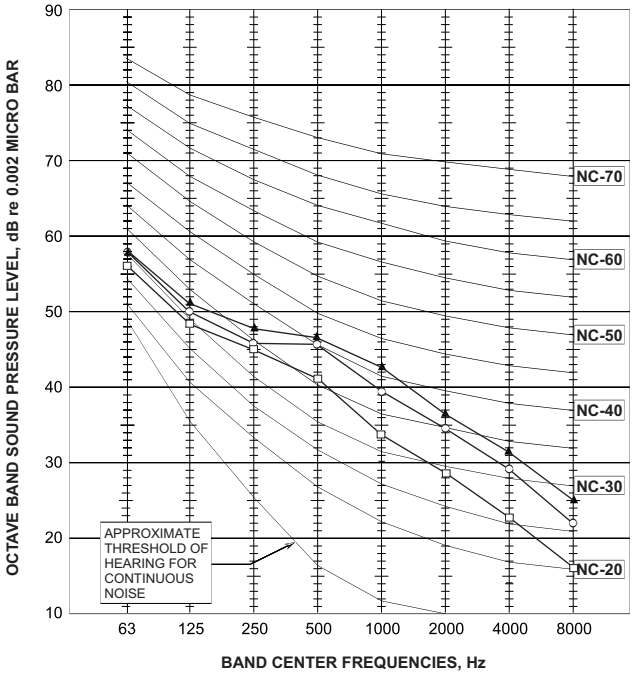
Fig.1 Monoblock

6.2 Soud Pressure Level Spectrum (Measured as Figure 1)

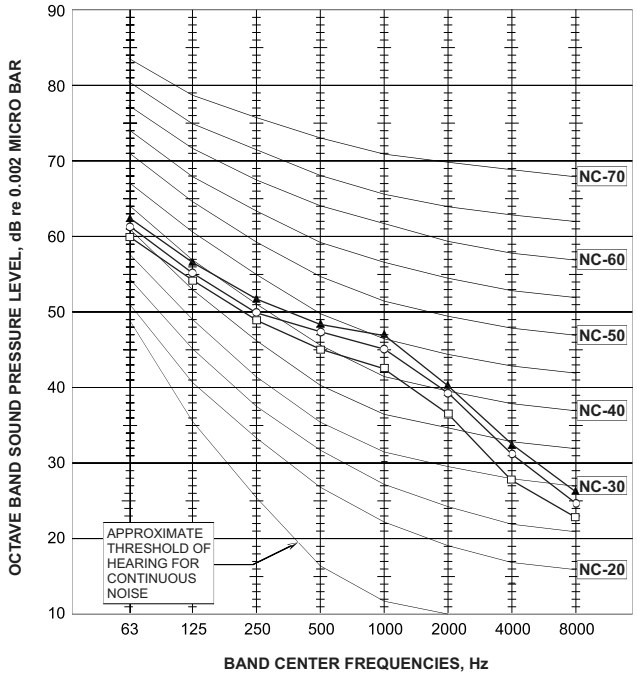
Monoblock 7



SP 11



SP 16



FAN SPEED	LINE
HI	▲
ME	○
LO	□

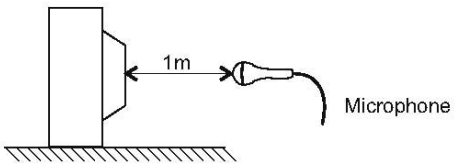
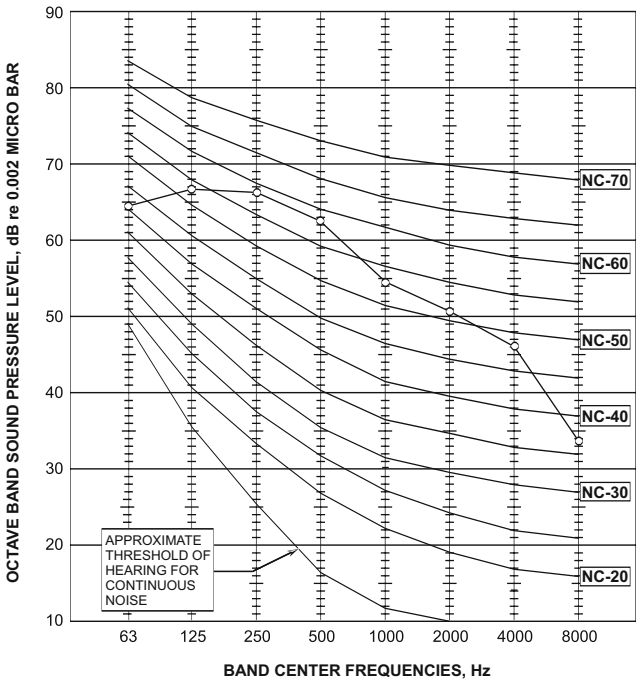


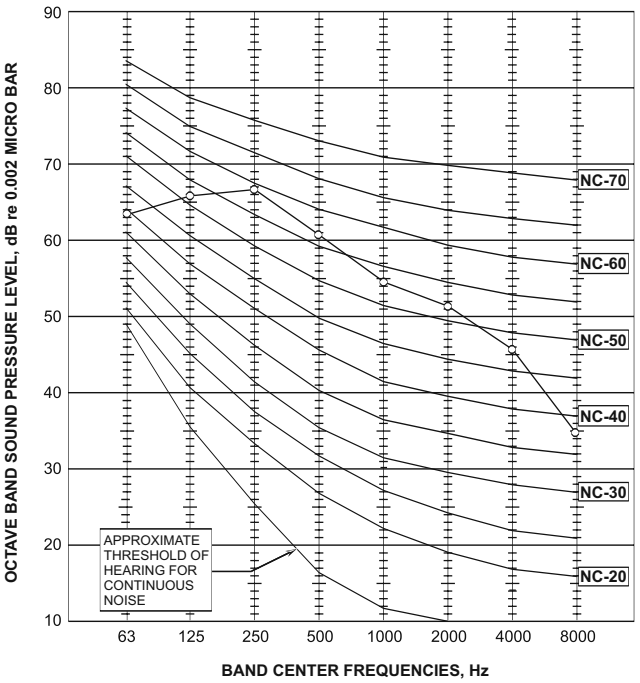
Fig.2 Microphone Distance from Unit

6.3 Sound Pressure Level Spectrum (Measured as Figure 2)

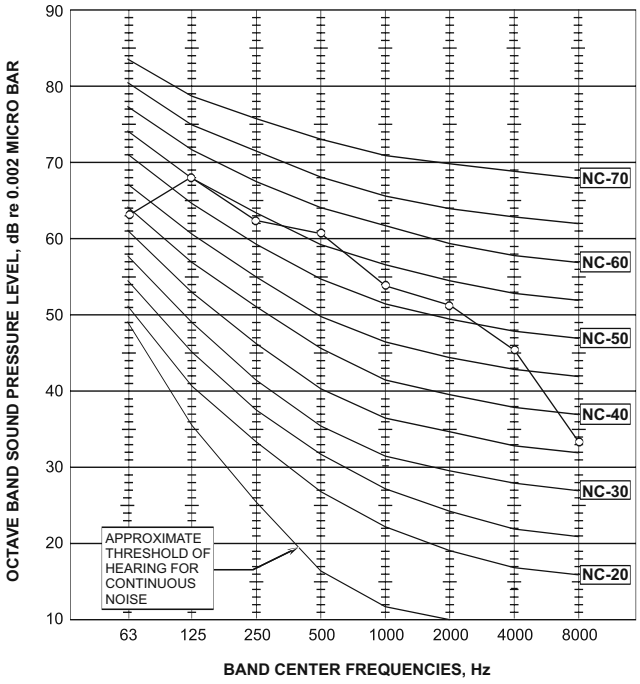
SP 11 Cooling



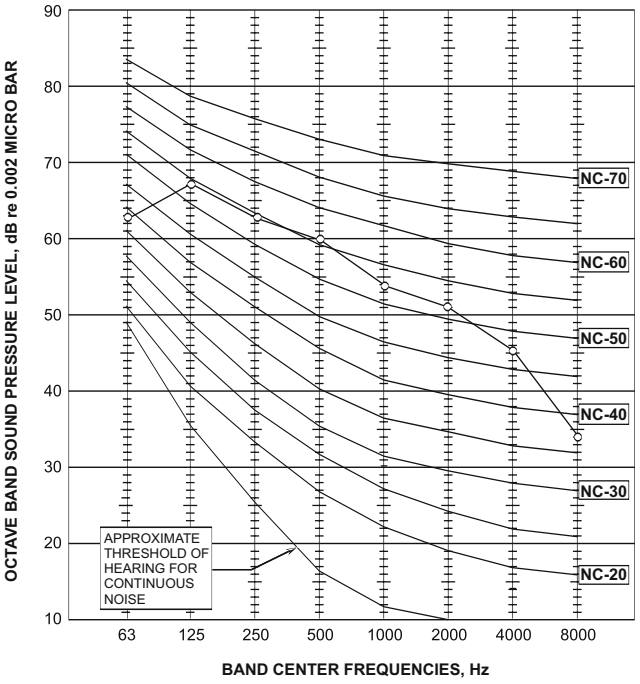
SP 11 Heating



SP 16 Cooling



SP 16 Heating



7. ELECTRICAL DATA

7.1 Single Phase Units

MODEL	Monoblock 7	SP 11	SP 16
Power Supply	To indoor	To indoor	To indoor
	1PH-230V-50Hz	1PH-230V-50Hz	1PH-230V-50Hz
Max Current, A	5.4	6.2	11
Circuit Breaker,A	10	10	15
Power Supply Wiring (No. X Cross Section, mm^2)	3x1.0 mm^2	3x1.0 mm^2	3x1.5 mm^2
*Interconnecting Cable RC Model (No. X Cross Section, mm^2)	N/A	4x1.0 mm^2 +2x0.5 mm^2 (OCT sensor)	4x1.0 mm^2 +2x0.5 mm^2 (OCT sensor)
*Interconnecting Cable ST Model (No. X Cross Section, mm^2)	N/A	4x1.0 mm^2	4x1.0 mm^2

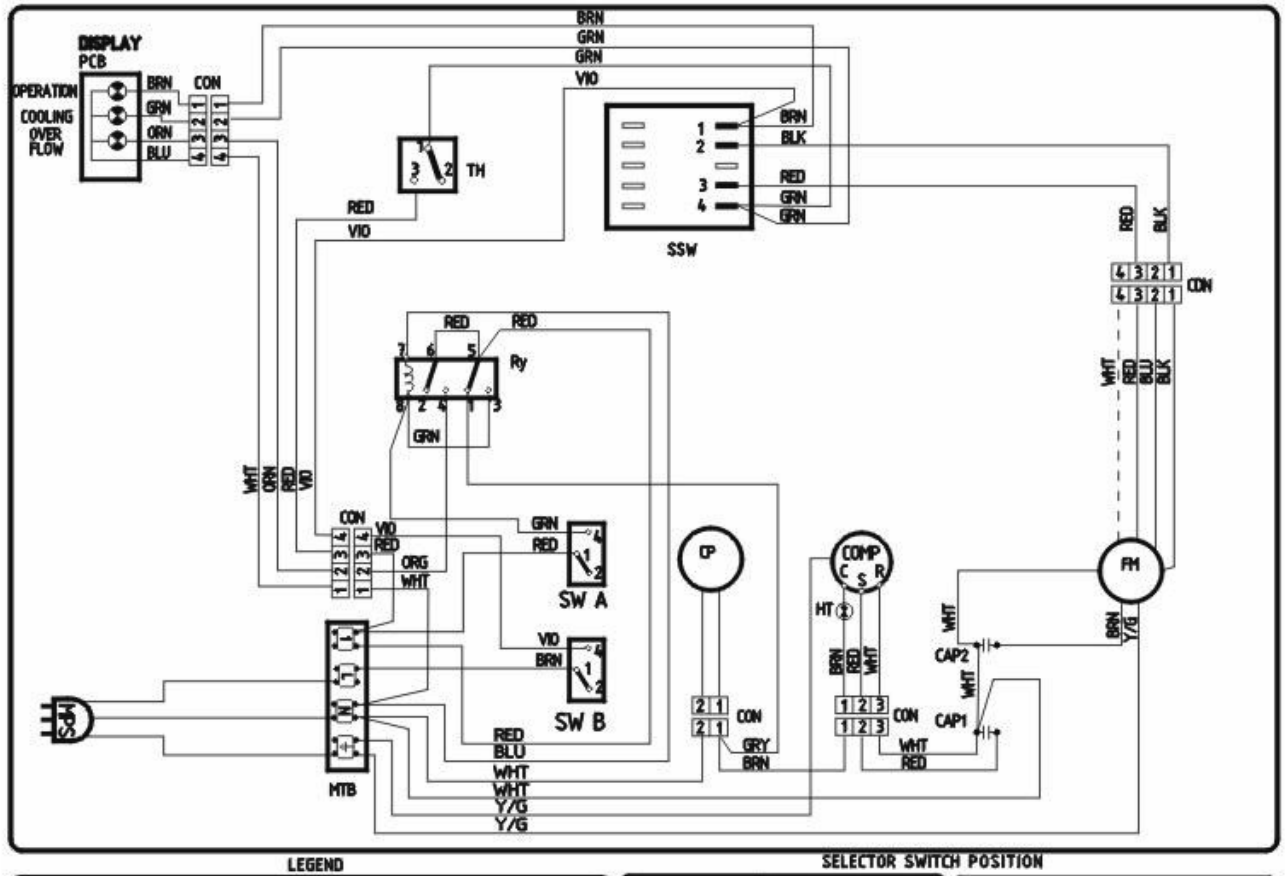
*Already connected on factory as standard

NOTE

Power wiring cord should comply with local lows and electrical regulations requirements.

8. WIRING DIAGRAMS

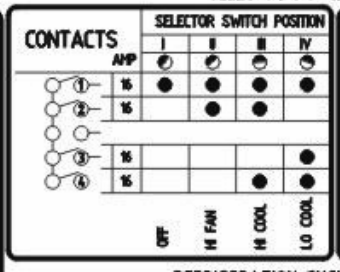
8.1 Monoblock 7 (Mechanical Model)

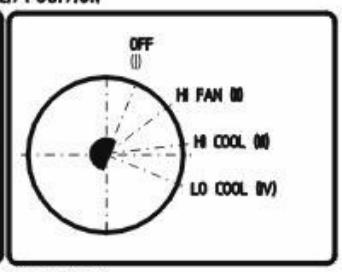


LEGEND

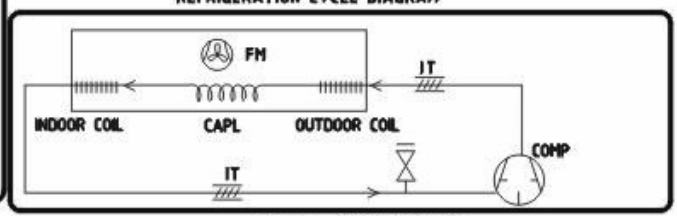
CAP1	COMP RESSOR CAPACITOR	BLK	BLACK
CAP2	FAN MOTOR CAPACITOR	BLU	BLUE
CAPL	CAPILLARY TUBE	BRN	BROWN
COMP	COMPRESSOR	GRN	GREEN
CON	CONNECTOR	GRY	GREY
CP	CONDENSATE PUMP	ORN	ORANGE
FM	FAN MOTOR	RED	RED
HT	HI. TEMP. CUT OUT	WHT	WHITE
IT	INSUL'D TUBE	VIO	VIOLET
MPS	MAIN POWER SUPPLY	Y/G	YELLOW-GREEN
MTB	MAIN TERMINAL BOARD		
Ry	RELAY		
SSW	SELECTOR SWITCH		
SW A	OVERFLOW FLOAT SWITCH		
SW B	CONDENSATE WATER TANK		
TH	THERMOSTAT		

SELECTOR SWITCH POSITION

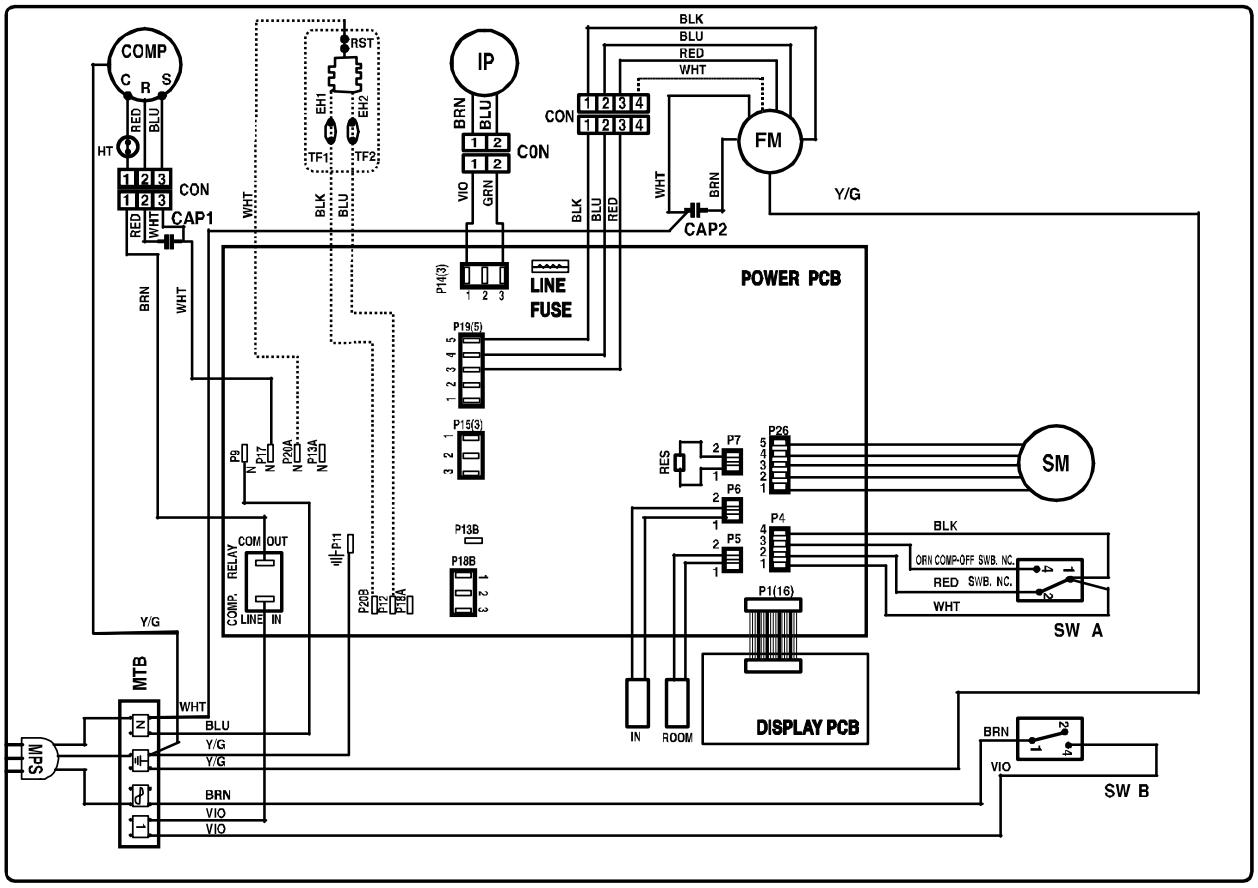




REFRIGERATION CYCLE DIAGRAM



8.2 Monoblock 7 (Electronic Model)

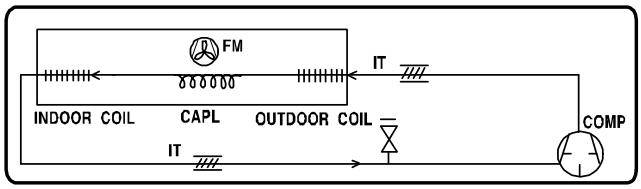


LEGEND

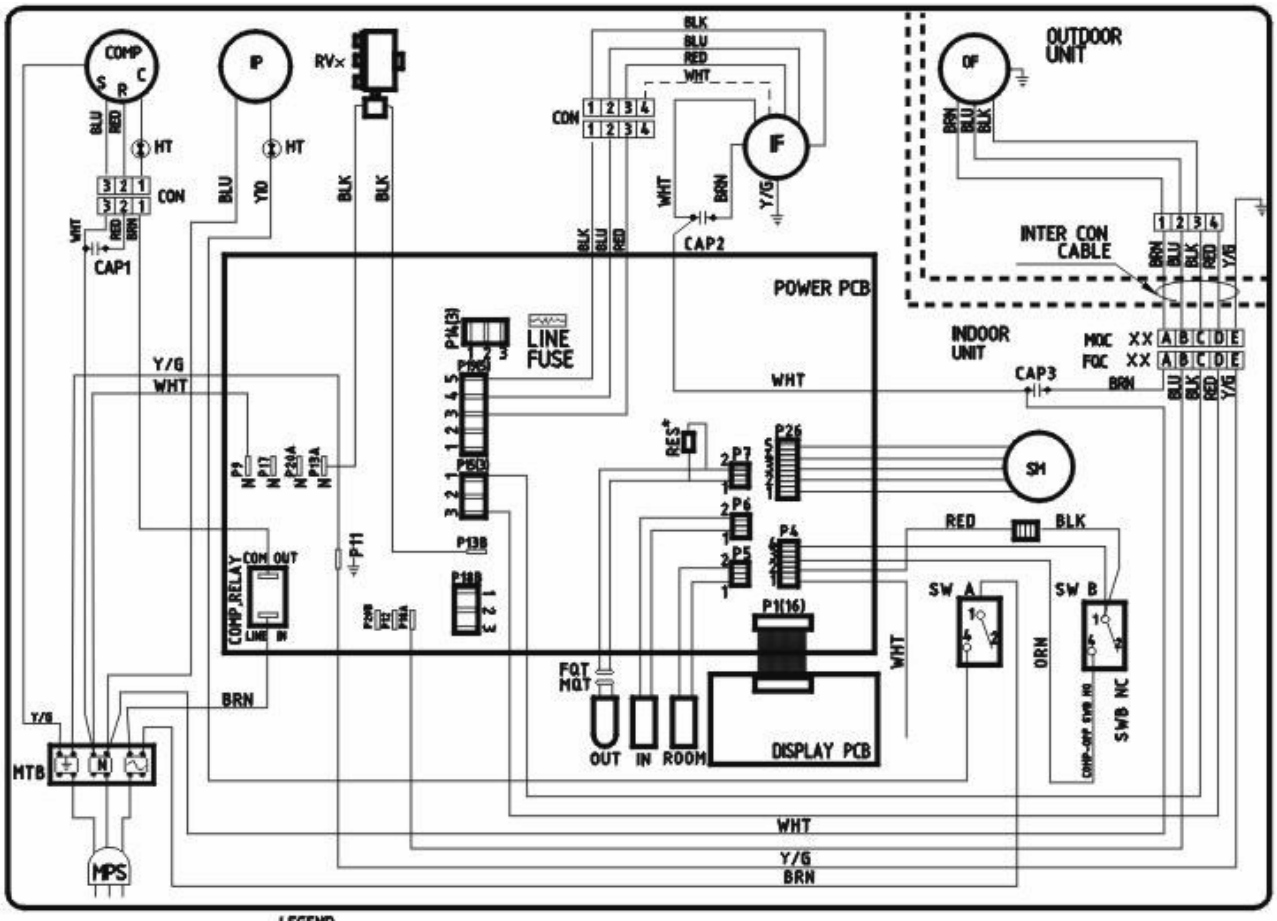
CAP1	— COMPRESSOR CAPACITOR	RES	— RESISTOR 4.7 KΩ
CAP2	— FAN MOTOR CAPACITOR	ROOM	— ROOM TEMP. SENSOR
CAPL	— CAPILARY TUBE	RST	— RESETTABLE THERMOSTAT
COMP	— COMPRESSOR	SM	— STEP MOTOR
CON	— CONNECTOR	SW A	— OVERFLOW FLOAT SWITCH
IP	— IN PUMP	SW B	— MAN CONTROL SWITCH
EH1	— ELEC HEATER STAG 1	TF1	— EH1 SAFETY THERMOFUSE
EH2	— ELEC HEATER STAG 2	TF2	— EH2 SAFETY THERMOFUSE
FM	— FAN MOTOR		
IN	— DEFROST TEMP. SENSOR		
IT	— INSULATED TUBE		
HT	— HI.TEMP.CUT OUT		
MPS	— MAIN POWER SUPPLY		

BLK	— BLACK
BLU	— BLUE
BRN	— BROWN
GRN	— GREEN
ORN	— ORANGE
RED	— RED
WHT	— WHITE
VIO	— VIOLET
Y/G	— YELLOW-GREEN

REFRIGERATION CYCLE DIAGRAM

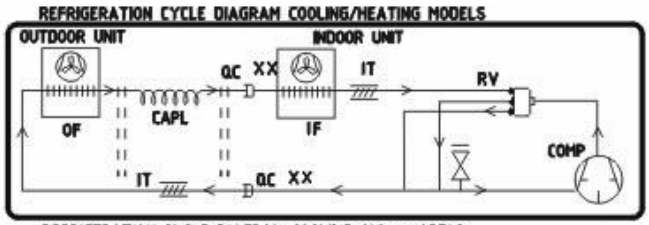


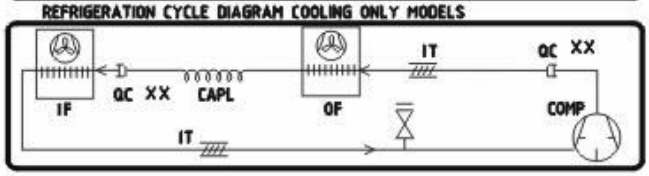
8.3 SP 11/16 (Electronic Model)



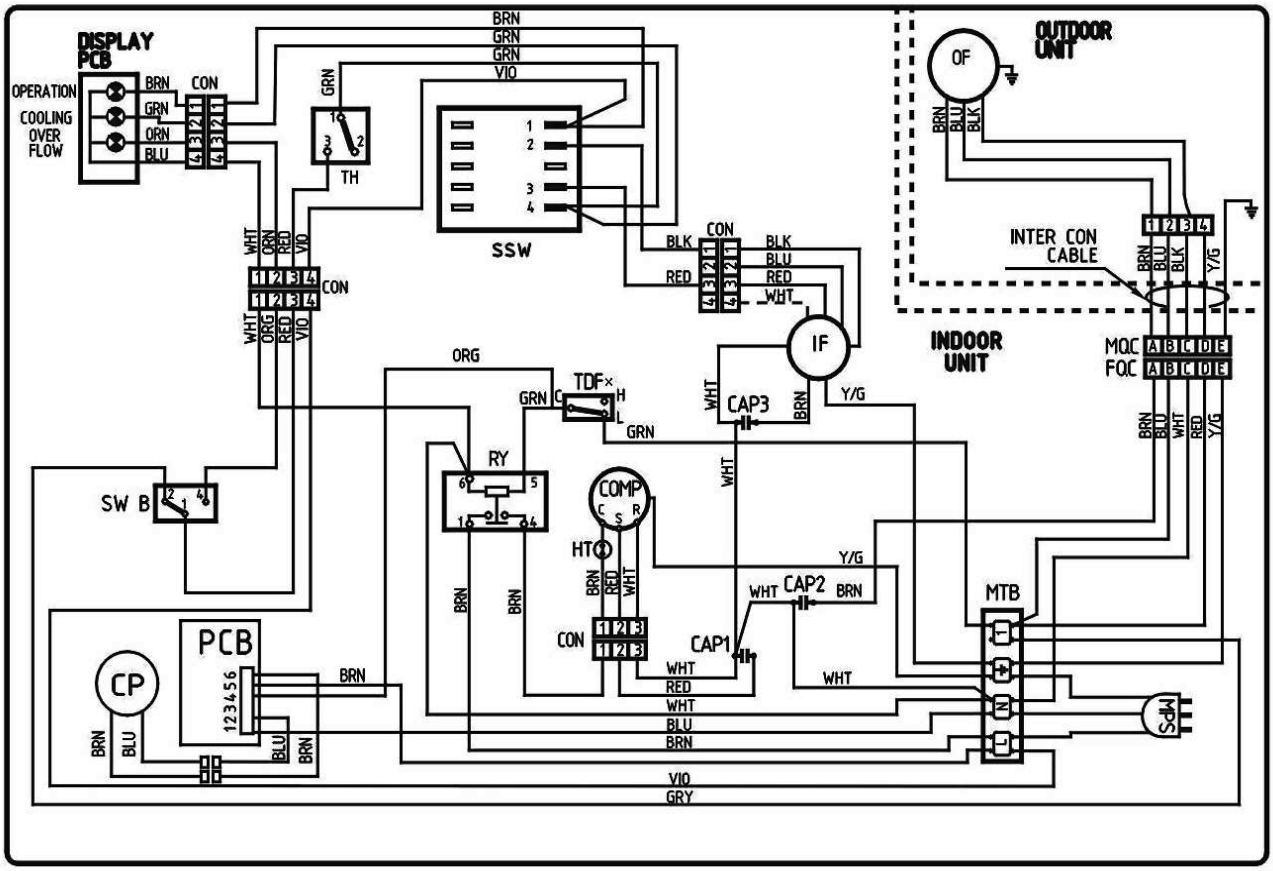
LEGEND

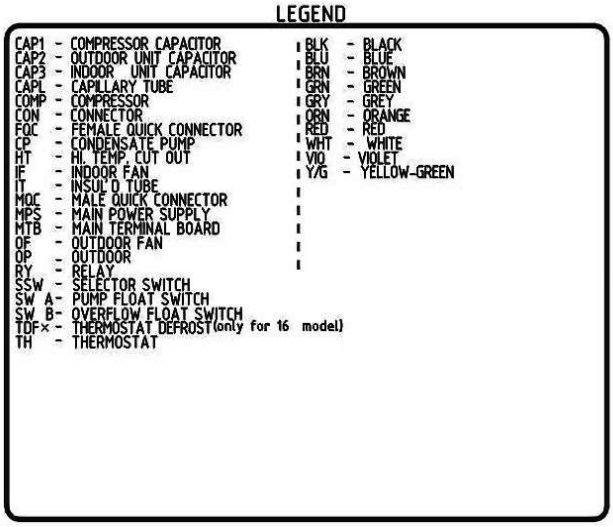
CAP1	COMPRESSOR CAPACITOR	OUT	LIQUID TEMP. SENSOR FOR ABOVE 12000 BTU/H
CAP2	INDOOR FAN CAPACITOR	+RES	RESISTOR, FOR UP TO 12000 BTU/H
CAP3	OUTDOOR FAN CAPACITOR	ROOM	ROOM TEMP. SENSOR
CAPL	CAPILLARY TUBE	RVX	REVERCIVE VALVE (16 model only)
COMP	COMPRESSOR	SM	STEP MOTOR
CP	CONDENSATE PUMP	SW A	PUMP FLOAT SWITCH
FQC	FEMALE QUICK CONNECTOR	SW B	OVERFLOW FLOAT SWITCH
FQT	FEMALE QUICK CONNECTOR THERMISTOR	XX	FOR QC MODEL ONLY
IF	INDOOR FAN	X	OPTION
IM	DEFROST TEMP. SENSOR		
IP	INDOOR PUMP		
IT	INSULATED TUBE		
HT	HI.TEMP.CUT OUT		
MPS	MAIN POWER SUPPLY		
MQC	MALE QUICK CONNECTOR	BLK	BLACK
MQT	MALE QUICK CONNECTOR THERMISTOR	BLU	BLUE
OF	OUTDOOR FAN	BRN	BROWN
OP	OUTDOOR PUMP	GRN	GREEN
		ORN	ORANGE
		RED	RED
		WHT	WHITE
		VIO	VIOLET
		Y/N	YELLOW-GREEN

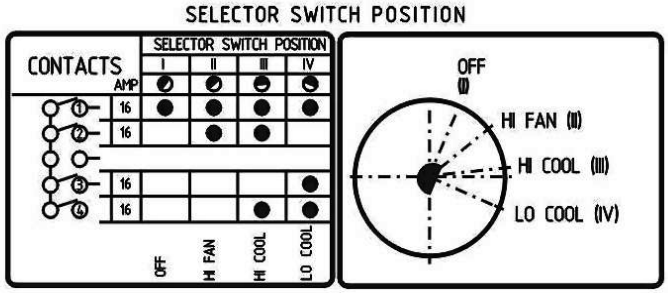


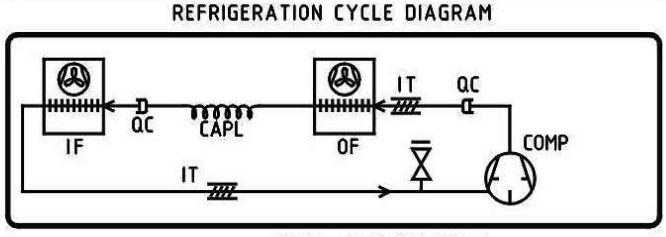


8.4 SP 11/16 (Mechanical Model)





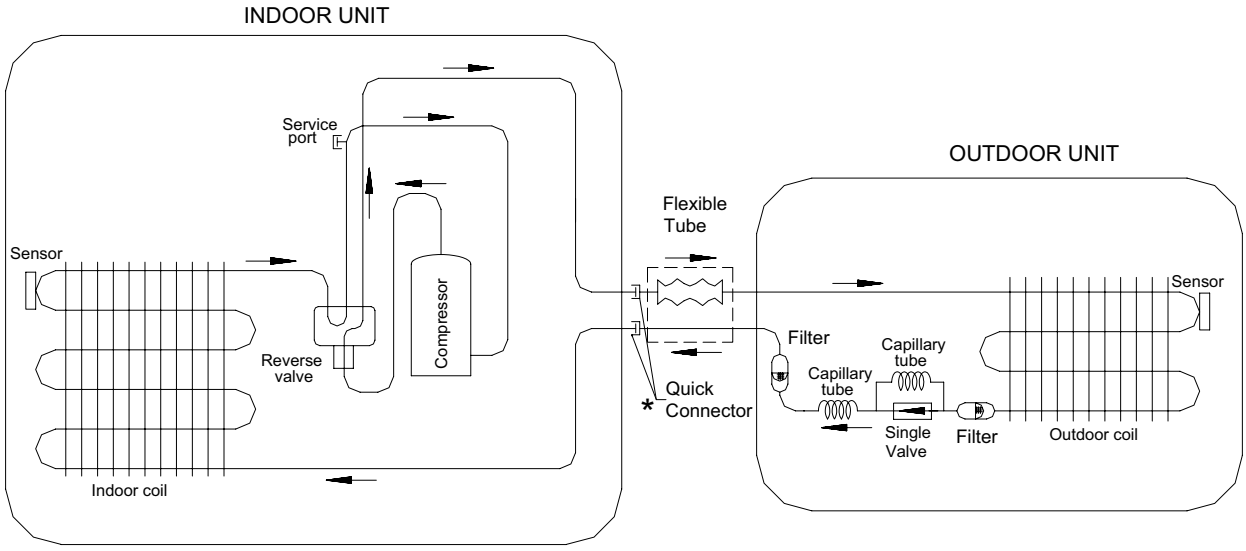




9. REFRIGERATION DIAGRAMS

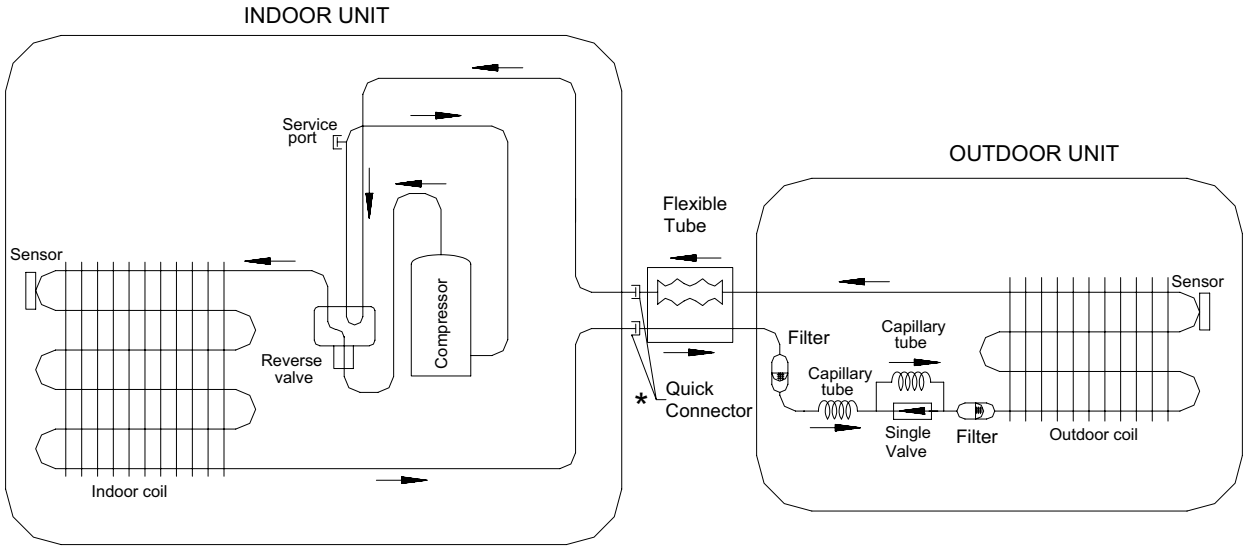
9.1 Heat Pump Models

9.1.1 SP11, 16 RC



COOLING MODE

*Optional

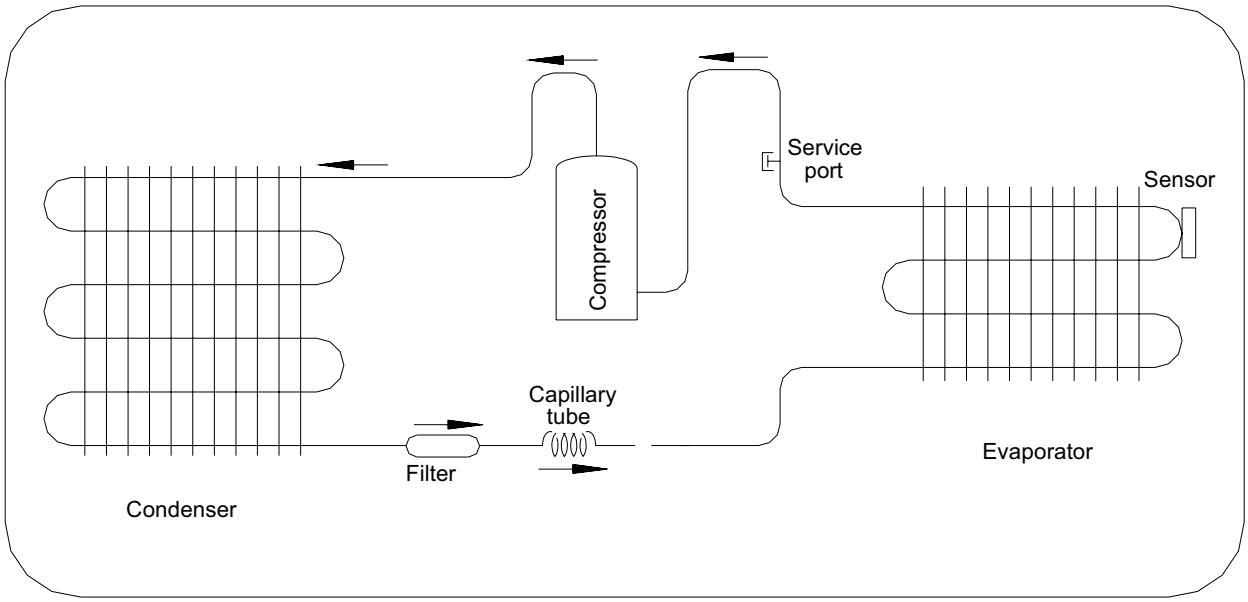


HEATING MODE

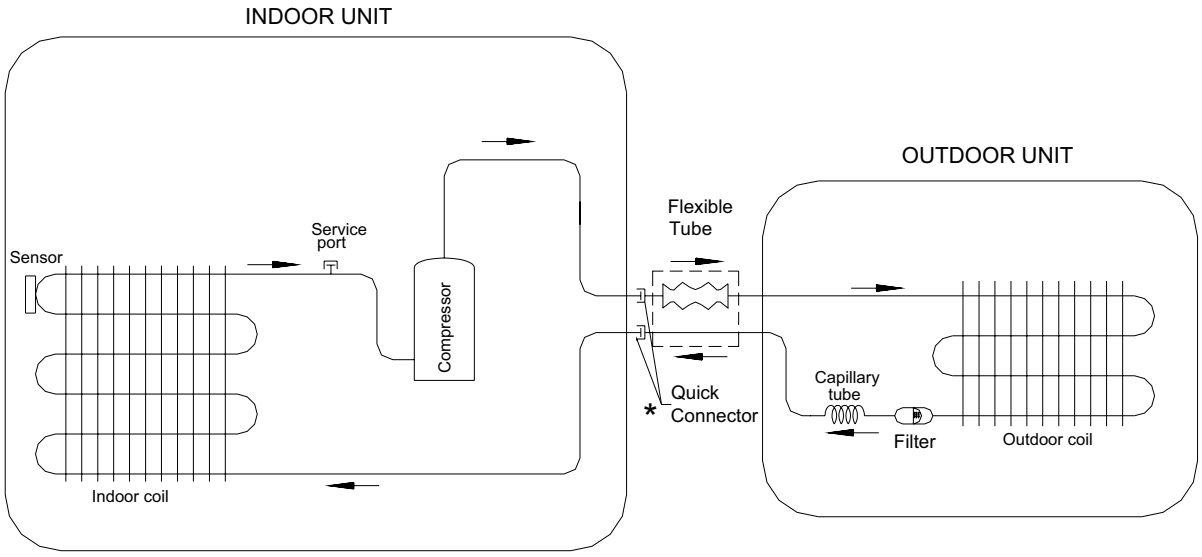
*Optional

9.2 Cooling Only Models

9.2.1 Monoblock 7 ST



10.2.2 SP 11, 16 ST



*Optional

10. CONTROL SYSTEM

10.1 Electronic Control

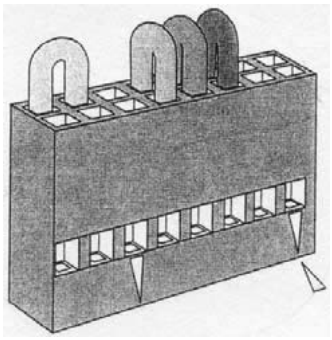
10.1.1 Introduction

The electronic control information is designed for service applications, and is common to the following groups of air-conditioners:

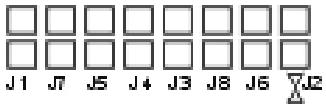
- **ST/ RC** group -Cooling only / cooling and heating by heat pump.
- **SH group** -Cooling and heating by heat pump and supplementary heater.
- **RH group** -Cooling, heating by heaters only.

10.1.2 Jumpers Settings

GROUP	**J6** Setting	**J2** Setting
ST / RC	Open	Open
SH	Closed	Open
RH	Closed	Closed



Model Plug

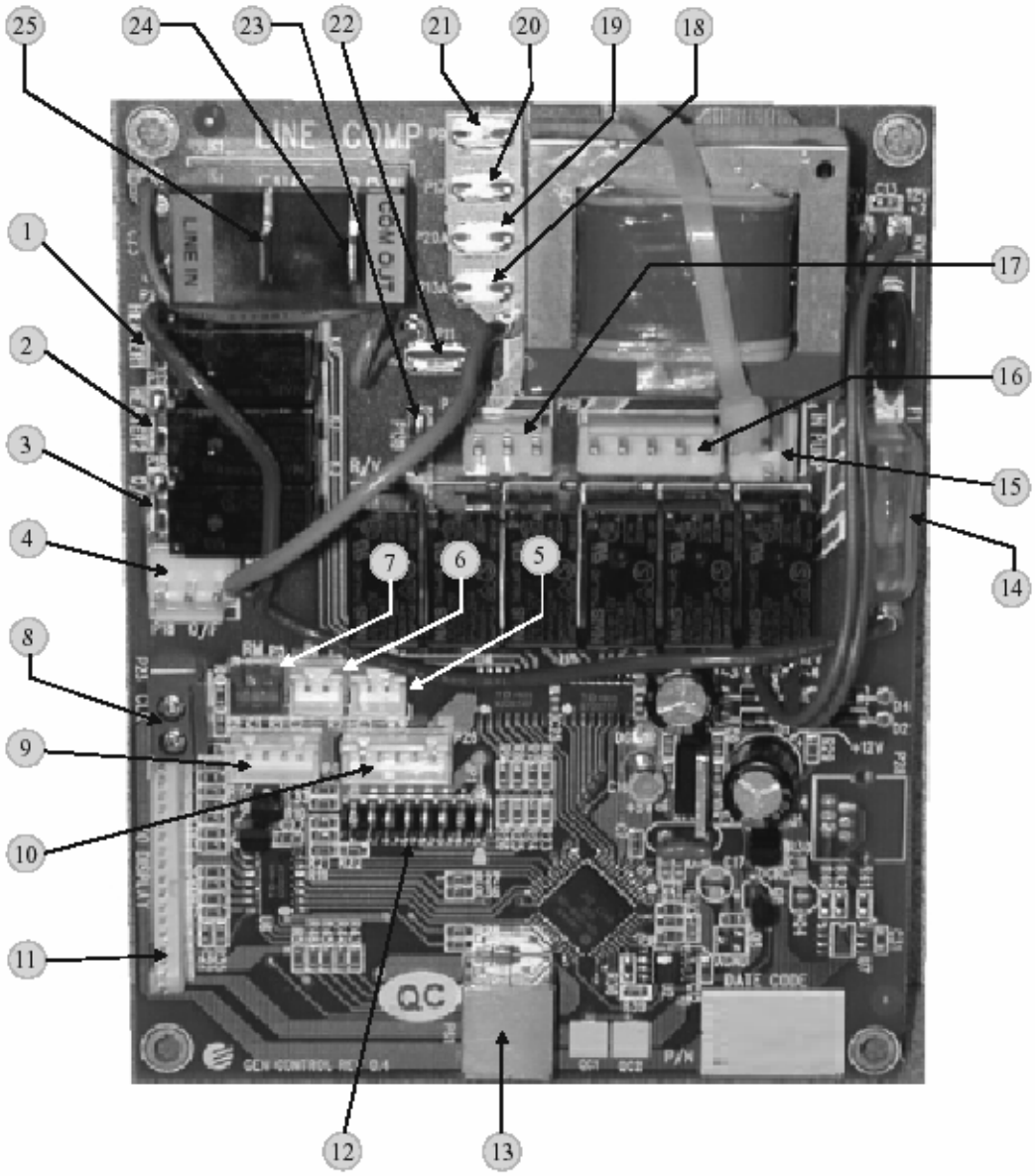


Group	Location of the jumpers
ST	
RC	
RH	
SH	

10.2 Legend

AC	- Alternate Current
A/C	- Air-Conditioner
ANY	- ON or OFF status
CLOCK	- ON/OFF Operation Input, (dry contact)
COMP	- Compressor
CPU	- Central Processing Unit
ELUM	- Extended Louver Upward Movement (Software Jumper)
E²PROM, EEP	- Erase Enable Programmable Read Only Memory
HE	- Heating Element
HPC	- High Pressure Control
H/W	- Hardware
ICP	- Indoor Condensation Pump
ICT	- Indoor Coil Temperature (RT2) sensor
IF, IFAN	- Indoor Fan
IR	- Infra Red
LEVEL1	- Normal Water Level
LEVEL2/3	- Medium/High Water Level
LEVEL4	- Overflow Level
Max	- Maximum
Min	- Minimum
min	- Minute (time)
NA	- Not Applicable
OCP	- Outdoor Condensation Pump
OCT	- Outdoor Coil Temperature (RT3) sensor
OF, OFAN	- Outdoor Fan
OPER	- Operate
Para.	- Paragraph
RAT	- Return Air Temperature (RT1) sensor
RC	- Reverse Cycle (Heat Pump)
R/C	- Remote Control
RCT	- Remote Control Temperature
RH	- Resistance Heater
RT	- Room Temperature (i.e. RCT in IFEEL mode, RAT otherwise)
RV	- Reversing Valve
SB, STBY	- Stand-By
sec	- Second (time)
Sect	- Section
SH	- Supplementary Heater
SPT	- Set Point Temperature
ST	- Standard (a Model with Cooling Only)
S/W	- Software
TEMP	- Temperature
W/O	- Without
WVL	- Water Valve
ΔT	- The difference between SPT and RT. in Heat Mode:ΔT = SPT-RT in Cool/Dry/Fan Mode: ΔT = RT-SPT

10.3 Main PCB Controller



LEGEND

1. Heater1
2. Heater 2
3. Outdoor Fan
4. Outdoor Fan
5. Outdoor coil thermistor
6. Indoor Coil Thermistor
7. Return Air Thermistor (Room)
8. External Clock
9. Water level input
10. Louver step motor
11. Display
12. Plug model jumper
13. Plug display for Ducted units
14. Fuse 3.15A, 250V
15. Indoor pump
16. Indoor Fan
17. Outdoor Pump for split units only
18. Reverse valve neutral
19. Heater neutral
20. Compressor -Neutral
21. Neutral- Power Supply
22. Ground - Power Supply
23. Reverse Valve -control
24. Compressor Control
25. line in - Power supply input

10.4 General functions

10.4.1 COMP operation

For each Mode including POWER OFF & SB, a Min time delay of 3 min before COMP restarting, excluding DEICING Mode

The Min operation time of COMP under different operating conditions is

Operation Mode	Min operation time of COMP
Heat, Cool or Auto Modes	3 min.
Fan, Dry, Overflow, Protection modes, or mode change	ignored

10.4.2 IFAN operation

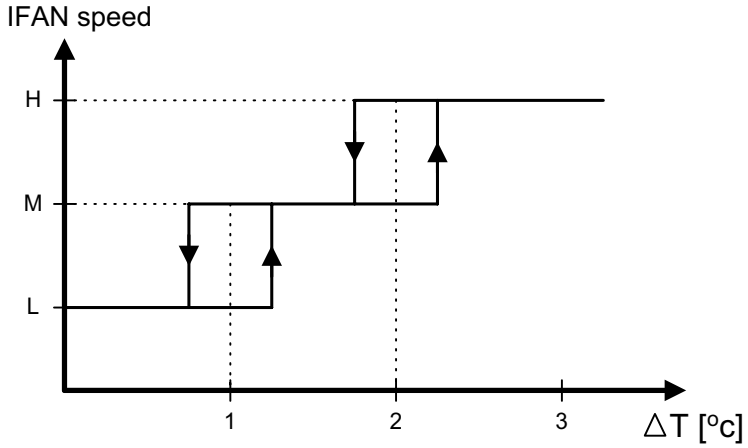
- Min time interval between IFAN speed change in AUTOFAN Mode, is 30 sec.
- Min time interval between IFAN speed change in H/M/L Mode is 1 sec.
- IFAN speed in Heat/Cool Autofan Mode is determined according to the following table:

ΔT	IFAN Speed
$\Delta T \geq 2$	HIGH
$2 \geq \Delta T \geq 1$	MED
$1 \geq \Delta T$	LOW

where in Heat Mode: $\Delta T = SPT - RT$
in Cool Mode: $\Delta T = RT - SPT$

Note:

- In Heat Mode, the rules in section 4.0.3 have the higher priority.
- The table above can be represent by a hysteresis curve which will minimize the switching of the IFAN relay and will minimize the change in IFAN speed:



10.4.3 OFAN operation

- Min time interval between OFAN ON/OFF state change is 30 sec.
- In general, OFAN starts together with COMP.

10.4.4 HE operation

- Minimum Heaters ON or OFF time is 30 sec.
- Heaters can be activated only if IFAN is on.

10.4.5 Protections

- High pressure protection is applicable to all operating modes.
- Deicing control is valid in Heat and Auto Heat Mode only.
- Defrosting control is valid in Dry, Cool, Heat and Auto Modes.
- No reset after protection modes.

10.4.6 Thermistors operation

- Return air Temp. is detected by RAT (RT1) in normal Mode, or by RCT (R/C sensor) in I-FEEL Mode.
- Indoor Coil Temp. is detected by ICT (RT2).

10.4.6.1 Definition of thermistor faults:

a. Thermistor is disconnected -
   The thermistor reading is below -30°c.

b. Thermistor is shorted -
   The thermistor reading is over 75°c.

c. Thermistor Temp reading doesn't change (irrelevant for RT1) -
   (i) This test is performed only once after a unit is switched from OFF/STBY to operation. At the first occurrence of 10 min continuous COMP operation, the current ICT & OCT are compared with those when the COMP was switched from OFF to ON 10 min before. If the ΔT is less than 3°c, the thermistor is regarded as defective.
   (ii) The ICT and OCT no-change error can be disabled together by connecting a4.7 kohm resistor (5%) to the OCT connector. These resistors are equivalent to a thermistor at 43+/-1°c and 48+/-1°c respectively.
   (iii) Connecting a 4.7k resistor to the ICT connector will disable the ICT no-change error only.

10.4.6.2 Cases for disabling thermistor short/disconnected detection

i. The detection of thermistor faults (a) and (b) above, are disabled when Deicer Protection is started. The detection will be enabled again only after (1) the deicing is completed, and (2) COMP has been restarted and operated for 30 sec.

ii. When all the following conditions are fulfilled:
   a. 4.7K Ohm resistor is connected on the OCT
   b. IFAN is OFF
   c. Compressor is ON
   d. ICT < -30 (disconnected)

   This condition come to detect and prevent IFAN operation in Deicer in multi spilt units.

10.4.6.3 Handling the thermistor faults in a COMP unit

i. ICT/OCT thermistor is disconnected or shorted -

The invalid thermistor temperature is replaced by 43°c, so that the unit can continue the normal operation. All protections related to that faulty thermistor will be disabled. For example, in case of any ICT fault, the ICT high pressure protection in Heat Mode and ICT defrost protection in Cool Mode will not operate anymore. The same is also applied to the OCT fault.

ii. RAT thermistor is disconnected or shorted –

The RAT will be derived from the ICT by using the equations :

Heat Mode: RAT=ICT/2.3
Cool Mode RAT=ICT*4

Notes:

- In case of any thermistor failure, the STBY LED will be blinking until the fault condition is corrected.
- User can use the system diagnostics function to find out the nature of the thermistor faults.

i. RAT thermistor is disconnected or shorted –

System will operate continuously in the last IFAN & WVL status when turned ON.

Notes:

- As in the COMP unit, the STBY LED will be blinking to indicate a thermistor fault. And, the user can use the system diagnostics function to find out the nature of the fault.

10.5 Cooling Mode - General

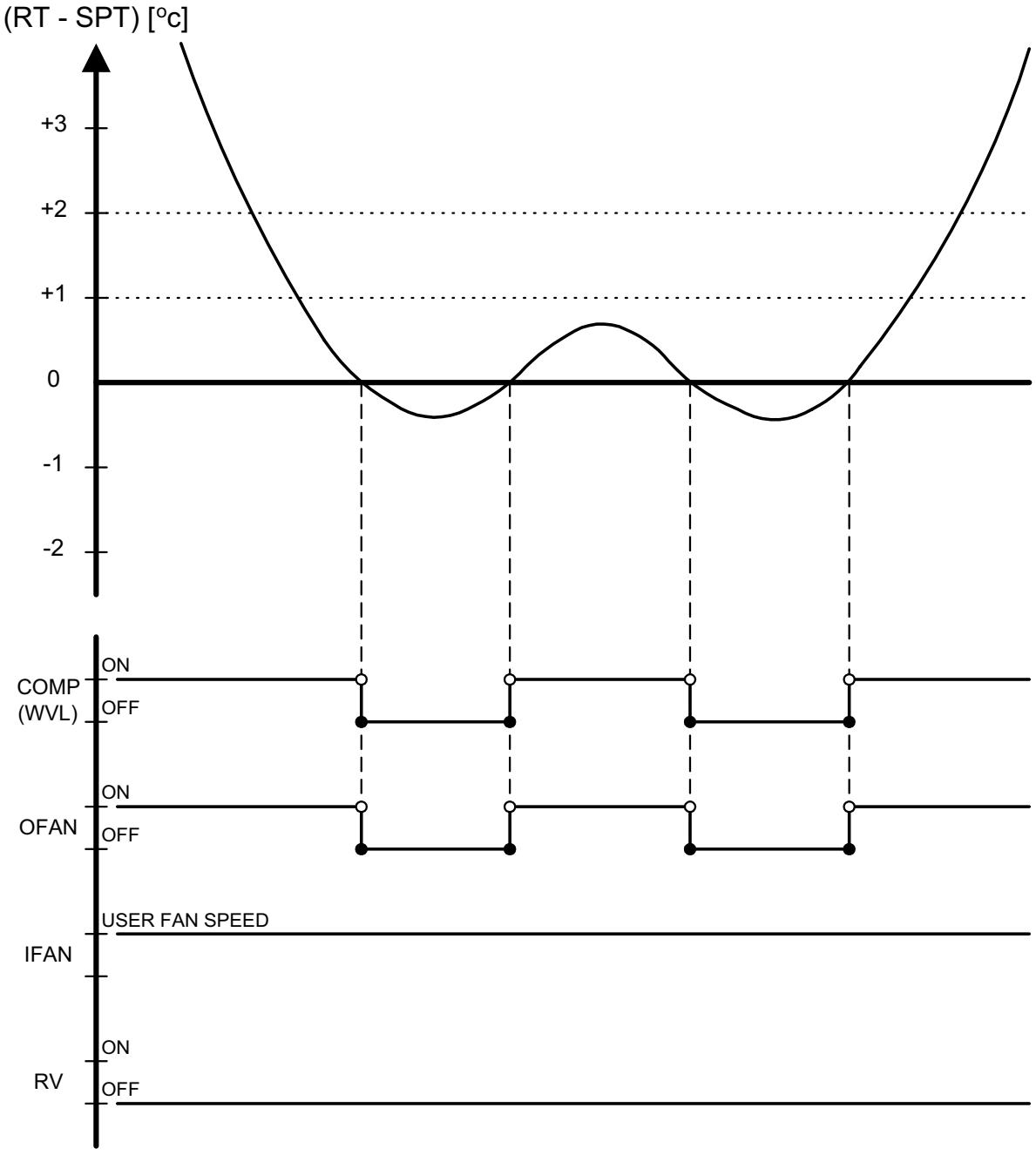
1) Room Temperature, RT, is detected by
   - RAT in normal operation, or
   - RCT (R/C sensor) in I-FEEL mode.
2) The resolution of RT is 1°c.
   - RT is activating COMP/WVL if (RT > SPT), and
   - RT is stopping COMP/WVL if (RT =< SPT).
3) Indoor Coil Temp is detected by ICT (RT2).
4) Outdoor Coil Temp is detected by OCT (RT3).
5) A WVL-RC/SH will work in Cooling Mode when
   - ICT < 16°c in general (see Sect 2.2.2 for details), and
   - Unit is not operating in Fan Mode.
6) OFAN OPERATIONS
   - OFAN starts together with COMP in general.

10.5.1 Cooling

Mode: Cool, Auto (at Cooling)
Temp: Selected desired temperature.
Fan: HIGH, MED, LOW
Timer: Any
I Feel: On or Off

Control function

Maintains room temp at desired level by comparing RT and SPT.



Note:

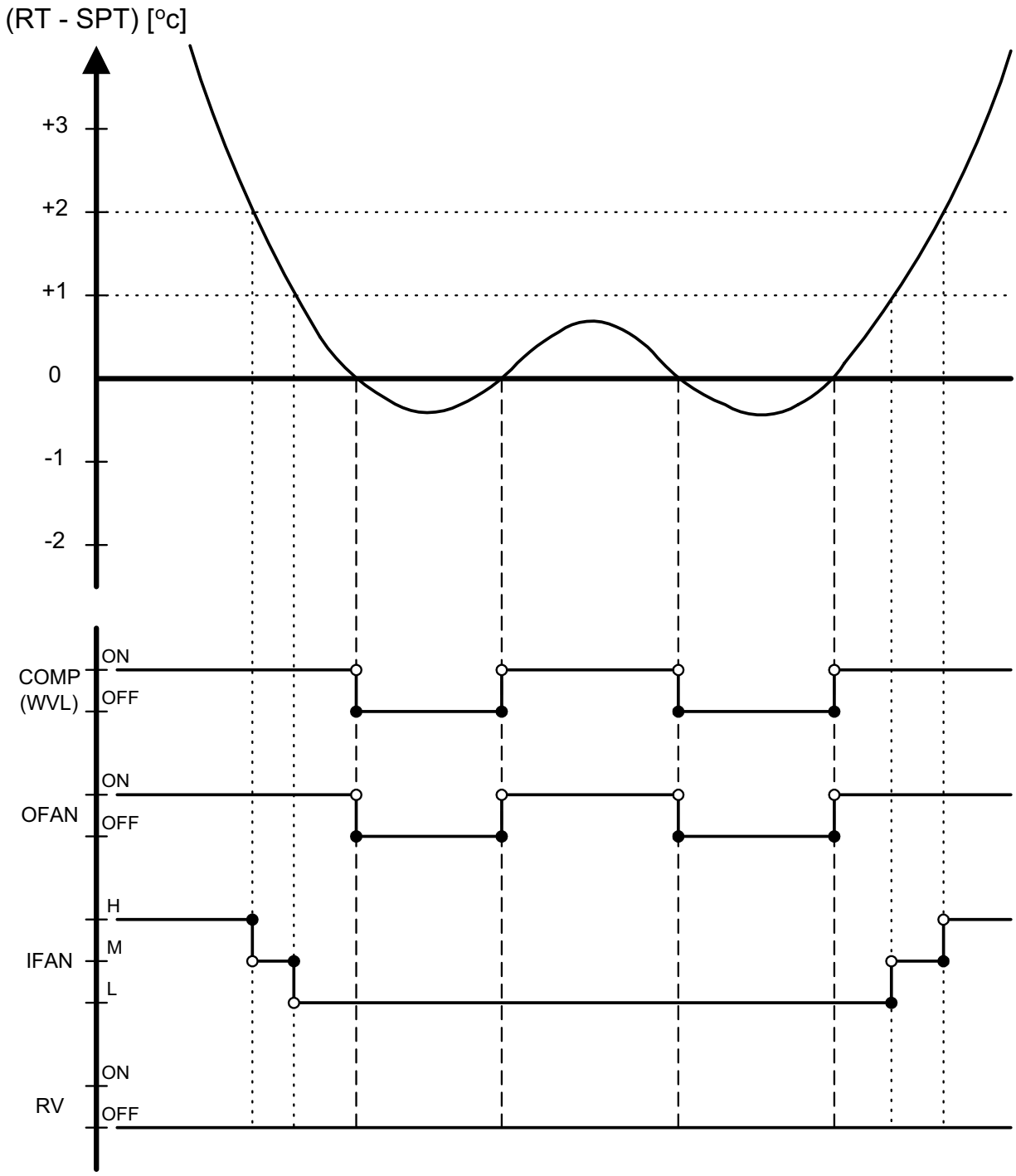
1) IFAN is always running at High, Medium or Low speed selected by user.
2) In IFEEL mode, the Room Temperature (RT) is the RCT from a R/C. Otherwise, the RT is the RAT from the Room Thermistor.

