



Service Manual

Compact Series

Indoor Units	Outdoor Units
IOD 7	CON 7
IOD 9	CON 9
IOD 12	CON 12



REFRIGERANT	
R407C R22	COOLING ONLY HEAT PUMP

SEPTEMBER - 2005

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.

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**Photos are not contractual

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1. INTRODUCTION

1.1 General

The new **COMPACT** split wall mounted range comprise the ST (cooling only) and RC (heat pump) models, as follows:

- **Cooling Only** COMPACT 7 ST, COMPACT 9 ST, COMPACT 12 ST
- **Heat Pump** COMPACT 7 RC, COMPACT 9 RC, COMPACT 12 RC

The indoor COMPACT units are available as LED display types only, featuring esthetic design, compact dimensions, and low noise operation.

1.2 Main Features

- R22 and R407C models
- Microprocessor control.
- Infrared remote control with liquid crystal display.
- Cross flow fan, allowing low noise level operation.
- Indoor coil with treated aluminum fins and coating for improved efficiency.
- Easy access to the interconnecting tubing and wiring connections, so that removing the front grill or casing is not necessary.
- Refrigerant pipes can be connected to the indoor unit from 6 different optional directions.
- Automatic treated air sweep.
- Low indoor and outdoor noise levels.
- Easy installation and service.

1.3 Indoor Unit

The indoor unit is wall mounted, and can be easily fitted to many types of residential and commercial applications.

It includes:

- Casing with air inlet and outlet grills.
- tangential fan.
- Coil with treated aluminum fins.
- Motorized flaps
- Multi-speed motor with internal protection
- Advanced electronic control box assembly
- Interconnecting wiring terminal block
- Mounting plate

1.4 Filtration

The COMPACT series presents several types of air filters:

- Easily accessible, and re-usable pre-filters (mesh)
- Pre-charged electrostatic filter (disposable) – optional
- Active carbon filter (disposable) – optional

1.5 Control

The microprocessor indoor controller, and an infrared remote control, supplied as standard, provides complete operating function and programming. For further details please refer to the Operation Manual, Appendix A.

1.6 Outdoor Unit

The COMPACT outdoor units can be installed as floor or wall mounted units by using a wall supporting bracket. The metal sheets are protected by anti-corrosion paint work allowing long life resistance. All outdoor units are pre-charged. For further information please refer to the Product Data Sheet, Chapter 2.

It includes :

- A **Rotary** Compressor mounted in a soundproofed compartment :
- Axial fan.
- Outdoor coil with hydrophilic louver fins for RC units.
- Outlet air fan grill.
- Service valves" flare" type connection.
- Interconnecting wiring terminal block.

1.7 Tubing Connections

Flare type interconnecting tubing to be produced on site.
For further details please refer to the Installation Manual, Appendix A.

1.8 Accessories

ASK (All Season Kit):

For low ambient working conditions in cooling, an ASK can be installed inside the outdoor unit. This kit allows cooling operation down to outdoor temp of -10 °C by gradually controlling the outdoor fan speed motor.

RCW Wall Mounted Remote Control

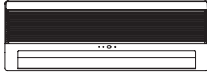
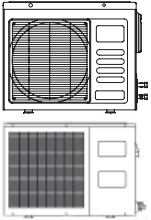
The RCW remote control is mounted on the wall, and controls the unit either as an infrared remote control or as a wired controller. The wired controller can control up to 10 Indoor units with the same program settings and adjustments.
For further details please refer to Optional Accessories, Chapter 15.

1.9 Inbox Documentation

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

1.10 Matching Table

1.10.1 R407C / R22

OUTDOOR UNITS		INDOOR UNITS			
					
	MODEL	REF'	IOD 7	IOD 9	IOD 12
	CON 7 ST/ RC	R407C/R22	√		
	CON 9 ST/ RC	R407C/R22		√	
	CON 12 ST/ RC	R407C/R22			√

2. PRODUCT DATA SHEET

2.1 R407C

Model Indoor Unit			IOD-7		
Model Outdoor Unit			CON-7		
Installation Method of Pipe			Flared		
Characteristics		Units	Cooling Only	Cooling	Heating
Capacity ⁽¹⁾		Btu/hr	7230	7230	7400
		kW	2.12	2.12	2.17
Power input ⁽¹⁾		kW	0.83	0.83	0.73
EER (Cooling) or COP(Heating) ⁽¹⁾		W/W	2.55	2.55	2.97
Energy efficiency class			F	E	D
Power supply		V/Ph/Hz	230V/Single/50Hz		
Rated current		A	3.7	3.7	3.3
Starting current		A	18		
Circuit breaker rating		A	10		
INDOOR	Fan type & quantity		Cross flow x 1		
	Fan speeds	H/M/L	RPM	1150/950	
	Air flow ⁽²⁾	H/M/L	m3/hr	400/320	
	External static pressure	Min-Max	Pa	0	
	Sound power level ⁽³⁾	H/M/L	dB(A)	50/45	
	Sound pressure level ⁽⁴⁾	H/M/L	dB(A)	37/31	
	Moisture removal		l/hr	0.7	
	Condensate drain tube I.D		mm	16	
	Dimensions	WxHxD	mm	680*250*180	
	Weight		kg	7	
	Package dimensions	WxHxD	mm	770*265*325	
	Packaged weight		kg	9.5	
	Units per pallet		units	36	
	Stacking height		units	9 levels	
OUTDOOR	Refrigerant control		Capillary tube		
	Compressor type, model		Rotary, HITACHI CG433EG1UC		
	Fan type & quantity		Propeller(direct) x 1		
	Fan speeds	H/L	RPM	850	
	Air flow	H/L	m3/hr	1200	
	Sound power level	H/L	dB(A)	61	62
	Sound pressure level ⁽⁴⁾	H/L	dB(A)	51	52
	Dimensions	WxHxD	mm	610*520*240	
	Weight		kg	24	24.5
	Package dimensions	WxHxD	mm	730*560*350	
	Packaged weight		kg	26.5	26.5
	Units per pallet		Units	12	
	Stacking height		units	4 levels	
	Refrigerant type		R407C		
	Refrigerant chargeless distance		kg/m	0.58kg/m	
	Additional charge per 1 meter		g/m	4m<Lin<8m:+5g/m Lin>8m:+9g/m	
	Connections between units	Liquid line	In.(mm)	Φ 1/4"(6.35)	
Suction line		In.(mm)	Φ 3/8"(9.53)		
Max.tubing length		m.	Max.10		
Max.height difference		m.	Max.7		
Operation control type		Remote control			
Heating elements		kW			
Others					

(1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.

(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		IOD-9		
Model Outdoor Unit		CON-9		
Installation Method of Pipe		Flared		
Characteristics	Units	Cooling Only	Cooling	Heating
Capacity ⁽¹⁾	Btu/hr	8530	8530	9080
	kW	2.5	2.5	2.66
Power input ⁽¹⁾	kW	1.03	1.03	0.93
EER (Cooling) or COP(Heating) ⁽¹⁾	W/W	2.43	2.43	2.86
Energy efficiency class		E	E	D
Power supply	V/Ph/Hz	230V/Single/50Hz		
Rated current	A	4.5	4.5	4.0
Starting current	A	20		
Circuit breaker rating	A	10		
INDOOR	Fan type & quantity		Cross flow x 1	
	Fan speeds	H/M/L	RPM 1250/1050	
	Air flow ⁽²⁾	H/M/L	m3/hr 450/350	
	External static pressure	Min-Max	Pa 0	
	Sound power level ⁽³⁾	H/M/L	dB(A) 52/47	
	Sound pressure level ⁽⁴⁾	H/M/L	dB(A) 40/36	
	Moisture removal		l/hr 1	
	Condensate drain tube I.D		mm 16	
	Dimensions	WxHxD	mm 680*250*180	
	Weight		kg 7	
	Package dimensions	WxHxD	mm 770*265*325	
	Packaged weight		kg 9.5	
	Units per pallet		units 36	
	Stacking height		units 9 levels	
OUTDOOR	Refrigerant control		Capillary tube	
	Compressor type, model		Rotary, TOSHIBA PG170X1C-4DZ3	
	Fan type & quantity		Propeller(direct) x 1	
	Fan speeds	H/L	RPM 900	
	Air flow	H/L	m3/hr 1265	
	Sound power level	H/L	62	63
	Sound pressure level ⁽⁴⁾	H/L	52	53
	Dimensions	WxHxD	mm 610*520*240	
	Weight		26	26.5
	Package dimensions	WxHxD	mm 730*560*350	
	Packaged weight		29	29
	Units per pallet		Units 12	
	Stacking height		units 4 levels	
	Refrigerant type		R407C	
	Refrigerant chargeless distance		kg/m 0.63kg/m	
	Additional charge per 1 meter		g/m 4m<Lin<8m:+5g/m Lin>8m:+15g/m	
	Connections between units	Liquid line	In.(mm)	Φ 1/4"(6.35)
Suction line		In.(mm)	Φ 3/8"(9.53)	
Max.tubing length		m.	Max.12	
Max.height difference		m.	Max.7	
Operation control type		Remote control		
Heating elements		kW		
Others				

- (1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
- (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		IOD-12		
Model Outdoor Unit		CON-12		
Installation Method of Pipe		Flared		
Characteristics	Units	Cooling Only	Cooling	Heating
Capacity ⁽¹⁾	Btu/hr	12620	12450	12620
	kW	3.7	3.65	3.7
Power input ⁽¹⁾	kW	1.29	1.26	1.25
EER (Cooling) or COP(Heating) ⁽¹⁾	W/W	2.87	2.90	2.96
Energy efficiency class		C	C	D
Power supply	V/Ph/Hz	230V/Single/50Hz		
Rated current	A	5.7	5.7	6.0
Starting current	A	30		
Circuit breaker rating	A	15		
INDOOR	Fan type & quantity		Cross flow x 1	
	Fan speeds	H/M/L	RPM 1250/1000	
	Air flow ⁽²⁾	H/M/L	m3/hr 600/450	
	External static pressure	Min-Max	Pa 0	
	Sound power level ⁽³⁾	H/M/L	dB(A) 54/47	
	Sound pressure level ⁽⁴⁾	H/M/L	dB(A) 42/36	
	Moisture removal		l/hr 1.7	
	Condensate drain tube I.D		mm 16	
	Dimensions	WxHxD	mm 840*250*180	
	Weight		kg 8	
	Package dimensions	WxHxD	mm 930*265*325	
	Packaged weight		kg 11	
	Units per pallet		units 36	
Stacking height		units 9 levels		
OUTDOOR	Refrigerant control		Capillary tube	
	Compressor type, model		Rotary, TOSHIBA PG215X2C-4FS	
	Fan type & quantity		Propeller(direct) x 1	
	Fan speeds	H/L	RPM 735	
	Air flow	H/L	m3/hr 1550	
	Sound power level	H/L	66	67
	Sound pressure level ⁽⁴⁾	H/L	56	57
	Dimensions	WxHxD	mm 760*545*245	
	Weight		37	38
	Package dimensions	WxHxD	mm 880*610*310	
	Packaged weight		40.5	40.5
	Units per pallet		Units 12	
	Stacking height		units 4 levels	
	Refrigerant type		R407C	
	Refrigerant chargless distance	kg/m	1.015kg/m	
	Additional charge per 1 meter	g/m	4m<Lin<7.5m:+10g/m 7.5M>Lin>15m:+15g/m	
Connections between units	Liquid line	In.(mm)	Φ 1/4"(6.35)	
	Suction line	In.(mm)	Φ 1/2"(12.7)	
	Max.tubing length	m.	Max.15	
	Max.height difference	m.	Max.7	
Operation control type		Remote control		
Heating elements		kW		
Others				

- (1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
- (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.

1.2 R22

Model Indoor Unit		IOD-7			
Model Outdoor Unit		CON-7			
Installation Method of Pipe		Flared			
Characteristics		Units	cooling only	Cooling	Heating
Capacity ⁽¹⁾		Btu/hr	7230	7230	7340
		kW	2.12	2.12	2.15
Power input ⁽¹⁾		kW	0.75	0.75	0.67
EER (Cooling) or COP(Heating) ⁽¹⁾		W/W	2.83	2.83	3.21
Energy efficiency class			C	C	C
Power supply	V/Ph/Hz	230V/Single/50Hz			
Rated current	A	3.4	3.4	3.1	
Starting current	A	16			
Circuit breaker rating	A	10			
INDOOR	Fan type & quantity		Cross flow x 1		
	Fan speeds	H/M/L	RPM	1150/950	
	Air flow ⁽²⁾	H/M/L	m3/hr	400/320	
	External static pressure	Min-Max	Pa	0	
	Sound power level ⁽³⁾	H/M/L	dB(A)	50/45	
	Sound pressure level ⁽⁴⁾	H/M/L	dB(A)	37/31	
	Moisture removal		l/hr	0.7	
	Condensate drain tube I.D		mm	16	
	Dimensions	WxHxD	mm	680*180*250	
	Weight		kg	7	
	Package dimensions	WxHxD	mm	770*325*265	
	Packaged weight		kg	9.5	
	Units per pallet		units	36	
	Stacking height		units	9 levels	
	OUTDOOR	Refrigerant control		Capillary tube	
Compressor type, model		Rotary, HITACHI SD134CV-H6AU			
Fan type & quantity		Propeller(direct) x 1			
Fan speeds		H/L	RPM	850	
Air flow		H/L	m3/hr	1200	
Sound power level		H/L	dB(A)	61	62
Sound pressure level ⁽⁴⁾		H/L	dB(A)	51	52
Dimensions		WxHxD	mm	610*240*520	
Weight			kg	23	
Package dimensions		WxHxD	mm	730*350*560	
Packaged weight			kg	26.5	26.5
Units per pallet			Units	12	
Stacking height			units	4 levels	
Refrigerant type		R22			
Refrigerant chargless distance		kg/m	0.5kg/m		
Additional charge per 1 meter		g/m	4m<Lin<8m:+5g/m Lin>8m:+9g/m		
Connections between units	Liquid line	ln.(mm)	1/4"(6.35)		
	Suction line	ln.(mm)	3/8"(9.53)		
	Max.tubing length	m.	Max.10		
	Max.height difference	m.	Max.7		
Operation control type		Remote control			
Heating elements		kW			
Others					

- (1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
- (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		IOD-9			
Model Outdoor Unit		CON-9			
Installation Method of Pipe		Flared			
Characteristics		Units	cooling only	Cooling	Heating
Capacity ⁽¹⁾		Btu/hr	8630	8630	9140
		kW	2.53	2.53	2.68
Power input ⁽¹⁾		kW	0.97	0.97	0.88
EER (Cooling) or COP(Heating) ⁽¹⁾		W/W	2.61	2.61	3.05
Energy efficiency class			D	D	D
Power supply		V/Ph/Hz	230V/Single/50Hz		
Rated current		A	4.2	4.2	3.9
Starting current		A	26		
Circuit breaker rating		A	10		
INDOOR	Fan type & quantity		Cross flow x 1		
	Fan speeds	H/M/L	RPM	1250/1050	
	Air flow ⁽²⁾	H/M/L	m3/hr	450/350	
	External static pressure	Min-Max	Pa	0	
	Sound power level ⁽³⁾	H/M/L	dB(A)	52/48	
	Sound pressure level ⁽⁴⁾	H/M/L	dB(A)	40/35	
	Moisture removal		l/hr	1	
	Condensate drain tube I.D		mm	16	
	Dimensions	WxHxD	mm	680*180*250	
	Weight		kg	7	
	Package dimensions	WxHxD	mm	770*325*265	
	Packaged weight		kg	9.5	
	Units per pallet		units	36	
	Stacking height		units	9 levels	
OUTDOOR	Refrigerant control		Capillary tube		
	Compressor type, model		Rotary, TOSHIBA PH170X1C 4DZ2		
	Fan type & quantity		Propeller(direct) x 1		
	Fan speeds	H/L	RPM	900	
	Air flow	H/L	m3/hr	1265	
	Sound power level	H/L	dB(A)	62	63
	Sound pressure level ⁽⁴⁾	H/L	dB(A)	52	53
	Dimensions	WxHxD	mm	610*240*520	
	Weight		kg	26	26.5
	Package dimensions	WxHxD	mm	730*350*560	
	Packaged weight		kg	29	29
	Units per pallet		Units	12	
	Stacking height		units	4 levels	
	Refrigerant type		R22		
	Refrigerant chargeless distance		kg/m	0.63kg/m	
	Additional charge per 1 meter		g/m	4m<Lin<8m:+5g/m Lin>8m:+15g/m	
	Connections between units	Liquid line	In.(mm)	1/4"(6.35)	
Suction line		In.(mm)	3/8"(9.53)		
Max.tubing length		m.	Max.12		
Max.height difference		m.	Max.7		
Operation control type		Remote control			
Heating elements		kW			
Others					

- (1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
- (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		IOD-12				
Model Outdoor Unit		CON-12				
Installation Method of Pipe		Flared				
Characteristics		Units	cooling only	Cooling	Heating	
Capacity ⁽¹⁾		Btu/hr	13140	13140	13310	
		kW	3.85	3.85	3.90	
Power input ⁽¹⁾		kW	1.27	1.27	1.25	
EER (Cooling) or COP(Heating) ⁽¹⁾		W/W	3.03	3.03	3.12	
Energy efficiency class			B	B	D	
Power supply		V/Ph/Hz	230V/Single/50Hz			
Rated current		A	5.7	5.7	6.0	
Starting current		A	30			
Circuit breaker rating		A	15			
INDOOR	Fan type & quantity		Cross flow x 1			
	Fan speeds		H/M/L	RPM	1250/1000	
	Air flow ⁽²⁾		H/M/L	m3/hr	600/450	
	External static pressure		Min-Max	Pa	0	
	Sound power level ⁽³⁾		H/M/L	dB(A)	54/47	
	Sound pressure level ⁽⁴⁾		H/M/L	dB(A)	42/36	
	Moisture removal			l/hr	1.77	
	Condensate drain tube I.D			mm	16	
	Dimensions		WxHxD	mm	840*180*250	
	Weight			kg	8	
	Package dimensions		WxHxD	mm	930*325*265	
	Packaged weight			kg	11	
	Units per pallet			units	36	
	Stacking height			units	9 levels	
OUTDOOR	Refrigerant control		Capillary tube			
	Compressor type, model		Rotary, TOSHIBA PH225X2C-4FS			
	Fan type & quantity		Propeller(direct) x 1			
	Fan speeds		H/L	RPM	735	
	Air flow		H/L	m3/hr	1550	
	Sound power level		H/L	dB(A)	65	
	Sound pressure level ⁽⁴⁾		H/L	dB(A)	55	
	Dimensions		WxHxD	mm	760*245*545	
	Weight			kg	37	38
	Package dimensions		WxHxD	mm	880*310*610	
	Packaged weight			kg	40.5	40.5
	Units per pallet			Units	12	
	Stacking height			units	4 levels	
	Refrigerant type			R22		
	Refrigerant chargeless distance		kg/m	1.005kg/m		
	Additional charge per 1 meter		g/m	4m<Lin<7.5m:+10g/m 7.5M>Lin>15m:+15g/m		
	Connections between units	Liquid line		ln.(mm)	1/4"(6.35)	
Suction line		ln.(mm)	1/2"(12.7)			
Max.tubing length		m.	Max.15			
Max.height difference		m.	Max.7			
Operation control type			Remote control			
Heating elements		kW				
Others						

- (1) Rating conditions in accordance with ISO 5151 and ISO 13253 (for ducted units) and EN14511.
- (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, ISO 13253 (for ducted units) and EN 14511.

Cooling:

Indoor: 27°C DB 19°C WB

Outdoor: 35°C DB

Heating:

Indoor: 20°C DB

Outdoor: 7°C DB 6°C WB

3.1 Operating Limits

3.1.1 R407C

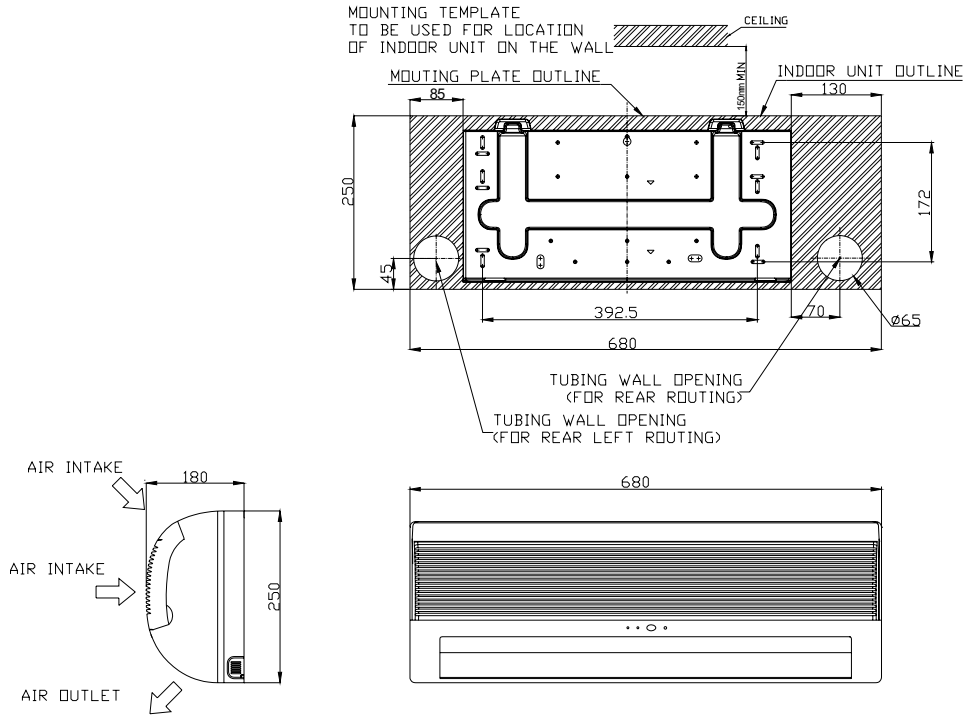
		Indoor	Outdoor
Cooling	Upper limit	32°C DB 23°C WB	46°C DB
	Lower limit	21°C DB 15°C WB	10°C DB
Heating	Upper limit	27°C DB	24°C DB 18°C WB
	Lower limit	10°C DB	-9°C DB -10°C WB
Voltage	1PH	198 – 264 V	
	3PH	360 – 440 V	

3.1.2 R22

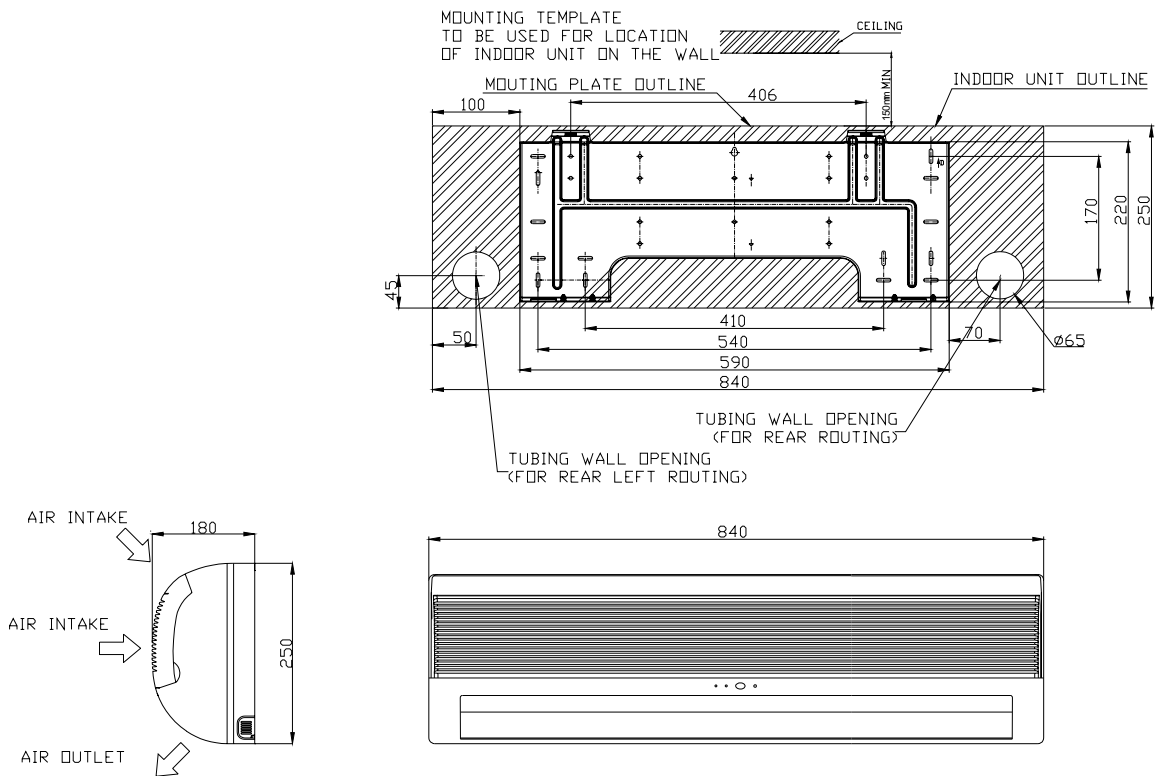
		Indoor	Outdoor
Cooling	Upper limit	32°C DB 23°C WB	46°C DB
	Lower limit	21°C DB 15°C WB	10°C DB
Heating	Upper limit	27°C DB	24°C DB 18°C WB
	Lower limit	10°C DB	-5°C DB -6°C WB
Voltage	1PH	198 – 264 V	
	3PH	360 – 440 V	

4. OUTLINE DIMENSIONS

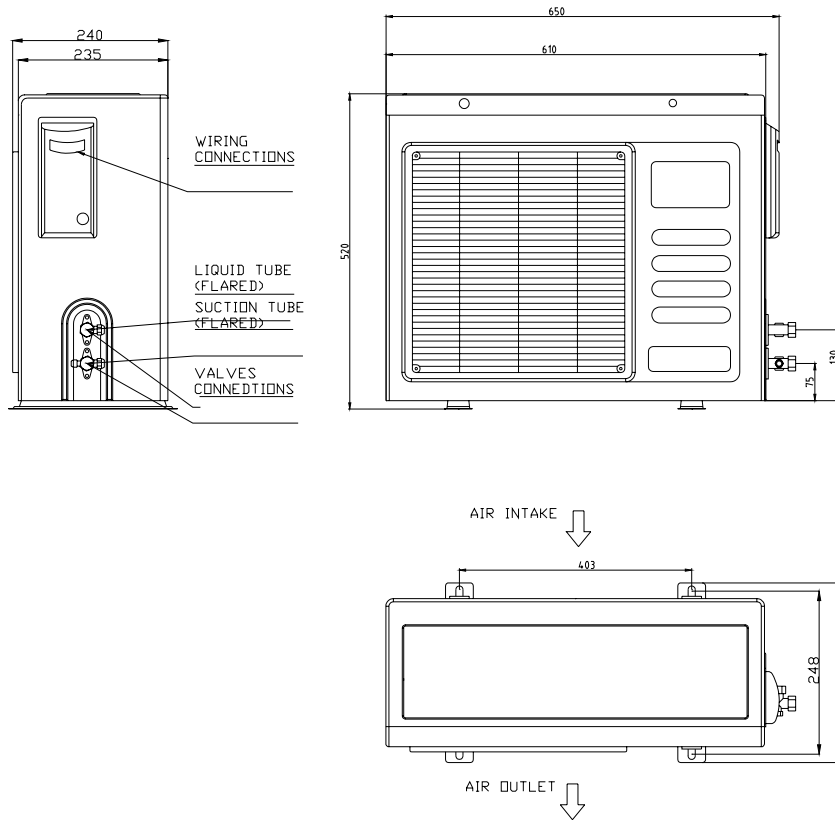
4.1 Indoor Unit IOD 7, 9



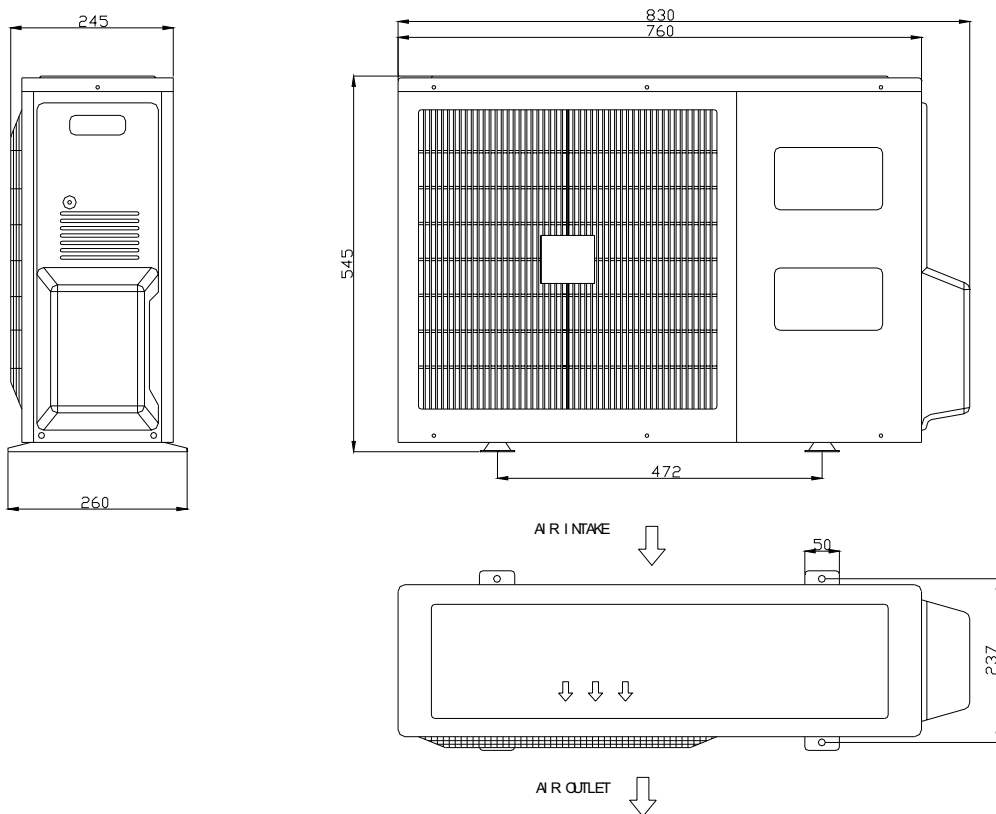
4.2 Indoor Unit IOD 12



4.3 Outdoor Unit CON 7, 9



4.4 Outdoor Unit CON 12



5. PERFORMANCE DATA & PRESSURE CURVES

5.1 IOD7/CON7 R407C

5.1.1 Cooling Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR DB OD Coil(°C)	Data	ENTERING AIR WB/DB ID Coil(°C)				
		15/21	17/24	19/27	21/29	23/32
15 ⁽¹⁾	TC	2.23	2.31	2.37	2.42	2.46
	SC	1.49	1.55	1.61	1.65	1.68
	PI	0.59	0.59	0.59	0.59	0.60
20 ⁽¹⁾	TC	2.16	2.28	2.35	2.41	2.46
	SC	1.46	1.54	1.60	1.65	1.68
	PI	0.64	0.64	0.64	0.65	0.65
25	TC	2.05	2.21	2.32	2.39	2.45
	SC	1.42	1.51	1.59	1.64	1.67
	PI	0.69	0.70	0.70	0.70	0.71
30	TC	1.91	2.08	2.25	2.33	2.40
	SC	1.38	1.46	1.56	1.60	1.63
	PI	0.74	0.76	0.76	0.77	0.78
35	TC	1.77	1.92	2.12	2.23	2.33
	SC	1.31	1.40	1.52	1.56	1.59
	PI	0.80	0.82	0.83	0.84	0.84
40	TC	1.61	1.75	1.91	2.09	2.20
	SC	1.23	1.33	1.44	1.48	1.51
	PI	0.87	0.88	0.89	0.91	0.91
46	TC	1.40	1.53	1.68	1.86	2.00
	SC	1.14	1.22	1.31	1.36	1.39
	PI	0.95	0.96	0.98	1.00	1.01

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
- OD – Outdoor

(1) Marked area is below standard operating limits. For operating in low ambient conditions, an A.S.K Kit is required.

5.1.2 Heating Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR WB OU COIL (°C)	ENTERING AIR DB ID COIL (°C)					
	15		20		25	
	TH	PI	TH	PI	TH	PI
-10	1.14	0.58	1.10	0.62	1.05	0.65
-7	1.23	0.60	1.18	0.63	1.14	0.67
-2	1.30	0.61	1.26	0.64	1.22	0.68
2	1.58	0.64	1.52	0.68	1.45	0.72
6	2.24	0.68	2.17	0.73	2.09	0.78
10	2.43	0.72	2.37	0.77	2.30	0.82
15	2.63	0.75	2.56	0.81	2.50	0.86
20	2.77	0.77	2.70	0.84	2.63	0.91

* the above chart includes the weighted deicing influence.

LEGEND

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

5.2 Capacity Correction Factor Due to Tubing Length

5.2.1 Cooling

TOTAL TUBING LENGTH								
3m	7.5m	10m	15m	20m	25m	30m	40m	50m
1.03	1	0.961	---	---	---	---	---	---

* Minimum recommended tubing length between indoor and outdoor units is 3m.

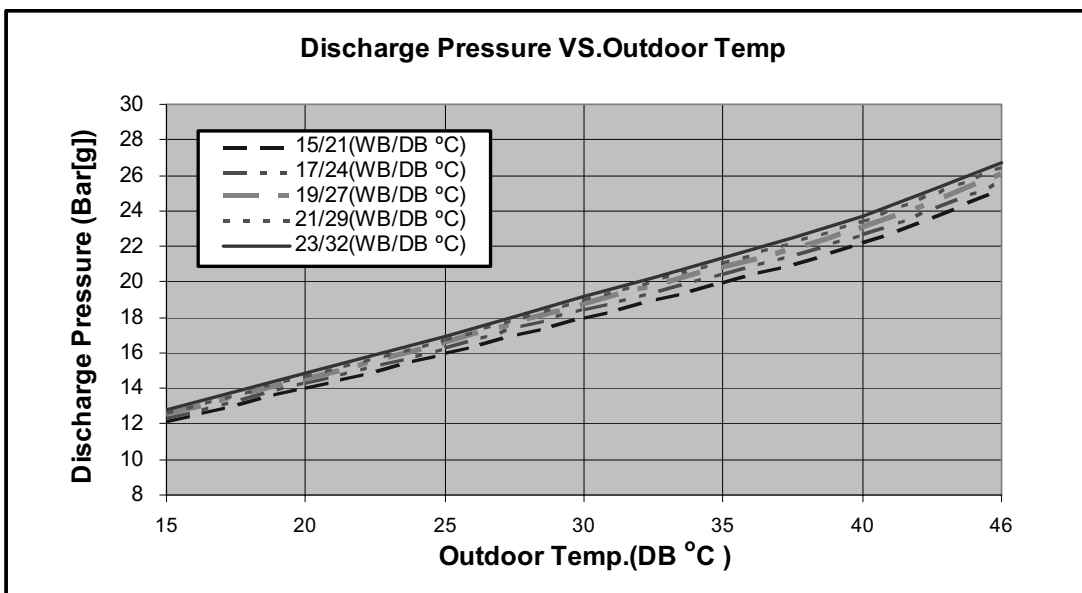
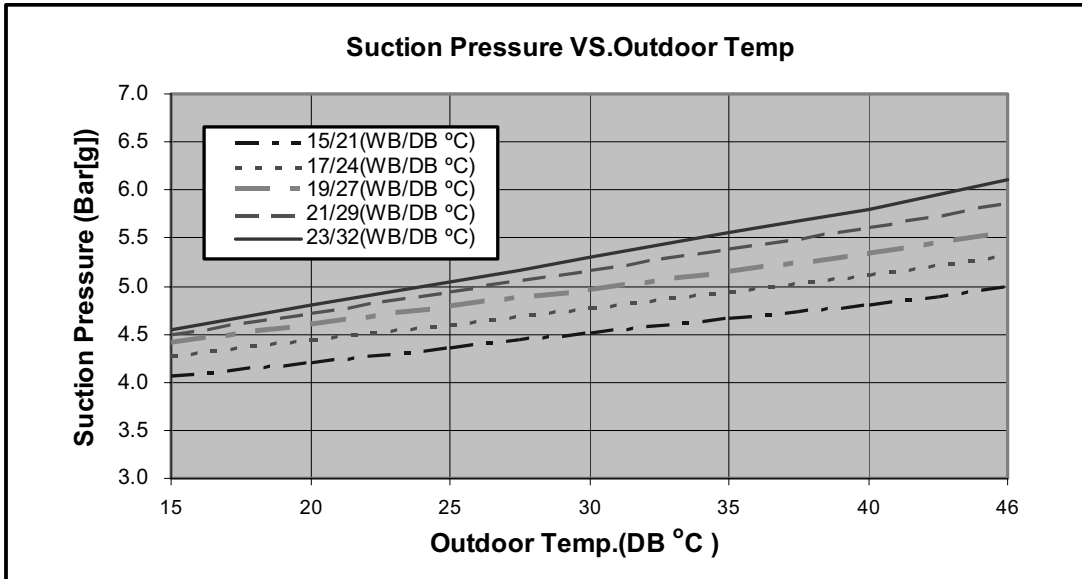
5.2.2 Heating

TOTAL TUBING LENGTH								
3m	7.5m	10m	15m	20m	25m	30m	40m	50m
1.06	1	0.982	---	---	---	---	---	---

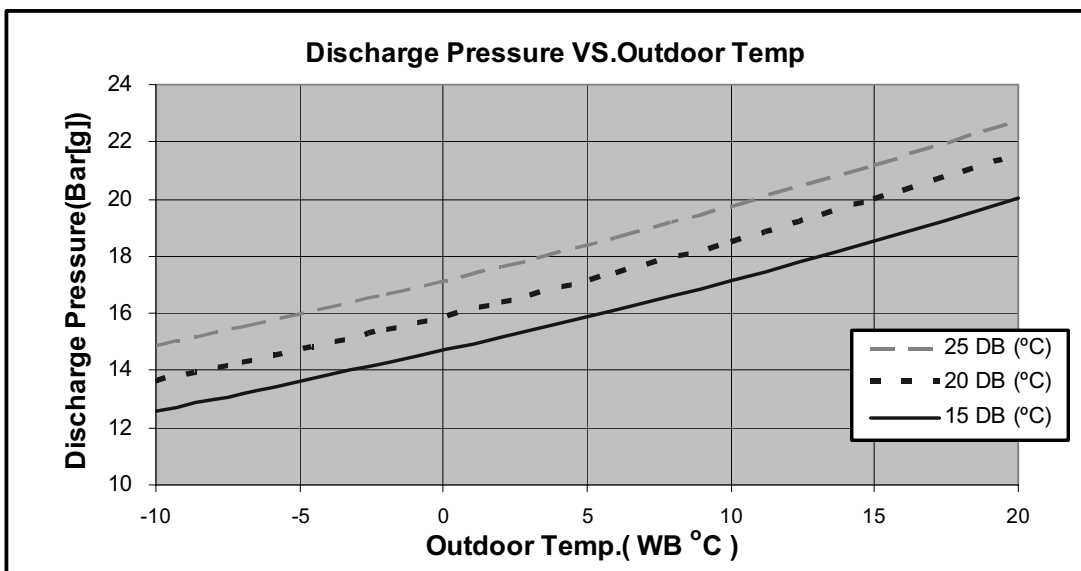
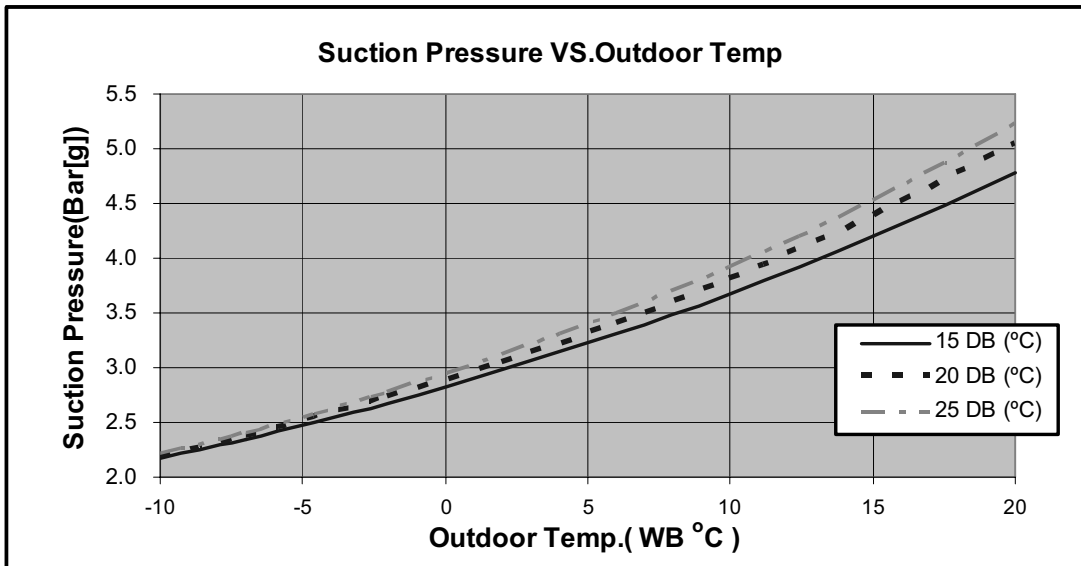
* Minimum recommended tubing length between indoor and outdoor units is 3m.

5.3 Pressure Curves.

5.3.1 Cooling.



5.3.2 Heating.



5.4 IOD9/CON9 R407C

5.4.1 Cooling Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR DB OD Coil(°C)	Data	ENTERING AIR WB/DB ID Coil(°C)				
		15/21	17/24	19/27	21/29	23/32
15 ⁽¹⁾	TC	2.63	2.73	2.79	2.86	2.90
	SC	1.65	1.72	1.78	1.83	1.86
	PI	0.73	0.73	0.73	0.73	0.74
20 ⁽¹⁾	TC	2.55	2.69	2.77	2.84	2.90
	SC	1.61	1.70	1.77	1.82	1.86
	PI	0.79	0.80	0.80	0.80	0.80
25	TC	2.41	2.60	2.74	2.82	2.89
	SC	1.57	1.67	1.76	1.81	1.84
	PI	0.86	0.86	0.87	0.87	0.88
30	TC	2.26	2.46	2.65	2.75	2.83
	SC	1.52	1.62	1.72	1.77	1.80
	PI	0.92	0.94	0.95	0.95	0.96
35	TC	2.09	2.27	2.50	2.63	2.75
	SC	1.45	1.55	1.68	1.73	1.76
	PI	1.00	1.01	1.03	1.04	1.04
40	TC	1.90	2.07	2.26	2.47	2.59
	SC	1.36	1.47	1.59	1.64	1.67
	PI	1.08	1.09	1.11	1.12	1.14
46	TC	1.65	1.80	1.98	2.19	2.36
	SC	1.26	1.35	1.45	1.50	1.53
	PI	1.17	1.19	1.22	1.24	1.25

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
- OD – Outdoor

(1) Marked area is below standard operating limits. For operating in low ambient conditions, an A.S.K Kit is required.

5.4.2 Heating Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR WB OU COIL (°C)	ENTERING AIR DB ID COIL (°C)					
	15		20		25	
	TH	PI	TH	PI	TH	PI
-10	1.40	0.74	1.34	0.79	1.29	0.83
-7	1.50	0.76	1.45	0.80	1.40	0.85
-2	1.60	0.77	1.54	0.82	1.49	0.86
2	1.94	0.81	1.86	0.86	1.78	0.91
6	2.74	0.87	2.66	0.93	2.57	0.99
10	2.98	0.92	2.90	0.98	2.82	1.05
15	3.22	0.96	3.14	1.03	3.06	1.10
20	3.39	0.99	3.31	1.07	3.22	1.15

* the above chart includes the weighted deicing influence.

LEGEND

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

5.5 Capacity Correction Factor Due to Tubing Length

5.5.1 Cooling

TOTAL TUBING LENGTH								
3m	7.5m	10m	12m	20m	25m	30m	40m	50m
1.03	1	0.978	0.961	---	---	---	---	---

* Minimum recommended tubing length between indoor and outdoor units is 3m.

