



Service Manual

K DCI Inverter series

Indoor Units	Outdoor Units
K 25 DCI INV	ONG 25 DCI INV
K 35 DCI INV	ONG 35 DCI INV
K 35S DCI INV	ONG 35S DCI INV
K 50 DCI INV	ONG 50 DCI INV



REFRIGERANT R410A	HEAT PUMP
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DECEMBER 2004

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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Page No.	Revision No. #		Page No.	Revision No. #		Page No.	Revision No. #
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Title 0
 A 0
 i 0
 1-1 - 1-4 0
 2-1 - 2-4 0
 3-1 - 3-2 0
 4-1 - 4-2 0
 5-1 - 5-12 0
 6-1 - 6-8 0
 7-1 - 7-2 0
 8-1 - 8-2 0
 9-1 - 9-2 0
 10-1-10-2 0
 11-1-11-16 0
 12-1-12-8 1
 13-1-13-10 0
 Appendix -A 0

- Zero in this column indicates an original page.

*Due to constant improvements please note that the data on this service manual can be modified with out notice.

**Photos are not contractual.

Table of Contents

1.	INTRODUCTION	1-1
2.	PRODUCT DATA SHEET	2-1
3.	RATING CONDITIONS	3-1
4.	OUTLINE DIMENSIONS	4-1
5.	PERFORMANCE DATA	5-1
6.	PRESSURE CURVES	6-1
7.	ELECTRICAL DATA.....	7-1
8.	WIRING DIAGRAMS	8-1
9.	REFRIGERATION DIAGRAMS	9-1
10.	TUBING CONNECTIONS.....	10-1
11.	CONTROL SYSTEM	11-1
12.	TROUBLESHOOTING	12-1
13.	EXPLODED VIEWS AND SPARE PARTS LISTS.....	13-1
14.	APPENDIX A	

1. INTRODUCTION

1.1 General

The new **K DCI INVERTERS** split Cassette range comprise the following RC (heat pump) models:

- **K 25 DCI INV**
- **K 35 DCI INV**
- **K 35S DCI INV**
- **K 50 DCI INV**

The New DCI K units can be easily fitted to residential and commercial applications featuring esthetic design, compact dimensions, and low noise operation.

1.2 Main Features

The K DCI INV series benefits from the most advanced technological innovations, namely:

- DC Inverter technology
- R410a
- High COP (level A)
- Lego Concept
- Pre-Charged units up to the max' allowing tubing distance
- Networking system connectivity
- Base heater connection
- Cooling operation at outdoor temperature down to -10°C
- Heating operation at outdoor temperature down to -15°C
- Bended indoor coil with treated aluminum fins and coating for improved efficiency.
- Easy access to the interconnecting tubing and wiring connections.
- Automatic treated air sweep.
- Low indoor and outdoor noise levels.
- Easy installation and service.

1.3 Filtration

The WNG DCI INV series presents several types of air filters:

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

1.4 Control

The microprocessor indoor and outdoor controllers, and an infrared remote control, supplied as standard, provide complete operating function and programming.

Remote controllers: RC-2/3/4/5/7, RCW, µBMS

Networking system AircoNet version 4.2 and up, MIU SW version H8 and up

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

1.5 Outdoor Unit

The K DCI INV 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.

- ONG 25 DCI
- ONG 35 DCI
- ONG 50

Outdoor Unit Features:

Features	ONG 25,35, 50, DCI
Display	3 LED's
Base Heater	Optional
Outdoor Fan	Variable Speed DC Inverter
M2L cable Port	No

1.6 Tubing Connections

Flare type interconnecting tubing to be produced on site.

For further details please refer to the Installation Manual, Chapter 9.

1.7 Accessories



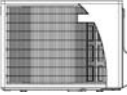
- MIU (K) MODBUS Interface Unit
- Base heater
- M2L cable

1.8 Inbox Documentation

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

1.9 Matching Table

1.9.1 R410A

OUTDOOR UNITS			INDOOR UNITS					
								
	MODEL	REF”	WNG25DCI	WNG35 DCI	K25 DCI	K35 DCI	K35S DCI	K50 DCI
	ONG 25 DCI	R410A	√		√			
	ONG 35 DCI	R410A		√		√	√	
	ONG 50 DCI	R410A						√

The above table lists outdoor units and K indoor units which can be matched together. In addition the listed outdoor units can be matched with other types of indoor units such as wall mounted, For further information please refer to the relevant Service Manual.

2. PRODUCT DATA SHEET

2.1 K25 DCI

Model Indoor Unit			K25 DCI			
Model Outdoor Unit			ONG25 DCI			
Installation Method			Flare			
Characteristics		Units	Cooling		Heating	
Capacity ⁽¹⁾		Btu/hr	8530 (5120-12970)		11600 (5120-17060)	
		W	2500 (1500 - 3800)		3400 (1500 - 5000)	
Power Input ⁽¹⁾		W	590 (420-1000)		915 (400-1500)	
COP ⁽¹⁾		W/W	4.24		3.72	
Energy Efficiency Class			A		A	
Power Supply		V/Ph/Hz	220-240V / 1Ph / 50Hz			
Rated Current		A	2.7		4.2	
Starting Current		A	10.50			
Circuit Breaker Rating		A	16			
INDOOR	Fan Type & Quantity		Centrifugal*1			
	Airflow ⁽²⁾	H/M/L	m ³ /hr	570-500-435	600-530-450	
	External Static Pressure		Min-Max	Pa		
	Sound Power Level ⁽³⁾		H/L	dB (A)		42-48
	Sound Pressure Level ⁽⁴⁾		H/L	dB (A)		32-38
	Moisture Removal			L/hr		
	Condensate Drain Tube I.D.			mm		
	Dimensions		W/H/D	mm	571	287
	Weight			kg		
	Package Dimensions		W/H/D	mm	685	415
	Units per Pallet			Units		
Stacking Height			Units			
OUTDOOR	Refrigerant Control		Electronic Expansion Valve			
	Compressor Type, Model		Single Rotary DC Inverter Panasonic 5RS102XAB			
	Fan Type & Quantity		Axial *1			
	Airflow	H	m ³ /hr	1780		
	Sound Power Level		H	dB (A)		60
	Sound Pressure Level ⁽⁴⁾		H	dB (A)		50
	Dimensions		W/H/D	mm	795	610
	Weight			kg		
	Package Dimensions		W/H/D	mm	945	655
	Units per Pallet			Units		
	Stacking Height			Units		
	Refrigerant Type			R410A		
	Refrigerant Chargeless Distance			g		
	Additional Charge Per 1 Meter			g/m		
	Connections Between Units	Liquid Line		(mm)In		
Suction Line			(mm)In			
Max. Tubing Length			m			
Max. Height Difference			m			
Operation Control Type			IR Remote Control			

- (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.

2.2 K35 DCI

Model Indoor Unit			K35 DCI			
Model Outdoor Unit			ONG35 DCI			
Installation Method			Flare			
Characteristics		Units	Cooling		Heating	
Capacity ⁽¹⁾		Btu/hr	11940 (5100 - 14960)		14620 (5100 - 18700)	
		W	3500 (1500 - 4400)		4300 (1500 - 5500)	
Power Input ⁽¹⁾		W	950 (420-1250)		1330 (400-1850)	
COP ⁽¹⁾		W/W	3.68		3.23	
Energy Efficiency Class			A		A	
Power Supply		V/Ph/Hz	220-240V / 1Ph / 50Hz			
Rated Current		A	4.1		5.6	
Starting Current		A	10.50			
Circuit Breaker Rating		A	16			
INDOOR	Fan Type & Quantity		Centrifugal*1			
	Airflow ⁽²⁾	H/M/L	m ³ /hr	580-510-435	620-560-450	
	External Static Pressure		Min-Max	Pa		
				N/A		
	Sound Power Level ⁽³⁾		H/L	dB (A)		42-48
						42-47
	Sound Pressure Level ⁽⁴⁾		H/L	dB (A)		32-38
						32-37
	Moisture Removal			L/hr		
				1.5		
	Condensate Drain Tube I.D.			mm		
				16		
Dimensions		W/H/D	mm	571	287	
					571	
Weight			kg			
			24.4			
Package Dimensions		W/H/D	mm	685	415	
					685	
Units per Pallet			Units			
			10			
Stacking Height			Units			
			5			
OUTDOOR	Refrigerant Control		Electronic Expansion Valve			
	Compressor Type, Model		Single Rotary DC Inverter Panasonic 5RS102XAB			
	Fan Type & Quantity		Axial *1			
	Airflow	H	m ³ /hr	1780		
	Sound Power Level	H	dB (A)	62		
	Sound Pressure Level ⁽⁴⁾	H	dB (A)	52		
	Dimensions	W/H/D	mm	795	610	290
	Weight		kg	40		
	Package Dimensions	W/H/D	mm	945	655	393
	Units per Pallet		Units	9		
	Stacking Height		Units	3		
	Refrigerant Type		R410A			
	Refrigerant Chargeless Distance		g	1200		
	Additional Charge Per 1 Meter		g/m	No Need		
	Connections Between Units	Liquid Line		(mm)In	(6.35) 1/4"	
Suction Line		(mm)In	(9.53) 3/8"			
Max. Tubing Length		m	20			
Max. Height Difference		m	10			
Operation Control Type			IR Remote Control			

- (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.

2.3 K35S DCI

Model Indoor Unit			K35S DCI			
Model Outdoor Unit			ONG35 DCI			
Installation Method			Flare			
Characteristics		Units	Cooling		Heating	
Capacity ⁽¹⁾		Btu/hr	11940 (5800 - 16380)		15300 (5780-19720)	
		W	3500 (1700 - 4800)		4500 (1700 - 5800)	
Power Input ⁽¹⁾		W	870 (460 - 1300)		1180 (350-1580)	
COP ⁽¹⁾		W/W	4.02		3.81	
Energy Efficiency Class			A		A	
Power Supply		V/Ph/Hz	220-240V / 1Ph / 50Hz			
Rated Current		A	4.0		5.4	
Starting Current		A	10.50			
Circuit Breaker Rating		A	16			
INDOOR	Fan Type & Quantity		Centrifugal*1			
	Airflow ⁽²⁾	H/M/L	m ³ /hr	580-510-435 620-560-450		
	External Static Pressure		Min-Max	Pa		
	Sound Power Level ⁽³⁾		H/L	dB (A)		42-49 42-48
	Sound Pressure Level ⁽⁴⁾		H/L	dB (A)		32-38 32-38
	Moisture Removal			L/hr		
	Condensate Drain Tube I.D.			mm		
	Dimensions		W/H/D	mm	571	287 571
	Weight			kg		
	Package Dimensions		W/H/D	mm	685	415 685
	Units per Pallet			Units		
	Stacking Height			Units		
OUTDOOR	Refrigerant Control		Electronic Expansion Valve			
	Compressor Type, Model		Single Rotary DC Inverter Panasonic 5RS102XAB			
	Fan Type & Quantity		Axial *1			
	Airflow	H	m ³ /hr	1780		
	Sound Power Level		H	dB (A)		62 62
	Sound Pressure Level ⁽⁴⁾		H	dB (A)		52 52
	Dimensions		W/H/D	mm	795	610 290
	Weight			kg		
	Package Dimensions		W/H/D	mm	945	655 393
	Units per Pallet			Units		
	Stacking Height			Units		
	Refrigerant Type			R410A		
	Refrigerant Chargeless Distance			g		
	Additional Charge Per 1 Meter			g/m		
	Connections Between Units	Liquid Line		(mm)In	(6.35) 1/4"	
Suction Line		(mm)In	(9.53) 3/8"			
Max. Tubing Length			m			
Max. Height Difference			m			
Operation Control Type			IR Remote Control			

- (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.

2.4 K50 DCI

Model Indoor Unit			K50 DCI			
Model Outdoor Unit			ONG35 DCI			
Installation Method			Flare			
Characteristics		Units	Cooling		Heating	
Capacity ⁽¹⁾		Btu/hr	17060 (4610 – 21840)		21500 (4610 - 25590)	
		W	5000 (1350 – 6400)		6300 (1350 – 7500)	
Power Input ⁽¹⁾		W	1550 (530 – 2000)		1740 (350 – 2080)	
COP ⁽¹⁾		W/W	3.23		3.62	
Energy Efficiency Class			A		A	
Power Supply		V/Ph/Hz	220-240V / 1Ph / 50Hz			
Rated Current		A	7.1		8.0	
Starting Current		A	10.50			
Circuit Breaker Rating		A	16			
INDOOR	Fan Type & Quantity		Centrifugal*1			
	Airflow ⁽²⁾	H/M/L	m ³ /hr	730-630-510		
	External Static Pressure	Min-Max	Pa	N/A		
	Sound Power Level ⁽³⁾	H/M/L	dB (A)	46 – 55 - 59		
	Sound Pressure Level ⁽⁴⁾	H/M/L	dB (A)	36 – 44 - 48.5		
	Moisture Removal		L/hr	2		
	Condensate Drain Tube I.D.		mm	16		
	Dimensions	W/H/D	mm	571	287	571
	Weight		kg	28		
	Package Dimensions	W/H/D	mm	685	415	685
	Units per Pallet		Units	10		
Stacking Height		Units	5			
OUTDOOR	Refrigerant Control		Electronic Expansion Valve			
	Compressor Type, Model		SCROLL Panasonic 5CS130XCC03			
	Fan Type & Quantity		Axial *1			
	Airflow	H	m ³ /hr	2160		
	Sound Power Level	H	dB (A)	62	63	
	Sound Pressure Level ⁽⁴⁾	H	dB (A)	52	53	
	Dimensions	W/H/D	mm	795	610	290
	Weight		kg	43		
	Package Dimensions	W/H/D	mm	945	655	393
	Units per Pallet		Units	9		
	Stacking Height		Units	3		
	Refrigerant Type		R410A			
	Refrigerant Chargeless Distance		g			
	Additional Charge Per 1 Meter		g/m			
Connections Between Units	Liquid Line	(mm)In	(6.35) 1/4"			
	Suction Line	(mm)In	(12.7) 1/2"			
	Max. Tubing Length	m	30			
	Max. Height Difference	m	10			
Operation Control Type		IR Remote Control				