10.5.2 Cooling with Autofan

Mode: Cool, Auto (at cooling)
Temp: Selected desired temperature
Fan: Auto
Timer: Any
I Feel: On or Off

Control function

Maintains room temp at desired level and controls the IFAN speed for optimal comfort.



10.6 Heating Mode

10.6.1 Heating Mode - General

- In heating Mode, temp. compensation schedule will be activated for wall mounted units.

SPT [°c]	Add to SPT	
	I-FEEL ON	I-FEEL OFF
18 ≤ SPT ≤ 27	0 °c	+2 °c
27 < SPT ≤ 30	0 °c	+3 °c

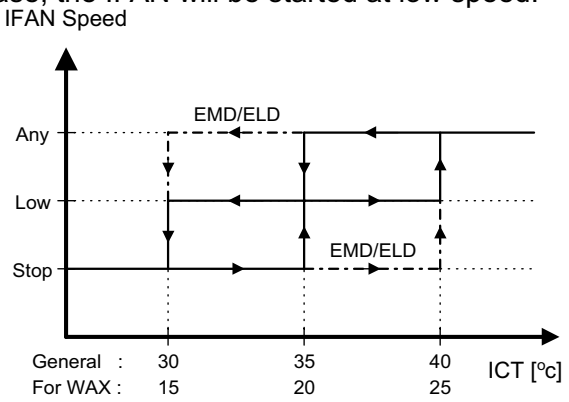
Notes :

- No compensation will be activated in Forced operation modes

10.6.2 IF operating rules

- As a general rule for **RC and SH groups**, when **COMP is ON**, excluding protection modes, IFAN will be switched ON if
- ICT > 35°c or

  at the IFTC 30 sec after the COMP is switched ON. In this case, the IFAN will be started at low speed.

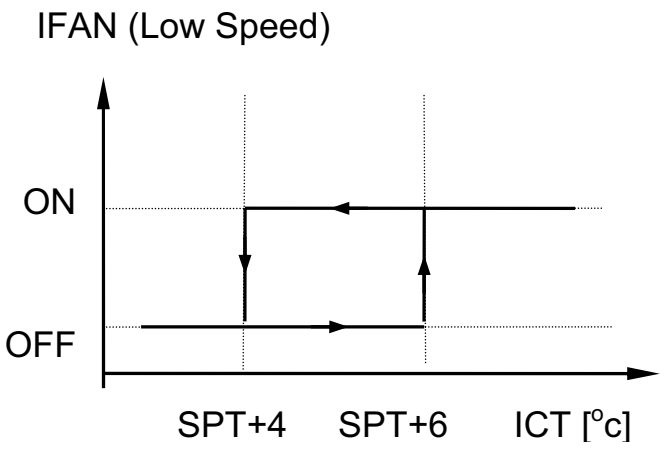


Notes :

1) In **SH or RC group**, if HE is set to OFF due to low ICT, IFAN will be switched to LOW and will be turned OFF after 30 sec.
2) An exception to this rule (4.0.3.a) is the Back-up mode for SH.

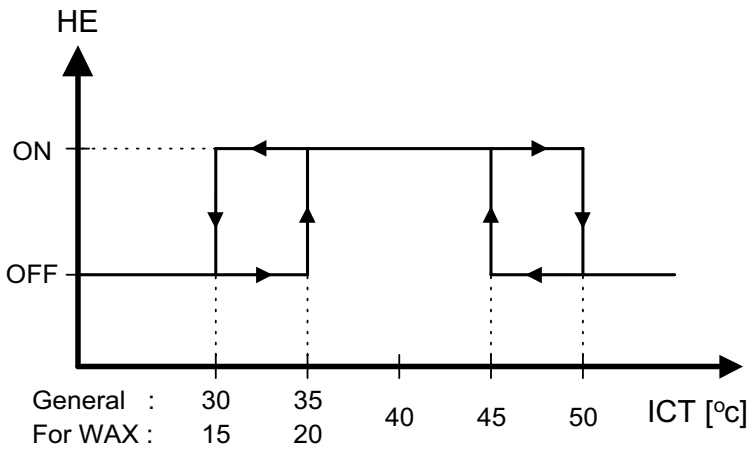
- In **RC and SH groups**, whenever **COMP & HE are both OFF**, excluding protection modes, IFAN operation will be according to the following:

In **other models** IFAN will operate in low speed for 30 sec and then stop. If COMP is OFF for more than 3 minutes and IFEEL Mode is inactive, IFAN will operate in low speed according to the following graph:



10.6.3 HE operation

- For **all Groups**, HE can be ON only when IFAN is ON.
- For **all Groups**, HE switches to OFF when ICT > 50 °c, and is activated again when ICT ≤ 45°c.
- In **SH or RC group**, HE operation is limited by the following graph:



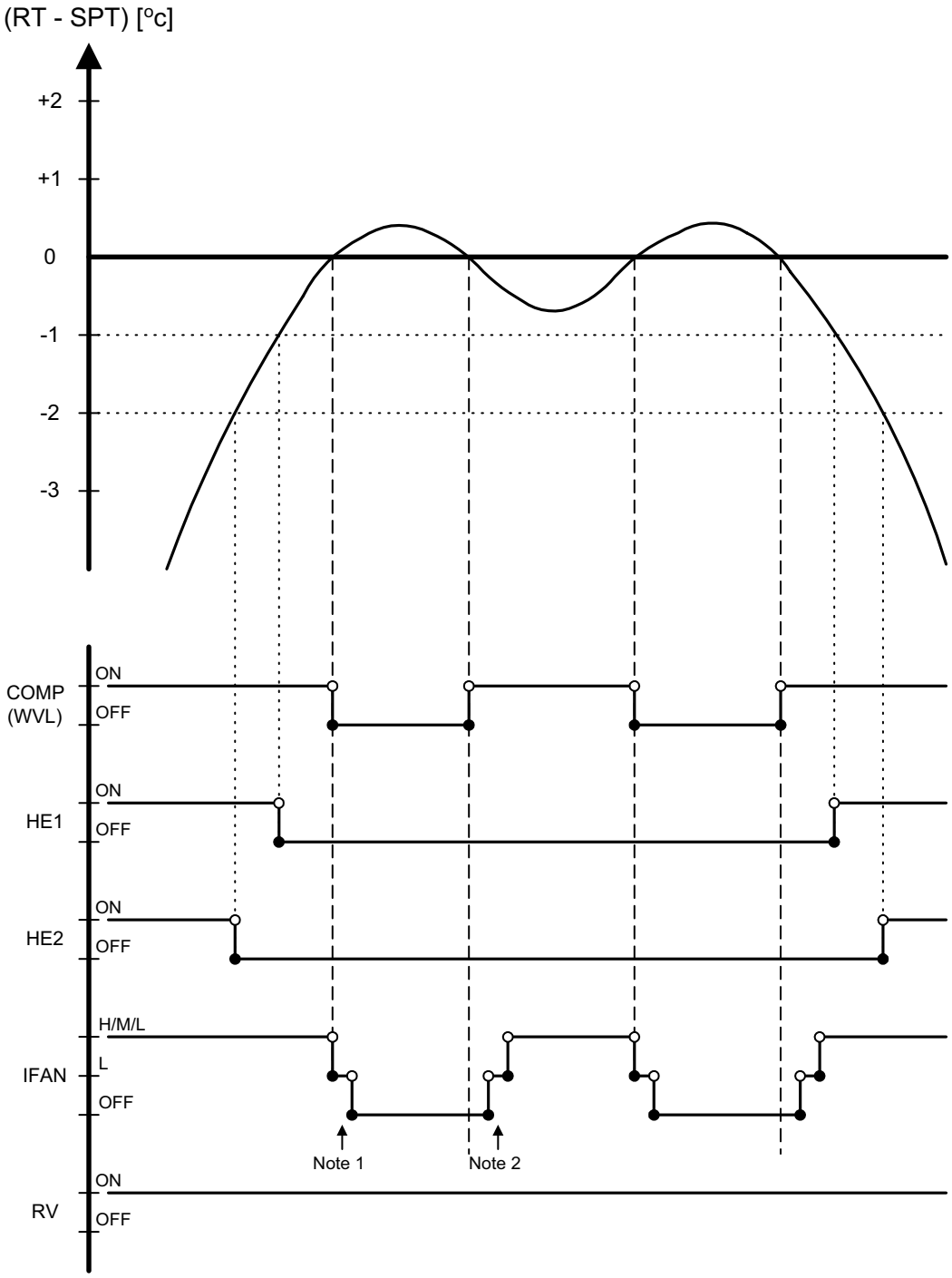
- Back-up mode for **SH group**

After COMP has been working for 5 minutes, HE & IFAN are activated even if the ICT is still below 35°c. This situation is called Back-up Mode. Both HE & IFAN will work in Back-up Mode until the ICT reaches 35°c. Then, the operation goes on in the usual mode .

10.6.4 Heating, RC or SH Group

Mode: Heat, Auto (at heating)
Temp: Selected desired temperature
Fan: HIGH, MED, LOW
Timer: Any
I Feel: On or Off

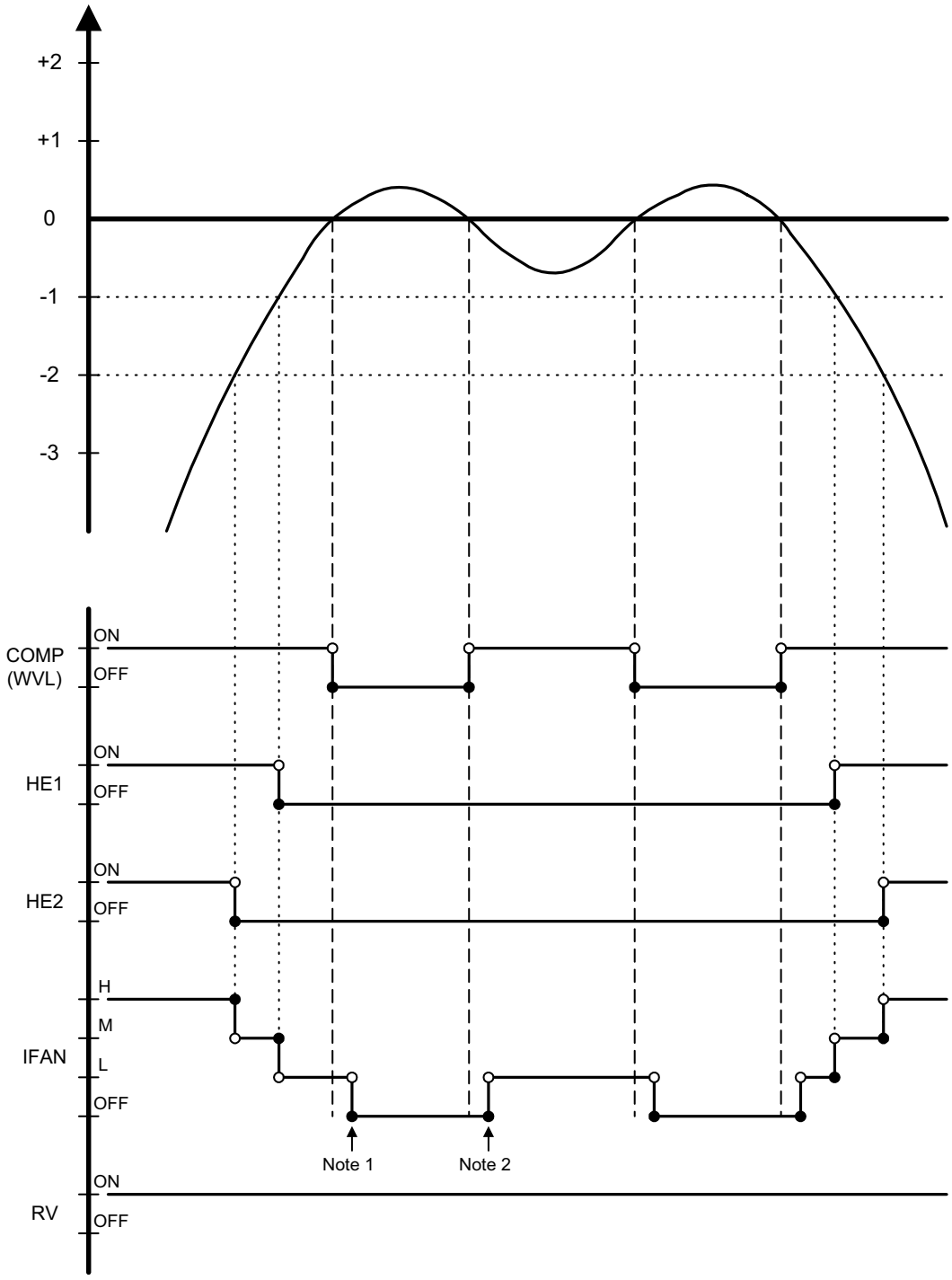
Control function
Maintains room temp. at desired level by comparing RAT or RCT to SPT.



10.6.5 Heating, RC or SH Group with Autofan

Mode: Heat, Auto (at heating)
Temp: Selected desired temperature
Fan: Auto
Timer: Any
I Feel: On or Off

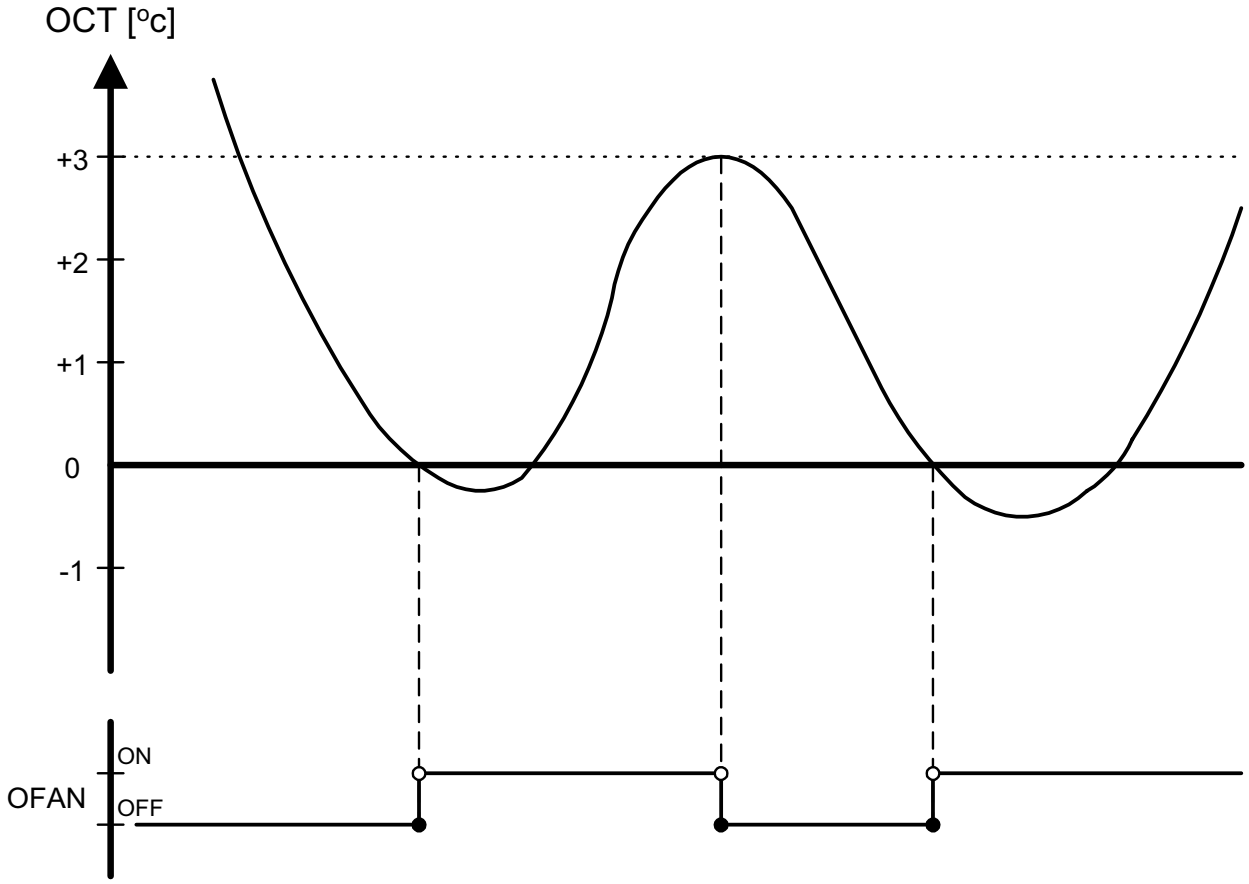
Control function
Maintains room temp at desired level by controlling COMP, IFAN and OFAN.



10.6..6 OFAN operation is controlled by the graph below when

1. (RAT ≥ SPT – 2°c), AND
2. (ICT ≥ 45°c), AND
3. (COMP is ON)

Otherwise, OFAN runs together with COMP.



10.7 Automatic Cooling or Heating

10.7.1 Automatic Cooling or Heating - General

- Switching-temperature between Cooling and Heating is SPT ± 3°c.

- Autofan in Automatic Cooling and Heating Mode will activate “Cooling with Autofan Mode” and “Heating with Autofan Mode” respectively.
- When the Auto Mode is started with SPT +/-0°c, the unit will not select Auto Heat or Auto Cool mode immediately. Instead, the unit will be in a temporary Fan Mode with IFAN operating at low speed.
  The proper Auto Heat mode or Auto Cool will be started whenever the RT reaches SPT-1°c or SPT+1°c respectively.

- For RC & SH units, Mode change between Auto Heat & Auto Cool Modes is possible only after the COMP has been OFF during the last T minutes.

Mode Change	time, T
Auto Cool to Auto Heat	3 min
Auto Heat to Auto Cool	4 min

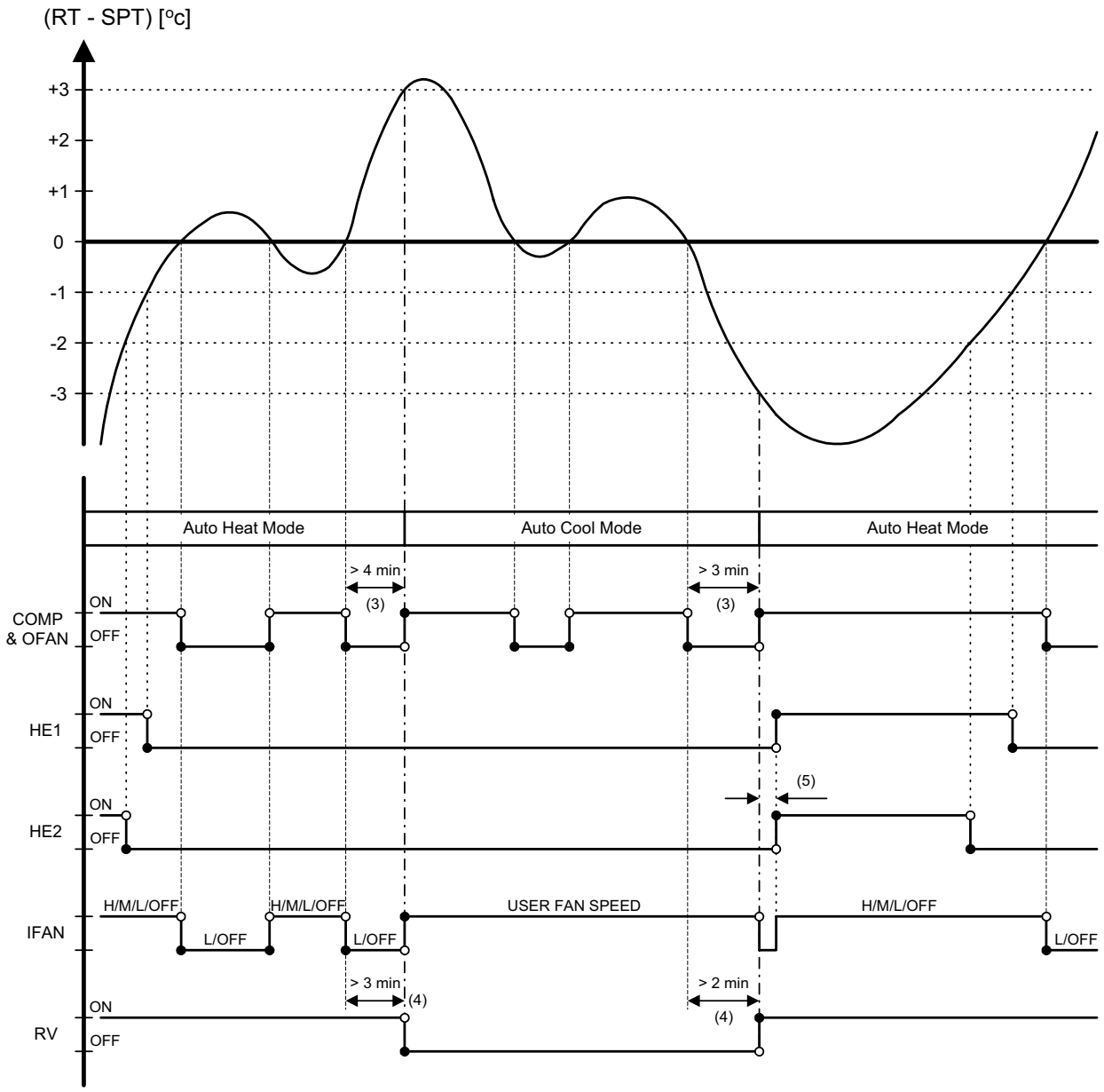
- When unit is changed form Cool/Dry mode to Auto Mode, the unit will continue to operate at (Auto) Cool Mode until the conditions for switching from Auto Cool to Auto Heat are satisfied.

  Similarly, when unit is changed from Heat Mode to Auto Mode, the unit will continue to operate at (Auto) Heat Mode until the conditions for switching from Auto Heat to Auto Cool are satisfied.

10.7.2 Auto Cooling or Heating, RC or SH Groups

Mode: Auto
Temp: Selected desired temperature
Fan: Any
Timer: Any
I Feel: On or Off

Control function
Maintains room temp at desired level by selecting between cooling and heating modes.



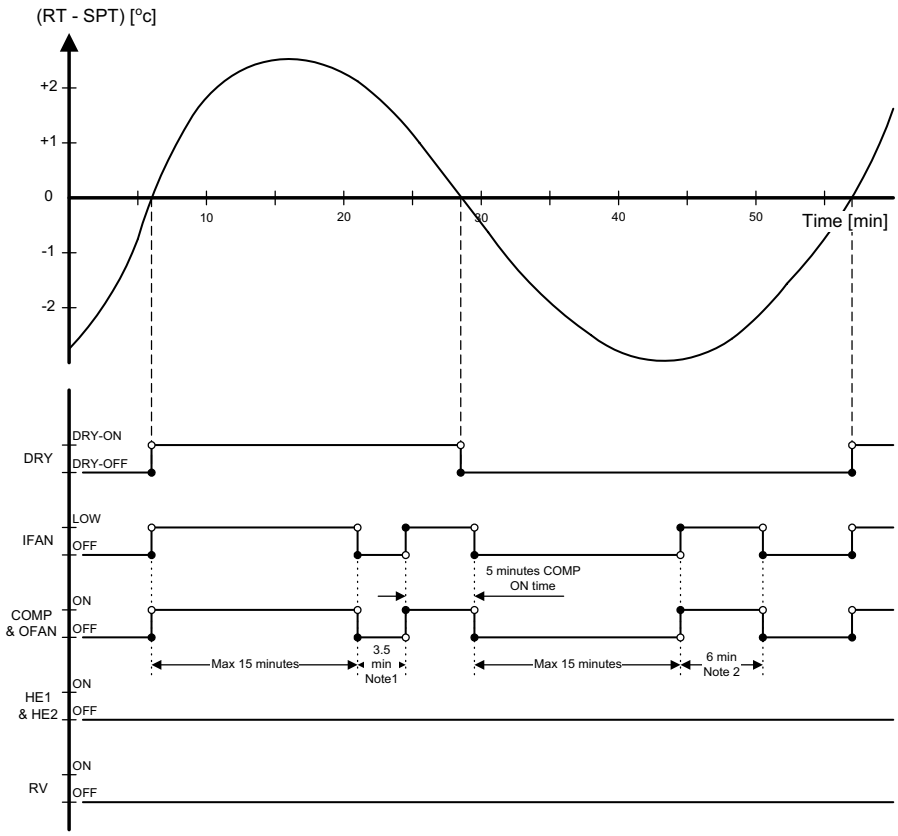
10.8 Dry Mode

10.8.1 Dry, ST or RC group

Mode: Dry
Temp: Selected desired temp
Fan: Low (automatically selected by software)
Timer: Any
I FEEL: Any

Control function

Reduce room humidity with minimum temp. fluctuations by operating in Cool Mode with low speed IFAN.



Notes :

- When Dry is ON, the COMP is forced OFF for 3.5 min (longer than the 3 min Min COMP-Off time) after every 15 min of continuous COMP operation.
- When Dry is OFF, the COMP is forced ON for 6 min (longer than the 3 min Min COMP-On time) after every 15 min of continuous COMP OFF time.
- When Dry is changed from ON to OFF or vice versa, the limits mentioned in (1) & (2) are ignored. The COMP operation is only controlled by the 3 min Min OFF time and 1 min Min ON time.
- In Dry Mode, IFAN is LOW when COMP is ON, and is OFF when COMP is OFF.

10.9 Protection

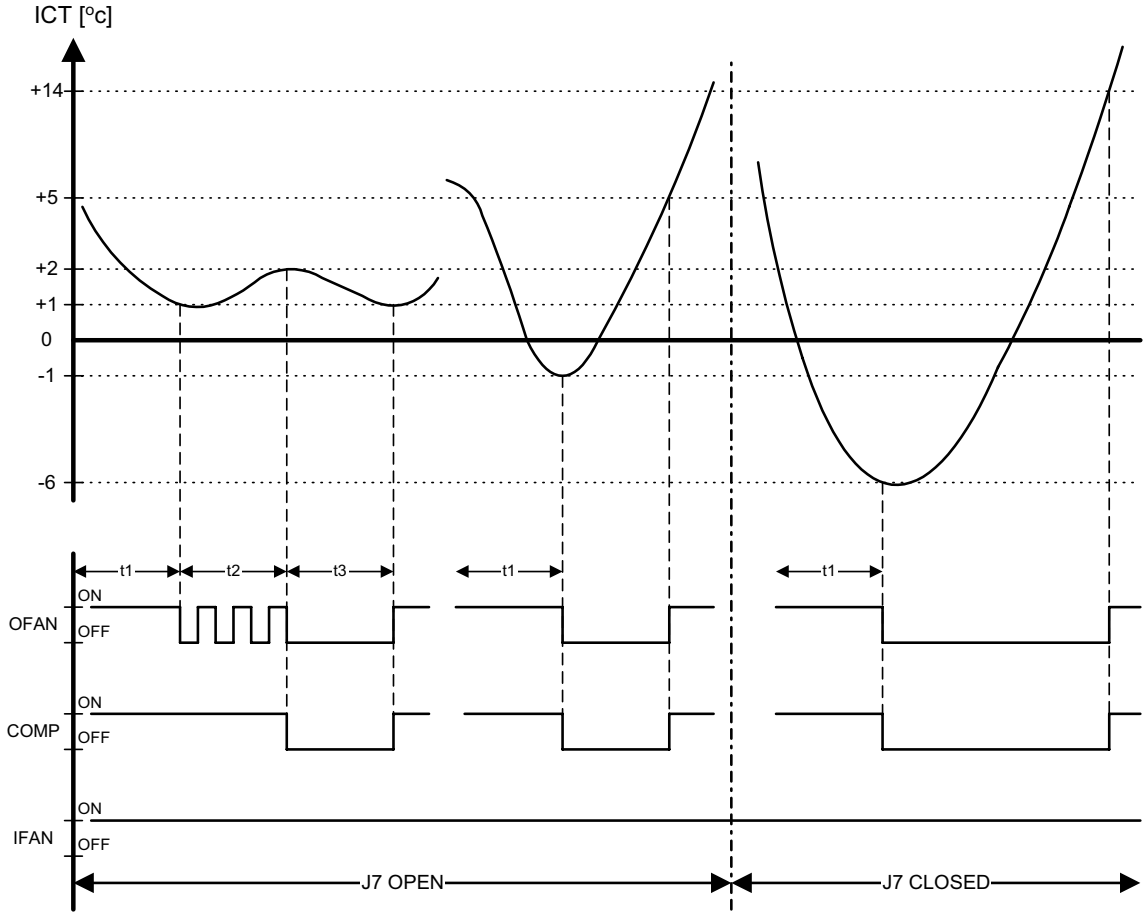
10.9.1 Cooling Mode Protections

Indoor Coil Defrost

Mode: Cooling, Dry, Auto
Temp: Selected desired temp.
Fan: Any
Timer: Any
I Feel: On or Off

Control Function

Protect the indoor coil from ice formation at low ambient temperature.



t1 = 5 min minimum for each COMP starting
t2 = OFAN cycling (alternate between ON and OFF every 30 sec) for 20 min maximum
t3 = COMP and OFAN stop for 10 min minimum

Notes:

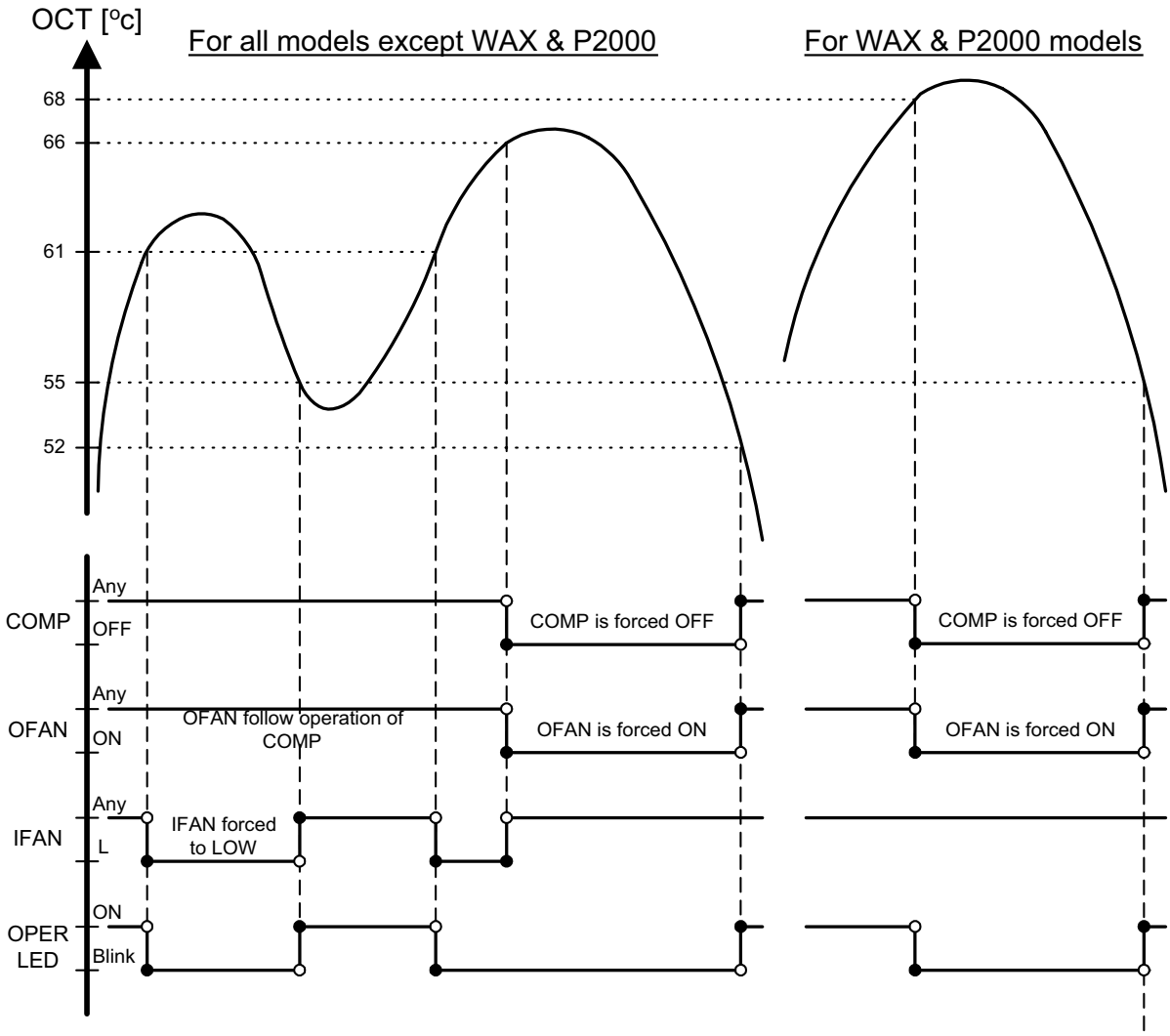
- When J7 is closed (connected), OFAN cycling is cancelled and the set temperature for COMP & OFAN cut-out and cut-in are changed. COMP & OFAN are forced OFF when ICT =< -6°c, and are kept OFF until ICT > 14°c.
- For WAX model, the defrost processes is simpler. When J7 is open, COMP & OFAN are forced OFF when ICT =< -1°c, and are kept OFF until ICT > 5°c. When J7 is closed, the WAX defrosting process is the same as that of the other models (R.H.S. of the graph above). In both cases, the ICT checking in t2 and t3 are not applied.

10.9.2 High Pressure Protection

Mode: (Auto) Cooling or Dry
Temp: Selected desired temp.
Fan: Any
Timer: Any
I Feel: On or Off

Control Function

To protect the COMP from the high pressure built-up in the outdoor coil during normal cooling operation, by switching OFF the IFAN and COMP.



Note:

- The ICT is also monitored during Cool and Dry mode, in case the RV control circuit is faulty. Whenever ICT reaches 70°c, which indicates a high pressure in the indoor coil, the COMP will be forced off automatically. The COMP can be turned on again only after the ICT is under 70°c again and after the 3 min COMP ON delay time. The OPER LED will not blink in this case.

10.9.3 Heating Mode Protections

Outdoor coil Deicing (excluding RH Group)

Mode: Heating, Auto (at heating)
Temp: Selected desired Temp
Fan: Any
Timer: Any
I FEEL: Any

Control function

Protects the Outdoor coil from ice formation by controlling COMP & RV operation.

Scope

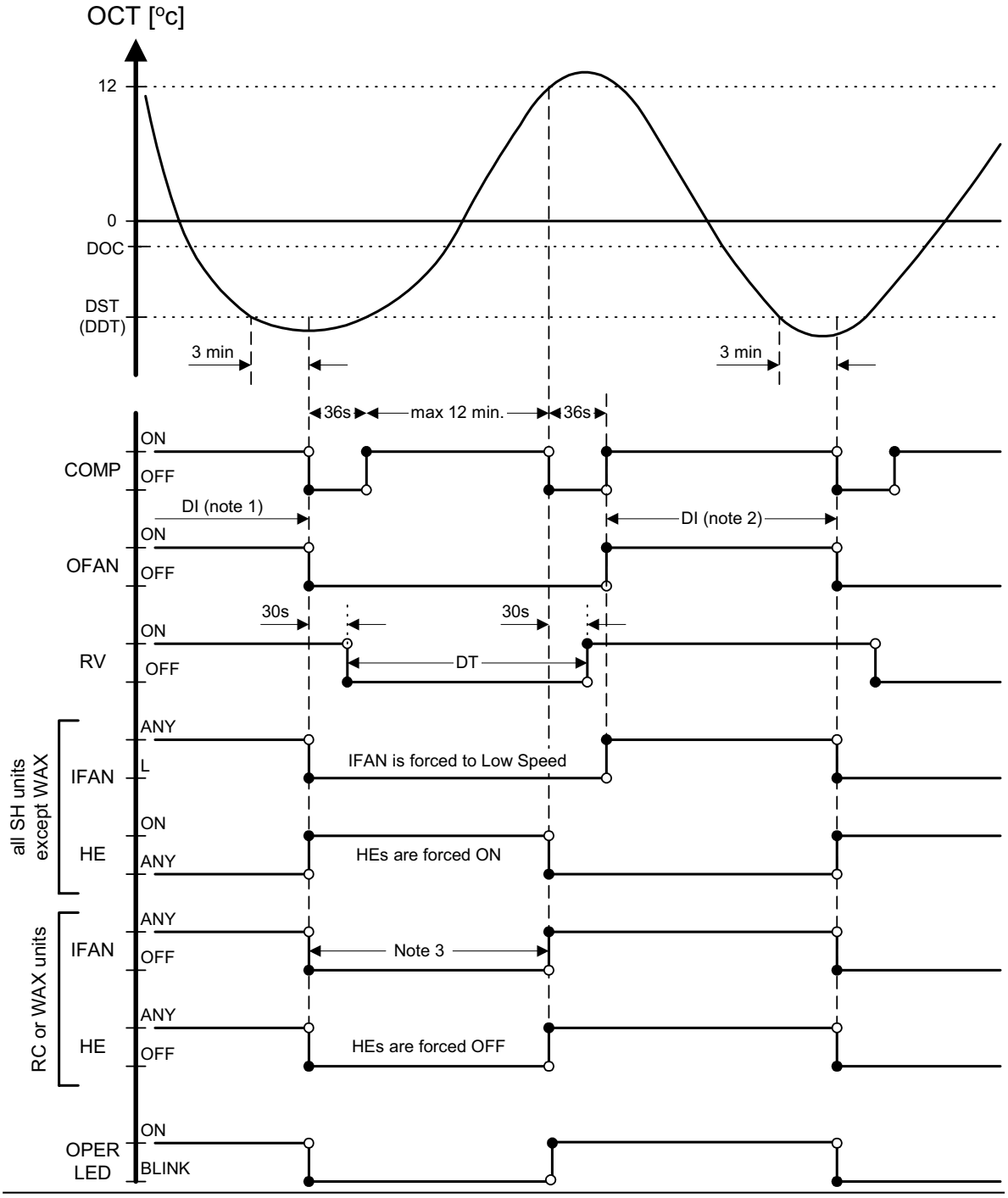
This new deicer is designed to operate at extreme temp conditions. The deicing cycle could be triggered from:

1. OCT temp and time between two consecutive deicing cycles.
2. Detection of ice forming by change of the OCT temp.

Both algorithms adjust the time between deicing cycles to optimize the A/C performance. The algorithm will automatically increase the time between deicing cycles and reduce the deicing cycle as needed.

The algorithm uses EEPROM data to operate.

Deicing procedure



Notes :

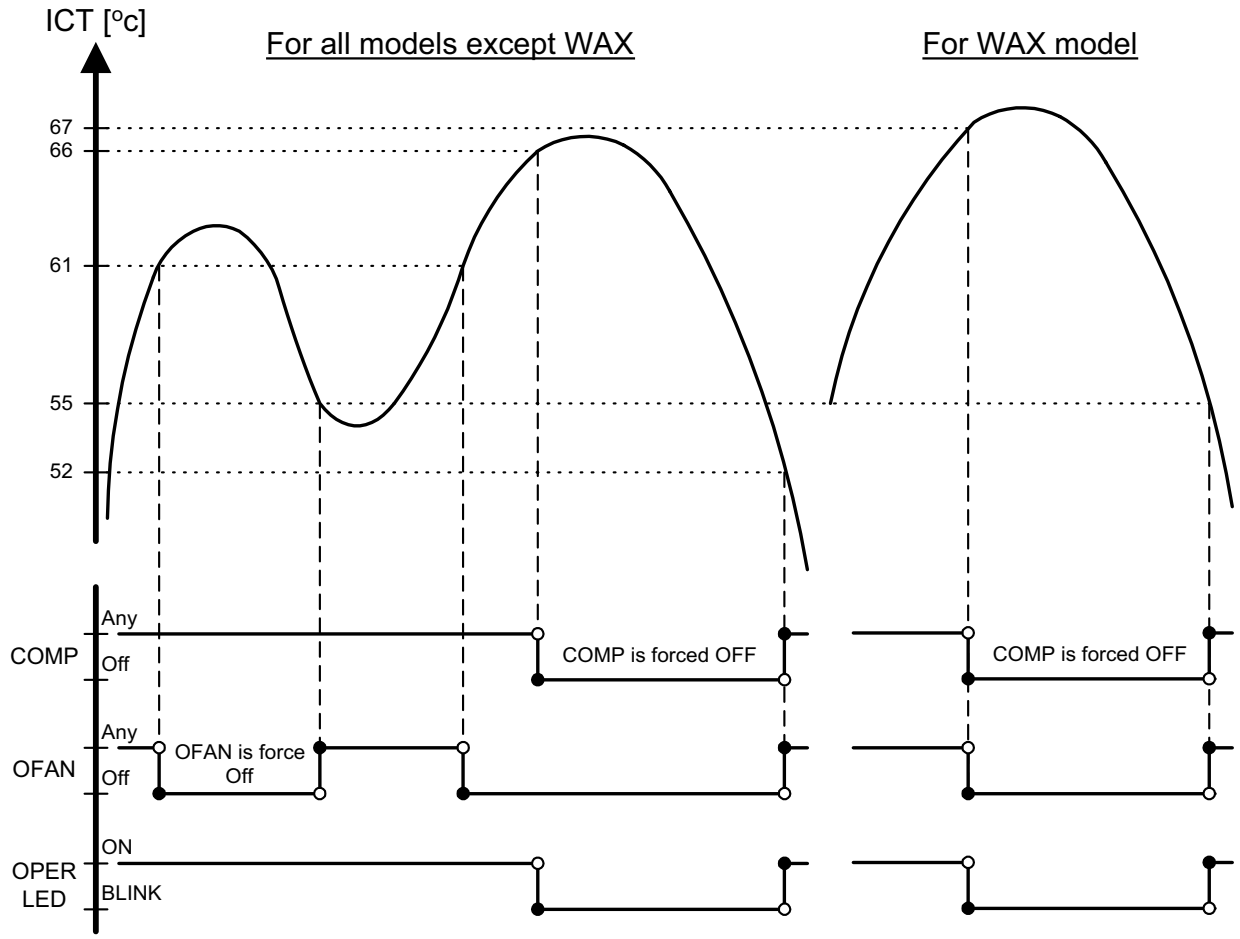
- At the first COMP activation after SB or OFF, if (OCT < 0ºc), then DI = 10 min, else DI = 40 min.
- In the following Deicing cycles, the time interval between two Deicing cycles activation is between 30 to 80 min (refer to the flow chart).
- For RC group, HEs are forced OFF. IFAN operation is as in Heat Mode, Sect 4.0.3.a, i.e. IFAN will be set to OFF when ICT<30ºc. For WAX, the IFAN is simply forced OFF.
- For SH group, HEs are forced ON and IFAN is forced to operate in Low speed, regardless of the ICT and difference between RAT & SPT.

10.9.4 High pressure protection (excluding RH Group)

Mode: (Auto) Heating
Fan: Any
Timer: Any
I Feel: On or Off

Control Function

Protect the Compressor from high pressure by switching OFF the OFAN and COMP.



Notes:

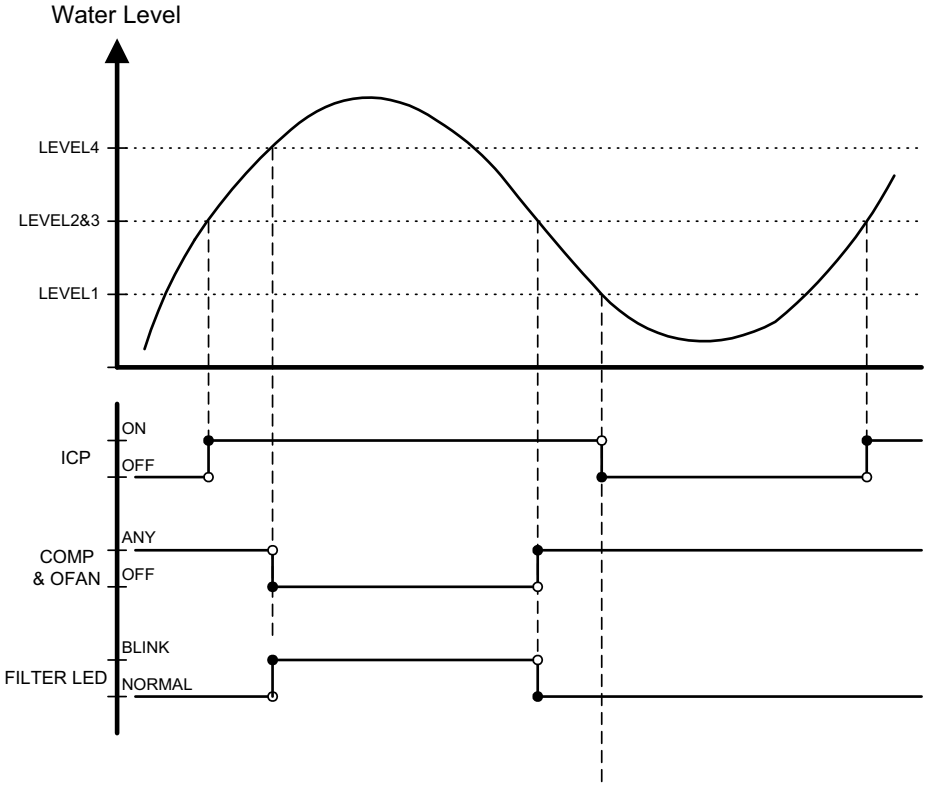
- IFAN, HE1 and HE2 will be activated according to the relevant Heating Mode Sect.
- In case of any malfunction in the relay control circuit, the OCT is also monitored during heating mode. Whenever OCT reaches 70°c, which indicates a high pressure in the outdoor coil, the COMP will be forced off automatically. The COMP can be turned on again only after the 3 min COMP ON delay and the OCT is under 70°c. The OPER LED will not blink in this case.

10.9.5 Indoor Condensation Pump (ICP) Operation and Overflow Protection (PXD, P2000 and MBX Models)

Mode: Cooling, Dry, Auto (at Cooling)
Temp: Desired temp selected
Fan: Any
Timer: Any
I Feel: On or Off

Control function:

To prevent the overflow of condensed water by turning ON the ICP.



Notes:

- When water level reaches LEVEL 4, ICP will be turned ON even if the unit is in SB mode.
- Under normal operation, at least one of the water level inputs must be active. If all LEVEL1, LEVEL2&3 and LEVEL4 are inactive, it is assumed that the connection has been broken and the ICP will be turned ON when the unit is operating in Cool or Dry mode.
- The operation of the pump is not related to the ON/OFF state of the COMP. On the contrary, the COMP can be forced to OFF when the water level is high (level 4).
- The water level inputs are low active. That is, when a water level is reached, the voltage at the corresponding input pin of the MCU would be changed from 5V (inactive) to 0V (active).

10.9.6 Outdoor condensation pump (P2000 Model)

Mode: Cooling, Auto (at Cooling), Dry.
Temp: Selected Desired temp.
Fan: Any
Timer: Any
Feel: On or Off

Control Function

Pumps condensed water from Indoor unit to Outdoor unit.

Outdoor Condensation Pump Control

The Outdoor pump relay is activated in parallel with the COMP at: Cooling, Dry, and Auto cooling as described in the following table:

COMP	Condensation Pump
ON	ON
OFF	OFF

Note:

- In Heating Mode, OCP is OFF.

10.10 Timer

Mode: Any
Temp. Selected desired temp
Fan: Any
Timer: Timer On, Timer Off
I Feel: On or Off

Control function

- Starts or stops the unit operation after pre-set time. If RC-1 is used, the timer setting will be (0.5 - 24 Hr) from the moment the timer is set. The minimum resolution is 30 minutes.

  If RC-2 or later version of remote controls is used, the timer setting will be (0:00 - 23:50) real time with 10 minutes resolution.

- After power failure, all pre-set timers are cleared. The system is forced to STBY mode and the Timer LED indicator is blinked to indicate the situation. The LED keeps blinking until the timer settings can be reloaded from a R/C message.

  Note: If all timers are inactive, the system will not be forced OFF after the power failure. The last OPER/STBY status will be loaded from the EEP instead.

- When the A/C receives any valid message from a R/C, the current ON/OFF timer settings will be replaced by the new timer settings in the R/C message.

  Note: The following timer related operations will not affect the A/C operating mode (Heat/Cool/Auto/Dry/Fan) setting.

  - Set ON/OFF timer
  - Clear ON/OFF timer
  - R/C ON Timer is time-up
  - R/C OFF Timer is time-up

E.g. When a STBY A/C unit (with Cool Mode setting in its EEP) is turned on by the ON-TIMER of a R/C with heat mode setting, the A/C will start in Cool Mode.

10.11 Forced Operation

Forced operation allows units to start, stop and operate in Cooling or Heating in pre-set temperature according to the following table:

Forced operation mode	Pre-set Temp for ; MBX, P2000, PRX, PX, PXD models	Pre-set Temp for : FCD, RWK, ELD, ECC, WAX, WMF, WMN, WNG models
Cooling	20°C	22°C
Heating	25°C	28°C

Note:

- While under the forced operation, the temperature compensation schedule.
- The forced operation is activated when the mode button on the Display Board is used to switch the unit to Cool or Heat mode.
- The IFAN is always set to Autofan Speed in forced operation.

10.12 Sleep Mode

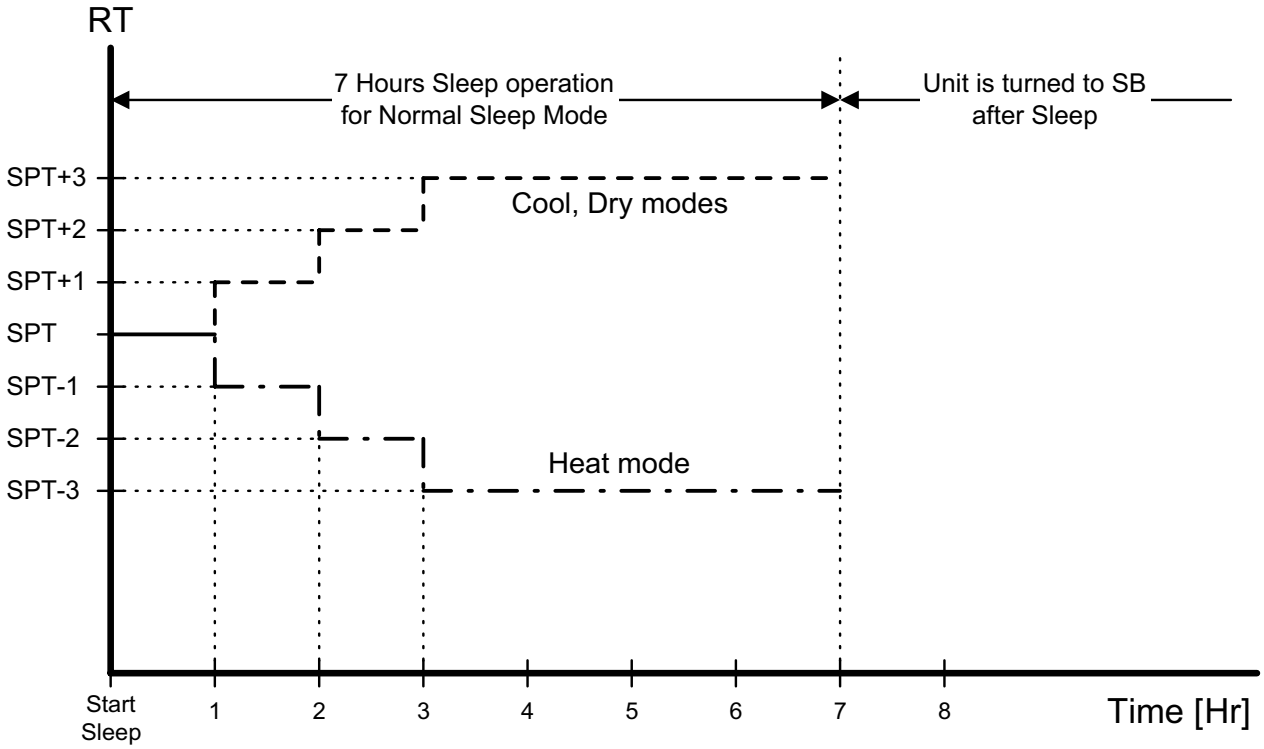
Mode: Any
Temp: Set – desired temperature selected
Fan: Any
Timer: Interact with Sleep Timer as described in sect 12.2
I Feel: On or Off

The Sleep mode is activated by using the sleep button on the R/C. In Sleep Mode, the unit will automatically adjust the SPT to turn up/down the room temperature (RT) gradually to provide maximum comfort to the user in sleep.

Sleep is treated as TIMER function. Therefore, the TIMER LED is activated similar to TIMER function.

10.12.1 Adjustment in Sleep Mode

1. in cool, auto cool or dry modes, the SPT adjustment is positive (from 0 to +3°c).
2. In heat or auto heat modes, the SPT adjustment is negative (from 0 to -3°c).
3. In other modes, there is no SPT adjustment.
4. The SPT adjustment is cancelled when the Sleep mode is cancelled.



Note: If Off-timer is active, the unit may go to SB before or after 7 hours of sleep operation.

10.12.2 Time adjustment in Sleep Mode

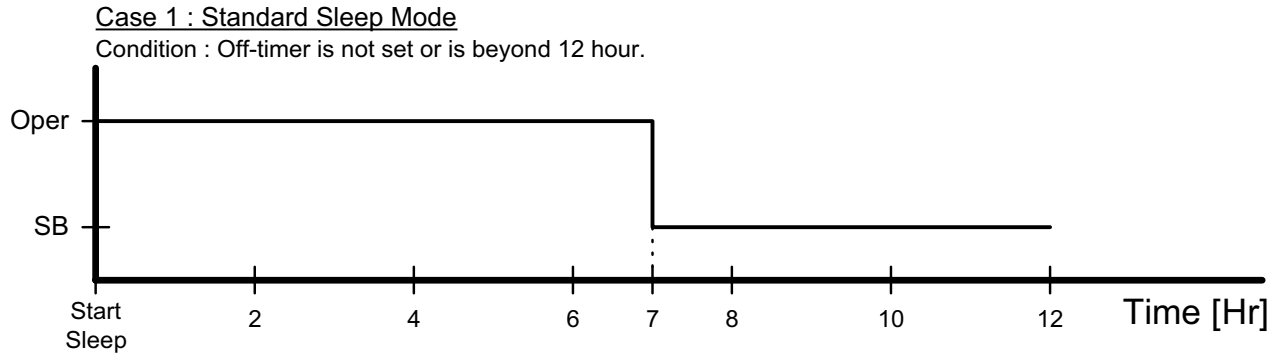
The user can make use of the Off-Timer to extend the Sleep Time from 7 hours to 12 hour (max). The operation of the new “Extended Sleep Mode” is illustrated by the graphs below.

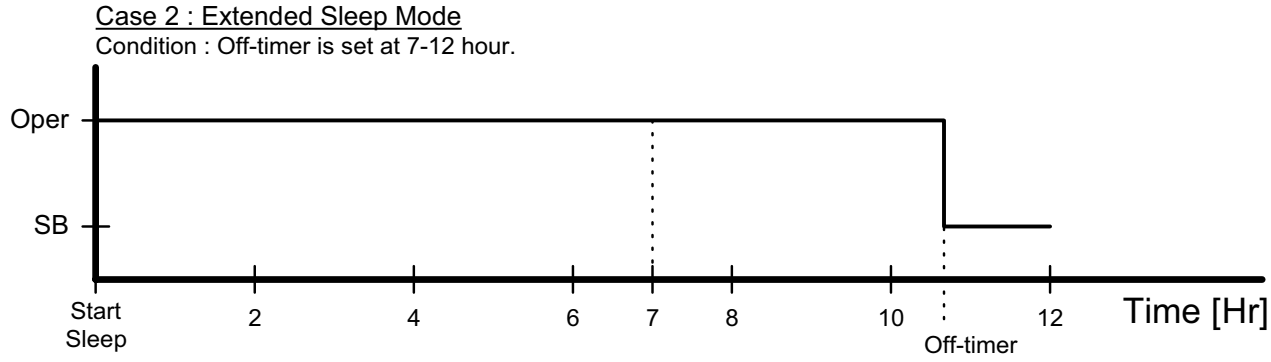
Case 1 is the Standard Sleep Mode, which is the only sleep mode in previous version of MCU. The A/C unit simply works for 7 hours, then goes to SB.

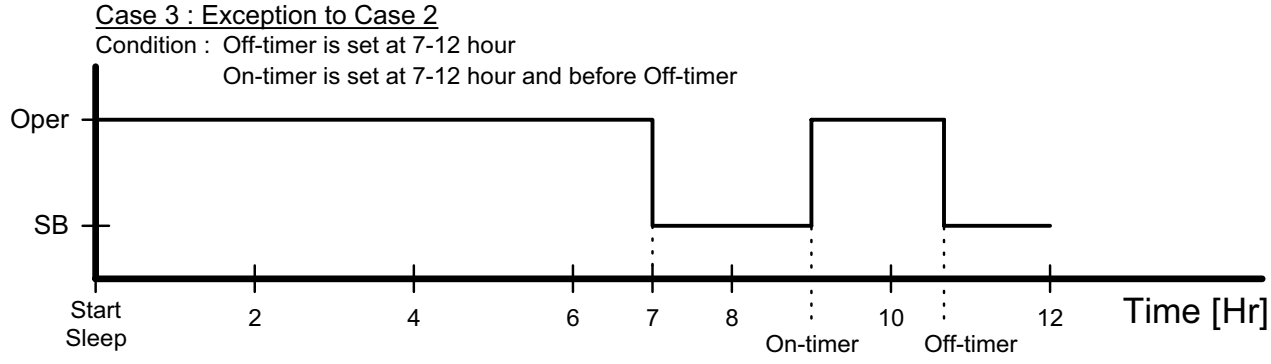
Case 2 is the new Extended Sleep Mode. If an active Off-Timer is set to turn off the A/C between 7-12 hour, relative to the starting of Sleep, the Sleep time is extended.

And, instead of going to SB at the 7th hour, the A/C will work until reaching the Off-time.

Case 3 is an exception to case 2. The Sleep Mode will not be extended to the Off-Time when the Off-Timer is preceded by an On-Timer, which is also between 7-12 hour.







10.13 Clogged Air Filter

Filter LED ON after 512 HR.