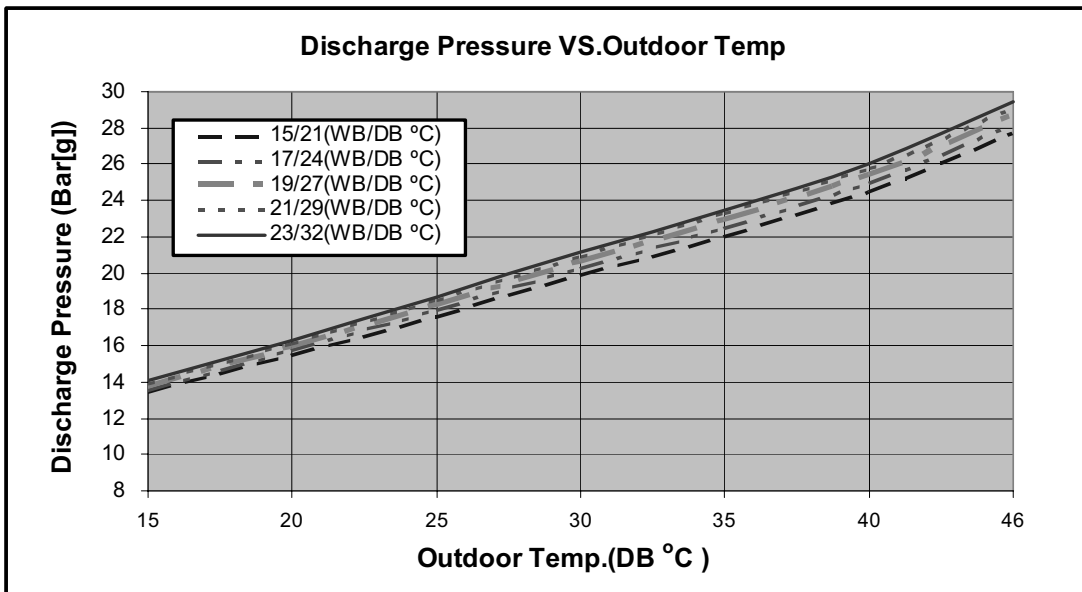
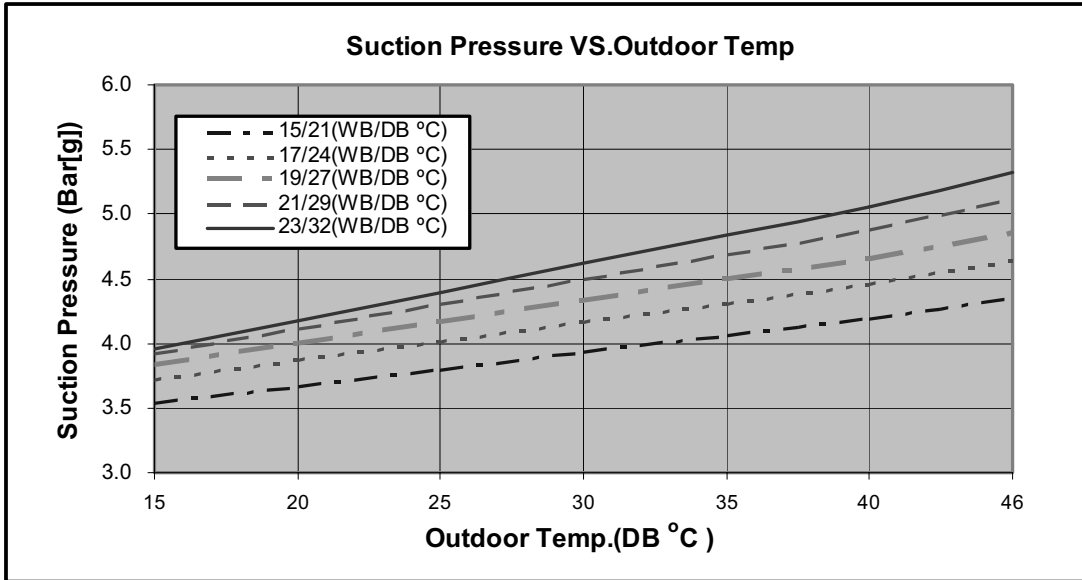
5.5.2 Heating

TOTAL TUBING LENGTH								
3m	7.5m	10m	12m	20m	25m	30m	40m	50m
1.05	1	0.981	0.965	---	---	---	---	---

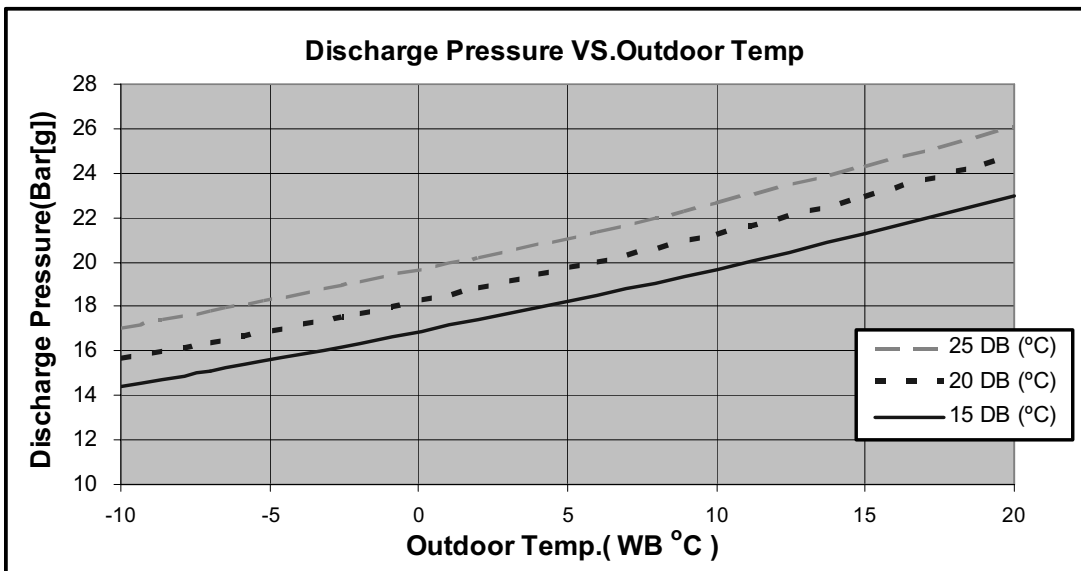
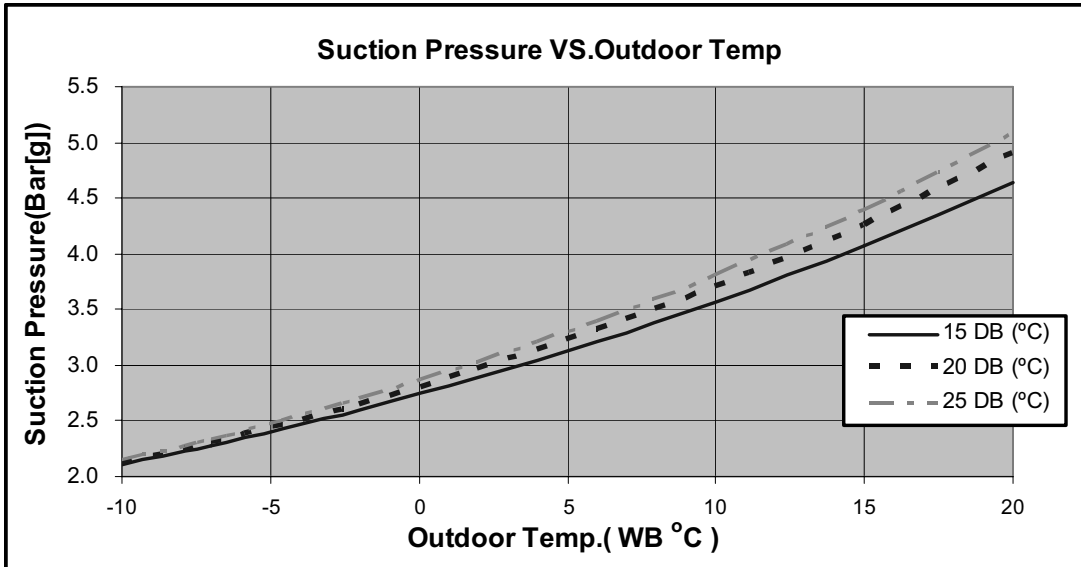
* Minimum recommended tubing length between indoor and outdoor units is 3m.

5.6 Pressure Curves.

5.6.1 Cooling.



5.6.2 Heating.



5.7 IOD12/CON12 R407C

5.7.1 Cooling Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR DB OD Coil(°C)	Data	ENTERING AIR WB/DB ID Coil(°C)				
		15/21	17/24	19/27	21/29	23/32
15 ⁽¹⁾	TC	3.90	4.04	4.13	4.23	4.30
	SC	2.43	2.53	2.63	2.70	2.75
	PI	0.91	0.92	0.92	0.92	0.93
20 ⁽¹⁾	TC	3.77	3.98	4.10	4.20	4.29
	SC	2.38	2.51	2.62	2.69	2.74
	PI	0.99	1.00	1.00	1.01	1.01
25	TC	3.57	3.85	4.05	4.18	4.28
	SC	2.32	2.46	2.60	2.67	2.72
	PI	1.07	1.08	1.09	1.09	1.10
30	TC	3.34	3.64	3.93	4.07	4.19
	SC	2.25	2.39	2.54	2.61	2.66
	PI	1.16	1.17	1.18	1.19	1.21
35	TC	3.09	3.35	3.70	3.89	4.07
	SC	2.14	2.29	2.48	2.55	2.60
	PI	1.25	1.27	1.29	1.30	1.31
40	TC	2.81	3.06	3.34	3.65	3.84
	SC	2.01	2.17	2.35	2.42	2.47
	PI	1.35	1.37	1.39	1.41	1.42
46	TC	2.44	2.67	2.93	3.24	3.49
	SC	1.85	1.99	2.14	2.21	2.26
	PI	1.47	1.49	1.53	1.55	1.57

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
- OD – Outdoor

(1) Marked area is below standard operating limits. For operating in low ambient conditions, an A.S.K Kit is required.

5.7.2 Heating Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR WB OU COIL (°C)	ENTERING AIR DB ID COIL (°C)					
	15		20		25	
	TH	PI	TH	PI	TH	PI
-10	1.94	1.00	1.87	1.07	1.79	1.12
-7	2.09	1.03	2.02	1.08	1.94	1.14
-2	2.22	1.04	2.15	1.10	2.07	1.16
2	2.70	1.09	2.59	1.16	2.48	1.23
6	3.81	1.17	3.70	1.25	3.57	1.33
10	4.14	1.23	4.03	1.32	3.92	1.41
15	4.48	1.29	4.37	1.39	4.26	1.48
20	4.72	1.33	4.61	1.44	4.48	1.55

* the above chart includes the weighted deicing influence.

LEGEND

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

5.8 Capacity Correction Factor Due to Tubing Length

5.8.1 Cooling

TOTAL TUBING LENGTH								
3m	7.5m	10m	15m	20m	25m	30m	40m	50m
1.04	1	0.974	0.922	---	---	---	---	---

* Minimum recommended tubing length between indoor and outdoor units is 3m.

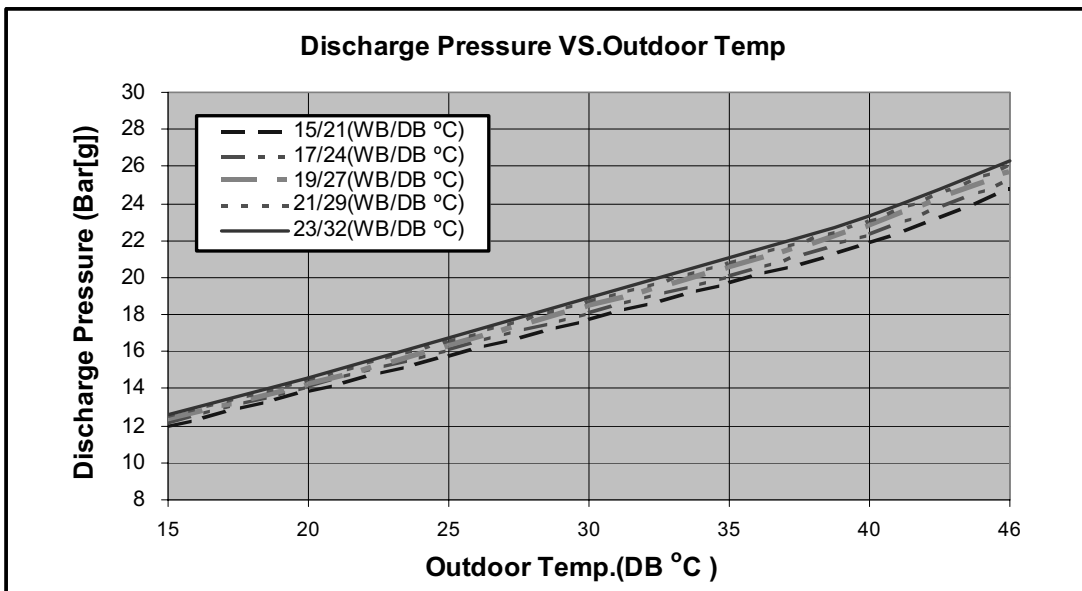
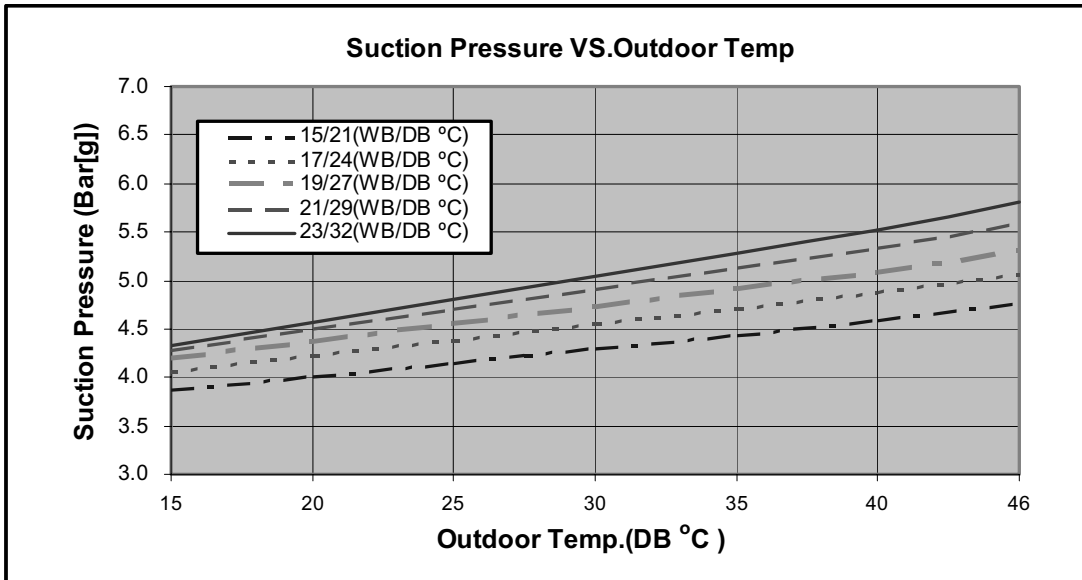
5.8.2 Heating

TOTAL TUBING LENGTH								
3m	7.5m	10m	15m	20m	25m	30m	40m	50m
1.05	1	0.976	0.935	---	---	---	---	---

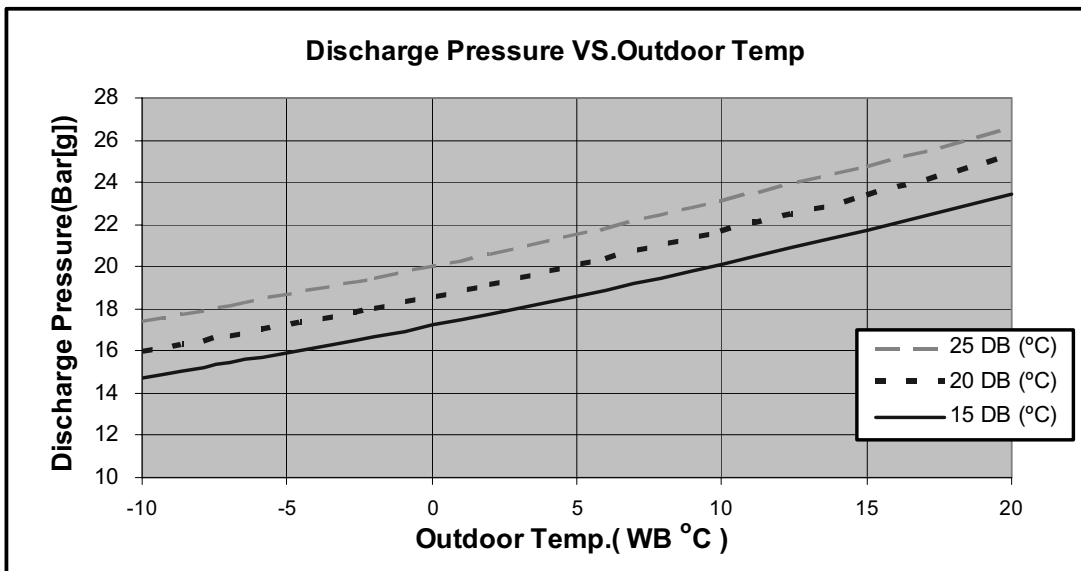
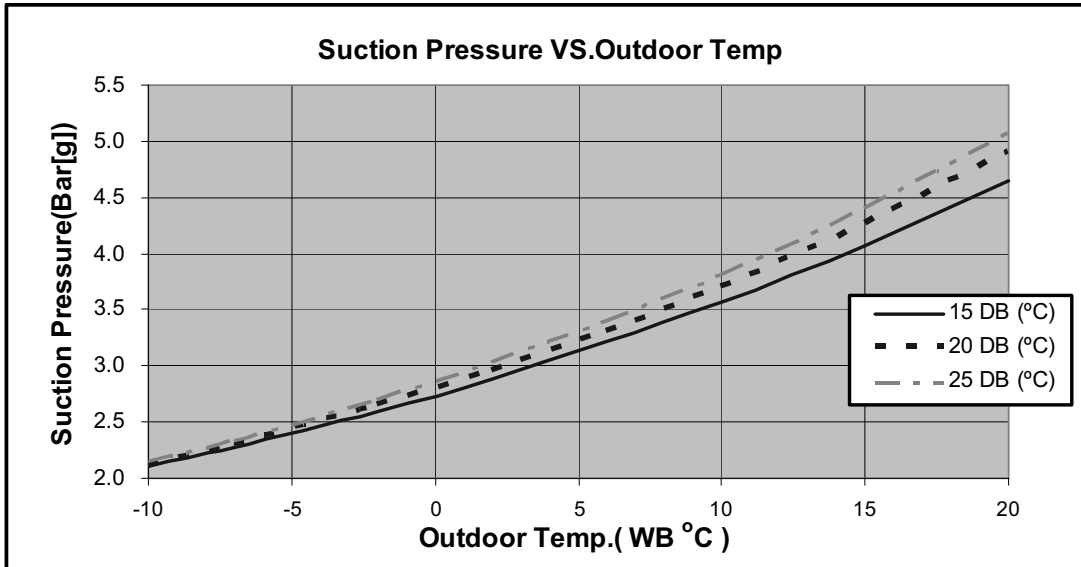
* Minimum recommended tubing length between indoor and outdoor units is 3m.

5.9 Pressure Curves.

5.9.1 Cooling.



5.9.2 Heating.



5.10 IOD7/CON7 R22

5.10.1 Cooling Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR DB OD Coil(°C)	Data	ENTERING AIR WB/DB ID Coil(°C)				
		15/21	17/24	19/27	21/29	23/32
15 ⁽¹⁾	TC	2.23	2.31	2.37	2.42	2.46
	SC	1.57	1.63	1.70	1.74	1.77
	PI	0.53	0.53	0.53	0.53	0.54
20 ⁽¹⁾	TC	2.16	2.28	2.35	2.41	2.46
	SC	1.54	1.62	1.69	1.74	1.77
	PI	0.58	0.58	0.58	0.58	0.59
25	TC	2.05	2.21	2.32	2.39	2.45
	SC	1.50	1.59	1.67	1.72	1.75
	PI	0.62	0.63	0.63	0.64	0.64
30	TC	1.91	2.08	2.25	2.33	2.40
	SC	1.45	1.54	1.64	1.69	1.72
	PI	0.67	0.68	0.69	0.69	0.70
35	TC	1.77	1.92	2.12	2.23	2.33
	SC	1.38	1.48	1.60	1.65	1.68
	PI	0.73	0.74	0.75	0.76	0.76
40	TC	1.61	1.75	1.91	2.09	2.20
	SC	1.30	1.40	1.51	1.56	1.59
	PI	0.78	0.80	0.81	0.82	0.83
46	TC	1.40	1.53	1.68	1.86	2.00
	SC	1.20	1.28	1.38	1.43	1.46
	PI	0.86	0.87	0.89	0.90	0.91

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
- OD – Outdoor

(1) Marked area is below standard operating limits. For operating in low ambient conditions, an A.S.K Kit is required.

5.10.2 Heating Mode at 7.5m Tubing Connection.
230V : Indoor Fan at High Speed.

ENTERING AIR WB OU COIL (°C)	ENTERING AIR DB ID COIL (°C)					
	15		20		25	
	TH	PI	TH	PI	TH	PI
-10	1.13	0.54	1.09	0.57	1.04	0.60
-7	1.21	0.55	1.17	0.58	1.13	0.61
-2	1.29	0.56	1.25	0.59	1.20	0.62
2	1.57	0.58	1.51	0.62	1.44	0.66
6	2.21	0.63	2.15	0.67	2.07	0.71
10	2.41	0.66	2.34	0.71	2.28	0.76
15	2.60	0.69	2.54	0.74	2.47	0.79
20	2.74	0.71	2.68	0.77	2.60	0.83

* the above chart includes the weighted deicing influence.

LEGEND

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

5.11 Capacity Correction Factor Due to Tubing Length

5.11.1 Cooling

TOTAL TUBING LENGTH								
3m	7.5m	10m	15m	20m	25m	30m	40m	50m
1.04	1	0.949	---	---	---	---	---	---

* Minimum recommended tubing length between indoor and outdoor units is 3m.

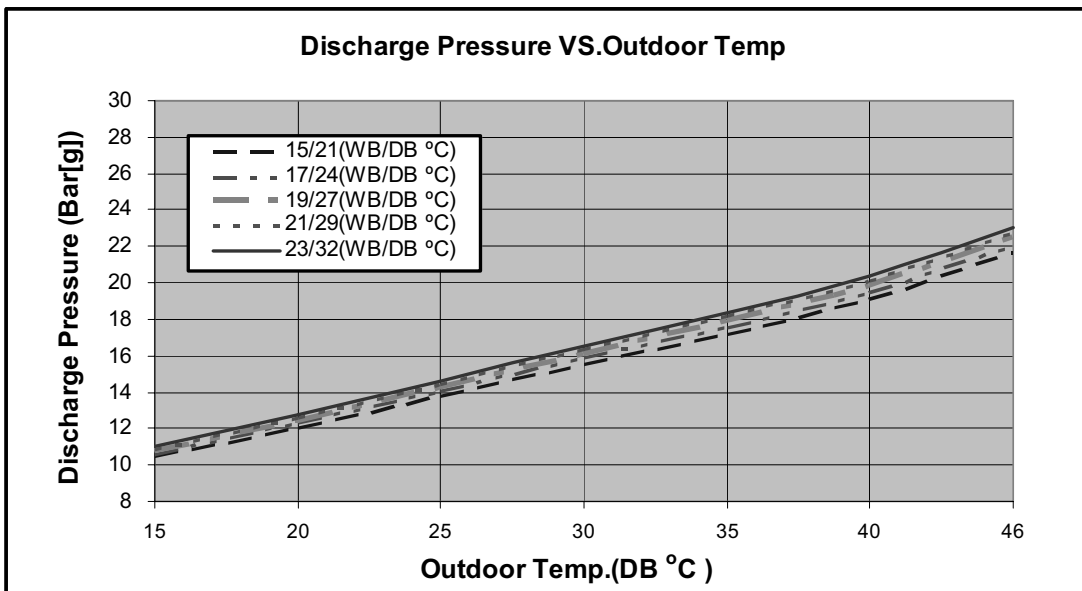
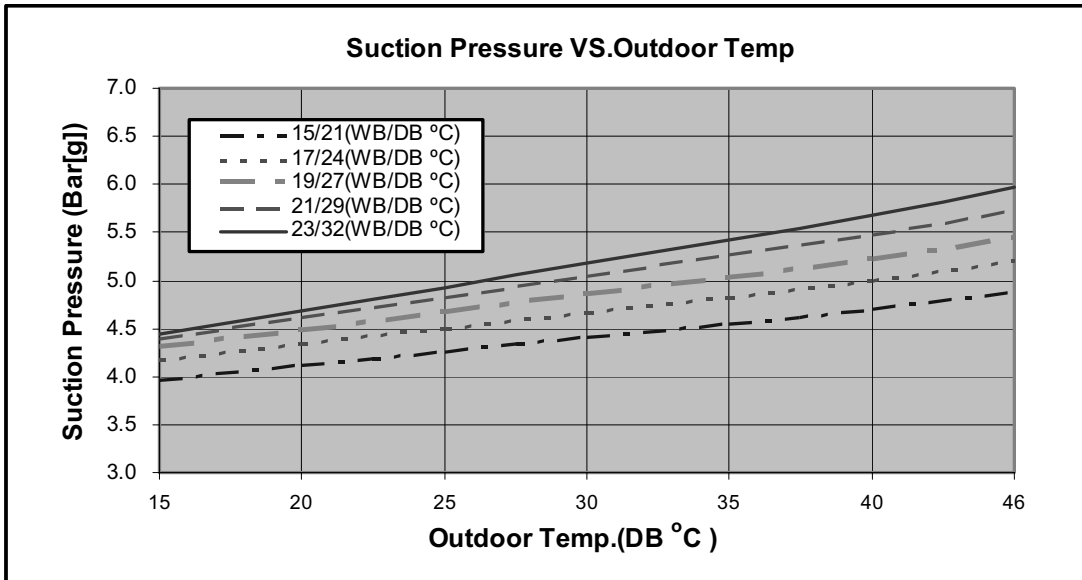
5.11.2 Heating

TOTAL TUBING LENGTH								
3m	7.5m	10m	15m	20m	25m	30m	40m	50m
1.03	1	0.973	---	---	---	---	---	---

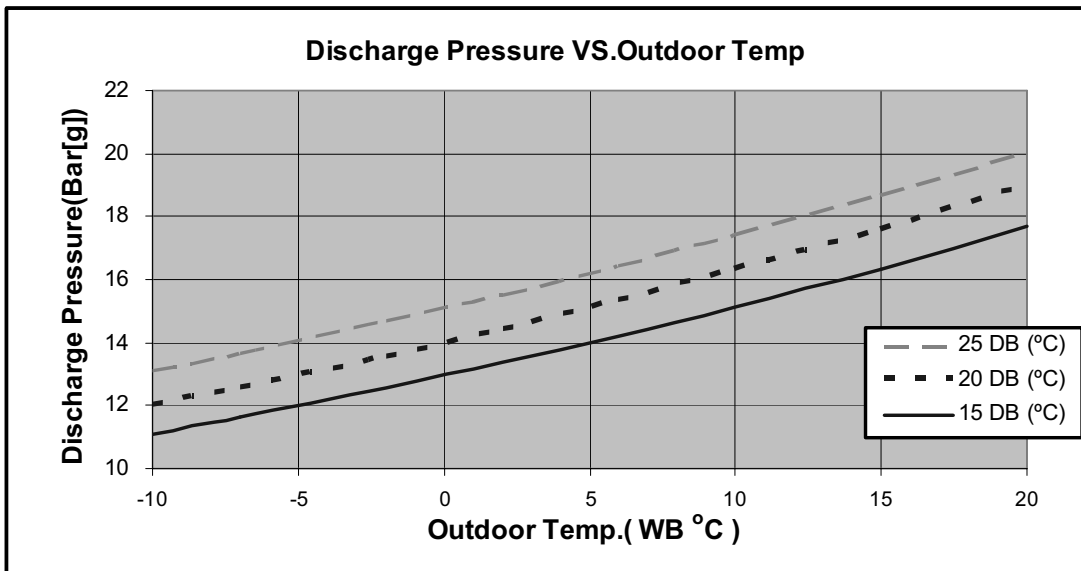
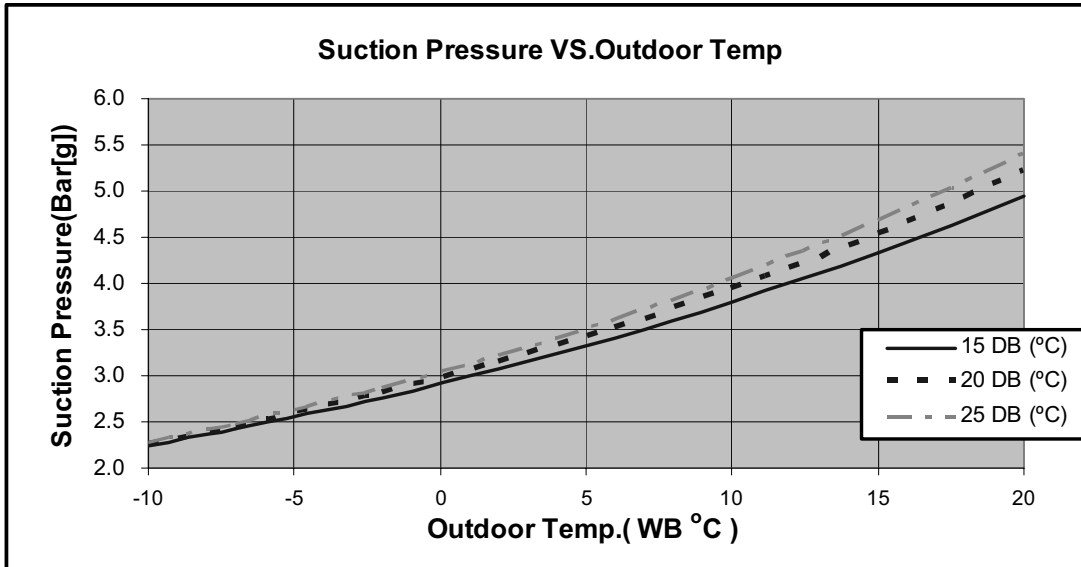
* Minimum recommended tubing length between indoor and outdoor units is 3m.

5.12 Pressure Curves.

5.12.1 Cooling.



5.12.2 Heating.



5.13 IOD9/CON9 R22

5.13.1 Cooling Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR DB OD Coil(°C)	Data	ENTERING AIR WB/DB ID Coil(°C)				
		15/21	17/24	19/27	21/29	23/32
15 ⁽¹⁾	TC	2.67	2.76	2.83	2.89	2.94
	SC	1.70	1.78	1.85	1.89	1.93
	PI	0.69	0.69	0.69	0.69	0.70
20 ⁽¹⁾	TC	2.58	2.72	2.81	2.87	2.93
	SC	1.67	1.76	1.84	1.89	1.92
	PI	0.75	0.75	0.75	0.76	0.76
25	TC	2.44	2.64	2.77	2.85	2.92
	SC	1.63	1.73	1.82	1.87	1.91
	PI	0.81	0.81	0.82	0.82	0.83
30	TC	2.28	2.49	2.69	2.78	2.86
	SC	1.58	1.68	1.78	1.83	1.87
	PI	0.87	0.88	0.89	0.90	0.91
35	TC	2.11	2.29	2.53	2.66	2.78
	SC	1.50	1.61	1.74	1.79	1.83
	PI	0.94	0.95	0.97	0.98	0.98
40	TC	1.92	2.09	2.28	2.50	2.62
	SC	1.41	1.52	1.65	1.70	1.73
	PI	1.01	1.03	1.05	1.06	1.07
46	TC	1.67	1.82	2.00	2.22	2.39
	SC	1.30	1.39	1.50	1.55	1.59
	PI	1.11	1.12	1.15	1.16	1.18

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
- OD – Outdoor

(1) Marked area is below standard operating limits. For operating in low ambient conditions, an A.S.K Kit is required.

5.13.2 Heating Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR WB OU COIL (°C)	ENTERING AIR DB ID COIL (°C)					
	15		20		25	
	TH	PI	TH	PI	TH	PI
-10	1.41	0.70	1.35	0.75	1.30	0.79
-7	1.51	0.72	1.46	0.76	1.41	0.80
-2	1.61	0.73	1.55	0.77	1.50	0.82
2	1.96	0.77	1.88	0.81	1.80	0.86
6	2.76	0.82	2.68	0.88	2.59	0.93
10	3.00	0.87	2.92	0.93	2.84	0.99
15	3.24	0.91	3.16	0.98	3.08	1.04
20	3.42	0.93	3.34	1.01	3.24	1.09

* the above chart includes the weighted deicing influence.

LEGEND

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

5.14 Capacity Correction Factor Due to Tubing Length

5.14.1 Cooling

TOTAL TUBING LENGTH								
3m	7.5m	10m	12m	20m	25m	30m	40m	50m
1.03	1	0.972	0.941	---	---	---	---	---

* Minimum recommended tubing length between indoor and outdoor units is 3m.

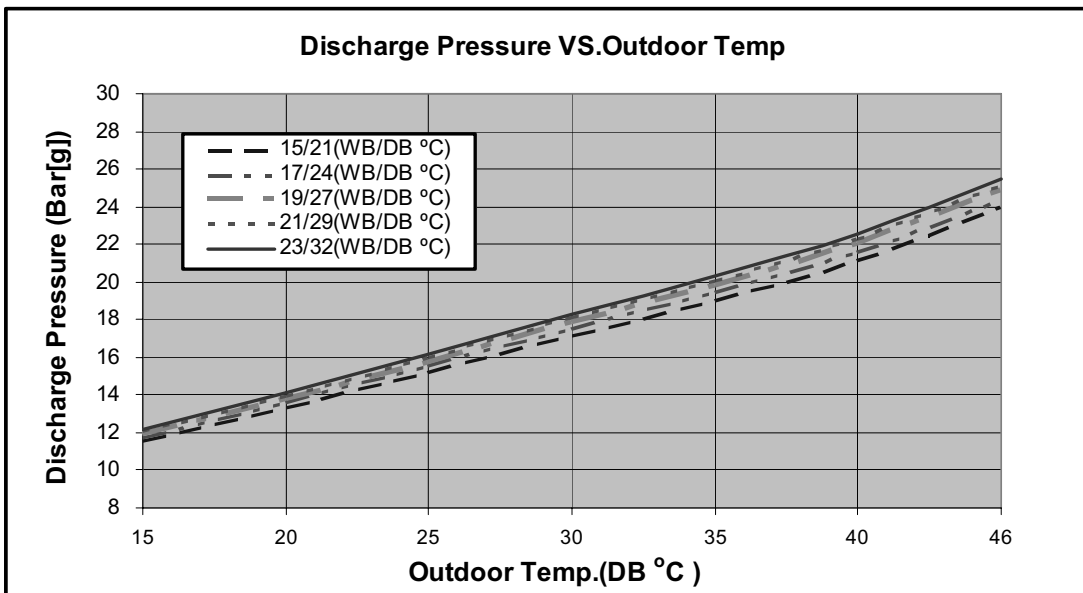
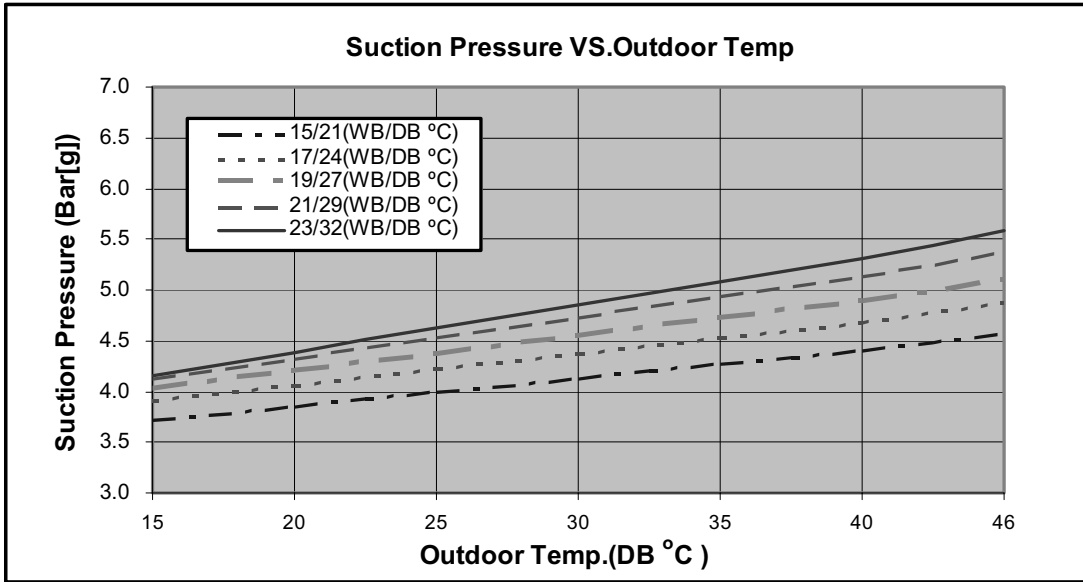
5.14.2 Heating

TOTAL TUBING LENGTH								
3m	7.5m	10m	12m	20m	25m	30m	40m	50m
1.04	1	0.985	0.973	---	---	---	---	---

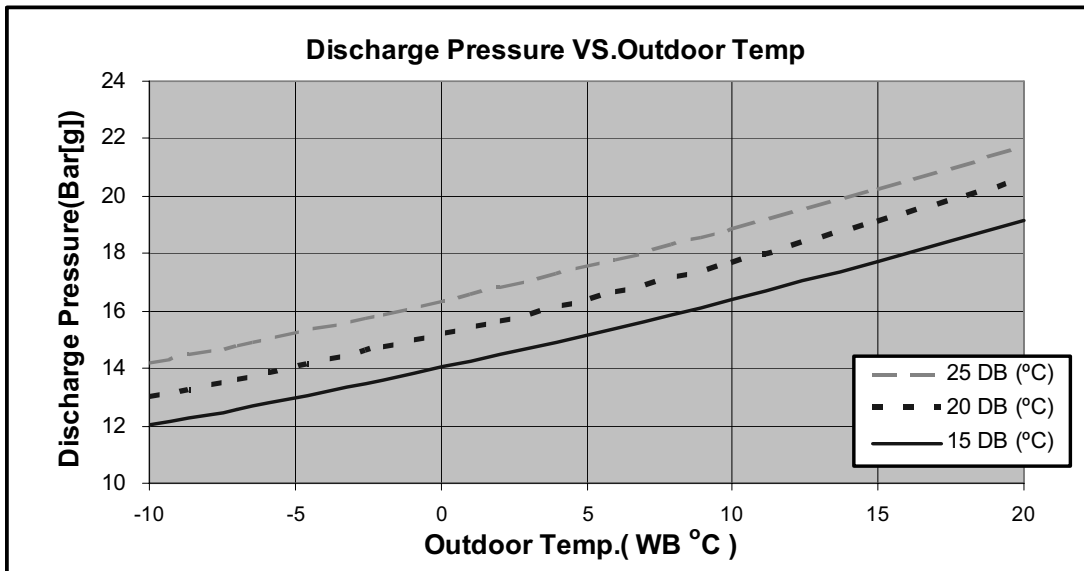
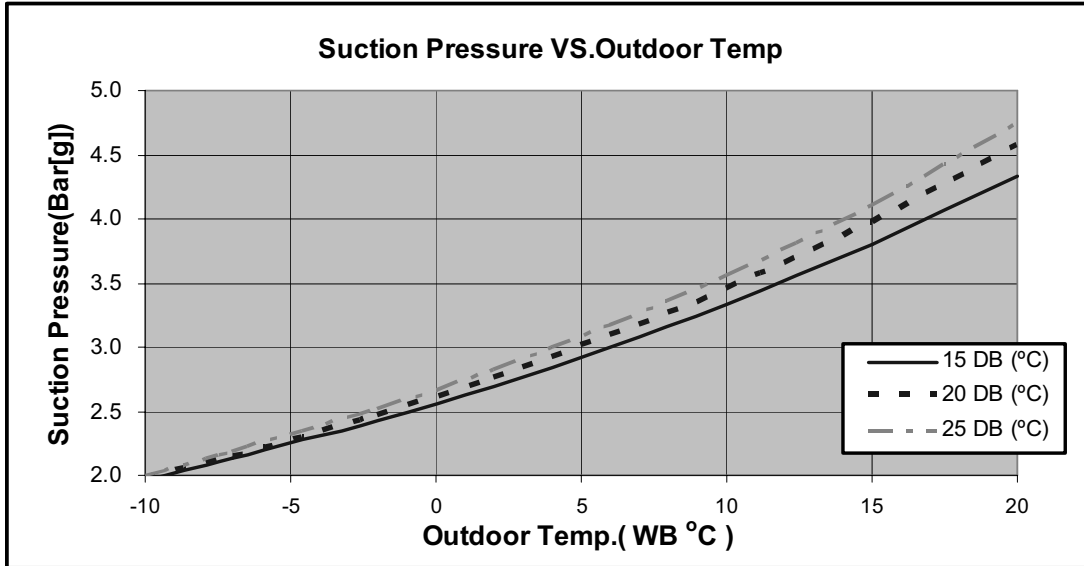
* Minimum recommended tubing length between indoor and outdoor units is 3m.

5.15 Pressure Curves.

5.15.1 Cooling.



5.15.2 Heating.



5.1 IOD12/CON12 R22

5.1.1 Cooling Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR DB OD Coil(°C)	Data	ENTERING AIR WB/DB ID Coil(°C)				
		15/21	17/24	19/27	21/29	23/32
15 ⁽¹⁾	TC	4.06	4.20	4.30	4.40	4.47
	SC	2.51	2.61	2.72	2.78	2.84
	PI	0.90	0.90	0.90	0.91	0.91
20 ⁽¹⁾	TC	3.93	4.14	4.27	4.37	4.46
	SC	2.46	2.59	2.70	2.78	2.83
	PI	0.98	0.98	0.98	0.99	0.99
25	TC	3.71	4.01	4.22	4.34	4.45
	SC	2.39	2.54	2.68	2.76	2.81
	PI	1.06	1.06	1.07	1.08	1.09
30	TC	3.47	3.78	4.09	4.23	4.36
	SC	2.32	2.46	2.62	2.70	2.75
	PI	1.14	1.16	1.17	1.18	1.19
35	TC	3.22	3.49	3.85	4.04	4.23
	SC	2.20	2.36	2.56	2.63	2.69
	PI	1.23	1.25	1.27	1.27	1.29
40	TC	2.92	3.18	3.47	3.80	3.99
	SC	2.08	2.24	2.42	2.50	2.55
	PI	1.33	1.35	1.37	1.39	1.40
46	TC	2.54	2.77	3.05	3.37	3.63
	SC	1.91	2.05	2.21	2.29	2.34
	PI	1.45	1.47	1.50	1.53	1.54

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
- OD – Outdoor

(1) Marked area is below standard operating limits. For operating in low ambient conditions, an A.S.K Kit is required.

5.16.2 Heating Mode at 7.5m Tubing Connection.

230V : Indoor Fan at High Speed.

ENTERING AIR WB OU COIL (°C)	ENTERING AIR DB ID COIL (°C)					
	15		20		25	
	TH	PI	TH	PI	TH	PI
-10	2.05	1.00	1.97	1.07	1.89	1.12
-7	2.20	1.03	2.13	1.08	2.05	1.14
-2	2.34	1.04	2.26	1.10	2.18	1.16
2	2.85	1.09	2.73	1.16	2.61	1.23
6	4.02	1.17	3.90	1.25	3.76	1.33
10	4.37	1.23	4.25	1.32	4.13	1.41
15	4.72	1.29	4.60	1.39	4.49	1.48
20	4.97	1.33	4.86	1.44	4.72	1.55

* the above chart includes the weighted deicing influence.

LEGEND

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

5.17 Capacity Correction Factor Due to Tubing Length

5.17.1 Cooling

TOTAL TUBING LENGTH								
3m	7.5m	10m	15m	20m	25m	30m	40m	50m
1.02	1	0.982	0.947	---	---	---	---	---

* Minimum recommended tubing length between indoor and outdoor units is 3m.