- (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

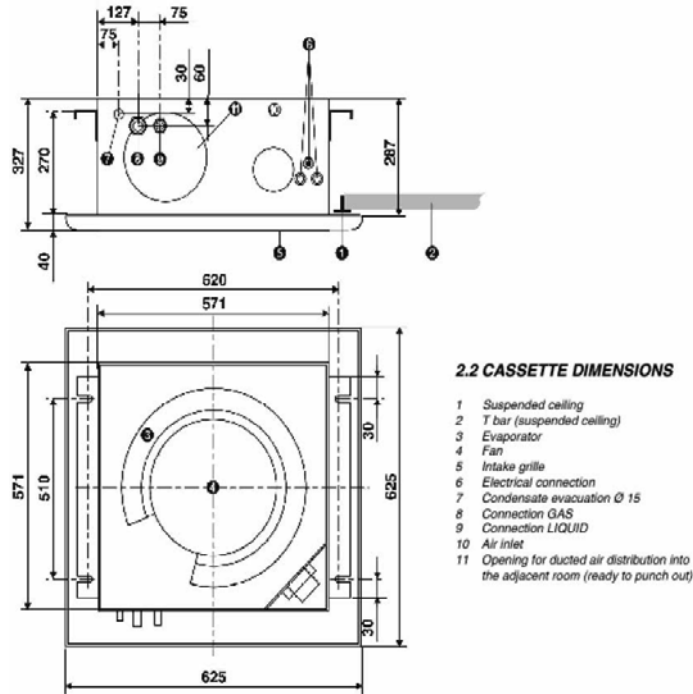
Outdoor: 7°C DB 6°C WB

3.1 Operating Limits

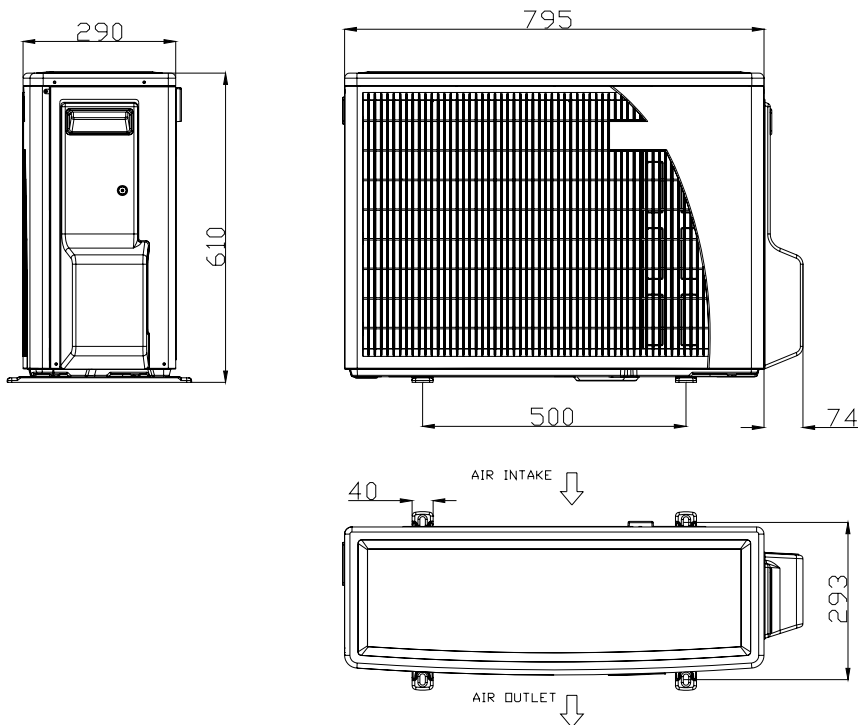
		Indoor	Outdoor
Cooling	Upper limit	32°C DB 23°C WB	46°C DB
	Lower limit	21°C DB 15°C WB	-10°C DB
Heating	Upper limit	27°C DB	24°C DB 18°C WB
	Lower limit	10°C DB	-15°C DB -16°C WB
Voltage	1PH	198 – 264 V	
	3PH	N/A	

4. OUTLINE DIMENSIONS

4.1 Indoor Unit: K 25, 35, 35S, 50 DCI



4.2 Outdoor Unit: ONG 25, 35, 35S, 50 DCI



5. PERFORMANCE DATA

5.1 K25 DCI

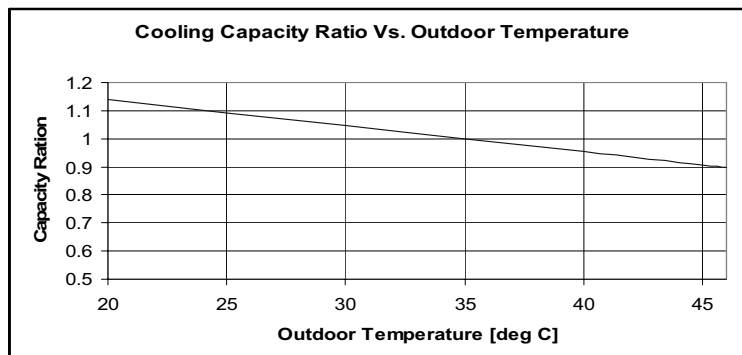
5.1.1 Cooling Capacity (kW) - Run Mode

OD COIL ENTERING AIR DB TEMPERATURE [C°]		ID COIL ENTERING AIR DB/WB TEMPERATURE [°C]				
		22/15	24/17	27/19	29/21	32/23
-10 - 20 (protection range)	TC	80 - 110 % of nominal				
	SC	80 - 105 % of nominal				
	PI	25 - 50 % of nominal				
25	TC	2.42	2.57	2.73	2.89	3.05
	SC	2.09	2.13	2.18	2.22	2.26
	PI	0.46	0.47	0.48	0.49	0.50
30	TC	2.30	2.46	2.62	2.77	2.93
	SC	2.04	2.08	2.12	2.17	2.21
	PI	0.52	0.53	0.54	0.54	0.55
35	TC	2.18	2.34	2.50	2.66	2.82
	SC	1.98	2.03	2.07	2.11	2.16
	PI	0.57	0.58	0.59	0.60	0.61
40	TC	2.07	2.23	2.38	2.54	2.70
	SC	1.93	1.97	2.02	2.06	2.10
	PI	0.63	0.64	0.64	0.65	0.66
46	TC	1.93	2.09	2.24	2.40	2.56
	SC	1.87	1.91	1.95	2.00	2.04
	PI	0.69	0.70	0.71	0.72	0.73

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

5.1.2 Capacity Correction Factors



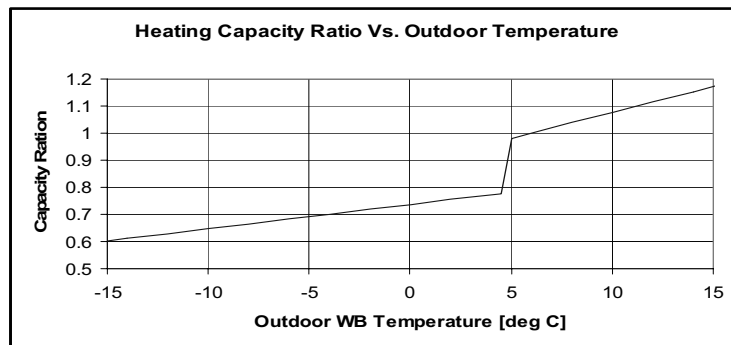
5.1.3 Heating Capacity (kW) - Run Mode

OD COIL ENTERING AIR DB/ WB TEMPERATURE [°C]	DATA	ID COIL ENTERING AIR DB TEMPERATURE [°C]		
		15	20	25
-15/-16	TC	2.16	2.01	1.86
	PI	0.55	0.60	0.66
-10/-12	TC	2.41	2.26	2.11
	PI	0.66	0.72	0.77
-7/-8	TC	2.59	2.44	2.29
	PI	0.75	0.80	0.86
-1/-2	TC	2.68	2.53	2.38
	PI	0.79	0.84	0.90
2/1	TC	2.75	2.59	2.44
	PI	0.82	0.87	0.93
7/6	TC	3.55	3.40	3.25
	PI	0.86	0.92	0.97
10/9	TC	3.75	3.60	3.44
	PI	0.91	0.97	1.02
15/12	TC	3.94	3.79	3.64
	PI	0.96	1.02	1.07
15-24 (Protection Range)	TC	85 - 105 % of nominal		
	PI	80 - 120 % of nominal		

LEGEND

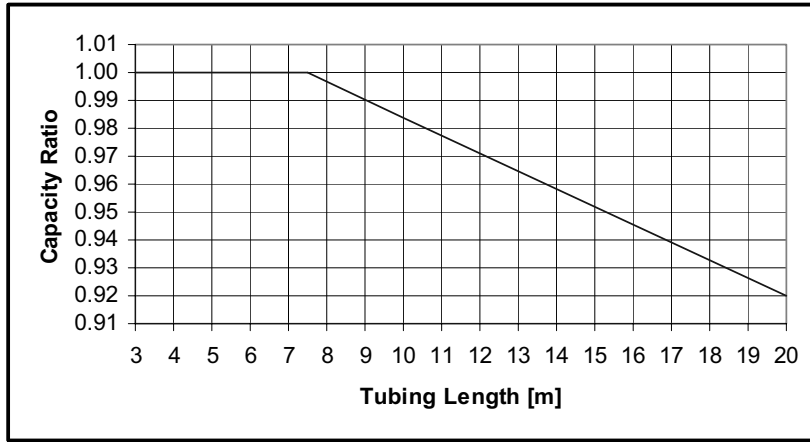
- TC – Total Cooling Capacity, kW
- PI – Power Input, kW
- WB – Wet Bulb Temp., (°C)
- DB – Dry Bulb Temp., (°C)
- ID – Indoor
- OD – Outdoor

5.1.4 Capacity Correction Factors

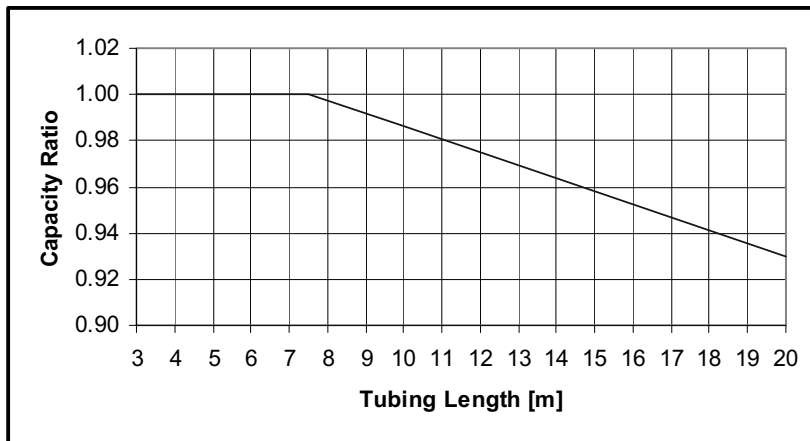


5.2 Capacity Correction Factor Due to Tubing Length

5.2.1 Cooling



5.2.2 Heating



5.3 K35 DCI

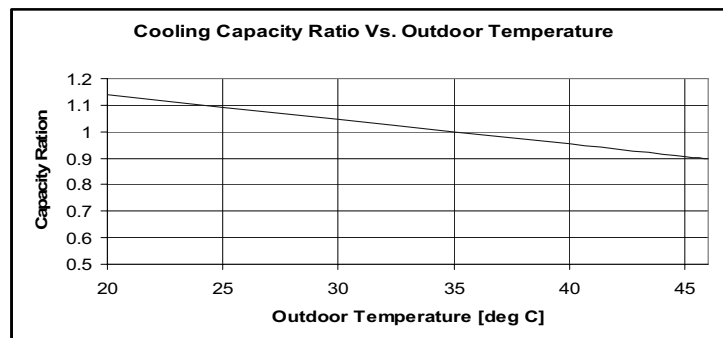
5.3.1 Cooling Capacity (kW) - Run Mode

OD COIL ENTERING AIR DB TEMPERATURE [°C]	DATA	ID COIL ENTERING AIR DB/WB TEMPERATURE [°C]				
		22/15	24/17	27/19	29/21	32/23
-10 - 20 (protection range)	TC	80 - 110 % of nominal				
	SC	80 - 105 % of nominal				
	PI	25 - 50 % of nominal				
25	TC	3.38	3.60	3.83	4.05	4.27
	SC	2.65	2.70	2.75	2.81	2.86
	PI	0.75	0.76	0.78	0.79	0.80
30	TC	3.22	3.44	3.66	3.88	4.11
	SC	2.58	2.63	2.69	2.74	2.79
	PI	0.83	0.85	0.86	0.88	0.89
35	TC	3.06	3.28	3.50	3.72	3.94
	SC	2.51	2.57	2.62	2.67	2.73
	PI	0.92	0.94	0.95	0.96	0.98
40	TC	2.89	3.12	3.34	3.56	3.78
	SC	2.45	2.50	2.55	2.61	2.66
	PI	1.01	1.02	1.04	1.05	1.07
46	TC	2.70	2.92	3.14	3.36	3.58
	SC	2.37	2.42	2.47	2.53	2.58
	PI	1.11	1.13	1.14	1.16	1.17