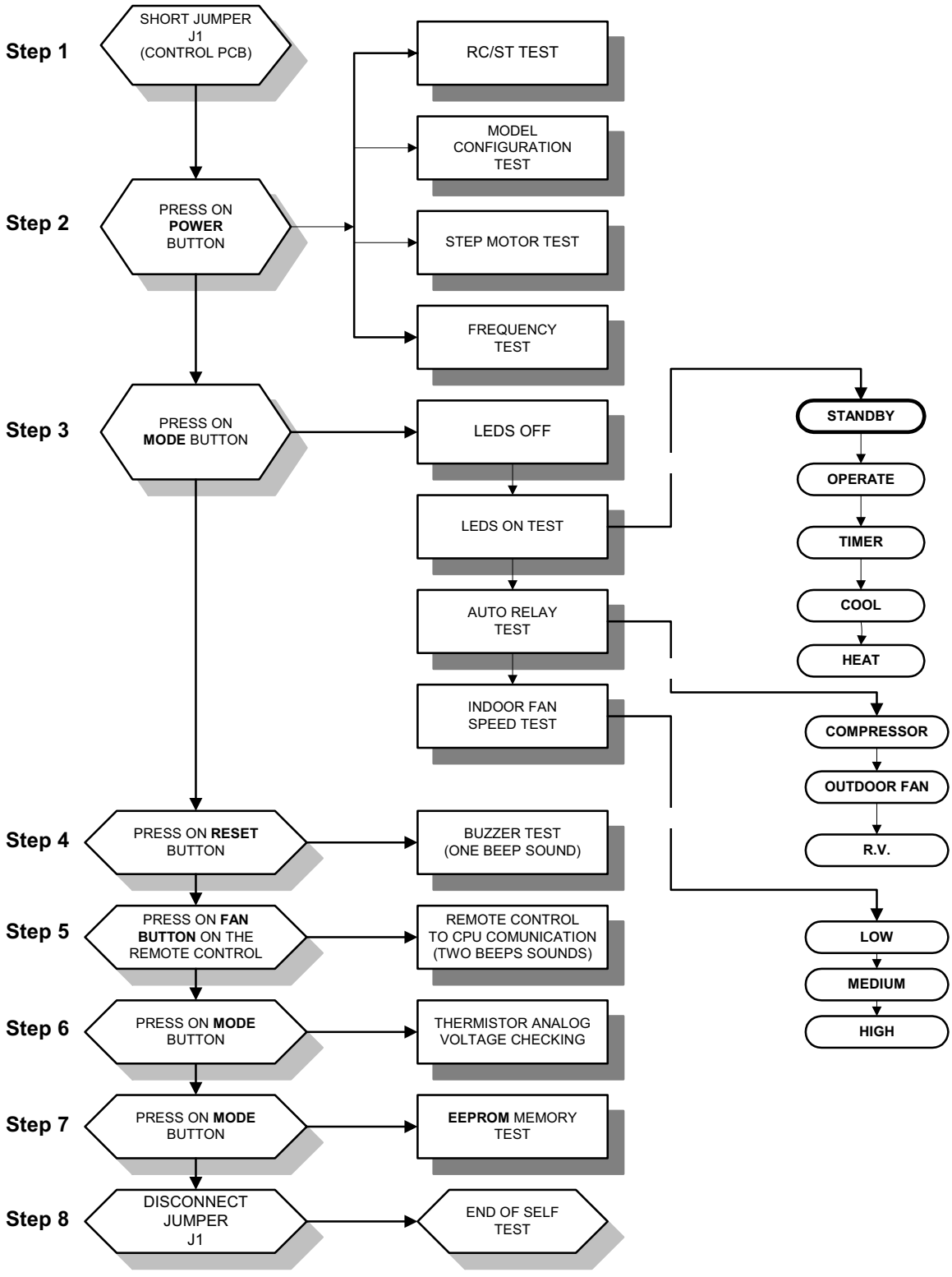
Filter LED is turned OFF, and the Filter Timer is restarted by pressing the reset button.

10.14 Controller Self-Test Procedure

10.14.1 By Shorting Test Jumper J1

SELF-TEST FLOW CHART

FOR CONTROLLER (VERSION 4V5 OR HIGHER)



10.14.2 By Remote Control Settings:

a. 1: TURNING ON THE POWER.
Turn ON the power, make sure that the unit is in operation.

b. STEP 2 : ENABLE SELF-TEST MODE

- Use the remote control to send the first settings to display / indoor unit HEAT mode, HIGH IFAN, set temperature to 16 ºC**,** no I-FEEL Sleep or any other timer settings are needed.
- Cover the IR transmitter components in the remote control so that it will not transmit the signals to the indoor unit display.
- Use the remote control to send the second settings to display / indoor unit COOL mode, LOW IFAN, no I-FEEL Sleep or any other timer settings.
- Uncover the remote control IR transmitter and change the temperature settings. If the display/indoor unit receive the settings properly the following steps will start:

c. STEP 3: MODEL SETTING CONFIRMATION

- The STAND-BY and COOL LEDS will indicate the operation mode as follows:

OPERATION MODE	STAND-BY LED	COOL LED
ST	ON	OFF
RC	OFF	OFF
SH	OFF	ON
RH	ON	ON

- Testing the Model configuration. Selected by the COMP, STAND-BY, TIMER LEDS and FILTER will indicate the model configuration as follows (the relevant line for this manual is highlighted):

MODEL	COMP	OPERATE LED	TIMER LED	FILTER LED
WNG	ON	OFF	OFF	OFF
WMN1	ON	ON	OFF	ON
WMN4	OFF	OFF	ON	OFF
WMN2/WHX	OFF	ON	OFF	ON
WMN3	OFF	ON	ON	ON
P2000	OFF	OFF	OFF	ON

In this term the step motor will turn to HOME POSITION.

d. STEP 4 : AUTO LED WALK TEST.

- All the LEDS will turn OFF.
- All the LEDS will turn ON for 1 second one by one in the following sequence:

  STAND-BY ⇨ OPERATE ⇨ TIMER ⇨ FILTER ⇨ COOL ⇨ HEAT.
- In PRX all the LEDS will turn ON for 1 second one by one in the following sequence : 18 °c ⇨ 20 °c ⇨ 22 °c ⇨ 24 °c ⇨ 26 °c ⇨ 28 °c ⇨ 30 °c ⇨ High IFAN ⇨ Auto IFAN ⇨ Med IFAN ⇨ Low IFAN ⇨ STAND-BY⇨ TIMER ⇨ FILTER ⇨COOL⇨ HEAT.

e. STEP 5: AUTO REALY WALK TEST:

- All relays will energize one by one in the following sequence:

COMPRESSOR ⇨ OUTDOOR FAN⇨R. V. ⇨ HEATER 1 ⇨ HEATER 2 ⇨ INDOOR WATER PUMP ⇨ SWING or OUTDOOR WATER PUMP ⇨ INDOOR FAN: LOW ⇨ MID ⇨ HIGH.

- When the relay walk test is completed, the next test will start automatically.

f. STEP 6: FREQUENCY TESTING:

- If the frequency measuring process fails the COOL LED will turn ON. In order to move to the next step, press ON/OFF button on the remote control.

g. STEP 7: INPUT TEST.

- The test purpose is to check the analog real time indicators (thermistors, LEVEL and clock) according to the table below.

LED Indicator	Condition for LED to be ON
STBY LED	Room thermistor ≠ 25°c
OPER LED	Indoor coil thermistor ≠ 25°c
TIMER LED	Outdoor coil thermistor ≠ 25°c
FILTER LED	Clock
COOL LED	LEVEL 2&3
HEAT LED	LEVEL 4

h. STEP 8: TIMING RESET TEST (WATCH DOG).

- The test purpose is to verify that the CPU rise time after power failure is between 1 to 3 sec, test results are indicated on the LEDS : STAND-BY,OPER, TIMER and FILTER turning ON one by one.

- The results of the test are coded as follows:

  Pass condition:

  1 sec - STAND-BY and OPER are turned ON

  2 sec - STAND-BY, OPER and TIMER are turned ON

Fail condition:

0 sec - STAND-BY is turned ON

3 sec - STAND-BY, OPER, TIMER and FILTER are turned ON

- When the timing reset test is completed, the next test will start automatically.

i. STEP 9: MEMORY TEST (EEPROM)

- The test purpose is to check if the memory is functioning correctly. The test result is reported by using the STAND-BY and FILTER LEDS:

LED Indicator	Condition for LED to be ON
STAND-BY LED	Test passed
FILTER LED	Test failed

AT THIS POINT THE SELF-TEST IS COMPLETED.

In order to terminate Self-Test mode the User can change the unit setting from COOL Mode, LOW FAN to COOL Mode, MED FAN or to wait without using the remote control for 60 sec.

Values of Sensors Temperature VS. Voltage (DC)

Temp. (*C)	Voltage (V)	Temp. (*C)	Voltage (V)	Temp. (*C)	Voltage (V)	Temp. (*C)	Voltage (V)
-20	4.554	2	3.744	24	2.555	46	1.487
-19	4.529	3	3.695	25	2.5	47	1.447
-18	4.502	4	3.646	26	2.445	48	1.409
-17	4.475	5	3.595	27	2.391	49	1.371
-16	4.446	6	3.544	28	2.338	50	1.334
-15	4.417	7	3.492	29	2.284	51	1.298
-14	4.386	8	3.439	30	2.232	52	1.263
-13	4.354	9	3.386	31	2.18	53	1.228
-12	4.322	10	3.332	32	2.128	54	1.195
-11	4.287	11	3.278	33	2.077	55	1.162
-10	4.252	12	3.223	34	2.027	56	1.13
9	4.216	13	3.168	35	1.978	57	1.099
-8	4.178	14	3.113	36	1.929	58	1.069
-7	4.14	15	3.058	37	1.881	59	1.04
-6	4.1	16	3.002	38	1.834	60	1.011
-5	4.059	17	2.946	39	1.798	61	0.983
-4	4.017	18	2.89	40	1.742	62	0.956
-3	3.974	19	2.833	41	1.698	63	0.929
-2	3.93	20	2.777	42	1.654	64	0.904
-1	3.885	21	2.722	43	1.611	65	0.879
0	3.839	22	2.666	44	1.569	66	0.854
1	3.792	23	2.61	45	1.527	67	0.831

10.15 On Unit Indicators and Controls

STAND BY INDICATOR	Lights up when the Air Conditioner is connected to power and ready to receive the R/C commands Blinks continuously in case of any thermistor failure.
OPERATION INDICATOR	Lights up during operation. Blinks for 300 ms, to announce that a R/C infrared signal has been received and stored. Blinks continuously during • OCT High Pressure Protection Mode • ICT High Pressure Protection Mode • Deicing in Heating Mode • Water Over Flow in ECC Model
TIMER INDICATOR	Lights up during Timer and Sleep operation.
FILTER INDICATOR	Lights up when Air Filter needs to be cleaned. Blinks during Water Over Flow in MBX/P2000 models.
COOLING INDICATOR	Lights up when system is switched to Cool Mode by using the Mode Switch on the unit. Show the thermistor status in Diagnostic Mode
HEATING INDICATOR	Lights up when system is switched Heat Mode by using the Mode Switch on the unit. Show the thermistor status in Diagnostic Mode.
MODE BUTTON (Cool, Heat, SB)	Use to cycle the operation mode of the A/C unit among COOL, HEAT and SB modes, without using the R/C. Every time this switch is pressed, the next operation mode is selected, in this order : SB ➔ Cool Mode ➔ Heat Mode ➔ SB ➔ ... Press this button continuously for 5 sec or more to start the Diagnostic Mode.
RESET / FILTER BUTTON	When the Filter LED is ON, press to turn off the Filter LED after a clean filter has been reinstalled. When the Filter LED is OFF, use this button to enable/disable the buzzer announcer.

10.16 Clock Random Delay From 0 to 2.5 seconds

0 = Clock Switch Open
1 = Clock Switch close

The Clock is activate according to the following table:

A/C STATE (before clock is changed)	CLOCK STATE (before clock is changed)	CLOCK ACTION (clock is changed)	A/C NEW STATE (after clock is changed)
ON	1	0	OFF
OFF	0	1	ON
OFF by interrupt (1)	1	0	OFF
ON by interrupt (1)	0	1	ON

Notes :

1. Clock can be interrupted by :
   - R/C - POWER ON/OFF Push-button.
   - R/C - TIMER.
   - R/C - SLEEP.
   - A/C - MODE SWITCH.
2. Any change in the CLOCK level during the first 6 sec after the system Reset is ignored.

10.17 System Diagnostics

Pressing Mode button for 5-10 seconds in SB or any other operation mode will activate diagnostic mode by the acknowledgment of 3 short beeps and lighting of COOL and HEAT LEDs.

In diagnostic mode, system problems will be indicated by blinking of Heat & Cool LEDs.

The coding method will be as follow:

Heat led will blink 5 times in 5 seconds, and then will be shut off for the next 5 seconds. Cool led will blink during the same 5 seconds according to the following table:

No	Problem	○	○	○	○	○
1	RT1 is disconnected	○	●	●	●	●
2	RT1 is shorted	○	●	●	●	○
3	(Reserved)	○	●	●	○	●
4	RT2 is disconnected	●	○	●	●	●
5	RT2 is shorted	●	○	●	●	○
6	(Reserved)	●	○	●	○	●
7	RT2 temp reading doesn’t change	●	○	●	○	○
8	RT3 is disconnected	●	●	○	●	●
9	RT3 is shorted	●	●	○	●	○
10	(Reserved)	●	●	○	○	●
11	RT3 temp reading doesn’t change	●	●	○	○	○
12	RT2 & RT3 temp reading doesn’t change	●	○	○	○	○

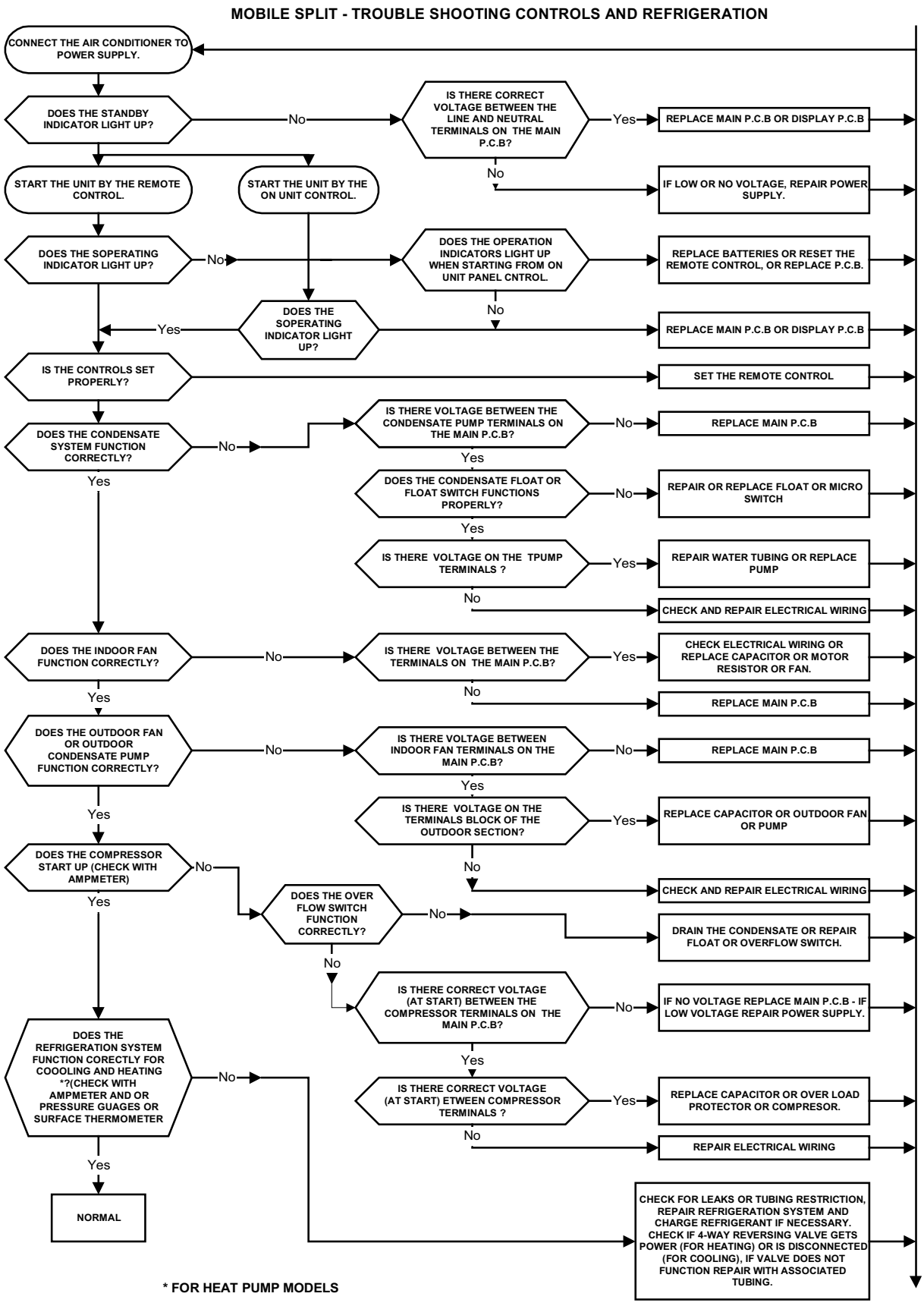
○ - ON, ● - OFF

Notes:

1. If faults occur in more than one thermistor (except case number 12 on the table above), only one fault will be indicated according to the following order: RT3, RT2, RT1.

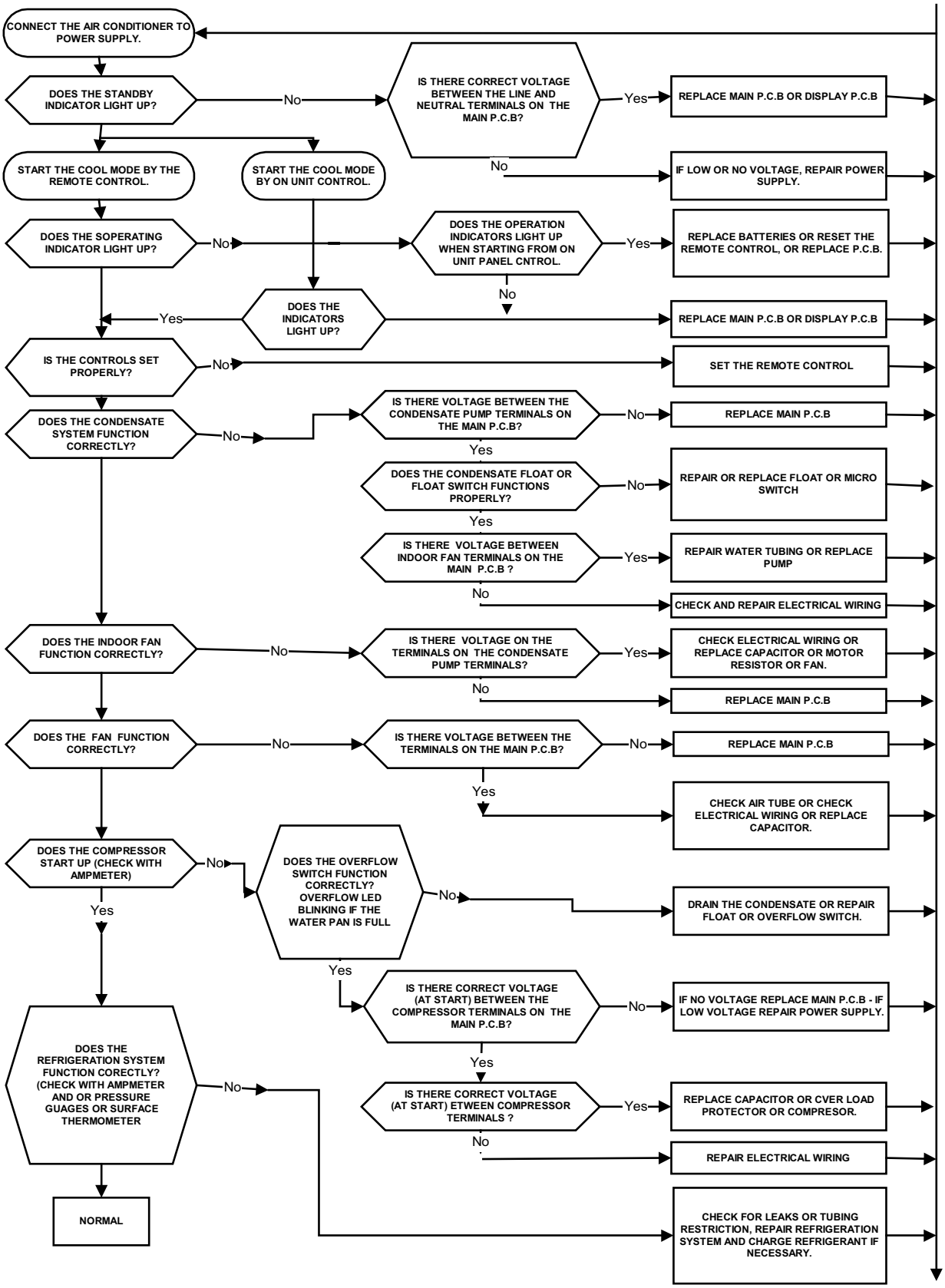
2. A/C will jump out to normal mode if sending a command by the R/C in the system diagnostics mode. If this command from the R/C contain a Group ID, this ID will become the new Group ID of the ELCON unit.

11. TROUBLESHOOTING



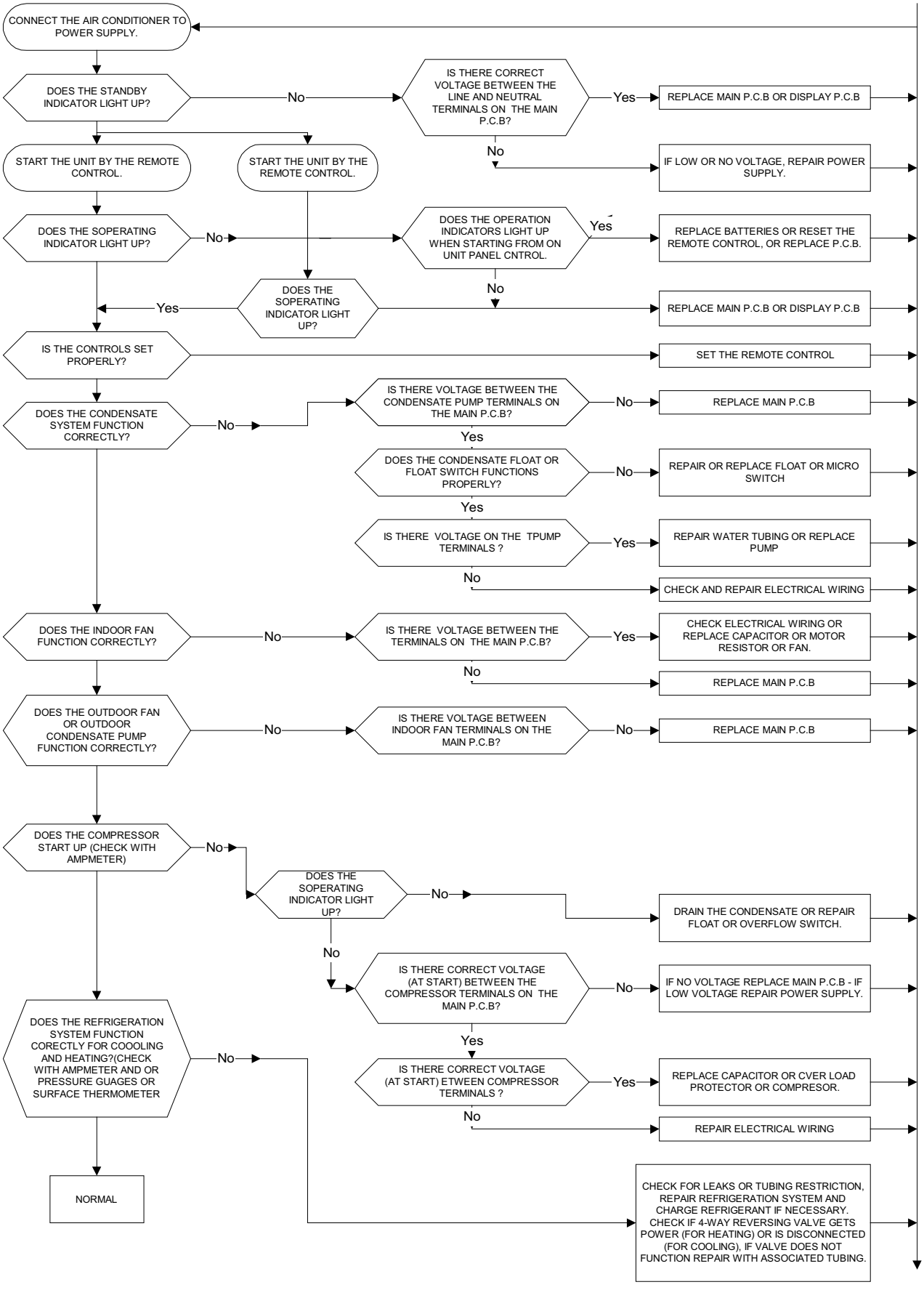
NOTE: The Standby indicator is not in use for the portable units.

PORTABLE / MOBILE SPLIT - COOLING TROUBLE SHOOTING CONTROLS AND REFRIGERATION



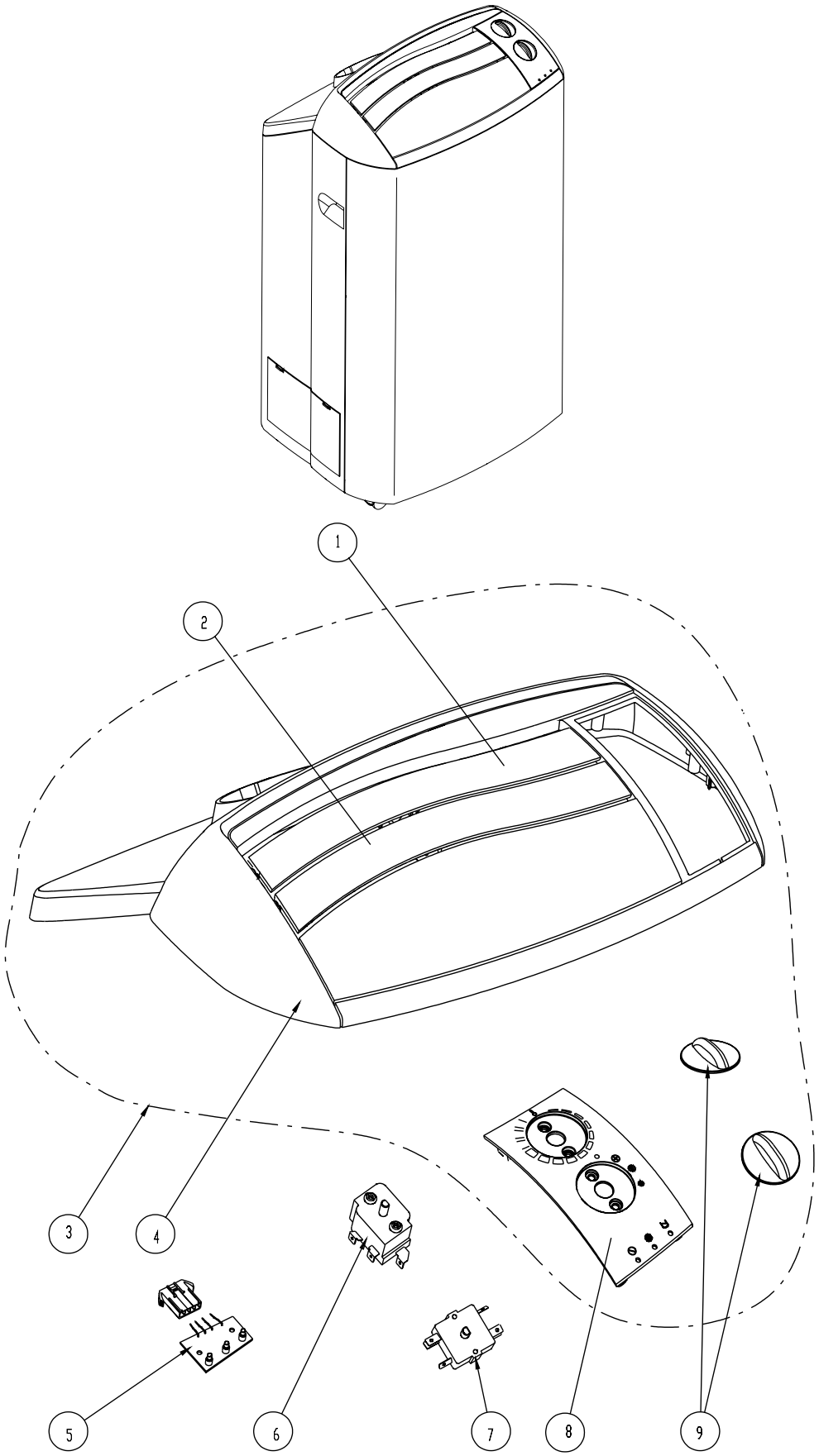
NOTE: The standby indicator is not in use for the portable units.

PORTABLE - COOLING - TROUBLE SHOOTING CONTROLS AND REFRIGERATION

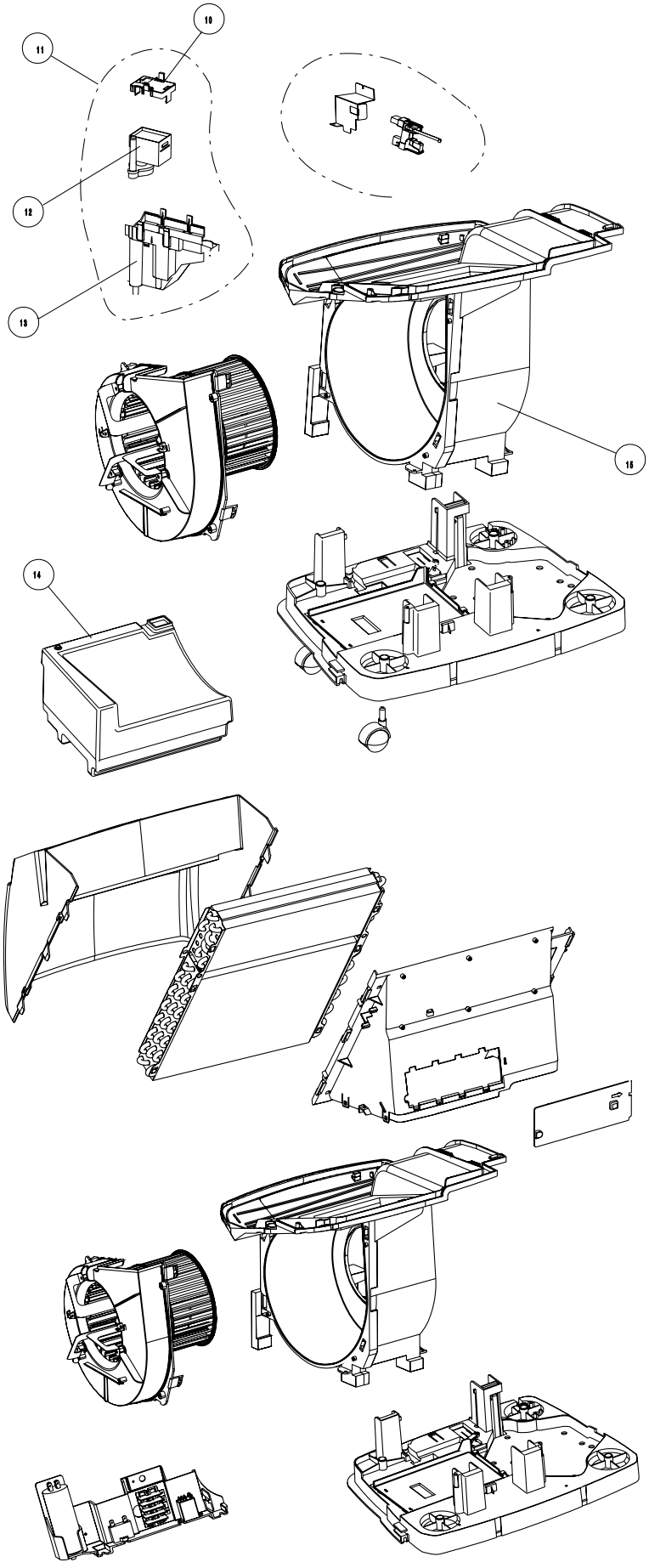


12. EXPLODED VIEWS AND SPARE PARTS LISTS

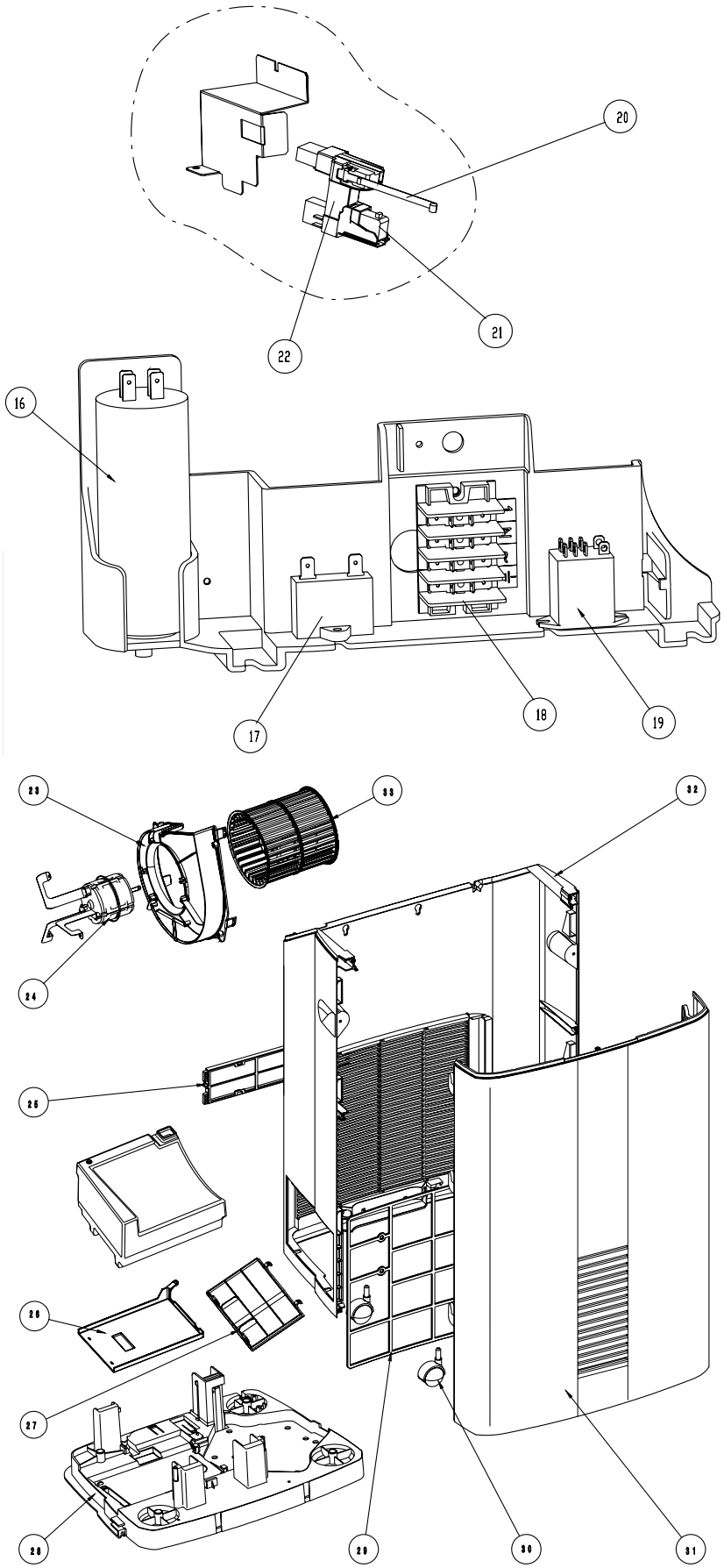
12.1 Monoblock 7M



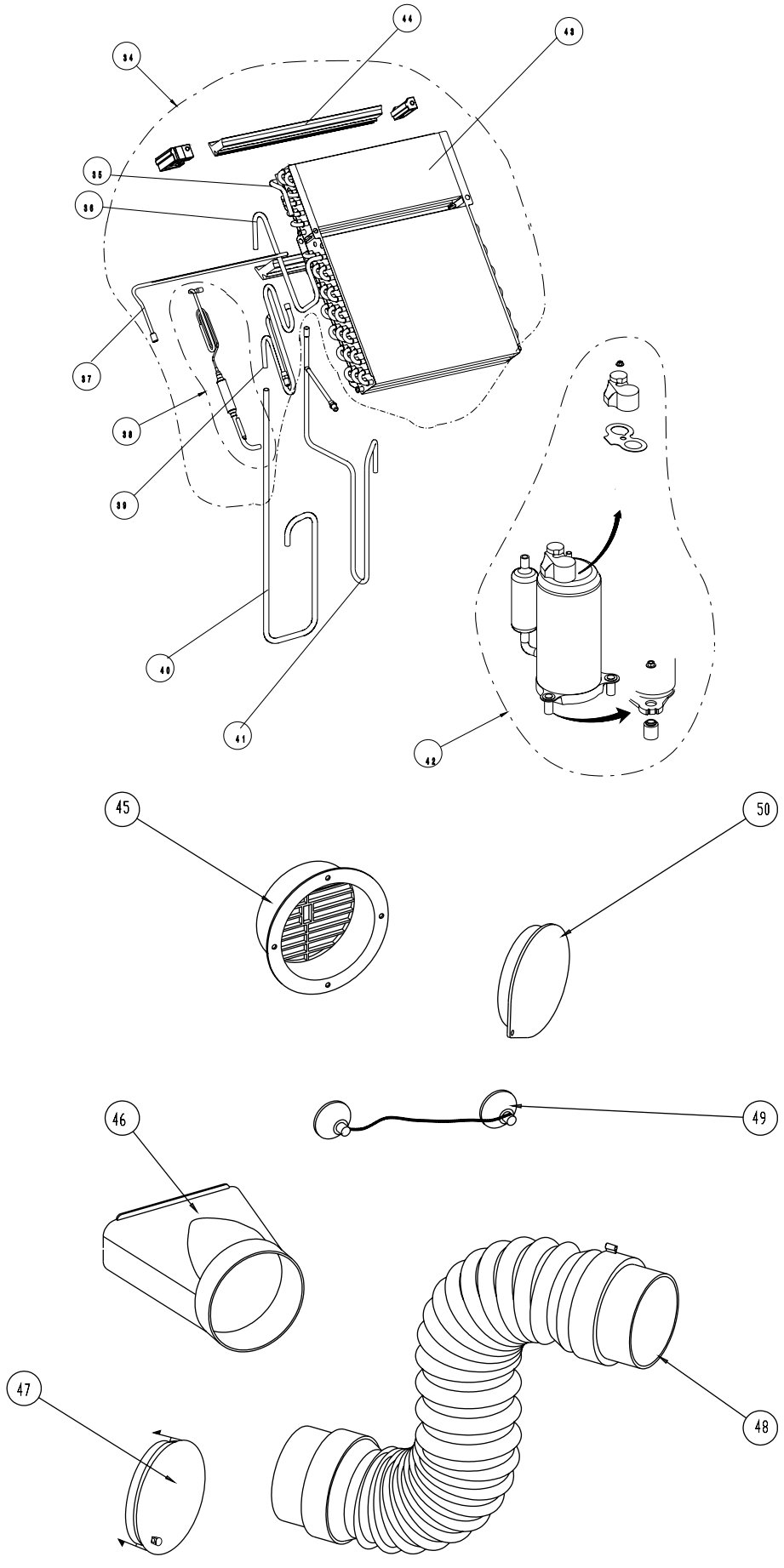
12.2 Monoblock 7M



12.3 Monoblock 7M



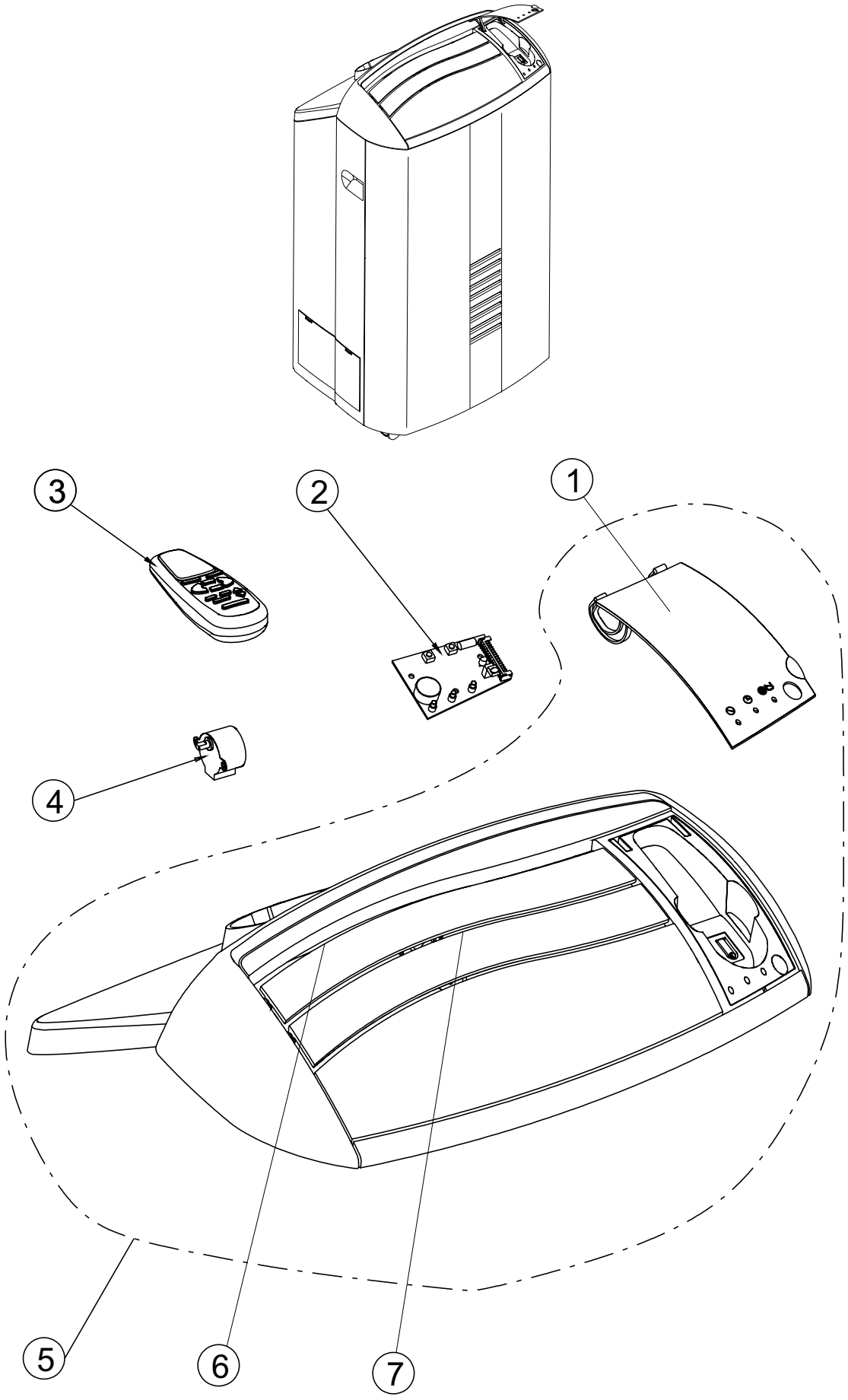
12.4 Monoblock 7M



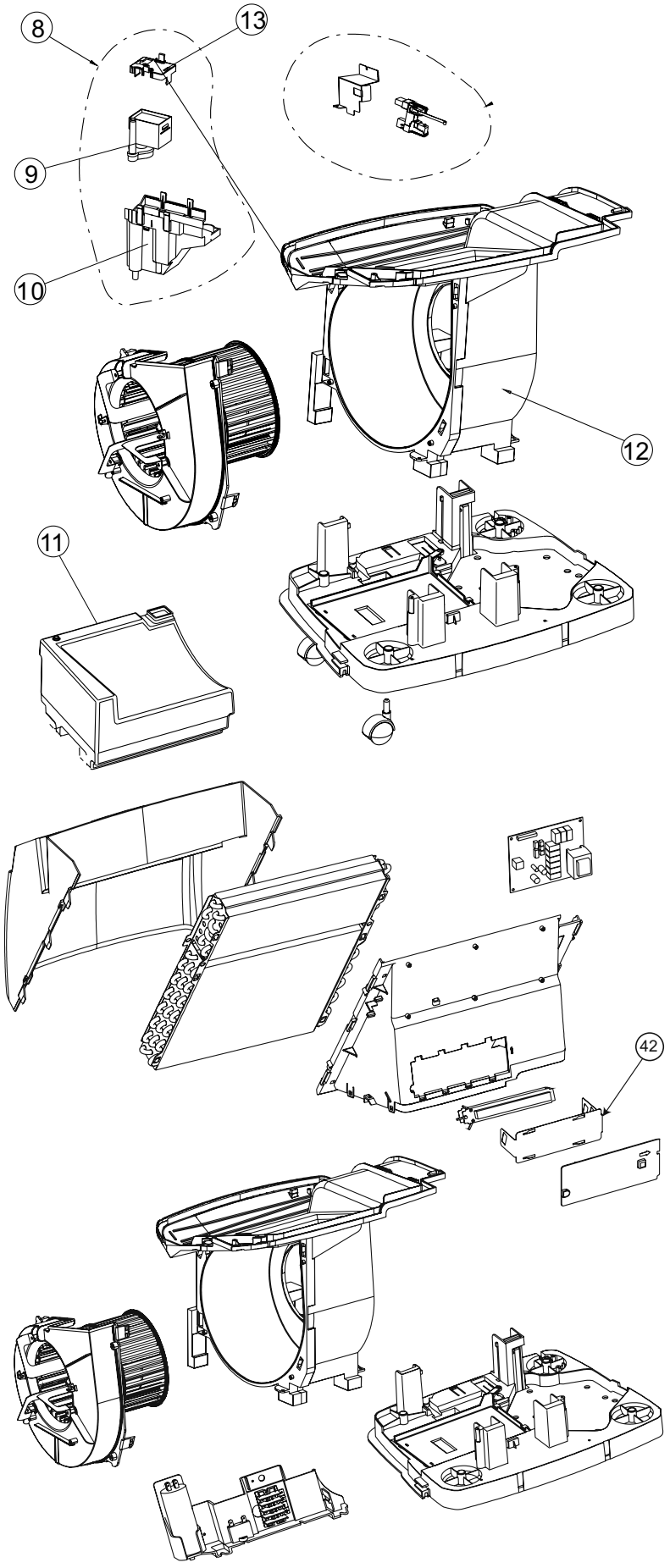
12.5 Monoblock 7M

No.	Part No.	Description	Qty
1	412169	Blade 1 EL10	1
2	412170	Blade 2 EL10	1
3	4523249	Head assy. M7M ACE	1
4	412031	HEAD P2000 MB AIRWELL	1
5	412165	Display Board PCB-M 901-201-04	1
6	412269	Thermostat	1
7	412224	Select Switch 16A	1
8	412230	Control Tray Mobile M	1
9	412177	Switch Knob EL10	2
10	412012	Pump Support P2000 COLOR: EL32	1
11	4522085	Pump assy	1
12	412047	Indoor Pump	1
13	412011	Water Pump Cater P2000 MB COLOR: NATURAL	1
14	412010	Water Tank 3 Litre COLOR: NATURAL	1
15	412001	Fan House	1
16	455000502	Compressor Capacitor With Screw 25uF (CBB65)	1
17	455000101	Double patch Capacitor for fan motor 2.5uF (CBB61S)	1
18	4523051	Indoor Terminal Block	1
19	192106	Relay JQX-13F/220-2Z5 OR VE-R02 2Ca2	1
20	412152	Microswitch D489-YGAC	1
21	412044	Microswitch D489Y5AA	1
22	412025	Microswitch Housing P2000 MB COLOR: EL10	1
23	412002	Motor Housing	1
24	412042	Fan Motor H/M/L:1390/1280/1170RPM	1
26	412005	WATER TANK TRAY P2000 COLOR: EL32	1
27	412221	Water Tank Door EL10	1
28	412000	Base	1
29	412206	Air Filter EL10	1
30	412052	Indoor Caster	4
31	4523250	Front assy.	1
32	4522080	Rear panel assy.	1
33	412029	Indoor Plastic Fan 171.5*164	1
34	453179600	Coil assy	1
35	453039400	EVA.Outlet tube	1
37	452973500	Water tube	1
38	453032300	Capillary Assy MB	1
39	453039600	Inlet of Cond.	1
40	452974100	Suction Tube	1
41	452974200	DISCHARGE TUBE ASSY P2000 MB	1
42	453042100	Compressor Assy.C-RV096H1A	1
43	452973600	Coil MB	1
44	412096	Partition EPS	1
45	409918	Round Adapter P2000 MB COLOR: RAL 7037	1
46	409921	Formal Adapter MBX COLOR: RAL7037	1
47	412261	Opening Outlet cover EL10	1
48	4523088	Outlet assy. GREY	1
49	410902	Suction Pad Assy	1
50	409920	Adap. Cover MBX COLOR: RAL 7037	1

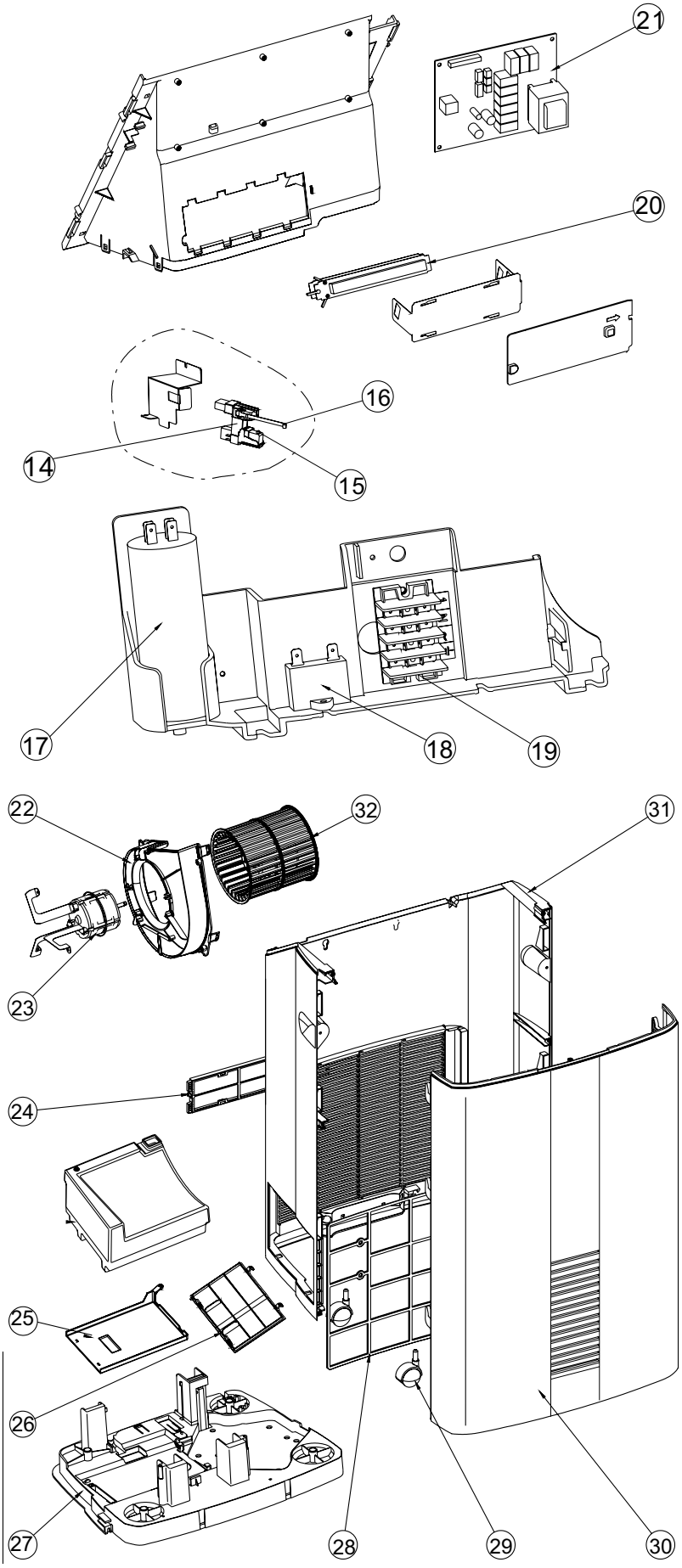
14.6 Monoblock 7E



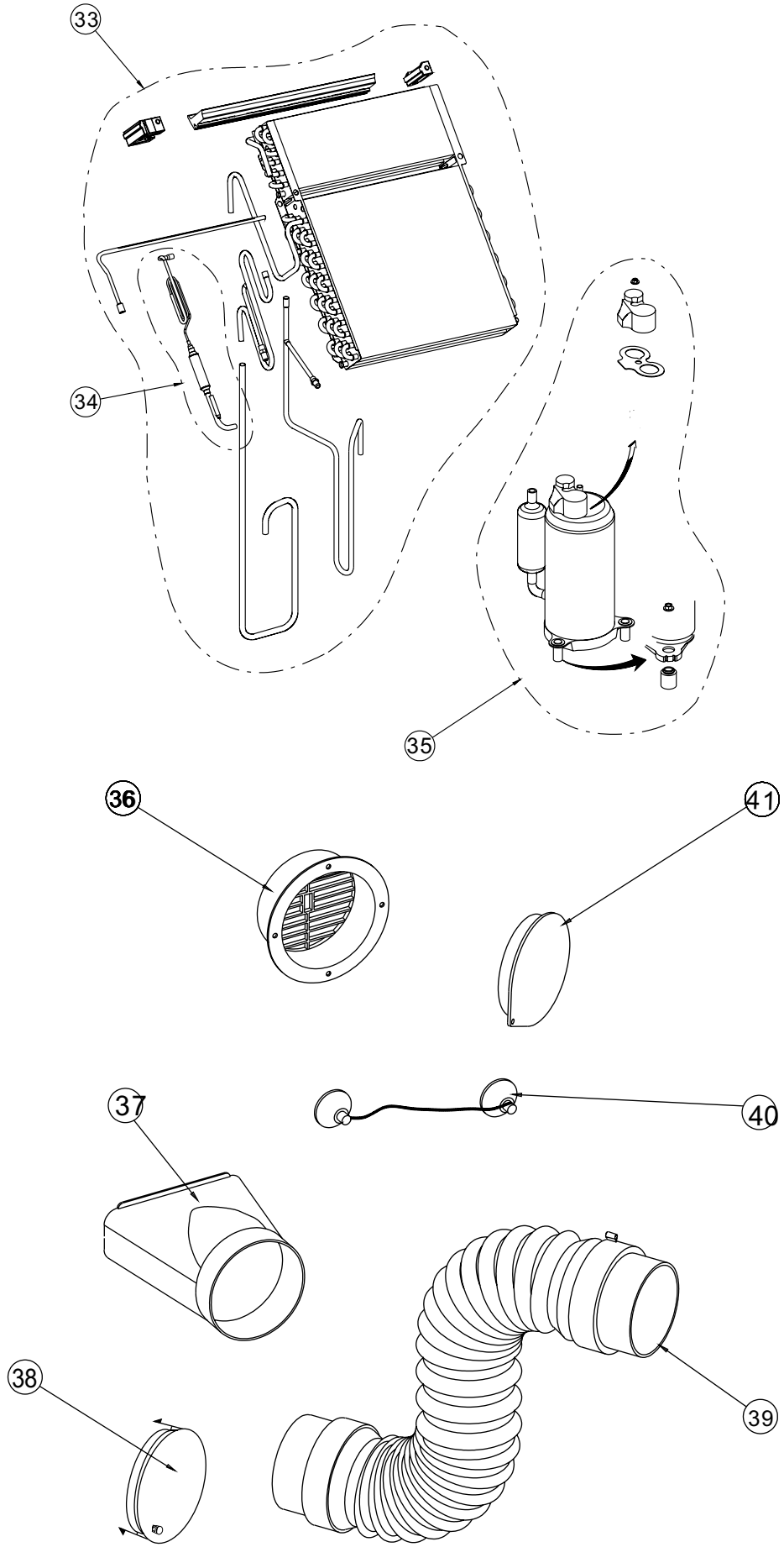
14.7 Monoblock 7E



14.8 Monoblock 7E



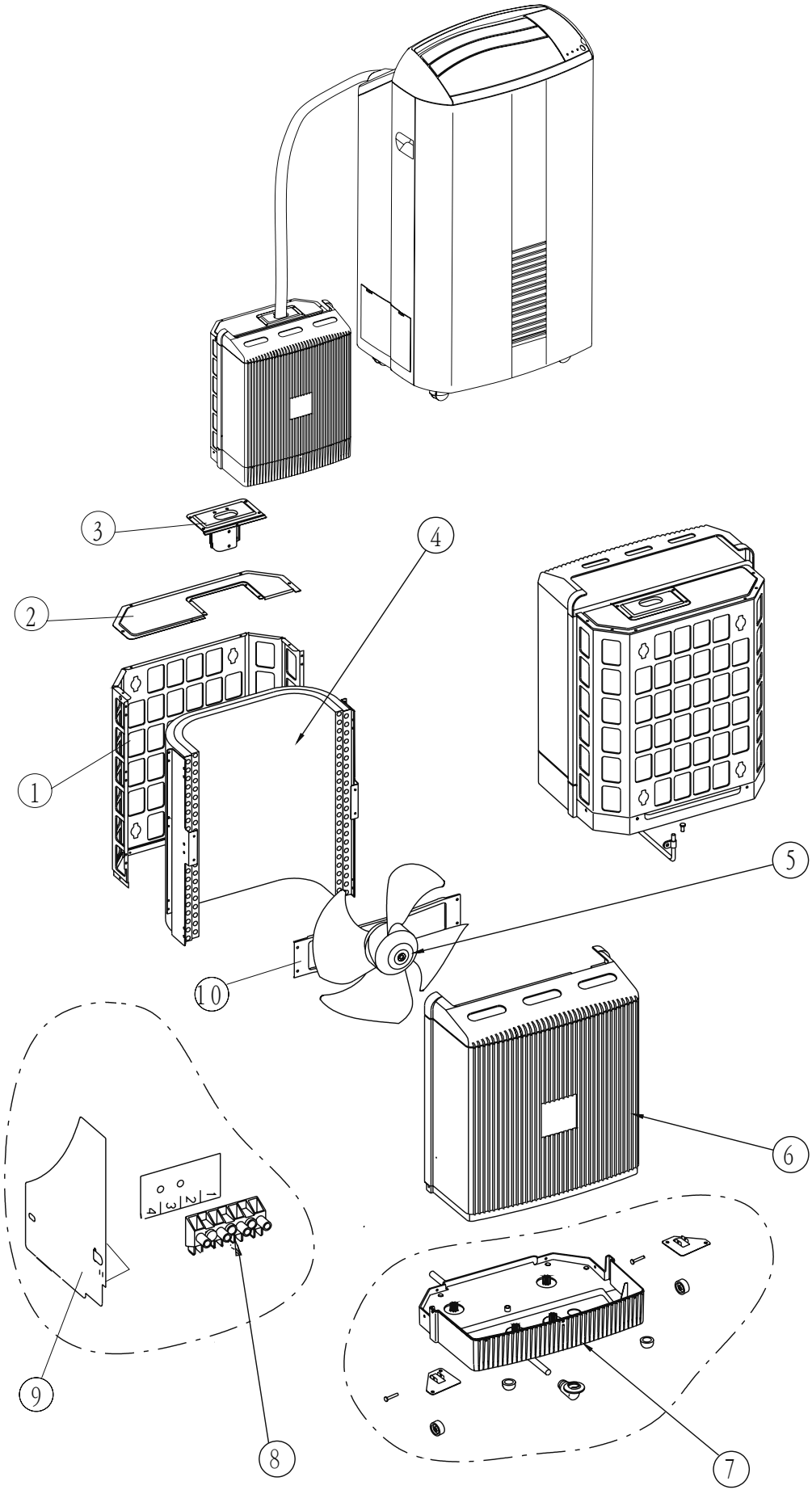
14.9 Monoblock 7E



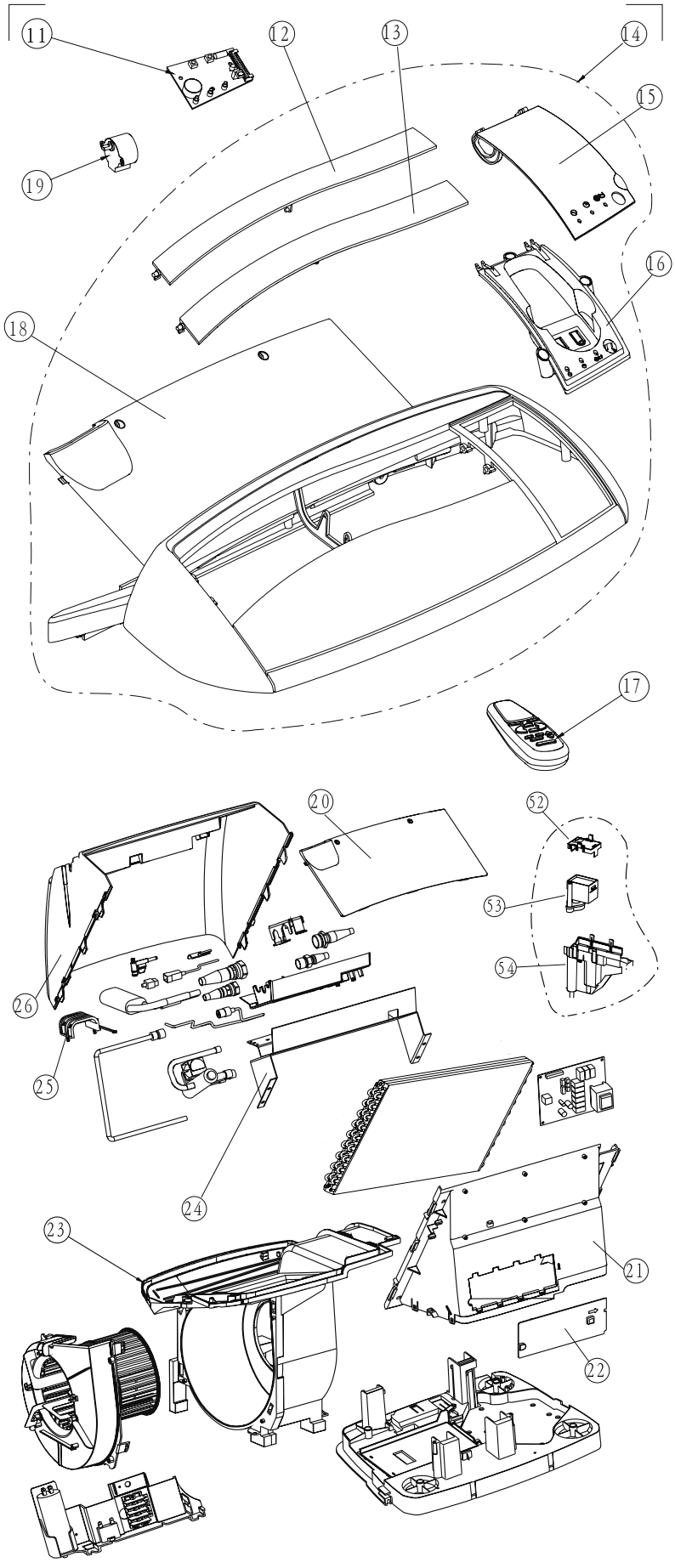
14.10 Monoblock 7E

No.	Part No.	Description	Qty
1	412226	Cotrol Door P2000E Printed	1
2	412163	Display Board PCB-E 901-201-02	1
3	4526469	RC5 ST EL10	1
4	436052	Motor step	1
5	4523087	Head assy M7E Airwell	1
6	412169	Blade 1 EL10	1
7	412170	Blade 2 EL10	1
8	4522085	Pump assy	1
9	412047	Indoor Pump	1
10	412011	Water Pump Cater P2000 MB COLOR: NATURAL	1
11	412010	Water Tank 3 Litre COLOR: NATURAL	1
12	412001	Fan House	1
13	412012	Pump Support P2000 COLOR: EL32	1
14	412025	Microswitch Housing P2000 MB COLOR: EL10	1
15	412044	Microswitch D489Y5AA	1
16	412152	Microswitch D489-YGAC	1
17	455000502	Compressor Capacitor With Screw 25uF (CBB65)	1
18	455000101	Double patch Capacitor for fan motor 2.5uF (CBB61S)	1
19	4523051	Indoor Terminal Block	1
20	412237	Electric heater	1
21	435969	CONTROL BOARD DST-8 10V5-FK15 911-353-15 MOBILE	1
22	412002	Motor Housing	1
23	412042	Fan Motor H/M/L:1390/1280/1170RPM	1
25	412005	WATER TANK TRAY P2000 COLOR: EL32	1
26	412221	Water Tank Door EL10	1
27	412000	Base	1
28	412206	Air Filter EL10	1
29	412052	Indoor Caster	4
30	4523250	Front assy.	1
31	4522080	Rear panel assy.	1
32	412029	Indoor Plastic Fan 171.5*164	1
33	453179600	Coil assy.	1
34	453032300	Capillary Assy	1
35	453042100	Compressor Assy.C-RV096H1A	1
36	409918	Round Adapter P2000 MB COLOR: RAL 7037	1
37	409921	Formal Adapter MBX COLOR: RAL7037	1
38	412261	Opening Outlet cover EL10	1
39	4523088	Outlet assy. GREY	1
40	410902	Suction Pad Assy	1
41	409920	Adap. Cover MBX COLOR: RAL 7037	1
42	412092	Bracket for HE	1