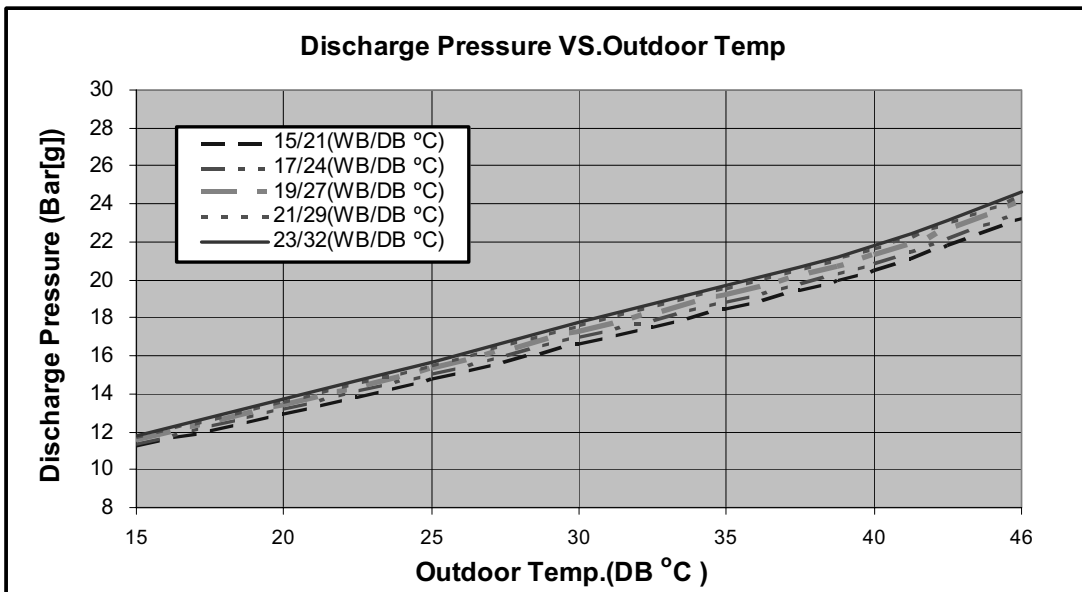
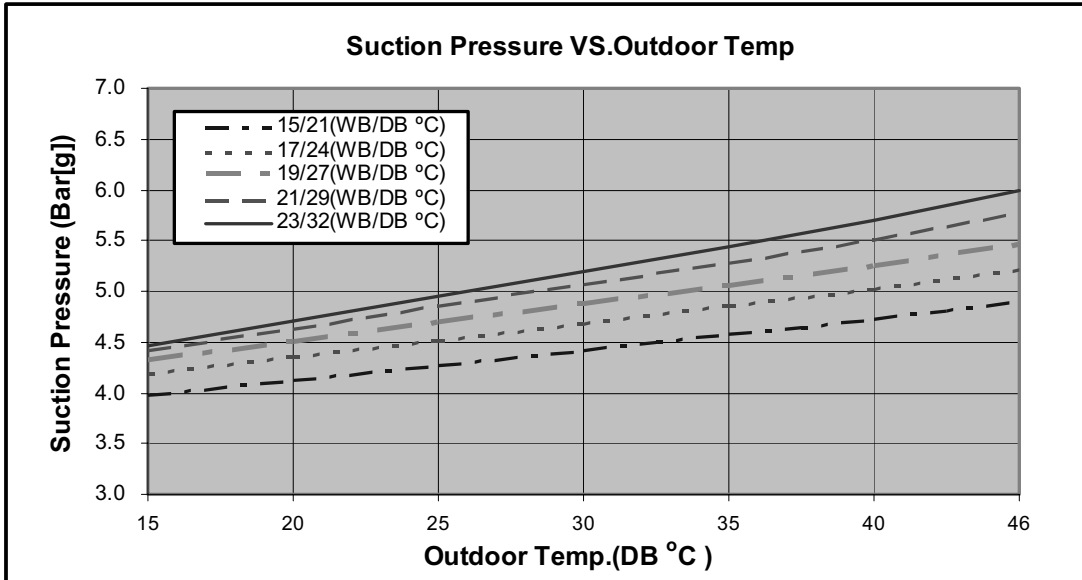
5.17.2 Heating

TOTAL TUBING LENGTH								
3m	7.5m	10m	15m	20m	25m	30m	40m	50m
1.03	1	0.985	0.965	---	---	---	---	---

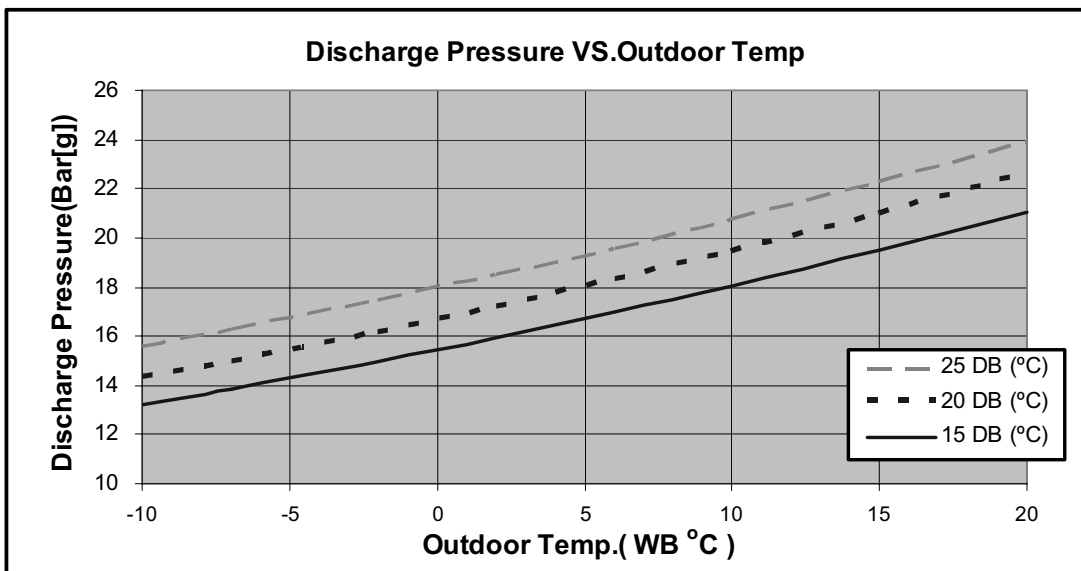
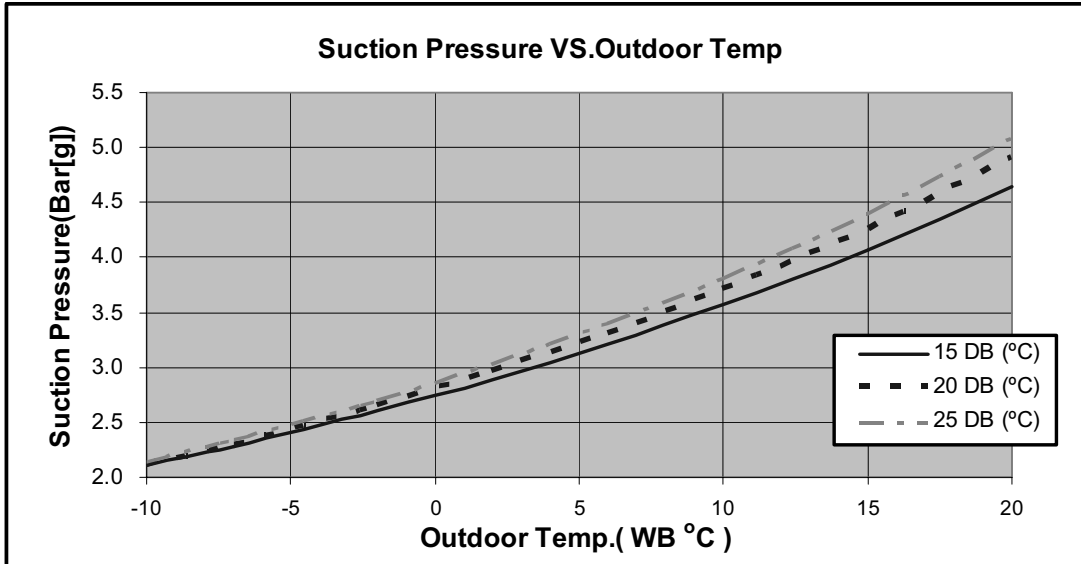
* Minimum recommended tubing length between indoor and outdoor units is 3m.

5.18 Pressure Curves.

5.18.1 Cooling.



5.18.2 Heating.



6. SOUND LEVEL CHARACTERISTICS

6.1 Sound Pressure Level

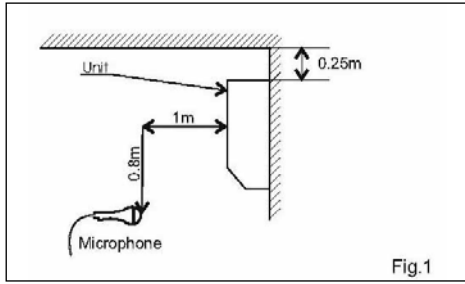


Figure 1. Wall Mounted

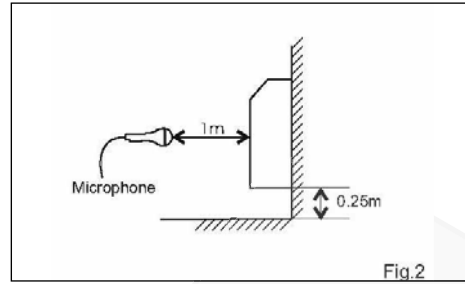


Figure 2. Floor Mounted

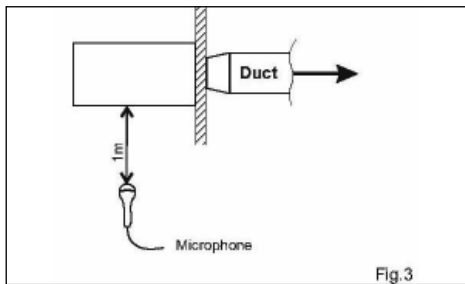


Figure 3. Ducted

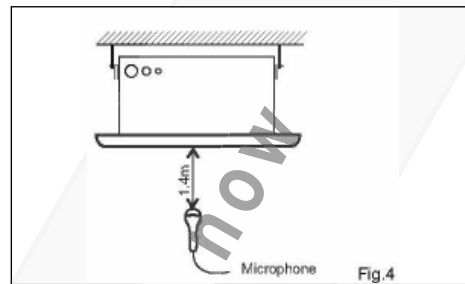
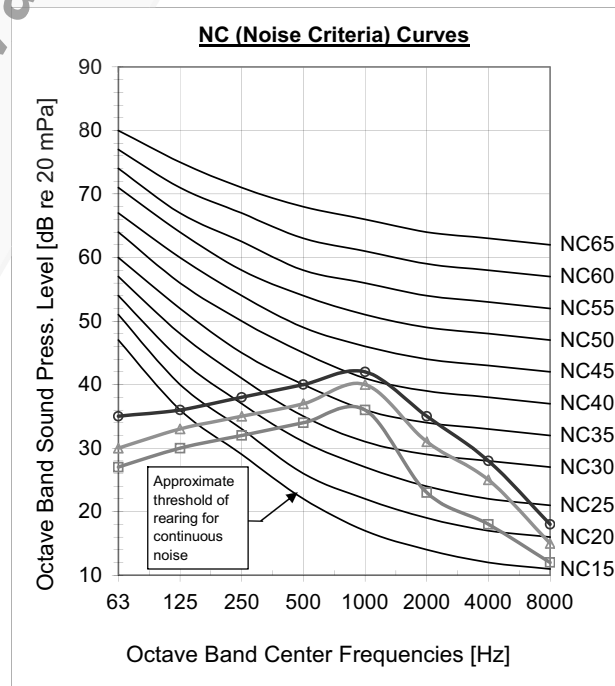
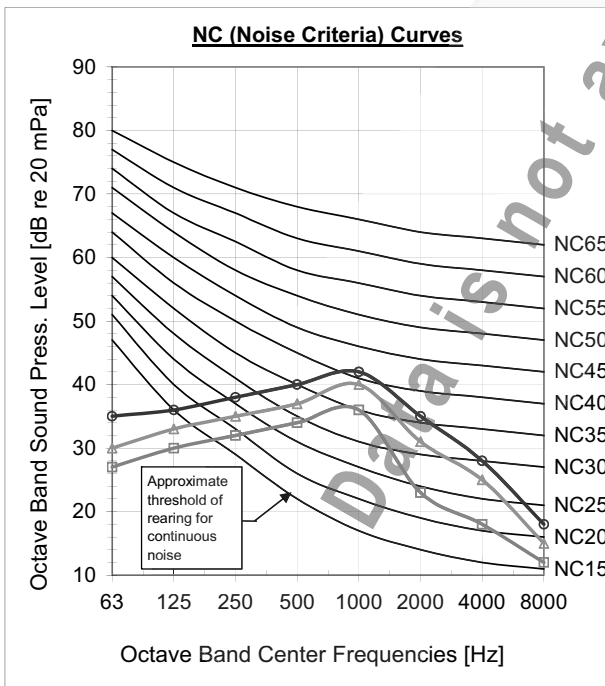


Figure 4. Cassette

6.2 Sound Pressure Level Spectrum (Measured as Figure 1)

IOD 7

IOD 9



FAN SPEED	LINE
HI	—○—
ME	—△—
LO	—□—

6.3 Outdoor units

MODEL		SPL dB(A)	SPW dB(A)
Indoor	Outdoor	Cooling/Heating	Cooling/Heating
IOD 7	CON 7	51/52	61/62
IOD 9	CON 9	52/53	62/63
IOD 12	CON 12	56/57	66/67
IOD 17	CON 17	49/49	59/59

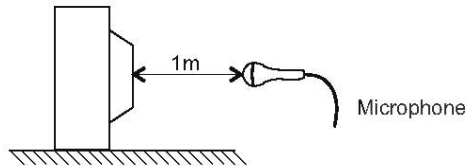


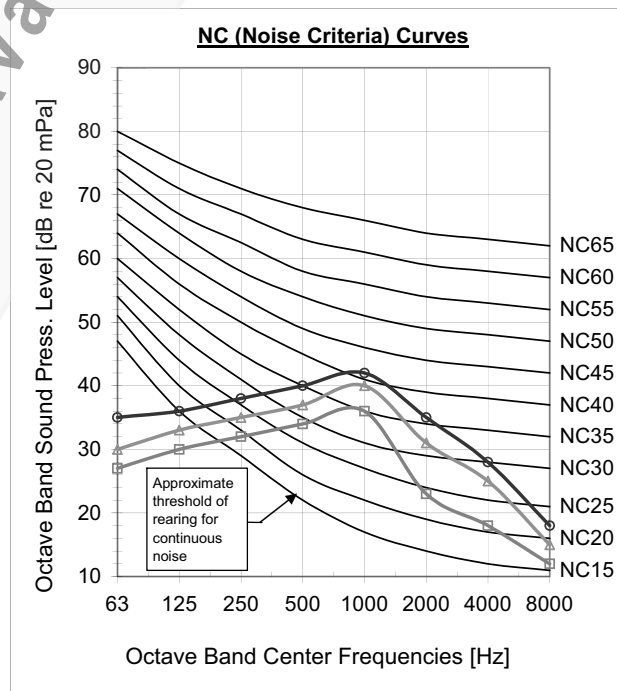
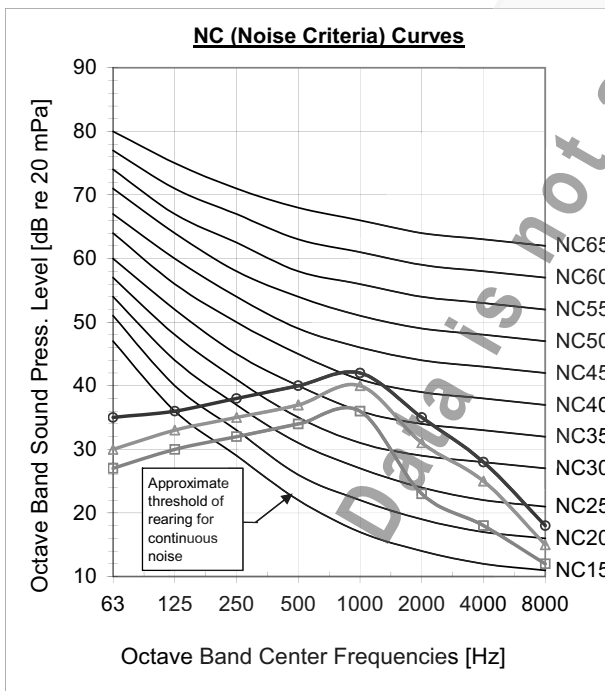
Fig.5

Figure 5. Microphone Distance from Unit

6.4 Sound Pressure Level Spectrum (Measured as Figure 5)

Cooling

Heating



MODEL	LINE
OU8-33	—○—
OU10-44	—△—
GC-18	—●—
GC-24	—□—

7. ELECTRICAL DATA

7.1 Single Phase Units

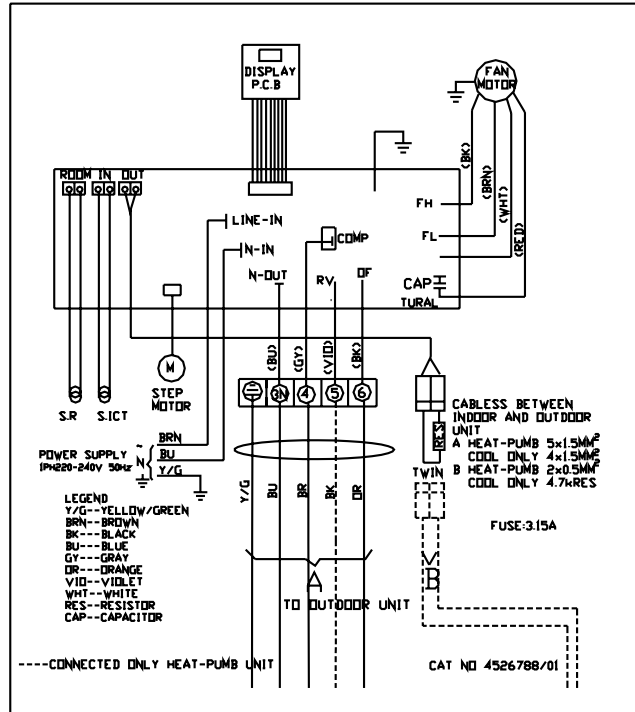
MODEL	COMPACT 7	COMPACT 9	COMPACT 12
Power Supply	To indoor	To indoor	To indoor
	1PH-230V-50Hz	1PH-230V-50Hz	1PH-230V-50Hz
Max Current, A	5.4	6.7	8.5
Circuit Breaker	10	10	15
Power Supply Wiring No. X Cross Section mm ²	3x1.0 mm ²	3x1.0 mm ²	3x1.5 mm ²
Interconnecting Cable RC Model No. X Cross Section mm ²	5x1.0 mm ² +2x0.5 mm ² (OCT sensor)	5x1.0 mm ² +2x0.5 mm ² (OCT sensor)	5x1.5 mm ² +2x0.5 mm ² (OCT sensor)
Interconnecting Cable ST Model No. X Cross Section mm ²	4x1.0 mm ²	4x1.0 mm ²	4x1.0 mm ²

NOTE

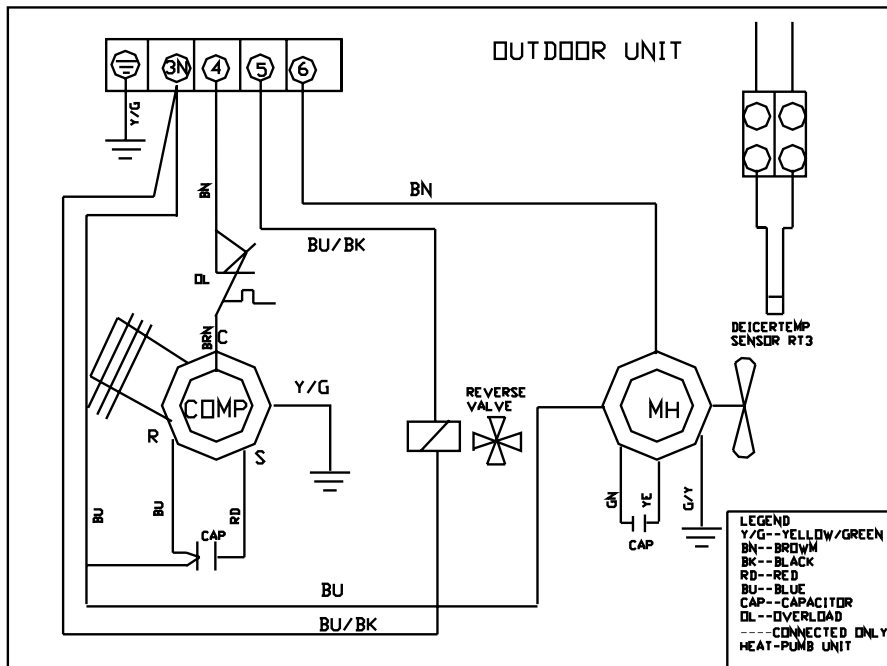
Power wiring cord should comply with local laws and electrical regulations requirements.

8. WIRING DIAGRAMS

8.1 Indoor Unit COMPACT 7,9,12

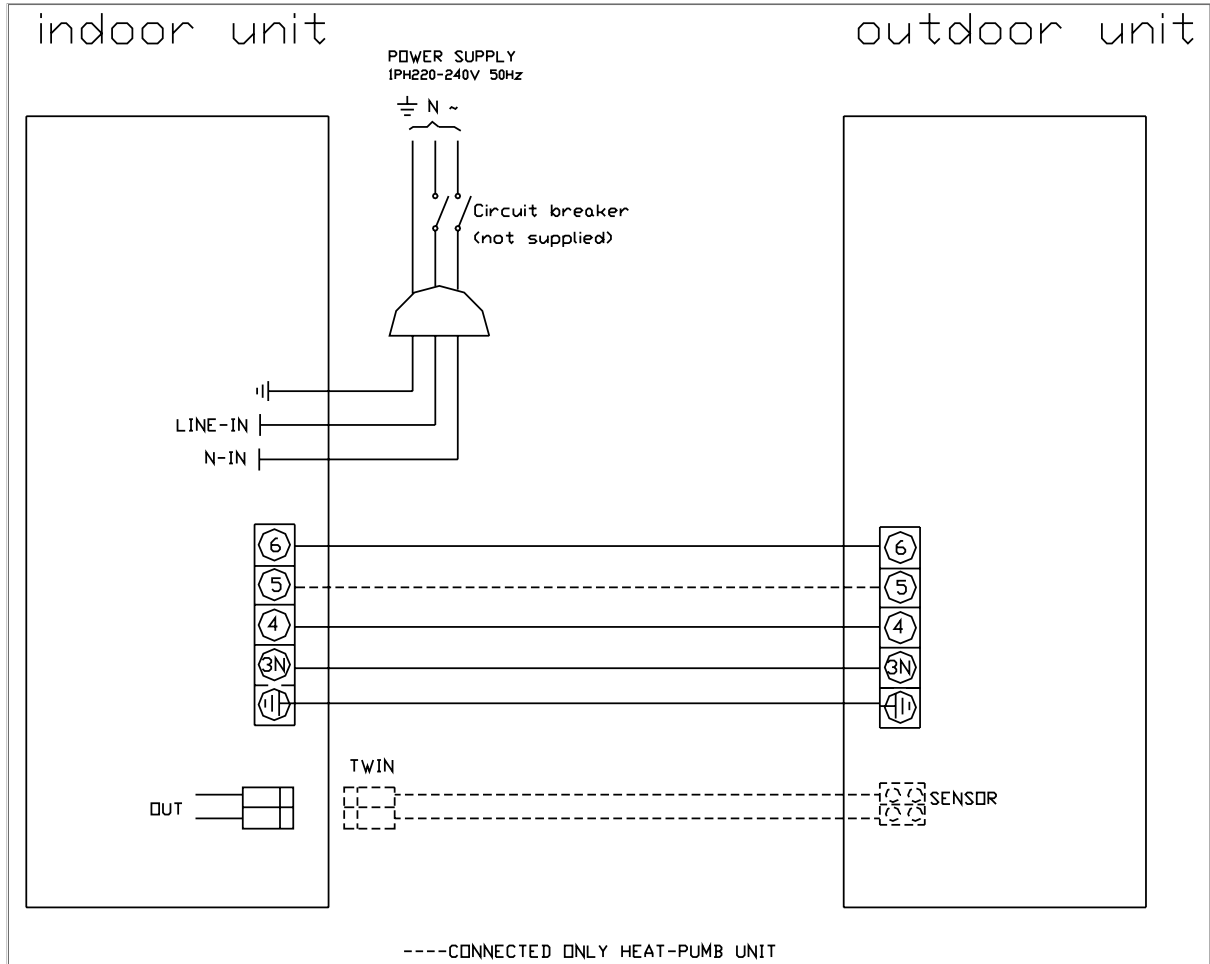


8.2 Outdoor Unit COMPACT 7,9,12



9. ELECTRICAL CONNECTIONS

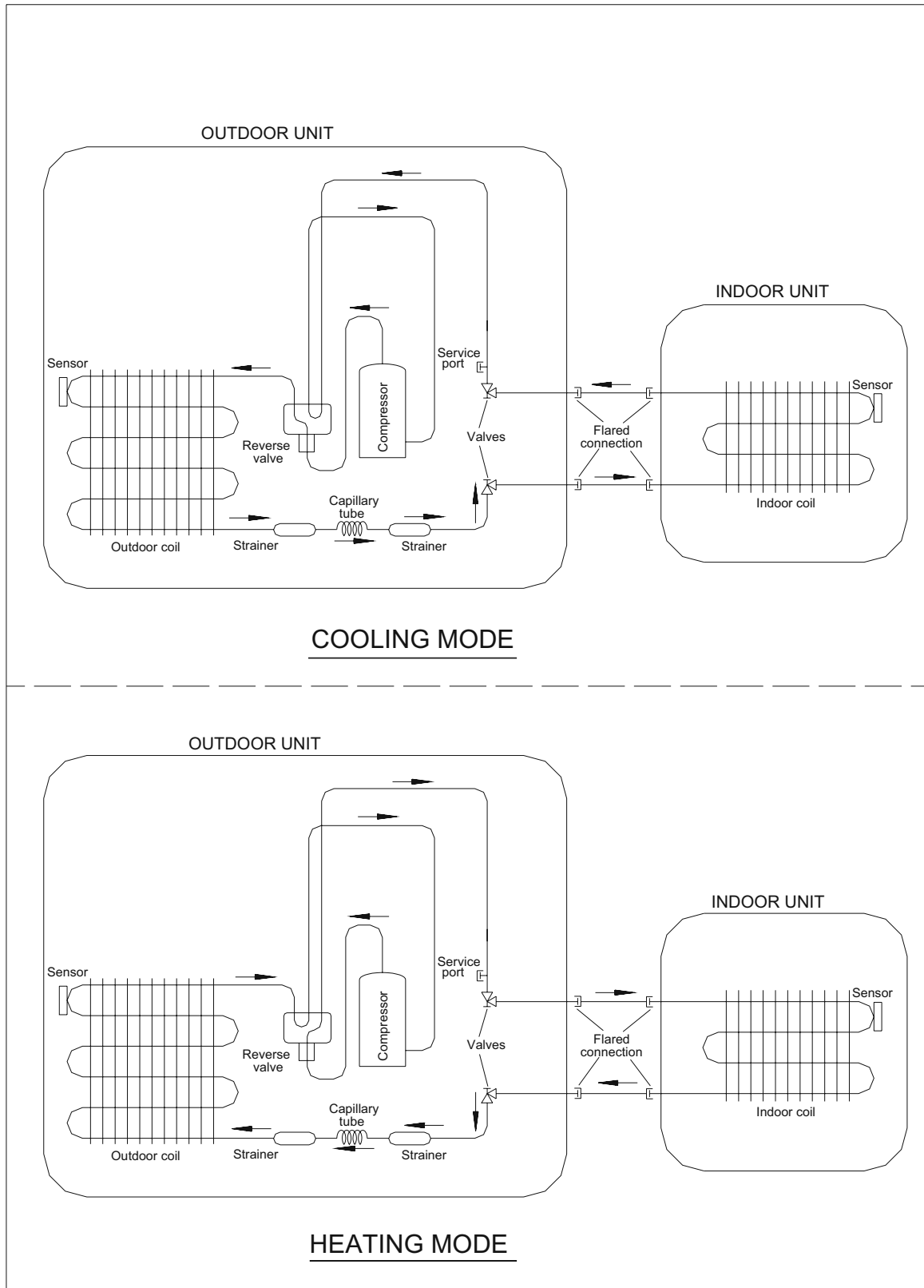
9.1 COMPACT 7,9,12,



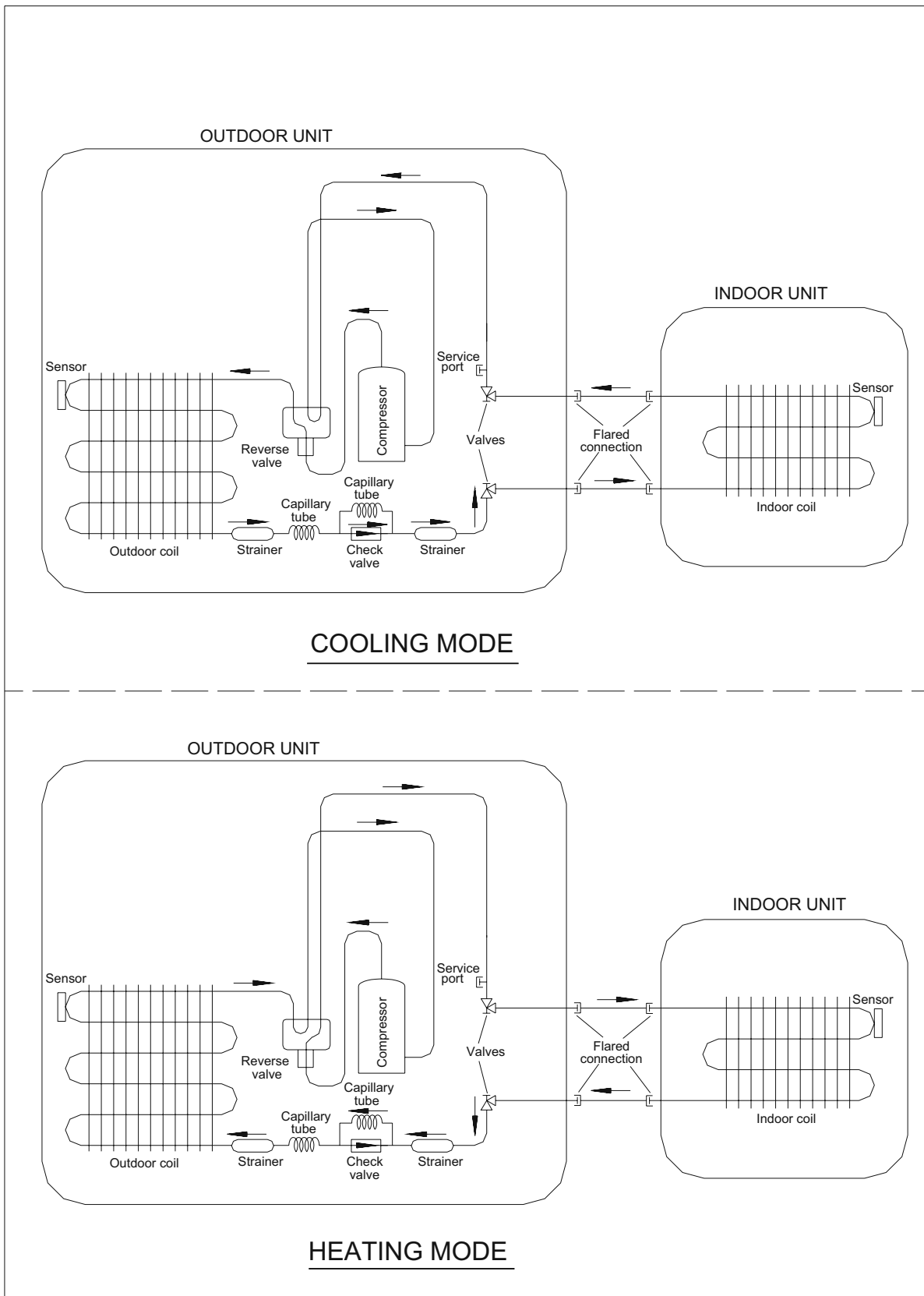
10. REFRIGERATION DIAGRAMS

10.1 Heat Pump Models

10.1.1 COMPACT 7,9 RC R407C & R22

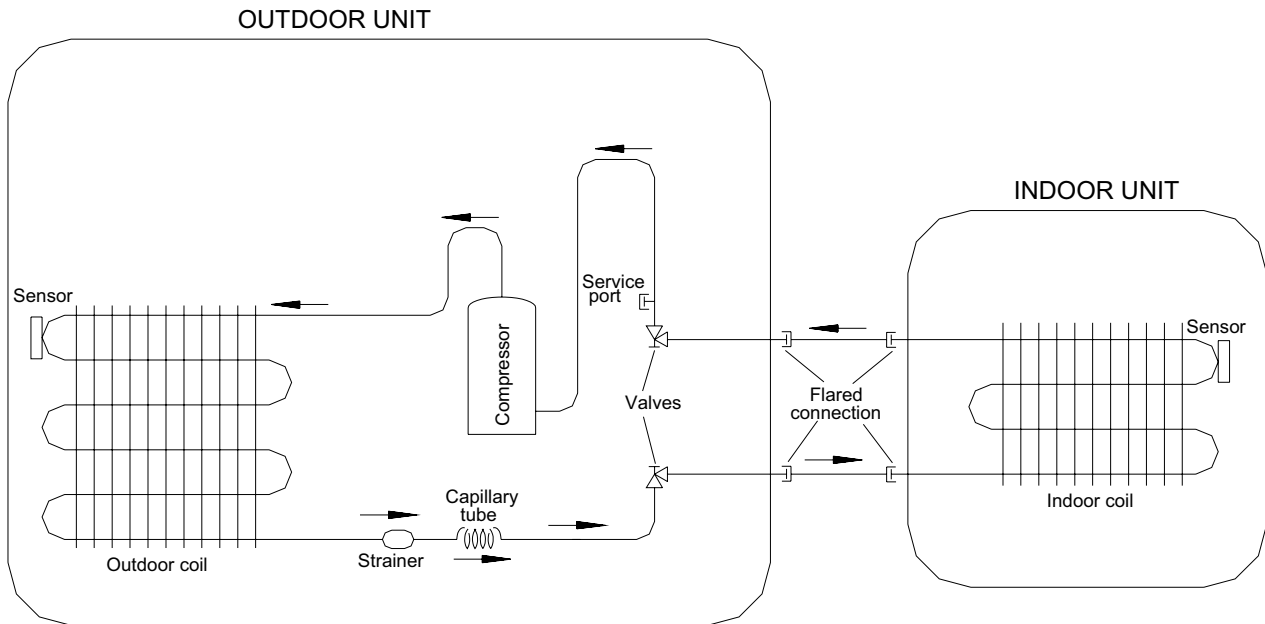


10.1.2 COMPACT 12 RC R407C & R22

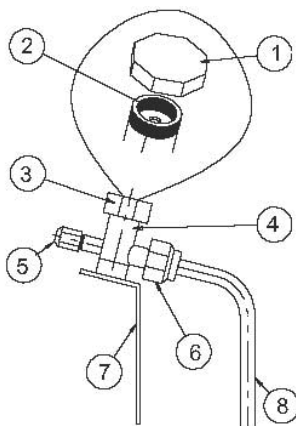
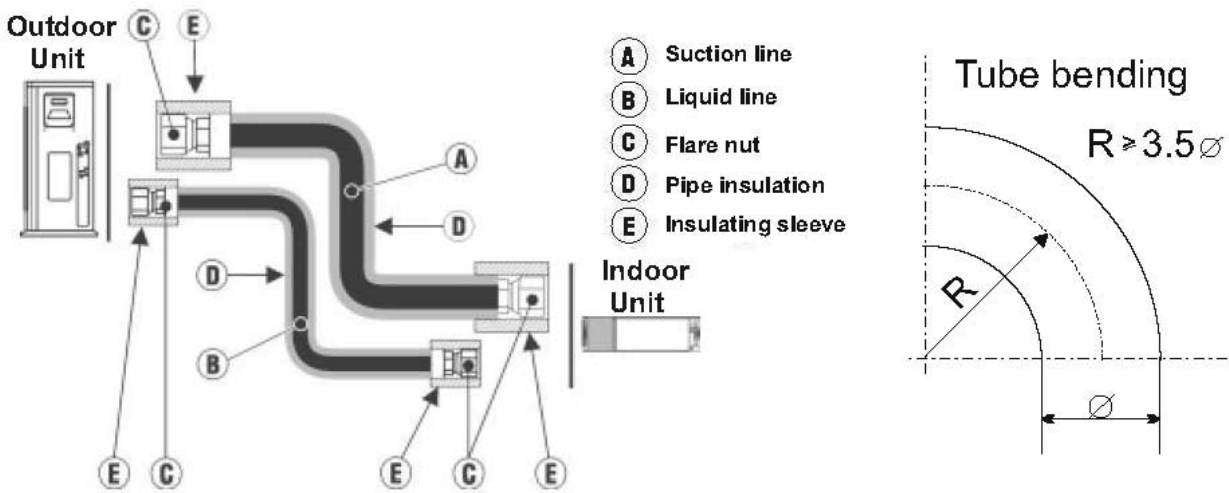


10.2 Cooling Only Models

10.2.1 COMPACT 7, 9, 12



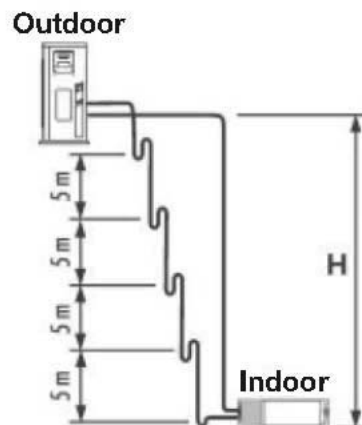
11. TUBING CONNECTIONS



TUBE (Inch)	1/4"	3/8"	1/2"	5/8"	3/4"
TORQUE (Nm)					
Flare Nuts	11-13	40-45	60-65	70-75	80-85
Valve Cap	13-20	13-20	18-25	18-25	40-50
Service Port Cap	11-13	11-13	11-13	11-13	11-13

1. Valve Protection Cap-end
2. Refrigerant Valve Port (use Allen wrench to open/close)
3. Valve Protection Cap
4. Refrigerant Valve
5. Service Port Cap
6. Flare Nut
7. Unit Back Side
8. Copper Tube

When the outdoor unit is installed above the indoor unit an oil trap is required every 5m along the suction line at the lowest point of the riser. In case the indoor unit is installed above the outdoor, no trap is required.



12. CONTROL SYSTEM COMPACT 7-12

12.1 Electronic Control

12.1.1 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.

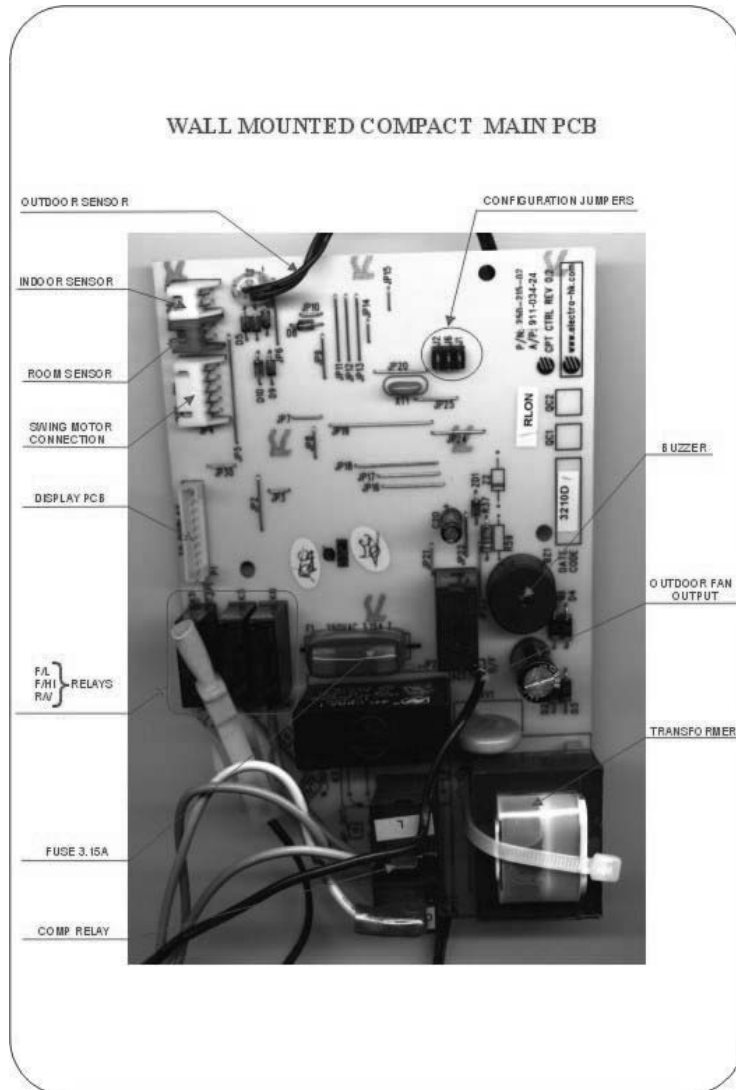
12.1.2 Jumpers Settings

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

12.2 Legend

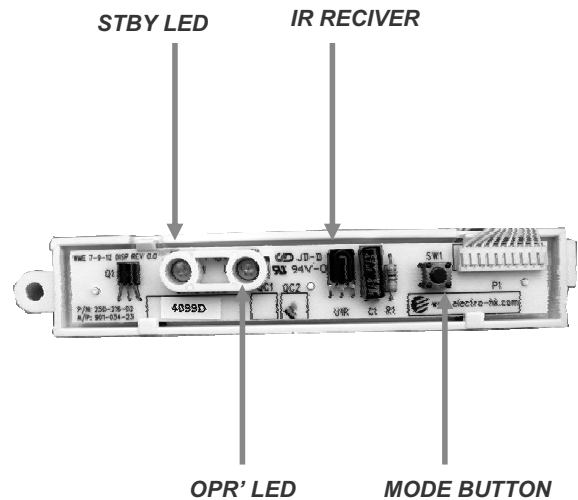
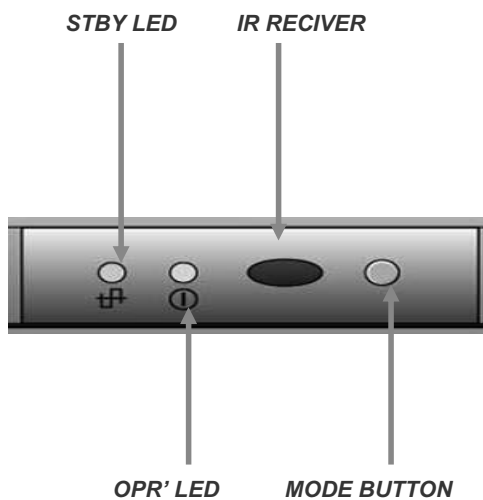
AC	- Alternate Current
A/C	- Air-Conditioner
ANY	- ON or OFF status
CLOCK	- ON/OFF Operation Input, (dry contact)
COMP	- Compressor
CPU	- Central Processing Unit
ELUM	- Extended Louver Upward Movement (Software Jumper)
E ² PROM, EEP	- Erase Enable Programmable Read Only Memory
HE	- Heating Element
HPC	- 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: $\Delta T = SPT - RT$ in Cool/Dry/Fan Mode: $\Delta T = RT - SPT$

12.3 Main PCB Controller



12.3.1 COMPACT 7-12 (LEXAN)

COMPACT 7-22 Display PCB



12.4 General functions

12.4.1 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

12.4.2 IFAN operation

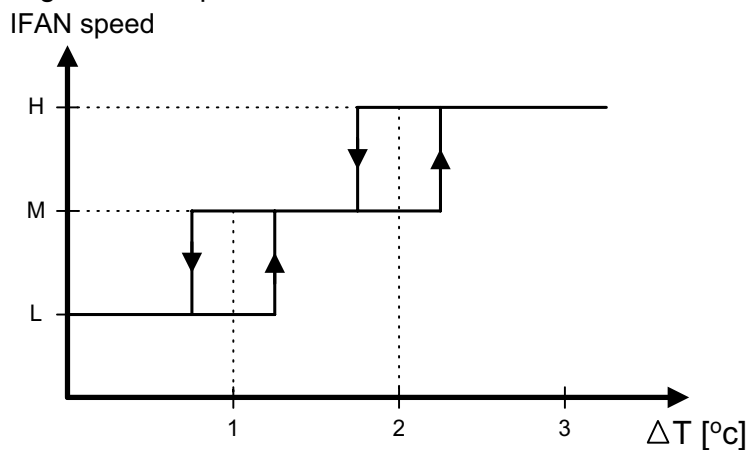
- Min time interval between IFAN speed change in AUTOFAN Mode, is 30 sec.
- Min time interval between IFAN speed change in H/M/L Mode is 1 sec.
- IFAN speed in Heat/Cool Autofan Mode is determined according to the following table:

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:



12.4.3 OFAN operation

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

12.4.4 HE operation

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

12.4.5 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.