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

5.3.2 Capacity Correction Factors



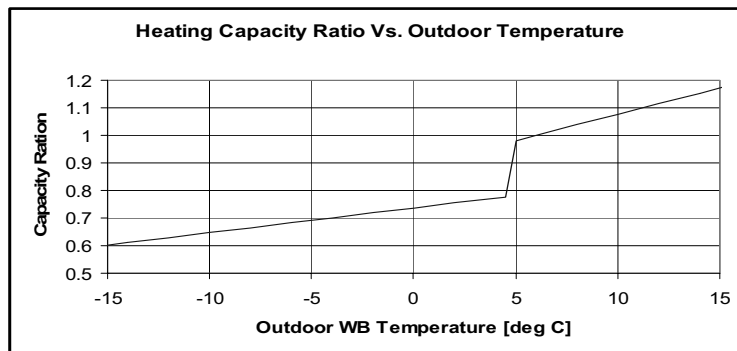
5.3.3 Heating Capacity (kW) - Run Mode

OD COIL ENTERING AIR DB/ WB TEMPERATURE [°C]	DATA	ID COIL ENTERING AIR DB TEMPERATURE [°C]		
		15	20	25
-15/-16	TC	2.74	2.55	2.35
	PI	0.80	0.88	0.96
-10/-12	TC	3.05	2.86	2.66
	PI	0.96	1.04	1.12
-7/-8	TC	3.28	3.09	2.90
	PI	1.09	1.17	1.25
-1/-2	TC	3.39	3.20	3.01
	PI	1.15	1.23	1.31
2/1	TC	3.47	3.28	3.09
	PI	1.19	1.27	1.35
7/6	TC	4.49	4.30	4.11
	PI	1.25	1.33	1.41
10/9	TC	4.74	4.55	4.36
	PI	1.32	1.40	1.49
15/12	TC	4.99	4.80	4.60
	PI	1.40	1.48	1.56
15-24 (Protection Range)	TC	85 - 105 % of nominal		
	PI	80 - 120 % of nominal		

LEGEND

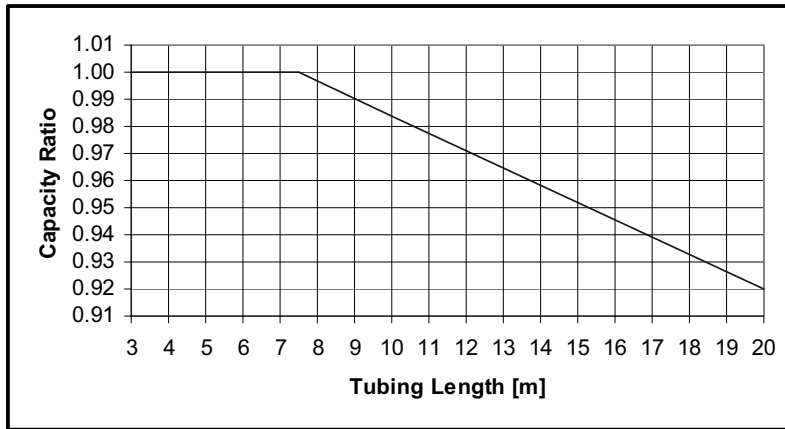
- TC – Total Cooling Capacity, kW
- PI – Power Input, kW
- WB – Wet Bulb Temp., (°C)
- DB – Dry Bulb Temp., (°C)
- ID – Indoor
- OD – Outdoor

5.3.4 Capacity Correction Factors

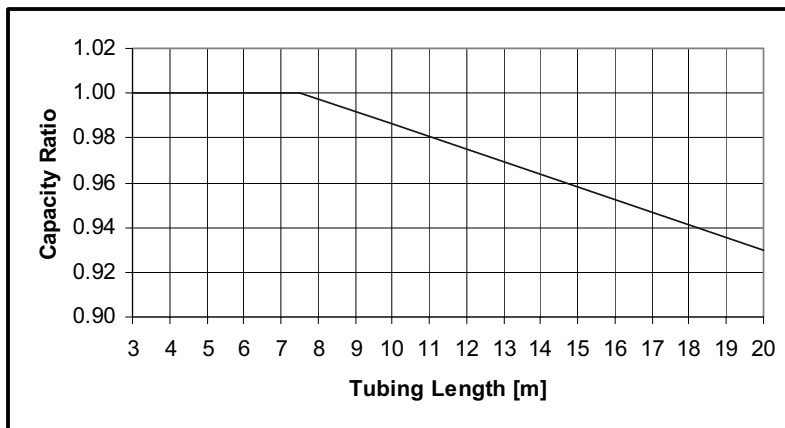


5.4 Capacity Correction Factor Due to Tubing Length

5.4.1 Cooling



5.4.2 Heating



5.5 K35S DCI

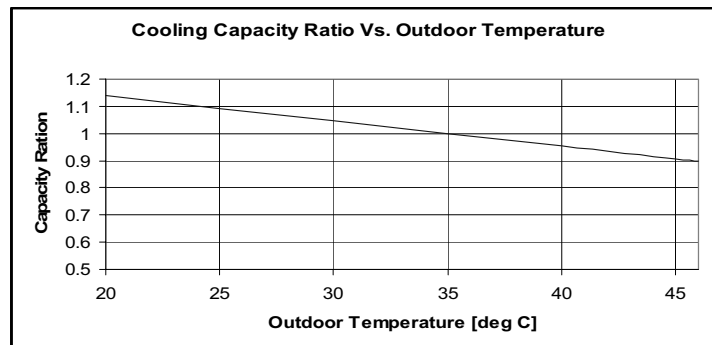
5.5.1 Cooling Capacity (kW) - Run Mode

OD COIL ENTERING AIR DB TEMPERATURE [°C]	DATA	ID COIL ENTERING AIR DB/WB TEMPERATURE [°C]				
		22/15	24/17	27/19	29/21	32/23
-10 - 20 (protection range)	TC	80 - 110 % of nominal				
	SC	80 - 105 % of nominal				
	PI	25 - 50 % of nominal				
25	TC	3.38	3.60	3.83	4.05	4.27
	SC	2.65	2.70	2.75	2.81	2.86
	PI	0.68	0.70	0.71	0.72	0.74
30	TC	3.22	3.44	3.66	3.88	4.11
	SC	2.58	2.63	2.69	2.74	2.79
	PI	0.76	0.78	0.79	0.80	0.82
35	TC	3.06	3.28	3.50	3.72	3.94
	SC	2.51	2.57	2.62	2.67	2.73
	PI	0.84	0.86	0.87	0.88	0.90
40	TC	2.89	3.12	3.34	3.56	3.78
	SC	2.45	2.50	2.55	2.61	2.66
	PI	0.92	0.94	0.95	0.96	0.98
46	TC	2.70	2.92	3.14	3.36	3.58
	SC	2.37	2.42	2.47	2.53	2.58
	PI	1.02	1.03	1.05	1.06	1.07

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

5.5.2 Capacity Correction Factors



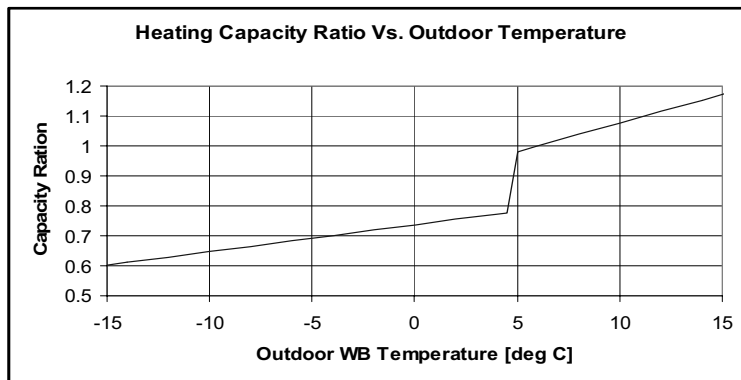
5.5.3 Heating Capacity (kW) - Run Mode

OD COIL ENTERING AIR DB/ WB TEMPERATURE [°C]	DATA	ID COIL ENTERING AIR DB TEMPERATURE [°C]		
		15	20	25
-15/-16	TC	2.86	2.66	2.46
	PI	0.71	0.78	0.85
-10/-12	TC	3.19	2.99	2.79
	PI	0.85	0.93	1.00
-7/-8	TC	3.43	3.23	3.03
	PI	0.96	1.03	1.11
-1/-2	TC	3.55	3.35	3.15
	PI	1.02	1.09	1.16
2/1	TC	3.63	3.43	3.23
	PI	1.05	1.13	1.20
7/6	TC	4.70	4.50	4.30
	PI	1.11	1.18	1.25
10/9	TC	4.96	4.76	4.56
	PI	1.17	1.25	1.32
15/12	TC	5.22	5.02	4.82
	PI	1.24	1.31	1.38
15-24 (Protection Range)	TC	85 - 105 % of nominal		
	PI	80 - 120 % of nominal		

LEGEND

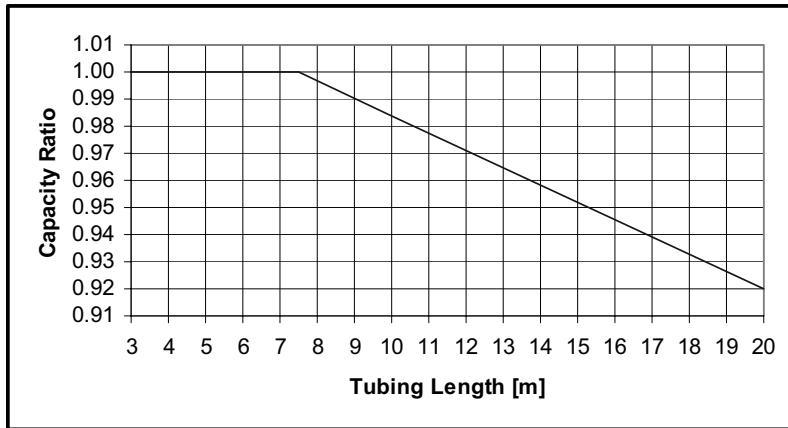
- TC – Total Cooling Capacity, kW
- PI – Power Input, kW
- WB – Wet Bulb Temp., (°C)
- DB – Dry Bulb Temp., (°C)
- ID – Indoor
- OD – Outdoor

5.5.4 Capacity Correction Factors

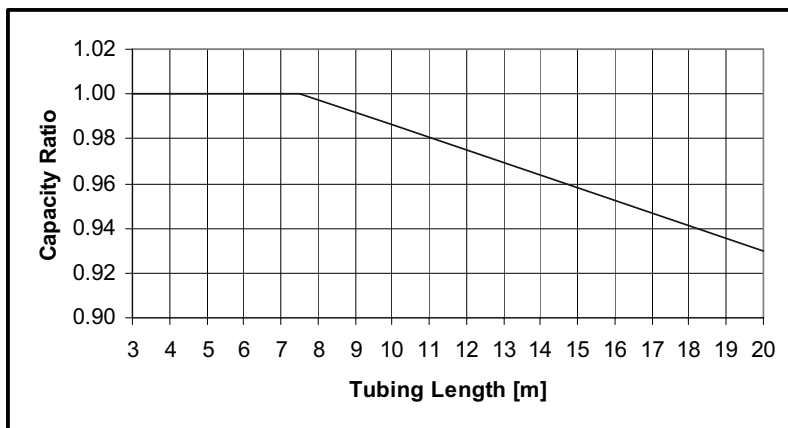


15.6 Capacity Correction Factor Due to Tubing Length

5.6.1 Cooling



5.6.2 Heating



5.7 K50 DCI

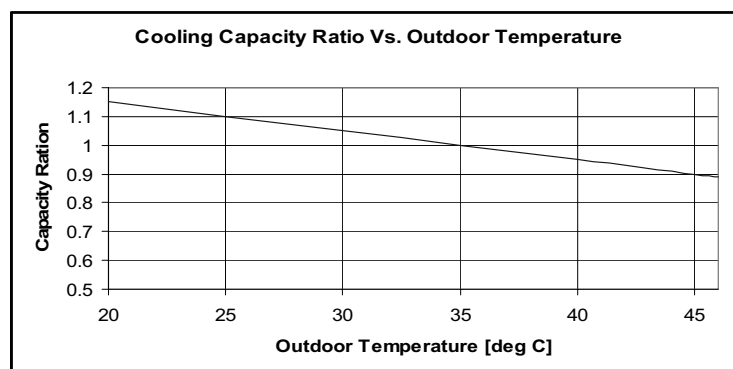
5.7.1 Cooling Capacity (kW) - Run Mode

OD COIL ENTERING AIR DB TEMPERATURE [°C]		DATA	ID COIL ENTERING AIR DB/WB TEMPERATURE [°C]				
			22/15	24/17	27/19	29/21	32/23
-10 - 20 (protection range)	TC	80 - 110 % of nominal					
	SC	80 - 105 % of nominal					
	PI	25 - 50 % of nominal					
25	TC	4.85	5.13	5.42	5.70	5.99	
	SC	3.30	3.35	3.40	3.45	3.50	
	PI	1.20	1.23	1.26	1.28	1.31	
30	TC	4.60	4.88	5.17	5.45	5.74	
	SC	3.17	3.22	3.27	3.32	3.37	
	PI	1.37	1.40	1.42	1.45	1.48	
35	TC	4.35	4.63	4.92	5.20	5.49	
	SC	3.04	3.09	3.14	3.19	3.24	
	PI	1.54	1.56	1.59	1.62	1.64	
40	TC	4.10	4.39	4.67	4.96	5.24	
	SC	2.91	2.96	3.01	3.06	3.11	
	PI	1.70	1.73	1.76	1.78	1.81	
46	TC	3.80	4.09	4.37	4.66	4.94	
	SC	2.76	2.81	2.86	2.91	2.95	
	PI	1.90	1.93	1.96	1.98	2.01	