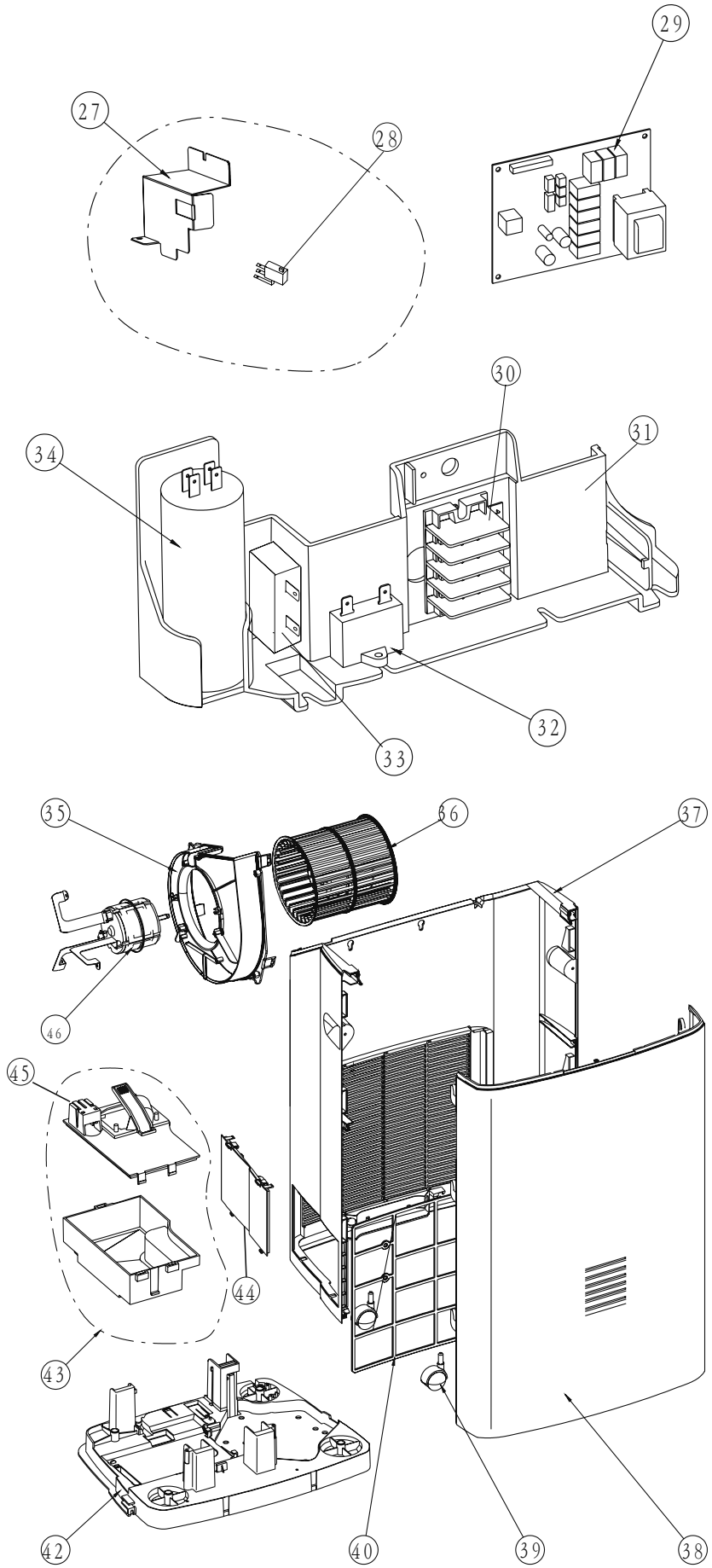
14.11 SP11E RC QC



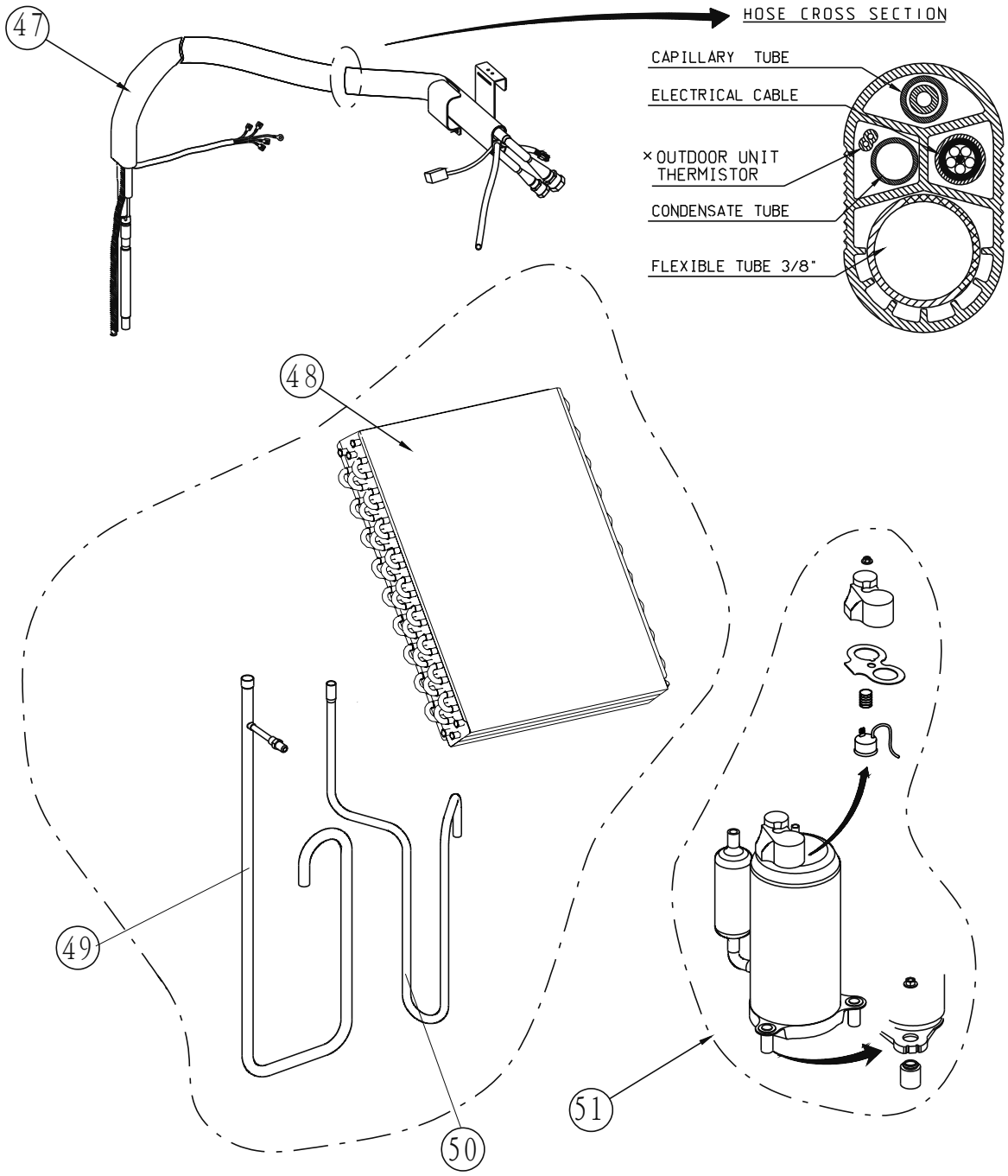
14.12 SP11E RC QC



14.13 SP11E RC QC



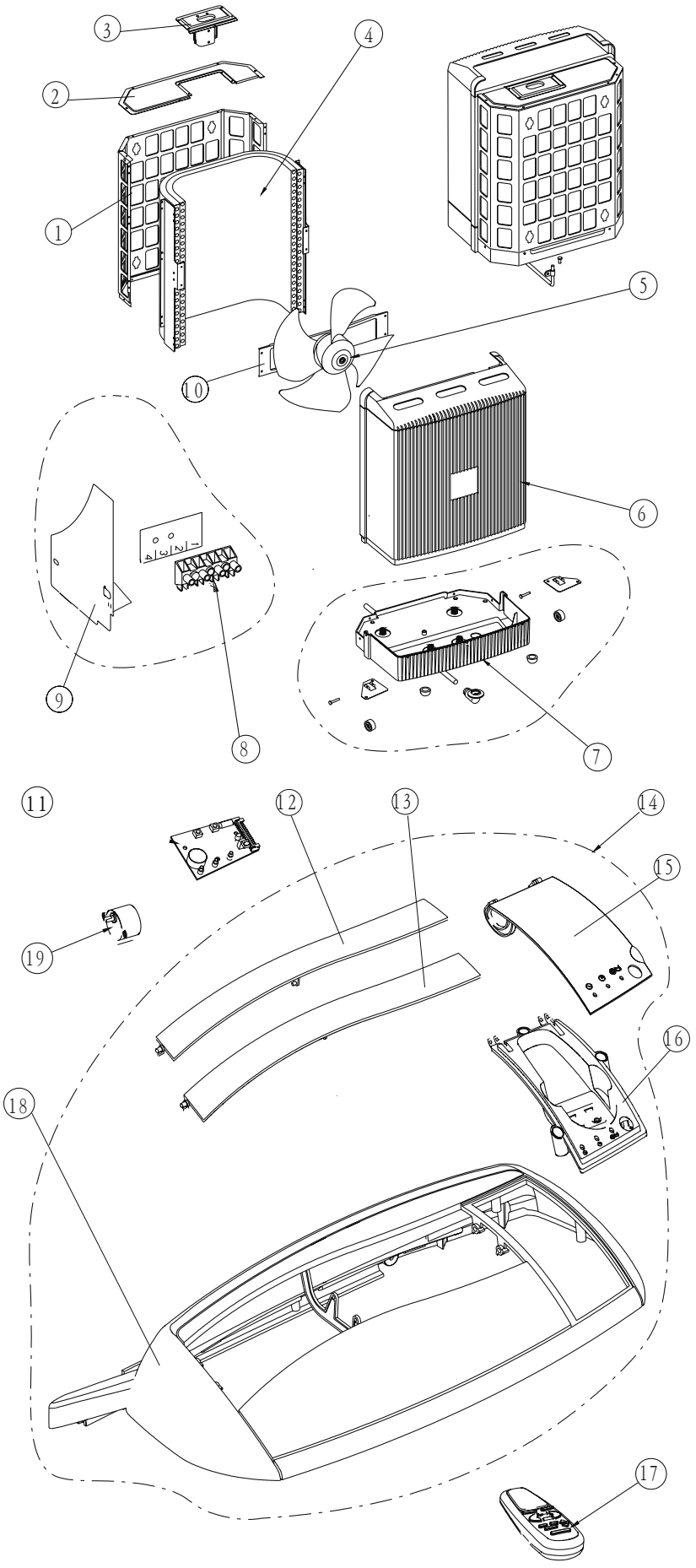
14.14 SP11E RC QC



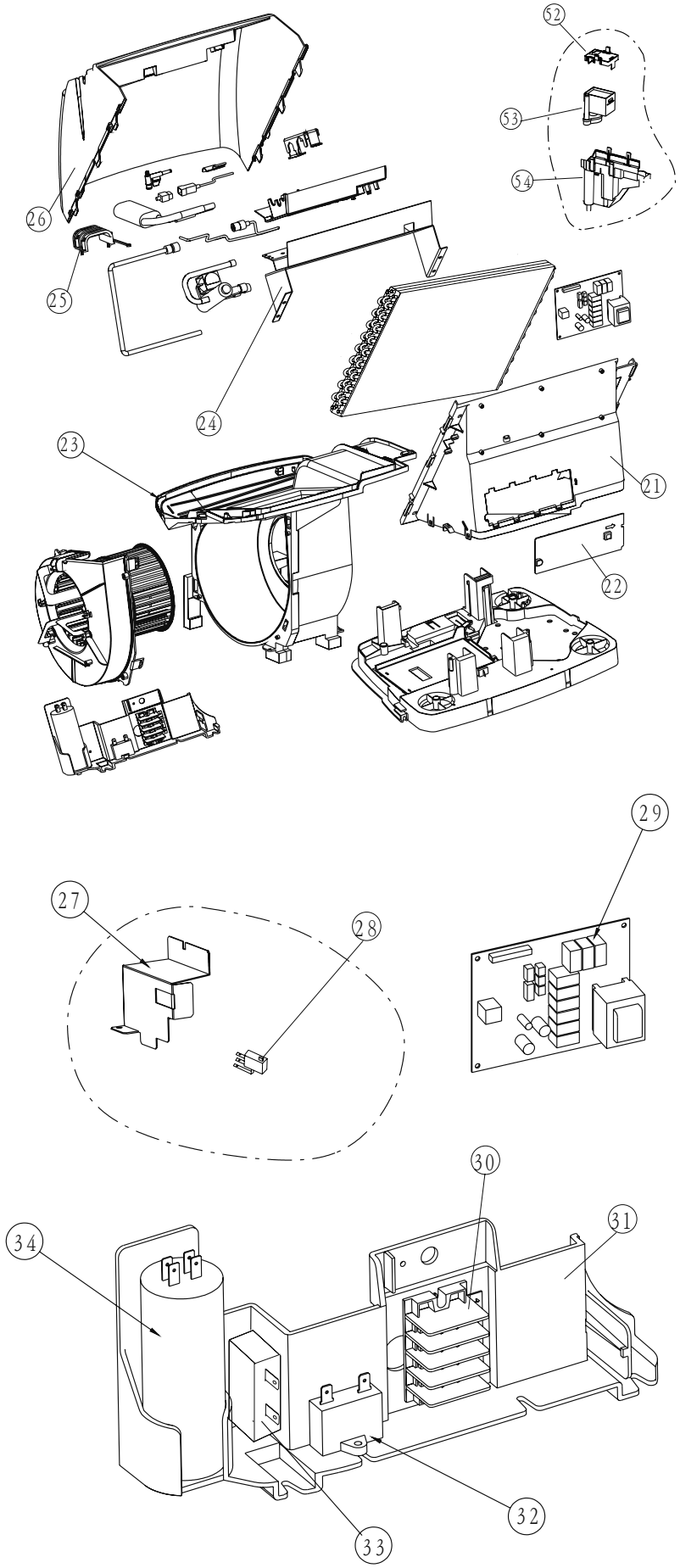
14.15 SP11E RC QC

No.	Part No.	Description	Qty
1	410999	Rear Guard 16 EL10	1
2	410915	Condenser Top Cover Painting EL10 SP16	1
3	410914	Flex.Hose Support Cover Painting EL10	1
4	452973800	Condenser / SP11 R410A	1
5	410040	Outdoor Fan Motor A4E360-AE19-16	1
6	410542	Condenser Housing EL10	1
7	410942	Drain Pan PSX 16 COLOR: EL10	1
8	410041	OD Terminal Block 16A	1
9	412537	OD Control Box Cover	1
10	4527306	OD Fan Motor Support Assy SP16	1
11	412163	Display Board PCB-E 901-201-02	1
12	412169	Blade 1 EL10	1
13	412170	Blade 2 EL10	1
14	453123700	Cover Assy./ ACE Design SP10E QC R410A Airwell	1
15	412226	Cotrol Door P2000E Printed	1
16	412229	Contray Tray E Printed	1
17	412548	REMOTE CONTROLLER RC5 RC EL 10 975-603-00	1
18	412033	Head SP QC AIRWELL	1
19	436052	Motor step	1
20	412210	QC Service Cover EL10	1
21	412003	Coil Housing	1
22	412006	H. E Support Cover	1
23	412001	Fan House	1
24	412350	Connectors Bridge	1
25	412185	Flex. Hose Bracket BIG	1
26	412081	Eva. Cover SP	1
27	412348	Microswitch Guard Painting	1
28	412044	Microswitch D489Y5AA	1
29	4524621	GEN Controller DST-5 10V5 911-353-16	1
30	4523051	Indoor Terminal Block	1
31	412162	Electrical Items Support	1
32	455000101	Double patch Capacitor for fan motor 2.5uF (CBB61S)	1
33	455000108	Double patch Capacitor for fan motor 2uF	1
34	455000510	Compressor Capacitor With Screw 35uF (CBB65)	1
35	412002	Motor Housing	1
36	412029	Indoor Plastic Fan 171.5*164	1
37	412205	Rear Panel EL10	1
38	412513	Front Panel EL10	1
39	412052	Indoor Caster	4
40	412206	Air Filter EL10	1
42	453128100	Unit Housing / Mobile R410A	1
43	412082	Water Pool	1
44	412221	Water Tank Door EL10	1
45	412083	Water Pool Cover	1
46	412028	Fan Motor SP11 H/M/L:1280/1170/920RPM	1
47	412252	FLEXIBLE TUBE ASSY SP16RC QC	1
48	453107800	3-Row Evaporator / SP11 R410A	1
49	452974300	Suction Pipe Assy. / SP11 R410A	1
50	452974400	Discharge Pipe Assy. / SP11 R410A	1
51	452932500	Compressor Assy. ASG108CV-B7AT (R410A Hitachi)	1
52	412012	Pump Support P2000 COLOR: EL32	1
53	412047	Indoor Pump	1
54	412011	Water Pump Cater P2000 MB COLOR: NATURAL	1

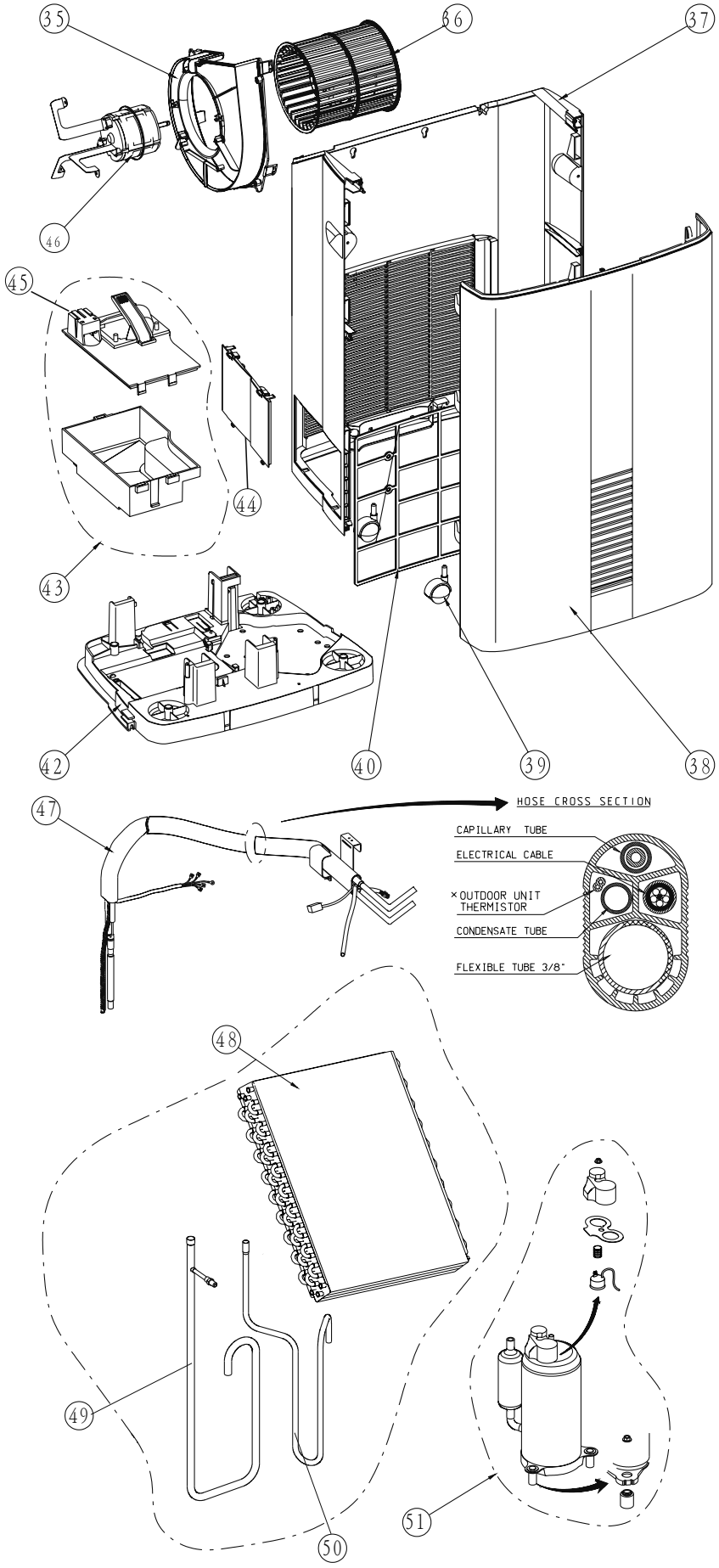
14.16 SP11E RC



14.17 SP11E RC



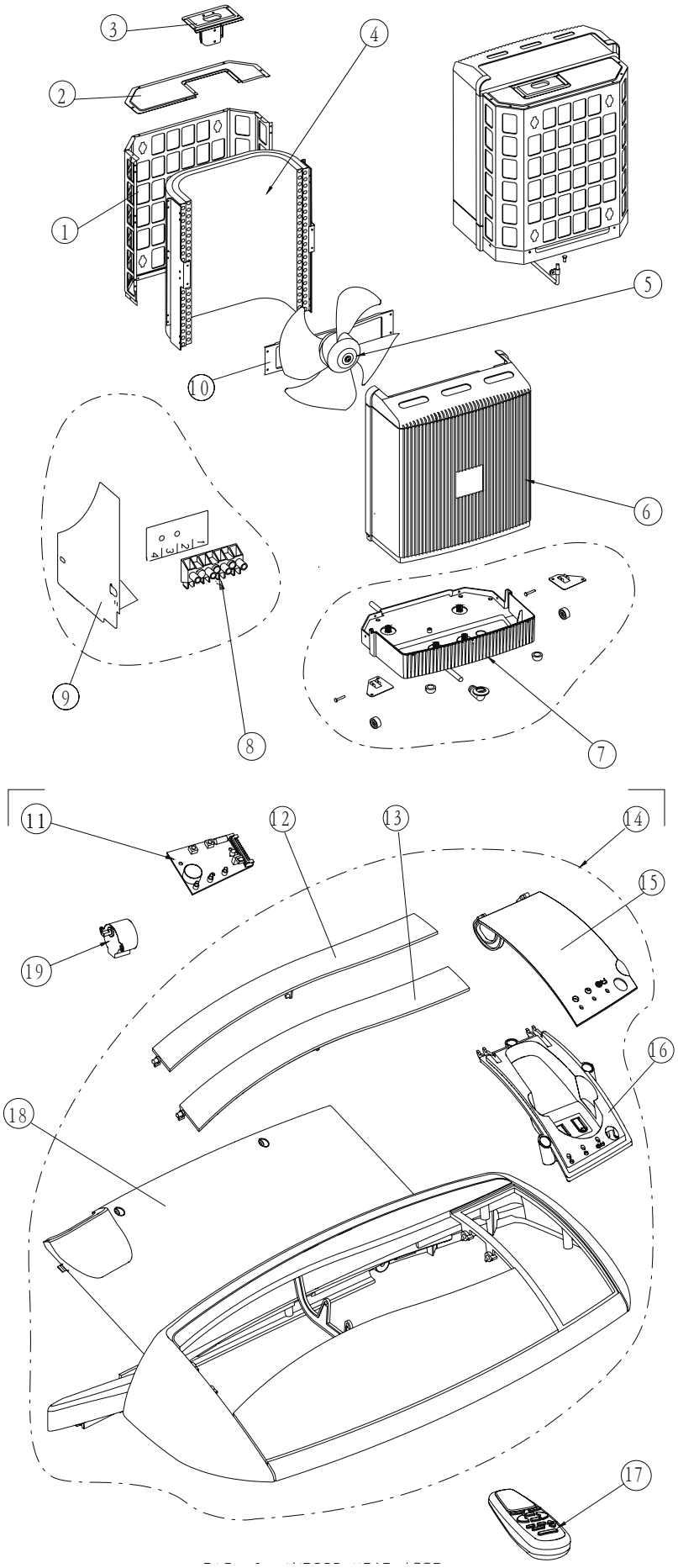
14.18 SP11E RC



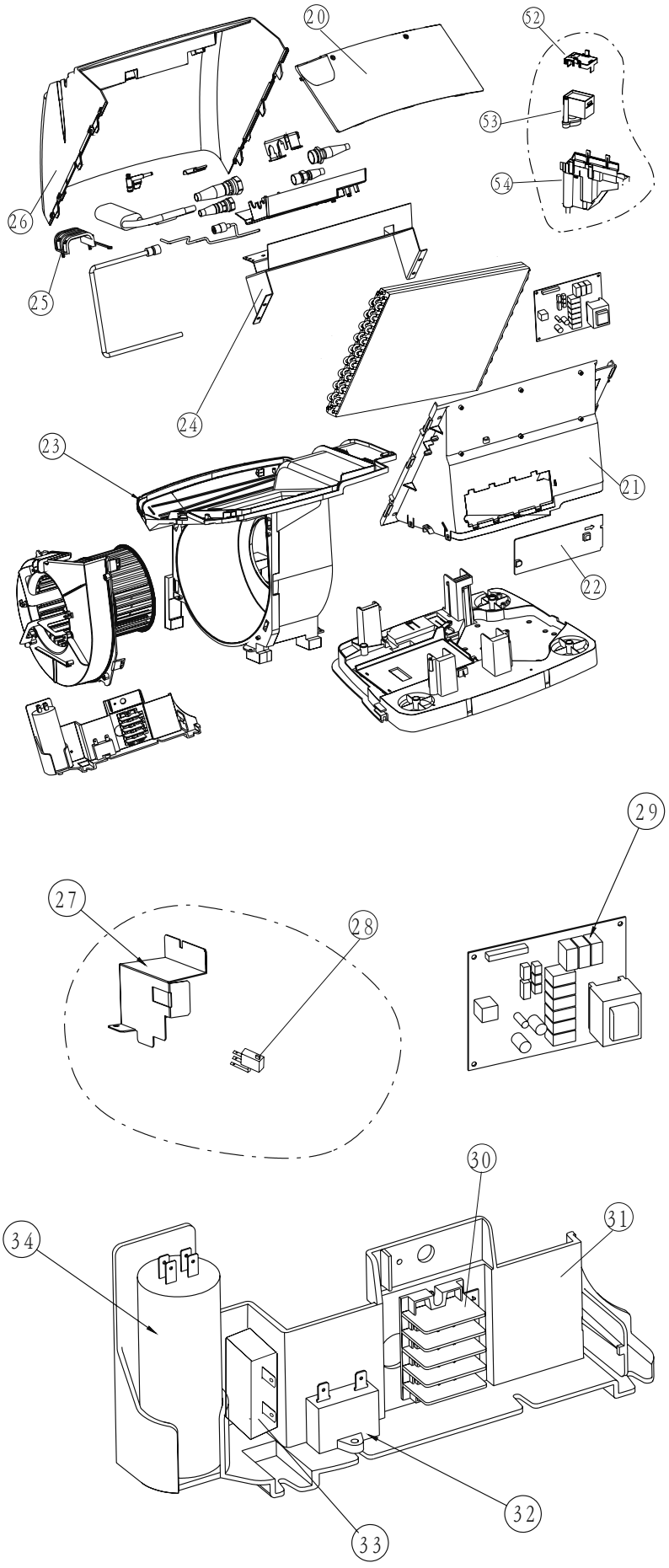
14.19 SP11E RC

No.	Part No.	Description	Qty
1	410999	Rear Guard 16 EL10	1
2	410915	Condenser Top Cover Painting EL10 SP16	1
3	410914	Flex.Hose Support Cover Painting EL10	1
4	452973800	Condenser / SP11 R410A	1
5	410040	Outdoor Fan Motor A4E360-AE19-16	1
6	410542	Condenser Housing EL10	1
7	410942	Drain Pan PSX 16 COLOR: EL10	1
8	410041	OD Terminal Block 16A	1
9	412537	OD Control Box Cover	1
10	4527306	OD Fan Motor Support Assy SP16	1
11	412163	Display Board PCB-E 901-201-02	1
12	412169	Blade 1 EL10	1
13	412170	Blade 2 EL10	1
14	453186800	Cover Assy./ SP10E R410A Airwell	1
15	412226	Cotrol Door P2000E Printed	1
16	412229	Contray Tray E Printed	1
17	412548	REMOTE CONTROLLER RC5 RC EL 10 975-603-00	1
18	412032	Head SP AIRWELL	1
19	436052	Motor step	1
21	412003	Coil Housing	1
22	412006	H. E Support Cover	1
23	412001	Fan House	1
24	412350	Connectors Bridge	1
25	412185	Flex. Hose Bracket BIG	1
26	412081	Eva. Cover SP	1
27	412348	Microswitch Guard Painting	1
28	412044	Microswitch D489Y5AA	1
29	4524621	GEN Controller DST-5 10V5 911-353-16	1
30	4523051	Indoor Terminal Block	1
31	412162	Electrical Items Support	1
32	455000101	Double patch Capacitor for fan motor 2.5uF (CBB61S)	1
33	455000108	Double patch Capacitor for fan motor 2uF	1
34	455000510	Compressor Capacitor With Screw 35uF (CBB65)	1
35	412002	Motor Housing	1
36	412029	Indoor Plastic Fan 171.5*164	1
37	412205	Rear Panel EL10	1
38	412513	Front Panel EL10	1
39	412052	Indoor Caster	4
40	412206	Air Filter EL10	1
42	453128100	Unit Housing / Mobile R410A	1
43	412082	Water Pool	1
44	412221	Water Tank Door EL10	1
45	412083	Water Pool Cover	1
46	412028	Fan Motor SP11 H/M/L:1280/1170/920RPM	1
47	412561	FLEXIBLE TUBE ASSY SP16RC	1
48	453107800	3-Row Evaporator / SP11 R410A	1
49	452974300	Suction Pipe Assy. / SP11 R410A	1
50	452974400	Discharge Pipe Assy. / SP11 R410A	1
51	452932500	Compressor Assy. ASG108CV-B7AT (R410A Hitachi)	1
52	412012	Pump Support P2000 COLOR: EL32	1
53	412047	Indoor Pump	1
54	412011	Water Pump Cater P2000 MB COLOR: NATURAL	1

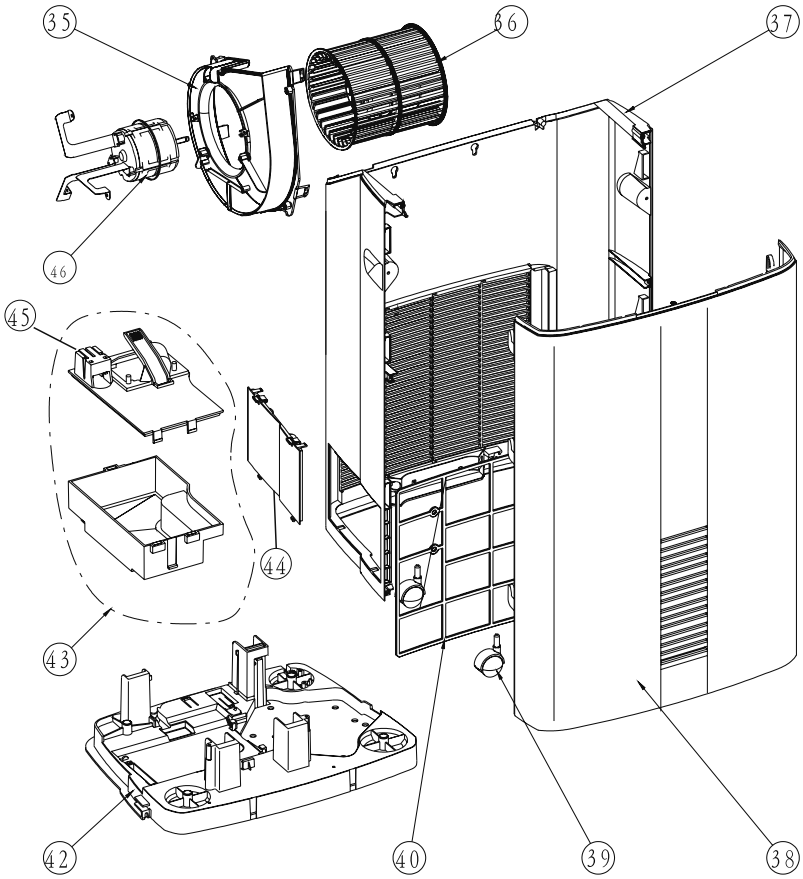
14.20 SP11E ST QC

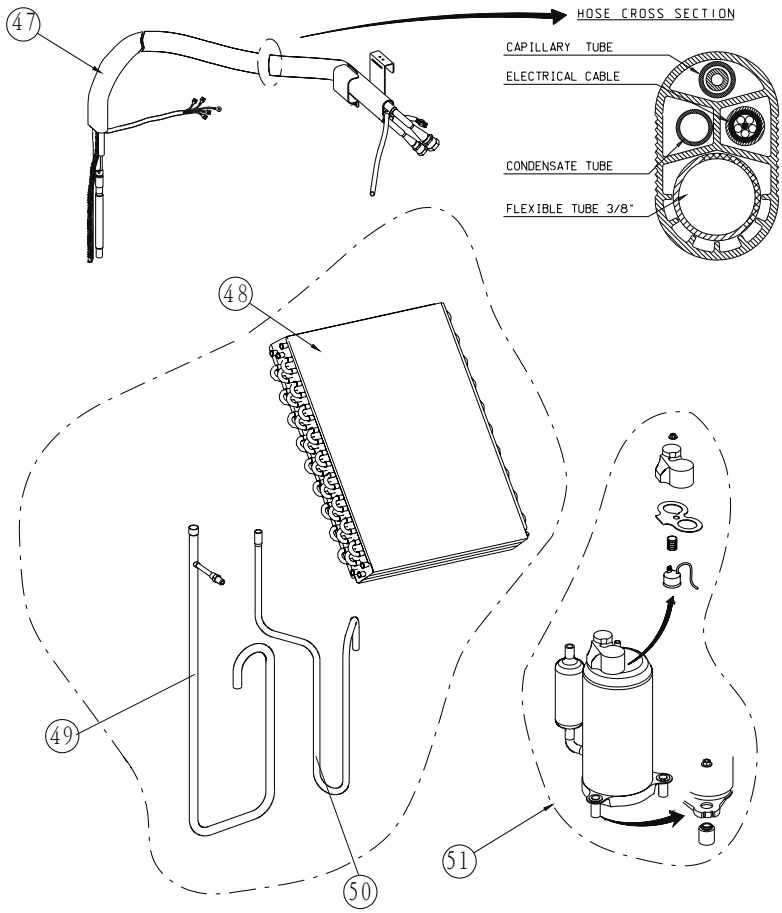


14.21 SP11E ST QC



12.22 SP11E ST QC

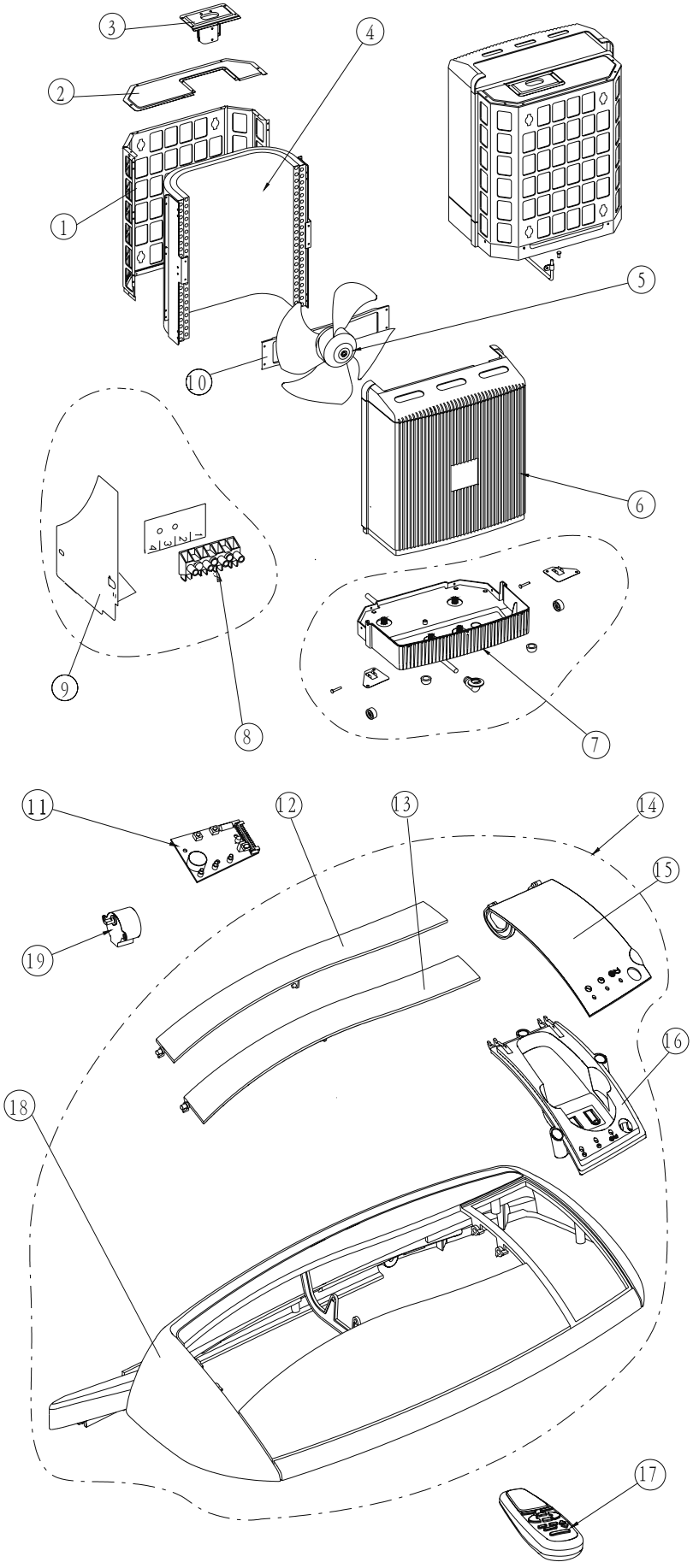




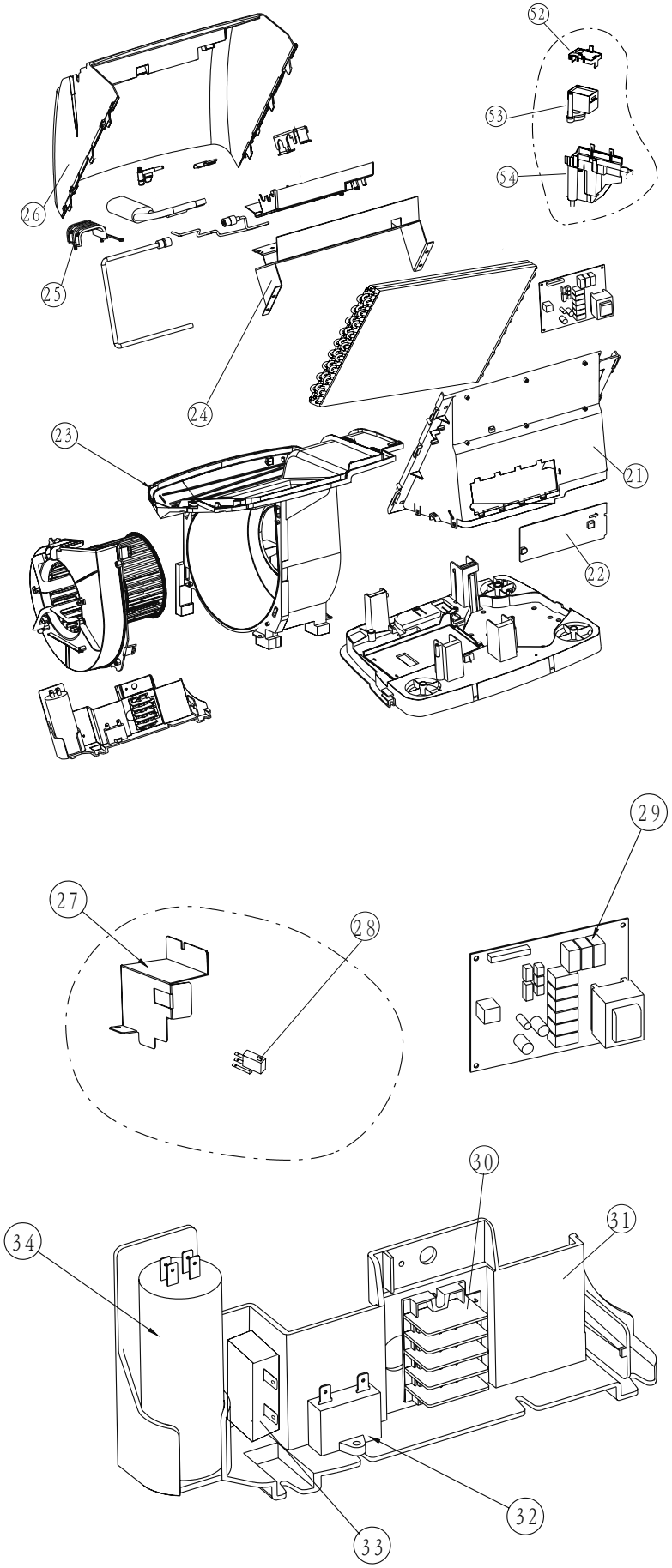
12.23 SP11E ST QC

No.	Part No.	Description	Qty
1	410999	Rear Guard 16 EL10	1
2	410915	Condenser Top Cover Painting EL10 SP16	1
3	410914	Flex.Hose Support Cover Painting EL10	1
4	452973800	Condenser / SP11 R410A	1
5	410040	Outdoor Fan Motor A4E360-AE19-16	1
6	410542	Condenser Housing EL10	1
7	410942	Drain Pan PSX 16 COLOR: EL10	1
8	410041	OD Terminal Block 16A	1
9	412537	OD Control Box Cover	1
10	4527306	OD Fan Motor Support Assy SP16	1
11	412163	Display Board PCB-E 901-201-02	1
12	412169	Blade 1 EL10	1
13	412170	Blade 2 EL10	1
14	453123700	Cover Assy./ ACE Design SP10E QC R410A Airwell	1
15	412226	Cotrol Door P2000E Printed	1
16	412229	Contray Tray E Printed	1
17	4526469	RC5 ST EL10	1
18	412033	Head SP QC AIRWELL	1
19	436052	Motor step	1
20	412210	QC Service Cover EL10	1
21	412003	Coil Housing	1
22	412006	H. E Support Cover	1
23	412001	Fan House	1
24	412350	Connectors Bridge	1
25	412185	Flex. Hose Bracket BIG	1
26	412081	Eva. Cover SP	1
27	412348	Microswitch Guard Painting	1
28	412044	Microswitch D489Y5AA	1
29	4524621	GEN Controller DST-5 10V5 911-353-16	1
30	4523051	Indoor Terminal Block	1
31	412162	Electrical Items Support	1
32	455000101	Double patch Capacitor for fan motor 2.5uF (CBB61S)	1
33	455000108	Double patch Capacitor for fan motor 2uF	1
34	455000510	Compressor Capacitor With Screw 35uF (CBB65)	1
35	412002	Motor Housing	1
36	412029	Indoor Plastic Fan 171.5*164	1
37	412205	Rear Panel EL10	1
38	412513	Front Panel EL10	1
39	412052	Indoor Caster	4
40	412206	Air Filter EL10	1
42	453128100	Unit Housing / Mobile R410A	1
43	412082	Water Pool	1
44	412221	Water Tank Door EL10	1
45	412083	Water Pool Cover	1
46	412028	Fan Motor SP11 H/M/L:1280/1170/920RPM	1
47	453094200	ID.&UD. Connect Pipe Assy./ SP ST QC R410A	1
48	453107800	3-Row Evaporator / SP11 R410A	1
49	452974300	Suction Pipe Assy. / SP11 R410A	1
50	452974400	Discharge Pipe Assy. / SP11 R410A	1
51	452932500	Compressor Assy. ASG108CV-B7AT (R410A Hitachi)	1
52	412012	Pump Support P2000 COLOR: EL32	1
53	412047	Indoor Pump	1
54	412011	Water Pump Cater P2000 MB COLOR: NATURAL	1

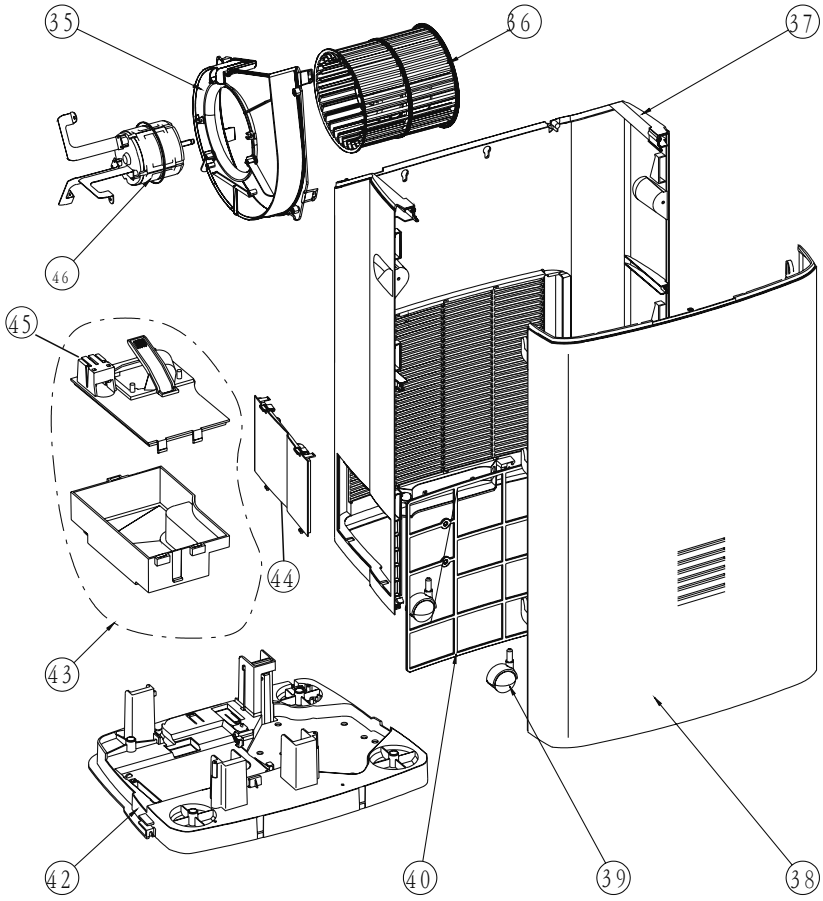
12.24 SP11E ST

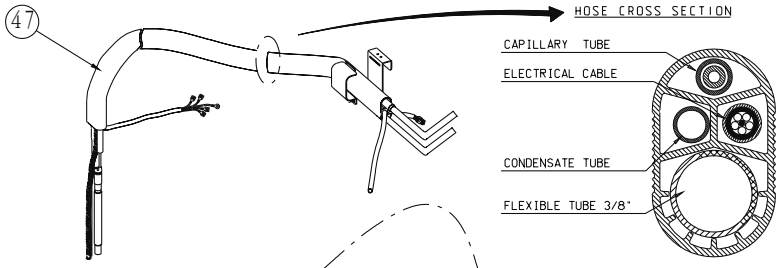


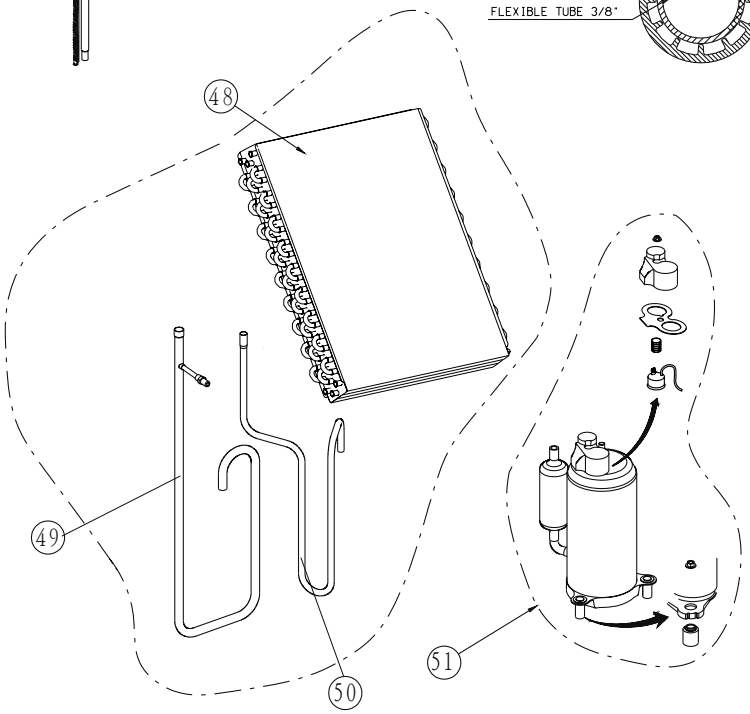
12.25 SP11E ST



12.25 SP11E ST



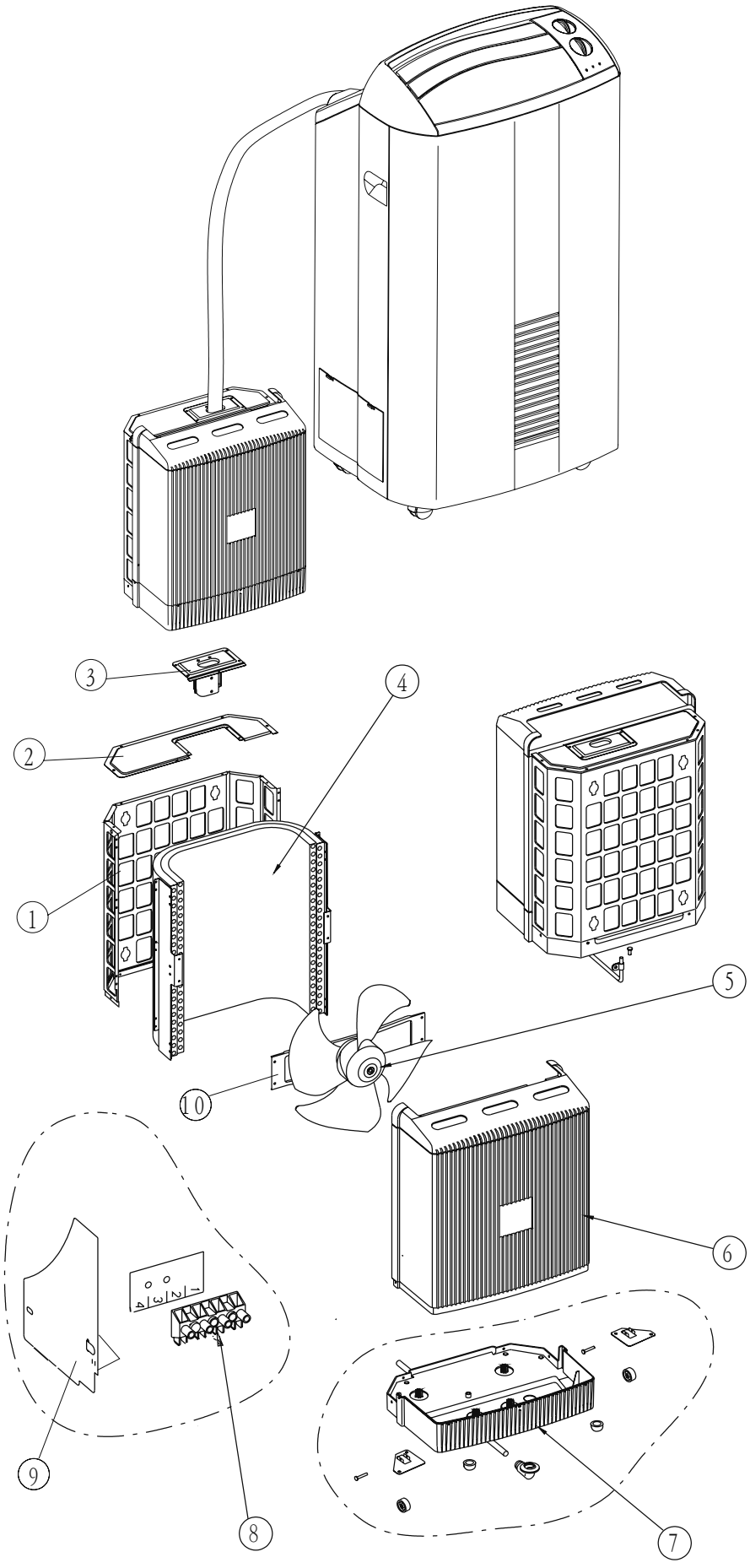




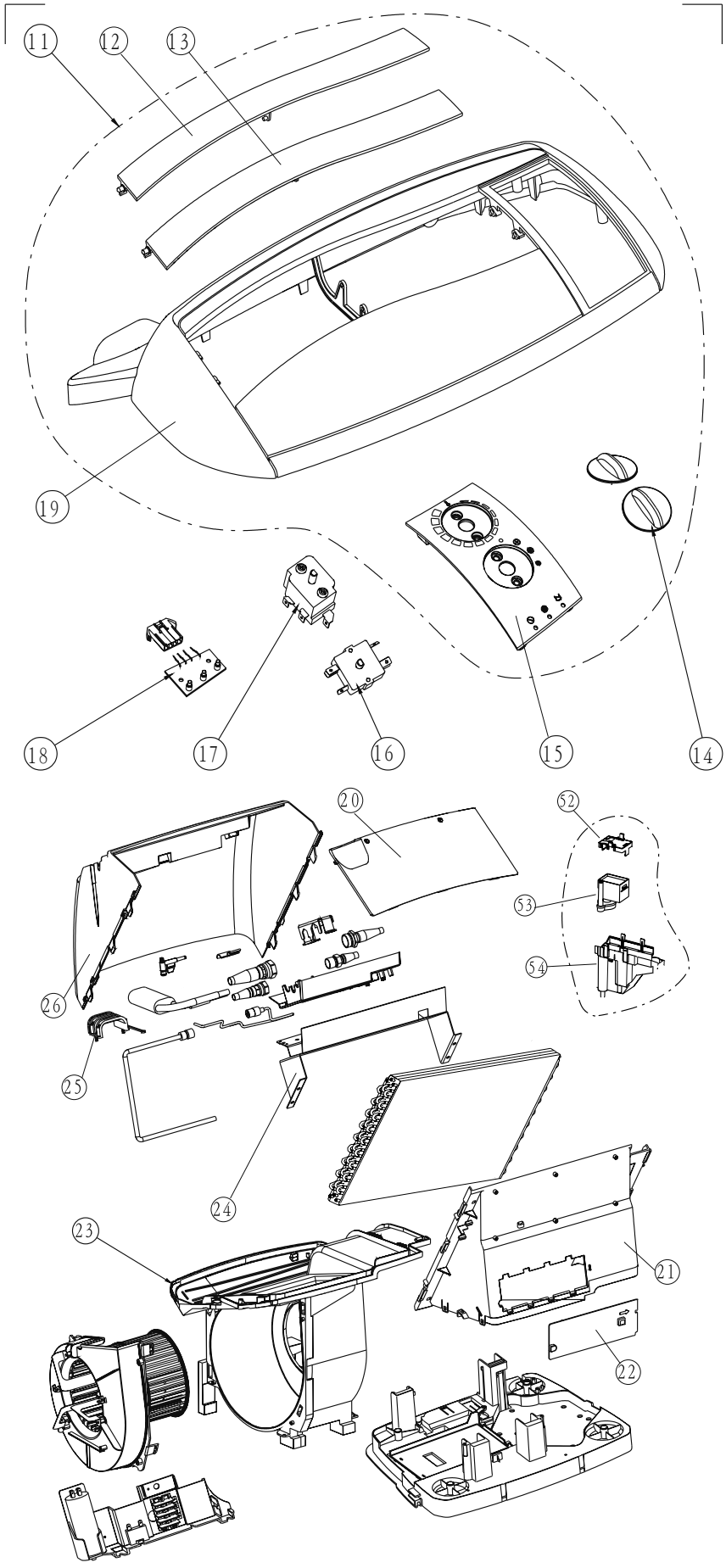
12.26 SP11E ST

No.	Part No.	Description	Qty
1	410999	Rear Guard 16 EL10	1
2	410915	Condenser Top Cover Painting EL10 SP16	1
3	410914	Flex.Hose Support Cover Painting EL10	1
4	452973800	Condenser / SP11 R410A	1
5	410040	Outdoor Fan Motor A4E360-AE19-16	1
6	410542	Condenser Housing EL10	1
7	410942	Drain Pan PSX 16 COLOR: EL10	1
8	410041	OD Terminal Block 16A	1
9	412537	OD Control Box Cover	1
10	4527306	OD Fan Motor Support Assy SP16	1
11	412163	Display Board PCB-E 901-201-02	1
12	412169	Blade 1 EL10	1
13	412170	Blade 2 EL10	1
14	453186800	Cover Assy./ SP10E R410A Airwell	1
15	412226	Cotrol Door P2000E Printed	1
16	412229	Contray Tray E Printed	1
17	4526469	RC5 ST EL10	1
18	412032	Head SP AIRWELL	1
19	436052	Motor step	1
21	412003	Coil Housing	1
22	412006	H. E Support Cover	1
23	412001	Fan House	1
24	412350	Connectors Bridge	1
25	412185	Flex. Hose Bracket BIG	1
26	412081	Eva. Cover SP	1
27	412348	Microswitch Guard Painting	1
28	412044	Microswitch D489Y5AA	1
29	4524621	GEN Controller DST-5 10V5 911-353-16	1
30	4523051	Indoor Terminal Block	1
31	412162	Electrical Items Support	1
32	455000101	Double patch Capacitor for fan motor 2.5uF (CBB61S)	1
33	455000108	Double patch Capacitor for fan motor 2uF	1
34	455000510	Compressor Capacitor With Screw 35uF (CBB65)	1
35	412002	Motor Housing	1
36	412029	Indoor Plastic Fan 171.5*164	1
37	412205	Rear Panel EL10	1
38	412513	Front Panel EL10	1
39	412052	Indoor Caster	4
40	412206	Air Filter EL10	1
42	453128100	Unit Housing / Mobile R410A	1
43	412082	Water Pool	1
44	412221	Water Tank Door EL10	1
45	412083	Water Pool Cover	1
46	412028	Fan Motor SP11 H/M/L:1280/1170/920RPM	1
47	453094100	ID.&OD. Connect Pipe Assy./SP ST R410A	1
48	453107800	3-Row Evaporator / SP11 R410A	1
49	452974300	Suction Pipe Assy. / SP11 R410A	1
50	452974400	Discharge Pipe Assy. / SP11 R410A	1
51	452932500	Compressor Assy. ASG108CV-B7AT (R410A Hitachi)	1
52	412012	Pump Support P2000 COLOR: EL32	1
53	412047	Indoor Pump	1
54	412011	Water Pump Cater P2000 MB COLOR: NATURAL	1