12.4.6 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).

12.4.6.1 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 a 4.7 kohm resistor (5%) to the OCT connector. These resistors are equivalent to a thermistor at $43\pm 1^{\circ}\text{C}$ and $48\pm 1^{\circ}\text{C}$ respectively.
 - (iii) Connecting a 4.7 k resistor to the ICT connector will disable the ICT no-change error only.

12.4.6.2 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 :

$$\text{Heat Mode: } \text{RAT} = \text{ICT} / 2.3$$

$$\text{Cool Mode } \text{RAT} = \text{ICT} * 4$$

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 & WVW 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.

12.5 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) OFAN OPERATIONS
 - OFAN starts together with COMP in general.

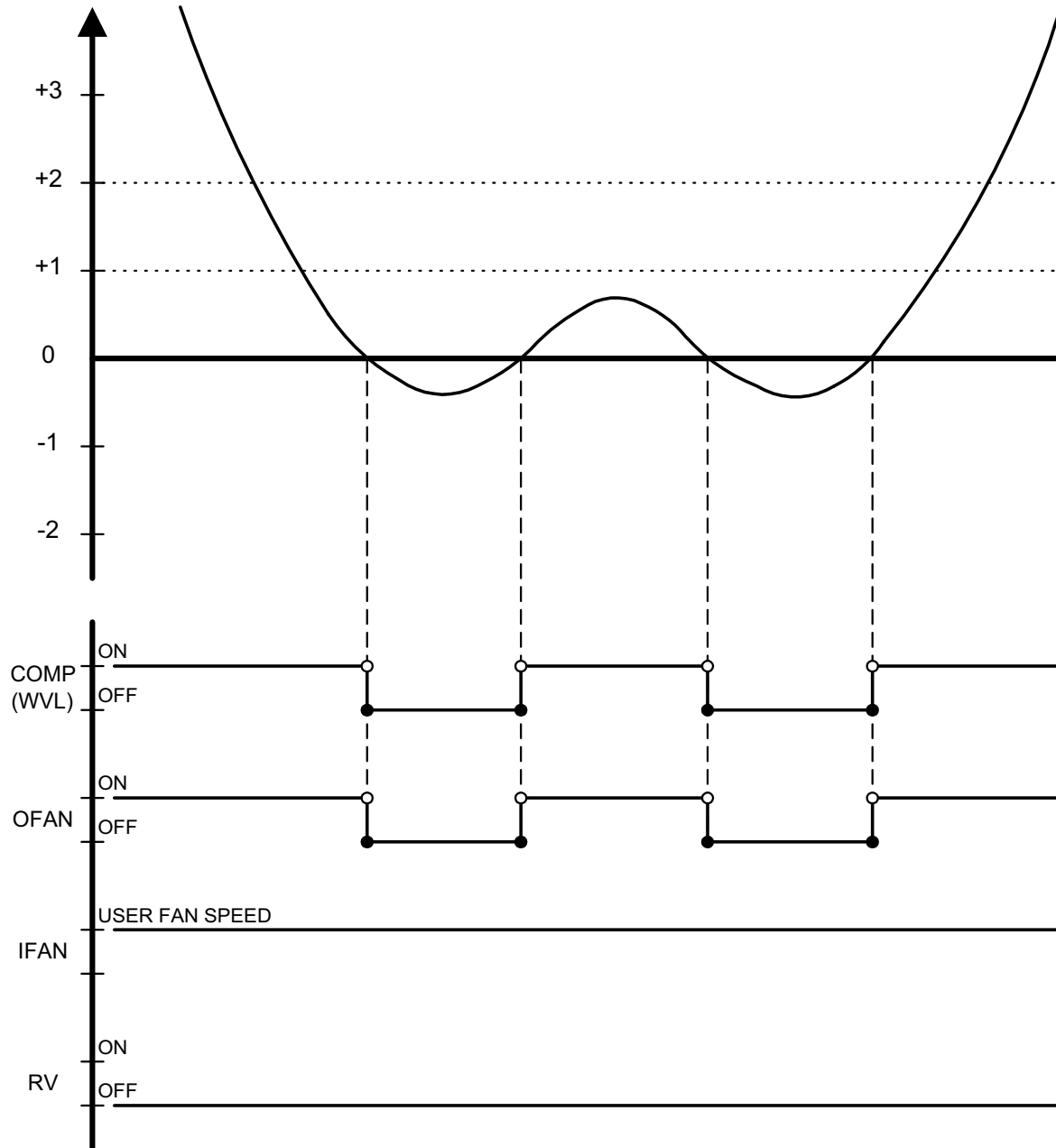
2.5.1 Cooling

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.

(RT - SPT) [°c]



Note:

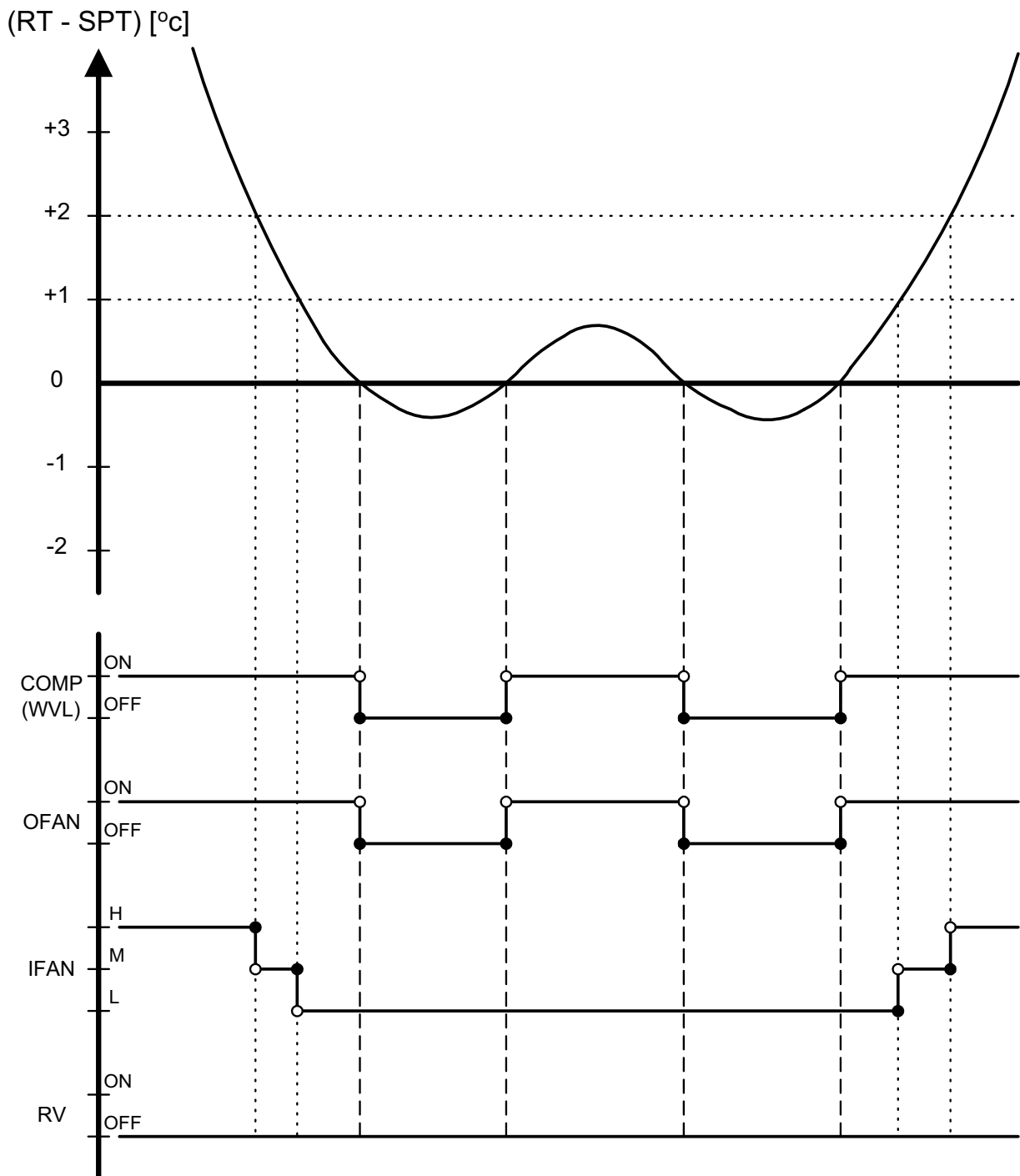
- 1) IFAN is always running at High, Medium or Low speed selected by user.
- 2) In IFEEL mode, the Room Temperature (RT) is the RCT from a R/C. Otherwise, the RT is the RAT from the Room Thermistor.

12.5.2 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.



12.6 Heating Mode

12.6.1 Heating Mode - General

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

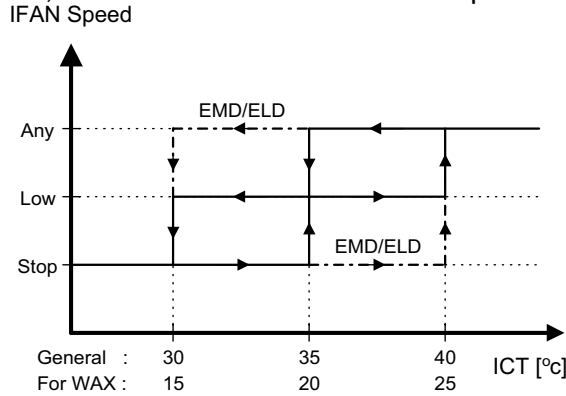
SPT [°C]	Add to SPT	
	I-FEEL ON	I-FEEL OFF
$18 \leq SPT \leq 27$	0 °C	+2 °C
$27 < SPT \leq 30$	0 °C	+3 °C

Notes :

- No compensation will be activated in Forced operation modes

12.6.2 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.

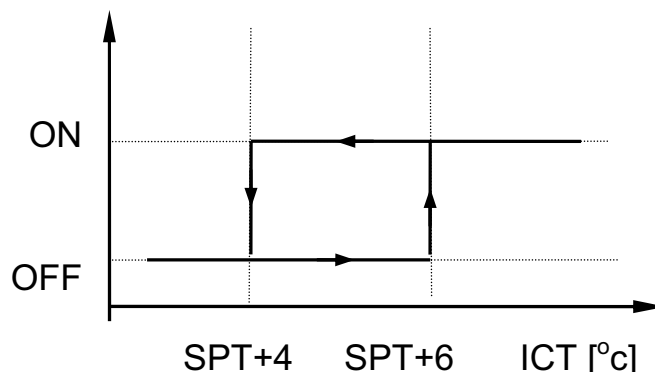


Notes :

- 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.
- 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:

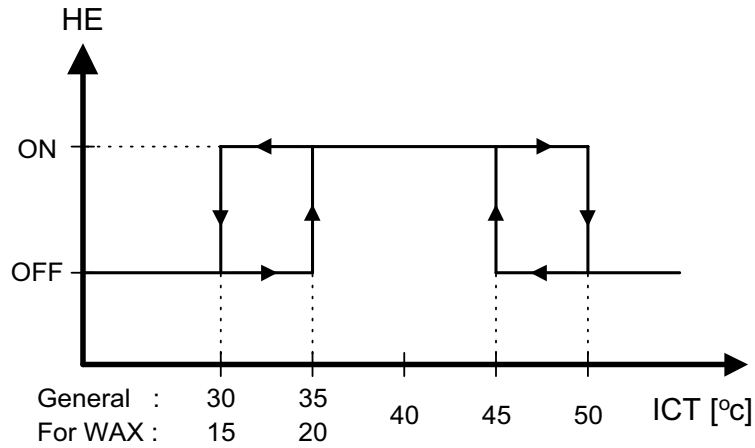
In **other models** IFAN will operate in low speed for 30 sec and then stop. If COMP is OFF for more than 3 minutes and IFEEL Mode is inactive, IFAN will operate in low speed according to the following graph:

IFAN (Low Speed)



12.6.3 HE operation

- For **all Groups**, HE can be ON only when IFAN is ON.
- For **all Groups**, HE switches to OFF when $ICT > 50\text{ }^{\circ}\text{C}$, and is activated again when $ICT \leq 45\text{ }^{\circ}\text{C}$.
- In **SH or RC group**, HE operation is limited by the following graph:



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

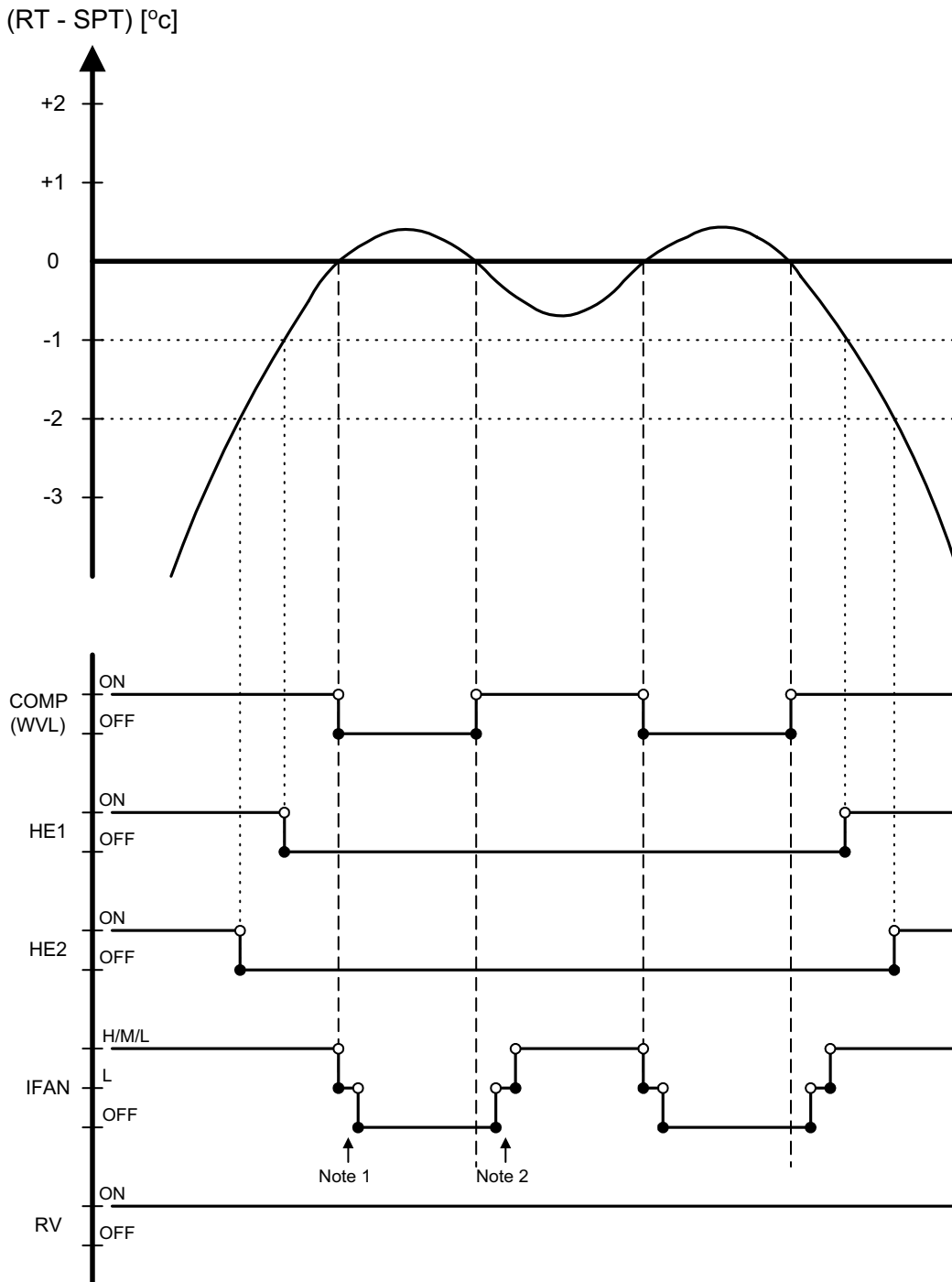
After COMP has been working for 5 minutes, HE & IFAN are activated even if the ICT is still below 35°C. This situation is called Back-up Mode. Both HE & IFAN will work in Back-up Mode until the ICT reaches 35°C. Then, the operation goes on in the usual mode .

12.6.4 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.



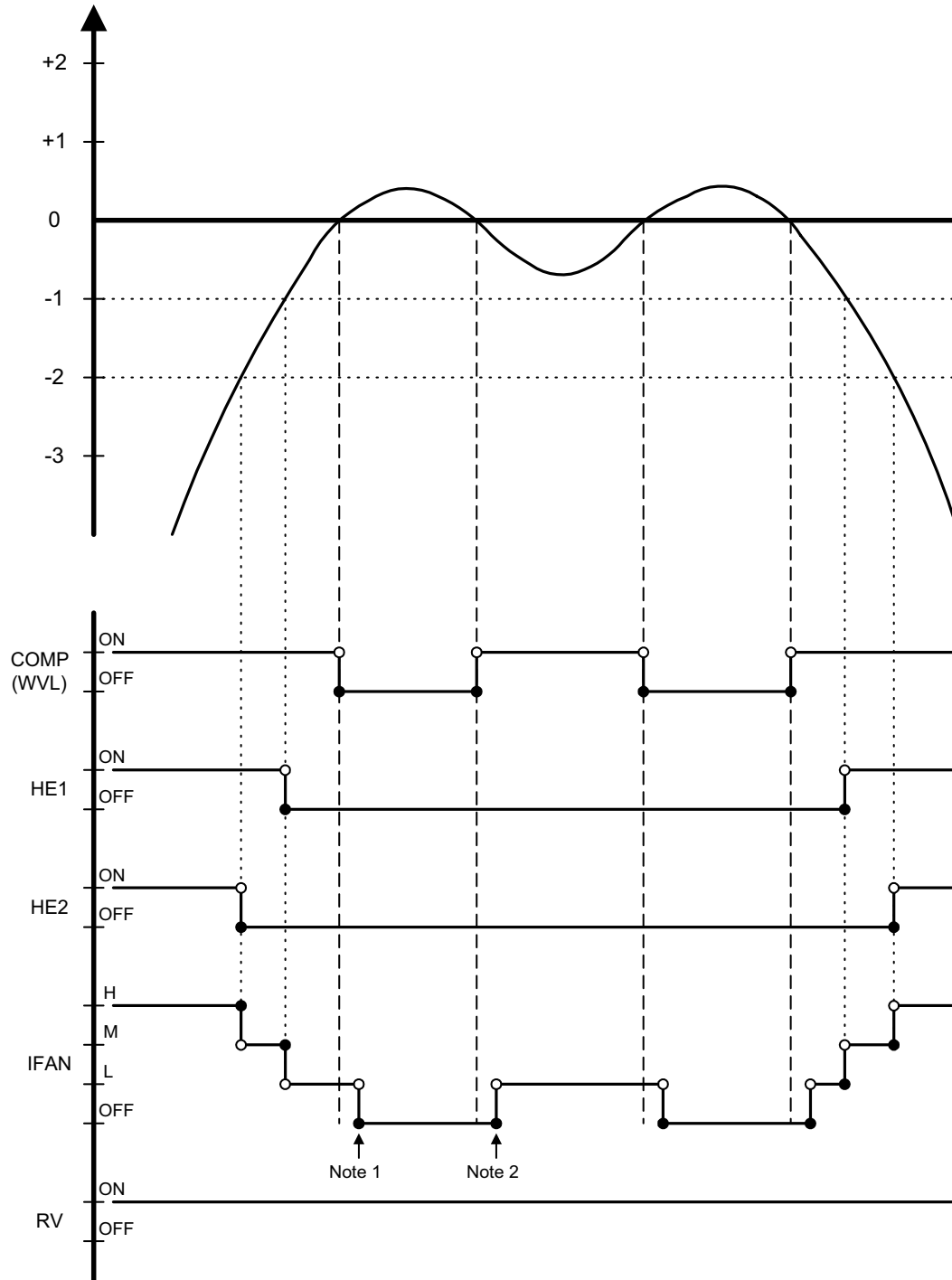
12.6.5 Heating, RC or SH Group with Autofan

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.

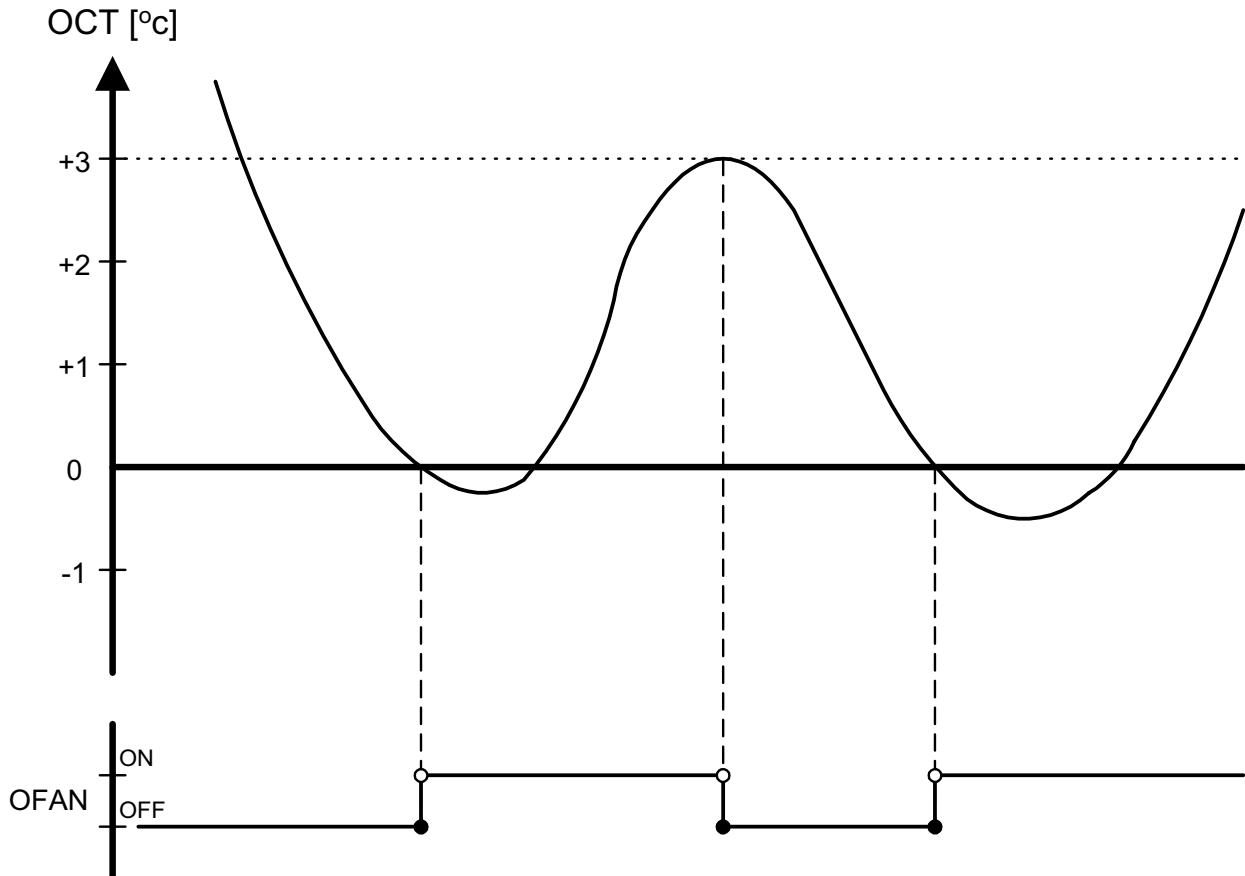
(RT - SPT) [°C]



12.6.6 OFAN operation is controlled by the graph below when

1. ($RAT \geq SPT - 2^{\circ}C$), AND
2. ($ICT \geq 45^{\circ}C$), AND
3. (COMP is ON)

Otherwise, OFAN runs together with COMP.



12.7 Automatic Cooling or Heating

12.7.1 Automatic Cooling or Heating - General

- Switching-temperature between Cooling and Heating is $SPT \pm 3^{\circ}C$.
- 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 $SPT \pm 0^{\circ}C$, 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 $SPT-1^{\circ}C$ or $SPT+1^{\circ}C$ 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

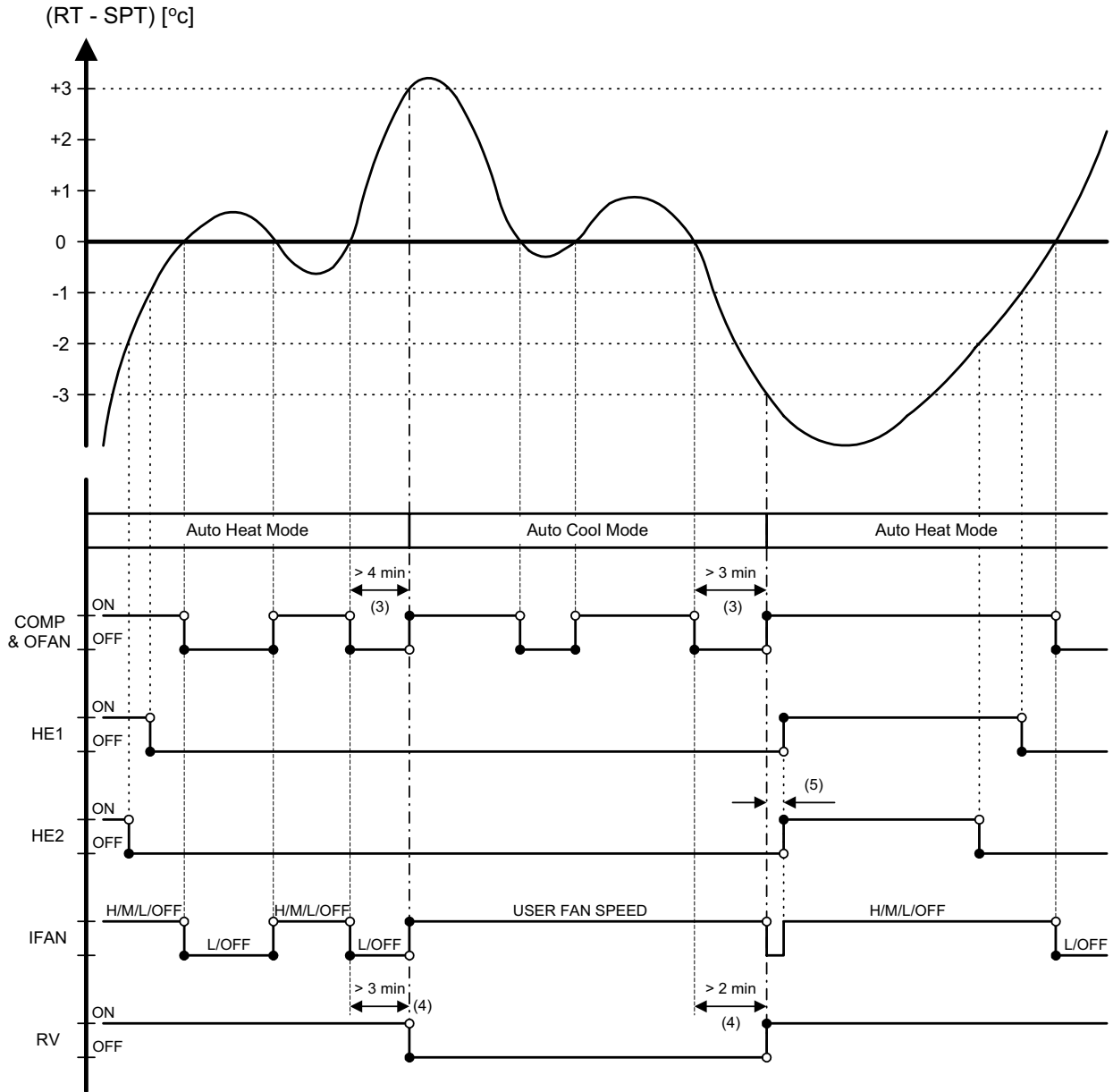
- When unit is changed form Cool/Dry mode to Auto Mode, the unit will continue to operate at (Auto) Cool Mode until the conditions for switching from Auto Cool to Auto Heat are satisfied. Similarly, when unit is changed from Heat Mode to Auto Mode, the unit will continue to operate at (Auto) Heat Mode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

12.7.2 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.



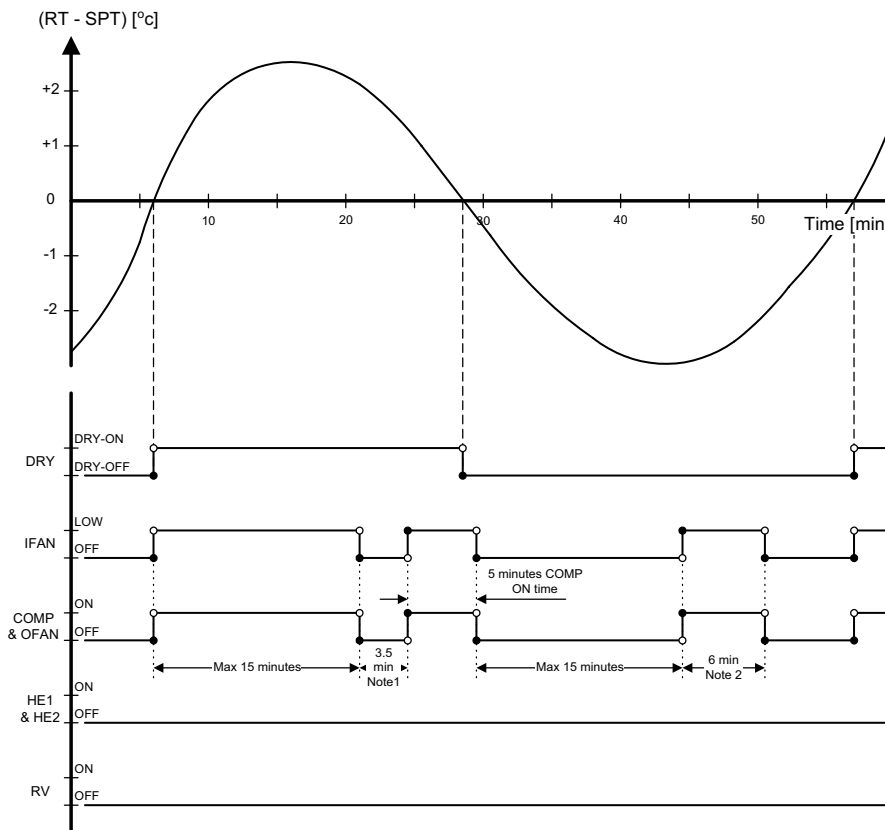
12.8 Dry Mode

12.8.1 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.

12.9 Protection

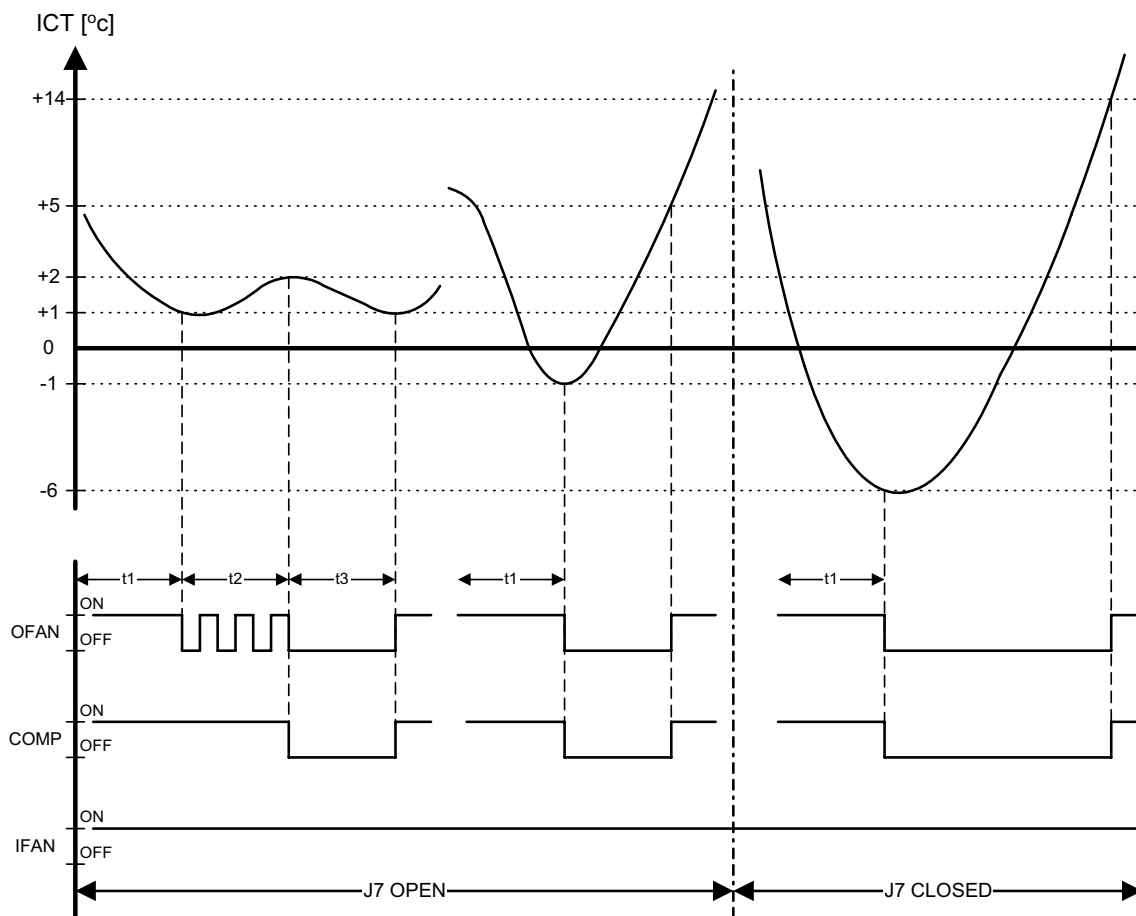
12.9.1 Cooling Mode Protections

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:

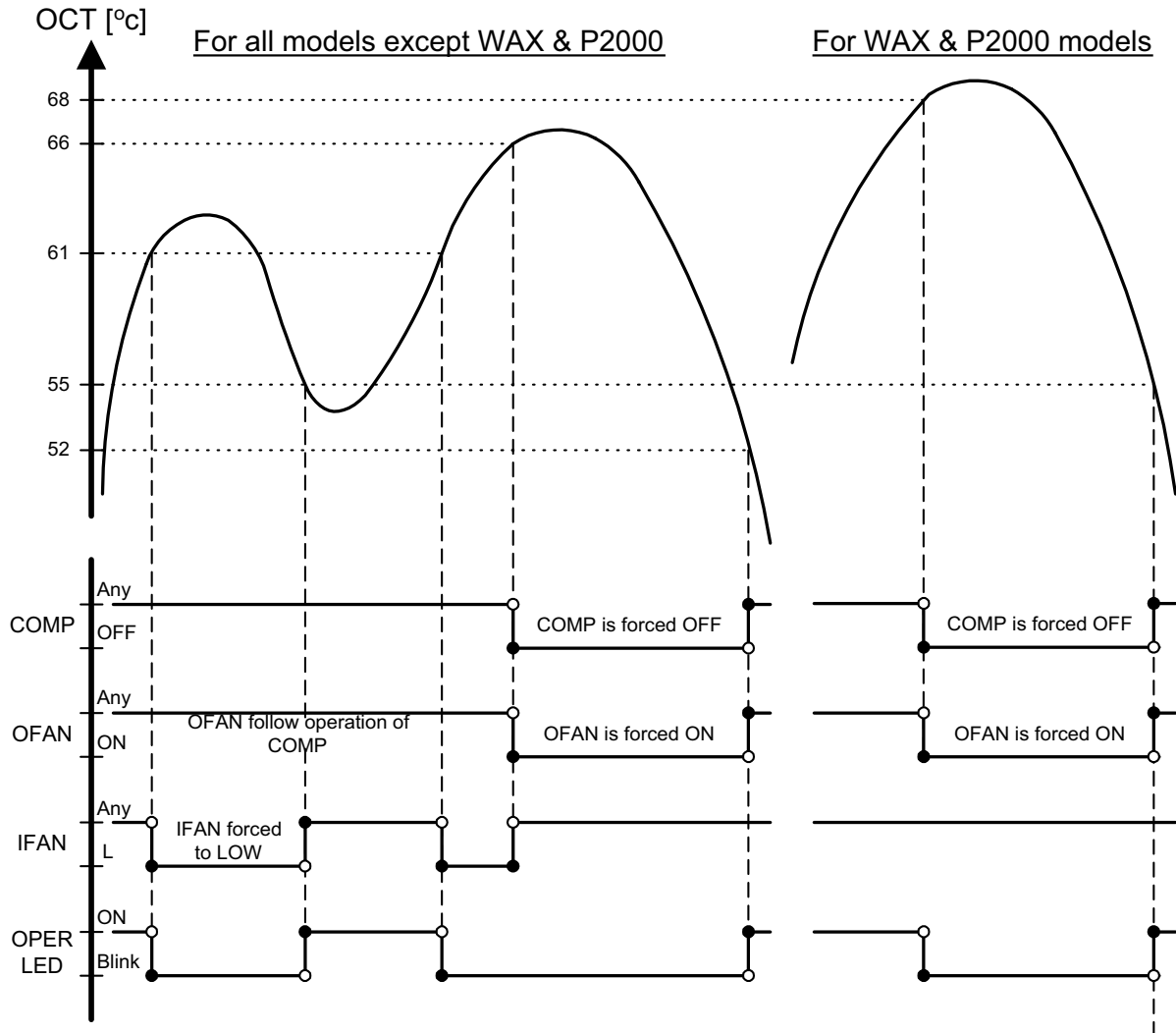
- When J7 is closed (connected), OFAN cycling is cancelled and the set temperature for COMP & OFAN cut-out and cut-in are changed. COMP & OFAN are forced OFF when ICT ≤ -6°C, and are kept OFF until ICT > 14°C.
- For WAX model, the defrost processes is simpler. When J7 is open, COMP & OFAN are forced 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.

12.9.2 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.

12.9.3 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

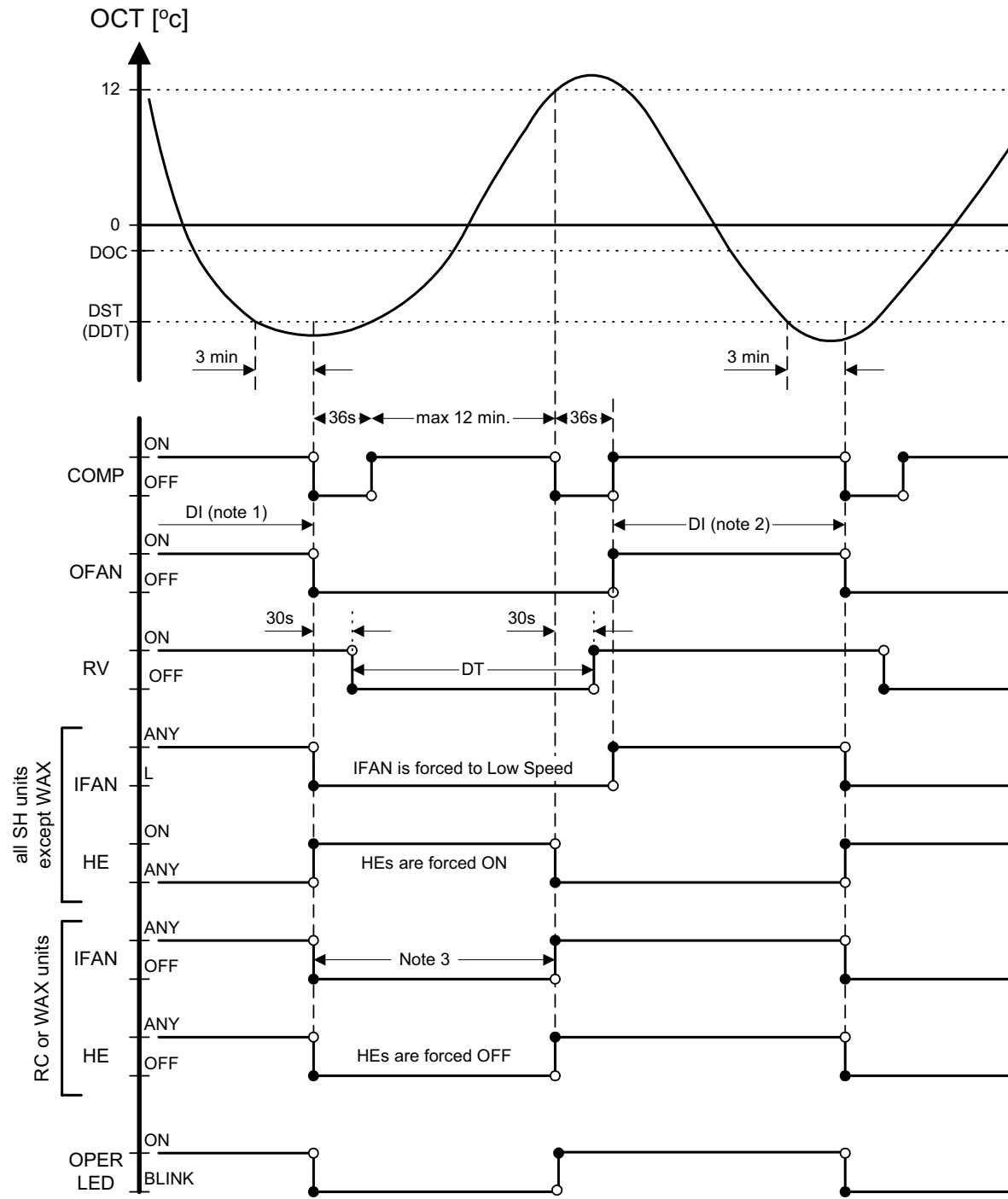
This new deicer is designed to operate at extreme temp conditions. The deicing cycle could be triggered from:

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 :

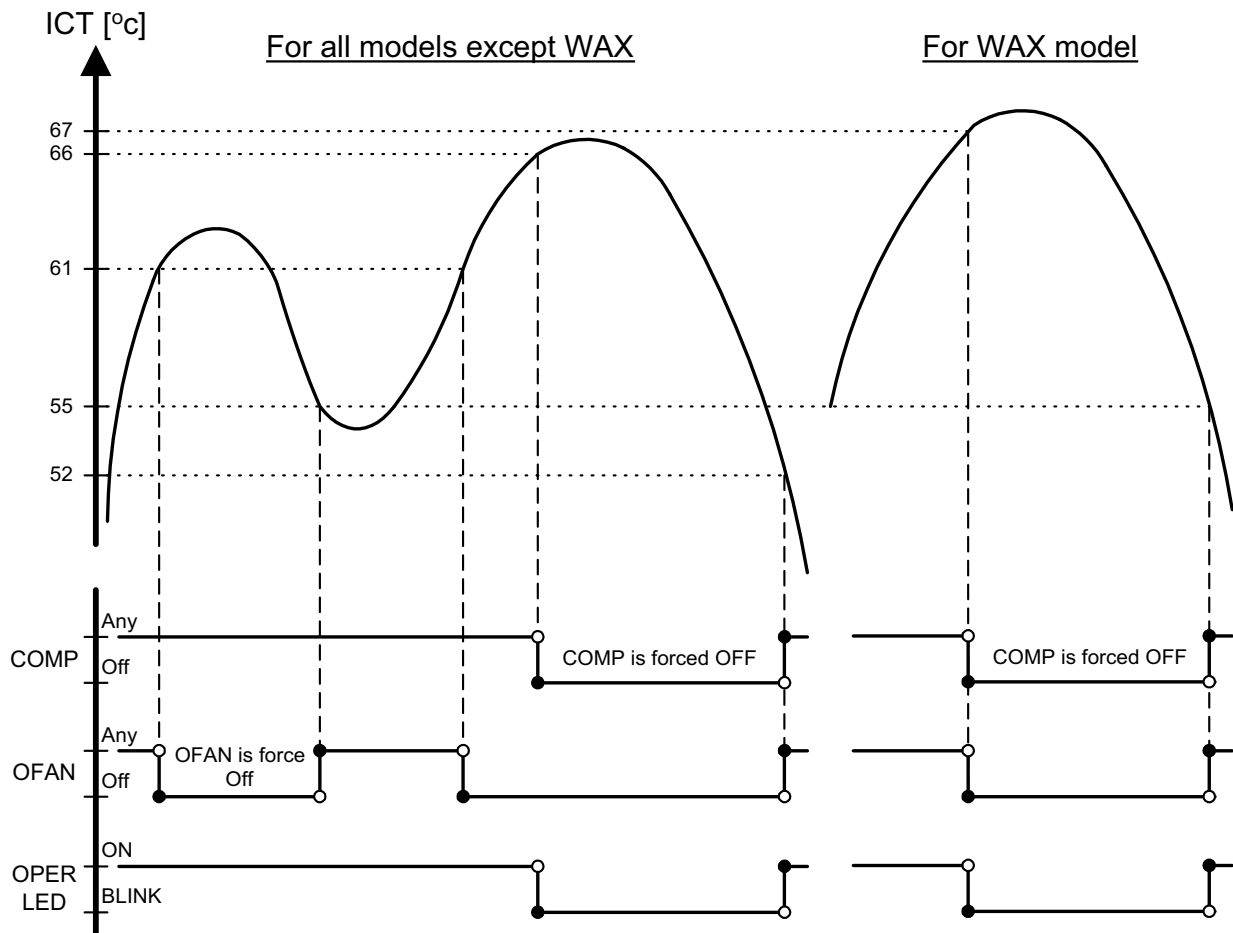
- At the first COMP activation after SB or OFF, if (OCT < 0°C), then DI = 10 min, else DI = 40 min.
- In the following Deicing cycles, the time interval between two Deicing cycles activation is between 30 to 80 min (refer to the flow chart).
- For RC group, HEs are forced OFF. IFAN operation is as in Heat Mode, Sect 4.0.3.a, i.e. IFAN will be set to OFF when ICT < 30°C. 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.