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

5.7.2 Capacity Correction Factors



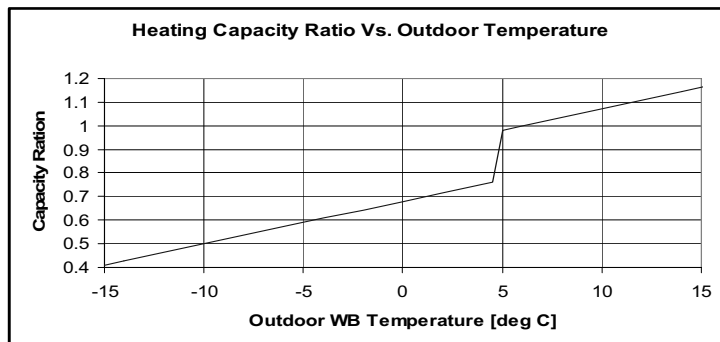
5.7.3 Heating Capacity (kW) - Run Mode

OD COIL ENTERING AIR DB/WB TEMPERATURE [°C]	DATA	ID COIL ENTERING AIR DB TEMPERATURE [°C]		
		15	20	25
-15/-16	TC	2.66	2.28	1.90
	PI	1.15	1.23	1.31
-10/-12	TC	3.52	3.13	2.75
	PI	1.30	1.38	1.46
-7/-8	TC	4.16	3.77	3.39
	PI	1.41	1.49	1.57
-1/-2	TC	4.47	4.09	3.71
	PI	1.46	1.55	1.63
2/1	TC	4.69	4.30	3.92
	PI	1.50	1.58	1.66
7/6	TC	6.24	5.85	5.47
	PI	1.56	1.64	1.72
10/9	TC	6.56	6.18	5.79
	PI	1.59	1.67	1.75
15/12	TC	6.88	6.50	6.12
	PI	1.62	1.70	1.78
15-24 (Protection Range)	TC	85 - 105 % of nominal		
	PI	80 - 120 % of nominal		

LEGEND

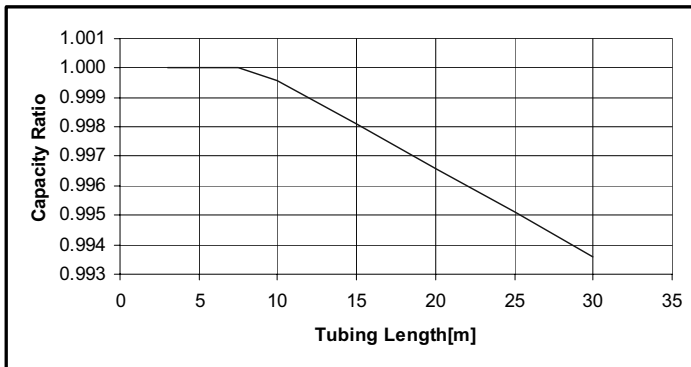
- TC – Total Cooling Capacity, kW
- PI – Power Input, kW
- WB – Wet Bulb Temp., (°C)
- DB – Dry Bulb Temp., (°C)
- ID – Indoor
- OD – Outdoor

5.7.4 Capacity Correction Factors

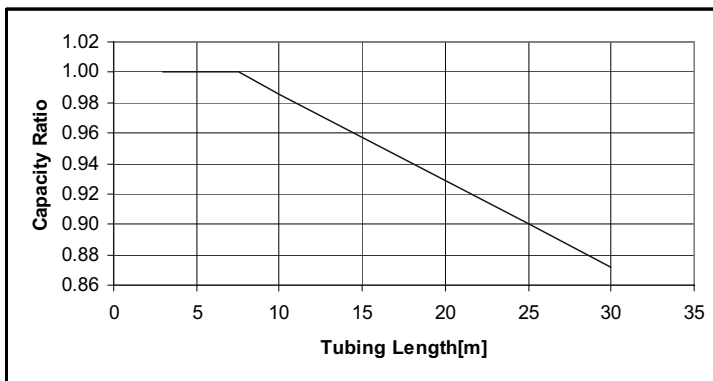


5.8 Capacity Correction Factor Due to Tubing Length

5.8.1 Cooling



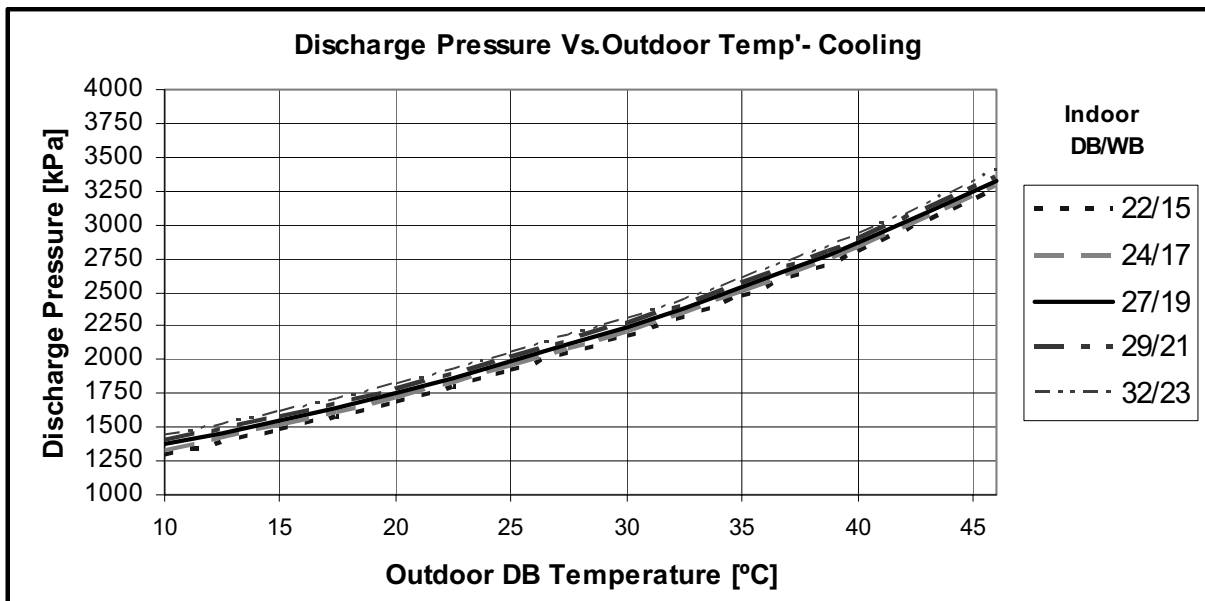
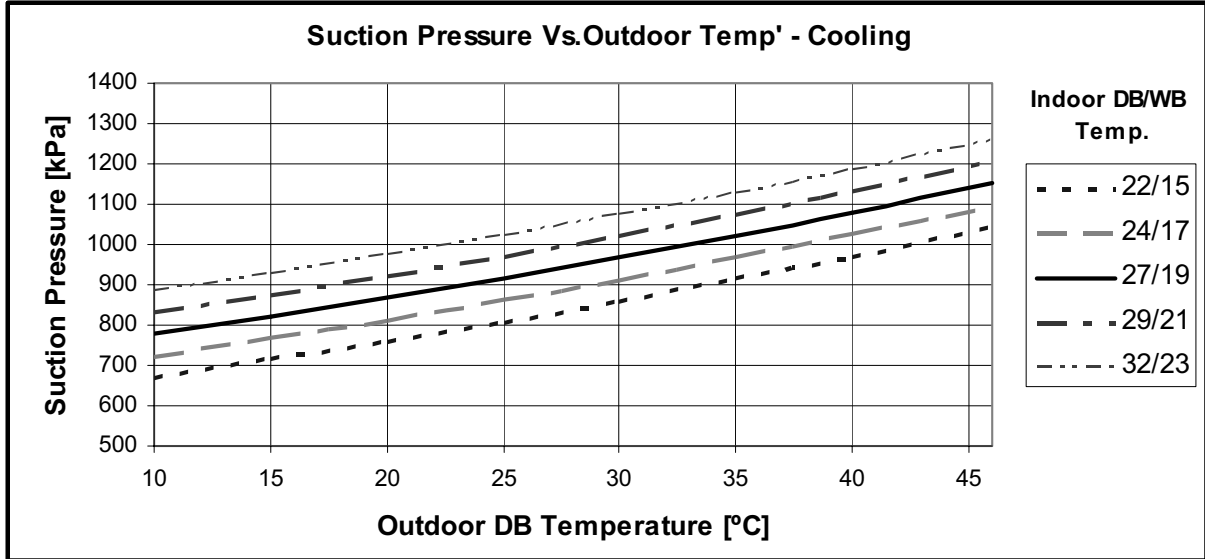
5.8.2 Heating



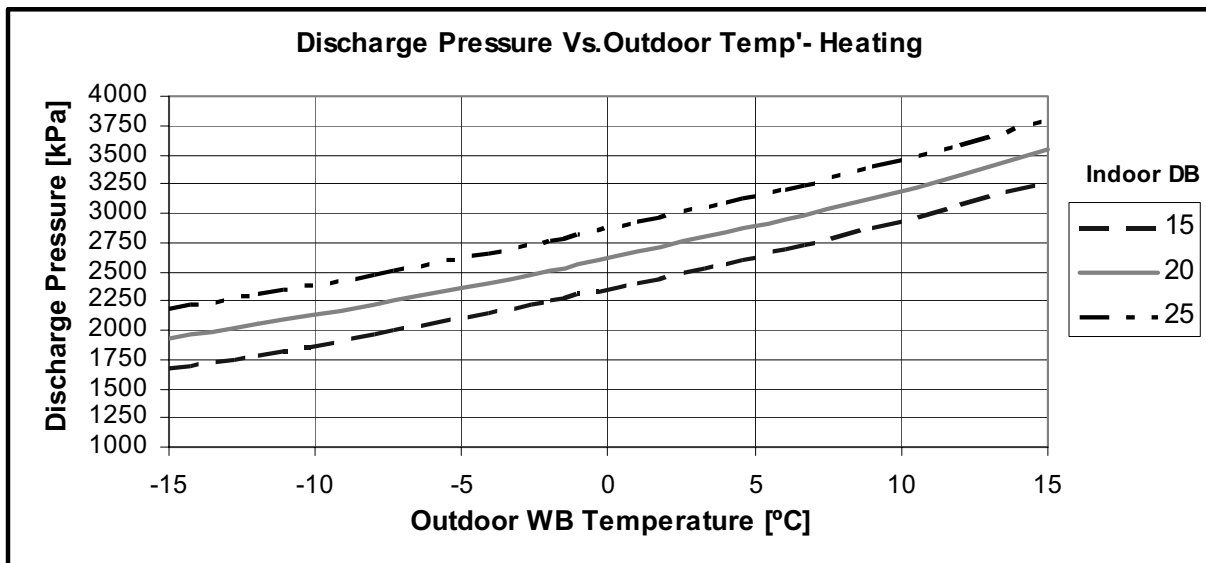
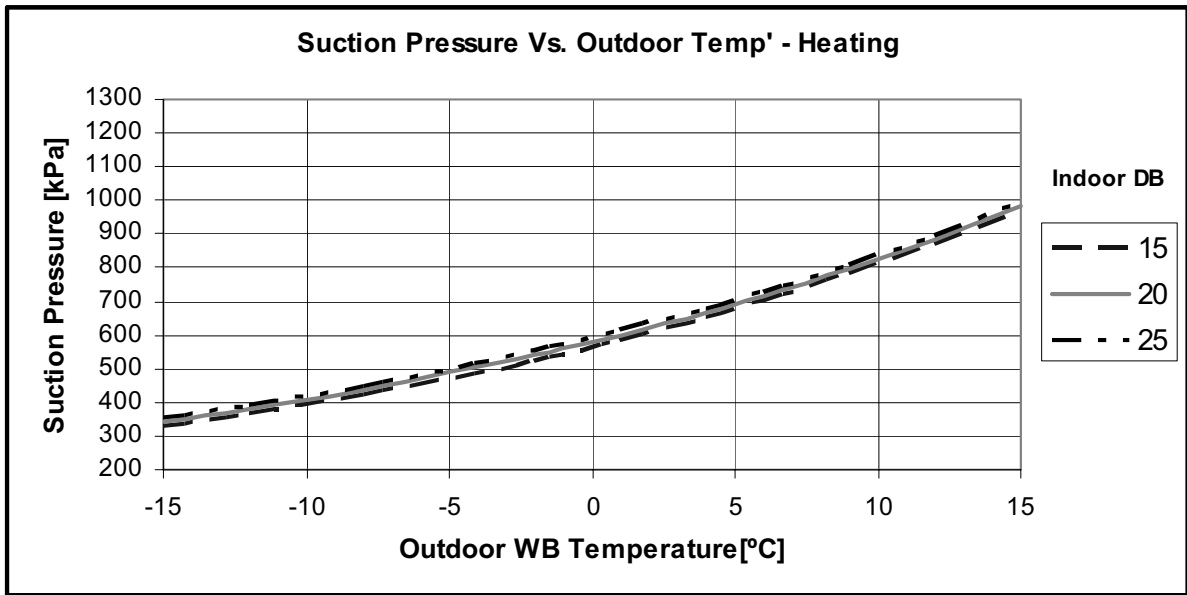
6. PRESSURE CURVES