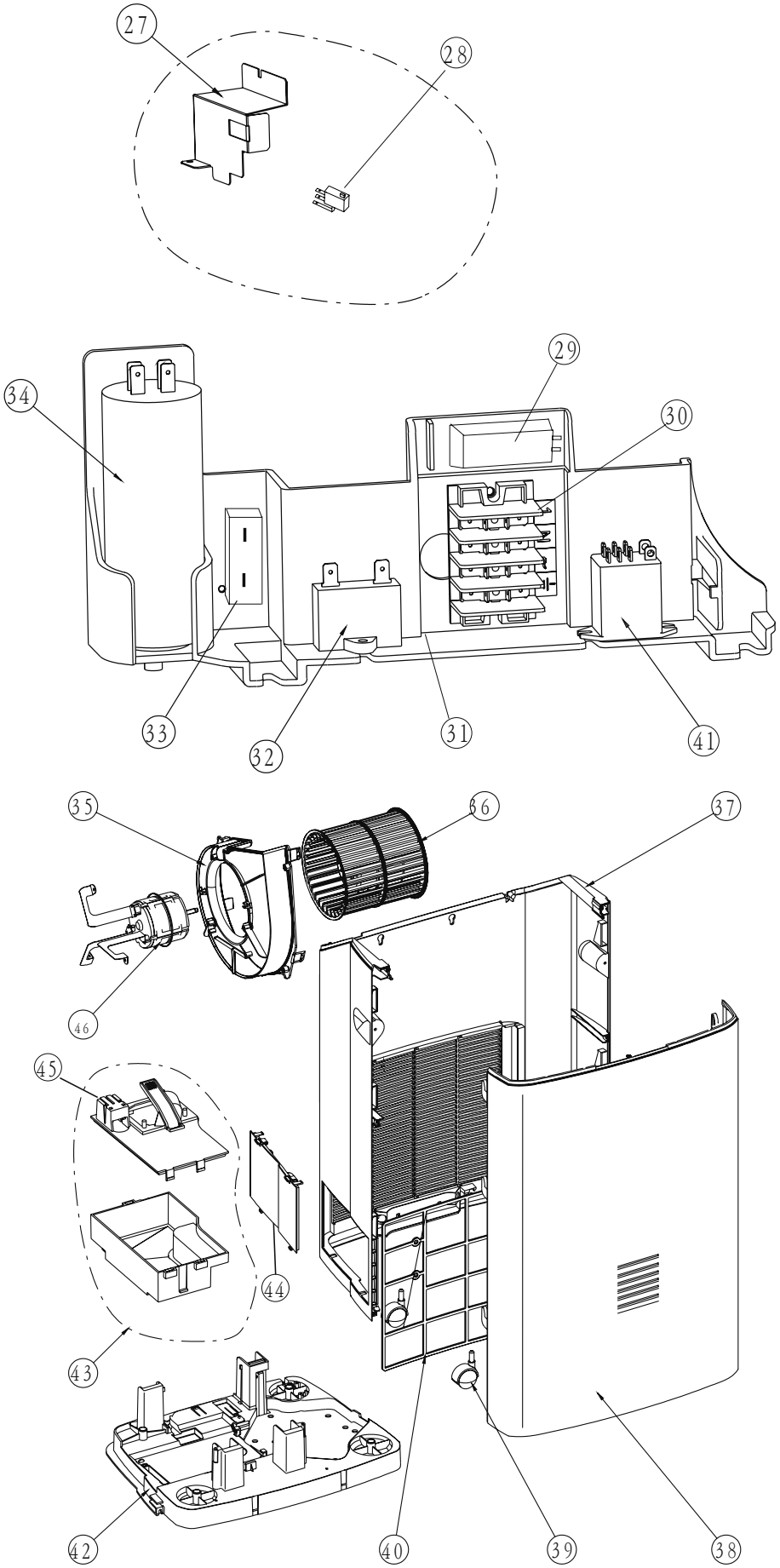
12.28 SP11M ST QC



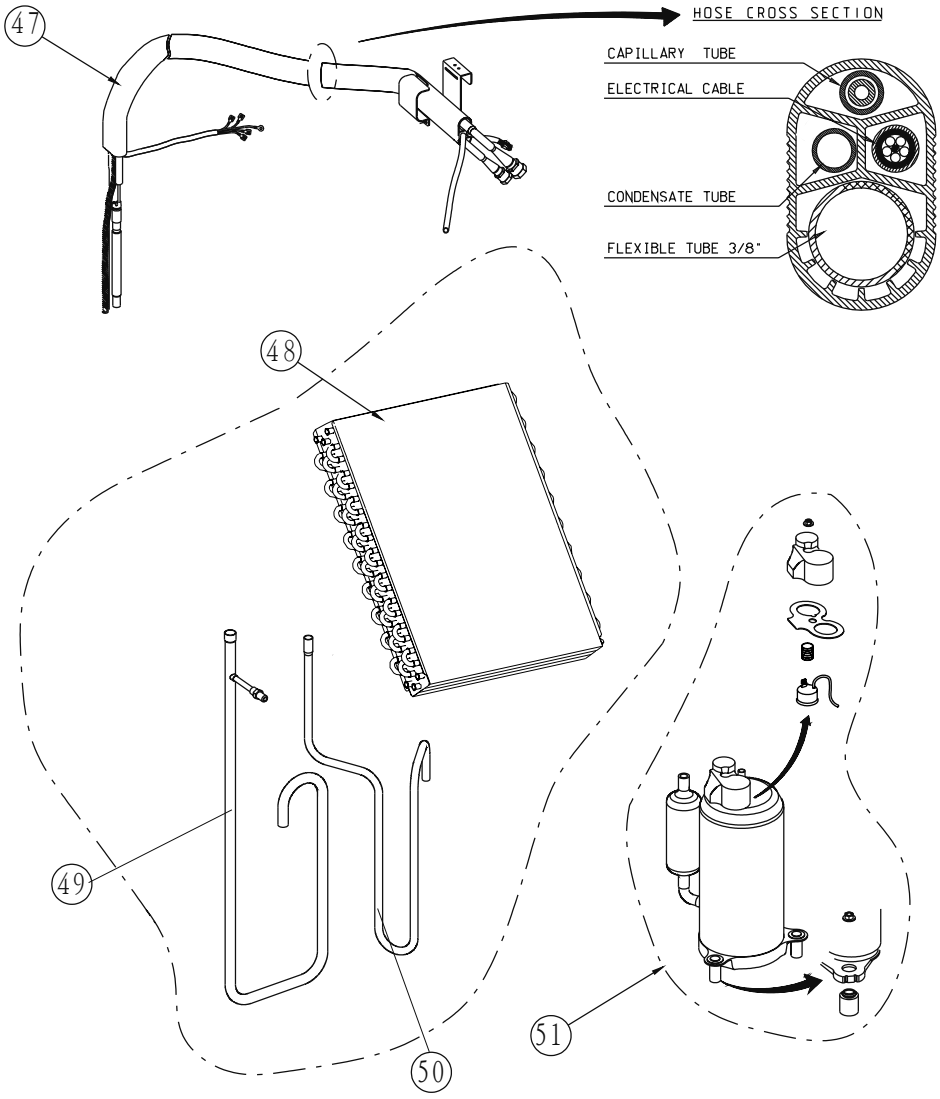
12.28 SP11M ST QC



12.30 SP11M ST QC



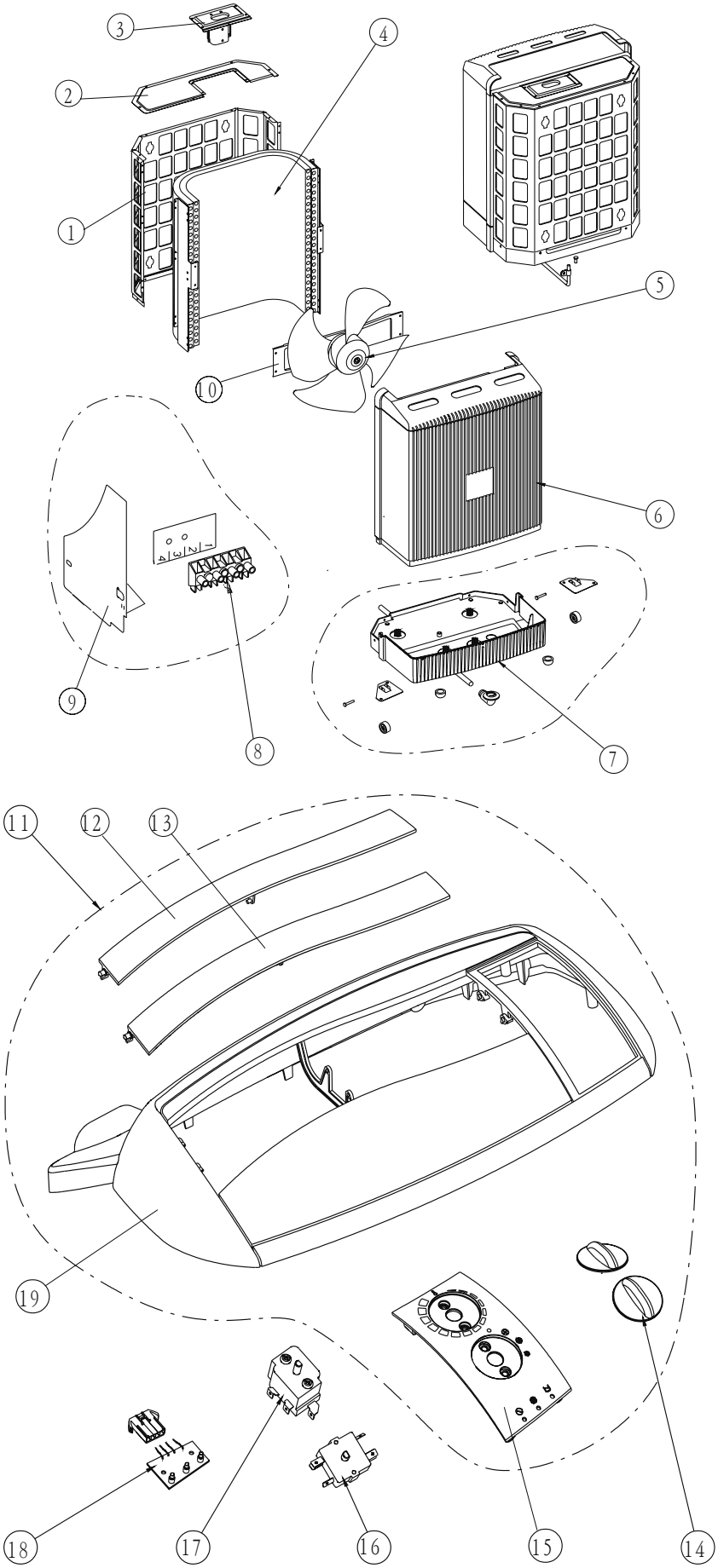
12.31 SP11M ST QC



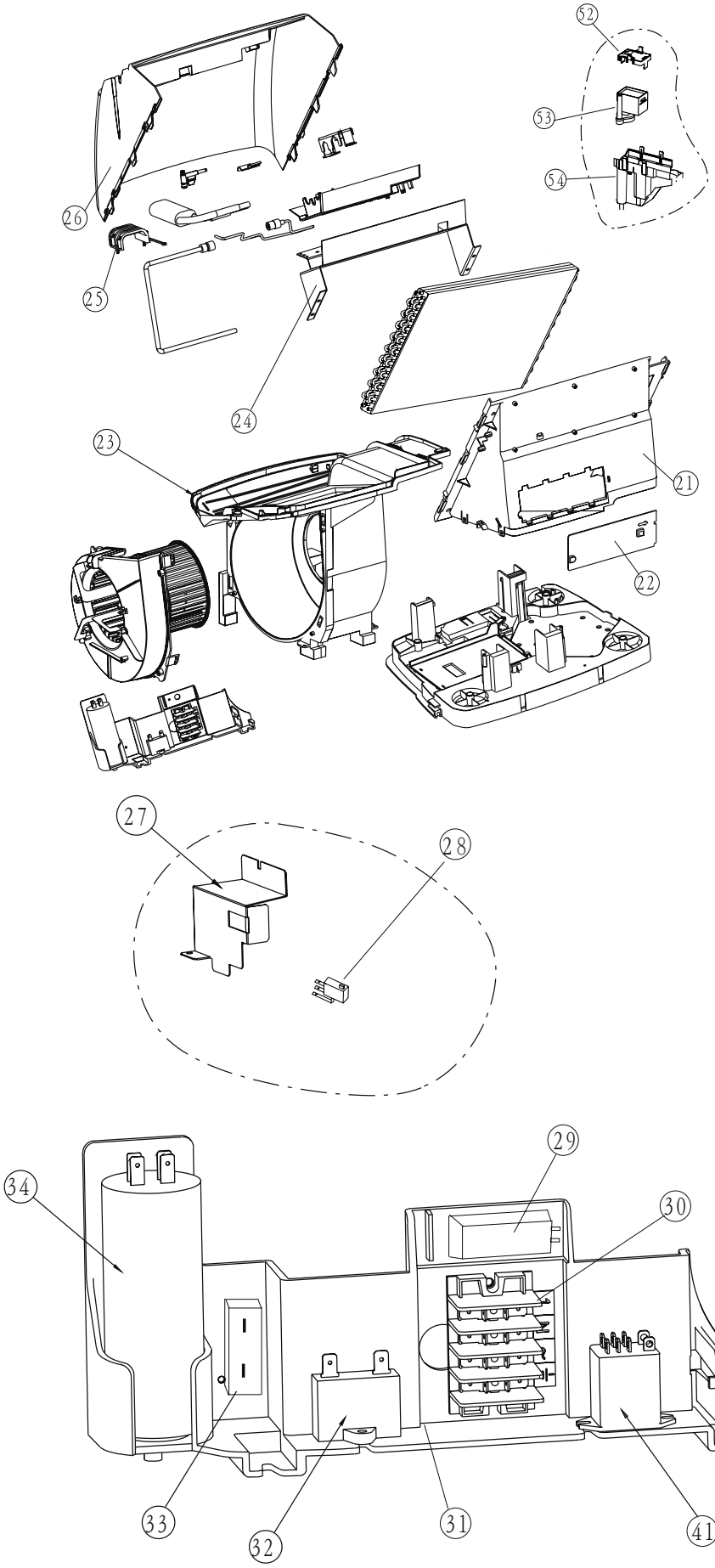
12.32 SP11M ST QC

No.	Part No.	Description	Qty
1	410999	Rear Guard 16 EL10	1
2	410915	Condenser Top Cover Painting	1
3	410914	Flex.Hose Support Cover	1
4	452973800	Condenser / SP11 R410A	1
5	410040	Outdoor Fan Motor A4E360-AE19-16	1
6	410542	Condenser Housing EL10	1
7	410942	Drain Pan PSX 16 COLOR: EL10	1
8	410041	OD Terminal Block 16A	1
9	412537	OD Control Box Cover	1
10	4527306	OD Fan Motor Support	1
11	453186700	Cover Assy./ SP10M ST QC R410A	1
12	412169	1 Blade 1 EL10	1
13	412170	2 Blade 2 EL10	1
14	412177	Switch Knob EL10	1
15	412230	Control Tray Mobile M	1
16	412224	Select Switch 16A	1
17	412269	Thermostat	1
18	412165	Display Board PCB-M 901-201-04	1
19	412033	Head SP QC AIRWELL	1
20	412210	QC Service Cover EL10	1
21	412003	Coil Housing	1
22	412006	H. E Support Cover	1
23	412001	Fan House	1
24	412350	Connectors Bridge	1
25	412185	Flex. Hose Bracket BIG	1
26	412081	Eva. Cover SP	1
27	412348	Microswitch Guard Painting	1
28	412044	Microswitch D489Y5AA	1
29	411232	Defrost Thermostat 20A	1
30	4523051	Indoor Terminal Block	1
31	412162	Electrical Items Support	1
32	455000101	Double patch Capacitor for fan	1
33	455000108	Double patch Capacitor for fan	1
34	455000510	Compressor Capacitor With Screw	1
35	412002	Motor Housing	1
36	412029	Indoor Plastic Fan 171.5*164	1
37	412205	Rear Panel EL10	1
38	412513	Front Panel EL10	1
39	412052	Indoor Caster	4
40	412206	Air Filter EL10	1
41	230356	Relay JQX-116F-2 30A220V No6531230	1
42	453128100	Unit Housing / Mobile R410A	1
43	412082	Water Pool	1
44	412221	Water Tank Door EL10	1
45	412083	Water Pool Cover	1
46	412028	Fan Motor SP11 H/M/L:1280/1170/920RPM	1
47	453094200	ID.&UD. Connect Pipe	1
48	453107800	3-Row Evaporator / SP11 R410A	1
49	452974300	Suction Pipe Assy. / SP11 R410A	1
50	452974400	Discharge Pipe Assy. / SP11 R410A	1
51	452932500	Compressor Assy. ASG108CV-B7AT	1
52	412012	Pump Support P2000 COLOR: EL32	1
53	412047	Indoor Pump	1
54	412011	Water Pump Cater P2000 MB COLOR: NATURAL	1

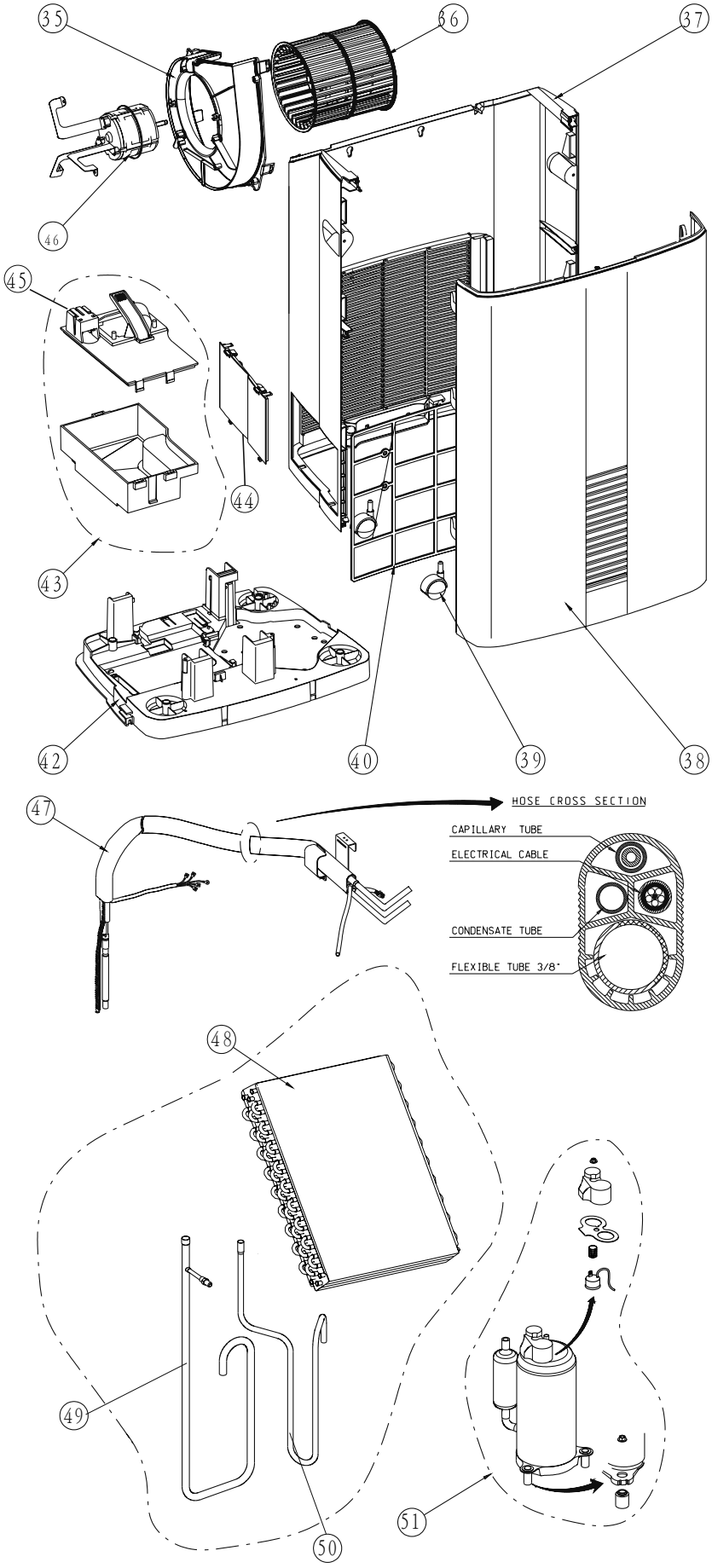
12.33 SP11M ST



12.34 SP11M ST



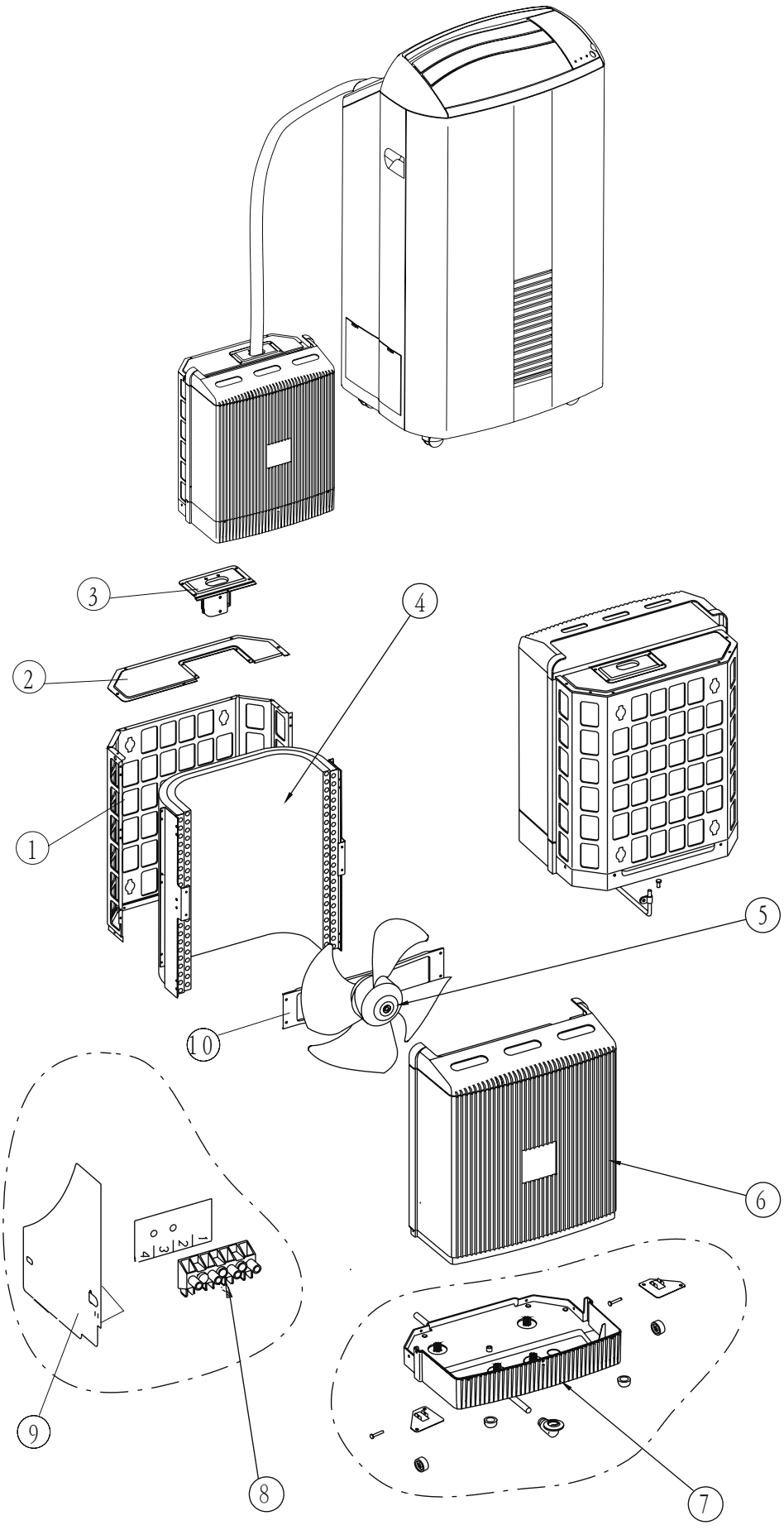
12.35 SP11M ST



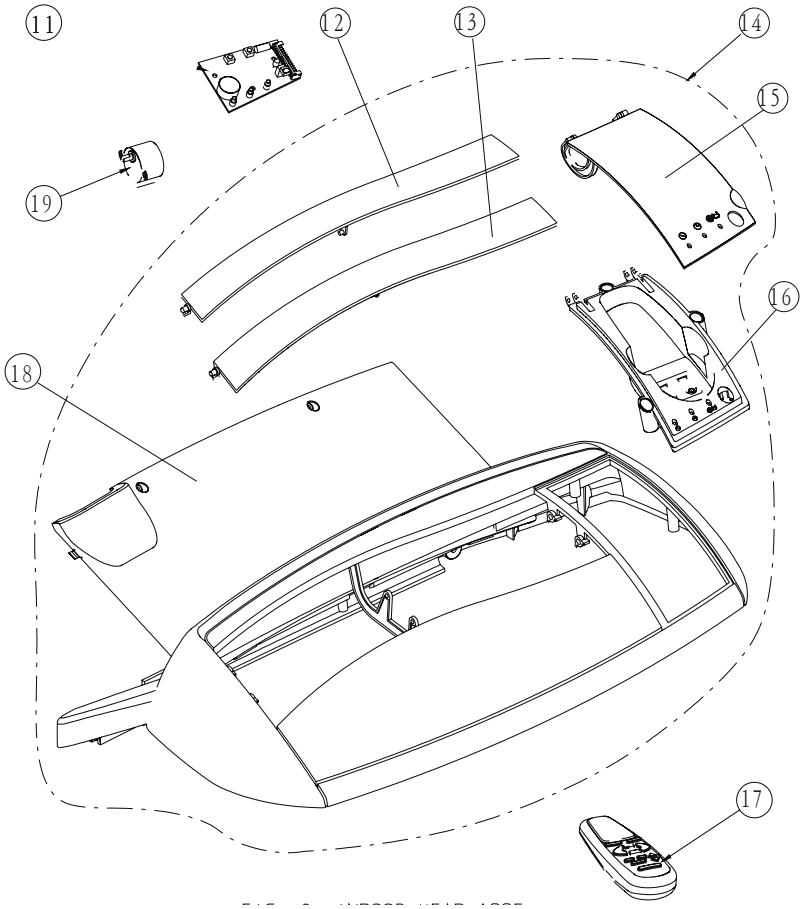
12.36 SP11M ST

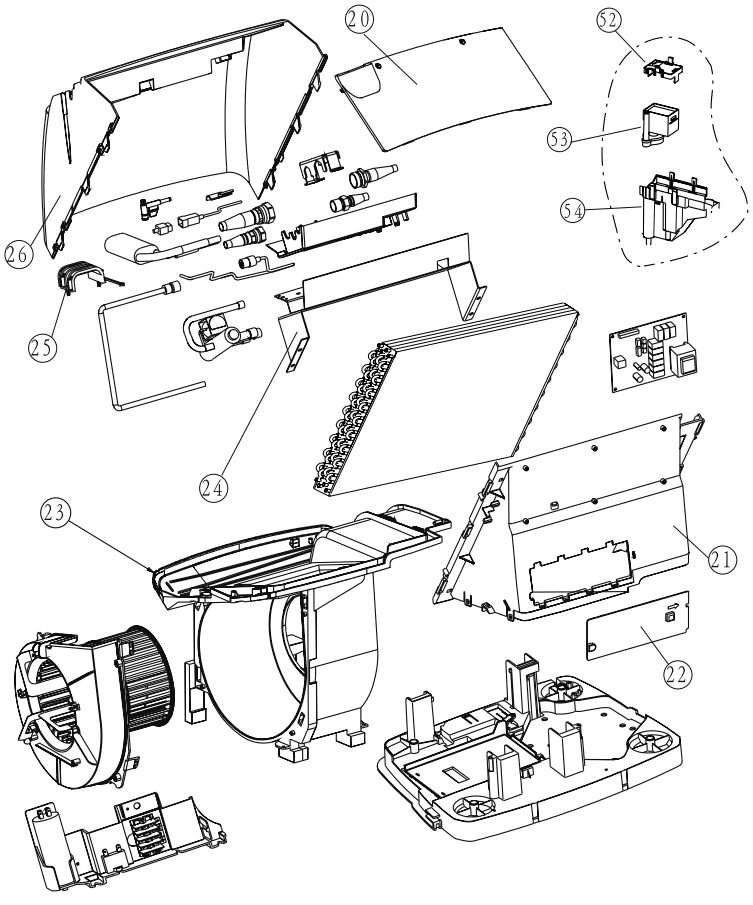
No.	Part No.	Description	Qty
1	410999	Rear Guard 16 EL10	1
2	410915	Condenser Top Cover Painting EL10 SP16	1
3	410914	Flex.Hose Support Cover Painting EL10	1
4	452973800	Condenser / SP11 R410A	1
5	410040	Outdoor Fan Motor A4E360-AE19-16	1
6	410542	Condenser Housing EL10	1
7	410942	Drain Pan PSX 16 COLOR: EL10	1
8	410041	OD Terminal Block 16A	1
9	412537	OD Control Box Cover	1
10	4527306	OD Fan Motor Support Assy SP16	1
11	453123600	Cover Assy./ ACE Design SP10M R410A Airwell	1
12	412169	Blade 1 EL10	1
13	412170	Blade 2 EL10	1
14	412177	Switch Knob EL10	1
15	412230	Control Tray Mobile M	1
16	412224	Select Switch 16A	1
17	412269	Thermostat	1
18	412165	Display Board PCB-M 901-201-04	1
19	412032	Head SP AIRWELL	1
21	412003	Coil Housing	1
22	412006	H. E Support Cover	1
23	412001	Fan House	1
24	412350	Connectors Bridge	1
25	412185	Flex. Hose Bracket BIG	1
26	412081	Eva. Cover SP	1
27	412348	Microswitch Guard Painting	1
28	412044	Microswitch D489Y5AA	1
29	411232	Defrost Thermostat 20A	1
30	4523051	Indoor Terminal Block	1
31	412162	Electrical Items Support	1
32	455000101	Double patch Capacitor for fan motor 2.5uF (CBB61S)	1
33	455000108	Double patch Capacitor for fan motor 2uF	1
34	455000510	Compressor Capacitor With Screw 35uF (CBB65)	1
35	412002	Motor Housing	1
36	412029	Indoor Plastic Fan 171.5*164	1
37	412205	Rear Panel EL10	1
38	412513	Front Panel EL10	1
39	412052	Indoor Caster	4
40	412206	Air Filter EL10	1
41	230356	Relay JQX-116F-2 30A220V No6531230	1
42	453128100	Unit Housing / Mobile R410A	1
43	412082	Water Pool	1
44	412221	Water Tank Door EL10	1
45	412083	Water Pool Cover	1
46	412028	Fan Motor SP11 H/M/L:1280/1170/920RPM	1
47	453094100	ID.&OD. Connect Pipe Assy./SP ST R410A	1
48	453107800	3-Row Evaporator / SP11 R410A	1
49	452974300	Suction Pipe Assy. / SP11 R410A	1
50	452974400	Discharge Pipe Assy. / SP11 R410A	1
51	452932500	Compressor Assy. ASG108CV-B7AT (R410A Hitachi)	1
52	412012	Pump Support P2000 COLOR: EL32	1
53	412047	Indoor Pump	1
54	412011	Water Pump Cater P2000 MB COLOR: NATURAL	1

12.37 SP16E RC QC

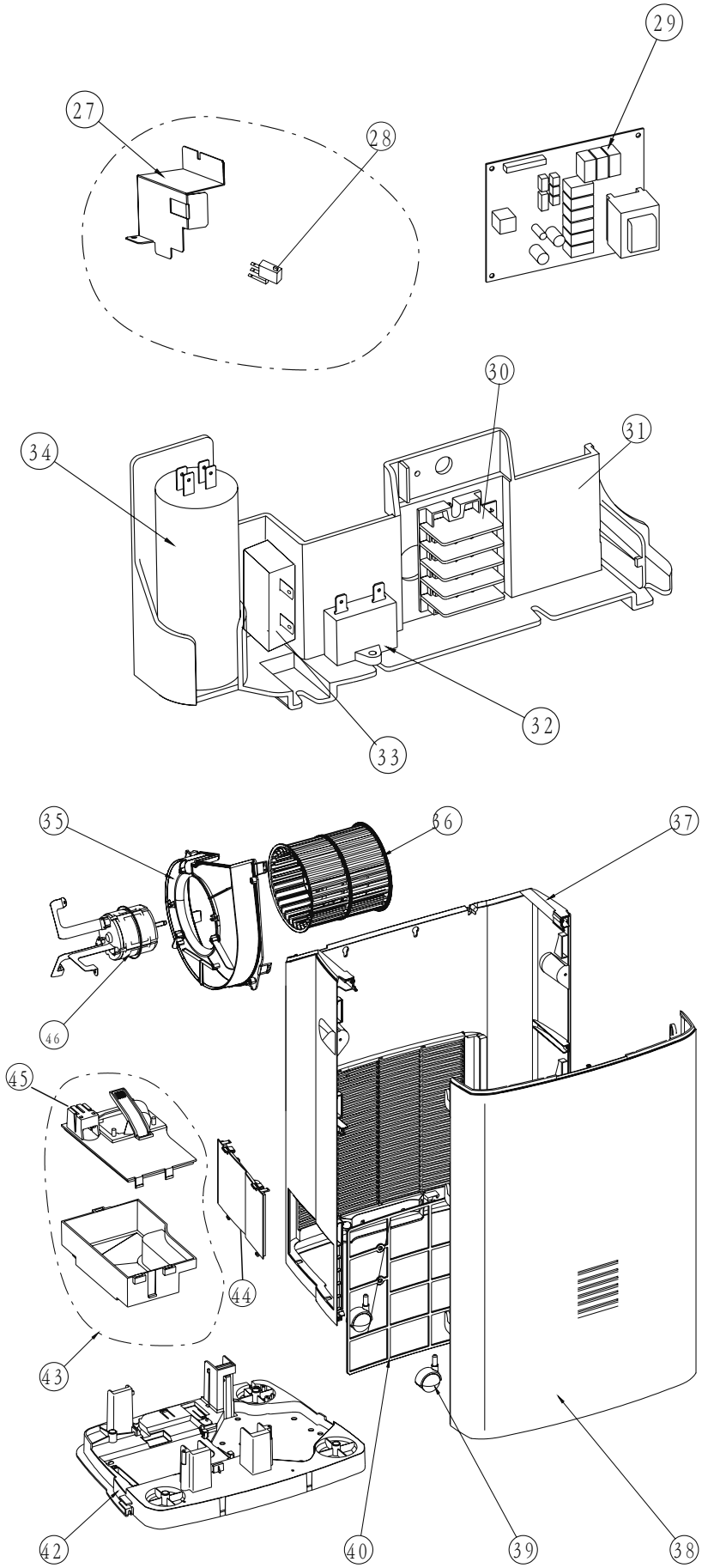


12.38 SP16E RC QC

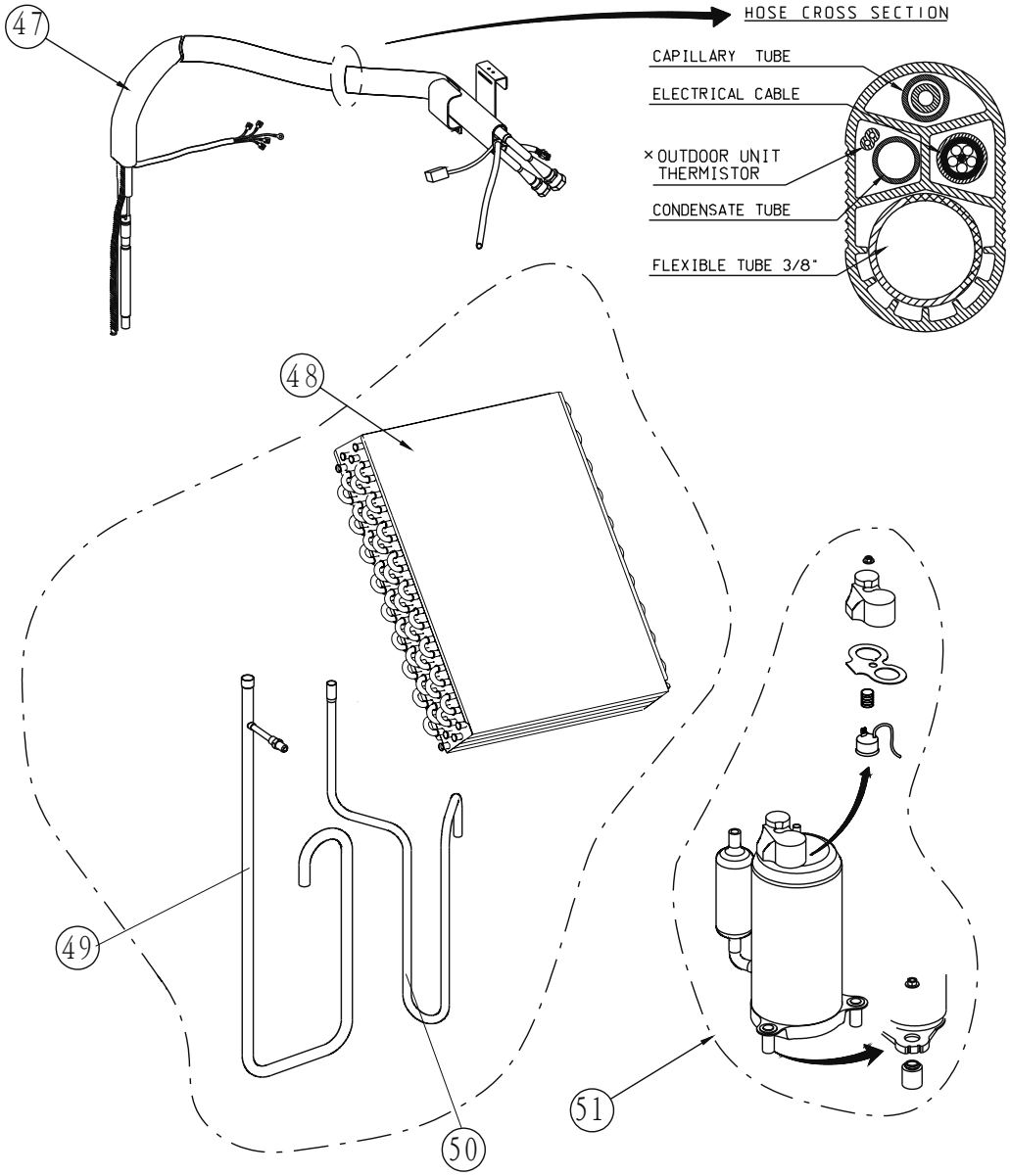




12.39 SP16E RC QC



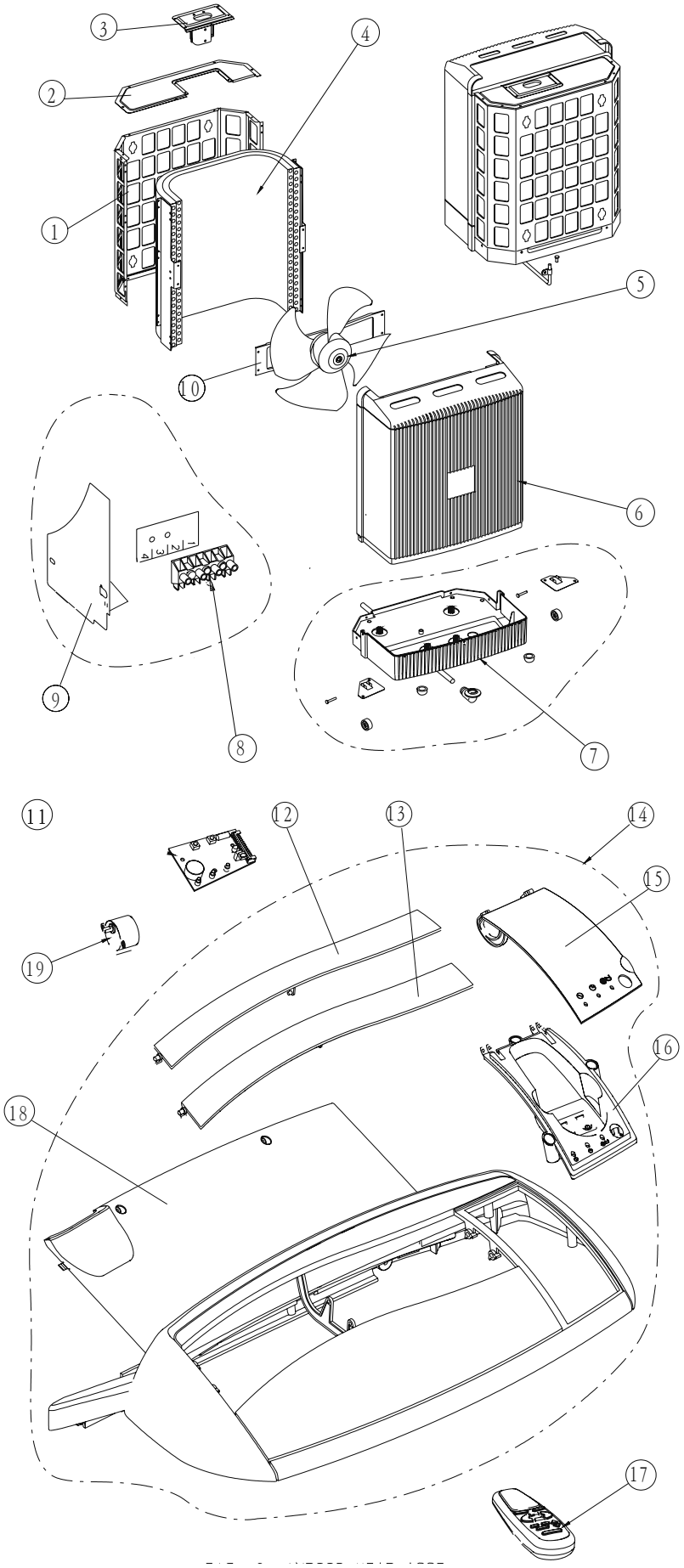
12.40 SP16E RC QC



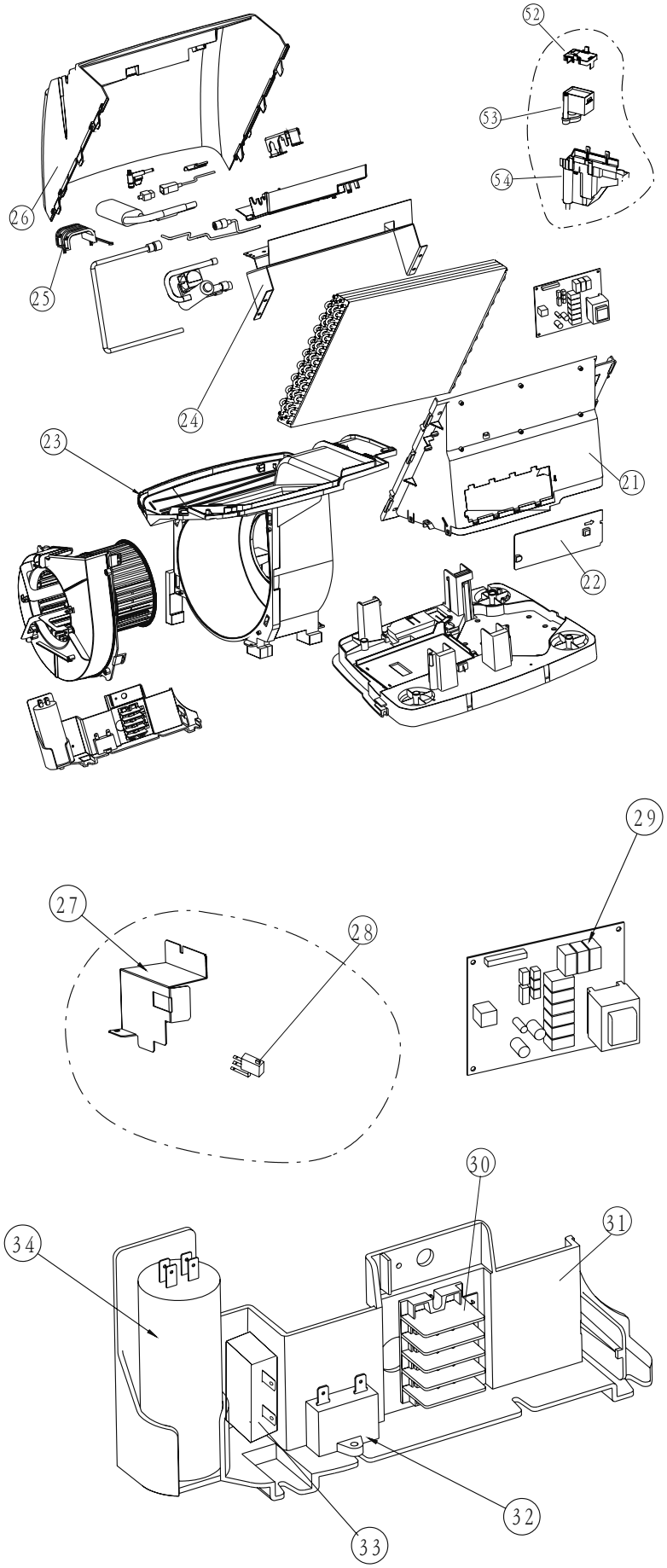
12.41 SP16E RC QC

No.	Part No.	Description	Qty
1	410999	Rear Guard 16 EL10	1
2	410915	Condenser Top Cover Painting EL10 SP16	1
3	410914	Flex.Hose Support Cover Painting EL10	1
4	453107900	3-Row Condenser / SP16 R410A	1
5	410040	Outdoor Fan Motor A4E360-AE19-16	1
6	410542	Condenser Housing EL10	1
7	410942	Drain Pan PSX 16 COLOR: EL10	1
8	410041	OD Terminal Block 16A	1
9	412537	OD Control Box Cover	1
10	4527306	OD Fan Motor Support Assy SP16	1
11	412163	Display Board PCB-E 901-201-02	1
12	412169	Blade 1 EL10	1
13	412170	Blade 2 EL10	1
14	4523218	HEAD ASSY mobile SP-E- AIRWELL	1
15	412226	Cotrol Door P2000E Printed	1
16	412229	Contray Tray E Printed	1
17	412548	REMOTE CONTROLLER RC5 RC EL 10 975-603-00	1
18	412033	Head SP QC AIRWELL	1
19	436052	Motor step	1
20	412210	QC Service Cover EL10	1
21	412003	Coil Housing	1
22	412006	H. E Support Cover	1
23	412001	Fan House	1
24	412350	Connectors Bridge	1
25	412185	Flex. Hose Bracket BIG	1
26	412081	Eva. Cover SP	1
27	412348	Microswitch Guard Painting	1
28	412044	Microswitch D489Y5AA	1
29	4524621	GEN Controller DST-5 10V5 911-353-16	1
30	4523051	Indoor Terminal Block	1
31	412162	Electrical Items Support	1
32	455000101	Double patch Capacitor for fan motor 2.5uF (CBB61S)	1
33	455000108	Double patch Capacitor for fan motor 2uF	1
34	455000510	Compressor Capacitor With Screw 35uF (CBB65)	1
35	412002	Motor Housing	1
36	412029	Indoor Plastic Fan 171.5*164	1
37	412205	Rear Panel EL10	1
38	412513	Front Panel EL10	1
39	412052	Indoor Caster	4
40	412206	Air Filter EL10	1
42	453128100	Unit Housing / Mobile R410A	1
43	412082	Water Pool	1
44	412221	Water Tank Door EL10	1
45	412083	Water Pool Cover	1
46	412042	Fan Motor H/M/L:1390/1280/1170RPM	1
47	412252	FLEXIBLE TUBE ASSY SP16RC QC	1
48	452973900	(4-rows)Evaporator / SP16 R410A	1
49	453031900	Suction Pipe Assy. / SP16 R410A	1
50	453032000	Discharge Pipe Assy. / SP16 R410A	1
51	452944100	Compressor Assy. C-RV168H1A (R410A SANYO)	1
52	412012	Pump Support P2000 COLOR: EL32	1
53	412047	Indoor Pump	1
54	412011	Water Pump Cater P2000 MB COLOR: NATURAL	1

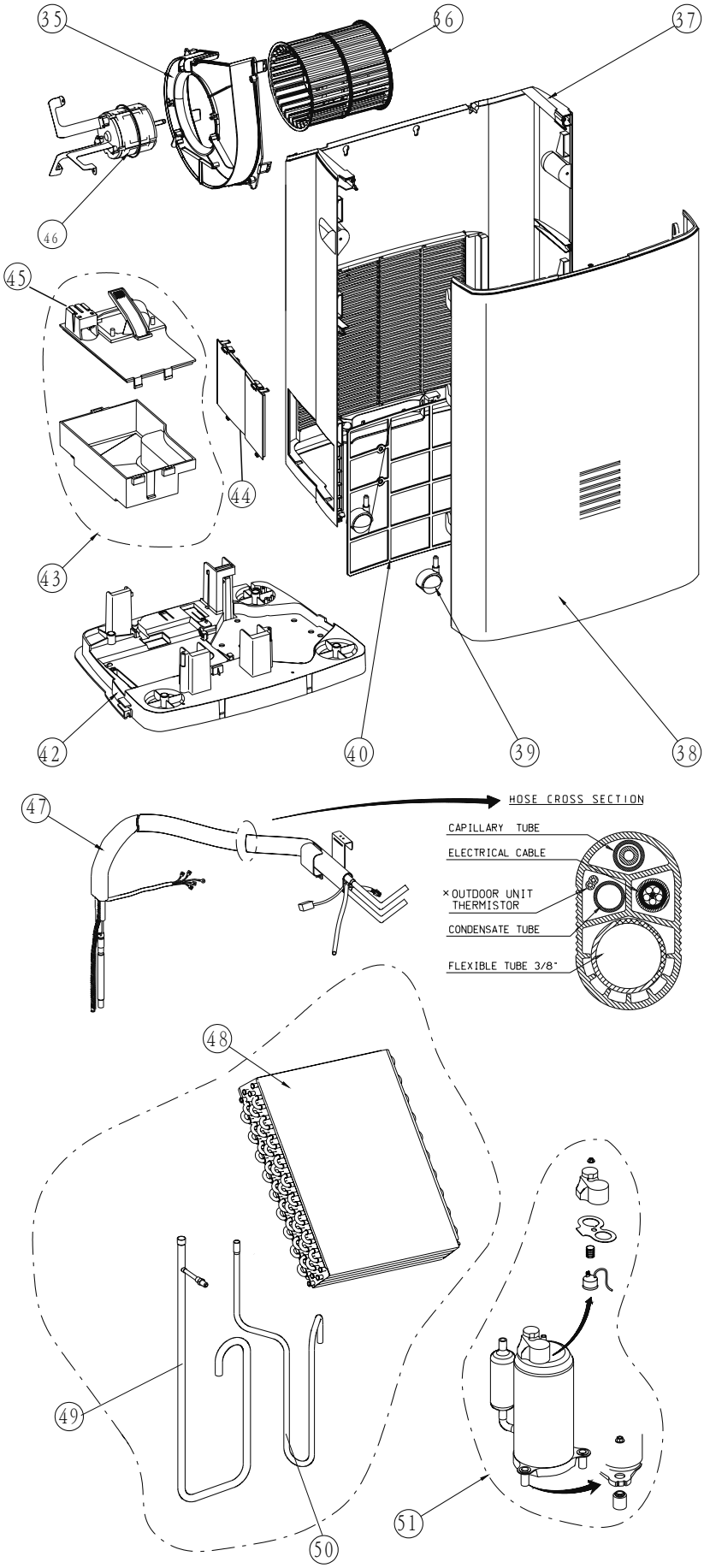
12.42 SP16E RC



12.43 SP16E RC



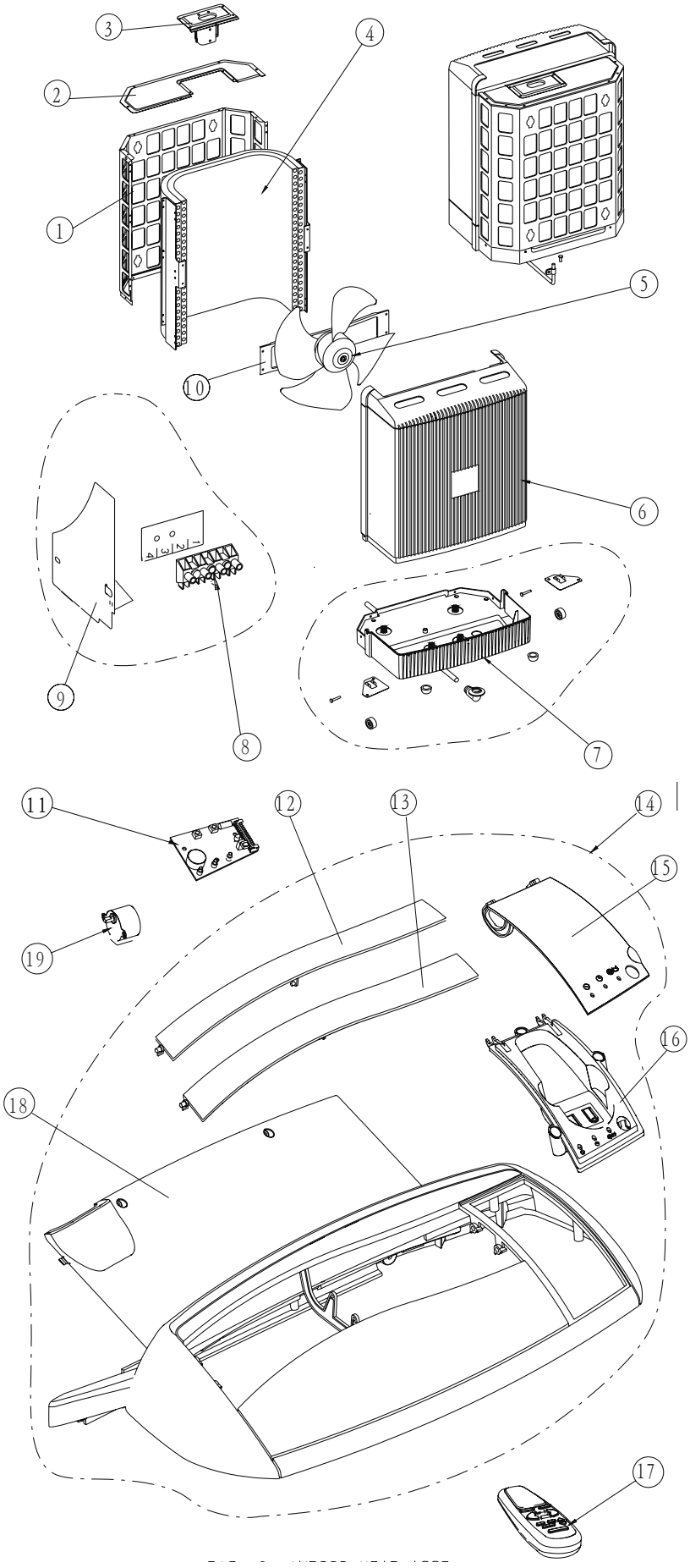
12.37 SP16E RC



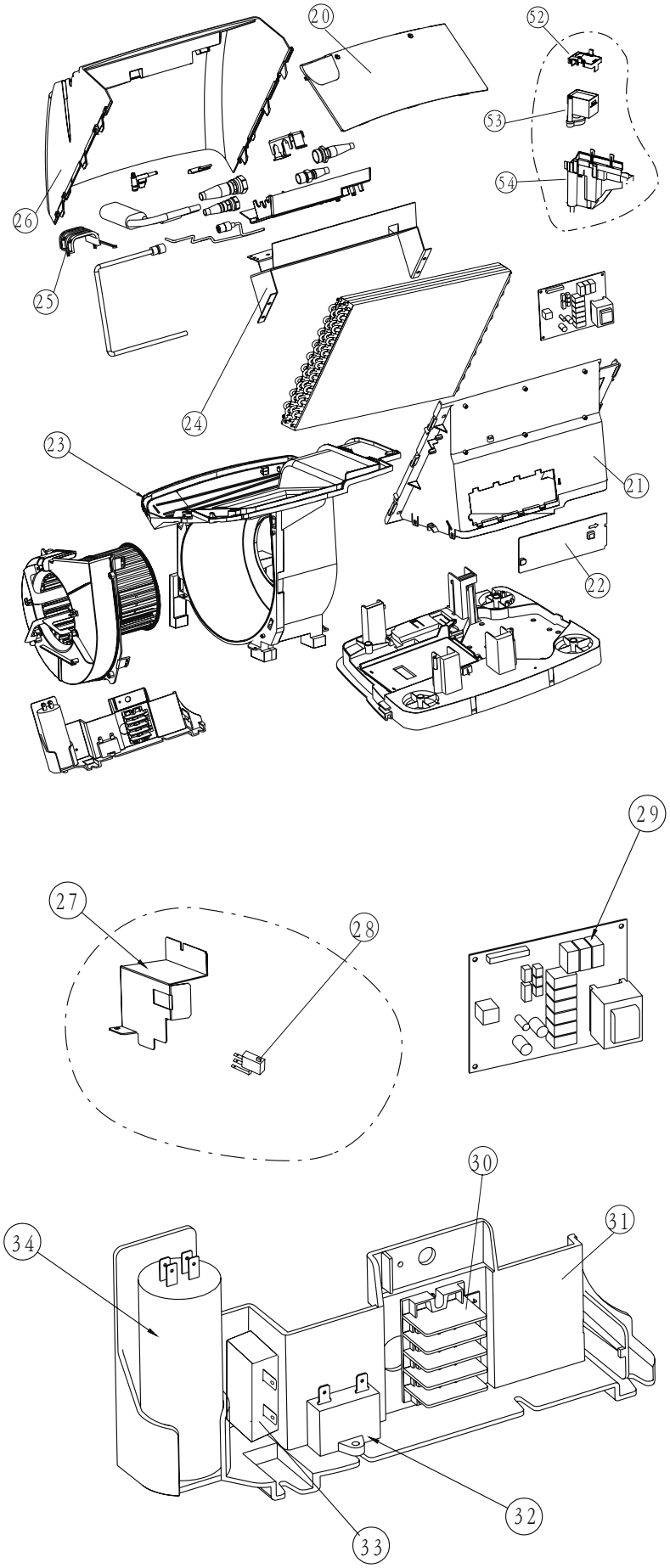
12.37 SP16E RC

No.	Part No.	Description	Qty
1	410999	Rear Guard 16 EL10	1
2	410915	Condenser Top Cover Painting EL10 SP16	1
3	410914	Flex.Hose Support Cover Painting EL10	1
4	453107900	3-Row Condenser / SP16 R410A	1
5	410040	Outdoor Fan Motor A4E360-AE19-16	1
6	410542	Condenser Housing EL10	1
7	410942	Drain Pan PSX 16 COLOR: EL10	1
8	410041	OD Terminal Block 16A	1
9	412537	OD Control Box Cover	1
10	4527306	OD Fan Motor Support Assy SP16	1
11	412163	Display Board PCB-E 901-201-02	1
12	412169	Blade 1 EL10	1
13	412170	Blade 2 EL10	1
14	4526259	Head Assy SP E- Airwell Aus	1
15	412226	Cotrol Door P2000E Printed	1
16	412229	Contray Tray E Printed	1
17	412548	REMOTE CONTROLLER RC5 RC EL 10 975-603-00	1
18	412032	Head SP AIRWELL	1
19	436052	Motor step	1
21	412003	Coil Housing	1
22	412006	H. E Support Cover	1
23	412001	Fan House	1
24	412350	Connectors Bridge	1
25	412185	Flex. Hose Bracket BIG	1
26	412081	Eva. Cover SP	1
27	412348	Microswitch Guard Painting	1
28	412044	Microswitch D489Y5AA	1
29	4524621	GEN Controller DST-5 10V5 911-353-16	1
30	4523051	Indoor Terminal Block	1
31	412162	Electrical Items Support	1
32	455000101	Double patch Capacitor for fan motor 2.5uF (CBB61S)	1
33	455000108	Double patch Capacitor for fan motor 2uF	1
34	455000510	Compressor Capacitor With Screw 35uF (CBB65)	1
35	412002	Motor Housing	1
36	412029	Indoor Plastic Fan 171.5*164	1
37	412205	Rear Panel EL10	1
38	412513	Front Panel EL10	1
39	412052	Indoor Caster	4
40	412206	Air Filter EL10	1
42	453128100	Unit Housing / Mobile R410A	1
43	412082	Water Pool	1
44	412221	Water Tank Door EL10	1
45	412083	Water Pool Cover	1
46	412042	Fan Motor H/M/L:1390/1280/1170RPM	1
47	412561	FLEXIBLE TUBE ASSY SP16RC	1
48	452973900	(4-rows)Evaporator / SP16 R410A	1
49	453031900	Suction Pipe Assy. / SP16 R410A	1
50	453032000	Discharge Pipe Assy. / SP16 R410A	1
51	452944100	Compressor Assy. C-RV168H1A (R410A SANYO)	1
52	412012	Pump Support P2000 COLOR: EL32	1
53	412047	Indoor Pump	1
54	412011	Water Pump Cater P2000 MB COLOR: NATURAL	1