12.9.4 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.

12.10 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.

12.11 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 : WMZ, WMF, WNG models
Cooling	22°C
Heating	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.

12.12 Sleep Mode

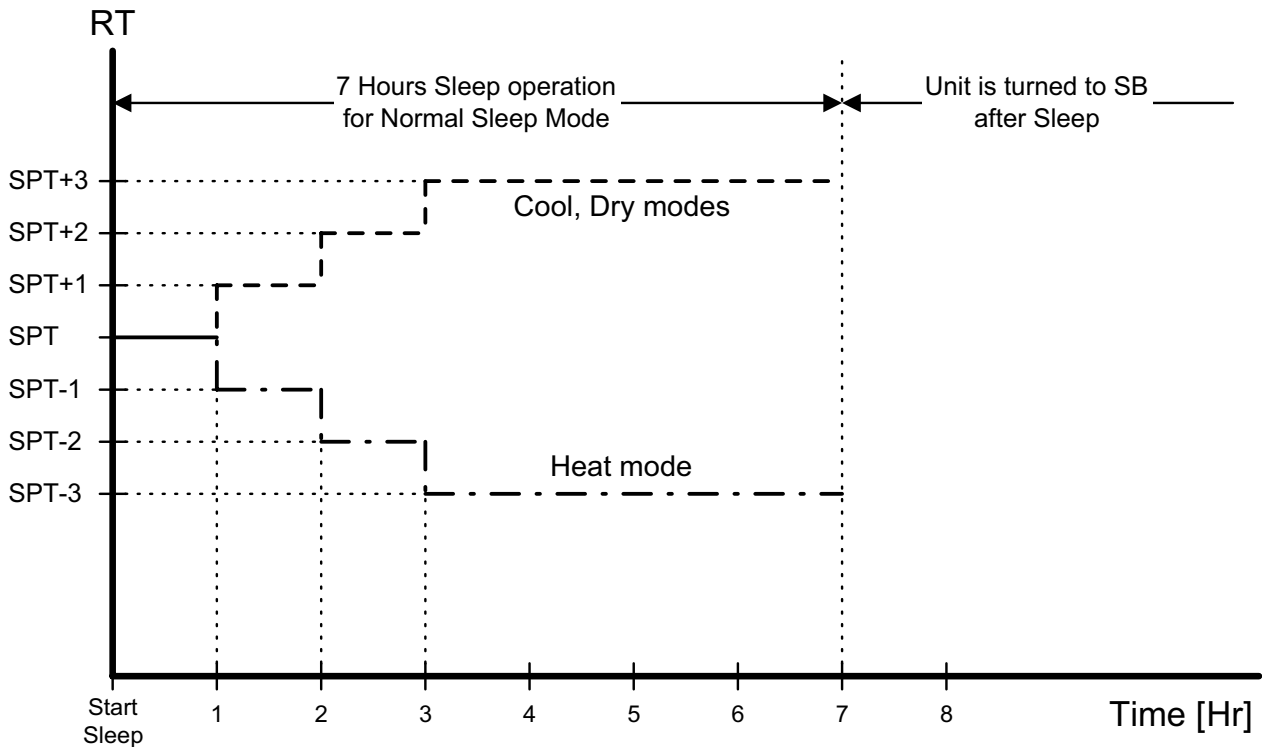
- Mode: Any
- Temp: Set – desired temperature selected
- Fan: Any
- Timer: Interact with Sleep Timer as described in sect 12.2
- I Feel: On or Off

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.

12.12.1 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.

12.12.2 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.

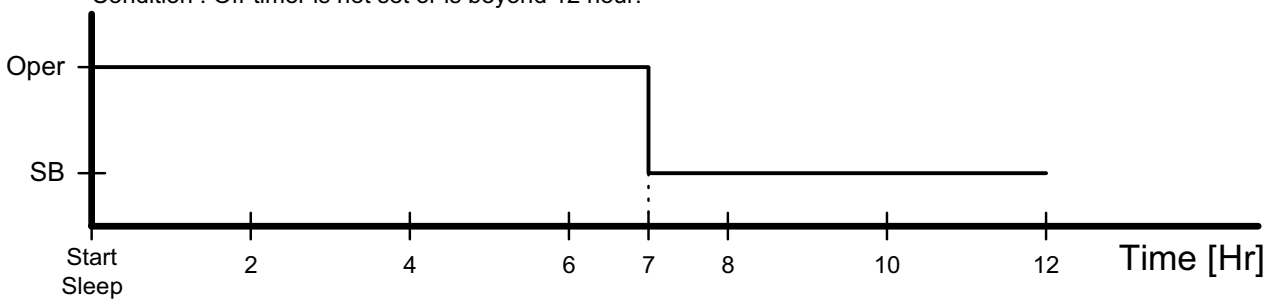
Case 2 is the new Extended Sleep Mode. If an active Off-Timer is set to turn off the A/C between 7-12 hour, relative to the starting of Sleep, the Sleep time is extended.

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.

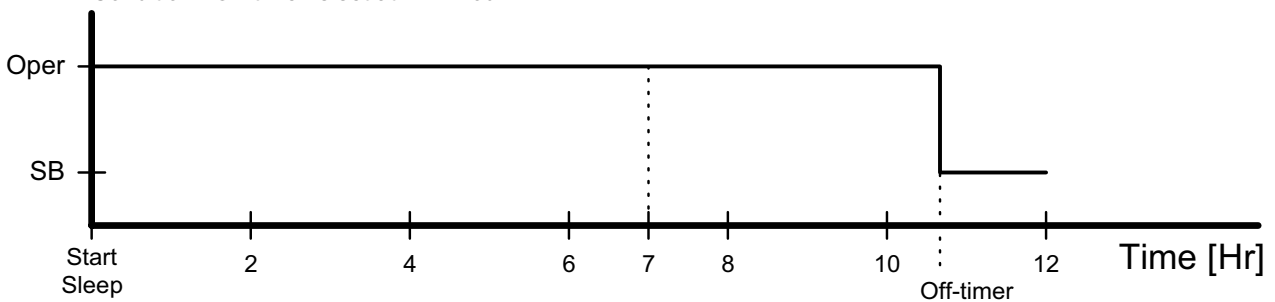
Case 1 : Standard Sleep Mode

Condition : Off-timer is not set or is beyond 12 hour.



Case 2 : Extended Sleep Mode

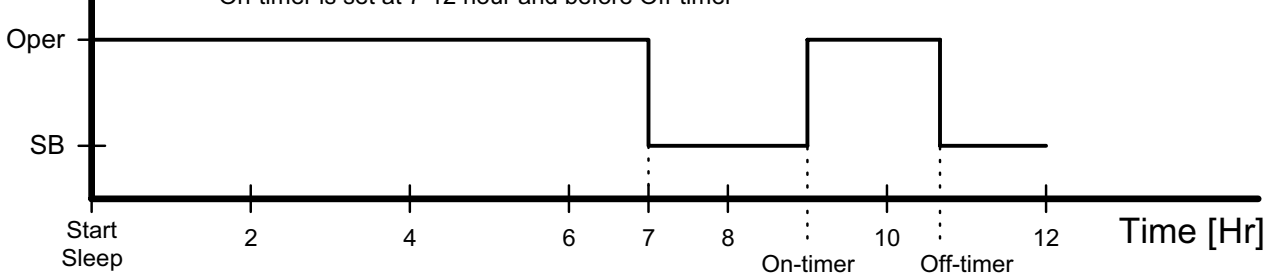
Condition : Off-timer is set at 7-12 hour.



Case 3 : Exception to Case 2

Condition : Off-timer is set at 7-12 hour

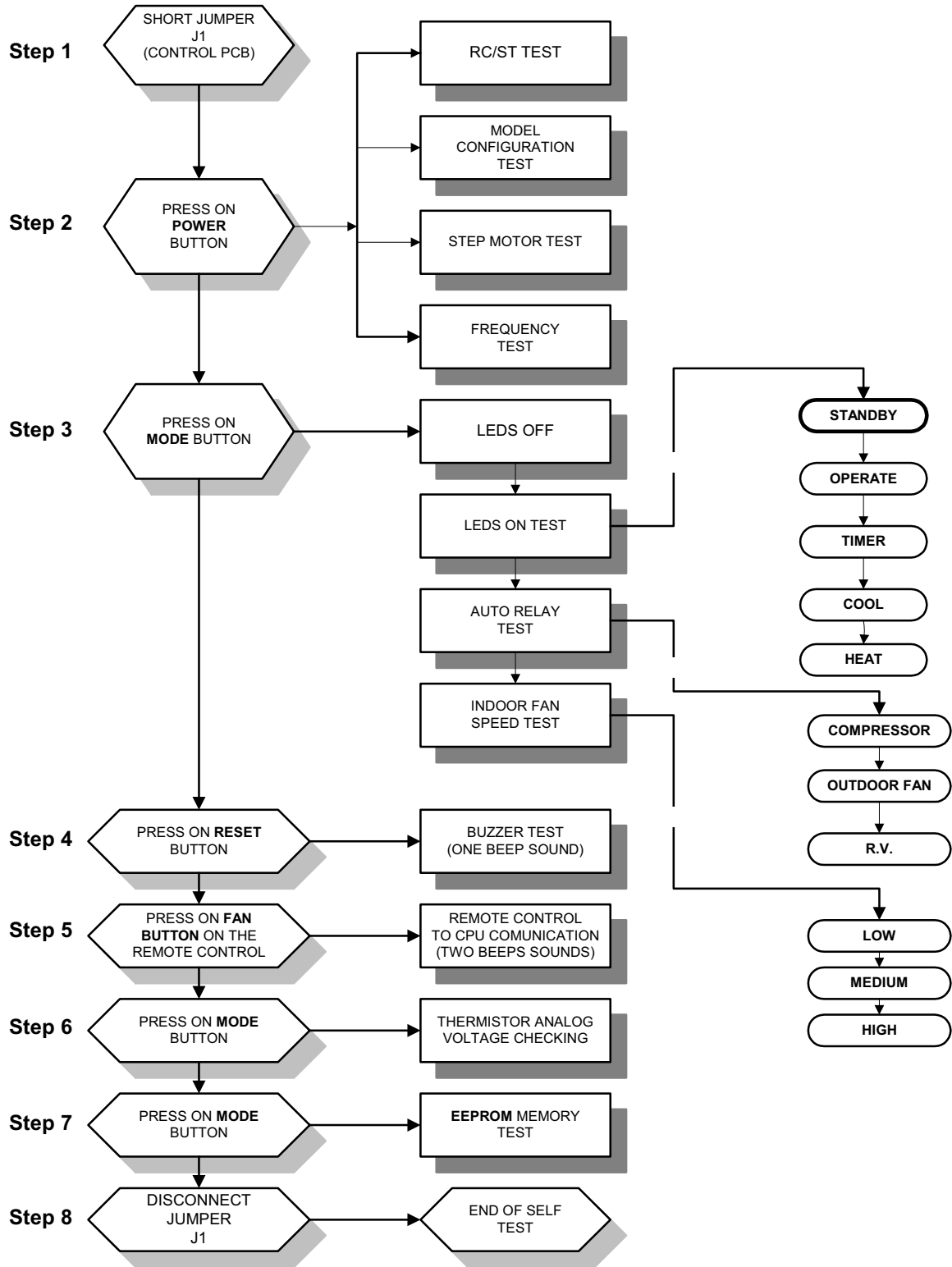
On-timer is set at 7-12 hour and before Off-timer



12.13 Controller Self-Test Procedure

12.13.1 By Shorting Test Jumper J1

SELF-TEST FLOW CHART
FOR CONTROLLER (VERSION 4V5 OR HIGHER)



12.13.2 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 °C, 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
WMZ	ON	ON	OFF	ON
WMN4	OFF	OFF	ON	OFF
WMN2/WHX	OFF	ON	OFF	ON
WMN3	OFF	ON	ON	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

12.14 On Unit Indicators and Controls

<p>STAND BY INDICATOR</p>	<p>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.</p>
<p>OPERATION INDICATOR</p>	<p>Lights up during operation. Blinks for 300 ms, to announce that a R/C infrared signal has been received and stored. Blinks continuously during</p> <ul style="list-style-type: none"> • OCT High Pressure Protection Mode • ICT High Pressure Protection Mode • Deicing in Heating Mode • Water Over Flow in ECC Model
<p>MODE BUTTON (Cool, Heat, SB)</p>	<p>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.</p>

12.15 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 :

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

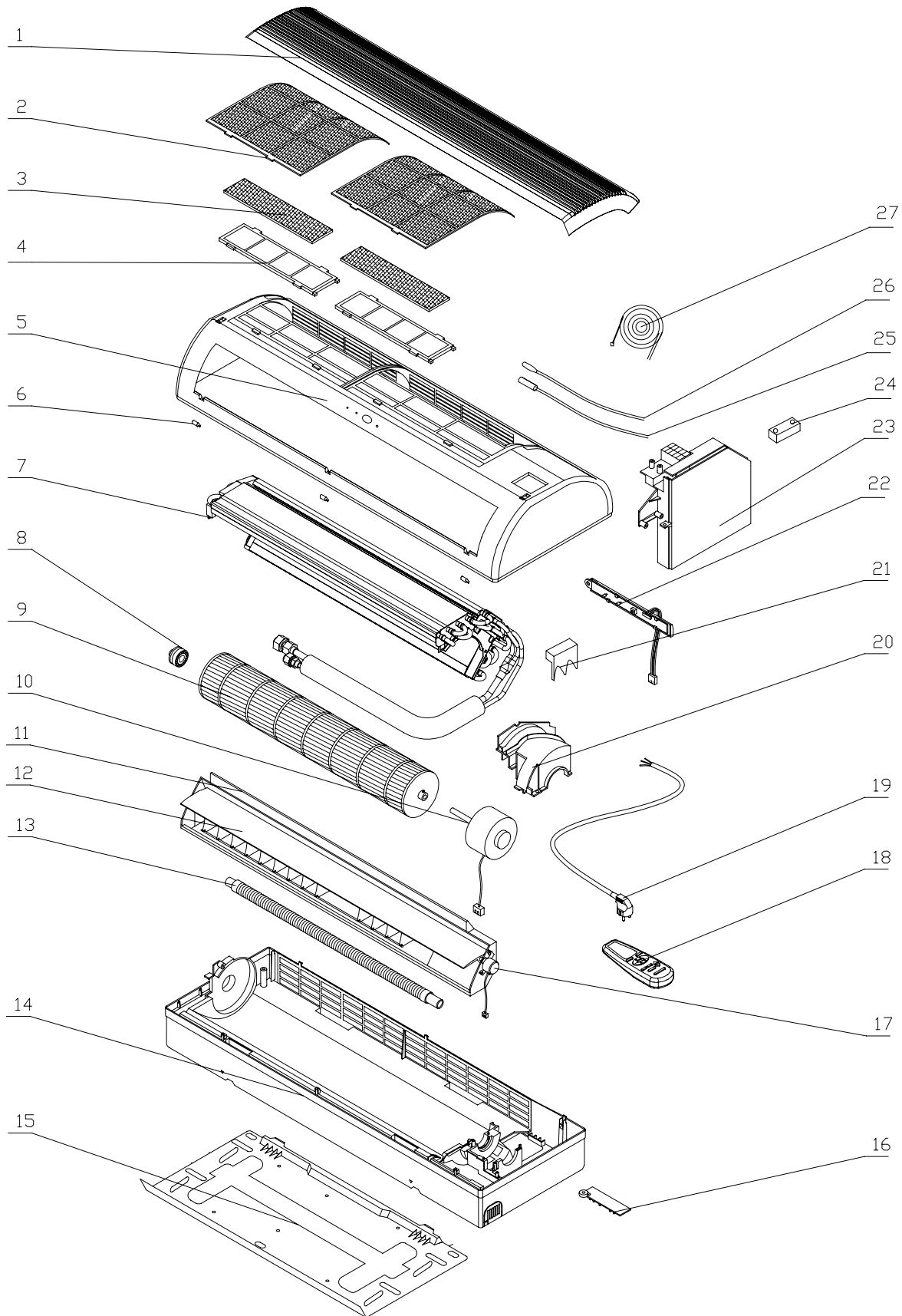
13. TROUBLESHOOTING

NO	SYMPTON	PROBABLE CAUSE	CORRECTIVE ACTION
1.	The stand-by indicator (red led) on the central control display panel doesn't light up.	There is no correct voltage between the line and neutral terminals on main P.C.B	-If the voltage is low repair power supply. -If there is no voltage repair general wiring. -If there is correct voltage replace main or display P.C.B'S
2.	The operation indicator (green led) on the central control display panel does not light up.	The remote control batteries are discharged	-Replace batteries of the remote control.
3.	The operation indicator (green led) does not light up when starting from unit.	Check main P.C.B and display P.C.B	-Replace P.C.B if necessary.
4.	The indoor fan does not function correctly.	Check the voltage between indoor fan terminals on the main P.C.B	-If there is voltage replace capacitor or motor.
5.	The outdoor fan does not function correctly.	Check the voltage between outdoor fan terminals on the main P.C.B There is voltage between outdoor fan terminals on the outdoor unit. There is no voltage between outdoor fan terminals on the outdoor unit.	-If there is no voltage replace main P.C.B -Replace capacitor or motor. -Check and repair electrical wiring between indoor and outdoor units.
6.	The compressor does not start up.	Check voltage on compressor terminals on the outdoor unit. (with ammeter) Check if there is correct voltage between compressor terminals on the outdoor unit.	-If no voltage replace main P.C.B -If low voltage repair power supply. -If the voltage correct replace capacitor or compressor. -If there is no voltage repair electrical wiring between indoor and outdoor units.
7.	The refrigeration system does not function correctly.	Check for leaks or restrictions. With ammeter. Pressure gauge or surface thermometer.	-Repair refrigeration system and charge refrigerant if necessary.

NO	SYMPTON	PROBABLE CAUSE	CORRECTIVE ACTION
8	No cooling or heating only indoor fan works.	Outdoor fan motor faulty or other fault caused, compressor overload protection cut out.	-Replace P.C.B. -Outdoor fan blocked remove obstructions.
9.	Only indoor fan and compressor working.	Outdoor fan blocked.	-Remove obstructions.
10.	Only indoor fan working.	-Run capacitor of outdoor fan motor faulty. -Windings of outdoor fan are shorted.	-Replace capacitor. -Replace motor.
11.	No cooling or heating takes place, indoor fans working.	-Overload safety device on compressor is cut out (low voltage or high temperature). -Compressor runs capacitor faulty. -Compressor windings are shorted.	-Check for proper voltage, switch off power and try again after one hour. -Replace compressor capacitor. -Replace compressor.
12.	No air supply at indoor unit, compressor operates.	-Indoor fan motor is blocked or turns slowly. -Indoor fan run capacitor faulty. -Motor windings are shorted.	-Check voltage, repair wiring if necessary. -Check fan wheel if it is tight enough on motor shaft, tighten if necessary.
13.	Partial, limited air supply at indoor unit.	Lack of refrigerant (will accompanied by whistling noise) cause ice formation on indoor unit coil in cooling mode.	-charge the unit after localizing leak.
14.	Water accumulates and over flow from indoor unit section.	Drain tube or spout of drain pan clogged.	-Disassemble plastic drain tube from spout of indoor unit drain pan.
15.	Water dripping from outdoor unit base, (in heating mode).	Water drain outlet is clogged.	-Open outdoor unit cover clean out water outlet clean the base inside thoroughly.
16.	Freeze-up of outdoor coil in heating mode, poor heating effect in room, indoor fan operates.	-Faulty outdoor thermistor. -Faulty control cable. -Outdoor temperature is below design conditions. -Outdoor unit air outlet is blocked.	-Replace thermistor. -Repair control cable. -Shut unit off, it cannot work properly. -Remove obstructions.
17.	Unit is in heat mode but operating in cooling.	-Faulty RV coil. -RV coil is ok valve is stuck position.	-Replace RV coil. -Replace the reversing valve.

14. EXPLODED VIEWS AND SPARE PARTS LISTS

14.1 Indoor Unit IOD 7, 9, 12



14.2 Indoor Unit IOD 7

Item Code	Item Desc	Quantity	Drawing Number	Effective From	Effective To
4525979	IOD 7/9 Grille A	1	1	15-Jan-04	16-Jan-04
4527484	IOD 7/9 Grille B	1	1	16-Jan-04	Active
4525989	FILTER	2	2	15-Jan-04	Active
4523901	ACTIVE CARBON FILTER	2	3	15-Jan-04	Active
4525990	FILTER BK.	2	4	15-Jan-04	Active
452700500	ELECTRA Front Frame Assy.	1	5	15-Jan-04	Active
4525987	SCREW COVER	3	6	15-Jan-04	Active
4523860	Coil ASSY	1	7	15-Jan-04	Active
4523526	BERAING ASSY FAN	1	8	15-Jan-04	Active
4523523	FAN ASSY PLASTIC	1	9	15-Jan-04	Active
4523505	Motor	1	10	15-Jan-04	Active
4526649	AIR OUTLET ASSY	1	11	15-Jan-04	23-Feb-04
452784400	IOD-7,9 Air outlet Assy. (no	1	11	23-Feb-04	Active
4525991	LOUVER	1	12	15-Jan-04	Active
4523693	DRAIN HOSE	1	13	15-Jan-04	Active
4526659	REAR PANEL ASSY	1	14	15-Jan-04	Active
4526150	INSTALLATION PLATE	1	15	15-Jan-04	Active
4526000	TUBE CLIP	1	16	15-Jan-04	Active
4523507	Step motor	1	17	15-Jan-04	Active
4524248	Remote controller RC-5RC (export) 975-	1	18	15-Jan-04	02-Apr-04
412040	Remote controller RC5-RC 975-630-00	1	18	02-Apr-04	Active
4526134	Power cord cable	1	19	15-Jan-04	Active
4525998	MOTEOR COVER	1	20	15-Jan-04	Active
4516263	SENSOR BASE	1	21	15-Jan-04	Active
4526661	LED DISPLAY ASSY. EHK: 936-001-01	1	22	15-Jan-04	12-Aug-04
452778400	WME Display Assembly	1	22	12-Aug-04	Active
4526660	WME Controller assy DST-8 936-021-	1	23	15-Jan-04	12-Aug-04
452778300	WME HT WME Controller	1	23	12-Aug-04	Active
4526662	Press cable board	1	24	15-Jan-04	Active
438082	Thermistor Indoor	1	25	15-Jan-04	Active
4519813	Thermistor room	1	26	15-Jan-04	Active

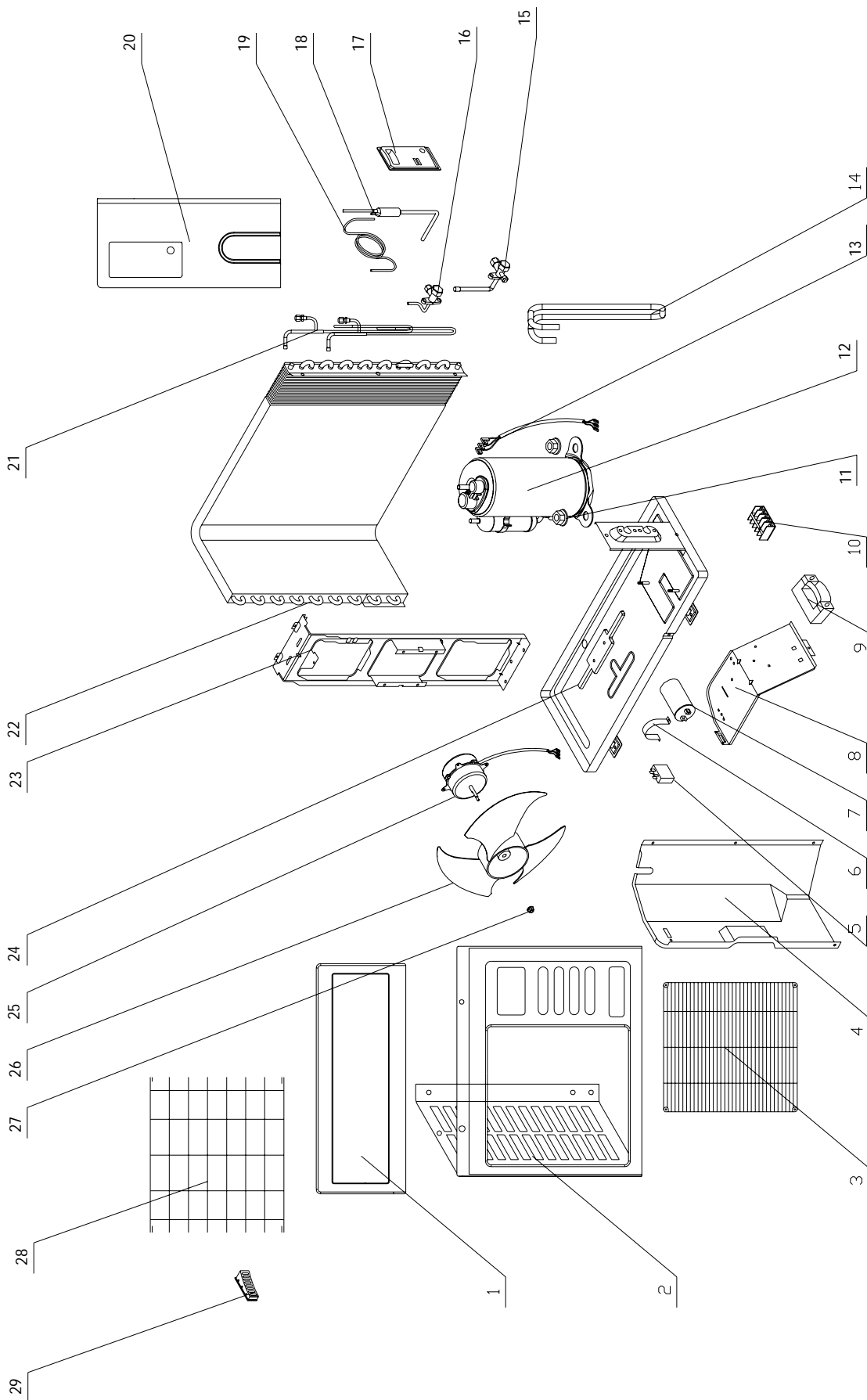
14.3 Indoor Unit IOD 9

Item Code	Item Desc	Quantity	Drawing Number	Effective From	Effective To
4525979	IOD 7/9 Grille A	1	1	15-Jan-04	16-Jan-04
4527484	IOD 7/9 Grille B	1	1	16-Jan-04	Active
4525989	FILTER	2	2	15-Jan-04	Active
4523901	ACTIVE CARBON FILTER	2	3	15-Jan-04	Active
4525990	FILTER BK.	2	4	15-Jan-04	Active
452700500	ELECTRA Front Frame Assy.	1	5	15-Jan-04	Active
4525987	SCREW COVER	3	6	15-Jan-04	Active
4523860	Coil ASSY	1	7	15-Jan-04	Active
4523526	BERAING ASSY FAN	1	8	15-Jan-04	Active
4523523	FAN ASSY PLASTIC	1	9	15-Jan-04	Active
4523534	MOTOR	1	10	15-Jan-04	Active
4526649	AIR OUTLET ASSY	1	11	15-Jan-04	23-Feb-04
452784400	IOD-7,9 Air outlet Assy. (no	1	11	23-Feb-04	Active
4525991	LOUVER	1	12	15-Jan-04	Active
4523693	DRAIN HOSE	1	13	15-Jan-04	Active
4526659	REAR PANEL ASSY	1	14	15-Jan-04	Active
4526150	INSTALLATION PLATE	1	15	15-Jan-04	Active
4526000	TUBE CLIP	1	16	15-Jan-04	Active
4523507	Step motor	1	17	15-Jan-04	Active
4524248	Remote controller RC-5RC (export) 975-	1	18	15-Jan-04	02-Apr-04
412040	Remote controller RC5-RC 975-630-00	1	18	02-Apr-04	Active
4526134	Power cord cable	1	19	15-Jan-04	Active
4525998	MOTEOR COVER	1	20	15-Jan-04	Active
4516263	SENSOR BASE	1	21	15-Jan-04	Active
4526661	LED DISPLAY ASSY. EHK: 936-001-01	1	22	15-Jan-04	12-Aug-04
452778400	WME Display Assembly	1	22	12-Aug-04	Active
4526660	WME Controller assy DST-8 936-021-	1	23	15-Jan-04	12-Aug-04
452778300	WME HT WME Controller	1	23	12-Aug-04	Active
4526662	Press cable board	1	24	15-Jan-04	Active
438082	Thermistor Indoor	1	25	15-Jan-04	Active
4519813	Thermistor room	1	26	15-Jan-04	Active

14.4 Indoor Unit IOD 12

Item Code	Item Desc	Quantity	Drawing Number	Effective From	Effective To
4527501	IOD12 Grille A	1	1	15-Jan-04	16-Jan-04
4527502	IOD12 Grille B	1	1	16-Jan-04	Active
4527507	Filter	2	2	15-Jan-04	Active
4527359	Active Carbon Static Filter	2	3	15-Jan-04	Active
4527508	Filter bracket	2	4	15-Jan-04	Active
452766805	ELECTRA Front Frame Assy.	1	5	15-Jan-04	Active
4525987	SCREW COVER	3	6	15-Jan-04	Active
4527184	IOD-12 Coil ASSY	1	7	15-Jan-04	Active
4523526	BERAING ASSY FAN	1	8	15-Jan-04	Active
4527111	FAN ASSY PLASTIC	1	9	15-Jan-04	Active
4527112	Motor Compact 12	1	10	15-Jan-04	Active
4527187	IOD-12 AIR OUTLET ASSY	1	11	15-Jan-04	23-Feb-04
452784401	IOD-12 Air Outlet Assy. (no wire)	1	11	23-Feb-04	Active
4527509	Horizontal Flap	1	12	15-Jan-04	Active
4523693	DRAIN HOSE	1	13	15-Jan-04	Active
4527186	IOD-12 REAR PANEL ASSY	1	14	15-Jan-04	Active
4527118	INSTALLATION PLATE	1	15	15-Jan-04	Active
4527512	Tube Clip	1	16	15-Jan-04	Active
4523507	Step motor	1	17	15-Jan-04	Active
4524248	Remote controller RC-5RC (export) 975-	1	18	15-Jan-04	02-Apr-04
412040	Remote controller RC5-RC 975-630-00	1	18	02-Apr-04	Active
452766402	Cable	1	19	15-Jan-04	Active
4525998	MOTEOR COVER	1	20	15-Jan-04	Active
4516263	SENSOR BASE	1	21	15-Jan-04	Active
4526661	LED DISPLAY ASSY. EHK: 936-001-01	1	22	15-Jan-04	Active
4526660	WME Controller assy DST-8 936-021-	1	23	15-Jan-04	Active
4526662	Press cable board	2	24	15-Jan-04	Active
438082	Thermistor Indoor	1	25	15-Jan-04	Active
4519813	Thermistor room	1	26	15-Jan-04	Active

14.5 Outdoor Unit CON 7, 9 ST R22 & R407C



14.6 Outdoor Unit CON 7 ST R22

Item Code	Item Desc	Quantity	Drawing Number	Effective From	Effective To
4526675	TOP COVER PAINTING	1	1	11-Dec-03	Active
4526671	FRONT PANEL PAINTING	1	2	11-Dec-03	Active
4526481	CON Outdoor Grille	1	3	11-Dec-03	Active
4526141	PARTITION PLATE	1	4	11-Dec-03	Active
4517990	Cap. 2uF/450V	1	5	11-Dec-03	08-Jan-04
455000001	single patch Capacitor for fan	1	5	08-Jan-04	09-Feb-04
4518839	Comp. Capacitor Clip	1	6	11-Dec-03	Active
4524136	Capacitors 17uf	1	7	11-Dec-03	29-Dec-03
455000500	Compressor Capacitor With Screw	1	7	29-Dec-03	Active
4526142	ELECTRIC SUPPORT	1	8	11-Dec-03	Active
204107	Cable clip Nylon	1	9	11-Dec-03	Active
4514588	5 Poles terminal block	1	10	11-Dec-03	Active
4510677	Nut With Flange M8 -D=24	3	11	11-Dec-03	Active
4524068	COMPRESSOR ASSY Hitachi S	1	12	11-Dec-03	Active
4524278	Wire assy	1	13	11-Dec-03	Active
4526836	Suction tube	1	14	11-Dec-03	Active
4523587	GAS VALVE	1	15	11-Dec-03	Active
4523533	LIQUID VALVE	1	16	11-Dec-03	Active
4526668	R lifter	1	17	11-Dec-03	Active
4520719	1????° Filter	1	18	11-Dec-03	Active
4524125	CAPILLARY ASSY	1	19	11-Dec-03	Active
4526669	SIDE PANEL PAINTING	1	20	11-Dec-03	Active
4526835	Discharge tube	1	21	11-Dec-03	Active
4526877	Cond. Assy	1	22	11-Dec-03	Active
4526146	MOTOR SUPPORT ASSY	1	23	11-Dec-03	Active
4526645	BOTTOM PLATE	1	24	11-Dec-03	Active
4523609	MOTOR YDK20-6L	1	25	11-Dec-03	Active
4523707	AXIAL FAN	1	26	11-Dec-03	Active
4524076	Nut hex	1	27	11-Dec-03	Active
4526881	protecting wire netting	1	28	11-Dec-03	Active
436358	L. lifter	1	29	11-Dec-03	Active
455000108	Double patch Capacitor for fan	1	50	09-Feb-04	Active

14.7 Outdoor Unit CON 7 ST R407C

Item Code	Item Desc	Quantity	Drawing Number	Effective From	Effective To
4526675	TOP COVER PAINTING	1	1	11-Dec-03	Active
4526671	FRONT PANEL PAINTING	1	2	11-Dec-03	Active
4526481	CON Outdoor Grille	1	3	11-Dec-03	Active
4526141	PARTITION PLATE	1	4	11-Dec-03	Active
4517990	Cap. 2uF/450V	1	5	11-Dec-03	08-Jan-04
45500001	single patch Capacitor for fan	1	5	08-Jan-04	09-Feb-04
4518839	Comp. Capacitor Clip	1	6	11-Dec-03	Active
4519148	Compressor Capacitor 30uF/450V	1	7	11-Dec-03	29-Dec-03
455000401	Compressor Capacitor 30uF (CBB65)	1	7	29-Dec-03	Active
4526142	ELECTRIC SUPPORT	1	8	11-Dec-03	Active
204107	Cable clip Nylon	1	9	11-Dec-03	Active
4514588	5 Poles terminal block	1	10	11-Dec-03	Active
4510677	Nut With Flange M8 -D=24	3	11	11-Dec-03	Active
4510677	Nut With Flange M8 -D=24	3	11	13-Nov-05	13-Nov-05
452795300	Nut With Flange M6	3	11	13-Nov-05	Active
4523998	COMPRESSORS ASSY Hitachi CG	1	12	11-Dec-03	Active
4523998	COMPRESSORS ASSY Hitachi CG	1	12	13-Nov-05	13-Nov-05
453053000	Compressor Assy CG433GBE-1(Hit	1	12	13-Nov-05	Active
4524278	Wire assy	1	13	11-Dec-03	Active
4526834	Suction tube	1	14	11-Dec-03	Active
4526834	Suction tube	1	14	13-Nov-05	13-Nov-05
452954300	Suction pipe assy. TP2M 9.53*0.7	1	14	13-Nov-05	Active
4524044	GAS VALVE (R407)	1	15	11-Dec-03	Active
4524043	LIQUID VALVE (R 407C)	1	16	11-Dec-03	Active
4526668	R lifter	1	17	11-Dec-03	Active
4520719	Filter	1	18	11-Dec-03	Active
4523997	Capillary ASSY	1	19	11-Dec-03	Active
4526669	SIDE PANEL PAINTING	1	20	11-Dec-03	Active
4526979	Discharge tube	1	21	11-Dec-03	Active
4526979	Discharge tube	1	21	13-Nov-05	13-Nov-05
453080100	Discharge Pipe(17.94;20.7£©	1	21	13-Nov-05	Active
4526877	Cond. Assy	1	22	11-Dec-03	Active
4526146	MOTOR SUPPORT ASSY	1	23	11-Dec-03	Active
4526645	BOTTOM PLATE	1	24	11-Dec-03	Active
4526645	BOTTOM PLATE	1	24	13-Nov-05	13-Nov-05
452938500	Base plate painting assy.	1	24	13-Nov-05	Active
4523609	MOTOR YDK20-6L	1	25	11-Dec-03	Active
4523707	AXIAL FAN	1	26	11-Dec-03	Active
4524076	Nut hex	1	27	11-Dec-03	Active
4526881	protecting wire netting	1	28	11-Dec-03	Active
436358	L. lifter	1	29	11-Dec-03	Active
45500108	Double patch Capacitor for fan	1	50	09-Feb-04	Active

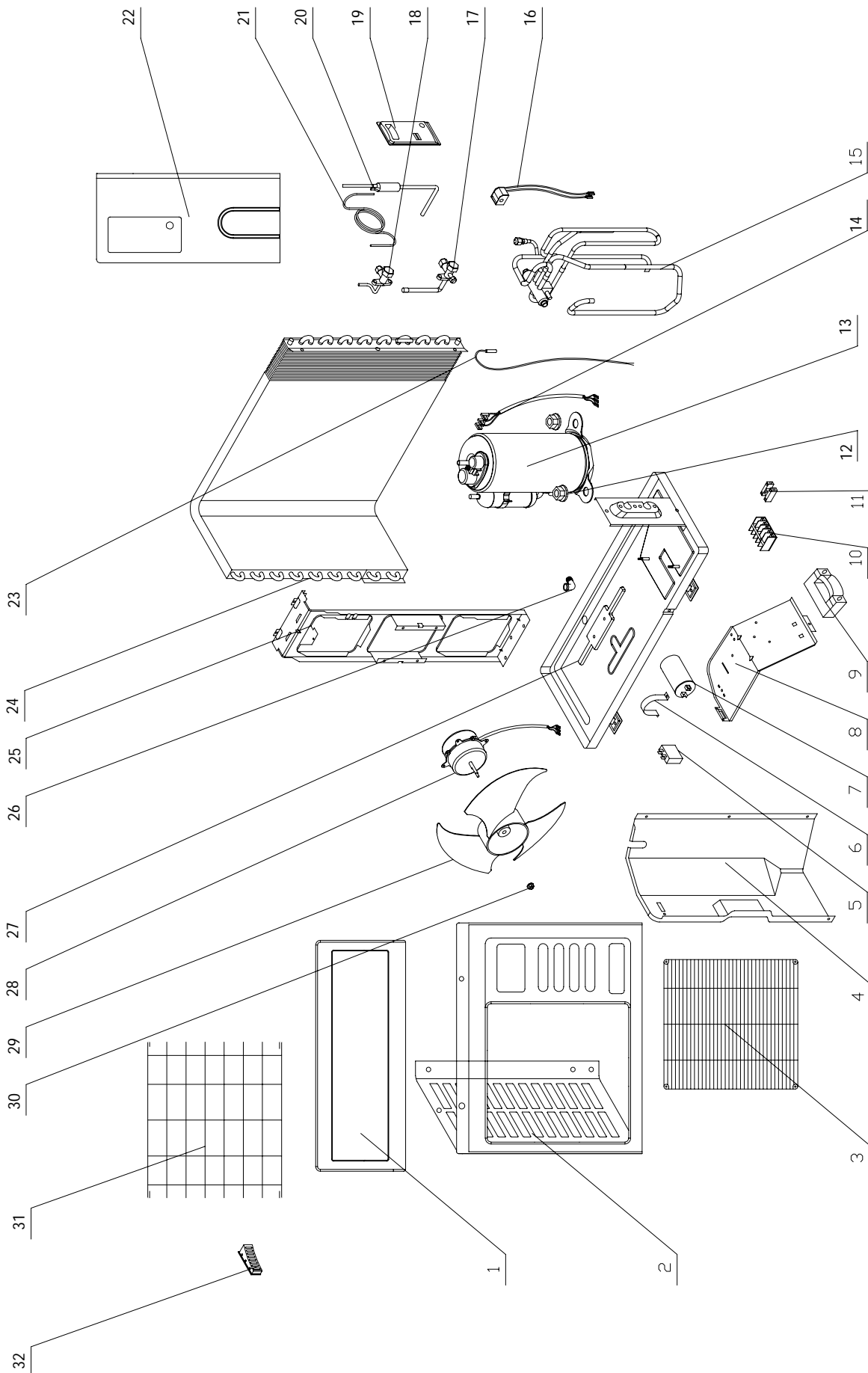
14.8 Outdoor Unit CON 9 ST R22

Item Code	Item Desc	Quantity	Drawing Number	Effective From	Effective To
4526675	TOP COVER PAINTING	1	1	11-Dec-03	Active
4526671	FRONT PANEL PAINTING	1	2	11-Dec-03	Active
4526481	CON Outdoor Grille	1	3	11-Dec-03	Active
4526141	PARTITION PLATE	1	4	11-Dec-03	Active
4517990	Cap. 2uF/450V	1	5	11-Dec-03	08-Jan-04
455000001	single patch Capacitor for fan	1	5	08-Jan-04	09-Feb-04
455000108	Double patch Capacitor for fan	1	5	09-Feb-04	Active
4518839	Comp. Capacitor Clip	1	6	11-Dec-03	Active
4519148	Compressor Capacitor 30uF/450V	1	7	11-Dec-03	29-Dec-03
455000401	Compressor Capacitor 30uF (CBB65)	1	7	29-Dec-03	Active
4526142	ELECTRIC SUPPORT	1	8	11-Dec-03	Active
204107	Cable clip Nylon	1	9	11-Dec-03	Active
4514588	5 Poles terminal block	1	10	11-Dec-03	Active
4510677	Nut With Flange M8 -D=24	3	11	11-Dec-03	Active
4523610	COMP ASSY PH170X1C-4D	1	12	11-Dec-03	21-Oct-04
452982000	Compressor assy PH170X1C-4DZD	1	12	21-Oct-04	Active
4524278	Wire assy	1	13	11-Dec-03	Active
4526834	Suction tube	1	14	11-Dec-03	Active
4523587	GAS VALVE	1	15	11-Dec-03	Active
4523533	LIQUID VALVE	1	16	11-Dec-03	Active
4526668	R lifter	1	17	11-Dec-03	Active
4520719	Filter	1	18	11-Dec-03	Active
4523913	Capillary assy	1	19	11-Dec-03	Active
4526669	SIDE PANEL PAINTING	1	20	11-Dec-03	Active
4526833	Discharge tube	1	21	11-Dec-03	Active
4526877	Cond. Assy	1	22	11-Dec-03	Active
4526146	MOTOR SUPPORT ASSY	1	23	11-Dec-03	Active
4526645	BOTTOM PLATE	1	24	11-Dec-03	Active
4523609	MOTOR YDK20-6L	1	25	11-Dec-03	Active
4523707	AXIAL FAN	1	26	11-Dec-03	Active
4524076	Nut hex	1	27	11-Dec-03	Active
4526881	protecting wire netting	1	28	11-Dec-03	Active
436358	L. lifter	1	29	11-Dec-03	Active