6.1 Model: K 25 DCI

6.1.1 Cooling – Test Mode

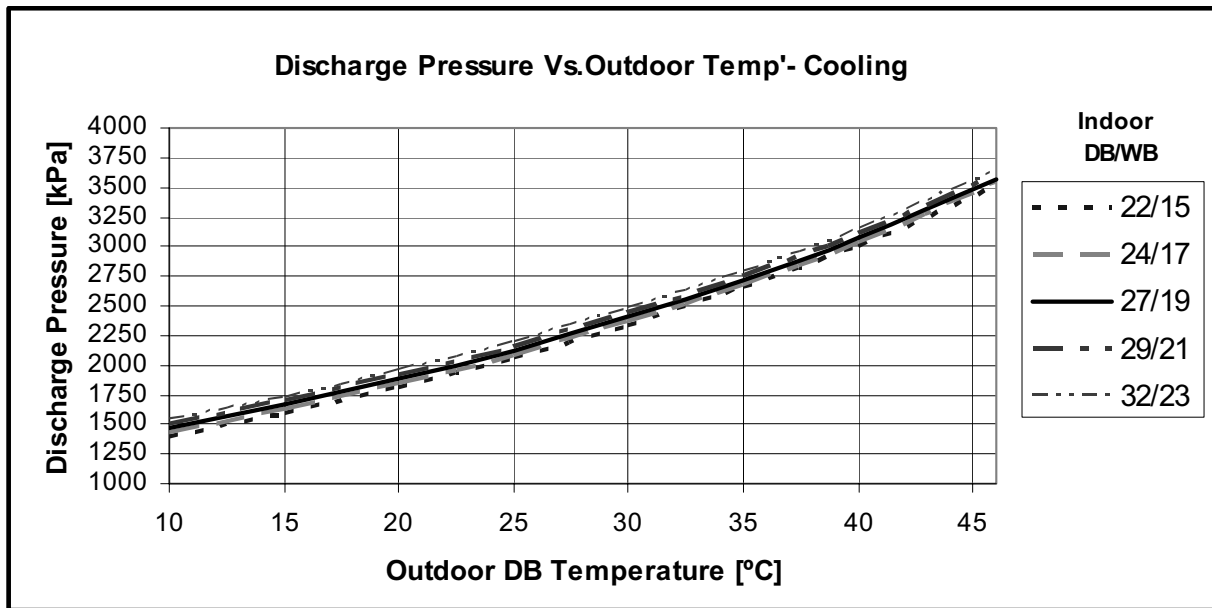
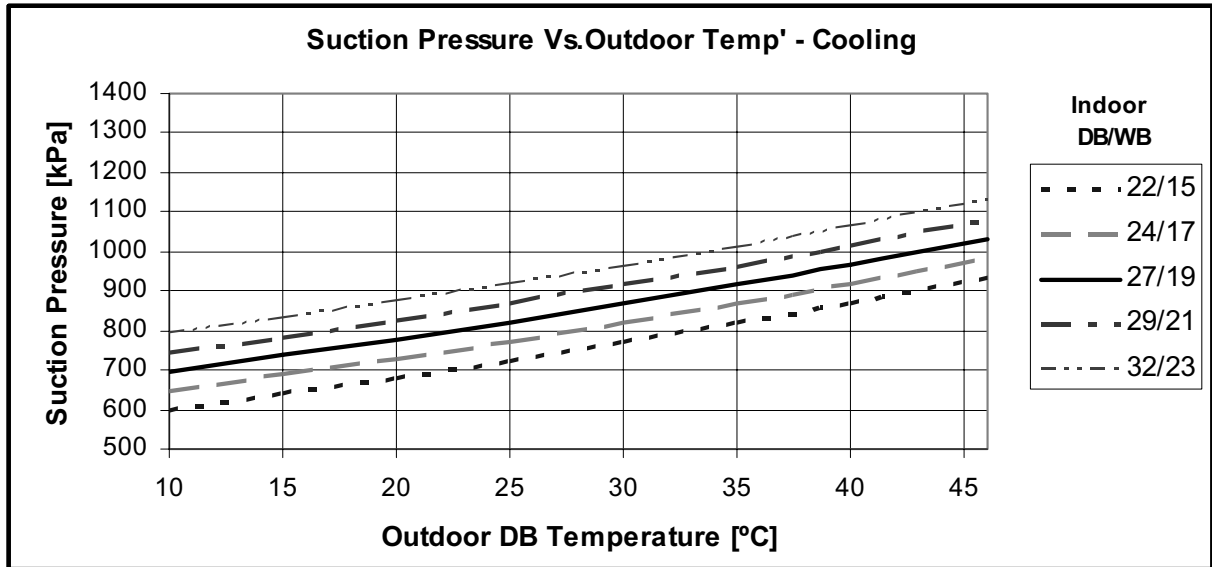


6.1.2 Heading – Test Mode

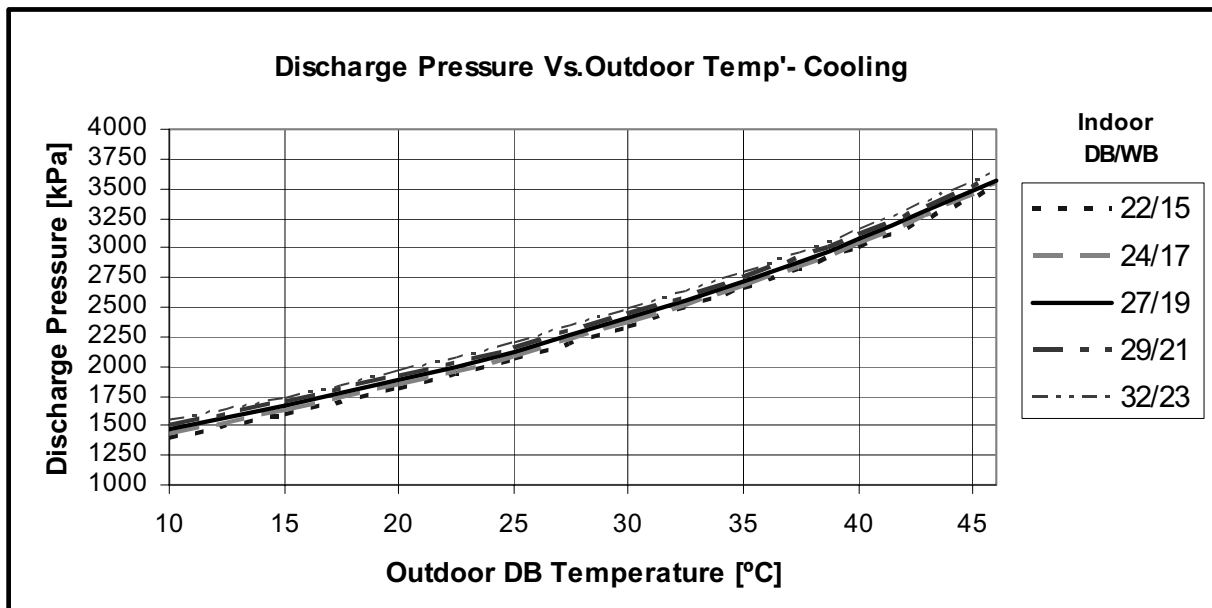
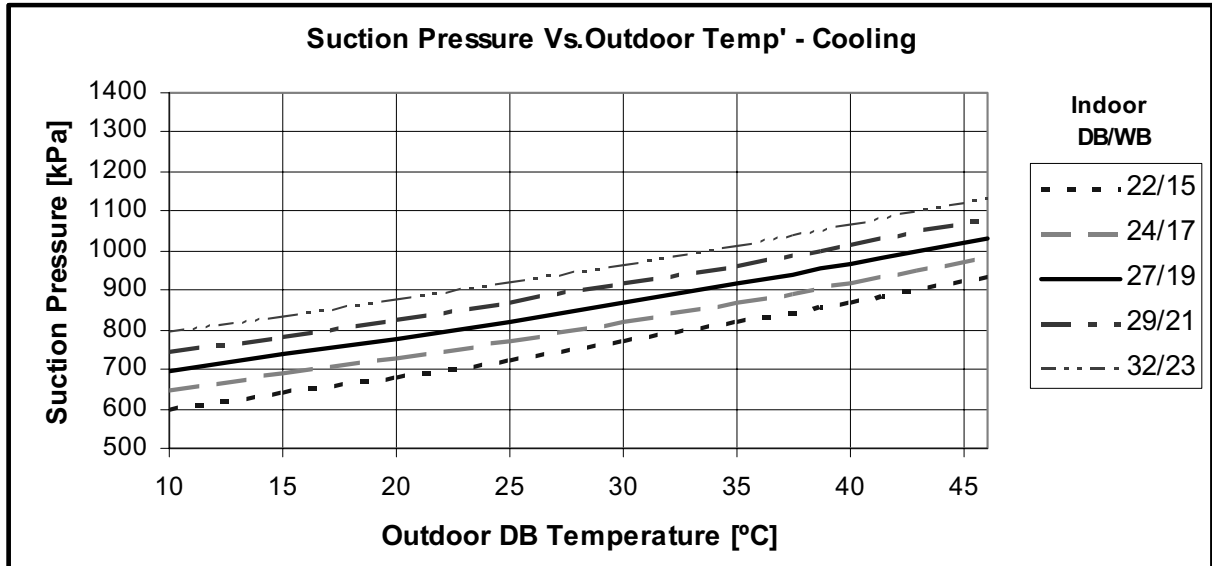


6.2 Model: K 35 DCI

6.2.1 Cooling – Test Mode

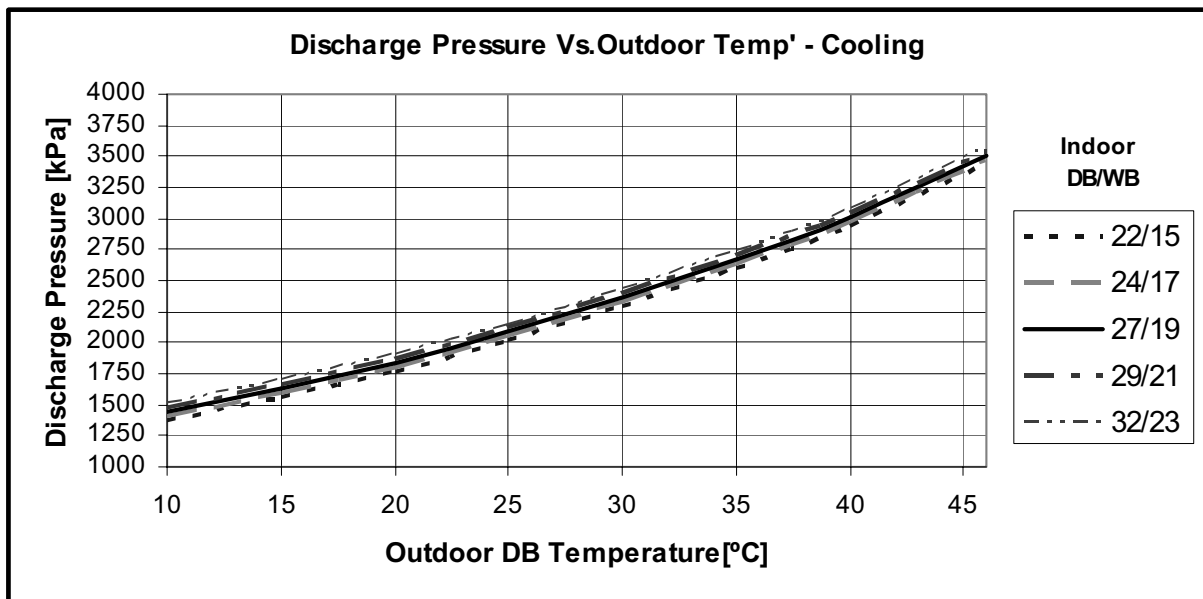
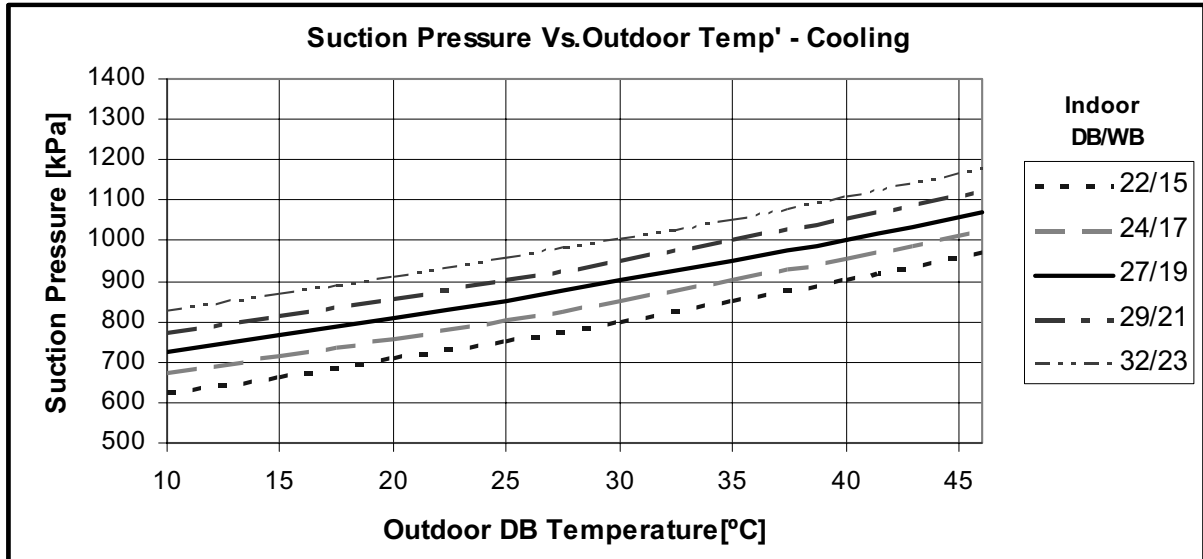