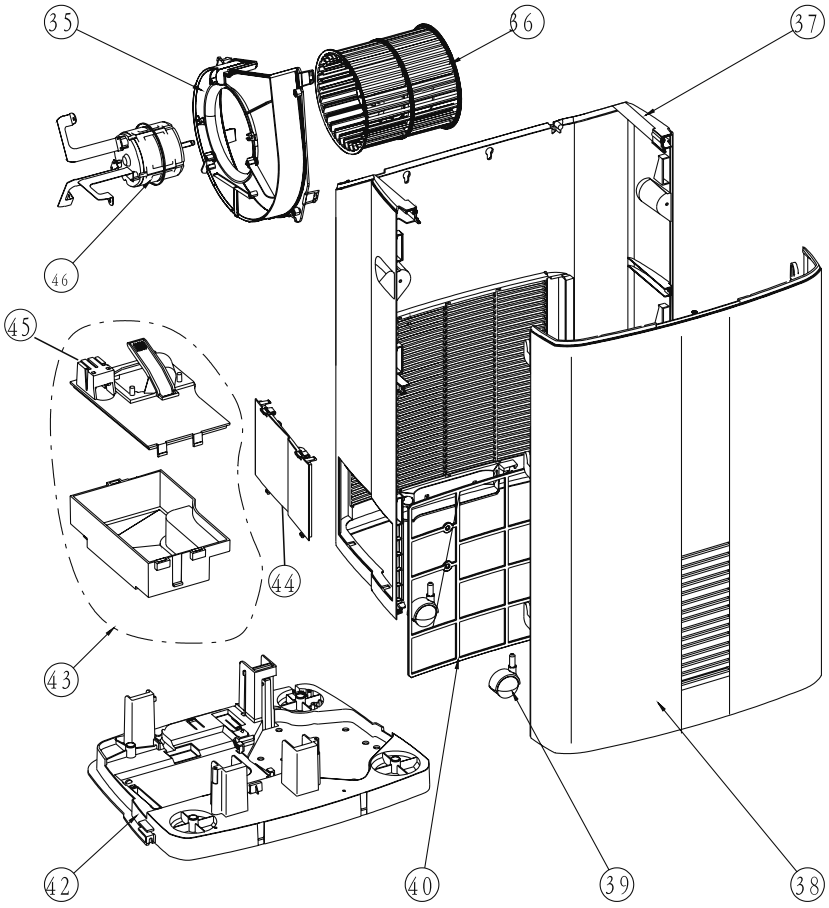
12.46 SP16E ST QC

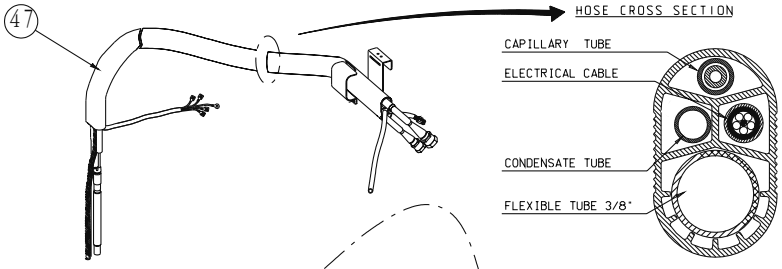


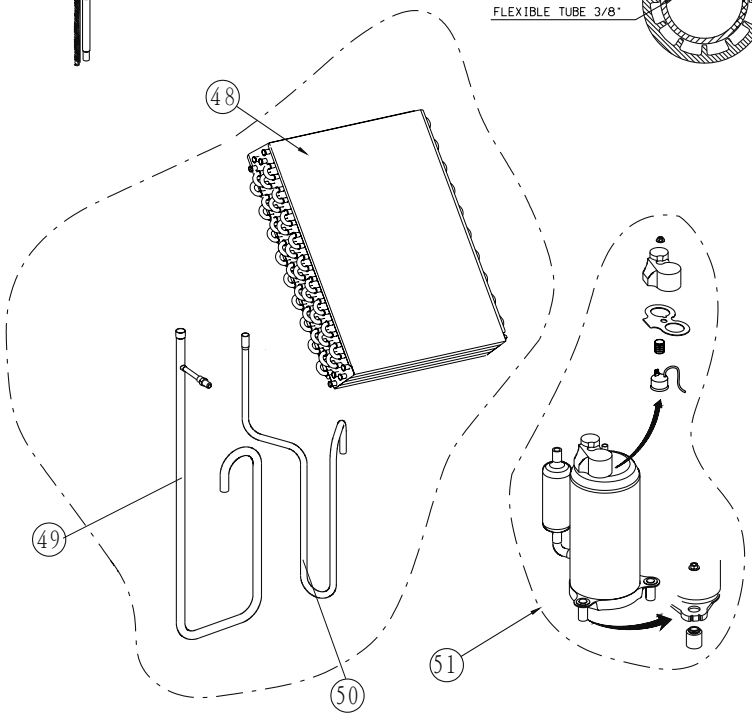
12.47 SP16E ST QC



12.48 SP16E ST QC



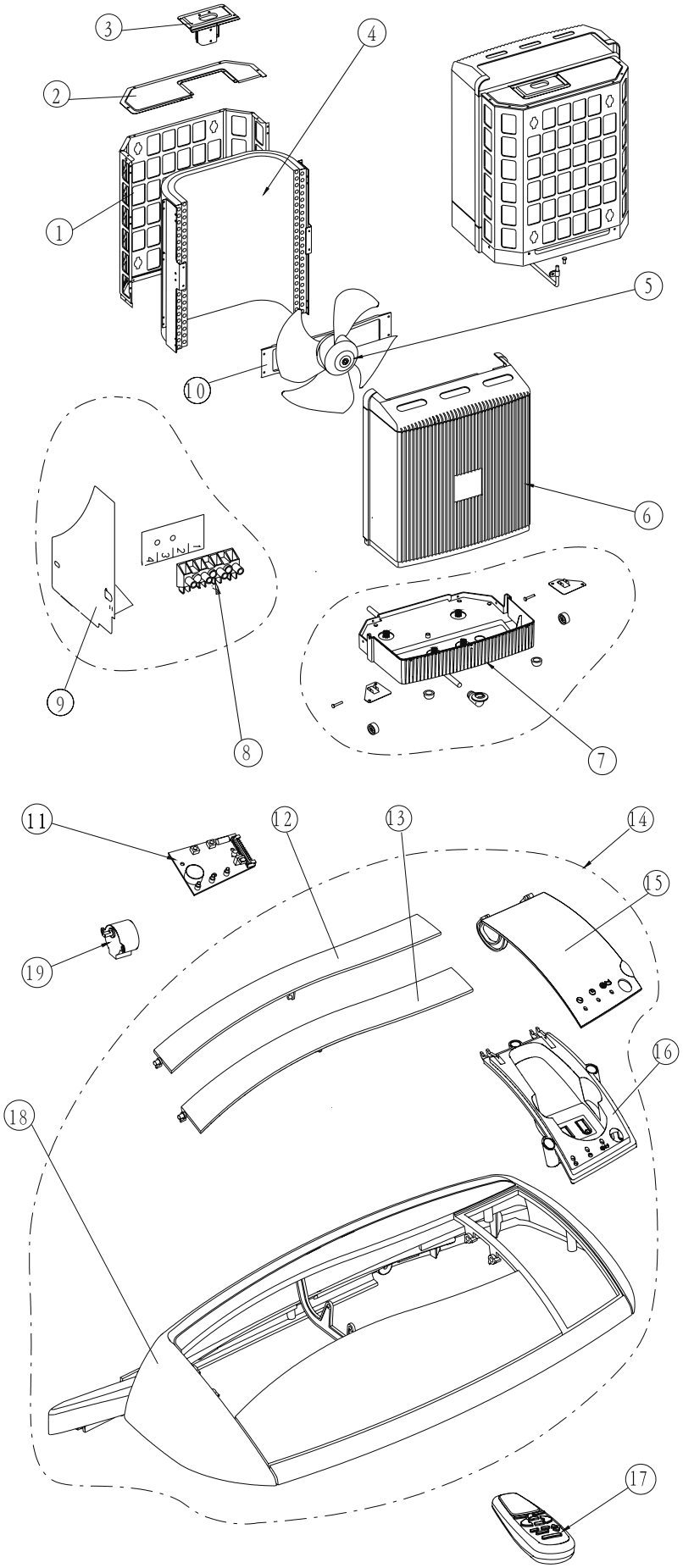




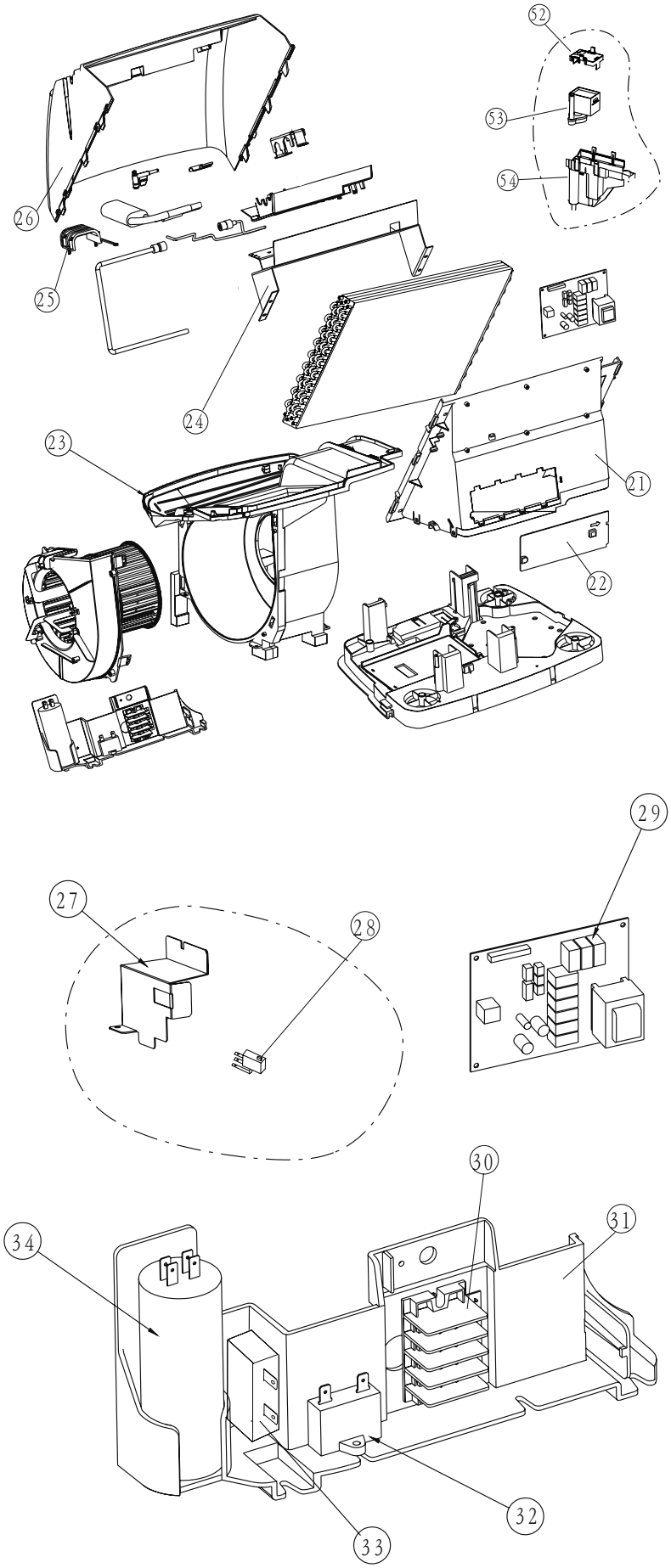
12.49 SP16E ST QC

No.	Part No.	Description	Qty
1	410999	Rear Guard 16 EL10	1
2	410915	Condenser Top Cover Painting EL10 SP16	1
3	410914	Flex.Hose Support Cover Painting EL10	1
4	453107900	3-Row Condenser / SP16 R410A	1
5	410040	Outdoor Fan Motor A4E360-AE19-16	1
6	410542	Condenser Housing EL10	1
7	410942	Drain Pan PSX 16 COLOR: EL10	1
8	410041	OD Terminal Block 16A	1
9	412537	OD Control Box Cover	1
10	4527306	OD Fan Motor Support Assy SP16	1
11	412163	Display Board PCB-E 901-201-02	1
12	412169	Blade 1 EL10	1
13	412170	Blade 2 EL10	1
14	4523218	HEAD ASSY mobile SP-E- AIRWELL	1
15	412226	Cotrol Door P2000E Printed	1
16	412229	Contray Tray E Printed	1
17	4526469	RC5 ST EL10	1
18	412033	Head SP QC AIRWELL	1
19	436052	Motor step	1
20	412210	QC Service Cover EL10	1
21	412003	Coil Housing	1
22	412006	H. E Support Cover	1
23	412001	Fan House	1
24	412350	Connectors Bridge	1
25	412185	Flex. Hose Bracket BIG	1
26	412081	Eva. Cover SP	1
27	412348	Microswitch Guard Painting	1
28	412044	Microswitch D489Y5AA	1
29	4524621	GEN Controller DST-5 10V5 911-353-16	1
30	4523051	Indoor Terminal Block	1
31	412162	Electrical Items Support	1
32	455000101	Double patch Capacitor for fan motor 2.5uF (CBB61S)	1
33	455000108	Double patch Capacitor for fan motor 2uF	1
34	455000510	Compressor Capacitor With Screw 35uF (CBB65)	1
35	412002	Motor Housing	1
36	412029	Indoor Plastic Fan 171.5*164	1
37	412205	Rear Panel EL10	1
38	412513	Front Panel EL10	1
39	412052	Indoor Caster	4
40	412206	Air Filter EL10	1
42	453128100	Unit Housing / Mobile R410A	1
43	412082	Water Pool	1
44	412221	Water Tank Door EL10	1
45	412083	Water Pool Cover	1
46	412042	Fan Motor H/M/L:1390/1280/1170RPM	1
47	453094200	ID.&UD. Connect Pipe Assy./ SP ST QC R410A	1
48	452973900	(4-rows)Evaporator / SP16 R410A	1
49	453031900	Suction Pipe Assy. / SP16 R410A	1
50	453032000	Discharge Pipe Assy. / SP16 R410A	1
51	452944100	Compressor Assy. C-RV168H1A (R410A SANYO)	1
52	412012	Pump Support P2000 COLOR: EL32	1
53	412047	Indoor Pump	1
54	412011	Water Pump Cater P2000 MB COLOR: NATURAL	1

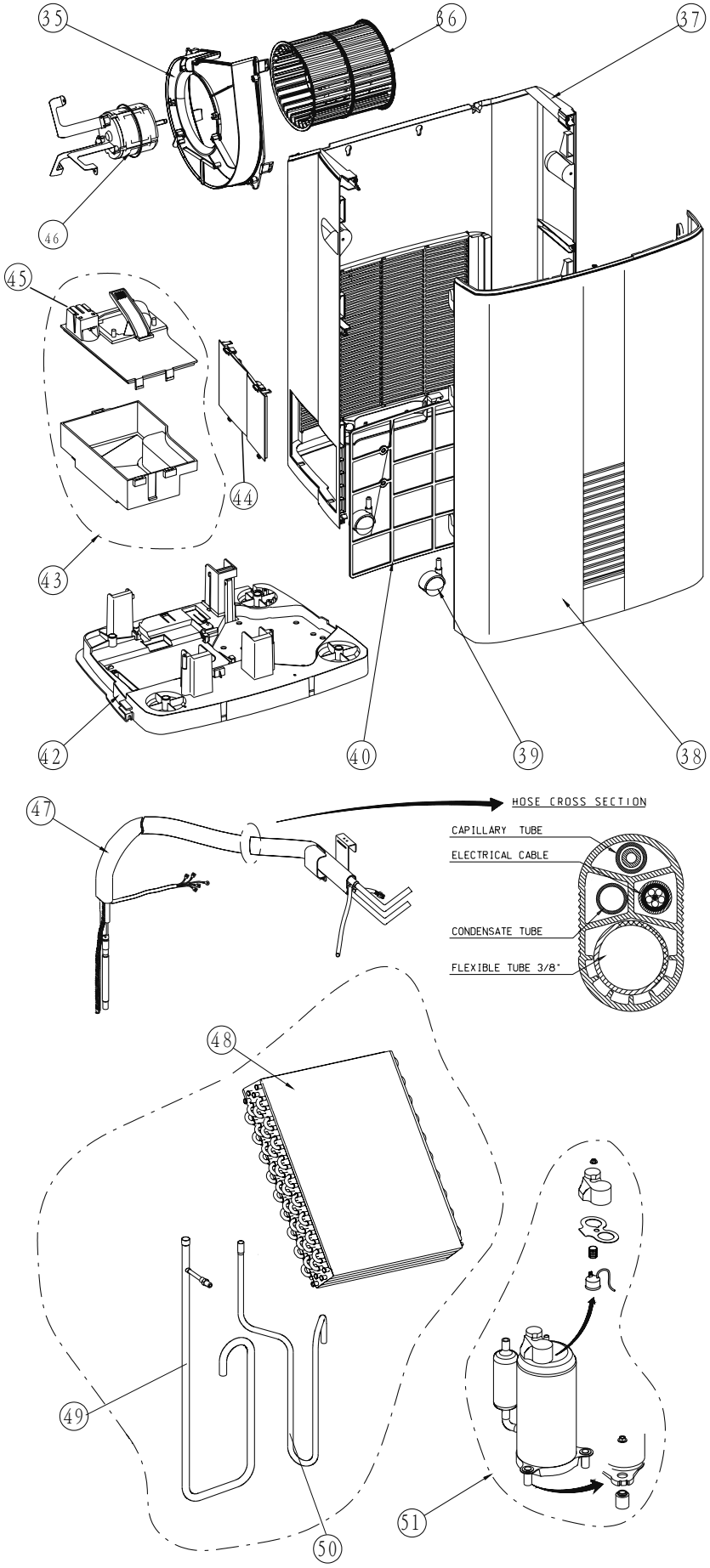
12.50 SP16E ST



12.51 SP16E ST



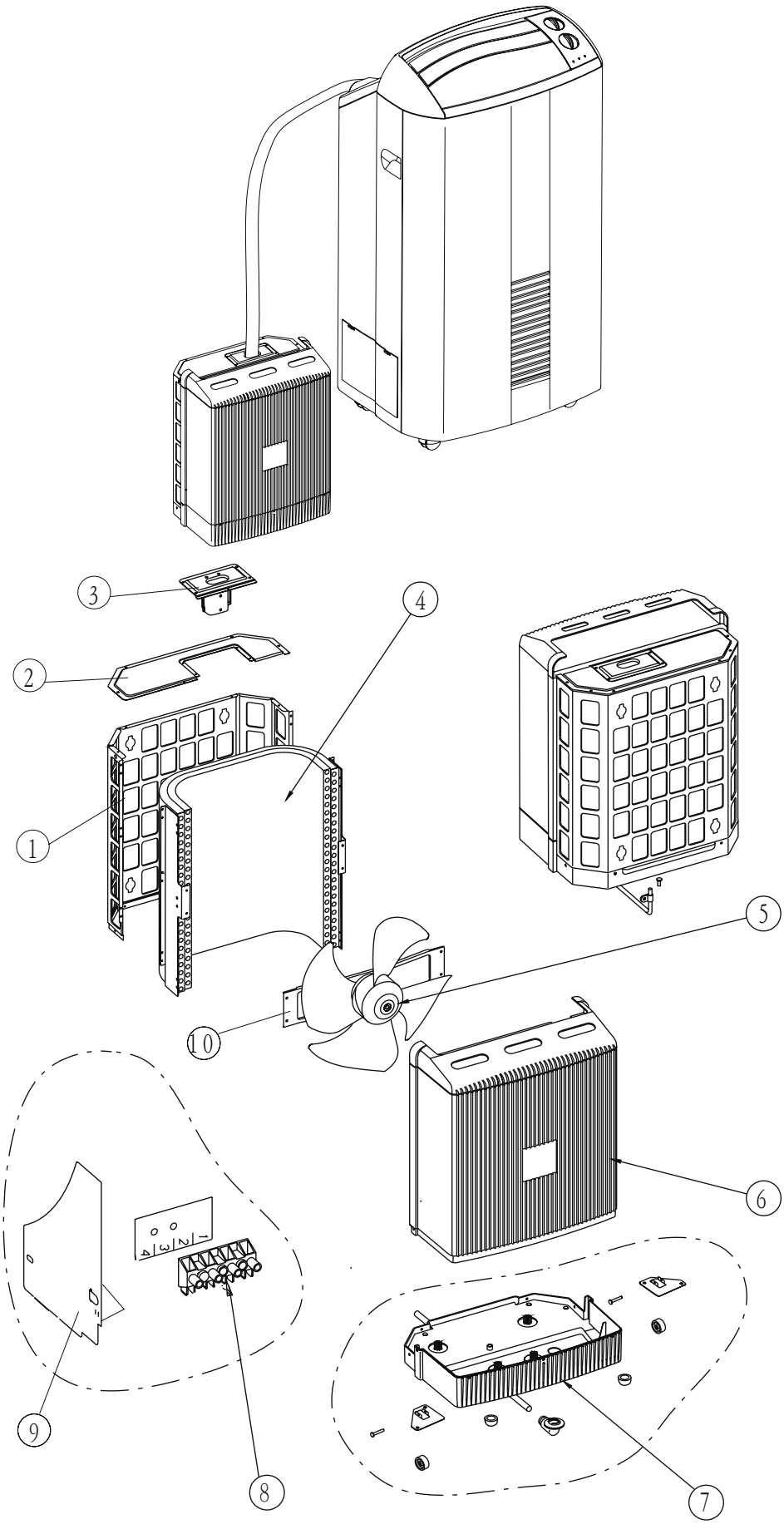
12.52 SP16E ST



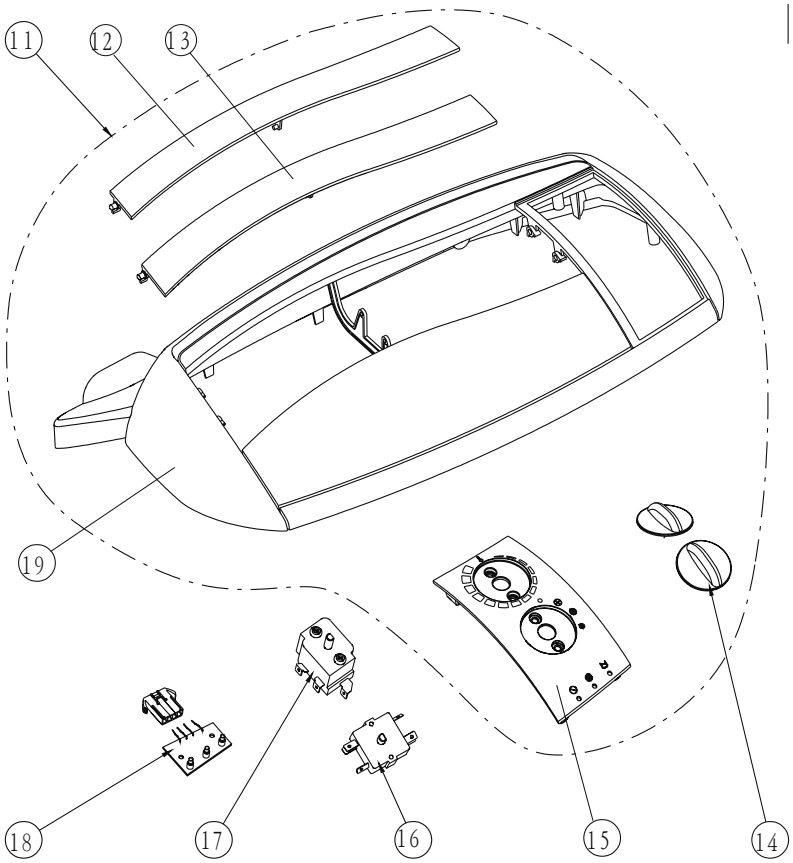
12.53 SP16E ST

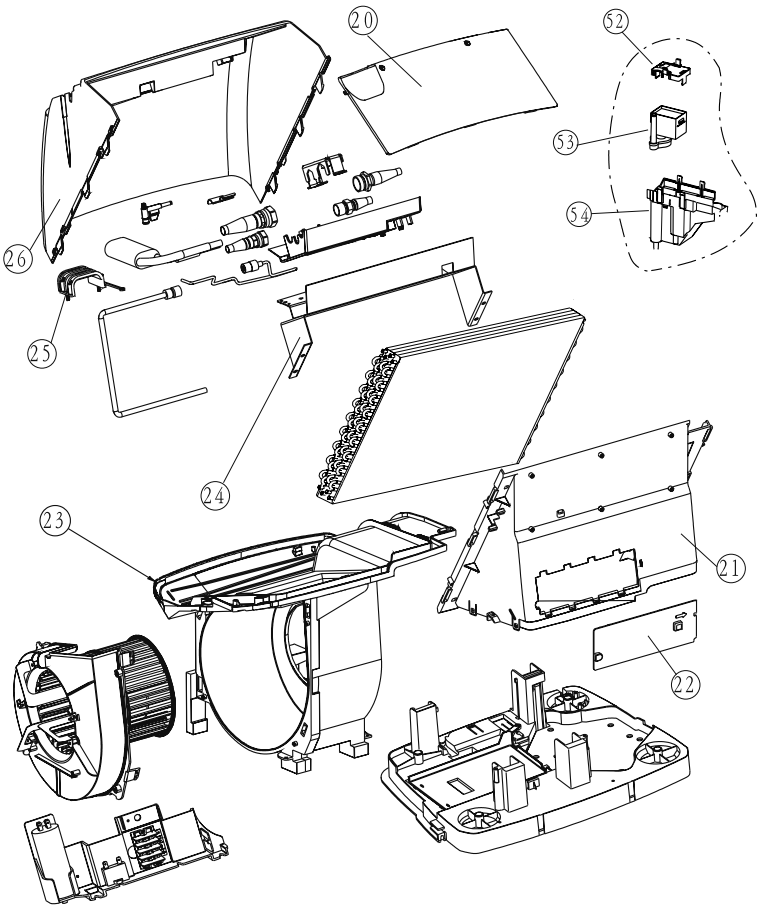
No.	Part No.	Description	Qty
1	410999	Rear Guard 16 EL10	1
2	410915	Condenser Top Cover Painting EL10 SP16	1
3	410914	Flex.Hose Support Cover Painting EL10	1
4	453107900	3-Row Condenser / SP16 R410A	1
5	410040	Outdoor Fan Motor A4E360-AE19-16	1
6	410542	Condenser Housing EL10	1
7	410942	Drain Pan PSX 16 COLOR: EL10	1
8	410041	OD Terminal Block 16A	1
9	412537	OD Control Box Cover	1
10	4527306	OD Fan Motor Support Assy SP16	1
11	412163	Display Board PCB-E 901-201-02	1
12	412169	Blade 1 EL10	1
13	412170	Blade 2 EL10	1
14	4526259	Head Assy SP E- Airwell Aus	1
15	412226	Cotrol Door P2000E Printed	1
16	412229	Contray Tray E Printed	1
17	4526469	RC5 ST EL10	1
18	412032	Head SP AIRWELL	1
19	436052	Motor step	1
21	412003	Coil Housing	1
22	412006	H. E Support Cover	1
23	412001	Fan House	1
24	412350	Connectors Bridge	1
25	412185	Flex. Hose Bracket BIG	1
26	412081	Eva. Cover SP	1
27	412348	Microswitch Guard Painting	1
28	412044	Microswitch D489Y5AA	1
29	4524621	GEN Controller DST-5 10V5 911-353-16	1
30	4523051	Indoor Terminal Block	1
31	412162	Electrical Items Support	1
32	455000101	Double patch Capacitor for fan motor 2.5uF (CBB61S)	1
33	455000108	Double patch Capacitor for fan motor 2uF	1
34	455000510	Compressor Capacitor With Screw 35uF (CBB65)	1
35	412002	Motor Housing	1
36	412029	Indoor Plastic Fan 171.5*164	1
37	412205	Rear Panel EL10	1
38	412513	Front Panel EL10	1
39	412052	Indoor Caster	4
40	412206	Air Filter EL10	1
42	453128100	Unit Housing / Mobile R410A	1
43	412082	Water Pool	1
44	412221	Water Tank Door EL10	1
45	412083	Water Pool Cover	1
46	412042	Fan Motor H/M/L:1390/1280/1170RPM	1
47	453094100	ID.&OD. Connect Pipe Assy./SP ST R410A	1
48	452973900	4-rows)Evaporator / SP16 R410A	1
49	453031900	Suction Pipe Assy. / SP16 R410A	1
50	453032000	Discharge Pipe Assy. / SP16 R410A	1
51	452944100	Compressor Assy. C-RV168H1A (R410A SANYO)	1
52	412012	Pump Support P2000 COLOR: EL32	1
53	412047	Indoor Pump	1
54	412011	Water Pump Cater P2000 MB COLOR: NATURAL	1

12.54 SP16M ST QC

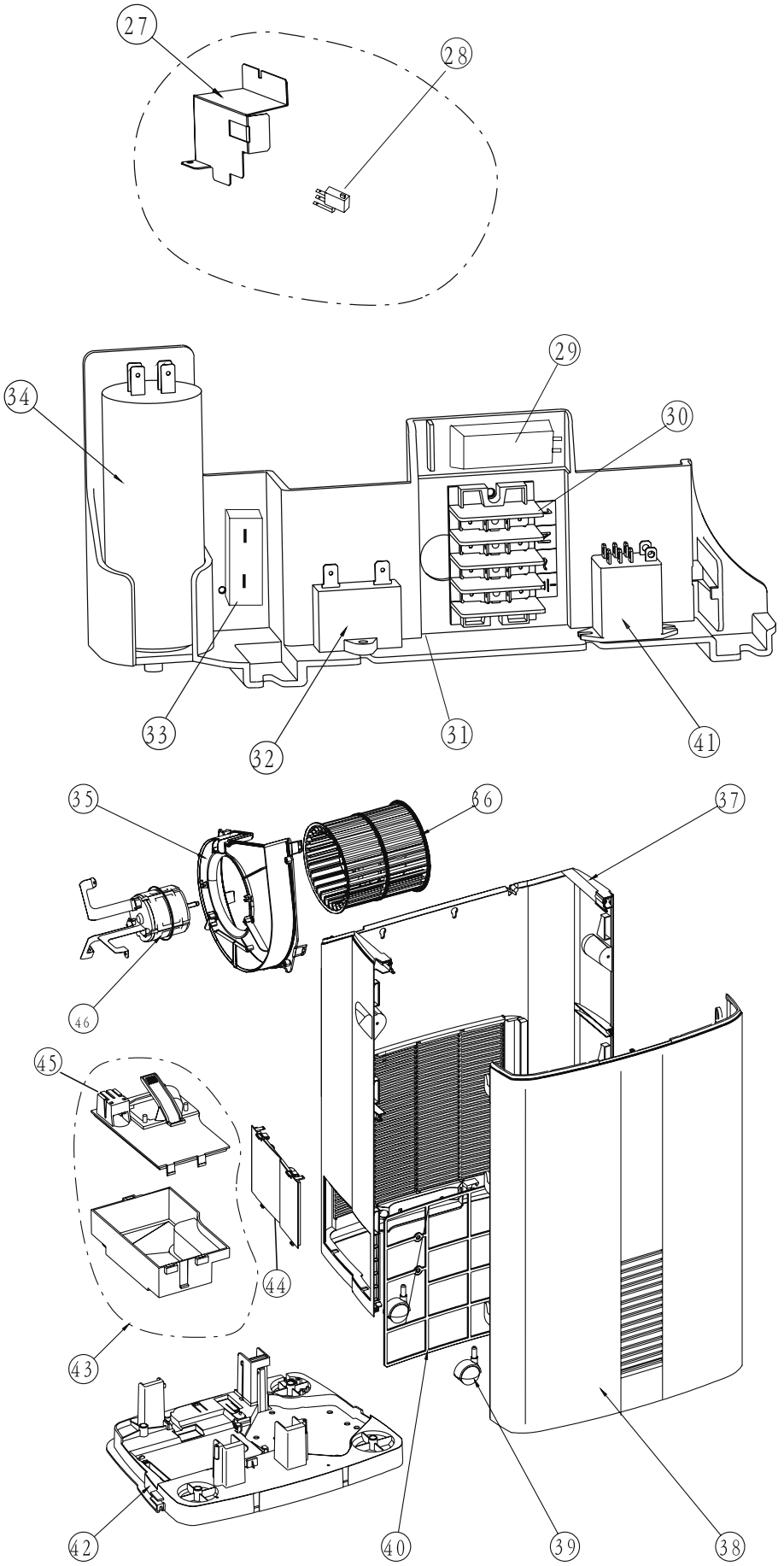


12.55 SP16M ST QC

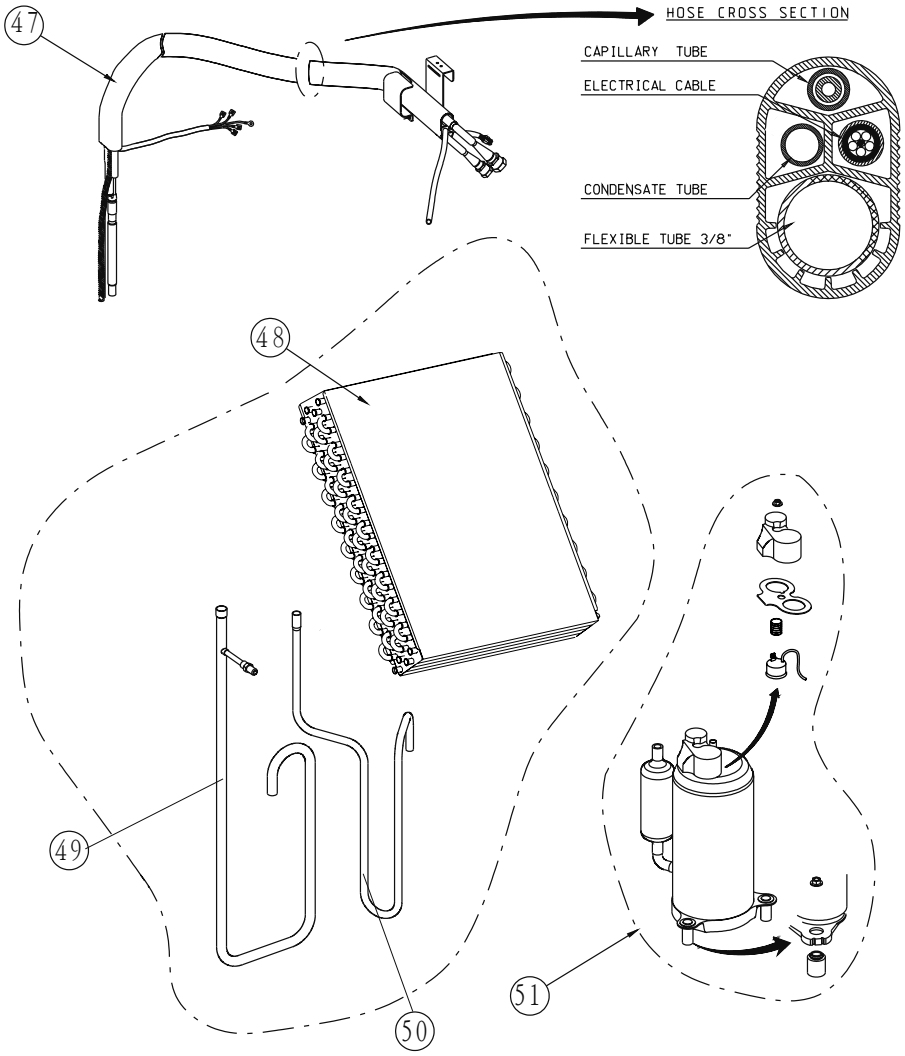




12.56 SP16M ST QC



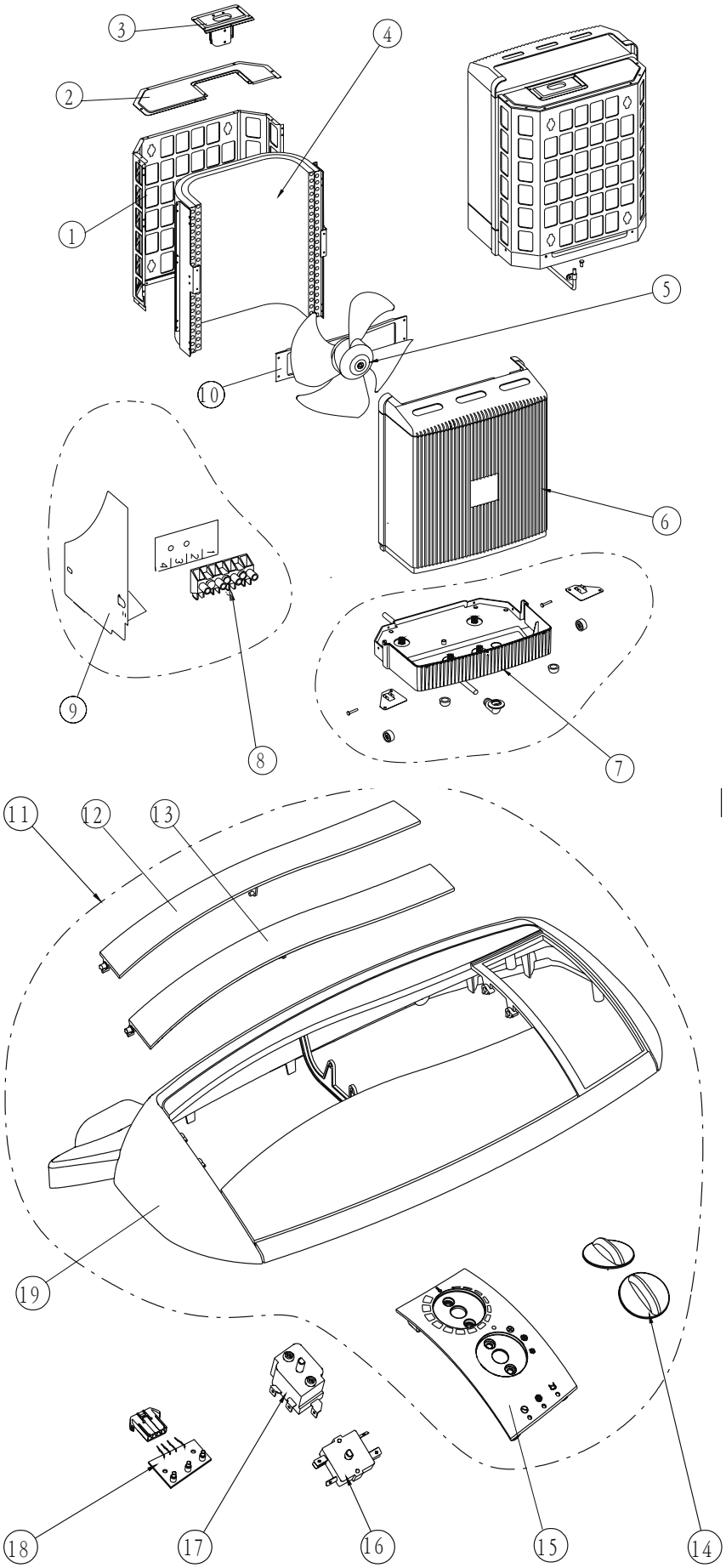
12.57 SP16M ST QC



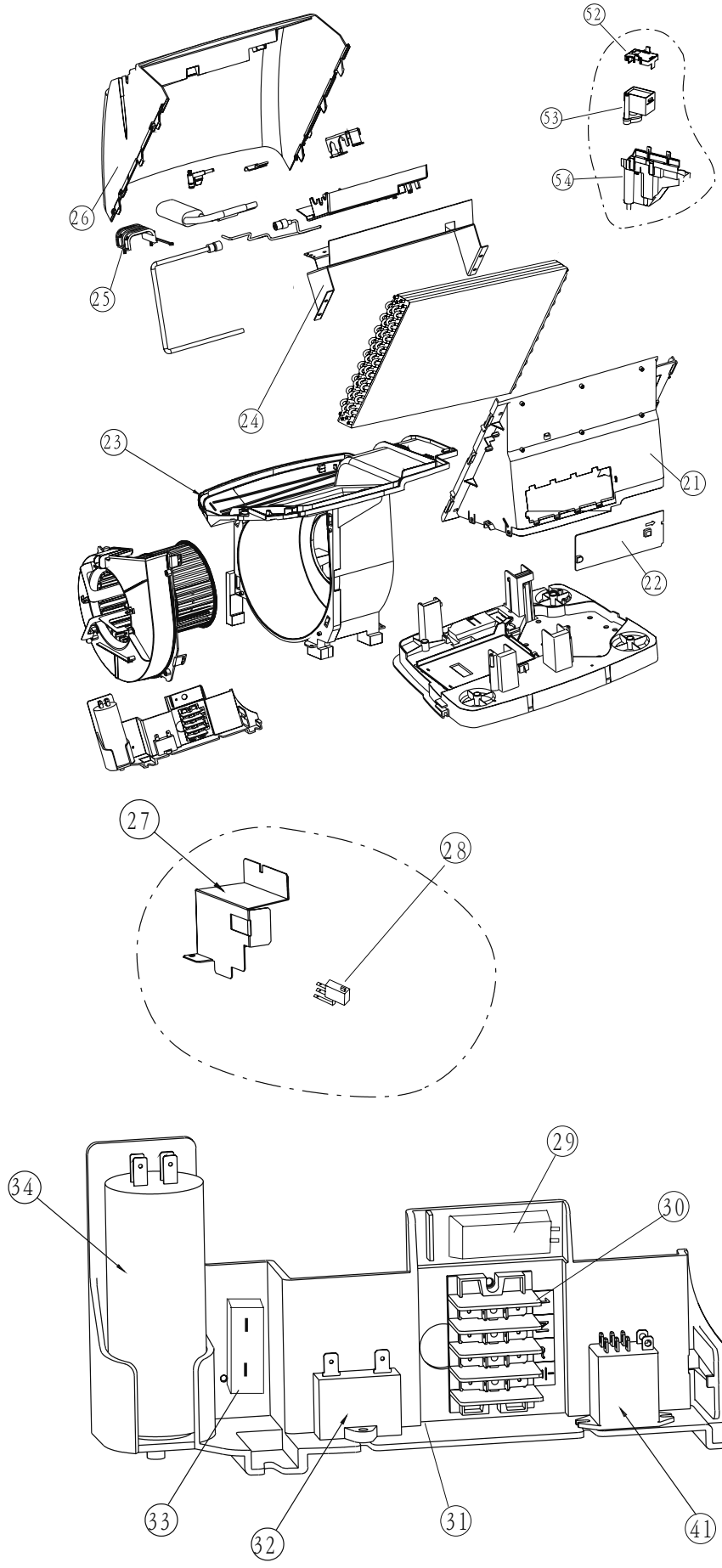
12.58 SP16M ST QC

No.	Part No.	Description	Qty
1	410999	Rear Guard 16 EL10	1
2	410915	Condenser Top Cover Painting EL10 SP16	1
3	410914	Flex.Hose Support Cover Painting EL10	1
4	453107900	3-Row Condenser / SP16 R410A	1
5	410040	Outdoor Fan Motor A4E360-AE19-16	1
6	410542	Condenser Housing EL10	1
7	410942	Drain Pan PSX 16 COLOR: EL10	1
8	410041	OD Terminal Block 16A	1
9	412537	OD Control Box Cover	1
10	4527306	OD Fan Motor Support Assy SP16	1
11	4523107	Head Assy. SP-M-QC- AIRWELL	1
12	412169	Blade 1 EL10	1
13	412170	Blade 2 EL10	1
14	412177	Switch Knob EL10	1
15	412230	Control Tray Mobile M	1
16	412224	Select Switch 16A	1
17	412269	Thermostat	1
18	412165	Display Board PCB-M 901-201-04	1
19	412033	Head SP QC AIRWELL	1
20	412210	QC Service Cover EL10	1
21	412003	Coil Housing	1
22	412006	H. E Support Cover	1
23	412001	Fan House	1
24	412350	Connectors Bridge	1
25	412185	Flex. Hose Bracket BIG	1
26	412081	Eva. Cover SP	1
27	412348	Microswitch Guard Painting	1
28	412044	Microswitch D489Y5AA	1
29	411232	Defrost Thermostat 20A	1
30	4523051	Indoor Terminal Block	1
31	412162	Electrical Items Support	1
32	455000101	Double patch Capacitor for fan motor 2.5uF (CBB61S)	1
33	455000108	Double patch Capacitor for fan motor 2uF	1
34	455000510	Compressor Capacitor With Screw 35uF (CBB65)	1
35	412002	Motor Housing	1
36	412029	Indoor Plastic Fan 171.5*164	1
37	412205	Rear Panel EL10	1
38	412513	Front Panel EL10	1
39	412052	Indoor Caster	4
40	412206	Air Filter EL10	1
41	230356	Relay JQX-116F-2 30A220V No6531230	1
42	453128100	Unit Housing / Mobile R410A	1
43	412082	Water Pool	1
44	412221	Water Tank Door EL10	1
45	412083	Water Pool Cover	1
46	412042	Fan Motor H/M/L:1390/1280/1170RPM	1
47	453094200	ID.&UD. Connect Pipe Assy./ SP ST QC R410A	1
48	452973900	(4-rows)Evaporator / SP16 R410A	1
49	453031900	Suction Pipe Assy. / SP16 R410A	1
50	453032000	Discharge Pipe Assy. / SP16 R410A	1
51	452944100	Compressor Assy. C-RV168H1A (R410A SANYO)	1
52	412012	Pump Support P2000 COLOR: EL32	1
53	412047	Indoor Pump	1
54	412011	Water Pump Cater P2000 MB COLOR: NATURAL	1

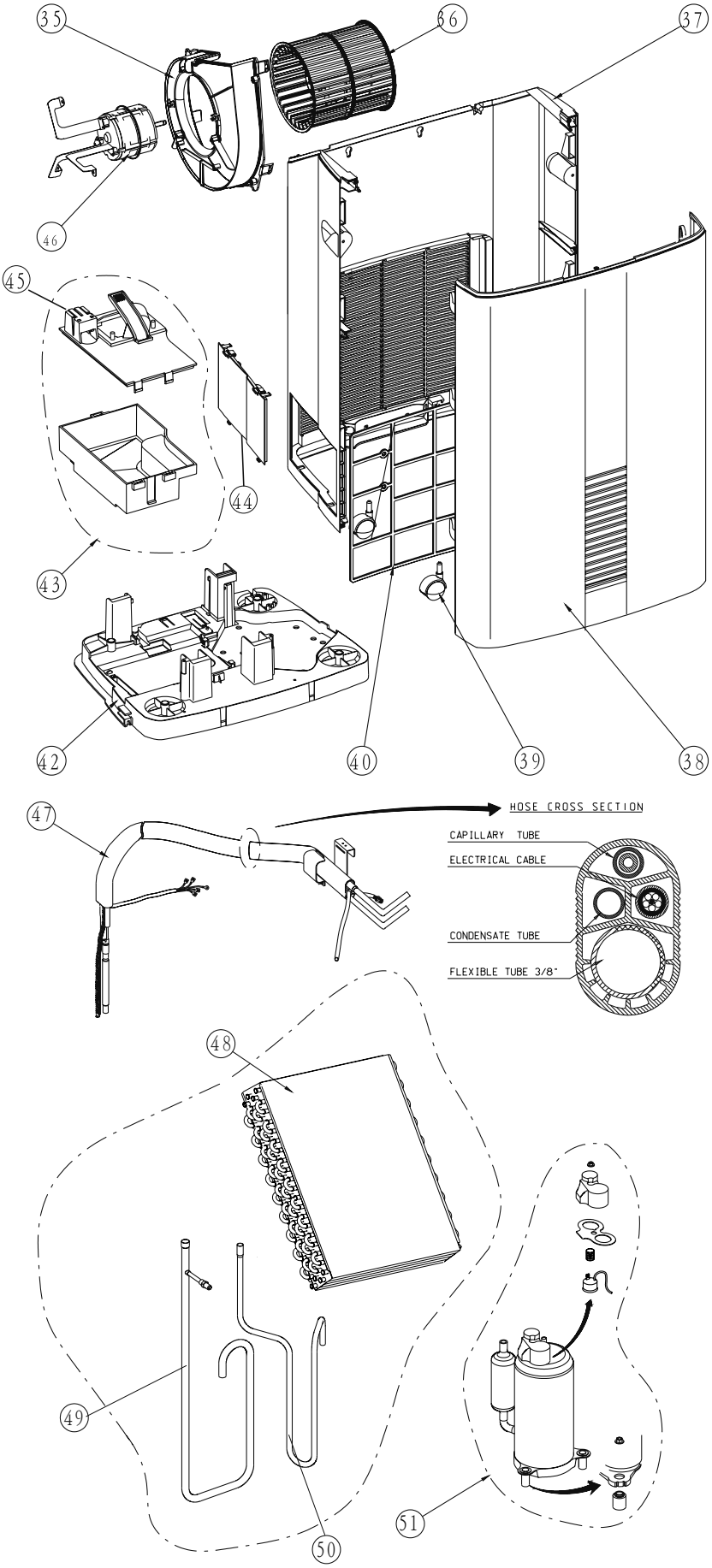
12.59 SP16M ST



12.60 SP16M ST



12.61 SP16M ST



12.62 SP16M ST

No.	Part No.	Description	Qty
1	410999	Rear Guard 16 EL10	1
2	410915	Condenser Top Cover Painting EL10 SP16	1
3	410914	Flex.Hose Support Cover Painting EL10	1
4	453107900	3-Row Condenser / SP16 R410A	1
5	410040	Outdoor Fan Motor A4E360-AE19-16	1
6	410542	Condenser Housing EL10	1
7	410942	Drain Pan PSX 16 COLOR: EL10	1
8	410041	OD Terminal Block 16A	1
9	412537	OD Control Box Cover	1
10	4527306	OD Fan Motor Support Assy SP16	1
11	4523135	Head Assy. SP-M-AIRWELL	1
12	412169	Blade 1 EL10	1
13	412170	Blade 2 EL10	1
14	412177	Switch Knob EL10	1
15	412230	Control Tray Mobile M	1
16	412224	Select Switch 16A	1
17	412269	Thermostat	1
18	412165	Display Board PCB-M 901-201-04	1
19	412032	Head SP AIRWELL	1
21	412003	Coil Housing	1
22	412006	H. E Support Cover	1
23	412001	Fan House	1
24	412350	Connectors Bridge	1
25	412185	Flex. Hose Bracket BIG	1
26	412081	Eva. Cover SP	1
27	412348	Microswitch Guard Painting	1
28	412044	Microswitch D489Y5AA	1
29	411232	Defrost Thermostat 20A	1
30	4523051	Indoor Terminal Block	1
31	412162	Electrical Items Support	1
32	455000101	Double patch Capacitor for fan motor 2.5uF (CBB61S)	1
33	455000108	Double patch Capacitor for fan motor 2uF	1
34	455000510	Compressor Capacitor With Screw 35uF (CBB65)	1
35	412002	Motor Housing	1
36	412029	Indoor Plastic Fan 171.5*164	1
37	412205	Rear Panel EL10	1
38	412513	Front Panel EL10	1
39	412052	Indoor Caster	4
40	412206	Air Filter EL10	1
41	230356	Relay JQX-116F-2 30A220V No6531230	1
42	453128100	Unit Housing / Mobile R410A	1
43	412082	Water Pool	1
44	412221	Water Tank Door EL10	1
45	412083	Water Pool Cover	1
46	412042	Fan Motor H/M/L:1390/1280/1170RPM	1
47	453094100	ID.&OD. Connect Pipe Assy./SP ST R410A	1
48	452973900	(4-rows)Evaporator / SP16 R410A	1
49	453031900	Suction Pipe Assy. / SP16 R410A	1
50	453032000	Discharge Pipe Assy. / SP16 R410A	1
51	452944100	Compressor Assy. C-RV168H1A (R410A SANYO)	1
52	412012	Pump Support P2000 COLOR: EL32	1
53	412047	Indoor Pump	1
54	412011	Water Pump Cater P2000 MB COLOR: NATURAL	1

APPENDIX A

INSTALLATION AND OPERATION MANUAL

- ► **INSTALLATION AND OPERATION MANUAL MONOBLOCK 7 ST (E/M)**
- ► **INSTALLATION AND OPERATION MANUAL SP11/16 ST/RC (E/M)**

FRANÇAIS **CLIMATISEUR PORTABLE**

ENGLISH **PORTABLE AIR CONDITIONER**

DEUTSCH **MOBILE KLIMAGERÄTE**

ITALIANO **CLIMATIZZATIRE PORTATILE**

ESPAÑOL **ACONDICIONADOR DE AIRE PORTATIL**

NEDERLANDS **VERRIJDBARE AIRCONDITIONER**

MONTAGE- UND GEBRAUCHSANWEISUNG

INSTALLATION AND OPERATING INSTRUCTIONS

ISTRUZIONI PER L'INSTALLAZIONE E IL FUNZIONAMENTO

INSTRUCTIONS DE MONTAGE ET D`EMPLOI

INSTRUCCIONES DE INSTALACIÓN Y FUNCIONAMIENTO

INSTALLATIE & BEDIENINGSVOORSCHRIFTEN

APPENDIX A

PORTABLE AIR CONDITIONER

ELECTRONIC / REMOTE CONTROL

ELECTRO MECHANICAL CONTROL

INSTALLATION AND OPERATING INSTRUCTIONS

APPENDIX A

CONTENTS

APPENDIX A

❑ INTRODUCTION

This portable air conditioner is designed for versatile applications:

- Cooling
- Dehumidification
- Heating (for electronic models only)
- Ventilation
- Air filtration

ELECTRONIC MODELS ONLY

This air conditioner is equipped with an electronic microprocessor control system, giving the user the choice of local or remote control operation, as well as precise temperature setting and control, timer operation and a built-in protection system for trouble-free and energy-efficient operation.

OPERATING TEMPERATURE RANGE: 21°C-32°C / 70°-90°F

Capacity based on test conditions of:

Indoor: 27°C/80°F DB - 19°C/67°F WB.

Actual cooling capacity might vary according to the local environmental conditions.

- **PLEASE READ THESE INSTRUCTIONS BEFORE OPERATING THE AIR CONDITIONER.**
- **IF YOUR AIR CONDITIONER IS FOR COOLING ONLY, PLEASE DISREGARD THE INSTRUCTIONS RELATED TO HEATING.**

IMPORTANT NOTES:

WARNING

- This air conditioner must be grounded for protection against electrical shock.
- Electrical connection and power cord replacement should be done only by authorized electricians and in accordance with electrical regulations and local codes.
- Do not expose the unit to rain.

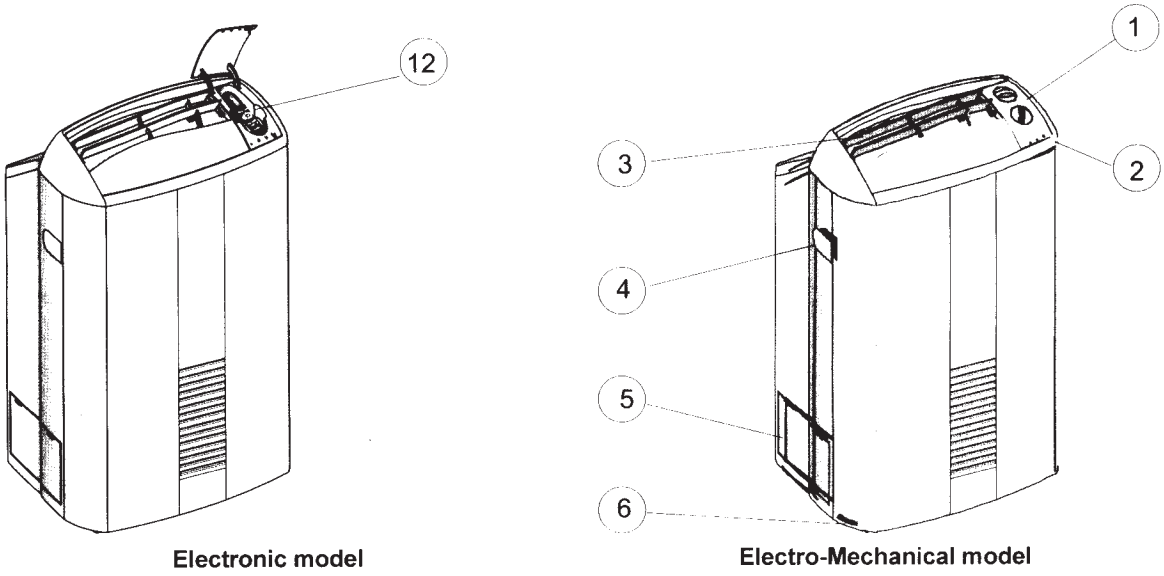
When using this air conditioner for the first time, please do the following:

1. Read the instruction manual and familiarize yourself with the controls.
2. Plug the electric power cord into a power socket which is protected by a proper fuse.
3. Check that all control functions operate properly, including both the remote control unit and on-unit control.
4. Repeat step 3 when the remote control unit is inside its compartment.
5. Disconnect the electric power cord from the power socket, wait 3 minutes and reconnect the unit.

IN THIS MANUAL

APPENDIX A

❑ DESCRIPTION



Electronic model

Electro-Mechanical model

Figure 1: Units components (front)

1. Control buttons (for electromechanical model)
2. Indicators (leds)
3. Adjusting air supply grille
4. Carrying handle
5. Water tank door
6. Castors
7. Air filter
8. Air filter handle
9. Electric Power cord
10. Drain tube with plug
11. Air outlet
12. Remote control (for electronic model only)

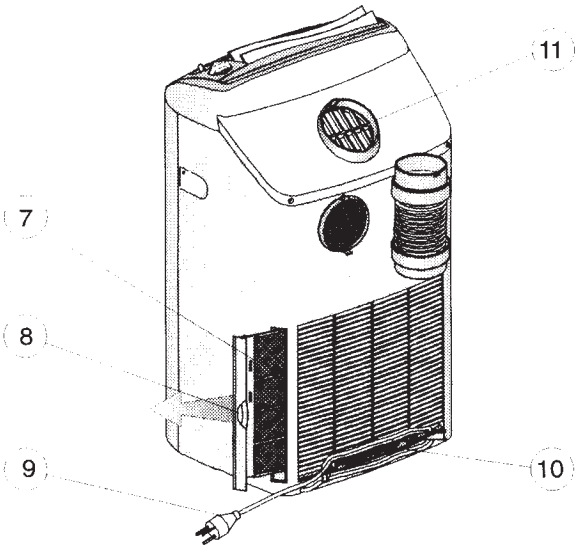


Figure 2: Unit components (back)

❑ ACCESSORIES

1. Wall or window hose sleeve
2. Sleeve cover
3. Suction pads
4. Window nozzle
5. Exhaust Hose
6. Air exhaust cover

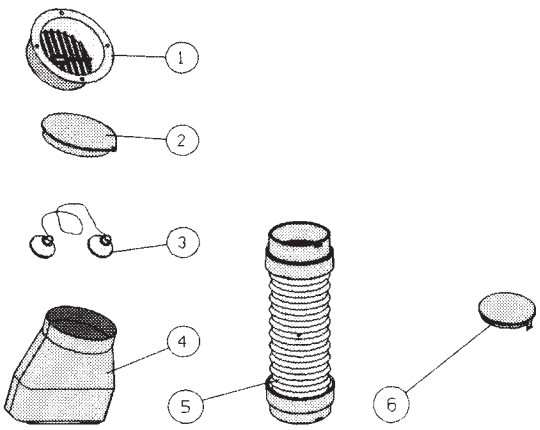


Figure 3: Accessories

APPENDIX A

❑INSTALLATION

INSTALLATION FOR COOLING

FIXED INSTALLATION OPTION (See fig. 4 and fig. 5)

For fixed installation, a sleeve (see 1, fig.4) should be installed through the wall, partition or window (see fig.5).

Prepare a 110 mm diameter outlet hole. Apply a waterproof sealant to the sleeve flange and install it in the opening. Insert the end of the exhaust hose into the fixed sleeve, making sure that the connection is airtight (see fig.5).

WARNING:
- Make sure the unit is level.
- Always keep a door or window slightly open.
- Make sure that the exhaust hose is installed without sharp bends.