14.9 Outdoor Unit CON 9 ST R407C

Item Code	Item Desc	Quantity	Drawing Number	Effective From	Effective To
4526675	TOP COVER PAINTING	1	1	11-Dec-03	Active
4526671	FRONT PANEL PAINTING	1	2	11-Dec-03	Active
4526481	CON Outdoor Grille	1	3	11-Dec-03	Active
4526141	PARTITION PLATE	1	4	11-Dec-03	Active
4517990	Cap. 2uF/450V	1	5	11-Dec-03	08-Jan-04
45500001	single patch Capacitor for fan	1	5	08-Jan-04	09-Feb-04
4518839	Comp. Capacitor Clip	1	6	11-Dec-03	Active
4519148	Compressor Capacitor 30uF/450V	1	7	11-Dec-03	29-Dec-03
455000401	Compressor Capacitor 30uF (CBB65)	1	7	29-Dec-03	Active
4526142	ELECTRIC SUPPORT	1	8	11-Dec-03	Active
204107	Cable clip Nylon	1	9	11-Dec-03	Active
4514588	5 Poles terminal block	1	10	11-Dec-03	Active
4510677	Nut With Flange M8 -D=24	3	11	11-Dec-03	Active
4523536	COMPRESSOR ASSY PG170X1C-4D	1	12	11-Dec-03	Active
452981900	Compressor assy PG170X1C-4DZD	1	12	11-Oct-05	Active
4524278	Wire assy	1	13	11-Dec-03	Active
4526834	Suction tube	1	14	11-Dec-03	Active
4524044	GAS VALVE (R407)	1	15	11-Dec-03	Active
4524043	LIQUID VALVE (R 407C)	1	16	11-Dec-03	Active
4526668	R lifter	1	17	11-Dec-03	Active
4520719	Filter	1	18	11-Dec-03	Active
4524009	Capillary 1/2.6*1/2.1.4*900	1	19	11-Dec-03	Active
4526669	SIDE PANEL PAINTING	1	20	11-Dec-03	Active
4526979	Discharge tube	1	21	11-Dec-03	Active
4526877	Cond. Assy	1	22	11-Dec-03	Active
4526146	MOTOR SUPPORT ASSY	1	23	11-Dec-03	Active
4526645	BOTTOM PLATE	1	24	11-Dec-03	Active
4523609	MOTOR YDK20-6L	1	25	11-Dec-03	Active
4523707	AXIAL FAN	1	26	11-Dec-03	Active
4524076	Nut hex	1	27	11-Dec-03	Active
4526881	protecting wire netting	1	28	11-Dec-03	Active
436358	L. lifter	1	29	11-Dec-03	Active
455000108	Double patch Capacitor for fan	1	50	09-Feb-04	Active
4523536	COMPRESSOR ASSY PG170X1C-4D	1	None	11-Oct-05	11-Oct-05

14.10 Outdoor Unit CON 7, 9 RC R22 & R407C



14.11 Outdoor Unit CON 7 RC R22

Item Code	Item Desc	Quantity	Drawing Number	Effective From	Effective To
4526675	TOP COVER PAINTING	1	1	11-Dec-03	Active
4526671	FRONT PANEL PAINTING	1	2	11-Dec-03	Active
4526481	CON Outdoor Grille	1	3	11-Dec-03	Active
4526141	PARTITION PLATE	1	4	11-Dec-03	Active
4517990	Cap. 2uF/450V	1	5	11-Dec-03	08-Jan-04
455000001	single patch Capacitor for fan	1	5	08-Jan-04	09-Feb-04
455000108	Double patch Capacitor for fan	1	5	09-Feb-04	Active
4518839	Comp. Capacitor Clip	1	6	11-Dec-03	Active
4524136	Capacitors 17uf	1	7	11-Dec-03	29-Dec-03
455000500	Compressor Capacitor With Screw	1	7	29-Dec-03	Active
4526142	ELECTRIC SUPPORT	1	8	11-Dec-03	Active
204107	Cable clip Nylon	1	9	11-Dec-03	Active
4514588	5 Poles terminal block	1	10	11-Dec-03	Active
236179	2 Poles terminal block	1	11	11-Dec-03	Active
4510677	Nut With Flange M8 -D=24	3	12	11-Dec-03	Active
4524068	COMPRESSOR ASSY Hitachi S	1	13	11-Dec-03	Active
4524278	Wire assy	1	14	11-Dec-03	Active
4526663	4-W vavle welding assy	1	15	11-Dec-03	Active
4526856	4-W valve coil	1	16	11-Dec-03	Active
4523587	GAS VALVE	1	17	11-Dec-03	Active
4523533	LIQUID VALVE	1	18	11-Dec-03	Active
4526668	R lifter	1	19	11-Dec-03	Active
4520719	Filter	1	20	11-Dec-03	Active
4524125	CAPILLARY ASSY	1	21	11-Dec-03	Active
4526669	SIDE PANEL PAINTING	1	22	11-Dec-03	Active
4516637	Out sensor Black	1	23	11-Dec-03	Active
4526651	Cond. Assy	1	24	11-Dec-03	Active
4526146	MOTOR SUPPORT ASSY	1	25	11-Dec-03	Active
4519609	Drain Jam	1	26	11-Dec-03	Active
4526645	BOTTOM PLATE	1	27	11-Dec-03	Active
4523609	MOTOR YDK20-6L	1	28	11-Dec-03	Active
4523707	AXIAL FAN	1	29	11-Dec-03	Active
4524076	Nut hex	1	30	11-Dec-03	Active
4526881	protecting wire netting	1	31	11-Dec-03	Active
436358	L. lifter	1	32	11-Dec-03	Active

14.12 Outdoor Unit CON 7 RC R407C

Item Code	Item Desc	Quantity	Drawing Number	Effective From	Effective To
4526675	TOP COVER PAINTING	1	1	11-Dec-03	Active
4526671	FRONT PANEL PAINTING	1	2	11-Dec-03	Active
4526481	CON Outdoor Grille	1	3	11-Dec-03	Active
4526141	PARTITION PLATE	1	4	11-Dec-03	Active
4517990	Cap. 2uF/450V	1	5	11-Dec-03	08-Jan-04
455000001	single patch Capacitor for fan	1	5	08-Jan-04	09-Feb-04
455000108	Double patch Capacitor for fan	1	5	09-Feb-04	Active
4518839	Comp. Capacitor Clip	1	6	11-Dec-03	Active
4519148	Compressor Capacitor 30uF/450V	1	7	11-Dec-03	29-Dec-03
455000401	Compressor Capacitor 30uF (CBB65)	1	7	29-Dec-03	Active
4526142	ELECTRIC SUPPORT	1	8	11-Dec-03	Active
204107	Cable clip Nylon	1	9	11-Dec-03	Active
4514588	5 Poles terminal block	1	10	11-Dec-03	Active
236179	2 Poles terminal block	1	11	11-Dec-03	Active
4510677	Nut With Flange M8 -D=24	3	12	11-Dec-03	01-Dec-04
452795300	Nut With Flange M6	3	12	01-Dec-04	Active
4523998	COMPRESSORS ASSY Hitachi CG	1	13	11-Dec-03	01-Dec-04
453053000	Compressor Assy CG433GBE-1(Hit	1	13	01-Dec-04	Active
4524278	Wire assy	1	14	11-Dec-03	Active
4526876	4-W vavle welding assy	1	15	11-Dec-03	01-Dec-04
453071000	4-Way Valve Assy.	1	15	01-Dec-04	Active
4526856	4-W valve coil	1	16	11-Dec-03	Active
4524044	GAS VALVE (R407)	1	17	11-Dec-03	Active
4524043	LIQUID VALVE (R 407C)	1	18	11-Dec-03	Active
4526668	R lifter	1	19	11-Dec-03	Active
4520719	Filter	1	20	11-Dec-03	Active
4523997	Capillary ASSY	1	21	11-Dec-03	Active
4526669	SIDE PANEL PAINTING	1	22	11-Dec-03	Active
4516637	Out sensor Black	1	23	11-Dec-03	Active
4526651	Cond. Assy	1	24	11-Dec-03	Active
4526146	MOTOR SUPPORT ASSY	1	25	11-Dec-03	Active
4519609	Drain Jam	1	26	11-Dec-03	Active
4526645	BOTTOM PLATE	1	27	11-Dec-03	01-Dec-04
452938500	Base plate painting assy.	1	27	01-Dec-04	Active
4523609	MOTOR YDK20-6L	1	28	11-Dec-03	Active
4523707	AXIAL FAN	1	29	11-Dec-03	Active
4524076	Nut hex	1	30	11-Dec-03	Active
4526881	protecting wire netting	1	31	11-Dec-03	Active
436358	L. lifter	1	32	11-Dec-03	Active

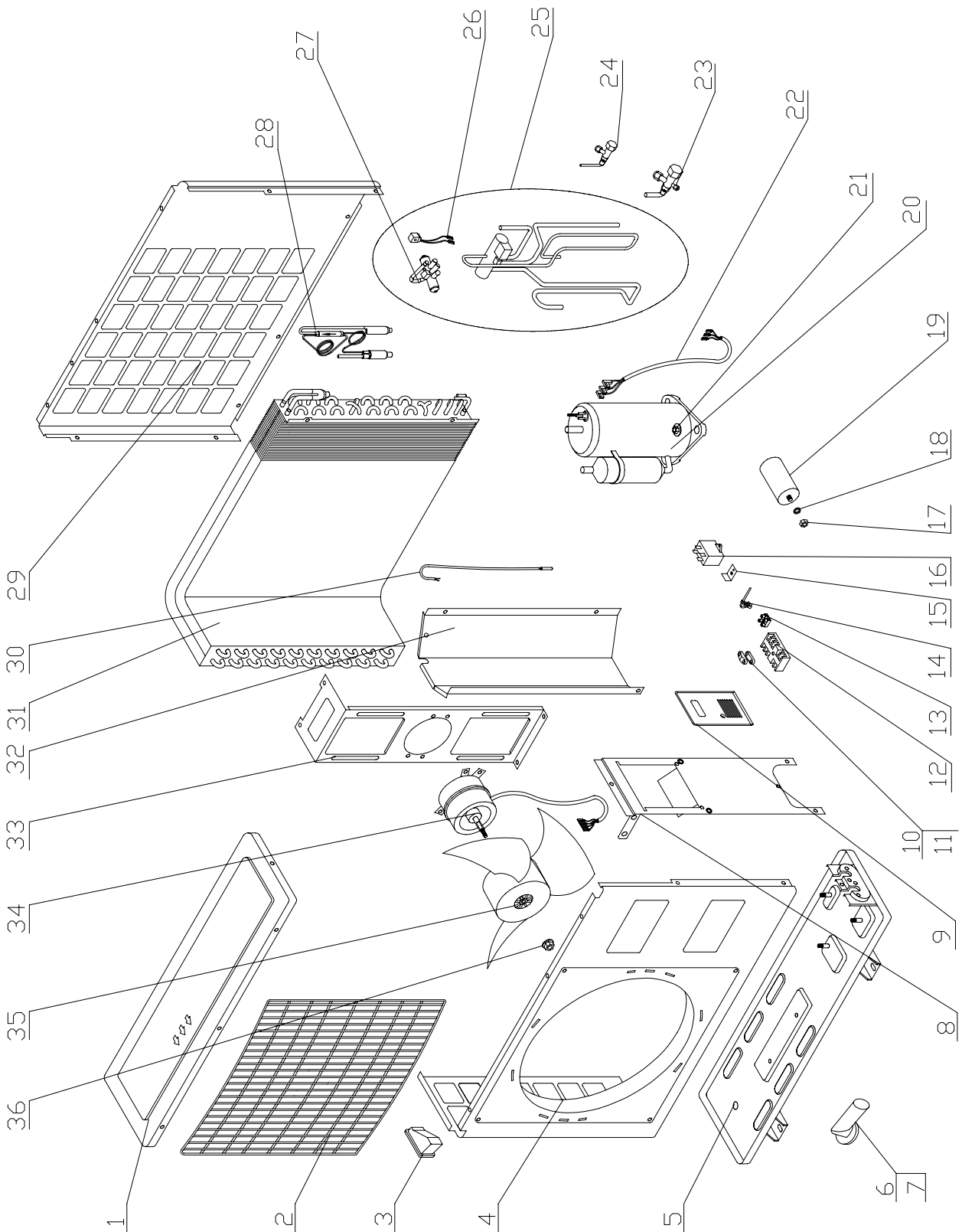
14.13 Outdoor Unit CON 9 RC R22

Item Code	Item Desc	Quantity	Drawing Number	Effective From	Effective To
4526675	TOP COVER PAINTING	1	1	11-Dec-03	Active
4526671	FRONT PANEL PAINTING	1	2	11-Dec-03	Active
4526481	CON Outdoor Grille	1	3	11-Dec-03	Active
4526141	PARTITION PLATE	1	4	11-Dec-03	Active
4517990	Cap. 2uF/450V	1	5	11-Dec-03	08-Jan-04
455000001	single patch Capacitor for fan	1	5	08-Jan-04	09-Feb-04
4518839	Comp. Capacitor Clip	1	6	11-Dec-03	Active
4519148	Compressor Capacitor 30uF/450V	1	7	11-Dec-03	29-Dec-03
455000401	Compressor Capacitor 30uF (CBB65)	1	7	29-Dec-03	Active
4526142	ELECTRIC SUPPORT	1	8	11-Dec-03	Active
204107	Cable clip Nylon	1	9	11-Dec-03	Active
4514588	5 Poles terminal block	1	10	11-Dec-03	Active
236179	2 Poles terminal block	1	11	11-Dec-03	Active
4510677	Nut With Flange M8 -D=24	3	12	11-Dec-03	Active
4523610	COMP ASSY PH170X1C-4D	1	13	11-Dec-03	21-Oct-04
452982000	Compressor assy PH170X1C-4DZD	1	13	21-Oct-04	Active
4524278	Wire assy	1	14	11-Dec-03	Active
4526875	4-W vavle welding assy	1	15	11-Dec-03	Active
4526856	4-W valve coil	1	16	11-Dec-03	Active
4523587	GAS VALVE	1	17	11-Dec-03	Active
4523533	LIQUID VALVE	1	18	11-Dec-03	Active
4526668	R lifter	1	19	11-Dec-03	Active
4520719	Filter	1	20	11-Dec-03	Active
4523913	Capillary assy	1	21	11-Dec-03	Active
4526669	SIDE PANEL PAINTING	1	22	11-Dec-03	Active
4516637	Out sensor Black	1	23	11-Dec-03	Active
4526651	Cond. Assy	1	24	11-Dec-03	Active
4526146	MOTOR SUPPORT ASSY	1	25	11-Dec-03	Active
4519609	Drain Jam	1	26	11-Dec-03	Active
4526645	BOTTOM PLATE	1	27	11-Dec-03	Active
4523609	MOTOR YDK20-6L	1	28	11-Dec-03	Active
4523707	AXIAL FAN	1	29	11-Dec-03	Active
4524076	Nut hex	1	30	11-Dec-03	Active
4526881	protecting wire netting	1	31	11-Dec-03	Active
436358	L. lifter	1	32	11-Dec-03	Active
455000108	Double patch Capacitor for fan	1	50	09-Feb-04	Active

14.14 Outdoor Unit CON 9 RC R407C

Item Code	Item Desc	Quantity	Drawing Number	Effective From	Effective To
4526675	TOP COVER PAINTING	1	1	11-Dec-03	Active
4526671	FRONT PANEL PAINTING	1	2	11-Dec-03	Active
4526481	CON Outdoor Grille	1	3	11-Dec-03	Active
4526141	PARTITION PLATE	1	4	11-Dec-03	Active
4517990	Cap. 2uF/450V	1	5	11-Dec-03	08-Jan-04
455000001	single patch Capacitor for fan	1	5	08-Jan-04	09-Feb-04
4518839	Comp. Capacitor Clip	1	6	11-Dec-03	Active
4519148	Compressor Capacitor 30uF/450V	1	7	11-Dec-03	29-Dec-03
455000401	Compressor Capacitor 30uF (CBB65)	1	7	29-Dec-03	Active
4526142	ELECTRIC SUPPORT	1	8	11-Dec-03	Active
204107	Cable clip Nylon	1	9	11-Dec-03	Active
4514588	5 Poles terminal block	1	10	11-Dec-03	Active
236179	2 Poles terminal block	1	11	11-Dec-03	Active
4510677	Nut With Flange M8 -D=24	3	12	11-Dec-03	Active
4523536	COMPRESSOR ASSY PG170X1C-4D	1	13	11-Dec-03	Active
452981900	Compressor assy PG170X1C-4DZD	1	13	11-Oct-05	Active
4524278	Wire assy	1	14	11-Dec-03	Active
4526977	4-W vavle welding assy R407C	1	15	11-Dec-03	Active
4526856	4-W valve coil	1	16	11-Dec-03	Active
4524044	GAS VALVE (R407)	1	17	11-Dec-03	Active
4524043	LIQUID VALVE (R 407C)	1	18	11-Dec-03	Active
4526668	R lifter	1	19	11-Dec-03	Active
4520719	Filter	1	20	11-Dec-03	Active
4524009	Capillary ?2.6* ?1.4*900	1	21	11-Dec-03	Active
4526669	SIDE PANEL PAINTING	1	22	11-Dec-03	Active
4516637	Out sensor Black	1	23	11-Dec-03	Active
4526651	Cond. Assy	1	24	11-Dec-03	Active
4526146	MOTOR SUPPORT ASSY	1	25	11-Dec-03	Active
4519609	Drain Jam	1	26	11-Dec-03	Active
4526645	BOTTOM PLATE	1	27	11-Dec-03	Active
4523609	MOTOR YDK20-6L	1	28	11-Dec-03	Active
4523707	AXIAL FAN	1	29	11-Dec-03	Active
4524076	Nut hex	1	30	11-Dec-03	Active
4526881	protecting wire netting	1	31	11-Dec-03	Active
436358	L. lifter	1	32	11-Dec-03	Active
455000108	Double patch Capacitor for fan	1	50	09-Feb-04	Active
4523536	COMPRESSOR ASSY PG170X1C-4D	1	None	11-Oct-05	11-Oct-05

14.15 Outdoor Unit CON 12 RC R22 & R407C



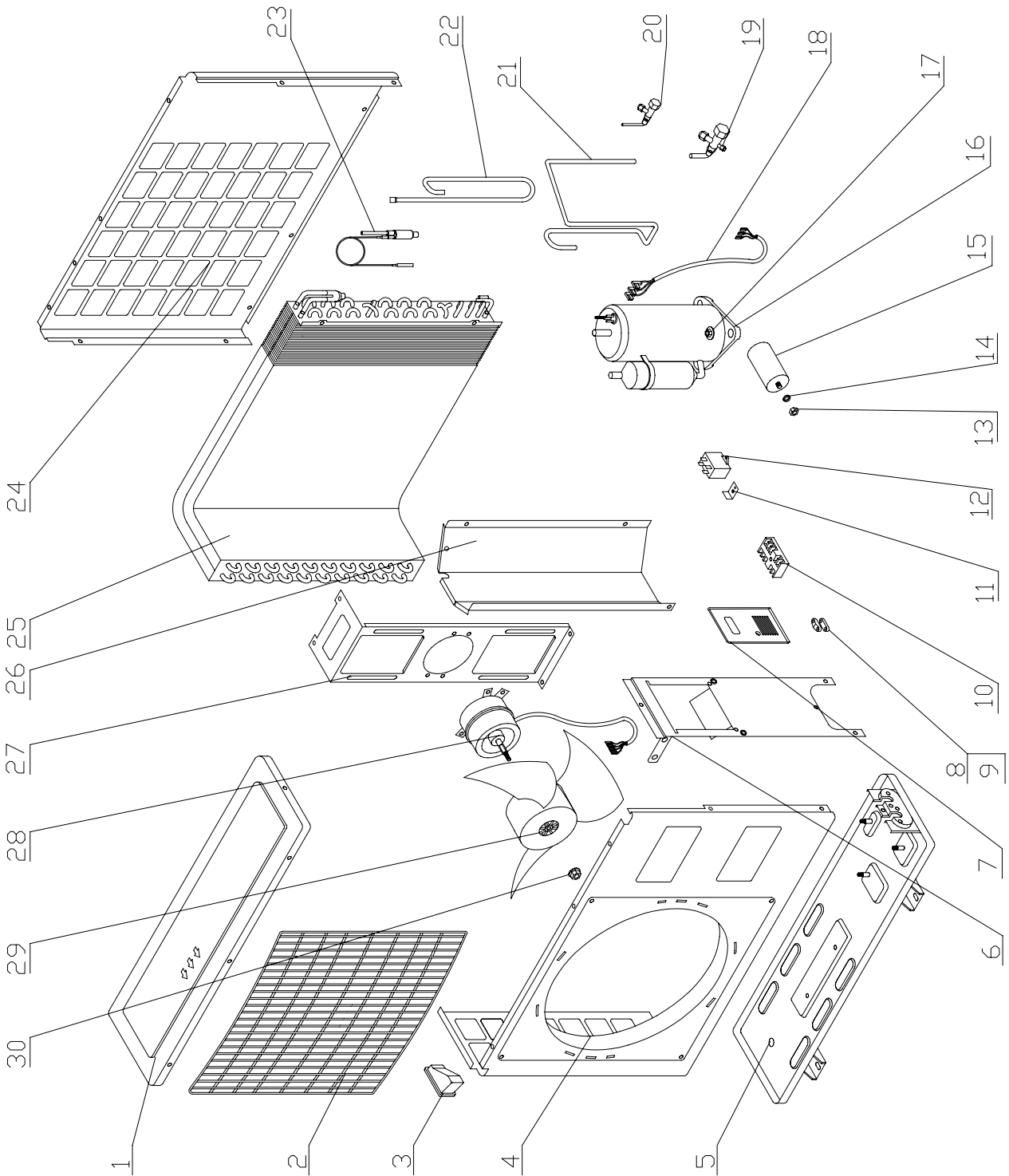
14.16 Outdoor Unit CON 12 RC R22

Item Code	Item Desc	Quantity	Drawing Number	Effective From	Effective To
4516158	Cover panel Painting assy	1	1	19-Feb-04	Active
4521257	Outdoor grille Painting assy	1	2	19-Feb-04	Active
436358	L. lifter	1	3	19-Feb-04	Active
4516159	Front panel Painting assy	1	4	19-Feb-04	Active
4516160	Base Painting assy	1	5	19-Feb-04	Active
436632	Drain Connector	1	6	19-Feb-04	Active
4519609	Drain Jam	1	7	19-Feb-04	Active
460129	Side panel Painting assy	1	8	19-Feb-04	Active
436357	R.lifter	1	9	19-Feb-04	Active
204107	Cable clip Nylon	1	10	19-Feb-04	Active
253046	Clip set PVC	1	11	19-Feb-04	Active
236332	6 Poles terminal block	1	12	19-Feb-04	Active
236179	2 Poles terminal block	1	13	19-Feb-04	Active
4511168	Small Tie	1	14	19-Feb-04	Active
4518022	Cap. Clip	1	15	19-Feb-04	Active
455000001	single patch Capacitor for fan	1	16	19-Feb-04	17-May-04
455000108	Double patch Capacitor for fan	1	16	17-May-04	Active
201019	Nut M8	1	17	19-Feb-04	Active
203008	Washer μ 8	1	18	19-Feb-04	Active
455000504	Compressor Capacitor With Screw	1	19	19-Feb-04	Active
4516600	Compressor assy. PH225X2-4FS	1	20	19-Feb-04	Active
4516357	Rubber Cushion 1K15910311	1	21	19-Feb-04	Active
391498	Wire assy	1	22	19-Feb-04	Active
4513972	Gas Valve	1	23	19-Feb-04	Active
224195	Liquid Valve	1	24	19-Feb-04	Active
4516461	4-W valve welding assy	1	25	19-Feb-04	Active
4514005	4-W valve coil	1	26	19-Feb-04	Active
224136	4-W valve	1	27	19-Feb-04	Active
452808200	Capillary	1	28	19-Feb-04	Active
4516156	Rear panel Painting assy	1	29	19-Feb-04	Active
4516637	Out sensor Black	1	30	19-Feb-04	Active
452802100	R22 Condenser Welded Assy.for	1	31	19-Feb-04	Active
4513965	Partition plate	1	32	19-Feb-04	Active
323156	Motor support assy	1	33	19-Feb-04	Active
261507	Motor YDK20-6N	1	34	19-Feb-04	Active
293289	Axial Fan D=400	1	35	19-Feb-04	Active
201130	Nut M4	1	36	19-Feb-04	Active

14.17 Outdoor Unit CON 12 RC R407C

Item Code	Item Desc	Quantity	Drawing Number	Effective From	Effective To
4516158	Cover panel Painting assy	1	1	16-Jan-04	Active
4521257	Outdoor grille Painting assy	1	2	16-Jan-04	Active
436358	L. lifter	1	3	16-Jan-04	Active
4516159	Front panel Painting assy	1	4	16-Jan-04	Active
4516160	Base Painting assy	1	5	16-Jan-04	Active
436632	Drain Connector	1	6	15-Mar-04	Active
255015	Washer	1	7	15-Mar-04	Active
460129	Side panel Painting assy	1	8	16-Jan-04	Active
436357	R.lifter	1	9	16-Jan-04	Active
204107	Cable clip Nylon	1	10	16-Jan-04	Active
253046	Clip set PVC	1	11	16-Jan-04	Active
236332	6 Poles terminal block	1	12	16-Jan-04	Active
236179	2 Poles terminal block	1	13	16-Jan-04	Active
4511168	Small Tie	1	14	16-Jan-04	Active
4518022	Cap. Clip	1	15	16-Jan-04	Active
201019	Nut M8	1	16	16-Jan-04	Active
203008	Washer μ 8	1	17	16-Jan-04	Active
455000001	single patch Capacitor for fan	1	18	16-Jan-04	Active
455000504	Compressor Capacitor With Screw	1	19	16-Jan-04	Active
4523418	Compressor assy. PG215X2C-4FS	1	20	16-Jan-04	Active
4516357	Rubber Cushion 1K15910311	1	21	16-Jan-04	Active
391498	Wire assy	1	22	16-Jan-04	Active
4516408	Gas Valve	1	23	16-Jan-04	Active
4516406	Liquid Valve	1	24	16-Jan-04	Active
4516461	4-W valve welding assy	1	25	16-Jan-04	Active
4514005	4-W valve coil	1	26	16-Jan-04	Active
224136	4-W valve	1	27	16-Jan-04	Active
452762500	Capillary	1	28	16-Jan-04	Active
4516156	Rear panel Painting assy	1	29	16-Jan-04	Active
4516637	Out sensor Black	1	30	16-Jan-04	Active
452763400	Condenser Welded Assy	1	31	16-Jan-04	Active
4513965	Partition plate	1	32	16-Jan-04	Active
323156	Motor support assy	1	33	16-Jan-04	Active
261507	Motor YDK20-6N	1	34	16-Jan-04	Active
293289	Axial Fan D=400	1	35	16-Jan-04	Active
201130	Nut M4	1	36	16-Jan-04	Active

14.18 Outdoor Unit CON 12 ST R22 & R407C



14.19 Outdoor Unit CON 12 ST R22

Item Code	Item Desc	Quantity	Drawing Number	Effective From	Effective To
4516158	Cover panel Painting assy	1	1	27-Feb-04	Active
4521257	Outdoor grille Painting assy	1	2	27-Feb-04	Active
436358	L. lifter	1	3	27-Feb-04	Active
4516159	Front panel Painting assy	1	4	27-Feb-04	Active
4516160	Base Painting assy	1	5	27-Feb-04	Active
436632	Drain Connector	1	6	27-Feb-04	27-Feb-04
460129	Side panel Painting assy	1	6	27-Feb-04	Active
436357	R.lifter	1	7	27-Feb-04	Active
204107	Cable clip Nylon	1	8	27-Feb-04	Active
253046	Clip set PVC	1	9	27-Feb-04	Active
236332	6 Poles terminal block	1	10	27-Feb-04	Active
4518022	Cap. Clip	1	11	27-Feb-04	Active
4511168	Small Tie	1	11	27-Feb-04	15-Mar-04
45500001	single patch Capacitor for fan	1	12	27-Feb-04	Active
236179	2 Poles terminal block	1	13	27-Feb-04	27-Feb-04
201019	Nut M8	1	13	27-Feb-04	Active
203008	Washer	1	14	27-Feb-04	Active
455000504	Compressor Capacitor With Screw	1	15	27-Feb-04	Active
4516600	Compressor assy. PH225X2-4FS	1	16	27-Feb-04	06-Nov-04
4516422	Compressor assy. PH225X2C-4FS	1	16	06-Nov-04	Active
4510677	Nut With Flange M8 -D=24	3	17	18-Mar-04	Active
4516357	Rubber Cushion 1K15910311	1	17	27-Feb-04	18-Mar-04
391498	Wire assy	1	18	27-Feb-04	Active
4513972	Gas Valve	1	19	27-Feb-04	Active
224195	Liquid Valve	1	20	27-Feb-04	Active
4516522	Suction Tube	1	21	15-Mar-04	Active
452785200	Discharge tube 17.94x0.7	1	22	15-Mar-04	Active
452809500	Capillary	1	22	27-Feb-04	15-Mar-04
452786300	Capillary assy.	1	23	15-Mar-04	Active
4516156	Rear panel Painting assy	1	24	27-Feb-04	Active
4516461	4-W valve welding assy	1	25	27-Feb-04	27-Feb-04
452807900	Condenser Coil	1	25	27-Feb-04	Active
4514005	4-W valve coil	1	26	27-Feb-04	27-Feb-04
4513965	Partition plate	1	26	27-Feb-04	Active
224136	4-W valve	1	27	27-Feb-04	27-Feb-04
323156	Motor support assy	1	27	27-Feb-04	Active
452808200	Capillary	1	28	27-Feb-04	27-Feb-04
261507	Motor YDK20-6N	1	28	27-Feb-04	Active
293289	Axial Fan D=400	1	29	27-Feb-04	Active
4516637	Out sensor Black	1	30	27-Feb-04	27-Feb-04
201130	Nut M4	1	30	27-Feb-04	Active
452802100	R22 Condenser Welded Assy.for	1	31	27-Feb-04	27-Feb-04

14.20 Outdoor Unit CON 12 ST R407C

Item Code	Item Desc	Quantity	Drawing Number	Effective From	Effective To
4516158	Cover panel Painting assy	1	1	04-Feb-04	Active
4521257	Outdoor grille Painting assy	1	2	04-Feb-04	Active
436358	L. lifter	1	3	04-Feb-04	Active
4516159	Front panel Painting assy	1	4	04-Feb-04	Active
4516160	Base Painting assy	1	5	04-Feb-04	Active
460129	Side panel Painting assy	1	6	04-Feb-04	Active
436357	R.lifter	1	7	04-Feb-04	Active
204107	Cable clip Nylon	1	8	04-Feb-04	Active
253046	Clip set PVC	1	9	04-Feb-04	Active
236332	6 Poles terminal block	1	10	04-Feb-04	Active
236179	2 Poles terminal block	1	11	04-Feb-04	04-Feb-04
4511168	Small Tie	1	11	04-Feb-04	15-Mar-04
4518022	Cap. Clip	1	11	04-Feb-04	Active
455000001	single patch Capacitor for fan	1	12	04-Feb-04	Active
201019	Nut M8	1	13	04-Feb-04	Active
203008	Washer μ 8	1	14	04-Feb-04	Active
455000504	Compressor Capacitor With Screw	1	15	04-Feb-04	Active
4523418	Compressor assy. PG215X2C-4FS	1	16	04-Feb-04	Active
4516357	Rubber Cushion 1K15910311	1	17	04-Feb-04	18-Mar-04
4510677	Nut With Flange M8 -D=24	3	17	18-Mar-04	Active
391498	Wire assy	1	18	04-Feb-04	Active
4516408	Gas Valve	1	19	04-Feb-04	Active
4516406	Liquid Valve	1	20	04-Feb-04	Active
4516461	4-W valve welding assy	1	23	04-Feb-04	04-Feb-04
4516522	Suction Tube \varnothing 12.7x0.7	1	21	04-Feb-04	Active
4514005	4-W valve coil	1	24	04-Feb-04	04-Feb-04
452785200	Discharge tube \varnothing 7.94x0.7	1	22	04-Feb-04	Active
224136	4-W valve	1	25	04-Feb-04	04-Feb-04
452786300	Capillary assy.	1	23	04-Feb-04	Active
4516156	Rear panel Painting assy	1	24	04-Feb-04	Active
452762500	Capillary	1	26	04-Feb-04	04-Feb-04
452807900	Condenser Coil	1	25	15-Mar-04	Active
4513965	Partition plate	1	26	04-Feb-04	Active
4516637	Out sensor Black	1	28	04-Feb-04	04-Feb-04
452763300	CON 12 ST R407C Lable BOM for	1	26	04-Feb-04	15-Mar-04
323156	Motor support assy	1	27	04-Feb-04	Active
452763400	Condenser Welded Assy	1	29	04-Feb-04	04-Feb-04
261507	Motor YDK20-6N	1	28	04-Feb-04	Active
293289	Axial Fan D=400	1	29	04-Feb-04	Active
201130	Nut M4	1	30	04-Feb-04	Active

15. OPTIONAL ACCESSORIES

15.1 A.S.K (All Season Kit)

The A.S.K is a pressure regulator to be installed on site in case the working conditions are below the standard operating range of the unit in cooling mode.

The ASK allows working in cooling at low temp' up to -10 °C for rooms with high internal gains.

For units up to 7.2 KW kit code no' – 7ACFH0077

For units up to 12 KW kit code no' – 7ACFH0078

Documentation as shown on kits :

TH 2210 H - 398887

Climateurs individuels "Split System" Standard (GC 9-11-12-15-18-24-28F)
Standard split-system individual air-conditioning units (GC 9-11-12-15-18-24-28F)
Split-raumklimageräte in standardausführung (GC 9-11-12-15-18-24-28F)

Montage du kit toutes saisons électronique code 680480

Elektronischer Bausatz für alle Jahreszeiten 680480

F
GB
D

Mise hors tension de l'appareil

Switch off power supply to the unit

- Fig. 1
Déposer :
- Le couvercle A
- Fig. 2
- La poignée de la platine électrique B
- Fig. 3
- Fixer le pressostat C sur le support fourni avec les 2 vis fournies.
- Fig. 3
- Fixer l'ensemble sur la cloison du compartiment compresseur avec la vis autopercussive fournie.
- Fig. 3
- Dévisser le bouchon de la valve D en attente, et raccorder l'extrémité E du capillaire du pressostat C.
- Fig. 3
- Fixer le pressostat C sur la cloison du compartiment compresseur dans les 2 trous prévus, avec les 2 vis fournies.
- Fig. 3
- Dévisser le bouchon de la valve D en attente, et raccorder l'extrémité E du capillaire du pressostat C.

Remarque :
Le té fourni dans le kit peut être installé entre la valve D et le capillaire E. Il permet de disposer d'une prise de pression supplémentaire.

Das Gerät außer Spannung setzen

- Abb. 1
Abnehmen :
- Haube A
- Abb. 2
- Griff des Schaltkastens B
- Abb. 3
- Pressostat C mit Hilfe der 2 mitgelieferten Schrauben auf dem gelieferten Träger befestigen.
- Abb. 3
- Die Maßeinheit mit Hilfe die Schraube in der Wand des Kompressorraums befestigen.
- Abb. 3
- Das anschließfertige Ventil D nach Abnehmen des Stopfens an das Ende E des Kapillarrohrs von Pressostat C anschließen.
- Abb. 3
- Pressostat C mit Hilfe der 2 mitgelieferten Schrauben in den zwei in der Wand des Kompressorraums befindlichen Löchern befestigen. Das anschließfertige Ventil D nach Abnehmen des Stopfens an das Ende E des Kapillarrohrs von Pressostat C anschließen.

Hinweis:
Das in dem Bausatz mitgelieferte T-Profil kann zwischen dem Ventil D und dem Kapillarrohr E installiert werden. Dadurch steht eine zusätzliche Druckanschlusstelle zur Verfügung.

Switch off power supply to the unit

- Fig. 1
Remove :
- Cover A
- Fig. 2
- Power panel handle B
- Fig. 3
- Mount pressure switch C on the provided support, using the two screws supplied.
- Fig. 3
- Mount the unit on the partition of the compressor compartment, using the self-drilling screw supplied.
- Fig. 3
- Unscrew the cap of valve D provided and connect the end E of pressure switch C capillary line to it.
- Fig. 3
- Mount pressure switch C on the partition of the compressor compartment in the holes provided, using the two screws supplied.
- Fig. 3
- Unscrew the cap of valve D provided and connect the end E of pressure switch C capillary line to it.

Comment:
The « T » supplied in the kit can be installed between the valve D and the capillary E. It offers the possibility of having an additional pressure outlet.

Fig. 1
Abb. 1

Fig. 2
Abb. 2

Fig. 3
Abb. 3

Fig. 3
Abb. 3

Fig. 3
Abb. 3

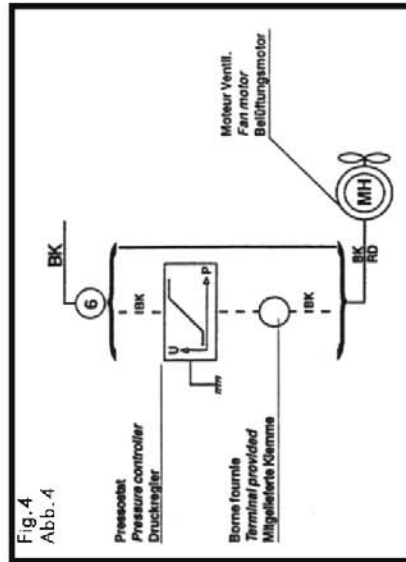
Fig. 3
Abb. 3

**Climatiseurs individuels "Split System" Standard (GC 9-11-12-15-18-24-28F)
Standard split-system individual air-conditioning units (GC 9-11-12-15-18-24-28F)
Split-raumklimageräte in standardausführung (GC 9-11-12-15-18-24-28F)**

- Fig. 4
Raccordement électrique
- Déconnecter le fil du moteur de ventilation de la borne 6.
- Raccorder le fil noir du pressostat sur la borne 6 libéré précédemment.
- Raccorder l'autre fil noir du pressostat sur le fil du moteur ventilation déconnecté précédemment à l'aide du connecteur m âle-mâle fourni.
- Raccorder la tresse de masse.
- Remonter les éléments démontés précédemment.

- Fig. 4
Electrical connections
- Disconnect the wire of fan motor on terminal 6.
- Connect a black wire of the pressure controller with terminal 6 previously made available.
- Connect the other black wire of the pressure controller with the wire of the fan motor previously disconnected by means of the provided male-male connector.
- Connect the grounding braid.
- Re-assemble the previously removed element.

- Abb. 4
Elektrische Anschlüsse
- Den Draht des Belüftungsmotors der Klemme 6.
- Eine schwarzen Draht des Druckreglers mit der vorher freigelegten Klemme 6 verbinden.
- Den anderen Draht des Druckreglers mit Hilfe des mitgelieferten Steckverbinders mit dem vorher abgeklemmten schwarzen Draht des Belüftungsmotors verbinden. Die Massenslitze anschließen.
- Die vorher demontierten Elemente wieder montieren.



GC18-24-28F

F
GB
D

MS 1040F (N°de produit fini : 7SP091012A) - MS 1400F (N°de produit fini : 7SP091014A / 7SP091015A)
 MS 1040F (End product part numbers : 7SP091012A) - MS 1400F (End product part numbers : 7SP091014A / 7SP091015A)
 MS 1040F (Teilenummern der enderzeugnisse : 7SP091012A) - MS 1400F (Teilenummern der enderzeugnisse : 7SP091014A / 7SP091015A)

Montage du kit toutes saisons
 électronique code 680480

kit installation : Electronic
 Around the Year code 680480

Elektronischer Bausatz für
 alle Jahreszeiten 680480



Mise hors tension de l'appareil



Switch off power supply to the unit

Das Gerät außer Spannung setzen

- Fig. 4
 Déposer :
 - Le panneau de dessus rep. 1
 - Le panneau avant rep. 2
 - La grille avant rep. 3

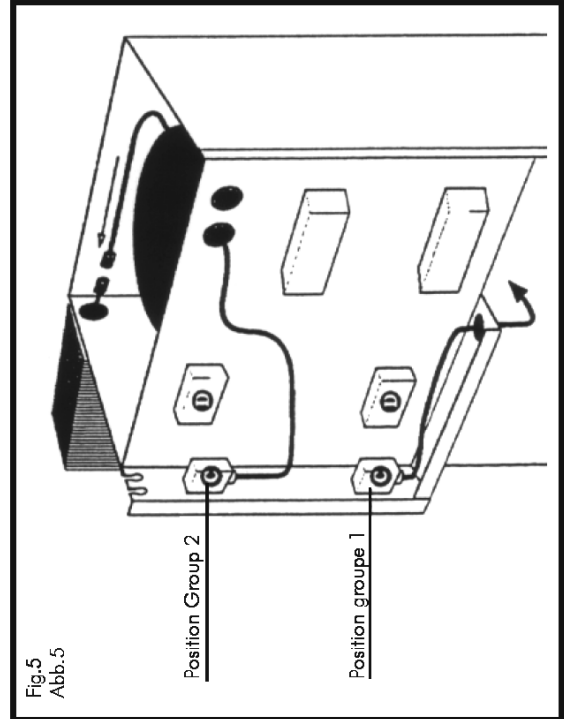
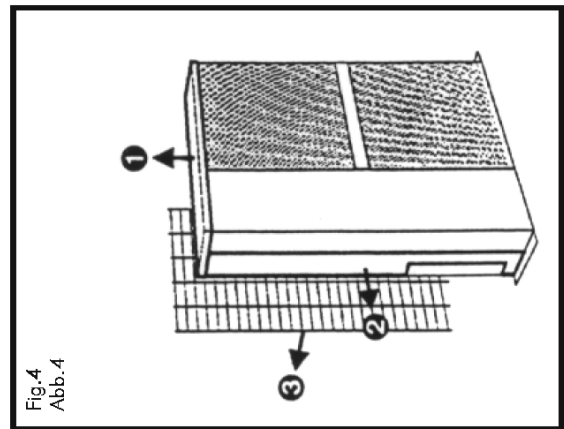
- Fig. 4
 Remove :
 - Top panel labeled 1
 - Front panel labeled 2
 - Front grille labeled 3

- Abb. 4
 Abnehmen :
 - Das obere Panel Kennz. 1
 - Das Frontpanel Kennz. 2
 - Das vordere Gitter Kennz. 3

- Fig. 5
 Fixer le thermostat C sur la platine électrique
 - en position Haute pour le groupe 2
 - en position Basse pour le groupe 1

- Fig. 5
 Fix the thermostat C on the electric panel
 - in position High for group 2
 - in position Low for group 1

- Abb. 5
 Das Thermostat C auf der Stromplatine befestigen
 - in oberer Position für die Gruppe 2
 - in unterer Position für die Gruppe 1



- Fig. 6
- Raccorder l'extrémité des capillaires des pressostat C sur les VUS correspondantes.
- Remarque :
Le té fourni dans le kit peut être installé entre la valve et le capillaire. Il permet de disposer d'une prise de pression supplémentaire.
- Fig. 7
- Raccordement électriques
- Déconnecter le fil Noir du moteur de ventilation de la borne 11 (Bornier rep. D fig.5) du groupe 1 ou 2, concerné par le montage du kit.
- Raccorder un fil Noir du pressostat sur la borne 11 libérée précédemment.
- Raccorder l'autre fil Noir du pressostat sur le fil Noir du moteur déconnecté précédemment à l'aide du connecteur mâle-mâle fourni.
- Raccorder la tresse de masse.

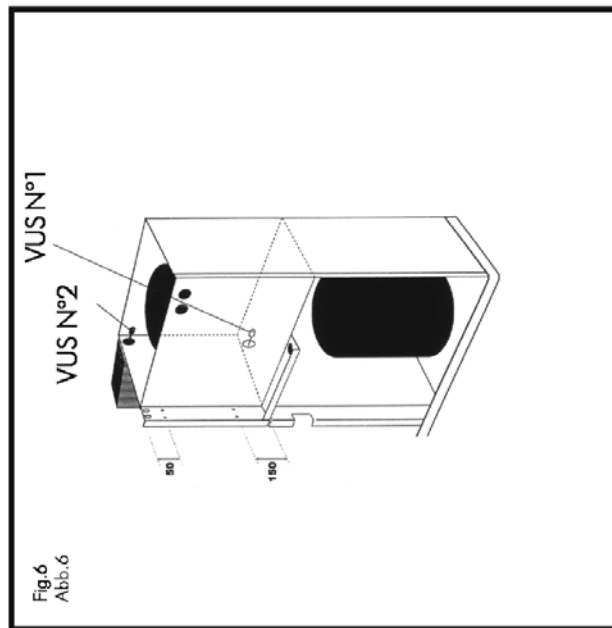


Fig. 6
Abb. 6

- Fig. 6
- Connect the end of the capillaries of pressure controller C with the corresponding VUS.
- Comment:
The «T» supplied in the kit can be installed between the valve and the capillary. It offers the possibility of having an additional pressure outlet.