6.2.2 Heating – Test Mode

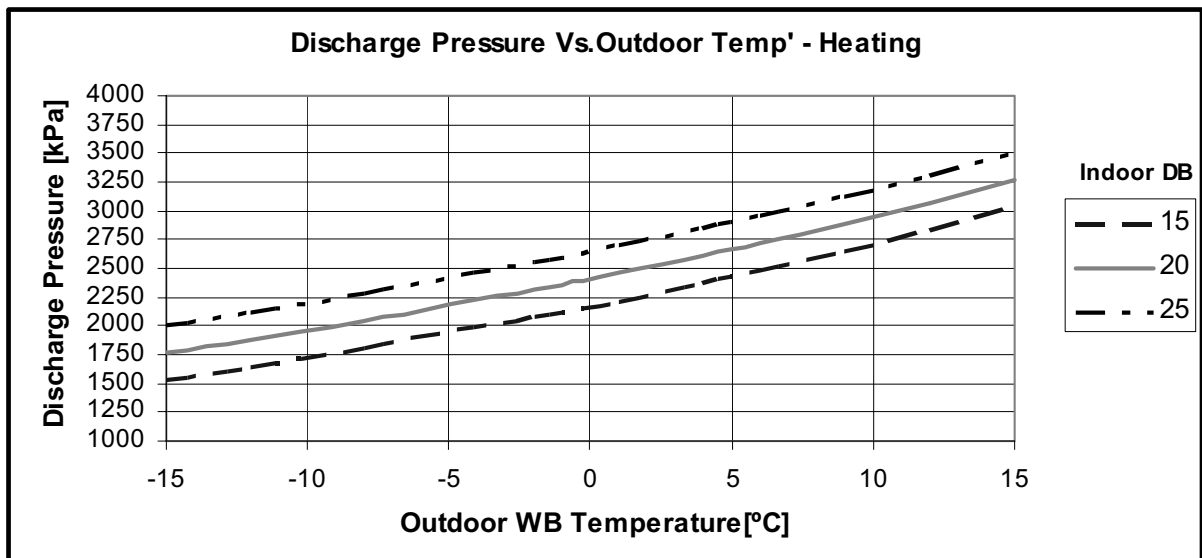
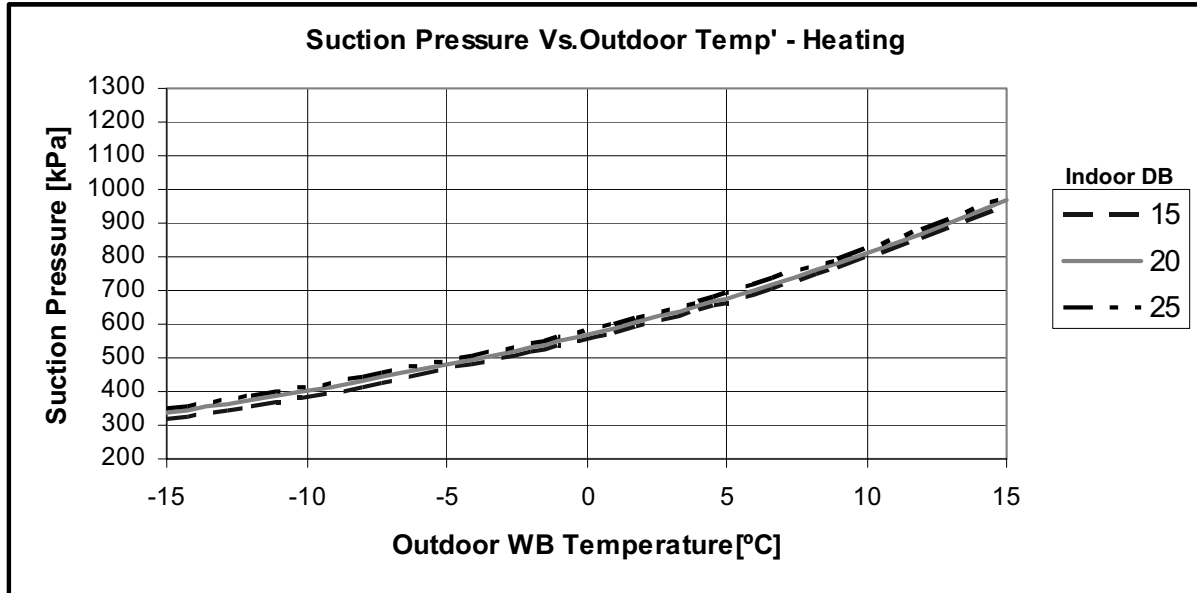


6.3 Model: K 35S DCI

6.3.1 Cooling – Test Mode

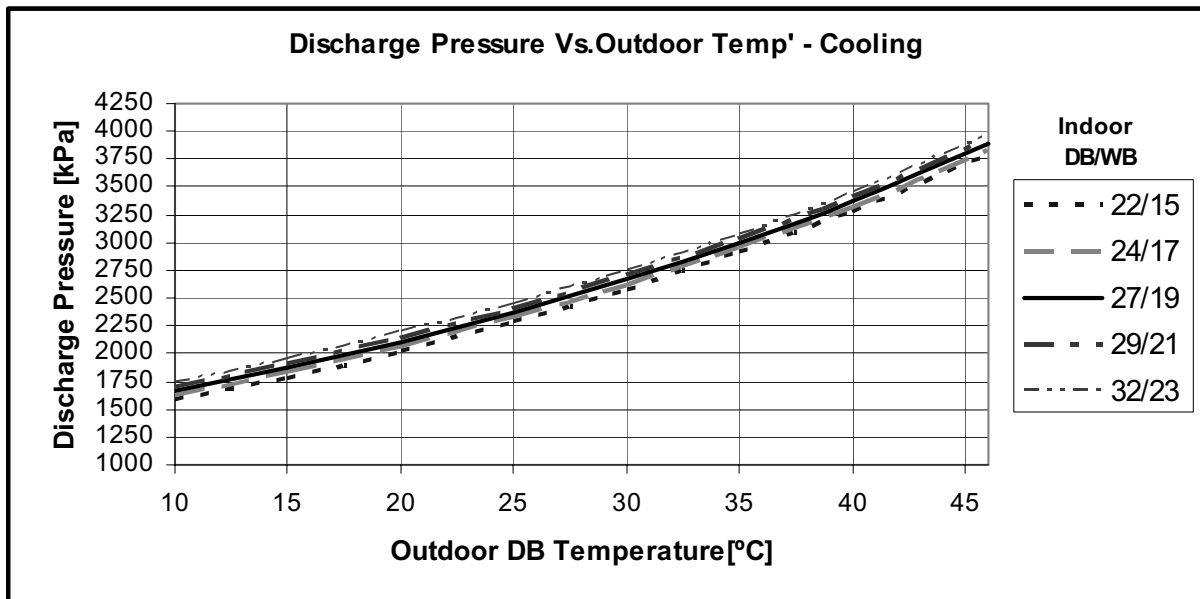
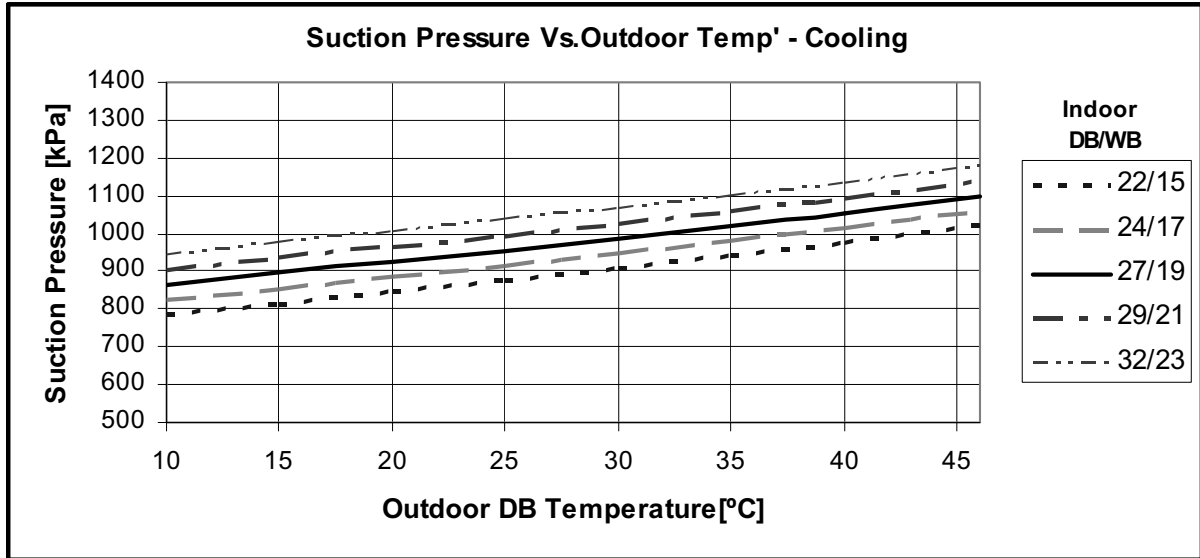


6.3.2 Heating – Test Mode

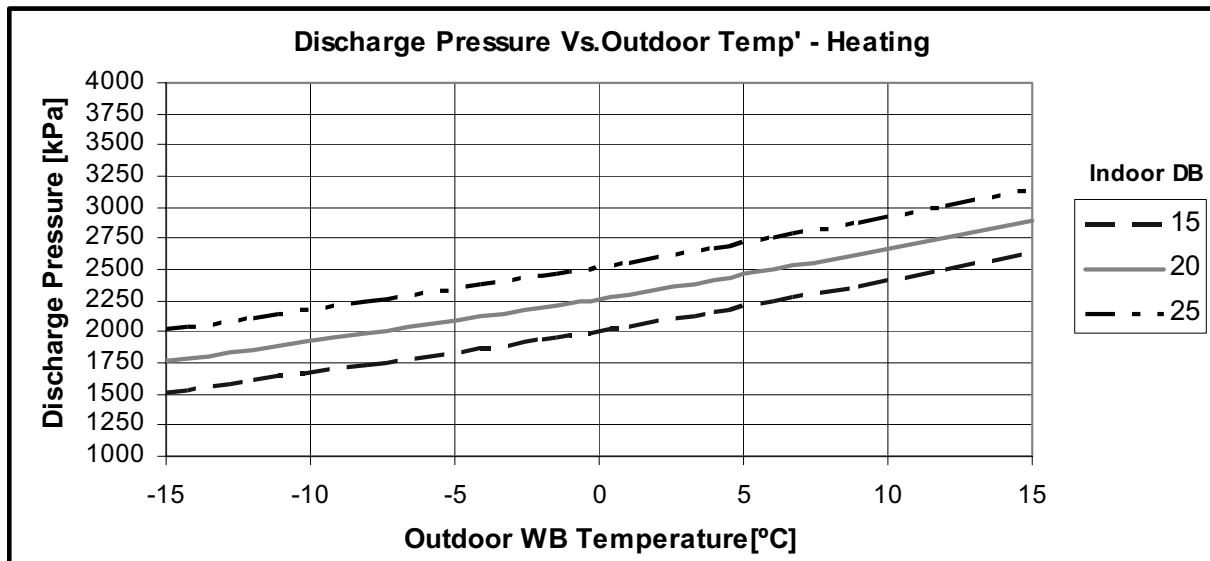
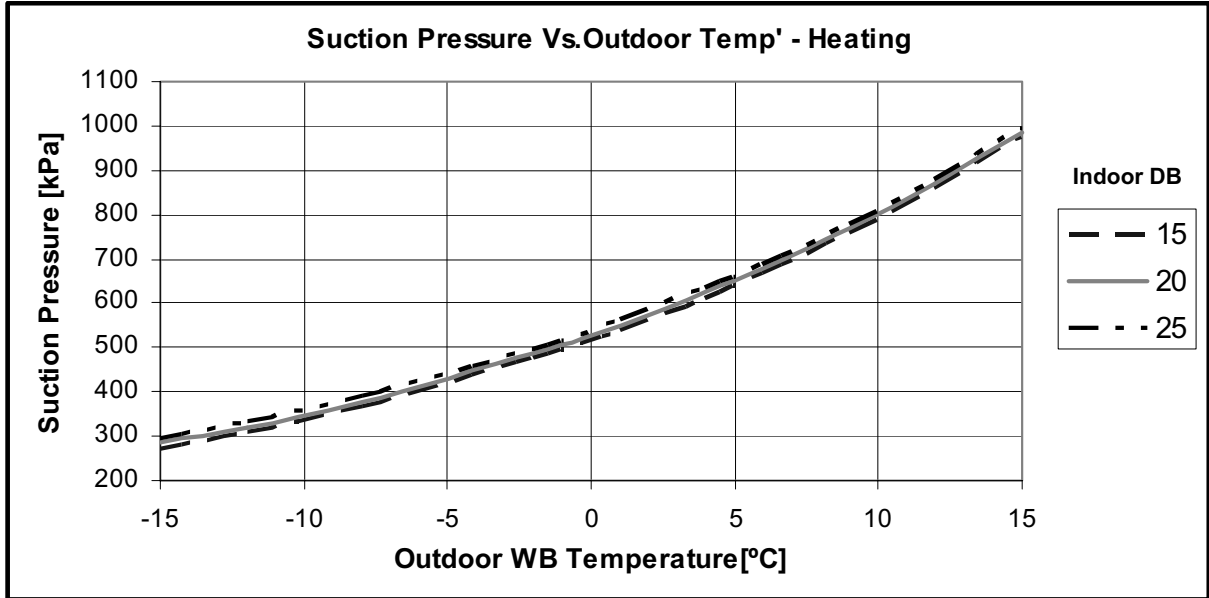


6.4 Model: K 50 DCI

6.4.1 Cooling – Test Mode



6.4.2 Cooling – Test Mode



7. ELECTRICAL DATA

7.1 Single Phase Units

Model	K 25 DCI	K 35/35S DCI	K 50 DCI
Power Supply	1 PH, 220-240 VAC, 50Hz		
Connected to	Indoor		
Maximum Current	10 A		12 A
Inrush Current ^(a)	35 A		
Starting Current ^(b)	10 A		10.5 A
Circuit breaker	16 A		20 A
Power supply wiring no. x cross section	3 X 1.5 mm ²		3 X 2.5 mm ²
Interconnecting cable no. x cross section	4 X 1.5 mm ²		4 X 2.5 mm ²