1. Sleeve
2. Window installation
3. Partition installation
4. Wall installation
5. Waterproof sealant

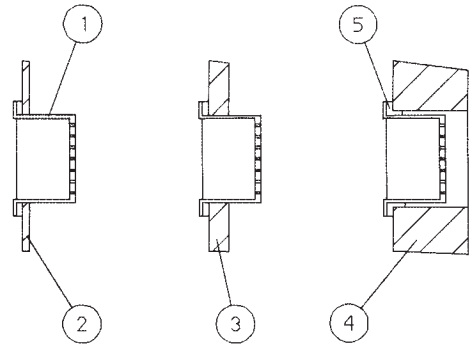


Figure 4

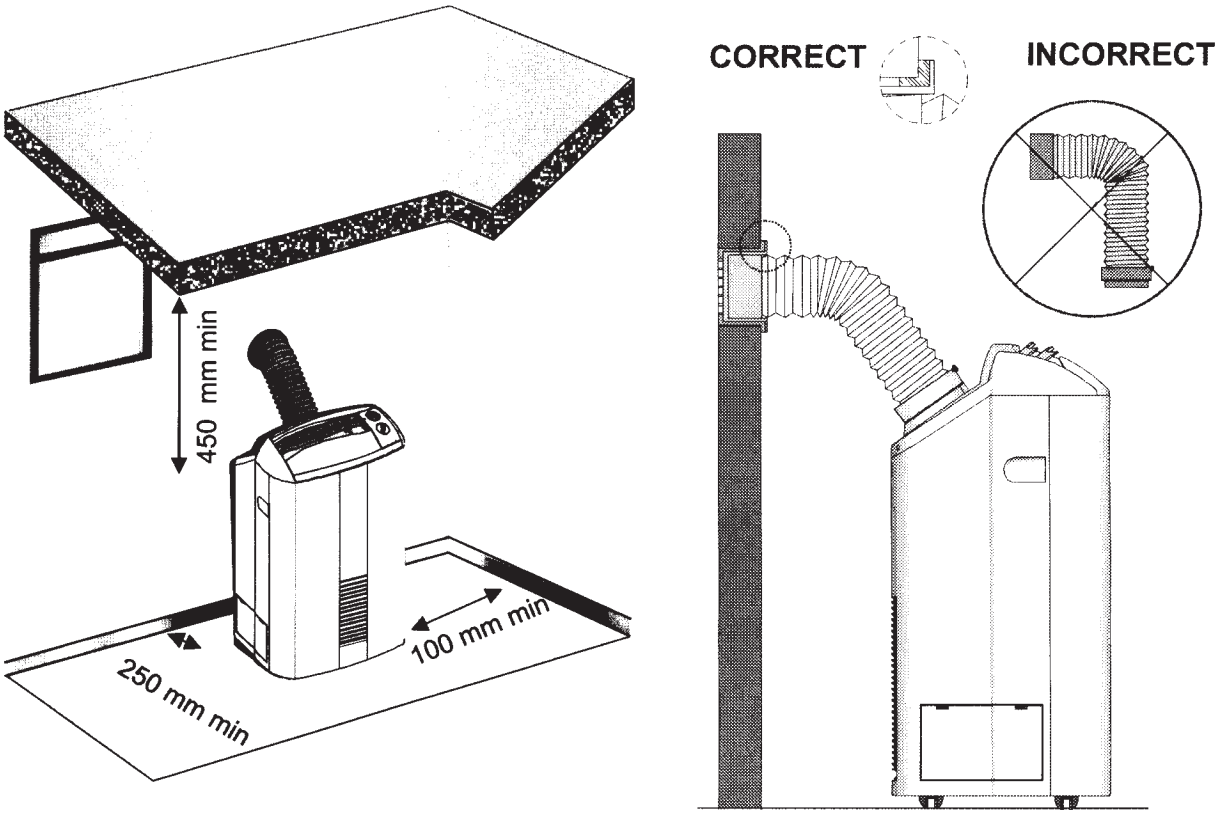


Figure 5

APPENDIX A

PROVISIONAL INSTALLATION (See figure 6)

This method of installation does not require a permanent opening in the room. The exhaust hose is inserted through an opening in a doorway or a slightly opened window. This allows the unit to be easily moved from room to room and re-installed within minutes.

Fit the window nozzle (4, fig. 3) to the end of the exhaust hose and insert it through the doorway or window opening. Use suction pads (3, fig. 3) to hold the window in place.

WARNING: Make sure the unit is positioned horizontally.

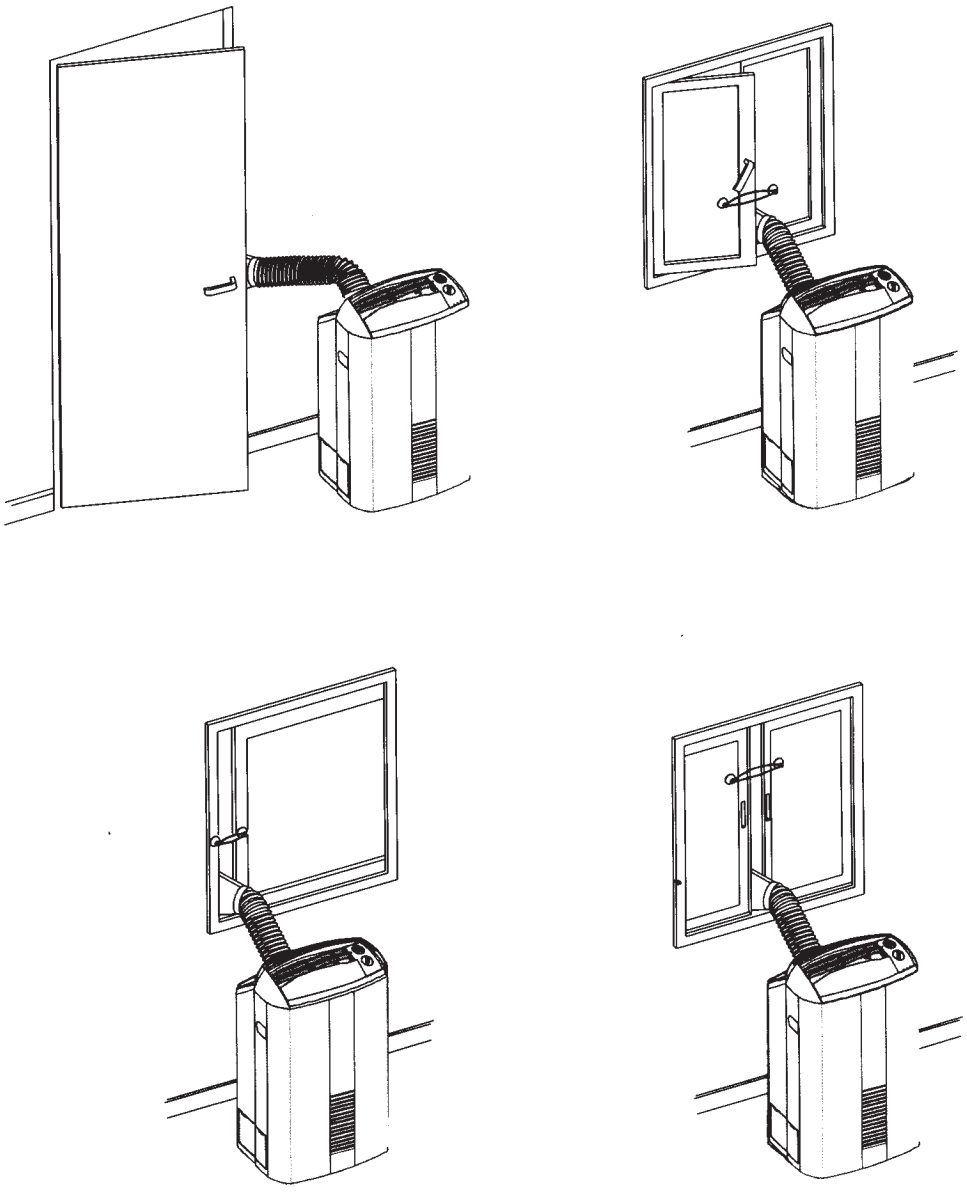


Figure 6

INSTALLATION FOR HEATING – For Electronic Models Only (see figures 3, 7)

The exhaust hose is not required for heating operations. Remove the hose and store it. Use the Sleeve Cover (2,Fig. 3) to close the wall opening. Close also the air exhaust opening with the Air Exhaust Cover. (See fig. 7).

INSTALLATION FOR «DRY» OPERATION – For Electronic Models Only

In DRY operation, (a mode giving priority to dehumidification while cooling), the exhaust hose removes hot, moist air from the room. The method of installation is the same as for the cooling operation.

INSTALLATION FOR DEHUMIDIFICATION – For All Models (see figure 8)

In this mode of operation, the exhaust hose should be disconnected. Remove the exhaust hose and store it.

During the entire dehumidification operation, the unit must be connected to a permanent drain by means of an extension tube.

NOTE:

DURING PROLONGED DEHUMIDIFICATION OPERATION EXPECT A RISE IN ROOM TEMPERATURE.

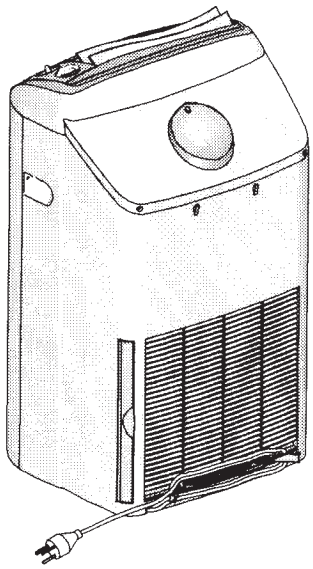


Figure 7: Installation for heating

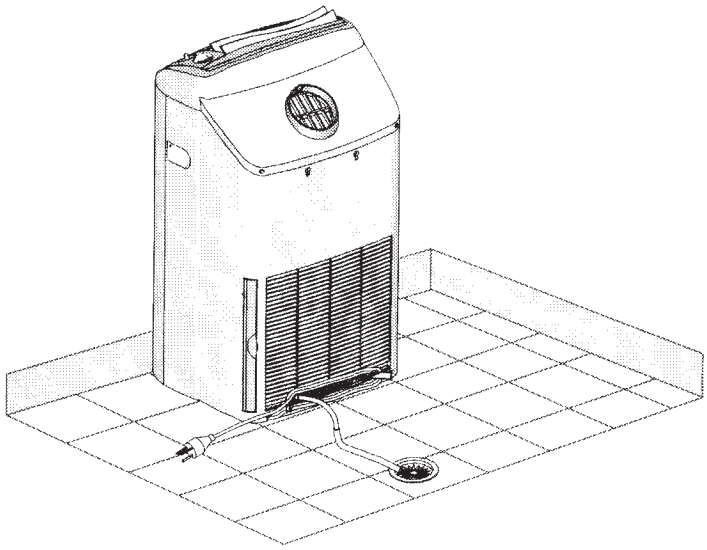


Figure 8: Installation for dehumidification

ELECTRICAL CONNECTION

Before plugging in, check that:

- The power supply and the fuse correspond to the value specified on the unit's nameplate.
- The socket and the lead mains correspond to the power requirements of the air conditioner.
- The socket fits the plug and is easily accessible.
- The socket is properly grounded.

The manufacturer cannot be held responsible for any damage resulting from failure to follow normal safety procedures.

❑ OPERATION – (With remote control)

In order to obtain maximum comfort and economical operation, please make sure:

- To follow the instructions for Installation For Cooling on page 4.
- That the air outlet and inlet openings on the unit are unobstructed.
- To shade the room from direct sunrays and avoid excessive sources of heat in the room.

MODES OF OPERATION, FUNCTIONS AND FEATURES

COOL

Cools, dehumidifies and filters the room air. Maintains desired room temperature.

HEAT

Heats and filters the room air. Maintains desired room temperature.

AUTO COOL/HEAT

Provided in certain models, not to be used in portable air conditioners with electric heaters.

DRY

Dehumidifies and softly cools the room air. In DRY Mode, the air conditioner operates with increased dehumidifying power. This function is recommended for use when the temperature is rather low, but the humidity is high.

FAN

Circulates and filters the room air. Maintains constant air movement in the room

AUTO FAN

The air conditioner automatically selects the FAN, in accordance with the temperature of the room. When starting this operation, the unit operates at high fan speed. As the room air approaches the desired temperature, the fan switches to a lower speed for quieter operation.

TIMER

Real time control and display, automatically turns the air conditioner ON and OFF, according to the time of day setting. This ensures comfortable conditions when returning home, without wasting electricity; it turns off the air conditioner, automatically, when sleeping.

SLEEP

Designed to create comfortable sleeping conditions. When in COOLING mode, the temperature rises one degree centigrade above the set-point after each consecutive hour for up to three hours from the start of the mode. The rise in temperature prevents the sense of over-cooling while sleeping (when your body is resting). In HEATING mode the reverse occurs; the air conditioner lowers the temperature one degree every hour. When in SLEEP mode, the air conditioner will be automatically turned off after seven hours. The result is a more comfortable and invigorating sleep, which leaves you feeling fresh and energetic in the morning.

VERTICAL AIR SWING (OPTIONAL)

Automatic swing of air supply in a vertical direction. The flaps automatically move in upward and downward directions to disperse the conditioned air evenly throughout the room.

FILTER AND WATER OVERFLOW INDICATION (see indicator C on figure 10)

Filter indicator on the indoor unit display is turned on when the filter requires cleaning. After cleaning and reinstalling the filter, the system should be reset. When the indicator is blinking, it indicates that the water tank is full of water and needs to be drained.

BUZZER INDICATOR

A soft buzzer will sound from the indoor unit display to indicate that a command sent by the remote control has been accepted and stored in the unit's memory. The user may easily cancel this feature from the display panel.

ON-UNIT OPERATION (see buttons E and D on figure 10)

The air conditioner can be turned on or off directly from the indoor unit display panel, without the use of the remote control.

3-MIN. DELAYED RE-START

The compressor is protected by a three-minute delayed restart function.

MEMORY

The microprocessor retains the last data entry, whether or not the unit is plugged in. Therefore, when the unit restarts after a power disruption or failure, it will resume operation in the same mode as before the power disruption.

STORED SETTINGS

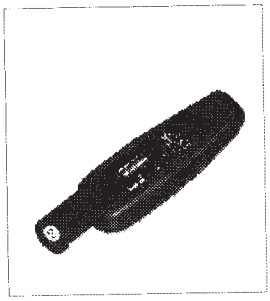
The air conditioner will store all the settings of the operating MODE.

USE OF WIRELESS REMOTE CONTROL

PRIOR TO OPERATION

Prior to operating your air conditioner, make sure that:

- The unit is properly connected to the power supply.
- The red tab protecting the remote control battery has been removed.
- For clock settings, see page 15.



REMOTE CONTROL BATTERY CHANGE

- Remove the batteries from the remote control unit, as shown on the figure, above.
- Use two 1.5 volt, size AAA batteries.
- In order to protect the environment, please return used batteries for recycling.

REMOTE CONTROL COMPARTMENT

Use the remote control compartment when the unit is not in use. The remote control can be flipped in or out of its compartment. (see figure 9).

PROTECTING THE ELECTRONIC SYSTEM

- The unit and the remote control must be at least one meter away from any TV, radio or any other electronic home appliance.
- Protect the unit and the remote control from direct sunrays or lighting.

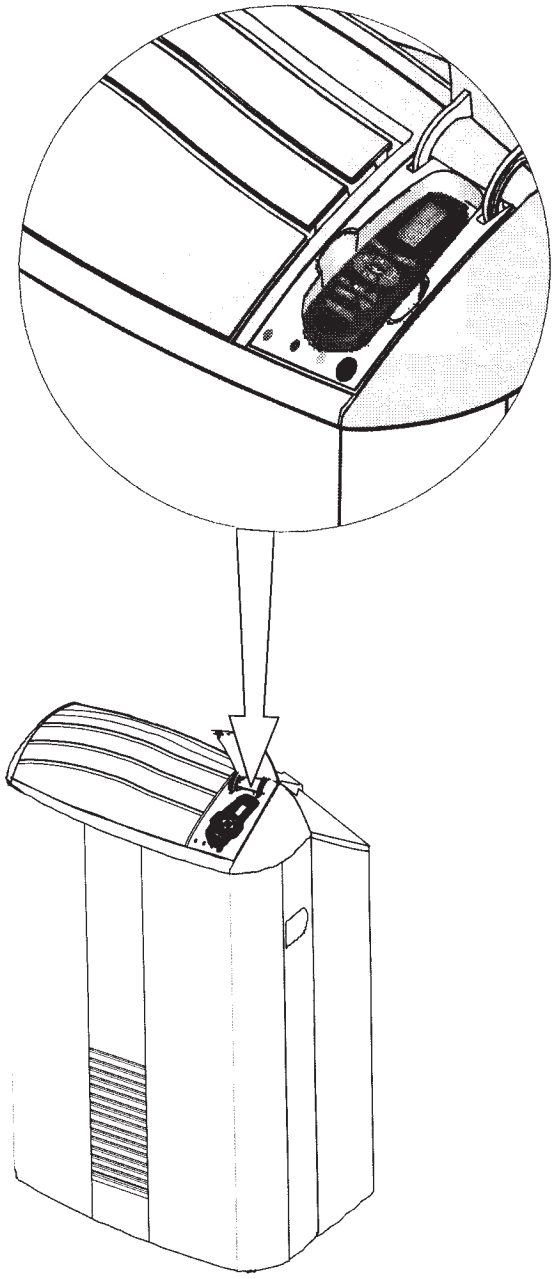


Figure 9. Remote control application

- Aim the remote control towards the air conditioner's infrared signal receiver when it is operating.
- The remote control signal can be received at a distance of up to 8 m.
- Be sure that there are no obstructions between the remote control and the signal receiver.
- Do not drop or throw the remote control unit.
- Do not place the remote control unit in a location exposed to direct sunlight, or next to a heating unit, or any other heat source.
- Do not expose the air conditioner signal receiver to strong light, such as a fluorescent lamp or sunlight.

ON-UNIT INDICATORS AND CONTROLS (see Figure 10)

A. TIMER INDICATOR

Lights up during TIMER and SLEEP operation.

B. OPERATION INDICATOR

Lights up during operation. Blinks to confirm that the remote control infrared signal has been received and stored.

C. FILTER AND WATER OVERFLOW INDICATOR

Lights up when air filter requires cleaning. Blinks when the water pan is full.

D. RESET/CANCEL BUTTON

Press to turn off the FILTER indicator and to reset the filter function, following the installation of a clean filter.

Press to cancel the buzzer operation.

E. MODE - COOL / HEAT / ON / OFF - UNIT OPERATION BUTTON

Used to switch the unit between positions OFF, ON, COOLING or HEATING*, without using the remote control.

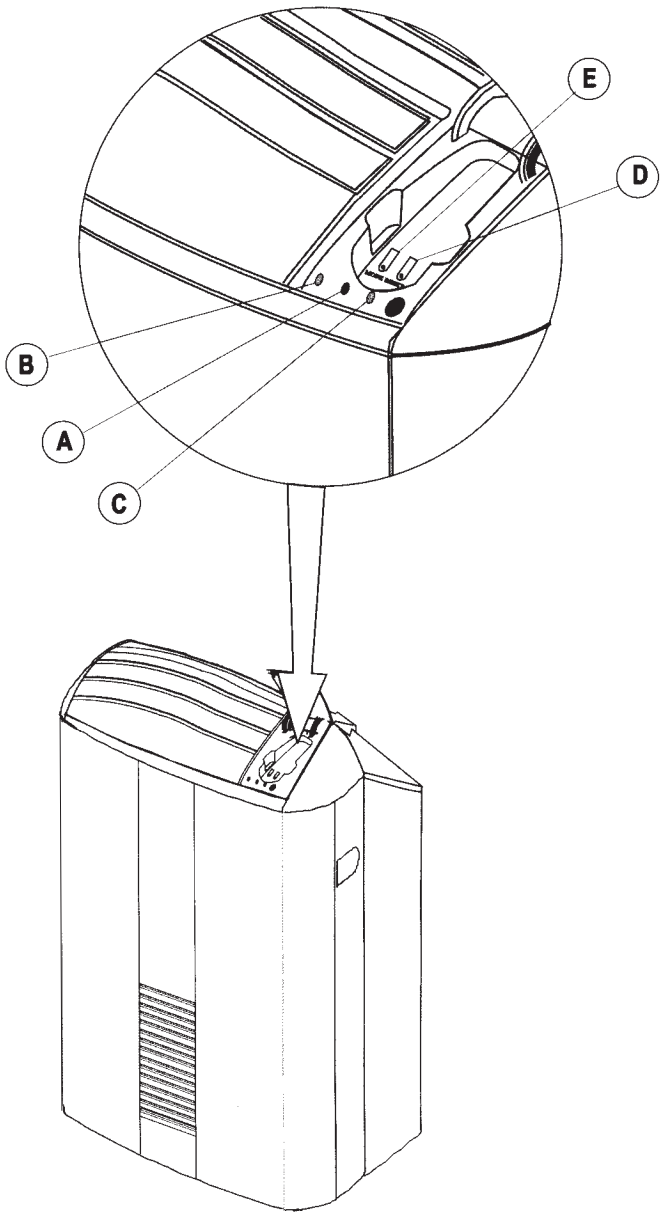


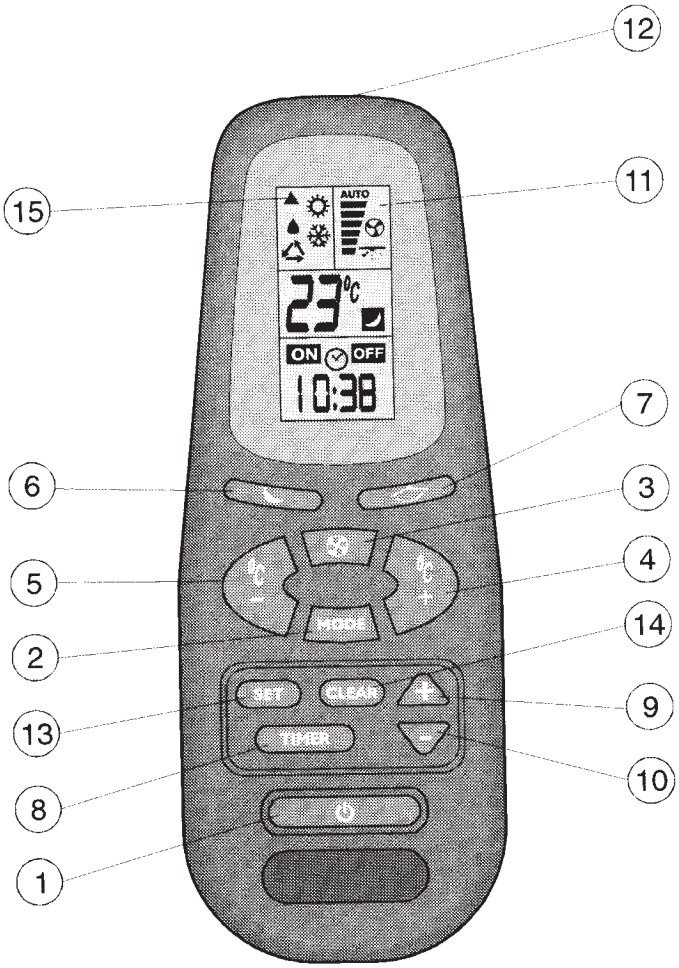
Figure 10

ON-UNIT OPERATION

If the remote control cannot be operated, the air conditioner can be turned on for cooling or heating, or completely turned off, by pressing MODE button (E). The MODE button will change the operational status of the unit between the - COOLING – HEATING – OFF positions every time it is pressed.

*** NOTE: The heating modes are used on units with cooling and heating.**

REMOTE CONTROL (see Figure 11)



1. START/STOP button
2. Operation MODE selection button
3. FAN SPEED and AUTO FAN button
4. Temperature set UP button (+)
5. Temperature set DOWN button (-)
6. SLEEP button
7. Automatic vertical air swing
8. TIMER select button
9. TIMER set up button (+)
10. TIMER set down button (-)
11. LCD operation display
12. Infrared signal transmitter
13. TIMER SET button
14. TIMER CLEAR button
15. Transmission sign

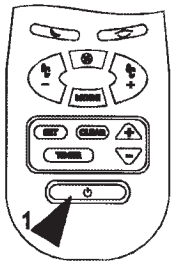
Figure 11

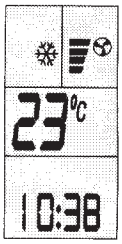
APPENDIX A

OPERATION PROCEDURE (see Figs. 10 & 11)

TURNING ON THE AIR CONDITIONER

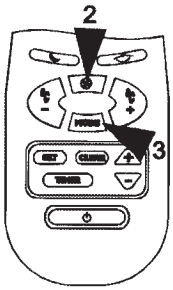
Press START/STOP button (1) to turn on the air conditioner. Operation Indicator (B) on the air conditioner will light up, indicating that the unit is in operation. Note that the LCD operation display (11) will always show the last mode of operation and the previous function used.

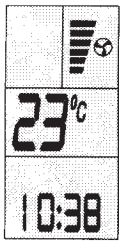




VENTILATING OPERATION

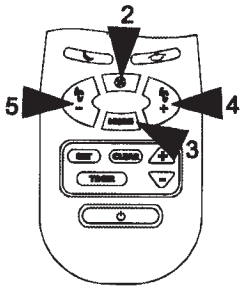
Select the FAN mode by pressing MODE button (2). Switch to the desired fan speed or AUTO speed by pressing FAN speed button (3).

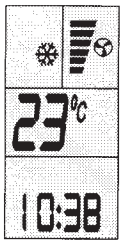




COOLING OPERATION

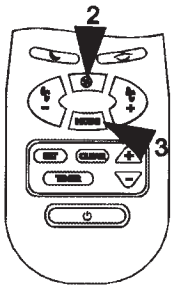
Select the COOLING mode by pressing MODE button (2). Switch to the desired fan speed or to AUTO fan by pressing button (3). Select suitable temperature setting.

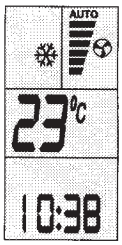




COOLING OPERATION WITH AUTO FAN MODE

This operation starts at the highest airflow, in order to quickly lower the room temperature. It will then automatically switch to low air flow, in order to quietly maintain the selected temperature.

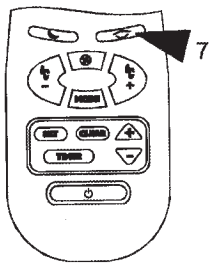


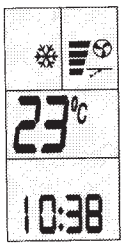


APPENDIX A

AUTOMATIC VERTICAL AIR SWING

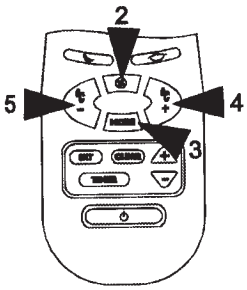
Press button (7) to activate the auto air swing. Press the button again to deactivate this function.

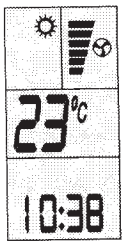




HEATING OPERATION *

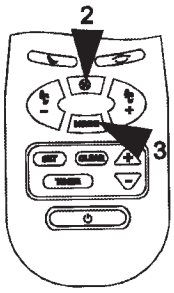
Select the HEATING mode by pressing MODE button (2). Switch to the desired Fan Speed or to AUTO FAN by pressing the Fan button (3). Select the suitable temperature setting. (see figure 7 for unit installation)

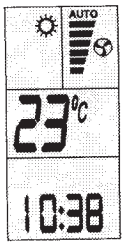




HEATING OPERATION WITH AUTO FAN MODE *

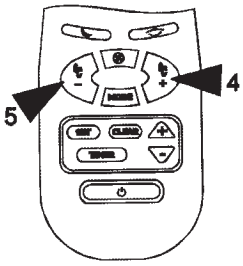
In this mode of operation, the indoor fan speed changes automatically, according to the room temperature.

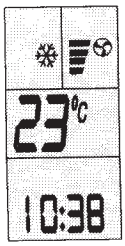




SELECTING THE TEMPERATURE

Press temperature button (4) or (5) to change the temperature setting on the LCD operation display (11). The temperature setting is shown in centigrade degrees. A higher number indicates a higher room temperature; a lower number indicates a lower room temperature.

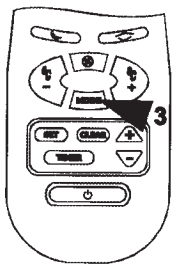


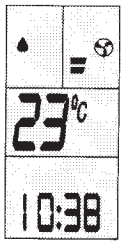


*** NOTE: The heating modes are used on units with cooling and heating.**

APPENDIX A

DRY OPERATION





Select DRY mode by pressing MODE button (2). Select the suitable temperature setting. While in DRY mode, the air conditioner will operate at low fan speed, regardless of the fan setting on the LCD operation display. The fan might stop operating from time to time to prevent over-cooling.

NOTE: In high humidity conditions, the water tank may fill up. When this occurs, cooling will stop and the filter indicator will blink.

Wait at least 5 minutes, then remove the water tank and empty it. (see figure 19).

As an option:

Drain the water into a water pan, as shown in figure 12. Place the drain tube in the pan and remove the plug.

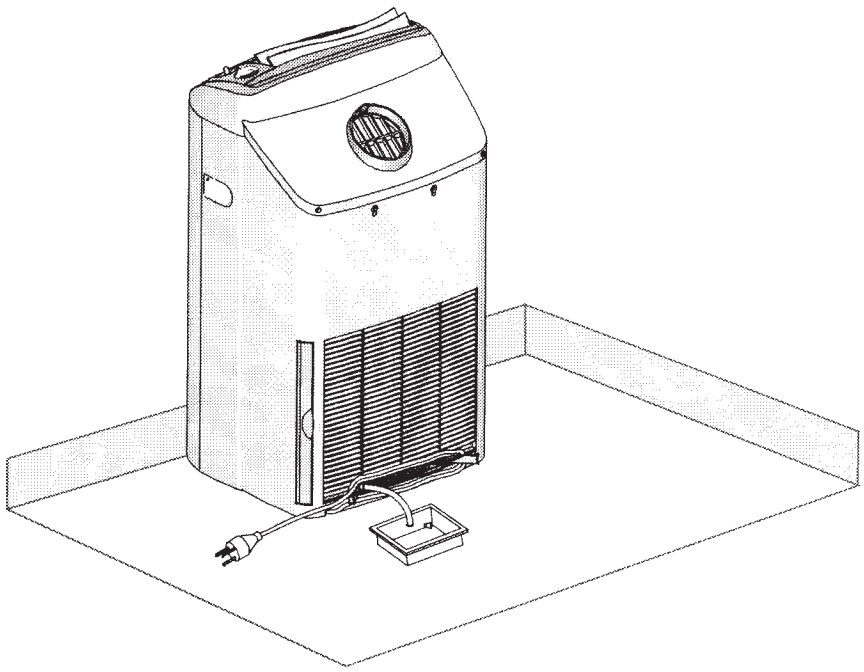
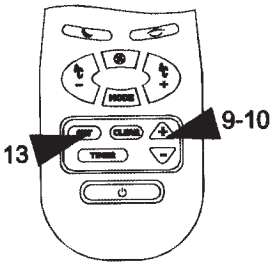


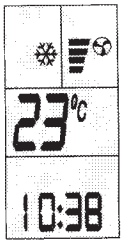
Figure 12

APPENDIX A

CURRENT CLOCK TIME SET

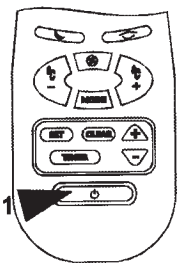
Clock setting is performed when batteries are inserted. The remote control displays the setting, and the clock display will blink " 00:00" or" 12:00" until a new time is set. For clock settings, use buttons (9) (10) in order to set the hours and minutes, respectively, and then press timer SET button (13). The clock setting can also be performed by pressing the timer SET button (13) for 5 seconds. The clock display will blink; for a new setting, follow the steps described above.

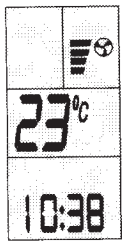




TURNING OFF THE AIR CONDITIONER

Press START/STOP button (1) to turn OFF the air conditioner. Operation Indicator (B) on the air conditioner will be turned off. The remote control LCD will display the clock time and room temperature or the set-point temperature. The last operating set-up will be kept for the next operation.



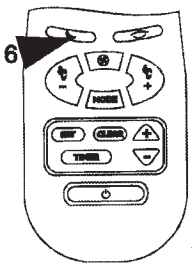


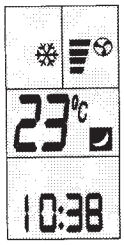
SLEEP FUNCTION

Press SLEEP button (6) to select the SLEEP function. When the sleep function is activated, the air conditioner will be automatically turned OFF after seven hours. If at the same time TIMER OFF is activated as well, the air conditioner will be turned OFF according to the TIMER settings. TIMER indicator (A) on the air conditioner will light up during SLEEP function.

To cancel SLEEP function press one of the following:

- START/STOP button (1)
- SLEEP button (6)

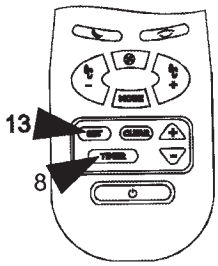


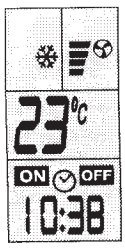


TIMER OPERATION

Press the TIMER select button (8) to activate the timer operation mode. Each time the TIMER button (8) is pressed, one of the four types of operation modes (shown below) will appear on the LCD display. The operation modes are sequenced in the direction of arrow. Indicator (A) on the air conditioner will light up during TIMER operation.

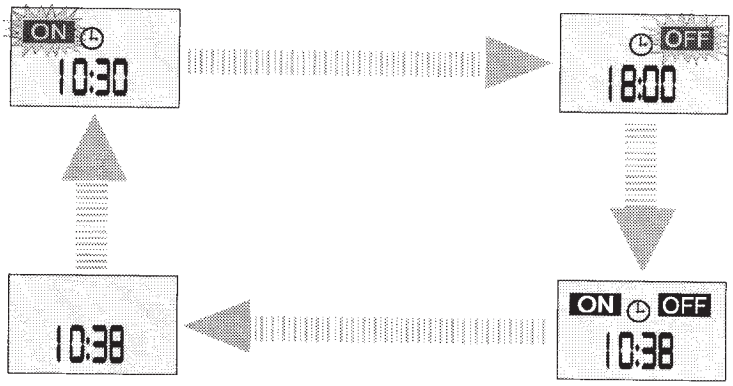
NOTE: After a power failure, the TIMER indicator (A) will blink. When the unit is in TIMER mode, the unit will automatically change to STAND BY mode and the timer operation will be cancelled. To resume the timer operation, follow the instructions, above.





APPENDIX A

TIMER OPERATING MODES



I. TIMER ON

This mode enables you to set a time for starting its operation. Press the TIMER button (8) until the ON sign blinks. Starting time can be adjusted using the up and down buttons (9) and (10), respectively. Press SET button (13) to activate the timer.

Example: Operation is restored at 10:30

II. TIMER OFF

This mode enables you to set the time at which timer stops its operation. Press the timer button (8) twice and the OFF sign will blink. Time can be adjusted using the up and down buttons (9) and (10), respectively. Press SET button (13) to activate the timer.

Example: Operation stops at 18:00

III. TIMER ON AND OFF

This mode enables you to set the start and stop time of operation. Press the TIMER button (8) until the ON sign blinks; by pressing again the OFF sign will blink. Time can be adjusted by using the up and down buttons (9) and (10), respectively. Press SET button (13) to activate the timer.

Example: Operation is restored at 10:30 and stops at 18:00.

IV. CLEAR

Use this mode to cancel timer operation. Press CLEAR button (14) and timer operation will terminate, and the LCD display will be cleared for each timer mode. When the CLEAR button is pressed, the timer indicator (A) will turn OFF.

NOTE: If the timer button (8) is selected and neither TIME ADJUST, SET, or CLEAR buttons are pressed within 15 seconds, the timer operation will be canceled and the last set-up will be displayed.

APPENDIX A

❑ OPERATION – (Electro - Mechanical Model)

The air conditioner has the following features:

- On-unit operation control
- Indicator control leds
- Warning light
- Thermostat

ON UNIT CONTROL AND DISPLAY PANEL (see figure 13)

In order to obtain maximum comfort and economical operation, please make sure:

- To follow the instructions for Installation For Cooling on page 4.
- That the air outlet and inlet openings on the unit are unobstructed.
- To shade the room from direct sunrays and avoid excessive sources of heat in the room.

A – Selector switch knob

Selector switch positions

A 1. Off

A 2. Fan only – High

A 3. Cooling – High

A 4. Cooling – Low

B – Temperature control knob

C – Indicators

C 1. Cooling indicator

C 2. Operation indicator

C 3. Overflow indicator

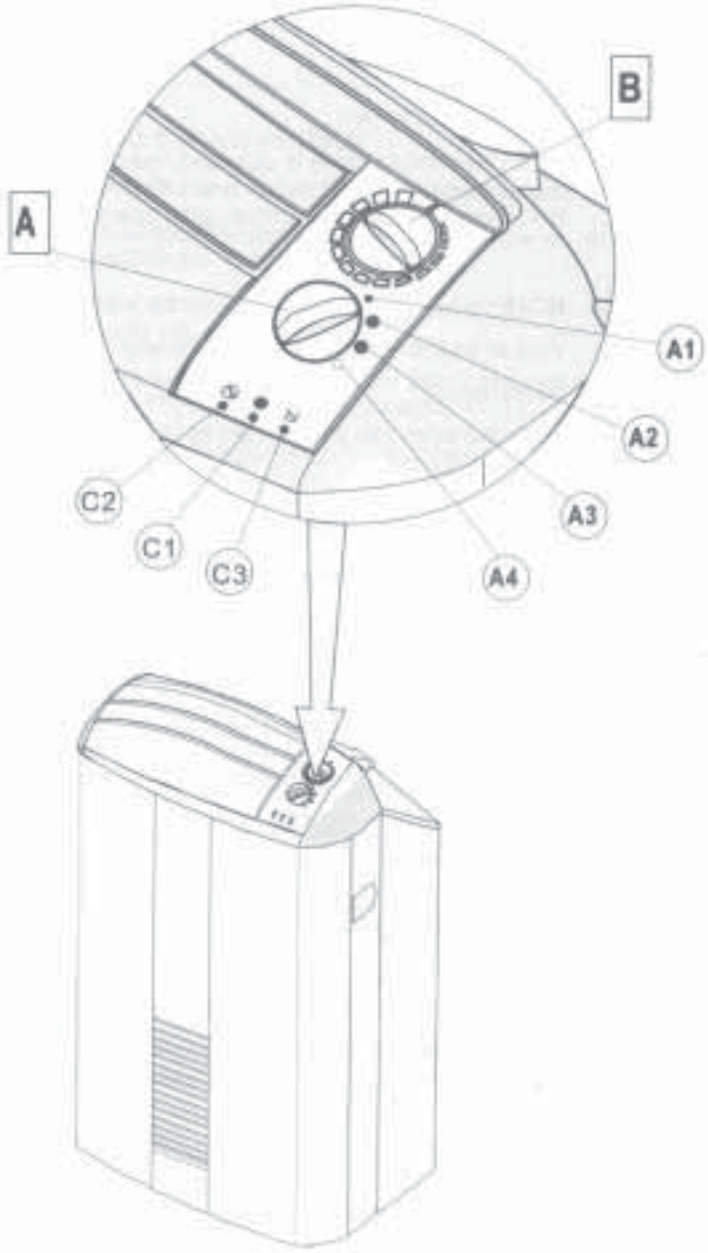


Figure 13

APPENDIX A

OPERATING PROCEDURE

Plug the unit into a power supply, and the operation indicator (C2) lights up. This indicates that the unit is ready for operation.

TURNING ON THE AIR CONDITIONER

Turn the selector switch knob (A) from OFF to any desired position.

FAN OPERATION (VENTILATING)

Turn the selector switch knob (A) to (A2)

- High fan (A2)

COOLING OPERATION

Turn the selector switch knob (A) to one of the following positions:

- High Cooling (A3)

- Low Cooling (A4)

When the cooling mode is activated, indicator (C1) will light up. It is recommended to use the High-cooling mode (A3) when a fast drop in temperature is required, while the Low cooling mode (A4) should be used for normal, quiet operation to maintain the selected temperature.

NOTE: In high humidity conditions, the water tank may fill up.

Wait at least 5 minutes, and then remove the water tank and empty it (see figure 19)

As an option:

Drain the water into a water pan as shown in figure 12. Place the drain tube in the pan and remove the plug.

SELECTING THE TEMPERATURE

The desired temperature is selected by turning the temperature control knob (B).

If the temperature is lower than desired, turn knob (B) counterclockwise to a new position.

If the temperature is higher than desired, turn knob (B) clockwise to a new position.

DEHUMIDIFYING OPERATION

Important:

- In this mode, the exhaust air is discharged into the room.
- The air conditioner must be connected to a permanent drain (See fig. 13). Turn selector-switch (A) to the (A4) low cooling mode. Indicator (C1) will light up.

During a prolonged dehumidification operation, expect a rise in temperature.

TURNING OFF THE AIR CONDITIONER

Turn the selector switch (A) to OFF position (A1).
The power indicator (C2) will remain ON.

WARNING: Wait 5 minutes before restarting the cooling modes, or before changing the temperature setting.

❑ CARE AND MAINTENANCE

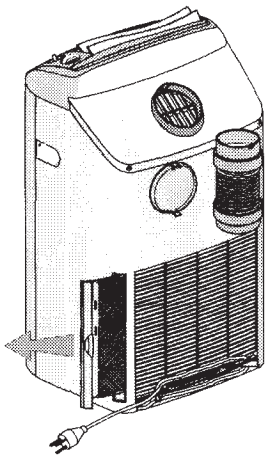


Figure 14

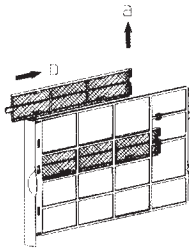


Figure 15

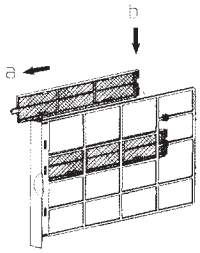


Figure 17

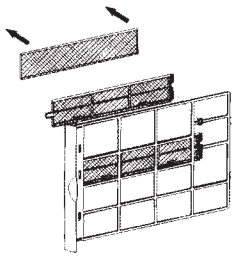


Figure 16

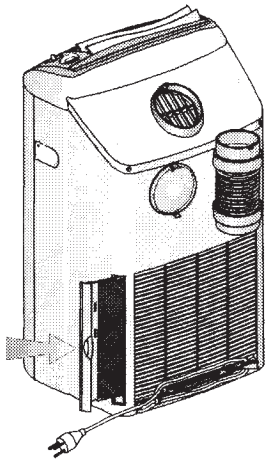


Figure 18

WARNING

Before performing any maintenance procedure, make sure to disconnect the air conditioner from the power supply.

One of the functions of the air conditioner is to filter the supplied air by collecting dust and dirt particles from the air. Your air conditioner is provided with a main filter and with two additional purifying filters, using activated carbon and electrostatic materials.

The filter should be cleaned periodically - once a month, or at least once every season under ordinary conditions.

Failure to clean the air filter will result in reduced cooling/heating capacity and may cause damage to the unit.

CLEANING THE AIR FILTERS

- Main filter removal and cleaning (See Figures 14, 15, 17, 18)
- To remove the main filter, hold the handle on its back and pull the filter out. (See Figure 14).
- Remove the 2 purifying filter frames from the main filter (See Figure 15).
- Rinse both sides of the main filter in lukewarm tap water and allow it to dry (not in direct sunlight).
- Attach the two purifying filter frames back on to the main filter.
- Reinstall the main filter by inserting it in the back opening of the unit and pushing the filter inwards (See Figure 18).

WARNING:

DO NOT OPERATE THE AIR CONDITIONER WITHOUT THE FILTER!

PURIFICATION FILTER REPLACEMENT (See Figures 15, 16, 17)

- The air purifying filters should be removed from the main filter and replaced once a year.
- Remove the two purifying filter frames from the main filter (See Figure 15).
- Replace the two filter elements and secure them in the frames (See Figure 16).
- Attach the two purifying filter frames back into the main filter (See Figure 17).

CLEANING THE AIR CONDITIONER

- Wipe the unit with a soft cloth or clean it with a vacuum cleaner.
- Do not use hot water or volatile materials which could damage the surface of the air conditioner.

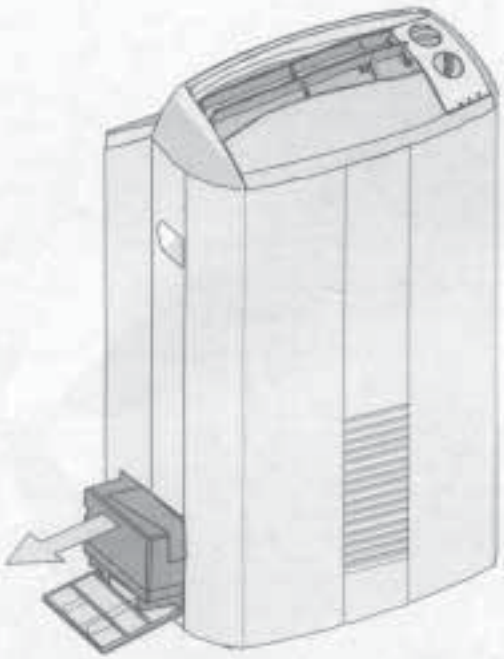


Figure 19

AT THE BEGINNING OF THE SEASON

- Make sure there are no obstacles blocking the flow of inlet or outlet air.
- Make sure the power supply is properly connected.

WATER TANK REMOVAL AND DRAINING

NOTE: To avoid water leakage on to the floor of the room, wait for at least 5 minutes after the unit has stopped cooling before removing the water tank. (filter indicator blinks)

To empty the condensed water tank, switch the unit off and remove the plug from the power supply socket.

1. Open the water tank door (see fig 19).
2. Pull out the water tank and empty the water.
3. Slide the water tank back into its place.
4. Close the water tank door.

STORING THE AIR CONDITIONER AT THE END OF THE SEASON

1. Unplug the air conditioner from the power socket.
2. Clean the air filter
3. Empty the water tank.
4. Hang the exhaust hose on the key hole at the back of the air conditioner (see Fig. 2).
5. Cover the air conditioner with a bag.

APPENDIX A

❑ IMPORTANT NOTICES

- This air conditioner has been manufactured for domestic environments and should not be used for any other purpose.
- Do not obstruct the air conditioner's air discharge and inlet.
- If repair is needed, contact only the nearest authorized service center; unqualified servicing is dangerous.
- This air conditioner is to be used by adults only. Do not allow children to play with it.
- Always ground the unit.
- Make sure that the unit is installed in a horizontal position.
- Before cleaning or performing any maintenance operations, always disconnect the electric power supply plug from the socket.
- Do not place any strain on the power cord when moving the unit.
- The air conditioner should not be installed in a place having any combustible gases, oil or sulfur in the atmosphere, or near any possible sources of heat.
- Do not place hot or heavy objects on the air conditioner.
- Clean air filter periodically.
- The air conditioner should be transported in an upright position. After transporting, wait at least one hour before switching it on.
- Move the unit with caution over carpets and rugs.
- Empty the water tank at the end of the day or before moving the unit over carpets and rugs.
- In case of damage to the power cord, replacement or repair should be made only by an authorized technician.
- In a fixed installation, the air discharged through the exhaust hose has been removed from the room. Make sure the room is not airtight. A drop in room pressure could cause irregular operation, which will, in turn, activate the system's high temperature protection control.
- This unit conforms to EEC Directive of Electromagnetic Compatibility (89/336/EEC).

APPENDIX A

❑ BEFORE CALLING FOR SERVICE

Before calling for service, please check the following malfunctions and correct as needed.

Should this fail to remedy the malfunction, contact your nearest authorized service center for qualified assistance.

PROBLEM	CAUSE	SOLUTION	E	M
• Unit does not operate. Operation indicator doesn't light up.	♦ Power failure. ♦ Plug is disconnected. ♦ The water tank is out of the unit, or not inserted properly in place.	❑ Check main fuse. ❑ Insert plug in power supply socket. ❑ Insert the water tank in its place.	X	X
• Unit does not operate Operation indicator lights.	♦ Remote control malfunctions.	❑ Check remote control batteries. ❑ Try to operate from a closer distance. ❑ Start from on-unit controls. ❑ Perform reset operation by pressing buttons (9), (10), (13), (14) for 5 seconds.	X	
• Unit operates for only brief periods in cooling or dry mode.	♦ Improper temperature setting.	❑ Decrease temperature setting	X	
• Unit functions, but does not perform efficiency.	♦ Window is open. ♦ Source of heat in the room (cooker, etc.) or room is over crowded with people. ♦ Unit capacity is insufficient for load or room size. ♦ Improper temperature setting. ♦ Air filter is clogged. ♦ Exhaust hose blocked, twisted or bent.	❑ Close window. ❑ Remove source of heat. ❑ Consult your dealer. ❑ Adjust temperature setting. ❑ Clean filter. ❑ Remove obstruction.	X	X
• Filter indicator blinks. Unit does not cool.	♦ Water tank is full of water.	❑ Drain the water through the rear drain tube. (See fig. 19).	X	X
• Unit does not heat.	♦ Temperature setting is too low.	❑ Reset temperature setting.	X	

APPENDIX A

PROBLEM	CAUSE	SOLUTION	E	M
• Unit does not respond properly to remote control command.	♦ IR signal does not reach unit. ♦ Distance between remote control and unit is too great or remote control unit is aimed at improper angle. ♦ IR receiver on unit is exposed to strong light source.	❑ Check for obstruction between unit and remote control; clear if needed. ❑ Get closer to unit. ❑ Dim lights, especially fluorescent.	X	
• Operating indicator blinks.	♦ Compressor operates at high pressure.	❑ Normal operation of the air conditioner. ❑ Operate the unit in high cooling mode. ❑ Verify that the exhaust hose has been installed correctly without bends, allowing free airflow.	X	
• Filter indicator lights up.	♦ Air filter is contaminated.	❑ Clean filter, reinstall it and reset indicator.	X	

Legend:

E - Electronic version

M - Electro-mechanical version

APPENDIX A

APPENDIX A

FRANÇAIS **CLIMATISEUR SPLIT MOBILE**

ENGLISH **MOBILE SPLIT AIR CONDITIONER**

DEUTSCH **MOBILE SPLIT-KLIMAGERÄTE**

ITALIANO **CLIMATIZZATORE PORTATILE SPLIT**

ESPAÑOL **ACONDICIONADO DE AIRE PORTÁTIL Y PARTIDO**

NEDERLANDS **VERRIJDBARE SPLIT AIRCONDITIONER**

РУССКИЙ РУКОВОДСТВ ПО УСТАНОВКЕ И ЗКСПЛУ АТАЦИИ

INSTRUCTIONS DE MONTAGE ET D'EMPLOI

INSTALLATION AND OPERATING INSTRUCTIONS

MONTAGE-UND GEBRAUCHSANWEISUNG

ISTRUZIONI PER L'INSTALLAZIONE E IL FUNZIONAMENTO

INSTRUCCIONES DE INSTALACIÓN Y FUNCIONAMIENTO

INSTALLATIE & BEDIENINGSVOORSCHRIFTEN

РУКОВОДСТВ ПО УСТАНОВКЕ И ЗКСПЛУ АТАЦИИ

APPENDIX A

MOBILE SPLIT AIR CONDITIONER

ELECTRONIC / REMOTE CONTROL

ELECTRO MECHANICAL CONTROL

INSTALLATION AND OPERATING INSTRUCTIONS

APPENDIX A

CONTENTS

APPENDIX A

❑ INTRODUCTION

This new split mobile air conditioner consists in an indoor and outdoor unit, interconnected by a flexible hose. The indoor unit is equipped with four castors for easy mobility.

The air conditioner you have purchased is a factory-chagred and ready for use. No special installation is required; just follow the simple instructions and enjoy this fully featured, versatile air conditioner.

The electronic models are equipped with an electronic microprocessor control system, giving the user the choice of local or remote control operation, as well as precise temperature setting and control, timer operation and a built-in protection system for trouble-free and energy-efficient operation.

Capacity based on test conditions of:
Indoor:27°C/80°F DB - 19°C/67°F WB.
Outdoor:35°C/95°F DB - 24°C/72°F WB.

In accordance with ISO 5151, T1 Conditions.
Actual cooling capacity might vary according to the local environmental conditions.

Optimal operating temperature:
Cooling: 21°-43°C
Heating: -5°-21°C R22
-9°-21°C R407 & R410A

- **PLEASE READ THESE INSTRUCTIONS BEFORE OPERATING THE AIR CONDITIONER**
- **IF YOUR AIR CONDITIONER IS FOR COOLING ONLY, PLEASE DISREGARD THE INSTRUCTIONS RELATED TO HEATING**

IMPORTANT NOTES:

WARNING

- This air conditioner must be grounded for protection against electrical shock.
- Electrical connection and power cord replacement should be done only by authorized electricians and in accordance with electrical regulations and local codes.
- Do not expose the unit to rain.

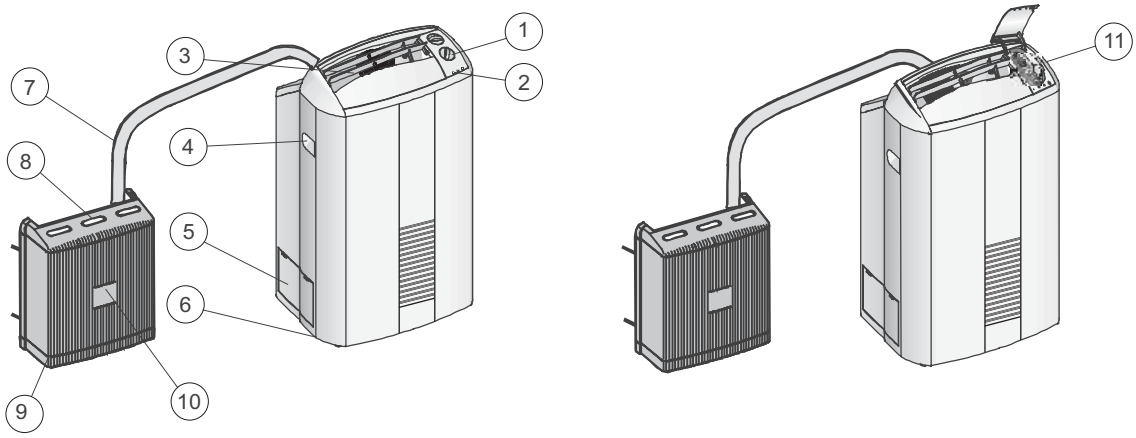
When using this air conditioner for the first time, please do the following:

1. Read the instruction manual and familiarize yourself with the controls.
2. Plug the electric power cord into a power socket which is protected by a proper fuse.
3. Check that all control functions operate properly, including both the remote control unit and on-unit control.
4. Repeat step 3 when the remote control unit is inside its compartment.
5. Disconnect the electric power cord from the power socket, wait 3 minutes and reconnect the unit.

IN THIS MANUAL

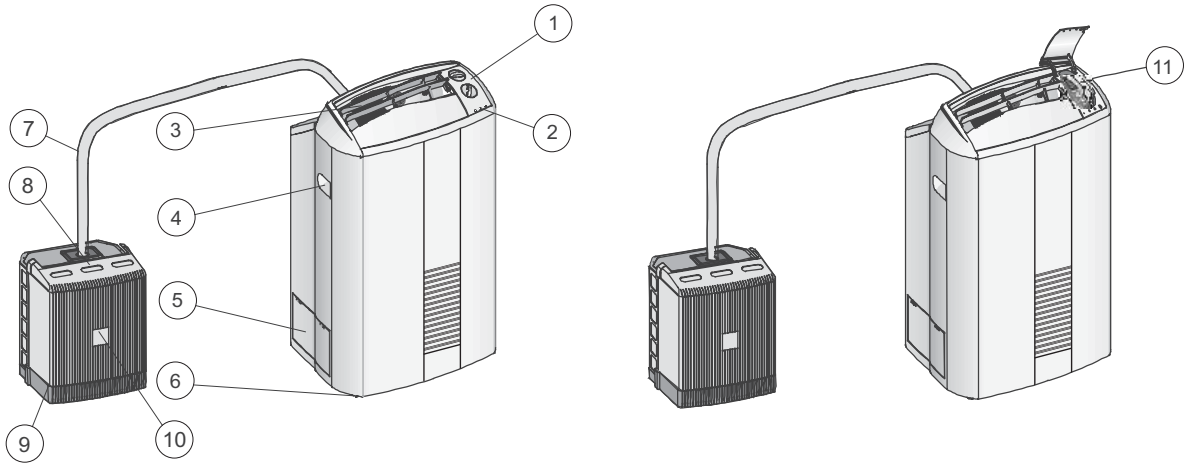
APPENDIX A

❑ DESCRIPTION



Electro-Mechanical models 3.1 KW (R407C) **Electronic models 3.1 KW (R407C)**

Figure 1: Indoor and Outdoor Unit components Description (Front)

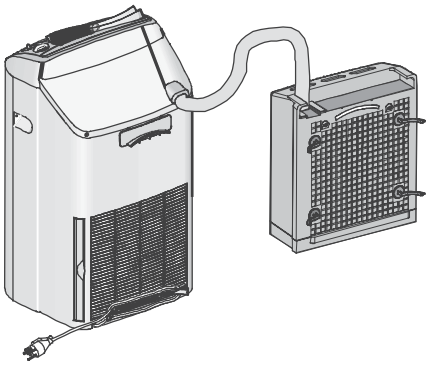


Electro-Mechanical models 4.1 KW (R22/R410A)
3.1 KW (R410A)

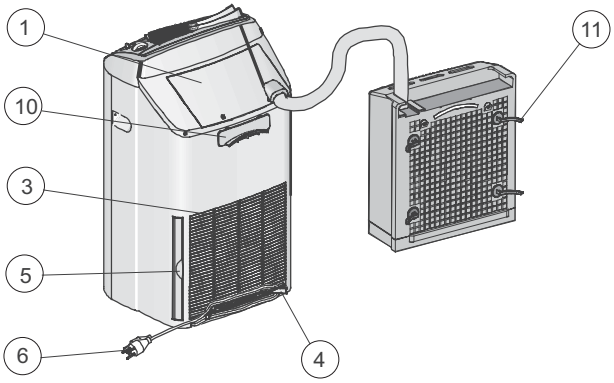
Electronic models 4.1 KW (R22/R410A)
3.1 KW (R410A)

Figure 2: Indoor and Outdoor Unit components Description (Front)

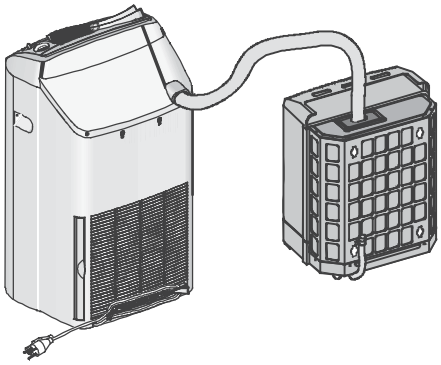
1. Control buttons (for electromechanical model)
2. Indicators (leds)
3. Adjusting air supply grille
4. Carrying handle
5. Water tank door
6. Castors
7. Interconnecting hose
8. Carrying handle -outdoor unit
9. Water basin
10. Condenser fan grille
11. Remote control (for electronic model only)



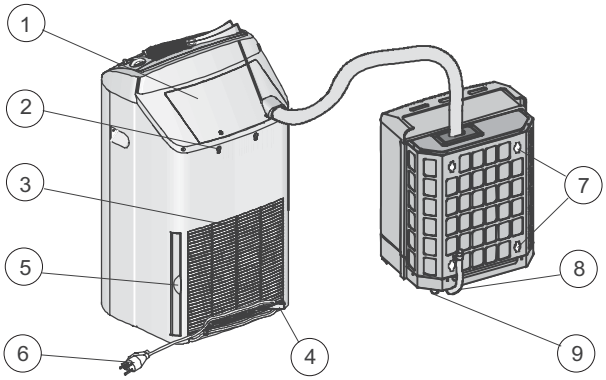
Models 3.1 KW (R407C)



Models 3.1 KW (R407C) - With Quick Connectors



Models 4.1 KW (R22/R410A)
3.1 KW (R410A)



Models 4.1 KW (R22/R410A) - With Quick Connectors
3.1 KW (R410A) - With Quick Connectors

Figure 3: Indoor and Outdoor Unit components Description (Back)

1. Quick disconnect cover (optional)
2. Key holes
3. Return air intake
4. Drain tube with plug-indoor unit
5. Air filter handle
6. Power Cord
7. Spacing stud holes
8. Drain tube with plug-outdoor unit
9. Castors outdoor unit (for model 4.1 KW, 3.1 KW /R410A)
10. Suspension bracket
11. Spacing studs

❑ ACCESSORIES

1. Suction pads
2. Wrench no. 1
3. Wrench no. 2

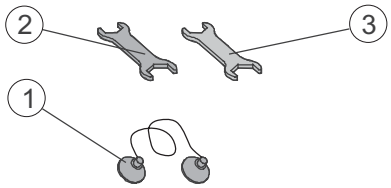


Figure 4: Accessories

APPENDIX A

❑ INSTALLATION

This mobile split air conditioner can be installed by the customer, as follows:

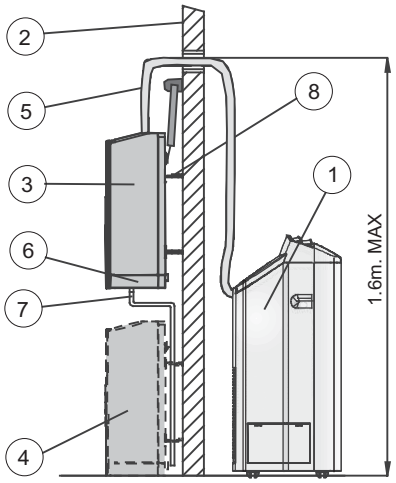
Choose an appropriate place for the air conditioner indoor unit near an exterior opening (window or door). A grounded 230 electrical outlet should be within 2.5 meters of the indoor unit.