- Fig. 7
- Electric connections
- Disconnect the Black wire of fanmotor on terminal 11 (terminal block labeled D fig.5) of group 1 or 2 according to the group concerned.
- Connect a Black wire of the pressure controller with terminal 11 previously made available.
- Connect the other Black wire of the pressure controller with the Black wire of the fanmotor previously disconnected by means of the provided male-male connector.
- Connect the grounding braid.

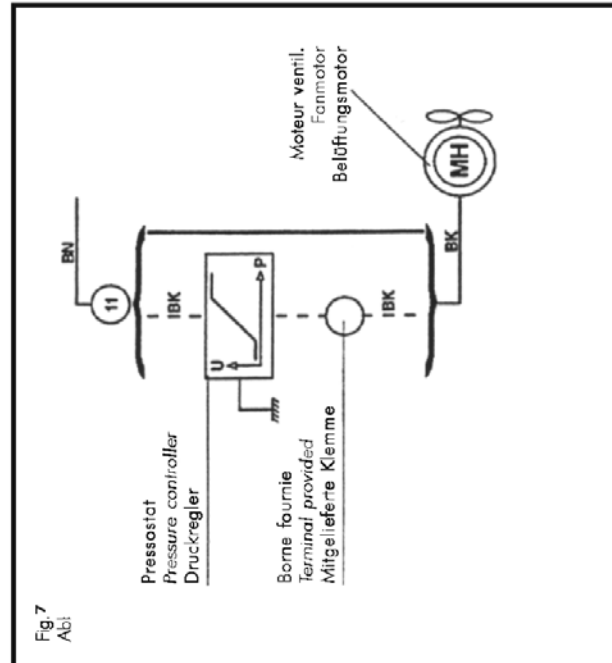


Fig. 7
Abt.

- Abb. 6
- Das Ende der Kapillarrohre der Druckregler C an den entsprechenden VUS anschließen.
- Hinweis:
Das in dem Bausatz mitgelieferte T-Profil kann zwischen dem Ventil und dem Kapillarrohr installiert werden. Dadurch steht eine zusätzliche Druckanschlusstelle zur Verfügung.
- Abb. 7
- Stromanschluß
- Den Schwarzen Draht des Belüftungsmotors der Klemme 11 (Klemme Kennz. D abb.5) der von der Montage des Bausatzes betroffenen Gruppe 1 oder 2 abklemmen.
- Einen Schwarzen Draht des Druckreglers mit der vorher freigelegten Klemme 11 verbinden.
- Den anderen Schwarzen Draht des Druckreglers mit Hilfe des mitgelieferten Steckverbinders mit dem vorher abgeklemmten Schwarzen Draht des Belüftungsmotors verbinden.
- Die Massennlitze anschließen.

- Remonter les éléments démontés précédemment.

- Re-assemble the previously removed elements.

- Die vorher demontierten Elemente wieder montieren.





TH 2531 D 399142

**GROUPE DE CONDENSATION (GC 30 F)
CONDENSER UNIT (GC 30F)
VERFLÜSSIGEREINHEIT (GC 30F)**

**EINBAUSATZ ELEKTRONISCHE VERFLÜSSIGER-
DRUCKREGELUNG (680488).**

YEAR-ROUND SYSTEM ELECTRONIC KIT (680488).

KIT TOUTES SAISONS ELECTRONIQUES (680488).

Einbau.
Am Verflüssiger/GC 30 F (Fig.1) folgende Teile abnehmen :
- Haube A.
- Elektroanschlußklappe B
- Seitenpanel F

Installation of the kit.
GC 30 F Condenser unit (Fig.1).
Remove :
- Cover A.
- Electrical connection hatch B
- Side panel F

Montage du kit.
Groupe de condensation GC 30 F (Fig.1).
Déposer :
- Le couvercle A.
- La trappe de raccordement électrique B.
- Le panneau de côté F.

Pressostat C mit Hilfe der 2 mitgelieferten Schrauben in den zwei in der Wand des Kompressorraums befindlichen Löchern befestigen. (Fig.2).

Mount pressure switch C on the partition of the compressor compartment in the two holes provided, using the two screws supplied (Fig.2).

Fixer le pressostat C sur la cloison du compartiment compresseur dans les 2 trous prévus, avec les 2 vis fournies. (Fig.2).

Das anschließende Ventil D nach Abnehmen des Stopfens an das Ende E des Kapillarrohrs von Pressostat C anschließen. (Fig.3).
Hinweis:
Das in dem Bausatz mitgelieferte T-Profil kann zwischen dem Ventil D und dem Kapillarrohr E installiert werden. Dadurch steht eine zusätzliche Druckanschlußstelle zur Verfügung.

Unscrew the cap of valve D provided and connect the end E of pressure switch C capillary line to it (Fig.3).
Comment:
The « T » supplied in the kit can be installed between the valve D and the capillary E. It offers the possibility of having an additional pressure outlet.

Dévisser le bouchon de la valve D en attente, et raccorder l'extrémité E du capillaire du pressostat C. (Fig.3).
Remarque :
Le té fourni dans le kit peut être installé entre la valve D et le capillaire E. Il permet de disposer d'une prise de pression supplémentaire.
Raccordements électriques. Sur le bornier de raccordement.

Elektrische Anschlüsse. An der Anschlußklemmleiste.
Das schwarze Kabel (Motor) von Klemme 6 der Anschlußklemmleiste abklemmen und an die Steckverbindung des von dem Pressostat kommenden Nr.2 Kabels anschließen.

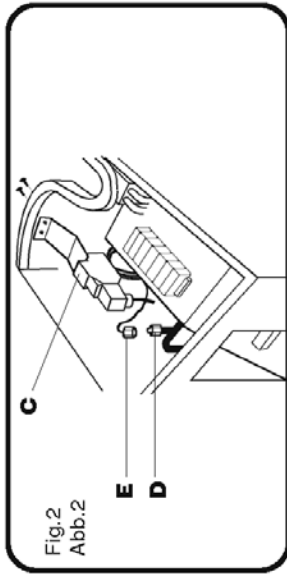
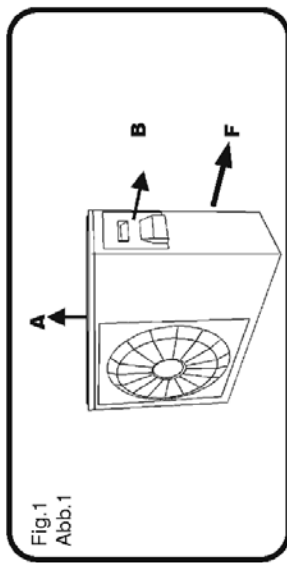
Electrical connections. On the terminal board.
Disconnect the black wire (motor) from terminal 6 on the terminal board and connect it to the connector with the wire N°2 coming from the pressure switch.

Déconnecter le fil noir (moteur) de la borne 6 du bornier de raccordement et le raccorder au connecteur avec le fil 2 du câble du pressostat.
Raccorder le 2^{ème} fil noir (marqué 1) du pressostat à la borne 6 du bornier de raccordement précédemment libérée.

Das 2. schwarze Kabel (1) des Pressostat an die zuvor freigeordnete Klemme 6 der Anschlußklemmleiste anschließen.
Prüfen, daß an dem Ventil keine Leckage auftritt.
Seitenpanel F, Haube A und Klappe B wieder montieren.

Connect the second black wire (mark 1) of the pressure switch to terminal 6 on the terminal board that is now free.
Check that there is no leak in the valve.
Replace panel F, cover A and hatch B.

Vérifier l'absence de fuite au niveau de la valve.
Remonter le panneau F, le couvercle A et la trappe B.



APPENDIX A

INSTALLATION AND OPERATION MANUAL

- ▶ **INSTALLATION AND OPERATION MANUAL COMPACT 7, 9, 12**

AIR CONDITIONER SPLIT WALL MOUNTED

ENGLISH

CLIMATISEUR SPLIT MURAL

FRANÇAIS

CLIMATIZADOR SPLIT MURAL

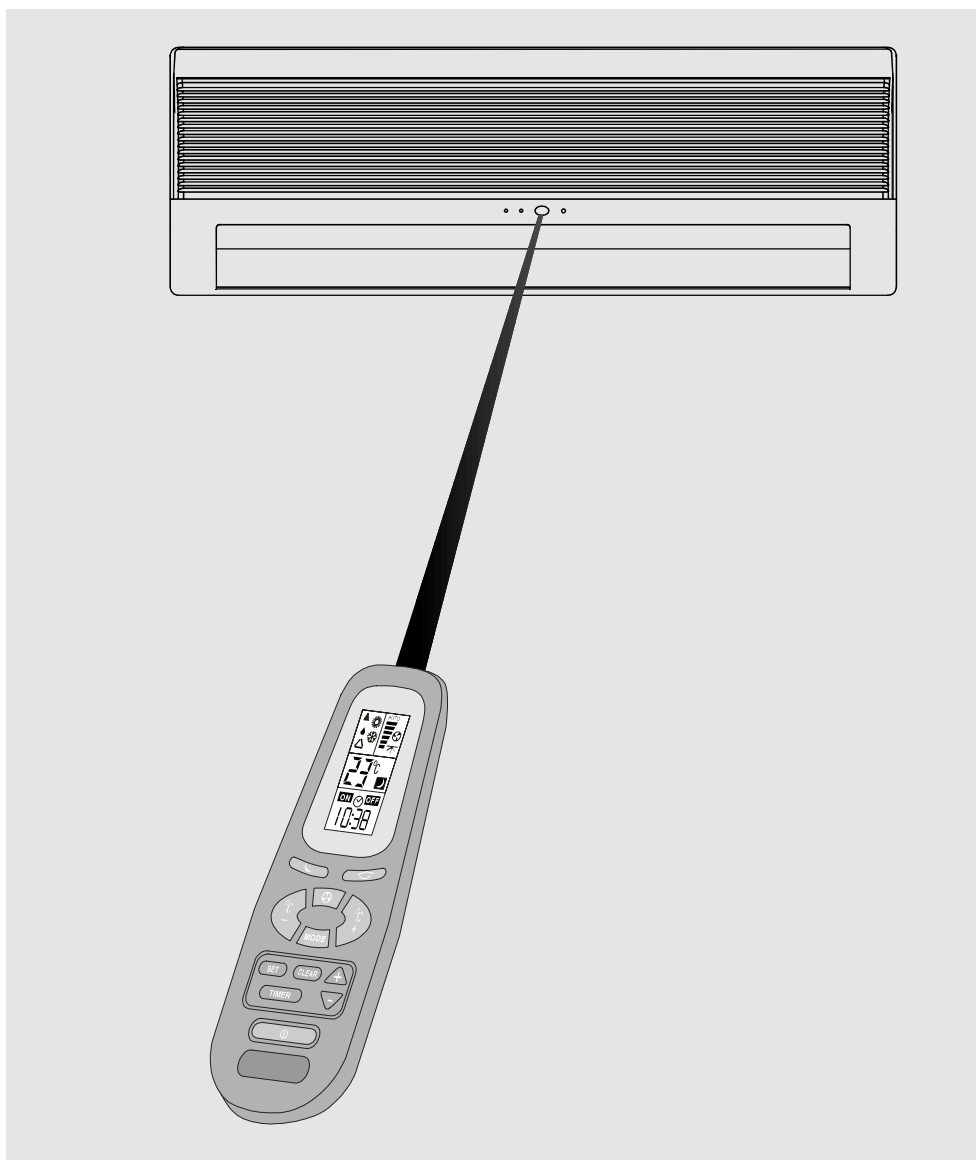
ESPAÑOL

CONDIZIONATORE D'ARIA A PARETE SPLIT

ITALIANO

KLIMAGERÄT IN SPLIT BAUWEISE

DEUTSCH



**PROGRAMMING AND OPERATING MANUAL
MANUEL D'UTILISATION ET DE PROGRAMMATION
MANUAL DE UTILIZACION Y DE PROGRAMACION
MANUALE DI UTILIZZO E DI PROGRAMMAZIONE
BEDIENUNGS UND PROGRAMMIERUNGS HANDBUCH**

ENGLISH

FRANÇAIS

ESPAÑOL

ITALIANO

DEUTSCH

**AIR CONDITIONER
SPLIT WALL MOUNTED
PROGRAMMING
AND OPERATING**

ENGLISH

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OPERATION MODES, FUNCTIONS AND FEATURES	3
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· Cooling operation	8
· Cooling operation with auto fan mode	8
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*IF YOUR AIR
CONDITIONER IS FOR
COOLING ONLY, PLEASE
DISREGARD THE
HEATING INSTRUCTIONS*

*PLEASE READ THESE
INSTRUCTIONS BEFORE
OPERATING THE AIR
CONDITIONER*

INTRODUCTION

This Split Air Conditioner is designed for versatile applications:



· Cooling air in the summer.



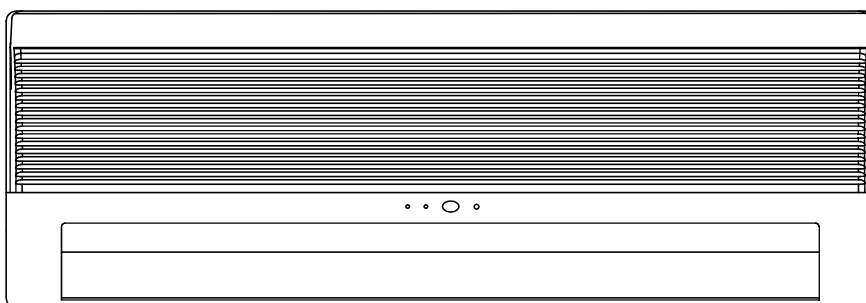
· Dehumidifying the air at high humidity conditions.



· Heating.



· Ventilation.



OPERATING TEMPERATURE RANGE:

(According to T_1 temperature condition)

Cooling: $21^{\circ} \sim 43^{\circ}\text{C}$

Heating: $-7^{\circ} \sim 21^{\circ}\text{C}$

IMPORTANT NOTICE:

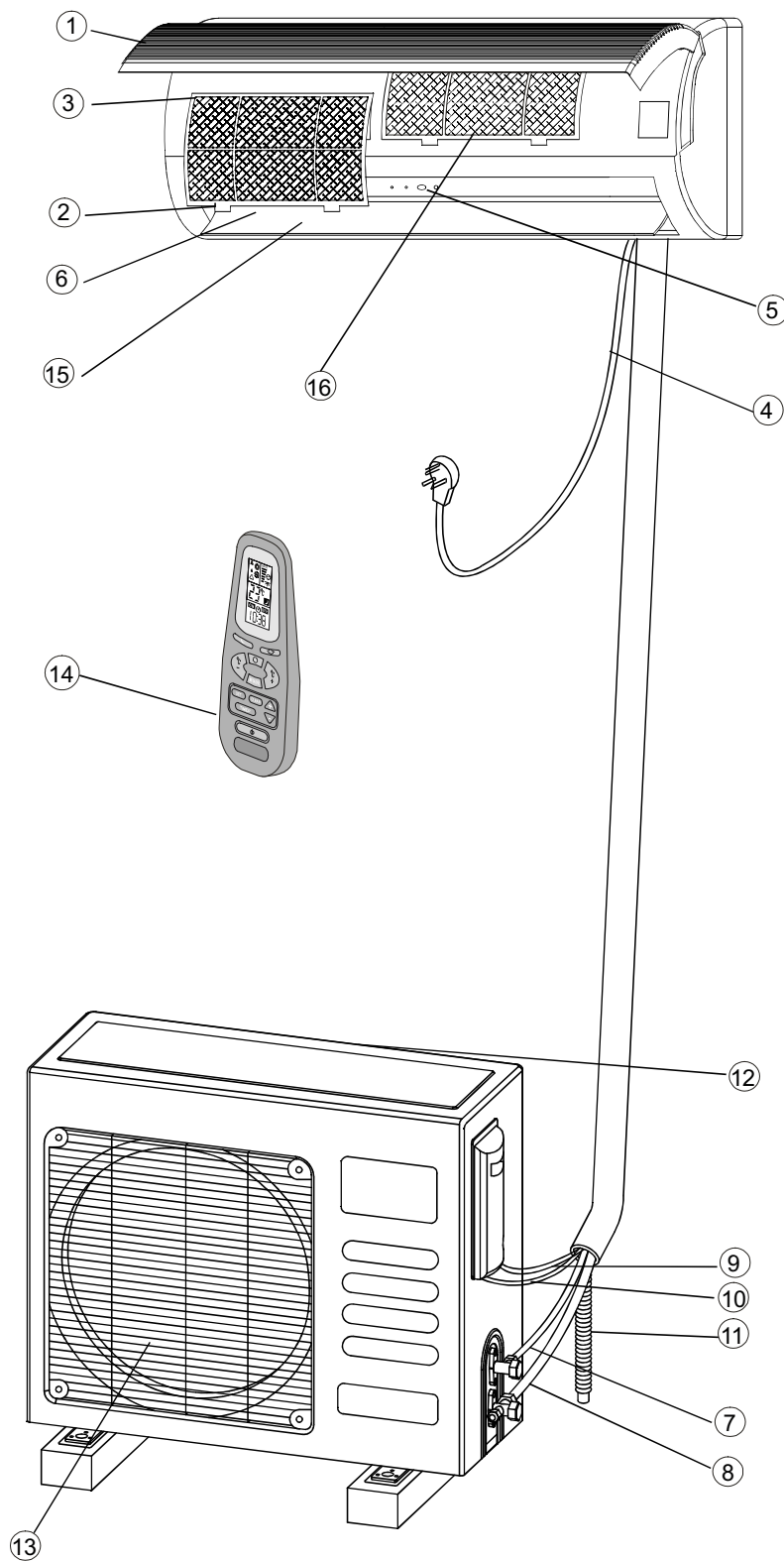
· *This air conditioner must be grounded to protect against electrical shock.*

· *Installation of the air conditioner must be performed by an experienced air conditioning installer, observing good refrigeration practice.*

· *Electrical connections and power cord replacement should only be made by authorized electricians and in accordance with electrical regulations and local codes.*

· *Failure to comply with the manufacturer's installation and operation instructions could affect the performance of the air conditioner and the validity of the warranty.*

SYSTEM DESCRIPTION



- ① *Air intake grille*
- ② *Supply air flap (louver)*
- ③ *Air filter*
- ④ *Power cord*
- ⑤ *Unit's indicators and on unit control*
- ⑥ *Horizontal air flow deflecting louvers*
- ⑦ *Suction line*
- ⑧ *Liquid line*
- ⑨ *Power cable*
- ⑩ *Control wire*
- ⑪ *Condensate tube*
- ⑫ *Outdoor unit air intake*
- ⑬ *Outdoor unit air outlet*
- ⑭ *Remote control*
- ⑮ *Air outlet*
- ⑯ *Air purifying filter (optional)*

OPERATION MODES, FUNCTIONS AND FEATURES



COOL

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



HEAT

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



AUTO

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 In DRY Mode, the air conditioner operates at an increased dehumidifying power. This function is recommended to be used when temperature is rather low but the humidity is high.



FAN

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

AUTO



AUTO FAN

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

HOT KEEP

In HEATING and in AUTO FAN, the fan will be turned off when the compressor is not in operation and will not be restarted, unless the indoor coil reaches adequate temperature. This HOT KEEP feature prevents uncomfortable cold air drafts. Use of AUTO FAN is, therefore, recommended when the air conditioner is in HEATING mode.



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 the air conditioner off automatically when sleeping.



SLEEP

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

**AUTO
LOUVRE**

The air louvers is automatically positioned for the most suitable blow-out angle, when COOL, HEAT, DRY or FAN modes are selected. When the air conditioner is turned off, the flap will close automatically for an aesthetic appearance.



**VERTICAL
AIR SWING**

Automatic swing of supply air in vertical direction. The flap moves automatically in upward and downward direction to spread the conditioned air evenly throughout the room.



BUZZER

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.

**ON UNIT
OPERATION**

The air conditioner can be turned ON for COOLING or HEATING or be turned OFF directly from the indoor unit display panel without the use of the remote control.

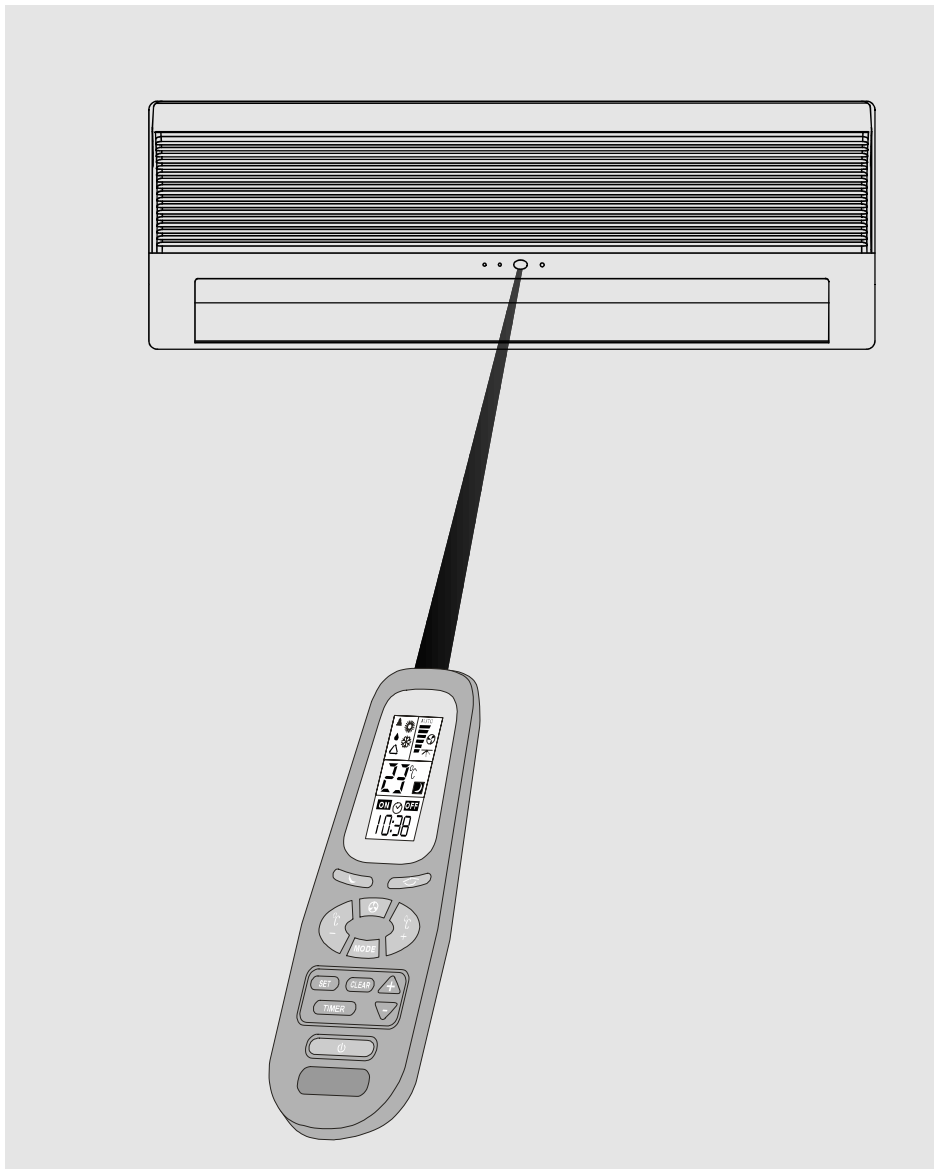
**3-MIN
DELAYED RUN**

This 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 operating in the same mode as before the power was disrupted.

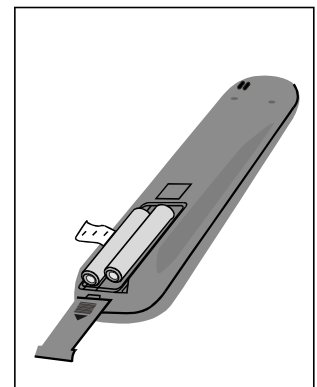
USE OF WIRELESS REMOTE CONTROL



PRIOR TO OPERATION

Prior to operating your air conditioner, make sure that:

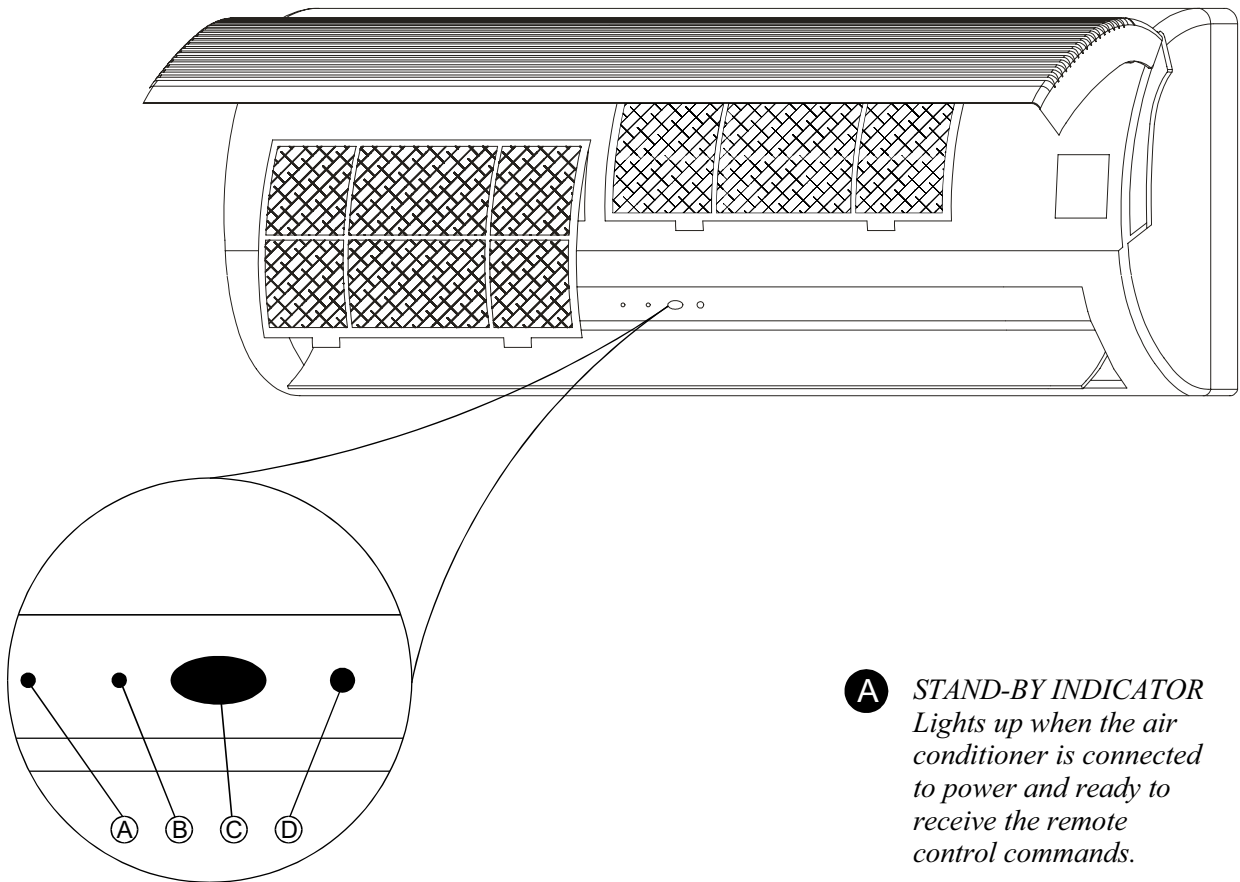
- The indoor unit is properly plugged into power.(Except for multi-split models).
- Indicator(A)on the unit's display is lit, meaning that the air conditioner is ready to accept your remote control commands.
- For clock setting, see page 11.



CARD TYPE REMOTE CONTROL PUTS ALL FUNCTIONS AT YOUR FINGERTIPS

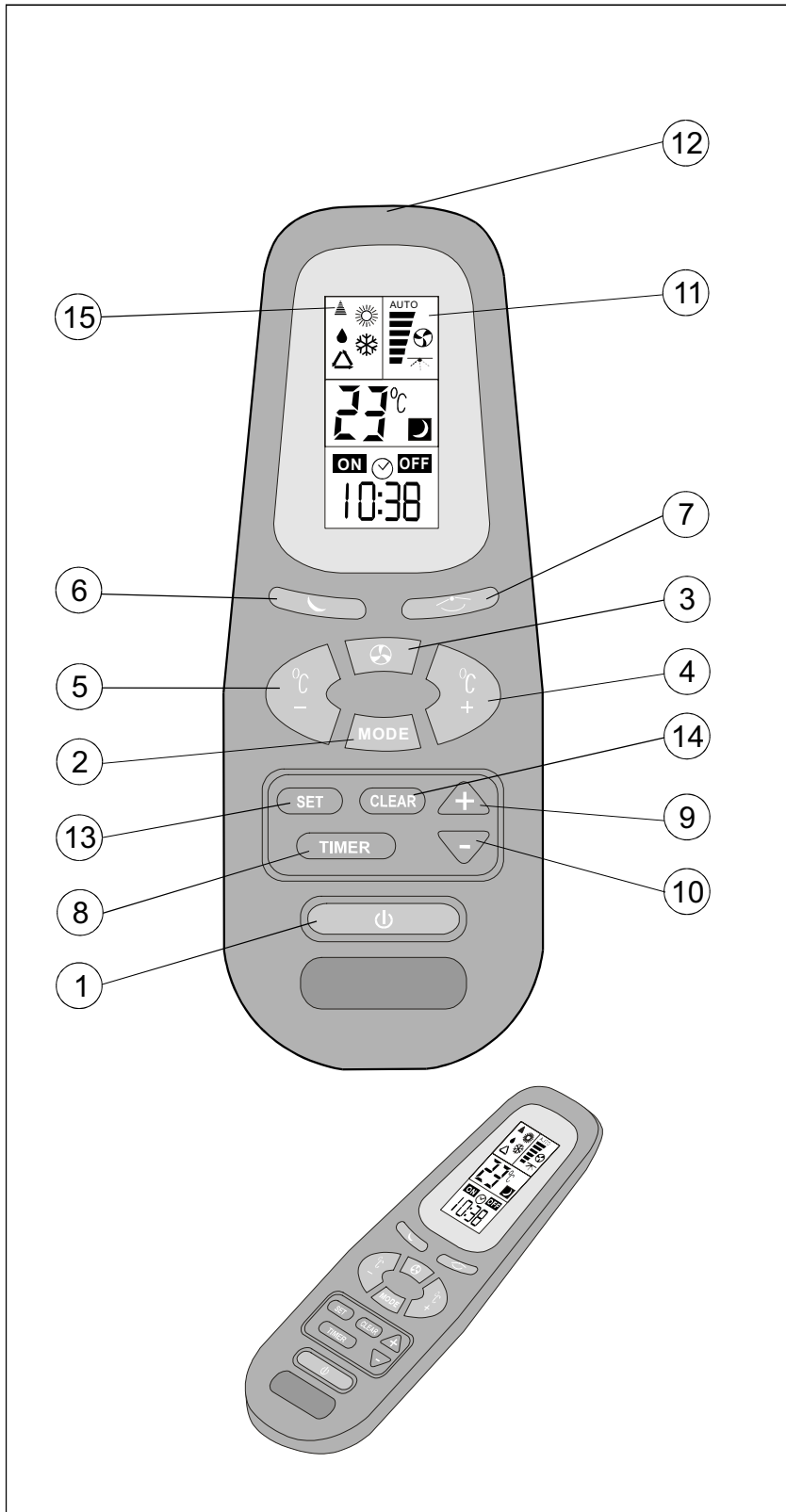
- Aim at the infrared signal receiver on the room air conditioner when operating.
- The remote control signal can be received at a distance of up to about 7m.
- Be sure that there are no obstructions between the remote control and the signal receptor.
- Do not drop or throw the remote control.
- Do not place the remote control in a location exposed to direct sunlight, or next to a heating unit, and/or other heat source.
- Do not expose the air conditioner signal receiver(C)to a strong light such as fluorescent lamp or sunlight

ON-UNIT INDICATORS AND CONTROLS



- A** *STAND-BY INDICATOR*
Lights up when the air conditioner is connected to power and ready to receive the remote control commands.
- B** *OPERATION INDICATOR*
Lights up during operation. Blinks once to announce that the remote control infrared signal has been received and stored. Blinks continuously in protection mode.
- C** *SIGNAL RECEIVER*
Receive signals from the remote control.
- D** *ON UNIT CONTROL*
Press to turn on or turn off for COOLING or HEATING without the use of remote control

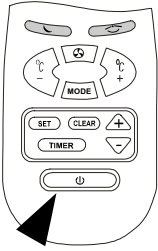
REMOTE CONTROL



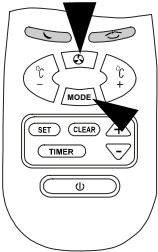
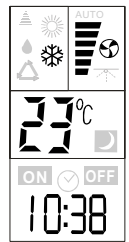
- ① *START/STOP button*
- ② *Operation mode selection button*
COOLING
HEATING
AUTO COOL/HEAT
DRY
FAN
- ③ *FAN SPEED and*
AUTO FAN button
- ④ *Room temperature*
UP button
- ⑤ *Room temperature*
DOWN Button
- ⑥ *SLEEP button*
- ⑦ *Airflow direction*
AUTO-CONTROL
button
- ⑧ *TIMER button*
- ⑨ *TIMER UP button*
- ⑩ *TIMER DOWN button*
- ⑪ *LCD operation display*
- ⑫ *Infrared signal*
transmitter
- ⑬ *TIMER SET button*
- ⑭ *TIMER CLEAR button*
- ⑮ *Transmission sign*

OPERATION PROCEDURE

TURNING ON THE AIR CONDITIONER

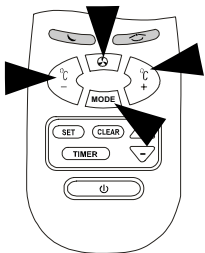
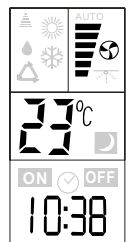


Press START/STOP button (1) to turn the air conditioner. After connecting to the power supply, The indicator (A) on the air conditioner light up, indicating that the air conditioner is in the standby status. Please note that LCD operation display (11) will always show the last mode of operation and the previous function used. If you want to change the control settings, proceed according to the following instructions. Otherwise, the air conditioner will start and operate in the same mode and functions prior to being turned off.



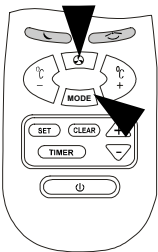
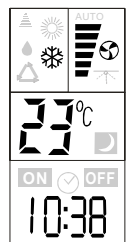
VENTILATING OPERATION

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



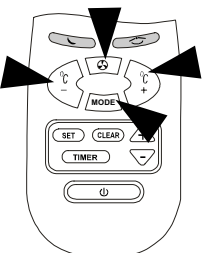
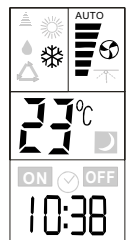
COOLING OPERATION

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. By selecting the COOLING mode, the air flap will move automatically to air delivery position, optimal for cooling.



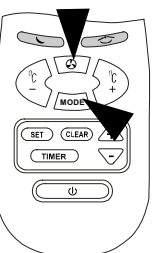
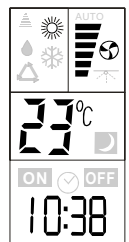
COOLING OPERATION WITH AUTO FAN MODE

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



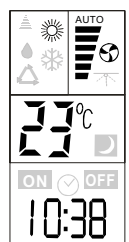
HEATING OPERATION

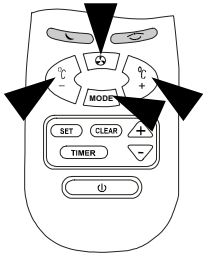
Select the HEATING mode by pressing MODE button (2). Switch to the desired FAN SPEED or to AUTO FAN by pressing FAN button (3). Select suitable temperature setting. By selecting the HEATING mode, the air flap will move automatically to air delivery position, optimal for heating.



HEATING OPERATION WITH AUTO FAN MODE

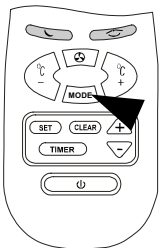
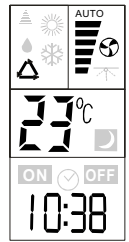
This operation starts with the highest air flow in order to quickly raise the room temperature. It will then automatically switch to a lower air flow to quietly maintain the selected temperature. HEATING with AUTO FAN will automatically provide the user with the HOT KEEP function. The fan will be turned off when the indoor coil temperature is not sufficiently hot to prevent uncomfortable cold air drafts.





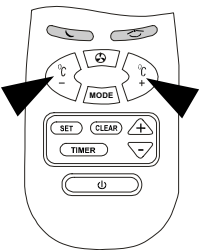
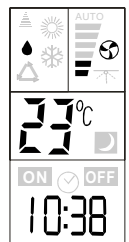
AUTO COOLING/HEATING OPERATION

Select the AUTO mode by pressing MODE button (2). Switch to the desired FAN SPEED or to AUTO FAN by pressing button (3). Select suitable temperature setting. The air flap will automatically move to either horizontal air delivery for cooling or to vertical air delivery for heating. At start, the air conditioner will select its mode of operation according to the room temperature and the temperature setting.



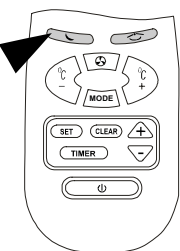
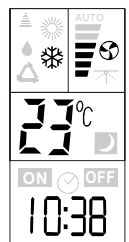
DRY OPERATION

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. Fan might terminate operation from time to time to prevent from over cooling. By selecting the mode, the air flap will move automatically to optimal horizontal air delivery position.



SELECTING THE TEMPERATURE

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

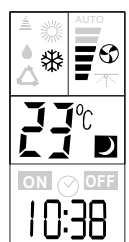


SLEEP FUNCTION

Press the 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 is activated, as well ,the air conditioner will be turned ON and OFF according to the TIMER setting.

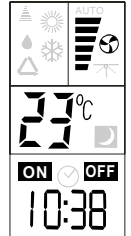
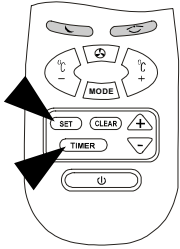
To cancel the SLEEP function press on one of the following:

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



TIMER OPERATION

Press TIMER select button (8) to activate the timed operation mode. Each time you press TIMER button (8) is pressed, one of the following four type of operation modes will appear on the LCD display. The operation modes are sequenced in turn in the direction of arrow. Indicator (B) on the air conditioner will light up during TIMER operation.



Note: After power failure when the unit is in timer mode indicator (B) will be blinking and the unit will be automatically turned to stand-by mode and the timer operation will be cancelled. To resume the timer wait 30 sec. before reprogramming. Follow the instructions above.

TIMER OPERATING MODES

I. TIMER ON

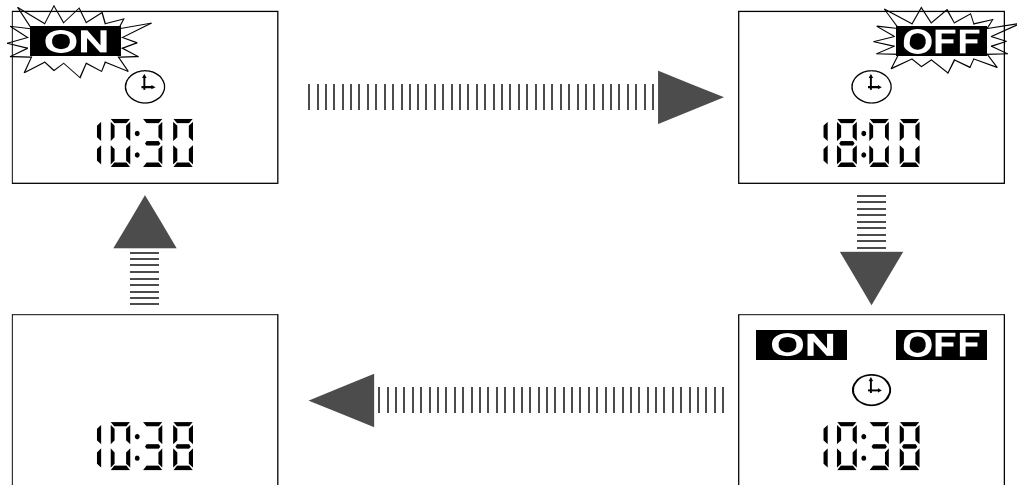
This mode enables you to set a start operating time. Press the TIMER button (8) till ON sign blinks. Start time can be adjusted using up and down buttons (9) and (10) respectively. Press SET button (13) to activate the timer.

Example: Operation is restored at 10:30 a.m.

II. TIMER OFF

This mode enables you to set the stop time of operation. Press the Timer button (8) till the OFF sign blinks. Time can be adjusted using up and down buttons (9) and (10) respectively. Press Set button (13) to activate the timer.

Example: Operation stops at 18:00.



IV. CLEAR

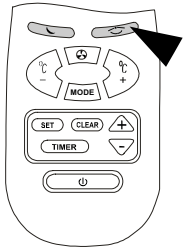
Use this mode to cancel timer operation. Press CLEAR button (14), timer operation will terminate and the LCD display will be cleared for each timer mode.

Note: If timer button (8) is selected and neither time adjust, SET, or CLEAR buttons are not pressed within 15 seconds; the timer operation will be cancelled and the last setup will be displayed

III. TIMER ON/OFF

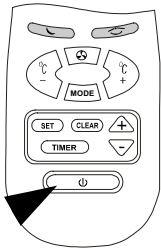
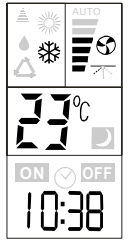
This mode enables you to set the start and stop time of operation. Press Timer button (8) till the ON sign blinks. By pressing again the OFF sign blinks. By press again the ON sign blinks. Time can be adjusted by using the up and down buttons (9) and (10) respectively. Press Set button (13) to activate the timer.

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



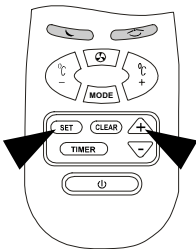
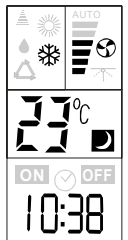
AUTOMATIC VERTICAL AIR SWING

Press button (7) to activate the auto air swing. By Pressing button (7) again you can stop the auto swing and position the air flap at any desired anle.



TURNING OFF THE AIR CONDITIONER

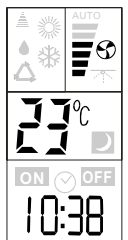
Press START/STOP button (1) to turn off the air conditioner. Indicator (B) on the air conditioner will be turned off. Indicator (A) will stay lit, indicating that the air conditioner is in STAND-BY mode and ready to accept any new command from the remote control. The remote control LCD will display the clock time. The last operating set-up will be kept for the next operation.



CURRENT CLOCK TIME SET

Clock setting is performed when batteries are inserted. The remote control displays the setting and the clock display will blink "0:00" or "12:00" AM (AM sign will blink, too) till a new time is set.

For clock setting, use buttons (9) and (10) for setting the hours and minutes, respectively, and then press timer SET button (13). The clock setting can be also performed by pressing time SET button (13) for 5 seconds. The clock display will blink, for new setting follow the steps described above.



PROTECTION MODES

Your air conditioner includes several automatic protection modes, which enables you to use it virtually at any time and in any season, regardless of the outdoor temperature. Some of the protection modes are listed below:

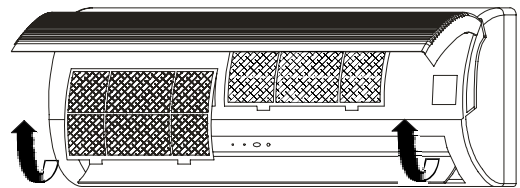
Mode	Operation conditons	Protection from	Controlled remedy
Cooling	Low outdoor temperature	Indoor coil freezes up	Stops outdoor fan and compressor when approaching freezing conditions Resumes operation automatically.
	High outdoor temperature	Outdoor coil overheating	Stops compressor when approaching over heating conditions. Resumes operation automatically. Operating indicator(D) blinks.
Heating	Low outdoor temperature	Outdoor coil ice build up	Reverses Operation from heating to cooling for short periods to de-ice outdoor coil. Oiperating indicator (D) blinks.
	High indoor or outdoor temperature	Indoor coil overheating	Stops outdoor fan and compressor when approaching high indoor coil temperature. Resumes operation automatically.