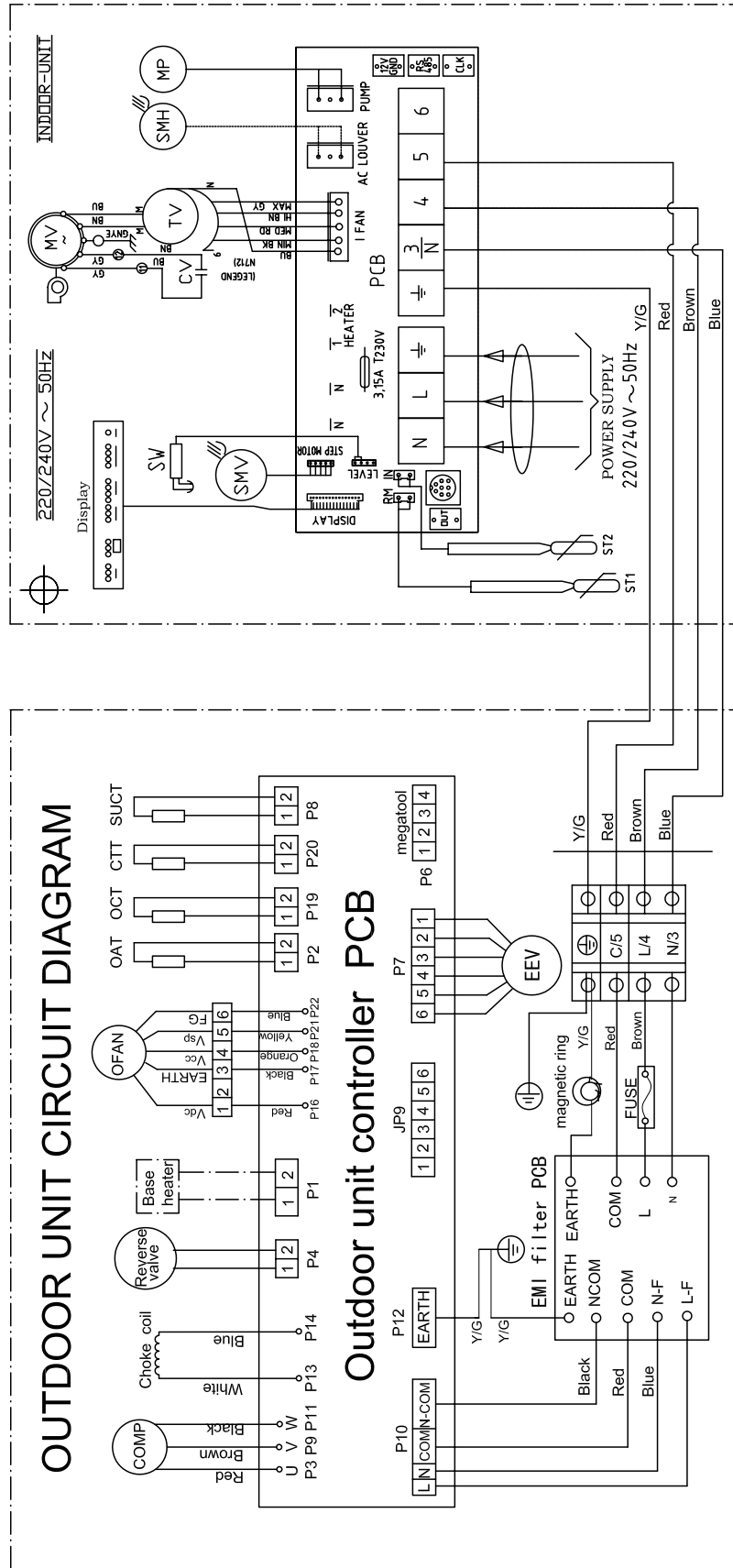
- (a) Inrush current is the current when power is up (charging the DC capacitors at outdoor unit controller).
- (b) Starting current is the current when starting the compressor.

NOTE

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

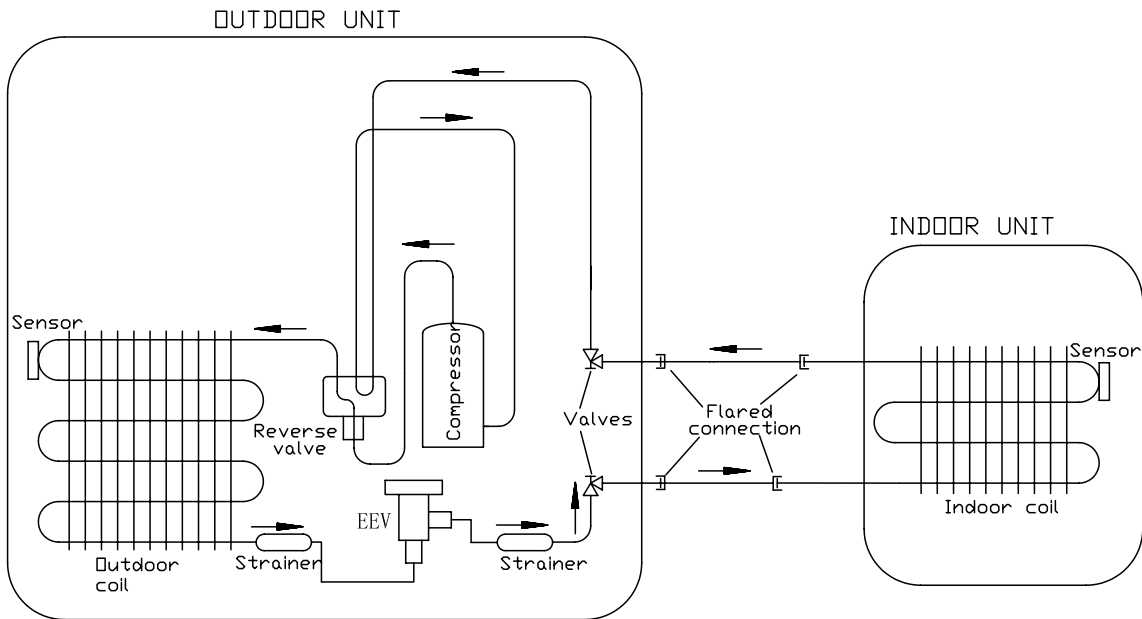
8. WIRING DIAGRAMS

8.1 K25, 35, 35S, 50 DCI

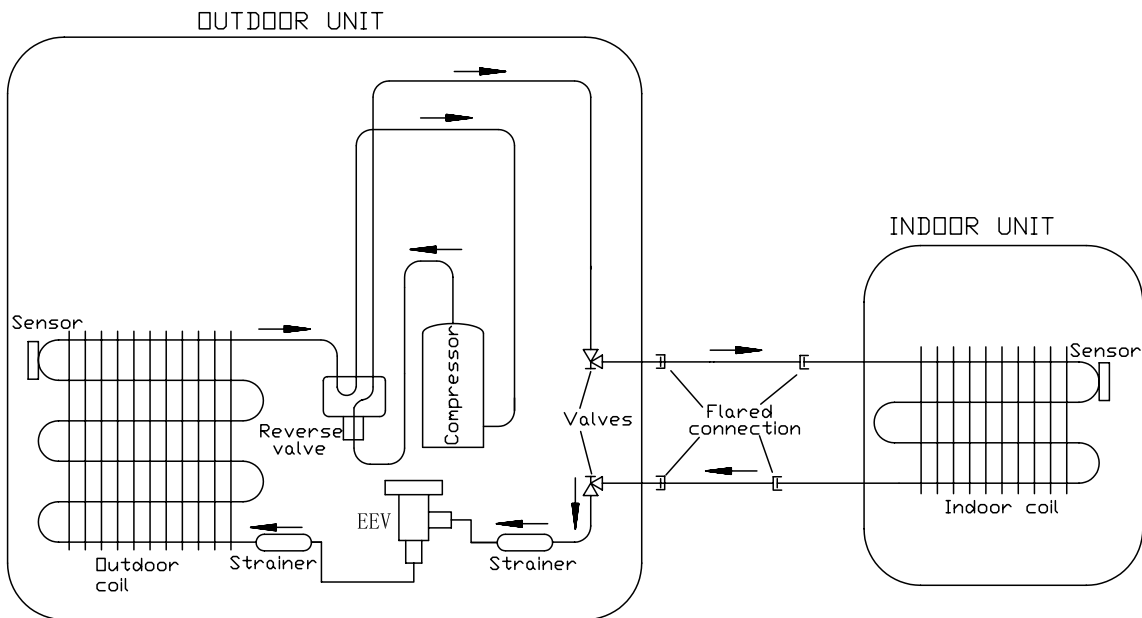


9. REFRIGERATION DIAGRAMS

9.1 K 25, 35,35S, 50 DCI

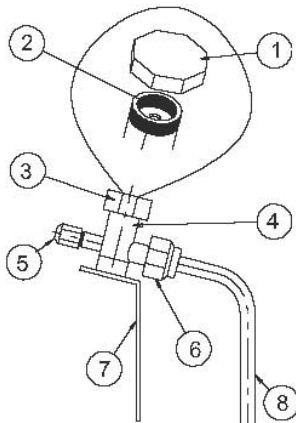
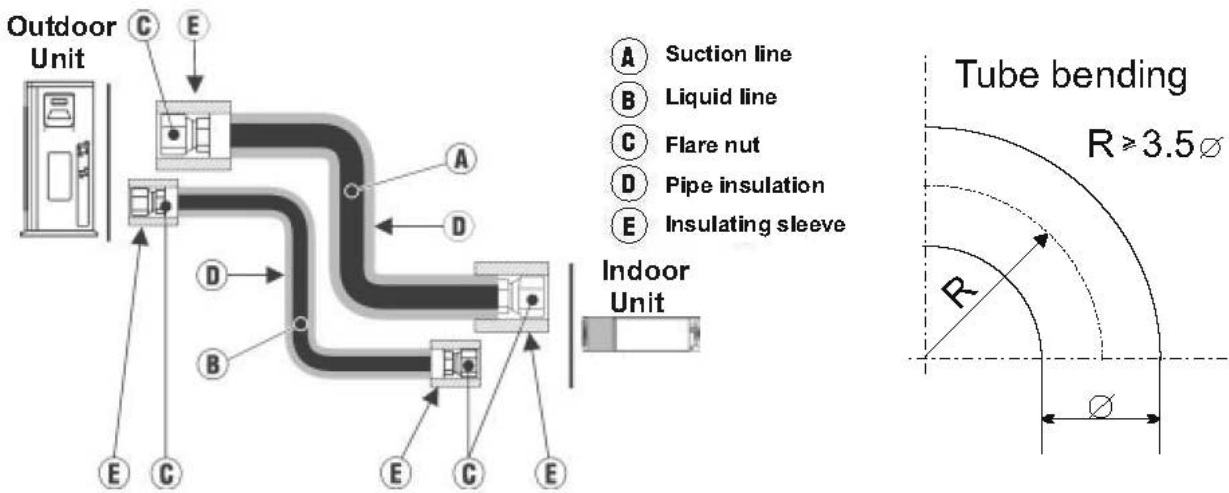


COOLING & DRY MODE



HEATING MODE

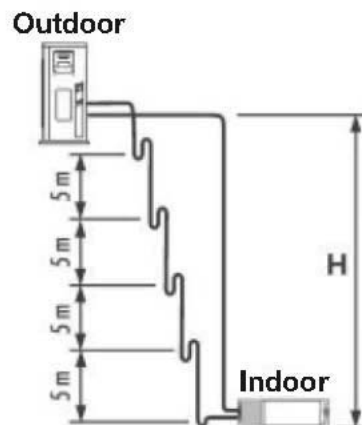
10. TUBING CONNECTIONS



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.



11. CONTROL SYSTEM

11.1 General Functions and Operating Rules

The DCI software is fully parametric.

All the model dependent parameters are shown in Blue color and with Italic style [*parameter*]. The parameters values are given in the last section of this control logic chapter of the service manual.

11.1.1 System Operation Concept

The control function is divided between indoor and outdoor unit controllers. Indoor unit is the System 'Master', requesting the outdoor unit for cooling/heating capacity supply. The outdoor unit is the system 'Slave' and it must supply the required capacity unless it enters into a protection mode avoiding it from supplying the requested capacity.

The capacity request is transferred via indoor to outdoor communication, and is represented by a parameter called 'NLOAD'. NLOAD is an integer number with values between 0 and 127, and it represents the heat or cool load felt by the indoor unit.

11.1.2 Compressor Frequency Control

11.1.2.1 NLOAD setting

The NLOAD setting is done by the indoor unit controller, based on a PI control scheme.

The actual NLOAD to be sent to the outdoor unit controller is based on the preliminary LOAD calculation, the indoor fan speed, and the power shedding function.

NLOAD limits as a function of indoor fan speed:

Indoor Fan Speed	Maximum NLOAD Cooling	Maximum NLOAD Heating
Low	<i>Max NLOADIF1C</i>	127
Medium	<i>Max NLOADIF2C</i>	127
High	<i>Max NLOADIF3C</i>	127
Turbo	<i>Max NLOADIF4C</i>	127
Auto	<i>Max NLOADIF5C</i>	127

NLOAD limits as a function of power shedding:

Mode	Power Shedding OFF	Power Shedding ON
Cool	No limit	Nominal Cooling
Heat	No limit	Nominal Heating

11.1.3 Target Frequency Setting

The compressor target frequency is a function of the NLOAD number sent from the indoor controller and the outdoor air temperature.