Determine whether the outdoor unit is to be suspended from the window of the wall, or placed on the floor near a doorway. Be sure the outdoor unit is stable and well supported at its place of installation (see Figure 5).

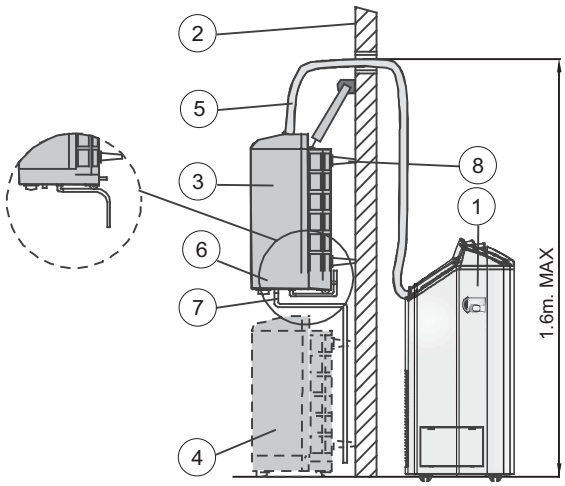
The outdoor unit must be installed with the rear grille facing the wall at a minimum distance of 60 mm.

Be sure the outdoor unit is stable and well supported at its place of installation so that its handle and hose are on top. To assure proper condensed drainage, make sure the unit is installed in a level position.

Under high humidity conditions, the outdoor unit condensate basin (6) may overflow. If this occurs often, it is recommended to use a permanent drain tube by fitting a 13-mm OD tube (7), routed to a nearby drainage point.



Model 3.1 KW (R407C)



Model 4.1 KW (R22/R410A)
3.1 KW (R410A)

Figure 5

1. Indoor unit
2. Window
3. Outdoor unit, wall mounted
4. Outdoor unit, floor mounted
5. Interconnecting hose
6. Condensate basin
7. Overflow drain tube
8. Spacing stud

INSTALLATION OF OUTDOOR UNIT (See Figure 6,7,8)

A standard kit (Figure 8), supplied with the air conditioner for suporting the outdoor unit, makes it possible to mount it either from a window sill (Figure 6) or on the wall (Figure 7), refer to Figure 8 for reference numbers in the following steps.

1. Install the 4 spacing studs (1) at the back of the unit to assre undisturbed air flow to the unit.
2. For window mounting, refer to Figure 6. Place the support bracket (3) on the window frame, drill four holes in the window frame and mount the support securely with four screws.
3. Attach the two lower snap-hooks (5) into the side holes of the unit.
4. Lift the unit up, pass it over the window and hang it inserting the hanging strip in the apposite grocve.
5. Verify that the unit is well supported, stable and level. Suspension Straps (2) can be used to level the unit.
6. For wall mounting, refer to Figure 7, place support bracket (3) against the wall, drill four holes in the wall and fasten with the four screws; verify that support is level.

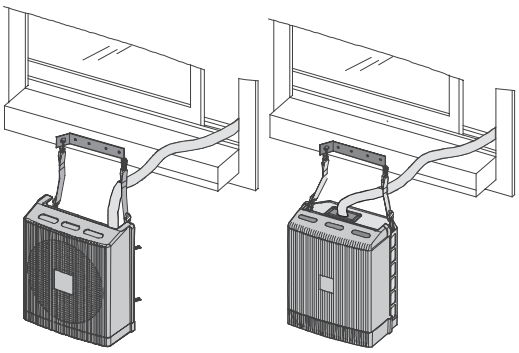


Figure 6. Suspending outdoor unit from window sill

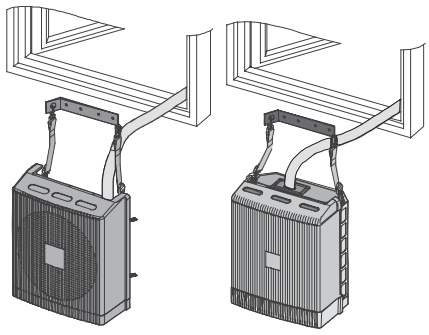
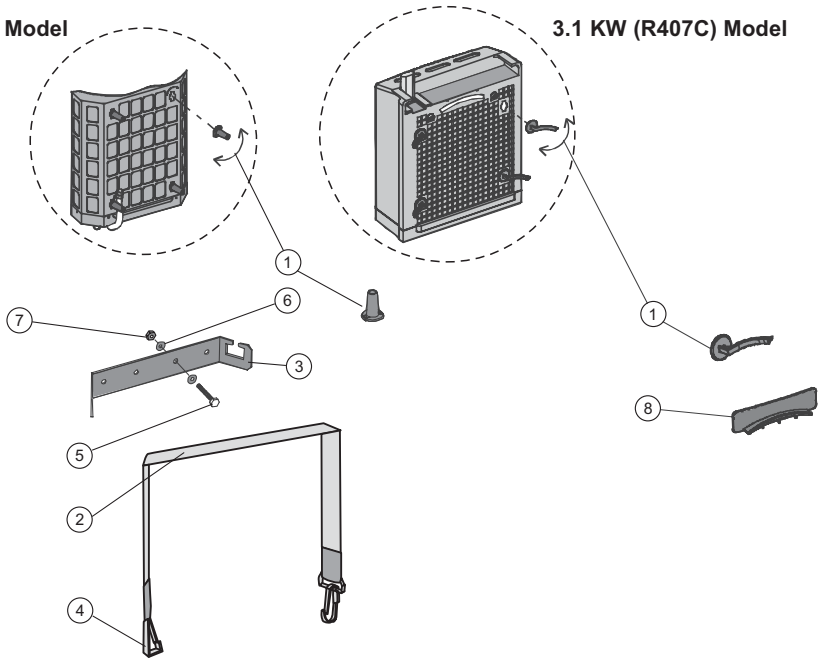


Figure 7. Suspending outdoor unit from wall

For all models up to 3.1 KW and 4.1 KW



1. Spacing stud (x4)
2. Suspension strap
3. Support bracket
4. Snap-hook (x2)
5. Bolt (x4)
6. Washer (x4)
7. Nut (x4)
8. Suspending bracket (for models 3.1KW / R407C)

Figure 8. Outdoor unit supporting kit

APPENDIX A

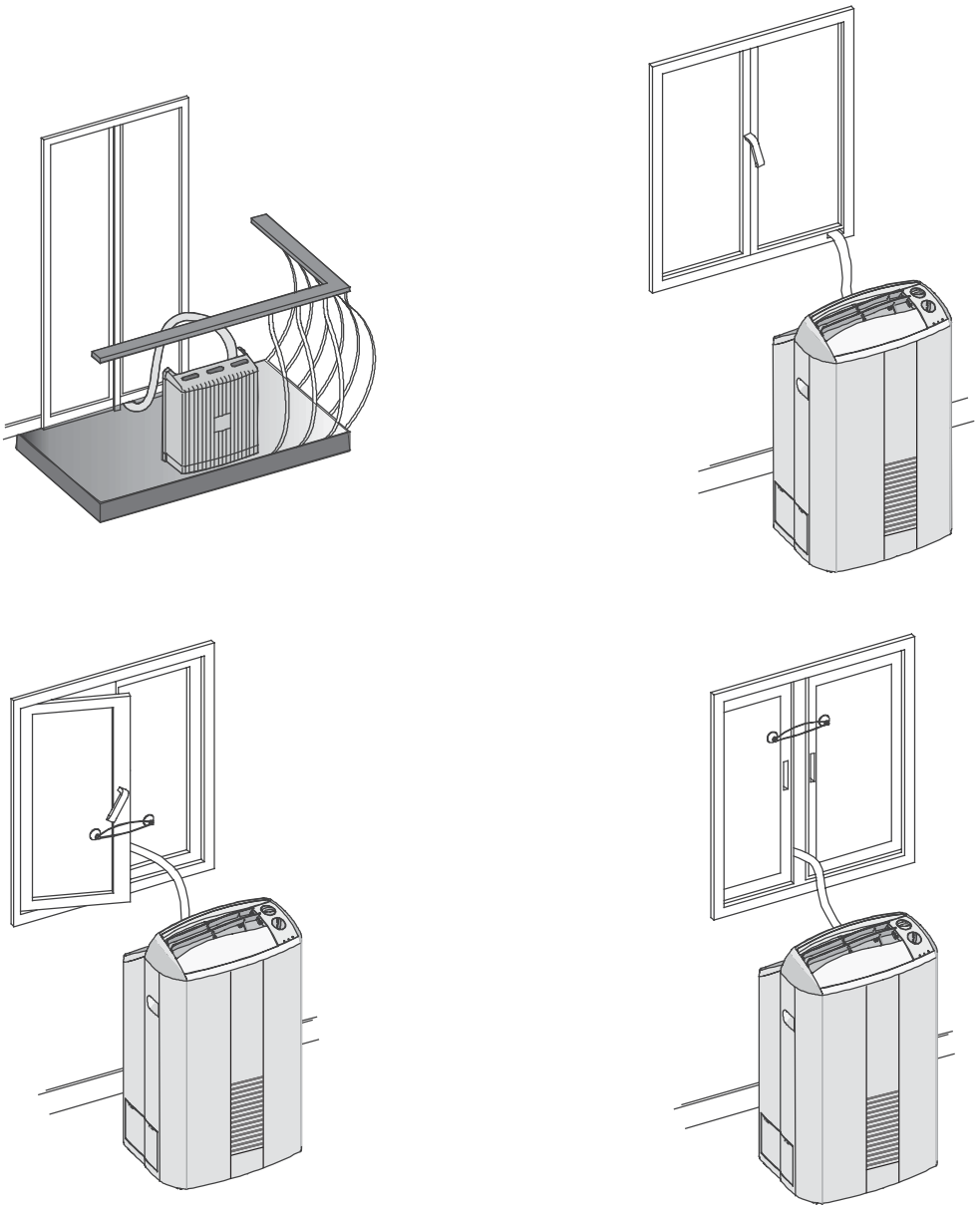


Figure 9

Prepare a slot in the lower part of door or window frame for the interconnecting hose location (see Figure 9).

Pass the interconnecting hose which contains the refrigerant tubing, cable and drain tube through a window or door opening. Be sure not to subject the interconnecting hose to any over-stress, avoid sharp bends or forced twisting. Before operation, close the window or door; use the suction pads if needed.

NOTE

a. If the air conditioner is to be used periodically in alternate rooms, it is recommended to cover the opening in the door or window. Additional mounting kits are available from your local dealer.

b. When transporting the unit, make sure to keep it in vertical position (discharge grille on top). Also, when removing outdoor unit, empty the water accumulated at the bottom by tilting to one side.

APPENDIX A

APPLICATION OF QUICK CONNECTORS (OPTIONAL)

The quick disconnect feature is used when installing the flexible interconnecting hose through a window or a wall. It enables temporary separation between indoor and outdoor units when passing the hose through and opening in an external wall.

DISCONNECTING THE UNITS (See Figures 10 and 11)

To disconnect between the indoor and outdoor unit, perform the following steps:

WARNING: Make sure to disconnect the unit from power supply.

STEP 1. Unscrew the fastening screw (2) and remove cover (1).
STEP 2. Unplug the electrical plug (3) and pull it out from its socket (4).
STEP 3. Disconnect drain hose (9) from the drain pan connector (10)
STEP 4. Remove the tube clamp (12) by unscrewing its fastening screw.
STEP 5. Unscrew the liquid line quick disconnect (5) from its mating part (6) as follows:
- Retain lock-nut (13) with the supplied wrench No. 2 (20) and open with the supplied wrench No. 1 (19) the hexagonal nut (5).
- Slowly turn nut (5), and open until part (5) is disconnected from part (6).

STEP 6. Unscrew the suction line quick disconnect (7) from its mating part (8)as follows:
- Retain lock-nut (14) with the supplied wrench No. 2 (20) and open with the supplied wrench No 1 (19) the hexagonal nut (7).
- Slowly turn nut (7), and open until part (7) is disconnected from part (8).

STEP 7. Remove interconnecting hose clamp (21) by unscrewing its fastening screw.
STEP 8. To protect the tube openings from any foreign material or contamination, close them with the provided plugs AND COVERS; REFER TO FIGURE 11. insert plug (16) into nut (5) , plug (18) into nut (7), Cover (15) onto part (6) and cover (17) on part (8). Tighten all of these lightly.

The outdoor unit, together with the interconnecting flexible hose (11) may now be separated from the indoor unit, and the hose can be passed through the wall opening.

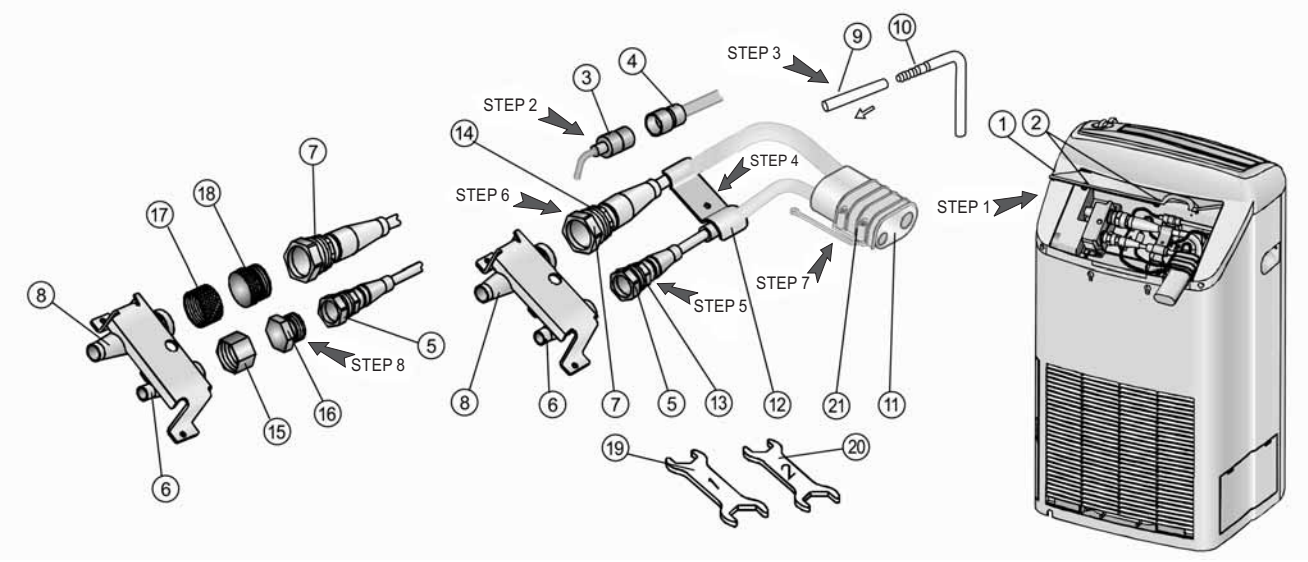


Figure 11 **Figure 10**

APPENDIX A

CONNECTING THE UNITS (See Figures 12 and 13)

After locating outdoor and indoor unit in their respective places, perform the following steps to reconnect between the two units:

STEP 1. Remove protection plugs (16), (18) and covers (15), (17) from their respective connectors (see Figure 13).

STEP 2. Connect quick disconnect (5) to its mating part (6), as follows:
- Turn by hand part (5) onto part (6).
- Retain lock-nut (13) with the supplied wrench No. 2 (20) and close with the supplied wrench No. 1 (19) the hexagonal nut (5) to its mating part (6), until it is tight.

WARNING: Do not use excessive force to tighten the nut.

STEP 3. Connect quick disconnect (7) to its mating part (8) as follows:
- Turn by hand part (7) onto part (8).
- Retain lock-nut (14) with the supplied wrench No. 2 (20) and close with the supplied wrench No. 1 (19) the hexagonal nut (7) to its mating part (8), until it is tight.

WARNING: Do not use excessive force to tighten the nut.

STEP 4. Reconnect interconnecting hose clamp (21) with its screws to the unit.

STEP 5. Connect the drain hose (9) to the drain pan (10).

STEP 6. Connect the electrical plug (3) by pressing it into its socket (4).

STEP 7. Reconnect the tubes clamps (12) with its fastening screw.

STEP 8. Reinstall the cover (1) and tighten it with its fastening screw (2).

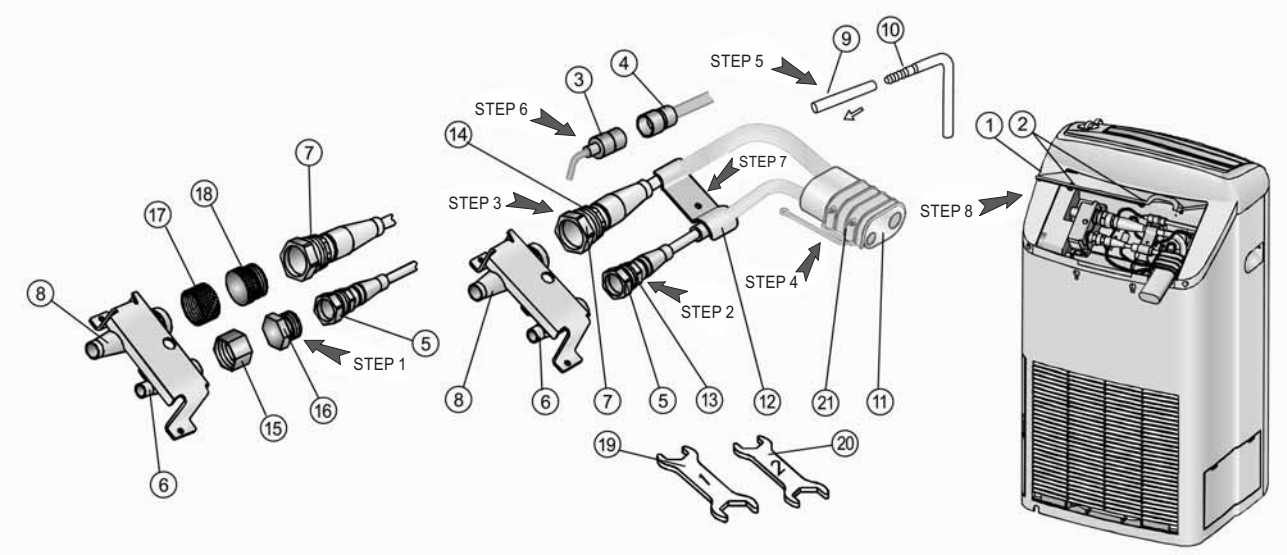


Figure 13

Figure 12

❑ ELECTRICAL CONNECTION

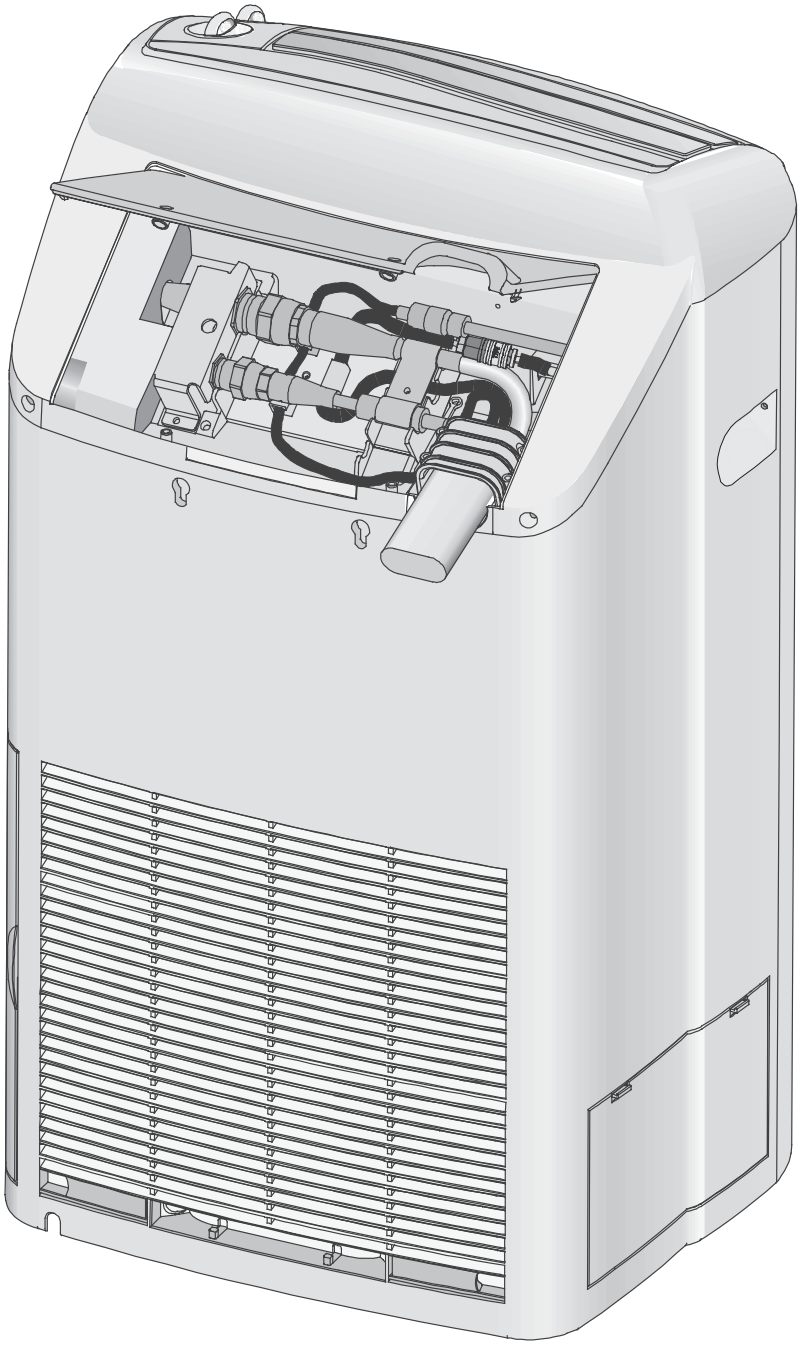
Before plugging in, please check that:

1. Socket and mains correspond to data given in specifications.
2. Plug fits the socket; if not, change socket.
3. Socket is properly grounded.

The manufacturer is not responsible for any damage incurred due to failure of following normal safety procedures.

APPENDIX A

QUICK CONNECTORS APPLICATION (OPTIONAL)



APPENDIX A

❑ OPERATION - ELECTRONIC MODEL (With remote control)

In order to obtain maximum comfort and economical operation, please make sure to:

- Doors and windows of room to be conditioned are closed.
- Air outlet and inlet openings on the unit are free of any obstruction.
- Shade the room from direct sunrays and avoid excessive sources of heat in the room.

MODES OF OPERATION, FUNCTIONS AND FEATURES

COOL

Cools, dehumidifies and filters the room air. Maintains desired room temperature.

HEAT

Heats and filters the room air. Maintains desired room temperature.

AUTO COOL/HEAT

Automatically switches from COOLING to HEATING or from HEATING to COOLING, maintaining the desired temperature according to the room conditions.

DRY

Dehumidifies and softly cools the room air. In DRY Mode, the air conditioner operates with increased dehumidifying power. This function is recommend for use when the temperature is rather low, but the humidity is high.

FAN

Circulates and filters the room air. Maintains constant air movement in the room.

AUTO FAN

The air conditioner automatically selects the FAN speed in accordance with the room temperature. At the start, the unit operates at high fan speed. As the room air approaches the desired temperature, the fan switches to a lower speed, for quieter operation.

TIMER

Real time control and display, automatically turns the air conditioner ON and OFF according to the time of day setting, ensuring comfort conditions before returning home, without wasting electricity; it turns off the air conditioner automatically when sleeping.

SLEEP

Designed to create comfortable sleeping conditions. When in COOLING mode, the temperature rises one degree centigrade above the set-point after each consecutive hour for up to three hours from the start of the mode. The rise in temperature prevents the sense of over-cooling while sleeping (when your body is resting). In HEATING mode the reverse occurs; the air conditioner lowers its temperature one degree every hour, up to three hours from the start of the mode. When in SLEEP mode, the air conditioner will be automatically turned off after seven hours. The result is a more comfortable and invigorating sleep, which leaves you feeling fresh and energetic in the morning.

*** NOTE: The heating modes are used on units with cooling and heating.**

VERTICAL AIR SWING (OPTIONAL)

Automatic swing of air supply in a vertical direction. The flaps automatically move in upward and downward directions to disperse the conditioned air evenly throughout the room.

FILTER AND WATER OVERFLOW INDICATION (see indicator C on figure 15)

Filter indicator on the indoor unit display is turned on when the filter requires cleaning. After cleaning and reinstalling the filter, the system should be reset. When the indicator is blinking, it indicates that the water tank is full of water and needs to be drained.

BUZZER INDICATOR

A soft buzzer will sound from the indoor unit display to indicate that a command sent by the remote control has been accepted and stored in the unit's memory. The user may easily cancel this feature from the display panel.

ON- UNIT OPERATION (see buttons E on figure 15)

The air conditioner can be turned on or off directly from the indoor unit display panel, without the use of the remote control.

3-MIN. DELAYED RUN

The compressor is protected by a three-minute delayed restart.

MEMORY

The microprocessor retains the last data entry, whether or not the unit is plugged in. Therefore, when the unit restarts after a power disruption or failure, it will resume operation in the same mode as before the power disruption.

SETTING STORED

The air conditioner will store all the settings of the operating MODE button in COOL, HEAT, AUTO, DRY and FAN.

APPENDIX A

USE OF WIRELESS REMOTE CONTROL

THE WIRELESS REMOTE CONTROL BRINGS ALL FUNCTIONS TO YOUR FINGERTIPS.

PRIOR TO OPERATION

Prior to operating your air conditioner, make sure that:

- The unit is properly connected to the power supply.
- The red tab protecting the remote control battery has been removed.
- For clock settings, see page 18.

REMOTE CONTROL BATTERY CHANGE

- Remove the batteries from the remote control unit, as shown on figure 14. Use two 1.5 volt, size AAA batteries.
- For reserving the environment, please return used batteries for recycling process.

REMOTE CONTROL COMPARTMENT

Use the remote control compartment when the unit is not in use. The remote control can be flipped in or out of its compartment. (See figure 14).

PROTECTING THE ELECTRONIC SYSTEM

- Indoor unit and the remote control must be at least one meter away from any TV, radio or any other electronic home appliance.
- Protect the unit and the remote control from direct sunrays or lighting.

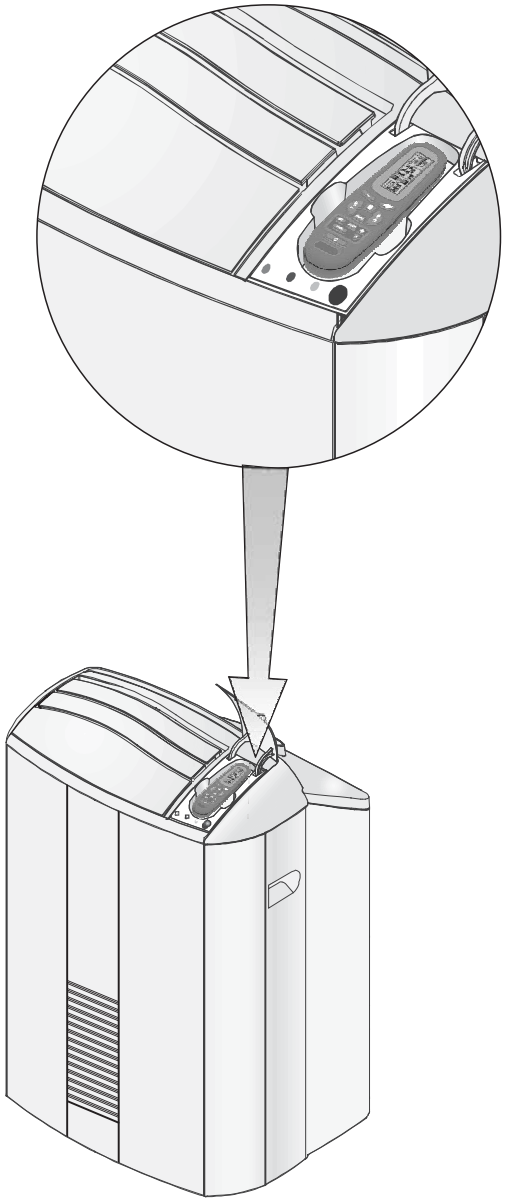


Figure 14. Remote control application

Aim the remote control towards the air conditioner's infrared signal receiver when it is operating.

The remote control signal can be received at a distance of up to 8m.

Be sure that there are no obstructions between the remote control and the signal receiver.

Do not drop or throw the remote control unit.

Do not place the remote control unit in a location exposed to direct sunlight, or next to a heating unit, or any other heat source.

Do not expose the air conditioner signal receiver to strong light, such as a fluorescent lamp or sunlight.

ON-UNIT INDICATORS AND CONTROLS - (ELECTRONIC MODES) (See Figure 15)

A. TIMER INDICATOR

Lights up during TIMER and SLEEP operation.

B. OPERATION INDICATOR

Lights up during operation. Blinks to announce that the remote control infrared signal has been received and stored. Blinks continuously when compressor operates in its high-pressure protection mode.

Lights up during TIMER and SLEEP operation.

C. FILTER AND WATER OVERFLOW INDICATOR

Lights up when air filter requires cleaning. Blinks during water overflow.

D. CLEAR/FILTER BUTTON

Press to turn off the FILTER indicator and to reset the filter function, after the clean filter has been reinstalled.

Press to cancel the buzzer announcer, if elected.

E. MODE - COOL / HEAT / ON / OFF - UNIT OPERATION BUTTON

Used to switch the unit between positions OFF, ON, COOLING or HEATING, without using the remote control.

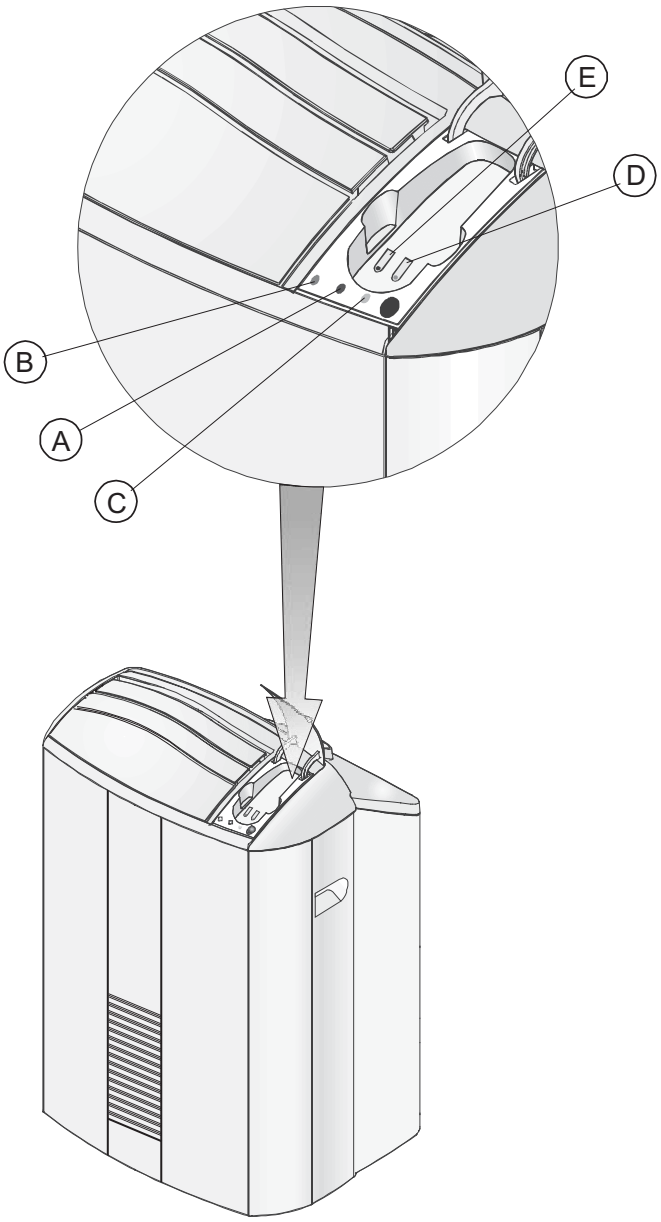


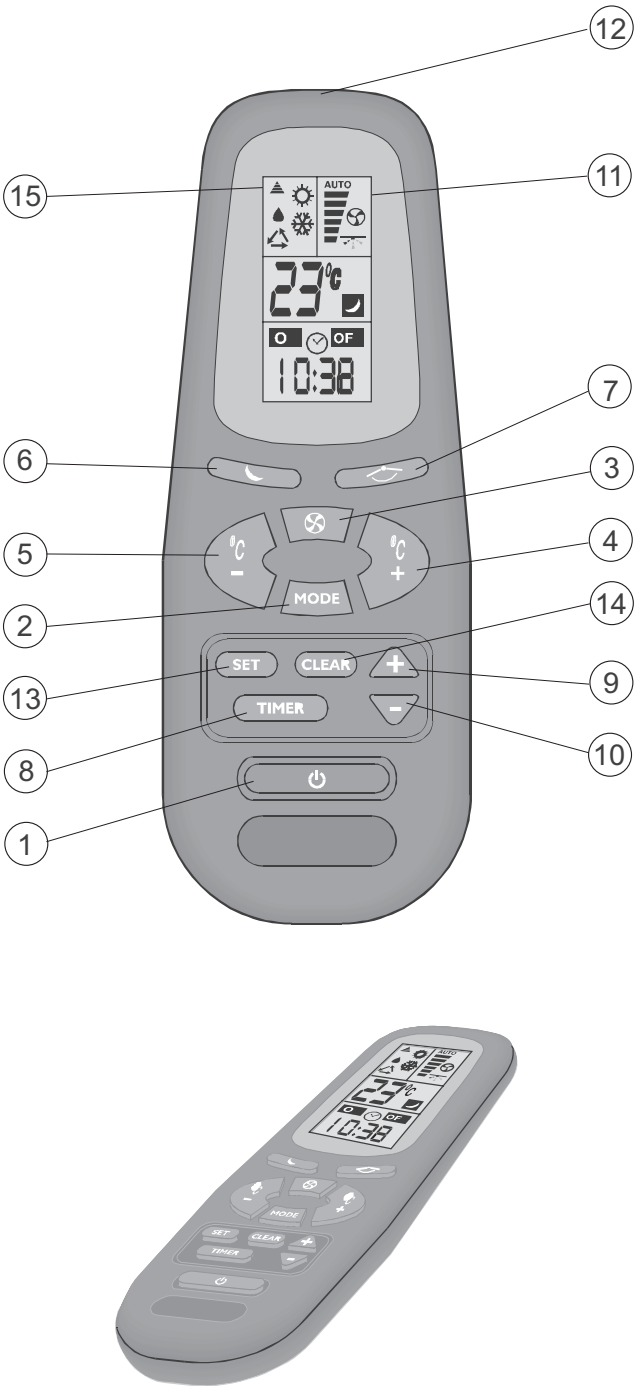
Figure 15

ON-UNIT OPERATION

If the remote control cannot be operated, the air conditioner can be turned on for cooling or heating, or completely turned off, by pressing MODE button (E). The MODE button will change the operational status of the unit between the - COOLING - HEATING - OFF positions every time it is pressed.

NOTE: The heating modes are used on units with cooling and heating.

REMOTE CONTROL (See figure 16)



1. START/STOP button
2. Operation MODE selection button
3. FAN SPEED and AUTO FAN button
4. Temperature set UP button (+)
5. Temperature set DOWN button (-)
6. SLEEP button
7. Automatic Vertical Air Swing button
8. TIMER select button
9. TIMER set up button (+)
10. TIMER set down button (-)
11. LCD display
12. Infrared signal transmitter
13. TIMER SET button
14. TIMER CLEAR button
15. Transmission sign

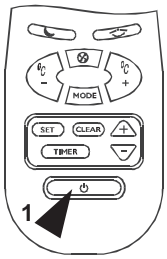
Figure 16

APPENDIX A

OPERATION PROCEDURE (See figs. 15 & 16)

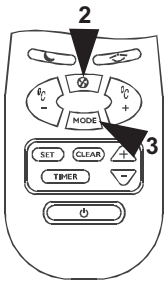
TURNING ON THE AIR CONDITIONER

Press START/STOP button (1) to turn on the air conditioner. Operation Indicator (B) on the air conditioner will light up, indicating that the unit is in operation. Note that the LCD operation display (11) will always show the last mode of operation and the previous function used.



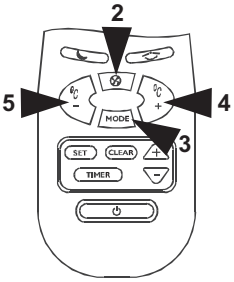
VENTILATING OPERATION

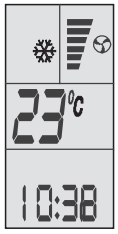
Select the FAN mode by pressing MODE button (2). Switch to the desired fan speed or AUTO speed by pressing FAN speed button (3).



COOLING OPERATION

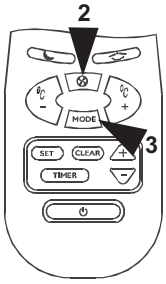
Select the COOLING mode by pressing MODE button (2). Switch to the desired fan speed or to AUTO fan by pressing button (3). Select suitable temperature setting.

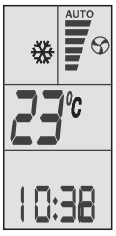




COOLING OPERATION WITH AUTO FAN MODE

This operation starts at the highest airflow, in order to quickly lower the room temperature. It will then automatically switch to low air flow, in order to quietly maintain the selected temperature.

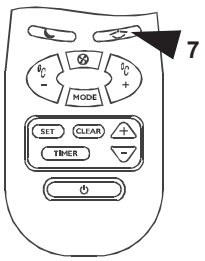


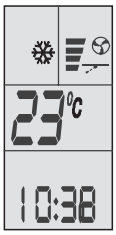


*** NOTE: The heating modes are used on units with cooling and heating.**

AUTOMATIC VERTICAL AIR SWING

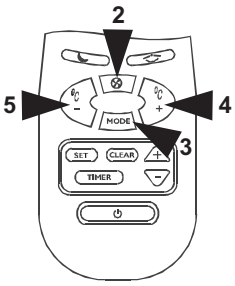
Press button (7) to activate the auto air swing.
Press the button again to deactivate this function.





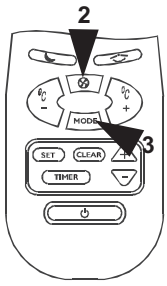
HEATING OPERATION *

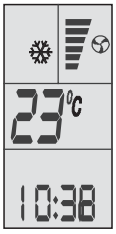
Select the HEATING mode by pressing MODE button (2). Switch to the desired Fan Speed or to AUTO FAN by pressing the Fan button (3). Select suitable temperature setting. (see figure 7 for unit installation)



HEATING OPERATION WITH AUTO FAN MODE *

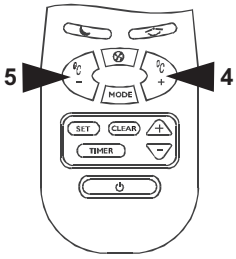
This operation starts with the highest air flow in order to quickly raise the room temperature. It will then automatically switch to the lower air flow to quietly maintain the selected temperature.





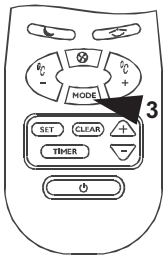
SELECTING THE TEMPERATURE

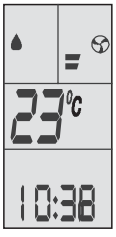
Press temperature button (4) or (5) to change the temperature setting on the LCD operation display (11). The temperature setting is shown in centigrade degree. A higher number indicates a higher room temperature; a lower number indicates a lower room temperature.



DRY OPERATION

Select the DRY mode by pressing MODE button (2). Select the suitable temperature setting. While in DRY mode, the air conditioner will operate at low fan speed, regardless of the fan setting on the LCD operation display. The fan might stop operating from time to time to prevent over-cooling.

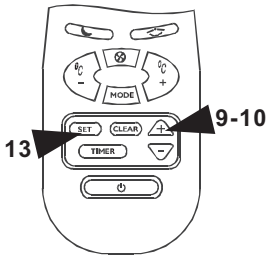




APPENDIX A

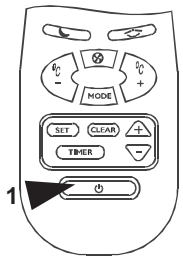
CURRENT CLOCK TIME SET

Clock setting is performed when batteries are inserted. The remote control displays the setting, and the clock display will blink "00:00" or "12:00" until a new time is set. For clock setting, use buttons (9) (10) in order to set the hours and minutes, respectively, and then press timer SET button (13). The clock setting can also be performed by pressing the timer SET button (13) for 5 seconds. The clock display will blink; for a new setting, follow the steps described above.



TURNING OFF THE AIR CONDITIONER

Press START/STOP button (1) to turn OFF the air conditioner. Operation Indicator (B) on the air conditioner will be turned off. The remote control LCD will display the clock time and room temperature or the set-point temperature. The last operating set-up will be kept for the next operation.

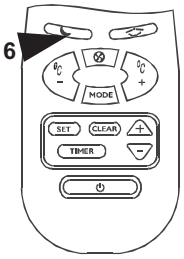


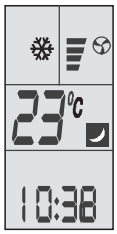
SLEEP FUNCTION

Press SLEEP button (6) to select the SLEEP function. When the sleep function is activated, the air conditioner will be automatically turned OFF after seven hours. If at the same time TIMER OFF is activated as well, the air conditioner will be turned OFF according to the TIMER settings. TIMER indicator (A) on the air conditioner lights up during SLEEP function.

To cancel SLEEP function press one of the following:

- START/STOP button (1)
- SLEEP button (6)

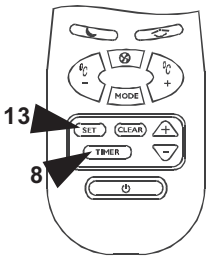


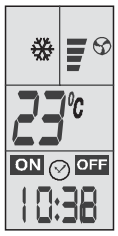


TIMER OPERATION

Press the TIMER select button (8) to activate the timer operation mode. Each time the TIMER button (8) is pressed, one of the four types of operation modes (shown below) will appear on the LCD display. The operation modes are sequenced in the direction of arrow. Indicator (A) on the air conditioner will light up during TIMER operation.

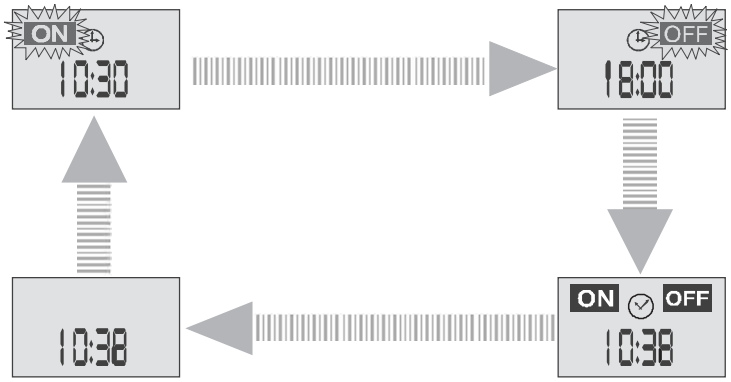
NOTE: After a power failure, the TIMER indicator (A) will blink. When the unit is in TIMER mode, the unit will automatically change to STAND BY mode and the timer operation will be cancelled. To resume the timer operation, follow the instructions, above.





APPENDIX A

TIMER OPERATING MODES



I. TIMER ON

This mode enables you to set a time for starting its operation. Press the TIMER button (8) until the ON sign blinks. Starting time can be adjusted using the up and down buttons (9) and (10), respectively. Press SET button (13) to activate the timer.

Example: Operation is restored at 10:30

II. TIMER OFF

This mode enables you to set the time at which timer stops its operation. Press the timer button (8) twice and the OFF sign will blink. Time can be adjusted using the up and down buttons (9) and (10), respectively. Press SET button (13) to activate the timer.

Example: Operation stops at 18:00

III. TIMER ON AND OFF

This mode enables you to set the start and stop time of operation. Press the TIMER button (8) until the ON sign blinks; by pressing again the OFF sign will blink. Time can be adjusted by using the up and down buttons (9) and (10), respectively. Press SET button (13) to activate the timer.

Example: Operation is restored at 10:30 and stops at 18:00.

IV. CLEAR

Use this mode to cancel timer operation. Press CLEAR button (14) and timer operation will terminate, and the LCD display will be cleared for each timer mode. When the CLEAR button is pressed, the timer indicator (A) will turn OFF.

NOTE: If the timer button (8) is selected and neither TIME ADJUST, SET, or CLEAR buttons are pressed within 15 seconds, the timer operation will be cancelled and the last set-up will be displayed.

APPENDIX A

❑ OPERATION - (For Mechanical Models)

The air conditioner has the following features:

- On-unit operation control
- Indicator control lights
- Warning light
- Thermostat

ON UNIT CONTROL AND DISPLAY PANEL (See Figure17)

In order to obtain maximum comfort and economical operation, please make sure to:

- Follow the instructions for Installation For Cooling on page 5.
- Be sure that the air outlet and inlet openings on the unit are unobstructed.
- Shade the room from direct sunrays and avoid excessive sources of heat in the room.

A - Selector switch knob

Selector switch positions

A1. Off

A2. Fan only - High

A3. Cooling - High

A4. Cooling - Low

B - Temperature control knob

C - Indicators

C1. Cooling indicator

C2. Operation indicator

C3. Overflow indicator

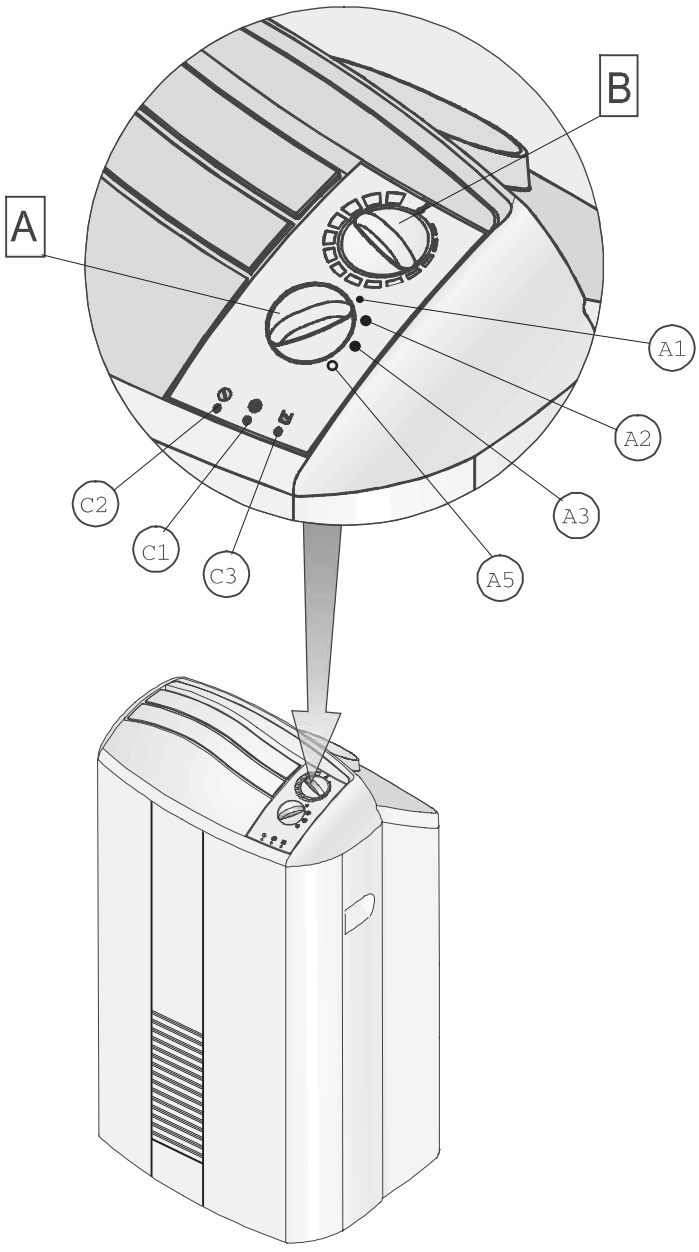


Figure 17

OPERATING PROCEDURE

Plug the unit into a power supply, and the power supply indicator (C2) lights up. This indicates that the unit is ready for operation.

TURNING ON THE AIR CONDITIONER

Turn the selector switch knob (A) from OFF to any desired position.

FAN OPERATION (VENTILATING)

Turn the selector switch knob (A) to (A2)

- High fan (A2)

COOLING OPERATION

Turn the selector switch knob (A) to one of the following positions:

- High Cooling (A3)

- Low Cooling (A4)

When the cooling mode is activated, indicator (C1) will light up. It is recommended to use the High-cooling mode (A3) when a fast drop in temperature is required, while the Low cooling mode (A4) should be used for normal, quiet operation to maintain the selected temperature.

SELECTING THE TEMPERATURE

The desired temperature is selected by turning the temperature control knob (B).

If the temperature is lower than desired, turn knob (B) counterclockwise to a new position.

If the temperature is higher than desired, turn knob (B) clockwise to a new position.

TURNING OFF THE AIR CONDITIONER

Turn the selector switch (A) to OFF position (A1). The operation indicator (C2) will remain ON.

WARNING:

Wait 5 minutes before restarting the cooling modes, or before changing the temperature setting.

❑ CARE AND MAINTENANCE

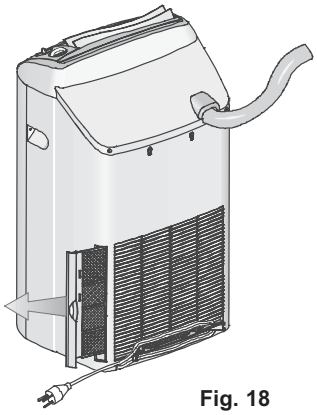


Fig. 18

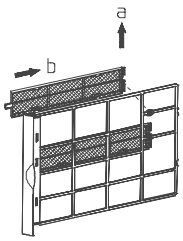


Fig. 19

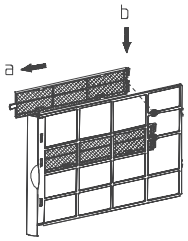


Fig. 21

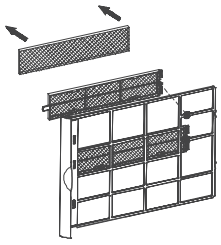


Fig. 20

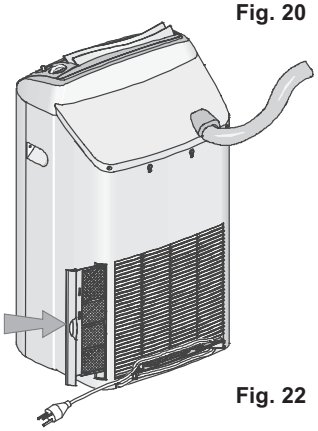


Fig. 22

WARNING

Before performing any maintenance procedure, make sure to dis connect the air conditioner from the power supply.

One of the functions of the air conditioner is to filter the supplied air by collecting dust and dirt particles from the air. Your air conditioner is provided with a main filter and with two additional purifying filters, using activated carbon and electrostatic materials.

The filter should the cleaned periodically - once a month, or at least once every season under ordinary conditions.

Failure to clean the air filter will result in reduced cooling/heating capacity and may cause damage to the unit.

CLEANING THE AIR FILTERS

- Main filter removal and cleaning (See Figures 18,19, 21,22)
- To Remove the main filter, hold the handle on its back and pull the filter out. (See Figure 18).
- Remove the 2 purifying filter frames from the main filter (See Figure 19).
- Rinse both sides of the main filter in lukewarm tap water and allow it to dry (not in direct sunlight).
- Attach the two purifying filter frames back on to the main filter.
- Reinstall the main filter by inserting it in the back opening of the unit and pushing the filter inwards (See Figure 22).

WARNING:

DO NOT OPERATE THE AIR CONDITIONER WITHOUT THE FILTER!

PURIFICATION FILTER REPLACEMENT (See Figures 19, 20, 21)

- The air purifying filters should be removed from the main filter and replaced once a year.
- Remove the two purifying filter frames from the main filter (See Figure 19).
- Replace the two filter elements and secure them in the frames (See Figure 20).
- Attach the two purifying filter frames back into the main filter (See Figure 21).

CLEANING THE AIR CONDITOINER

- Wipe the unit with a soft cloth or clean it with a vacuum cleaner.
- Do not use hot water or volatile materials which could damage the surface of the air conditioner.

AT THE BEGINNING OF THE SEASON

- Make sure there are no obstacles blocking the flow of inlet or outlet air.
- Make sure the power supply is properly connected.

CLEANING OUTDOOR UNIT CONDENSATE BASIN (See Figures 23 and 24)

Remove the water basin (2) by unscrewing the four screws (3) on each side of the basin. Clean the basin with water, dry and reinstall.

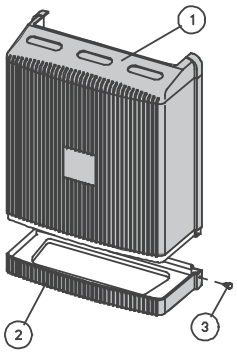


Figure 23. Removal of condensate basin Model 3.1 KW (R407C)

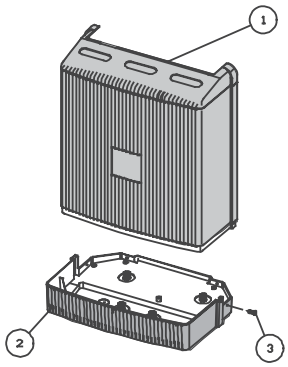


Figure 24. Removal of condensate basin Model 4.1 KW (R22/R410A) 3.1 KW (R410A)

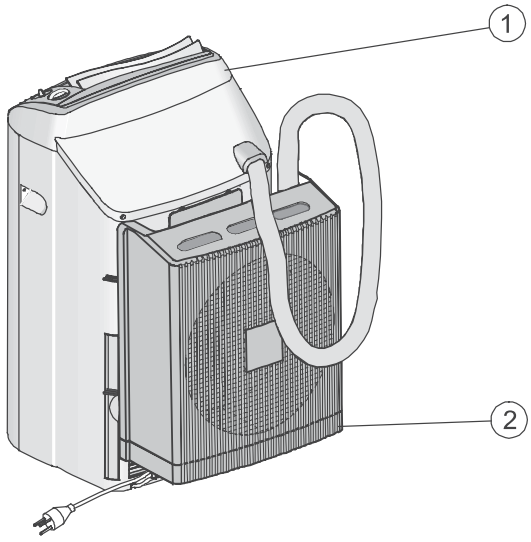
❑ MOVING AND STORING - ALL MODELS (See Figure 25)

Before carrying or storing, tilt the outdoor unit to empty it from any remaining condensed water, Use the carrying handles to move the unit on its castors.

Do not attempt to move the unit by pulling the flexible hose. When transporting the appliance in a vehicle, always kept it in an upright position.

FOR MODELS 3.1 KW (R407C) ONLY

The indoor and outdoor units should be joined together (Figure 25) when moving or storing the air conditioner. To join the units, insert attaching pins (10) of the outdoor unit into the key holes (2) of the indoor unit (see Figure 3).



1. Indoor Unit
2. Outdoor Unit

Figure 25. Units joined for moving - Model 3.1 KW (R407C) only

❑ IMPORTANT NOTICES

- This air conditioner has been manufactured for domestic environments and should not be used for any other purpose.
- Do not obstruct the air conditioner's air discharge and inlet.
- If repair is needed, contact only the nearest authorized service center; unqualified servicing is dangerous.
- This air conditioner is to be used by adults only. Do not allow children to play with it.
- Always ground the unit.
- Make sure that the unit is installed in a horizontal position.
- Before cleaning or performing any maintenance operations, always disconnect the electric power supply plug form the socket.
- Do not place any strain on the power cord when moving the unit.
- The air conditioner should not be installed at a place having any combustible gases, oil or sulphur in the atmosphere, or near any possible sources of heat.
- Do not place hot or heavy objects on the air conditioner.
- Clean air filter periodically.
- The air conditioner should be transported in an upright position. After transporting, wait at least one hour before switching it on.
- After transporting, wait at last one hour before turning the unit on.
- Move the unit with caution over carpets and rugs.
- Empty the water tank at the end of the day or before moving the unit over carpets and rugs.
- In case of damage to the power cord, replacement or repair should be made only by an authorized technician.
- This unit conforms to EEC Directive of Electromagnetic compatibility (89/336/EEC).

APPENDIX A

❑ BEFORE CALLING FOR SERVICE

Before calling for service, please check the following malfunctions and correct as needed.

Should this fail to remedy the malfunction, contact your nearest authorized service center for qualified assistance.

PROBLEM	CAUSE	SOLUTION	E	M
• Unit does not operate. Operation indicator doesn't light up.	♦ Power failure. ♦ Plug is disconnected. ♦ The water tank is out of the unit, or not inserted properly in place.	❑ Check main fuse. ❑ Insert plug in power supply socket. ❑ Insert the water tank in its place.	X	X
• Unit operates for only brief periods in cooling or dry mode.	♦ Improper temperature setting.	❑ Decrease temperature setting.	X	X
• Unit functions, but does not perform efficiency.	♦ Window is open. ♦ Source of heat in the room (cooker, etc.) or room is over crowded with people. ♦ Unit capacity is insufficient for load or room size. ♦ Improper temperature setting. ♦ Air filter is clogged. ♦ Loss of refrigerant. ♦ Room tightly closed. ♦ Exhaust hose blocked, twisted or bent.	❑ Close window. ❑ Remove source of heat. ❑ Consult your dealer. ❑ Adjust temperature setting. ❑ Clean filter. ❑ Call for service center. ❑ slightly open window or outside door. ❑ Remove obstruction.	X	X
• Water overflow warning indicator lights up or blinks. Unit does not dehumidify.	♦ Water tank is full of water	❑ Drain the water through the rear drain tube. See Fig. 3 (4). tube.	X	X
• Unit does not heat.	♦ Temperature setting is too low.	❑ Reset temperature setting.	X	
• Unit does not operate Operation indicator lights.	♦ Remote control malfunctions.	❑ Check remote control batteries. ❑ Tyr to operate from a closer distance. ❑ Start from on-unit controls. ❑ Perform reset operation by pressing buttons (9), (10), (13), (14) fro 5 seconds.	X	

PROBLEM	CAUSE	SOLUTION	E	M
• Unit does not respond properly to remote control command.	♦ IR signal does not reach unit. ♦ Distance between remote control and unit is too great or remote control unit is aimed at improper angle. ♦ IR receiver on unit is exposed to strong light source.	❑ Check for obstruction between unit and remote control; clear if needed. ❑ Get closer to unit. ❑ Dim lights, especially fluorescent.	X	
• Operating indicator blinks.	♦ Compressor operates at high pressure.	❑ Normal operation of the air conditioner. ❑ Open a door or a window.	X	
• Filter indicator lights up.	♦ Air filter is contaminated.	❑ Clean filter, reinstall it and reset indicator.	X	
• Noise from the outdoor unit.	♦ The outdoor condensate pump is operating without water.	❑ Regular operation of the air conditioner.	X	X

Legend:

E - Electronic model

M - Electro-mechanical model

APPENDIX A

APPENDIX A

INSTALLATION/SERVICE TOOLS (ONLY FOR R410A PRODUCT)

CAUTION

New Refrigerant Air Conditioner Installation

THIS AIR CONDITIONER ADOPTS THE NEW HFC REFRIGERANT (R410A) WHICH DOES NOT DESTROY OZONE LAYER.
R410A refrigerant is apt to be affected by impurities such as water, oxidizing membrane, and oils because the working pressure of R410A refrigerant is approx. 1.6 times of refrigerant R22. Accompanied with the adoption of the new refrigerant, the refrigeration machine oil has also been changed. Therefore, during installation work, be sure that water, dust, former refrigerant, or refrigeration machine oil does not enter into the new type refrigerant R410A air conditioner circuit. To prevent mixing of refrigerant or refrigerating machine oil, the sizes of connecting sections of charging port on main unit and installation tools are different from those used for the conventional refrigerant units. Accordingly, special tools are required for the new refrigerant (R410A) units.

New tools for R410A

New tools for R410A	Applicable to R22 model		Changes
Gauge manifold	×		As the working pressure is high, it is impossible to measure the working pressure using conventional gauges. In order to prevent any other refrigerant from being charged, the port diameters have been changed.
Charge hose	×		In order to increase pressure resisting strength, hose materials and port sizes have been changed (to 1/2 UNF 20 threads per inch). When purchasing a charge hose, be sure to confirm the port size.
Electronic balance for refrigerant charging	○		As working pressure is high and gasification speed is fast, it is difficult to read the indicated value by means of charging cylinder, as air bubbles occur.
Vacuum pump adapter	○		Connected to conventional vacuum pump. It is necessary to use an adapter to prevent vacuum pump oil from flowing back into the charge hose. The charge hose connecting part has two ports -- one for conventional refrigerant (7/16 UNF 20 threads per inch) and one for R410A. If the vacuum pump oil (mineral) mixes with R410A a sludge may occur and damage the equipment.
Gas leakage detector	×		Exclusive for HFC refrigerant.

- Incidentally, the "refrigerant cylinder" comes with the refrigerant designation (R410A) and protector coating in the U.S's ARI specified rose color (ARI colr code:PMS507).
- Also, the "charge port and packing for refrigerant cylinder" requires 1/2 UNF 20 threads per inch corresponding to the charge hose's port size.