CARE AND MAINTENANCE

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

CLEANING THE AIR FILTER

· To remove the air filters lift up the panel. Push the air filters up slightly to unlock them. Pull out the filters clean the filter by washing in warm soapy water and dry thoroughly. Align and fit the filters in place. Close the panel by pushing it in the center to lock it in place.



PURIFICATION FILTER REPLACEMENT

The air purifying filter should be removed from the unit and replaced once a year, as shown in figures 1, 2 and 3.

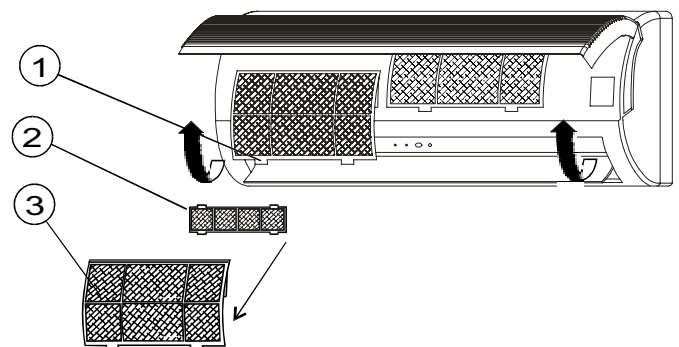
Pulling out the filter

Replacing and securing the filter in its frame

Sliding the filter back in its place

Note: The above procedure is used for replacing the active carbon filter (when supplied).

DO NOT OPERATE THE UNIT WITHOUT FILTERS !



CLEANING THE AIR CONDITIONER

- Wipe the unit with a soft dry cloth or clean it using 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

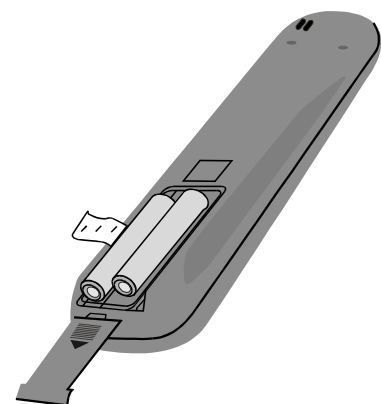
- Make sure there are no obstacles blocking the flow of inlet or outlet air, in both indoor and outdoor units.
 - Make sure the power is properly connected.
-

PROTECT THE ELECTRONIC SYSTEM

- Indoor unit and remote control must be at least 1 meter away from a TV, radio or any other home electronic appliance.
 - Protect the indoor unit from direct sun or lighting.
-

REMOTE CONTROL BATTERY CHANGE

- Remove the batteries from the remote control as shown.
 - Use two 1.5 volt size AAA batteries
-

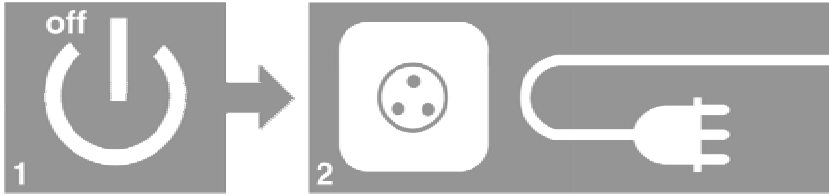


OPERATING TIPS

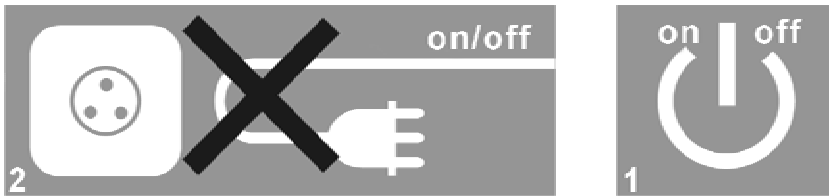
- Set a suitable room temperature; excessively low room temperature is not good for your health and wastes electricity. Avoid frequent setting of the temperature.
- During cooling, avoid direct sun. Keep curtains and blinds closed. Close doors and windows to keep the cool air in the room.
- Avoid generating heat or using of heating appliances while the air conditioner is in cooling mode.
- Make sure that the air flap is positioned properly: horizontal flow in cooling and downward vertical flow for heating.
- Keep the room temperature uniform by adjusting the left/right vertical air blades.
- Position the air flap and the left/right air blades in such a manner as to prevent your body from being exposed directly to air drafts.
- During prolonged operation, ventilate the room occasionally by opening a window from time to time.
- In a power failure, the microprocessor memory is retained. When restarted, operation will be resumed in the last mode of operation.
- After turning on, allow more than 3 minutes for cooling, heating or dry operation to start.
- When COOL modes are used, make sure that the room's relative humidity is below 78%. If the unit is used for a prolonged periods of time in high humidity, moisture may form on the air outlet and drip down.
- Remote control signals may not be received if the indoor unit controls cover is exposed to direct sunlight or strong light. In such a case, block the sunlight or dim the lighting.
- The remote control is operative in a range of 7 meters. If you are out of range, the remote control may have difficulties in transmitting signals.

PRECAUTIONS

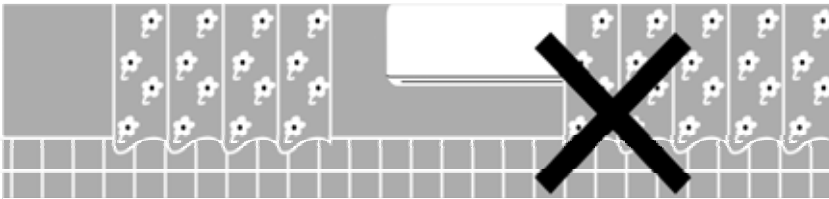
- Use the proper electrical fuse.
Do not pull out the power cord unless the unit is turned off.



- Do not start or stop operation by disconnecting the power cord.



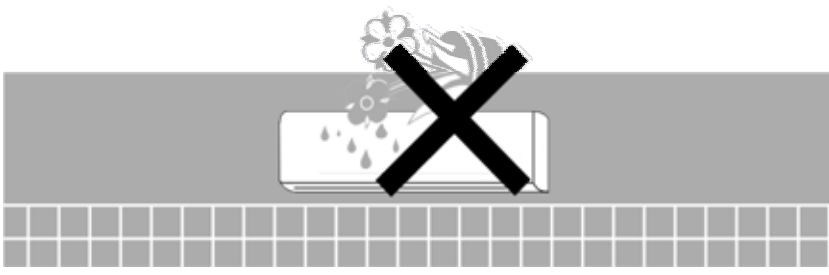
- Do not obstruct or block the air inlet or air outlet of the air conditioner.



- Do not insert any objects in the air outlet of the indoor or outdoor units.



- Do not splash water on the air conditioner.



IF NOISE IS HEARD

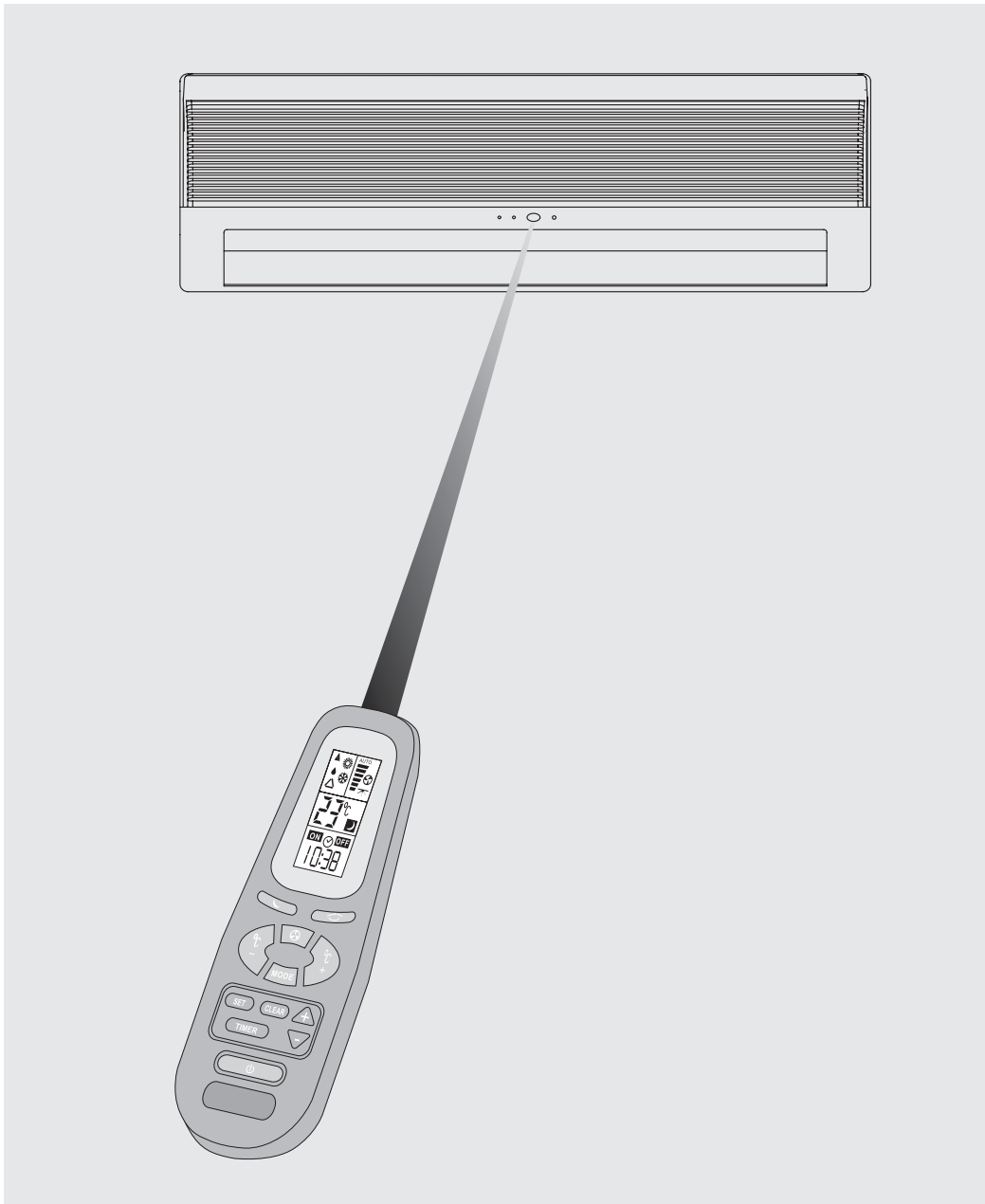
There may be hissing sound during operation or just after shut down. this is caused by the refrigerant that is circulating inside the unit

There may be a cracking sound at starting and stopping the unit's operation. This is caused by heat expansion or contraction of plastics.

BEFORE CALLING FOR SERVICE

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

Problem	Cause	Remedy
<ul style="list-style-type: none"> Unit does not operate. Stand-by indicator does not light up 	<ul style="list-style-type: none"> Unit not connected to power Power failure 	<ul style="list-style-type: none"> Plug in the power cord Check main fuse
<ul style="list-style-type: none"> unit does not operate. Stand-by indicator lights. 	<ul style="list-style-type: none"> Remote control malfunctions 	<ul style="list-style-type: none"> Check remote control batteries Try to operate from a closer distance Start from on-unit controls
<ul style="list-style-type: none"> Unit does not respond properly to remote control command 	<ul style="list-style-type: none"> IR signal does not reach unit 	<ul style="list-style-type: none"> Check for obstruction between unit and remote control. Clear if needed.
	<ul style="list-style-type: none"> Distance between remote control and unit too large or aimed at from improper angle IR receiver on-unit exposed to strong light source 	<ul style="list-style-type: none"> Get closer to unit Dim lights, fluorescents especially
<ul style="list-style-type: none"> Air does not blow out from indoor unit 	<ul style="list-style-type: none"> De-icing protection mode is activated 	<ul style="list-style-type: none"> Normal operation in HEATING mode
<ul style="list-style-type: none"> COOLING, or HEATING does not start immediately 	<ul style="list-style-type: none"> 3-min. compressor delayed start 	<ul style="list-style-type: none"> Normal operation for these modes
<ul style="list-style-type: none"> Unit functions but does not perform sufficiently 	<ul style="list-style-type: none"> Improper temperature setting Unit capacity insufficient for load or room size 	<ul style="list-style-type: none"> Reset temperature Consult your dealer



INSTALLATION INSTRUCTIONS

ENGLISH

INSTRUCTIONS D'INSTALLATION

FRANÇAIS

INSTRUCCIONES DE INSTALACION

ESPAÑOL

ISTRUZIONI PER L'INSTALLAZIONE

ITALIANO

INSTALLATIONSANLEITUNG

DEUTSCH

INSTALLATION INSTRUCTIONS

ENGLISH

1. ACCESSOIRES SUPPLIED WITH AIR CONDITIONER
2. LOCATION OF INDOOR AND OUTDOOR UNITS
3. ELECTRICAL REQUIREMENTS
4. INSTALLATION OF THE INDOOR UNIT
5. CONDENSATE HOSE CONNECTION
6. ELECTRICAL CONNECTION BETWEEN INDOOR AND OUTDOOR UNITS
7. REFRIGERANT TUBING
8. FINAL TASKS

INSTRUCTIONS D'INSTALLATION

FRANCAIS

1. ACCESSOIRES FOURNIS AVEC LE CLIMATISEUR
2. EMBLEMES POUR L'ELEMENT INTERIEUR ET EXTERIEUR
3. ELECTRICITE
4. INSTALLATION DE L'ELEMENT INTERIEUR
5. DURIT D'EVACUATION D'EAU CONDENSEE
6. CONNEXIONS ELECTRIQUES ENTRE L'ELEMENT INTERIEUR ET EXTERIEUR
7. TUBES DE LIAISON
8. TACHES TERMINALES

INSTRUCCIONES DE INSTALACION

ESPAÑOL

1. ACCESORIOS INCLUIDOS
2. UBICACION DE LAS UNIDADES INTERIOR Y EXTERIOR
3. INSTALACION ELECTRICA
4. INSTALACION DE LA UNIDAD INTERIOR
5. DRENAJE DEL AGUA CONDENSADA
6. CONEXIONES ELECTRICAS ENTRE AMBAS UNIDADES
7. TUBERIA DE REFRIGERANTE
8. TAREAS FINALES

ISTRUZIONI PER L'INSTALLAZIONE

ITALIANO

1. ACCESSORI FORNITI INSIEME AL CONDIZIONATORE
2. UBICAZIONE DELL'UNITA INTERNA ED ESTERNA
3. ALLACCIAMENTO ELETTRICO
4. INSTALLAZIONE DELL'UNITA INTERNA
5. DRENAGGIO DELL'ACQUA DI CONDENZA
6. COLLEGAMENTI ELETTRICI TRA L'UNITA INTERNA E L'ESTERNA
7. I TUBI PER IL LIQUIDO REFRIGERANTE
8. OPERAZIONI FINALI

INSTALLATIONSANLEITUNG

DEUTSCH

1. MITGELIEFERTES ZUBEHOER ZUM KLIMAGERAET
2. STANDORT DES INNEN-UND AUSSENGERAETES
3. ELEKTRISCHE ANFORDERUNGEN
4. INSTALLATION DES INNENGERAETES
5. KONDENSWASSERABFLUSS
6. ELEKTRISCHE VERBINDUNGEN ZWISCHEN DEM INNEN-UND AUSSENGERÄT
7. KUEHLVERBINDUNGLEITUNG
8. LETZTE AUFGABEN

INSTALLATION INSTRUCTIONS

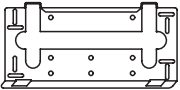




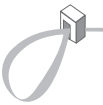


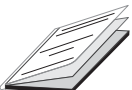
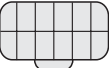
ENGLISH

- 1.ACCESSOIRES SUPPLIED WITHAIR CONDITIONER
- 2.LOCATION OF INDOOR AND OUTDOOR UNITS
- 3.ELECTRICAL REQUIREMENTS
- 4.INSTALLATION OF THE INDOOR UNIT
- 5.CONDENSATE HOSE CONNECTION
- 6.ELECTRICAL CONNECTION BETWEEN INDOOR AND OUTDOOR UNITS
- 7.REFRIGERANT TUBING
- 8.FINAL TASKS

The appliance shall not installed in the laundry

INSTALLATION INSTRUCTIONS FOR SPLIT WALL MOUNTED AIR CONDITIONER

1 ACCESSORIES SUPPLIED WITH THE AIR CONDITIONER

Shape	Name	Qty	Used for
	Mounting Plate	1	Wall mounting of the indoor unit
	Remote control with batteries	1	Operation of Unit
	Screws washers dowels	4	Wall mounting of indoor unit
	Outdoor unit drain connector	1	Outdoor unit water drain
	Mounting pads	4	Padding of outdoor unit bottom support
	Cable ties	4	Securing wires in the indoor and outdoor unit
	Cable terminals	1	Securing of grounding wire on the indoor and outdoor unit
	Twin wire cable (for heat pump units)	1	Transmitting signals
	Operation and installation instructions	2	Users and installers reference
	Air purifying filter (optional)	2	cleaning the air

2 LOCATION OF INDOOR AND OUTDOOR UNITS

Select the location considering the following:

INDOOR UNIT

1. Choose a location which will provide good air circulation. ensure that no objects or furnishings prevent air circulation.
2. Do not install the unit near a heat source or where it will be exposed to direct sunlight.
3. The location must allow convenient electrical draingage and tubing connections.
4. Installation site should provide an easy passage to outdoors.
5. The unit must be mounted on a strong wall that will withstand the generated vibrations.
6. Install the mounting plate as shown.

OUTDOOR UNIT

1. The location must allow easy servicing and provide good air circulation.
2. The unit may be suspended from a wall by a bracket (Optional) or located in a free standing position on the floor (preferably slightly elevated).
3. If the unit is suspended, ensure that the bracket is firmly connected and the wall is strong enough to withstand vibrations.
4. Unit location should not disturb neighbors with noise or exhaust air stream.
5. Place the mounting pads under the unit legs.
6. Install the outdoor unit as shown. Refer to the technical and service manual for allowed distances.
7. When the unit is installed on a wall, install the drain connector hose and drain plug as shown.

Fig.1
1.Bottom of outdoor unit
2.Drain connector

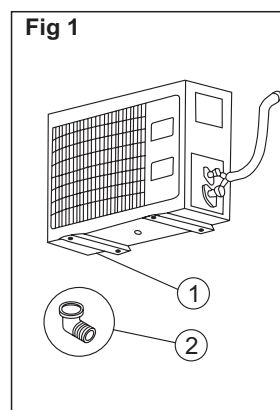


Fig.2
Drain installation
Example

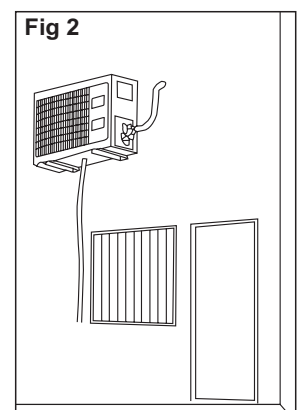


Fig.3
Length of electric cable to mains

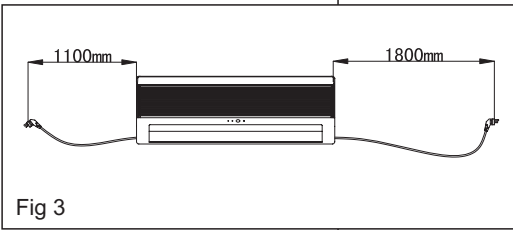


Fig 3

Fig.4
Direction of tubing

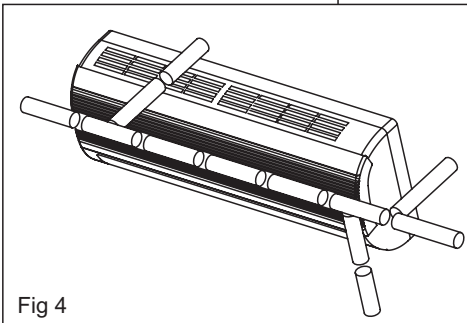


Fig 4

Fig.5

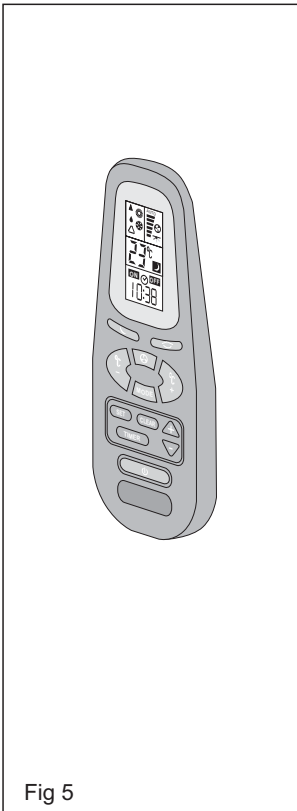


Fig 5

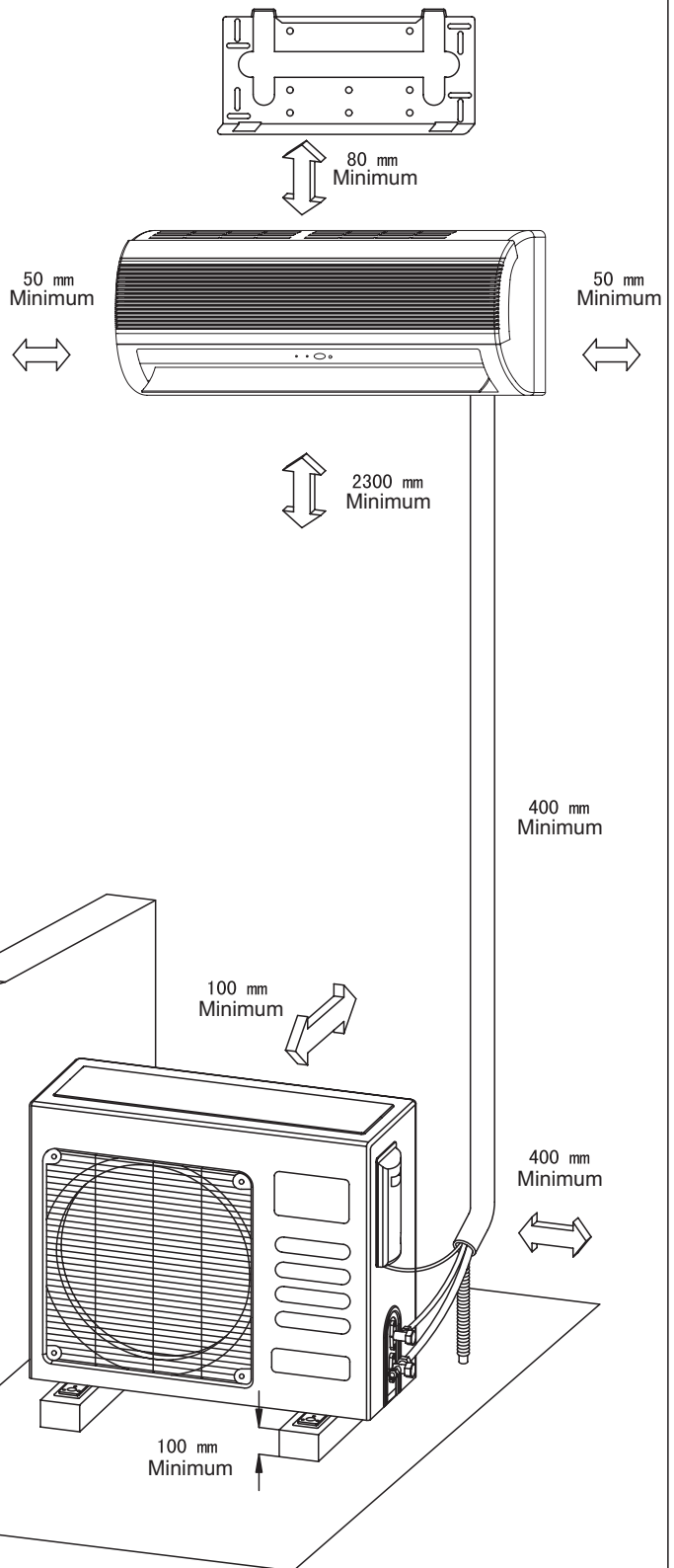


Fig.6
1.Mounting pads(x4)

Fig 6

3 ELECTRICAL REQUIREMENTS

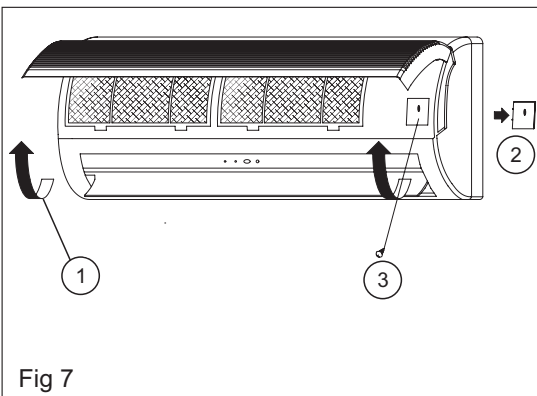
Electrical wiring and connections should be made by qualified electricians and in accordance with local electrical codes and regulations. The air conditioner units must be grounded. The air conditioner unit must be connected to an adequate power outlet from a separate branch circuit protected by a time delay circuit breaker, as specified on unit's nameplate. Voltage should not vary beyond $\pm 10\%$ of the rated voltage.

4 INSTALLATION OF THE INDOOR UNIT

Electrical wiring and connections should be made by qualified electricians and in accordance with local electrical codes and regulations. The air conditioner units must be grounded. The air conditioner unit must be connected to an adequate power outlet from a separate branch circuit protected by a time delay circuit breaker, as specified on unit's nameplate. Voltage should not vary beyond $\pm 10\%$ of the rated voltage.

Fig.7

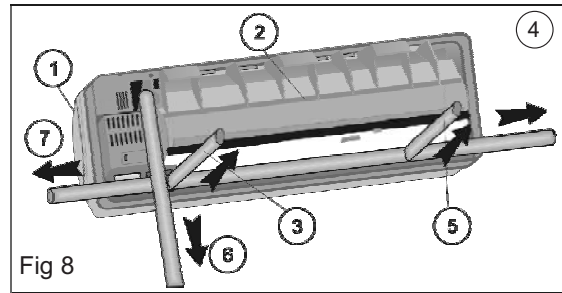
1. Lift front panel
2. Terminal cover
3. Screw



REFRIGERATION TUBE ROUTING

1. There are five possible routes for installing the refrigeration tube as shown.
2. For route (6), cut the bottom notch in the rear.
3. For routes (5) or (7), cut the side notches in the rear and in the front panel.

- Fig.8
- | | |
|----------------|------------------------|
| 1. Front | 4. Lefthand outlet |
| 2. Rear | 5. Lefthand rar outlet |
| 3. Rear outlet | 6. Bottom outlet |
| | 7. Righthand outlet |



INSTALLATION OF THE MOUNTING PLATE

1. Figure 9 shows the location of the mounting plate relative to the unit size. Refer to one of the drawings, according to your unit length (marked in square).
2. Locate the mounting plate as shown on the wall in a horizontal position, using a spirit level.
3. Mark the position of the four mounting holes on the wall and drill four holes to accommodate the dowels.
4. Mount the mounting plate on to the wall by the four screws. Ensure screws are tightened properly.

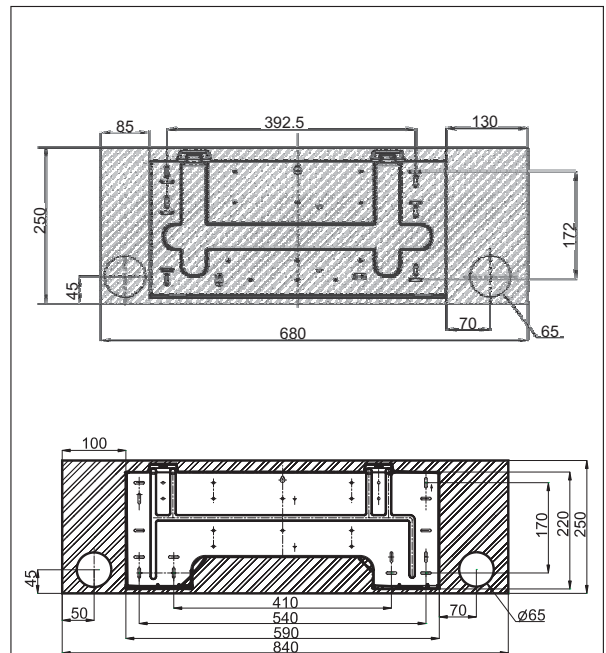


Fig 9

PENETRATION OF WALL FOR TUBING

1. Mark the location of the hole on either side of the mounting plate as shown. and drill it at a 5° downward angle, as shown.
2. The hole is drilled at an angle, to prevent condensed or rain water from penetrating back into the room
3. Trim the hole in the wall with a ϕ 70 mm commercial plastic tube.

Fig. 10

- A. OUTDOOR SIDE 1. Drill 70 mm
B. INDOOR SIDE 2. Wall

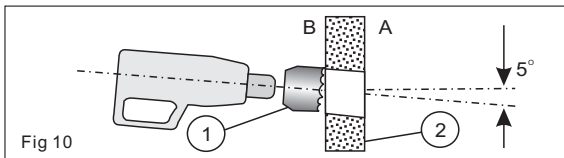


Fig 10

SUSPENDING AND RELEASING THE UNIT FROM THE MOUNTING PLATE

1. Make sure that the refrigerant tubes, electric cables and condensate water hose are well insulated with closed cell rubber based insulating tubes (6 mm thickness), are wrapped together with UV stabilized non-adhesive plastic tape, and are passed through the hole in the wall.
2. Hang the indoor unit on the two hooks that are located near the top edge of the mounting plate.
3. Press the lower part of the indoor unit against the mounting plate until the catches snap into the slots and lock the indoor unit to the mounting plate.
4. Check the installation by pulling the unit towards you.
5. To release the unit from the mounting plate, lift up the unit and then pull the unit towards you, to ensure that the hooks are locked.

Fig. 11

1. Indoor unit 3. Top hooks
2. Snap catches 4. Bottom hooks

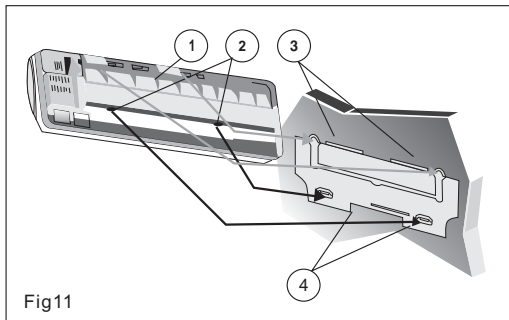


Fig11

Fig. 12

1. Mounting plate 3. Lift up
2. Lower hook 4. Pull

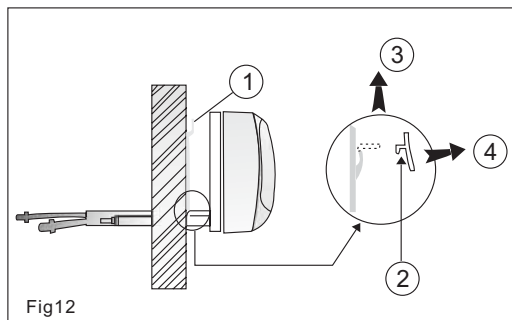


Fig12

5 CONDENSATE HOSE CONNECTION

1. Attach the condensate drain hose to the corrugated hose in the rear groove of the indoor unit.
2. Wrap the drain hose together with the refrigerant tubes and electrical cables.

Fig. 13

1. drain hose
2. Clamp
3. Downward slope

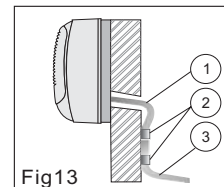


Fig13

3. Ensure that the condensate drain hose is at all points installed in a downward slope manner.

Fig. 14

1. Trap
2. U-bend
3. End immersed in water

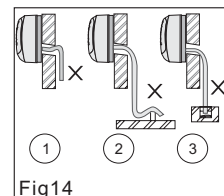


Fig14

4. When installing the drain hose avoid traps and U-bends. The end of the drain hose should not be immersed in water.

Fig. 15

1. Electric cable
2. Refrigerant tubing
3. Condensate drain hose

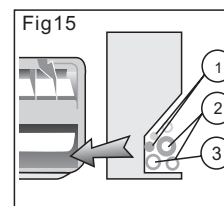


Fig15

5. For a lefthand outlet, lay the drain hose on the bottom of the indoor unit rear groove.

Fig. 16

1. Vent
2. Downward drain
3. Water drain hose

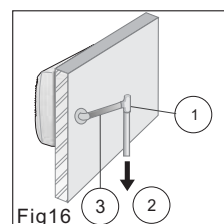


Fig16

6. When the installation location requires long horizontal sections, a vent must be provided at the top of the hose to prevent overflow of the unit drain pan.

Upon completing the installation, test the water drain by pouring at least two liters of water into the unit drainpan. Check that the water drains off.

6

ELECTRICAL CONNECTIONS BETWEEN INDOOR AND OUTDOOR UNITS

1. To connect the indoor unit to the outdoor unit use the following electrical cables, protected for outdoor use:

Cooling and heating model:

Multiple wire cable

5 wires x 1.5 mm²

5 wires x 0.5 mm² - for low voltage

(supplied with the unit).

Cooling only models:

Multiple wire cable

4 wires x 1.5 mm²

2. Prepare the multiple wire(7)cable ends for connection as shown in fig.18.

3. Connect the cable ends to the terminals of the indoor and outdoor units, as shown in fig.20.

4. Shape a loop and connect the yellow/green ground wire (2) to ground terminal screw of the indoor unit, as shown in fig.20a.

5. Prepare the twin wire cable end for connection as shown in fig.19.

6. Disconnect the resistor (5) from the indoor unit twin wire cable (3) and connect the twin wire cable (6) connector instead.

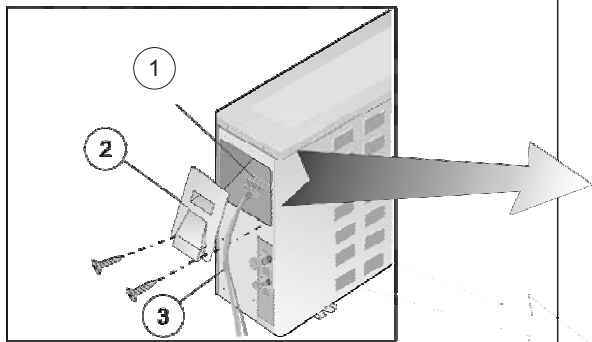
7. connect the other end of the twin wire cable (6) to the outdoor unit twin wire terminal (9).

8. Secure the multiple wire power cable with the cable clamps.

9. Fasten the twin wire cable to the power cable with cable ties.

Fig.17

1.Terminal 2.Cover 3.Cable tie



NOTES:

1. The wire color code can be selected by the installer.
2. Wires leading to outdoor unit twin wire terminal (9). must be in a separate twin wire cable, otherwise the electronic controls will be subjected to operational malfunctions.
3. For cooling only model, terminal number 5 should not be connected.

MULTIPLE WIRE POWER CABLE

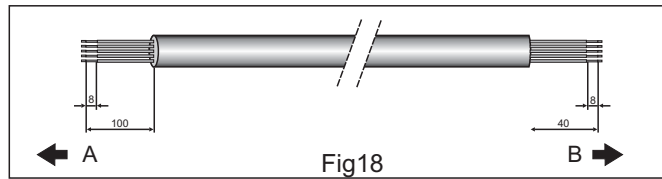


Fig.18 A.OUTDOOR B.INDOOR

TWIN-WIRE LOW VOLTAGE CABLE

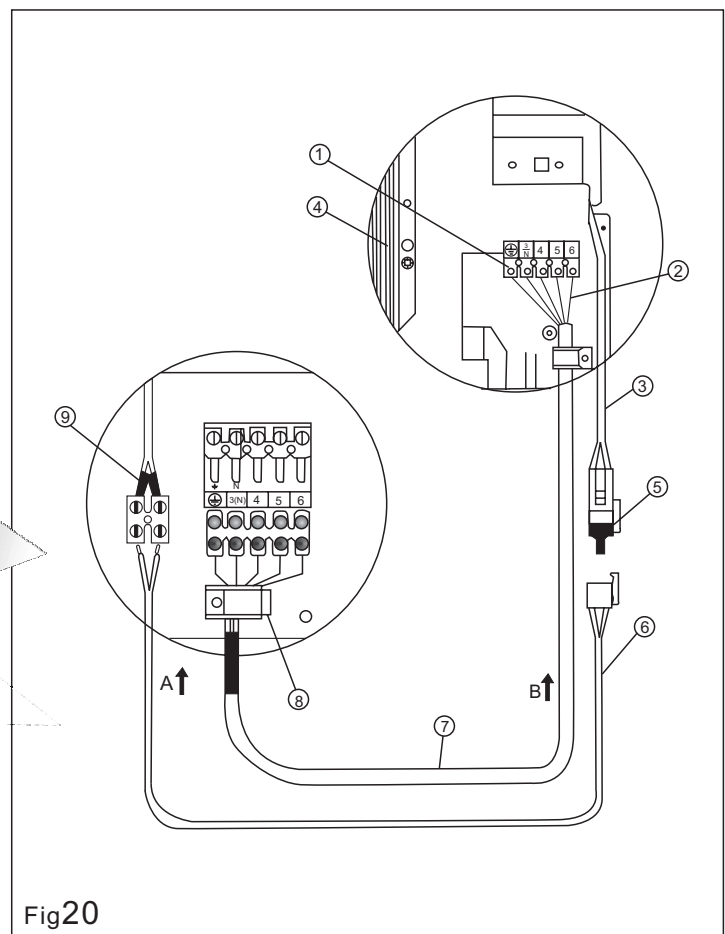
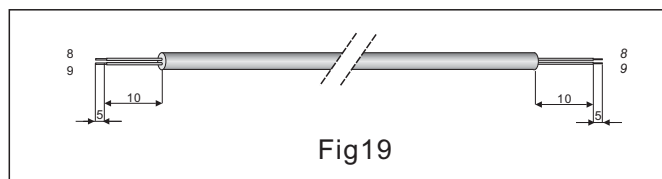


Fig.20

1.Indoor unit terminal
2.Ground wire
3.Indoor twin wire cable
4.Indoor coil

5.Resistor
6.Twin wire cable
7.Multiple wire cable
8.Cable clamp

9.Outdoor twin wire terminal
A.OUTDOOR B.INDOOR

7 REFRIGERANT TUBING

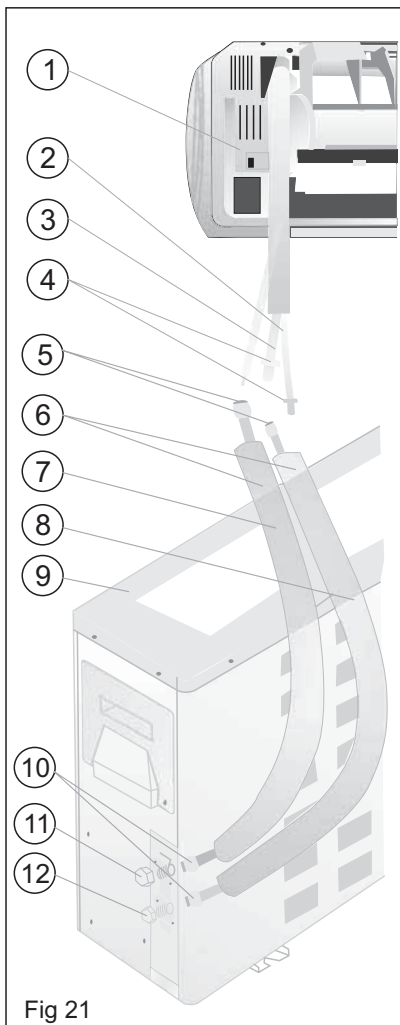
CONNECT THE INDOOR TO THE OUTDOOR UNIT

The indoor unit contains a small quantity of refrigerant. Do not unscrew the nuts from the unit until you are ready to connect the tubing. The outdoor unit is supplied with sufficient refrigerant charge. Refer to outdoor unit nameplate.

To prevent crushing, bend tubes using a bending tool.

NOTE: Use refrigeration type copper tubing only.

1. Use tubing diameter that corresponds to the tubing diameter of the indoor and outdoor units. Note that the liquid and suction tubes have different diameters. (See tube size, torque tightening table.)
2. Place flare nuts on tube ends before preparing them with a flaring tool. Use the flare nuts that are mounted on the supplied outdoor and indoor units.
3. Connect the four ends of the tubing to the indoor and outdoor units.
4. Insulate each tube separately, and their unions, with at least 6 mm. of insulation. Wrap the refrigerant tubing, drain hose and electric cables together with a vinyl tape (UV protected).



Caution!
When unscrewing the valve caps, do not stand in front of them or the spindles at any time, as the system is under pressure.

Fig.21
1.INDOOR UNIT
2.Liquid tube (small dia.)
3.Suction tube (large dia.)
4.Plugs
5.Flare nuts
6.Tubing between units
7.Suction tube
8.Liquid tube
9.OUTDOOR UNIT
10.Flare nuts
11.Suction valve (larger)
12.Liquid valve (small)

Tightening torques of unions and valve caps:

TUBE SIZE	TORQUE
Liquid line 1/4"	15-20 N.M.
Suction line 3/8"	30-35 N.M.
Suction line 1/2"	50-54 N.M.
Suction line 5/8"	75-78 N.M.

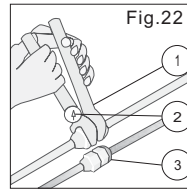


Fig.22
1.Wrench
2.Torque wrench
3.Union

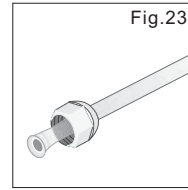


Fig.23
To prevent refrigerant leakage, coat the flared surface with refrigeration oil

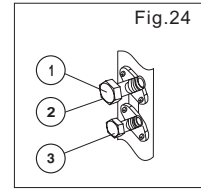


Fig.24
1.Suction valve
2.Service port
3.Liquid valve

EVACUATION OF THE REFRIGERATION TUBES AND THE INDOOR UNIT

After connecting the unions of the indoor and outdoor units, purge the air from the tubes and indoor unit as follows:

1. Connect the charging hoses with a push pin to the low and high sides of the charging set and the service port of the suction and liquid valves. Be sure to connect the end of the charging hose with the push pin to the service port.
2. Connect the center hose of the charging set to a vacuum pump
3. Turn on the power switch of the vacuum pump and make sure that the needle in the gauge moves from 0MPa(0cm Hg)to -0.1 MPa (-76cm Hg). Let the pump run for fifteen minutes.
4. Close the valves of both the low and high sides of the charging set and turn off the vacuum pump. Note that the needle in the gauge should not move after approximately five minutes.
5. Disconnect the charging hose from the vacuum pump and from the service ports of the suction and liquid valves.
6. Tighten the service port caps of both suction and liquid valves.
7. Remove the valve caps from both valves, and open them using a hexagonal Allen wrench.
8. Remount valve caps onto both of the valves.
9. Check for gas leaks from the four unions and from the valve caps. Text with electronic leak detector or with a sponge immersed in soapy water for bubbles.

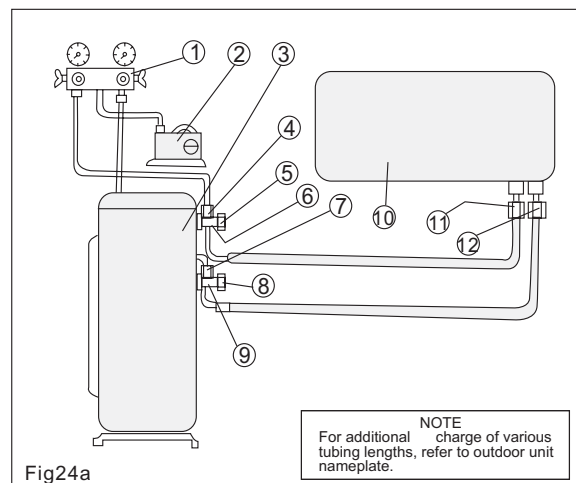


Fig.24a
1.Charging set
2.Vacuum pump
3.OUTDOOR UNIT
4.Service valve
5.Cap
6.Suction valve
7. Service valve*
8.Cap
9.Liquid valve
10.INDOOR UNIT
11.Suction flare connection
12.Liquid flare connection
*In some models only

NOTE
For additional charge of various tubing lengths, refer to outdoor unit nameplate.

8

FINAL TASKS

1. Replace all valve caps and ensure that they are tightened properly.
2. Fill gaps on the wall between hole sides and tubing with sealer.
3. Attach wiring and tubing to the wall with clamps where necessary.
4. Operate the air conditioner together with the customer and explain all functions.
5. Explain filter removal, cleaning and installation.
6. Give the operating and installation manuals to the customer.