Basic Target Frequency Setting:

NLOAD	Target Frequency
127	<i>Maximum frequency</i>
10 < NLOAD < 127	Interpolated value between minimum and maximum frequency
10	<i>Minimum frequency</i>
0	Compressor is stopped

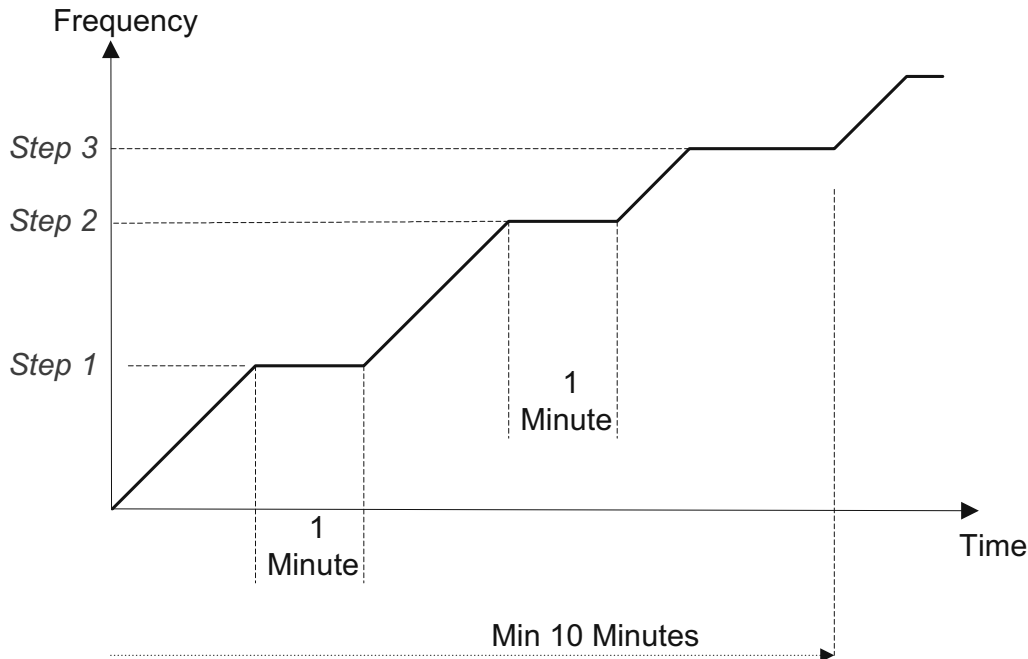
Target frequency limits as a function of outdoor air temperature)OAT(:

OAT Range	Cool mode limits	Heat mode limits
OAT < 6	<i>MaxFreqAsOATC</i>	No limit
6 ≤ OAT < 15		<i>MaxFreqAsOAT1H</i>
15 ≤ OAT < 24		<i>MaxFreqAsOAT2H</i>
24 ≤ OAT	No limit	

11.1.4 Frequency Changes Control

Frequency change rate is 1 Hz/sec.

11.1.5 Compressor Starting Control



11.1.6 Minimum On and Off Time

3 minutes.

11.1.7 Indoor Fan Control

10 Indoor fan speeds are determined for each model. 5 speeds for cool/dry/fan modes and 5 speeds for heat mode.

When user sets the indoor fan speed to a fixed speed)Low/ Medium/ High(, unit will operate constantly at set speed.

When Auto Fan is selected, indoor unit controller can operate in all speeds. The actual speed is set according to the cool/heat load.

11.1.7.1 Turbo Speed

The Turbo speed is activated during the first 30 minutes of unit operation when auto fan speed is selected and under the following conditions:

Difference between set point and actual room temperature is bigger then 3 degrees.

Room temperature > 22 for cooling, or < 25 for heating.

11.1.8 Heating Element Control

Heating element can be started if $LOAD > 0.8 * MaximumNLOAD$ AND Indoor Coil temperature < 45 .

The heating element will be stopped when $LOAD < 0.5 * MaximumNLOAD$ OR if Indoor Coil Temperature > 50 .

11.1.9 Outdoor Fan Control

7 outdoor fan speeds are determined for each model. 3 speeds for cool and dry modes, and 3 speeds for heat mode, and a very low speed.

Outdoor fan speed is a function of compressor frequency and outdoor air temperature (OAT). 4 routines for fan control are determined. The control routine selection depends on operation mode, compressor speed, outdoor air temperature (OAT) and heat sink temperature (HST).

Routine	Conditions
A	Heating with $OAT < 15^{\circ}C$ or Cooling with $OAT > 20^{\circ}C$, or $HST > 50^{\circ}C$ or Faulty OAT
B	Cooling with $20^{\circ}C > OAT > 50^{\circ}C$
C	Cooling with $7^{\circ}C > OAT$
D	Heating with $OAT > 15^{\circ}C$

Compressor Frequency (CF)	Outdoor Fan Speed			
	Routine A	Routine B	Routine C	Routine D
$CF = 0$	OFF	OFF	OFF	OFF
$10 \leq CF < OFLowFreq$	Low	Low	Very Low	Low
$10 \leq CF < OFMedFreq$	Medium	Low	Very Low	Low
$OFMedFreq \leq CF$	High	Low	Low	Medium

When compressor is switched to OFF and the heat sink temperature is above 55 degrees, the outdoor fan will remain ON in low speed for up to 3 minutes.

11.1.10 EEV (electronic Expansion valve) Control

EEV opening is defined as $EEV = EEV_{OL} + EEV_{CV}$

EEV_{OL} is the initial EEV opening as a function of the compressor frequency, operation mode, unit model and capacity.

EEV_{CV} is a correction value for the EEV opening that is based on the compressor temperature.

During the first 10 minutes of compressor operation $EEV_{CV} = 0$.

Once the first 10 minutes are over, the correction value is calculated as follow: $EEV_{CV}(n) =$

$$EEV_{CV}(N-1) + EEV_{CTT}$$

EEV_{CTT} is the correction based on the compressor temperature. A target compressor temperature is set depending on frequency and outdoor air temperature, and the actual compressor temperature is compared to the target temperature to set the required correction to the EEV opening.

11.1.11 Reversing Valve (RV) Control

Reversing valve is on in heat mode.

Switching of RV state is done only after compressor is off for over 3 minutes.

11.1.12 Ioniser Control

Ioniser is on when unit is on AND indoor fan is on AND Ioniser power switch (on Ioniser) is on.

11.1.13 Electro Static Filter)ESF(Control

ESF is on when ESF switch is on, Safety switch is pressed, unit is on, AND indoor fan is on.

11.1.14 Base Heater Control

When OAT is connected, Base Heater will be on when unit is in heating and $OAT < 2^{\circ}C$.
When OAT is disconnected, Base Heater will be on when unit is in heating.

11.2 Fan Mode

In high/ medium/ low indoor fan user setting, unit will operate fan in selected speed.
In AutoFan user setting, fan speed will be adjusting automatically according to the difference between actual room temperature and user set point temperature.

11.3 Cool Mode

NLOAD is calculated according to the difference between actual room temperature and user set point temperature by PI control.

In high/ medium/ low indoor fan user setting, unit will operate fan in selected speed.
In AutoFan user setting, fan speed will be adjusted automatically according to the calculated NLOAD.

11.4 Heat Mode

NLOAD is calculated according to the difference between actual room temperature and user set point temperature by PI control.

In high/ medium/ low indoor fan user setting, unit will operate fan in selected speed.
In AutoFan user setting, fan speed will be adng to the calculated NLOAD.

11.4.1 Temperature Compensation

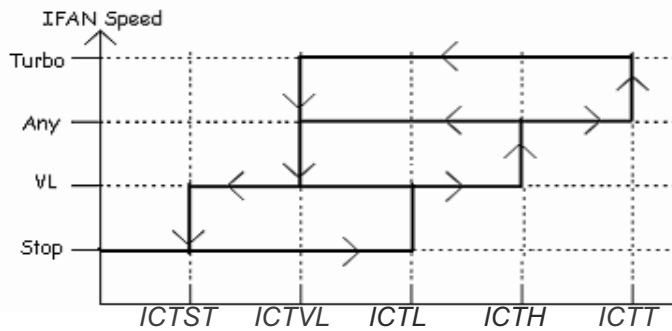
In wall mounted, ducted, and cassette models, 3 degrees are reduced from room temperature reading (except when in I-Feel mode), to compensate for temperature difference between high and low areas in the heated room, and for coil heat radiation on room thermistor.

The temperature compensation can be enabled/disabled by shortening of J2 on the indoor unit controller.

Model	J2 Shorted	J2 Opened
Wall mounted	Compensation Disabled	Compensation Enabled
Cassette	Compensation Enabled	Compensation Disabled
Ducted	Compensation Enabled	Compensation Disabled
Floor/Ceiling	Compensation Disabled	Compensation Enabled

11.4.2 Indoor Fan Control in Heat Mode

Indoor fan speed depends on the indoor coil temperature:



11.5 Auto Cool/Heat Mode

When in auto cool heat mode unit will automatically select between cool and heat mode according to the difference between actual room temperature and user set point temperature) ΔT (.

Unit will switch from cool to heat when compressor is off for 3 minutes, and $\Delta T < -3$.

Unit will switch from heat to cool when compressor is off for 5 minutes, and $\Delta T < -3$.

11.6 Dry Mode

As long as room temperature is higher then the set point, indoor fan will work in low speed and compressor will work between 0 and *MaxNLOADIF1C* Hz.

When the room temperature is lower than the set point, compressor will be switched OFF and indoor fan will cycle 3 minutes OFF, 1 minute ON.

11.7 Protections

There are 5 protection codes.

Normal (Norm) – unit operate normally.

Stop Rise (SR) – compressor frequency can not be raised but does not have to be decreased.

HzDown1 (D1) – Compressor frequency is reduced by 2 to 5 Hz per minute.

HzDown2 (D2) – Compressor frequency is reduced by 5 to 10 Hz per minute.

Stop Compressor (SC) – Compressor is stopped.

11.7.1 Indoor Coil Defrost Protection

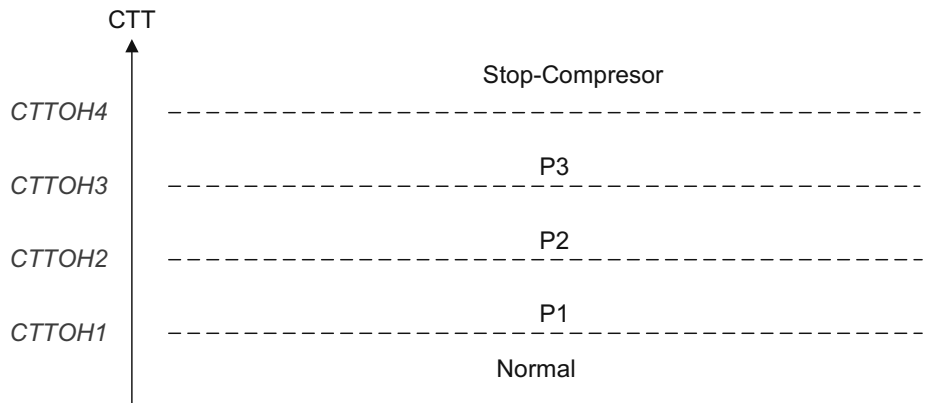
ICT	ICT Trend				
	Fast Increasing	Increasing	No change	Decreasing	Fast Decreasing
ICT < -2	SC	SC	SC	SC	SC
-2 ≤ ICT < 0	D1	D1	D2	D2	D2
0 ≤ ICT < 2	SR	SR	D1	D2	D2
2 ≤ ICT < 4	SR	SR	SR	D1	D2
4 ≤ ICT < 6	Norm	Norm	SR	SR	D1
6 ≤ ICT < 8	Norm	Norm	Norm	SR	SR
8 ≤ ICT	Normal				

11.7.2 Indoor Coil over Heating Protection

ICT	ICT Trend				
	Fast Decreasing	Decreasing	No Change	Increasing	Fast Increasing
ICT > 55	SC	SC	SC	SC	SC
53 < ICT ≤ 55	D1	D1	D2	D2	D2
49 < ICT ≤ 53	SR	SR	D1	D2	D2
47 < ICT ≤ 49	SR	SR	SR	D1	D2
45 < ICT ≤ 47	Norm	Norm	SR	SR	D1
43 < ICT ≤ 45	Norm	Norm	Norm	SR	SR
ICT ≤ 43	Normal				

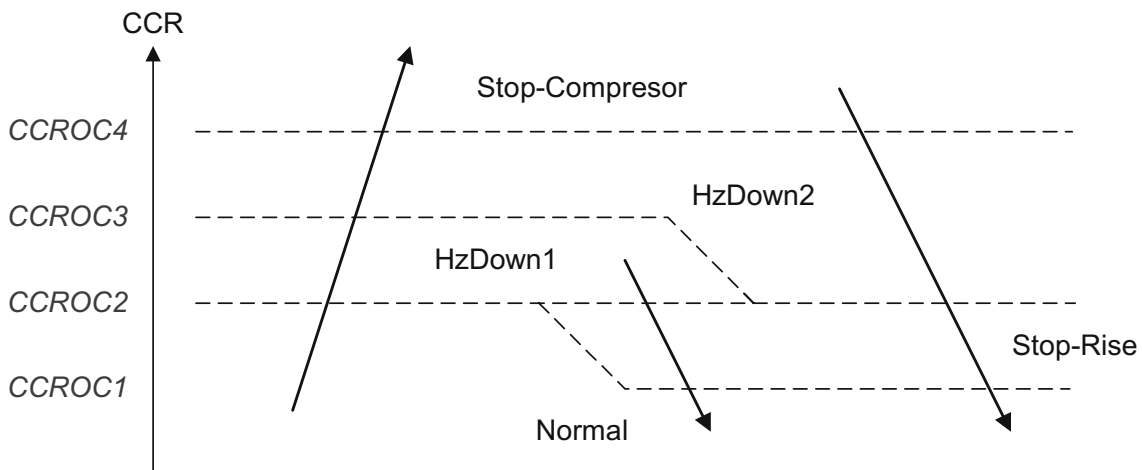
11.7.3 Compressor over Heating Protection

Compressor temperature can be in one of 5 control zones)4 in protection, and 1 normal(, according to the following chart.



Control Status	Compressor Temperature Increases	Else
P1	Norm	SR
P2	D1	SR
P3	D2	D1
Stop Compressor	SC	

11.7.4 Compressor over Current Protection



11.7.5 Heat Sink Over Heating Protection (NA for DCI 25 and 35)

HST	HST Trend		
	Decreasing	No Change	Increasing
HST > 90	SC	SC	SC
85 < HST ≤ 90	D1	D2	D2
82 < HST ≤ 85	SR	D1	D2
80 < HST ≤ 82	SR	SR	D1
78 < HST ≤ 80	Norm	Norm	SR
HST ≤ 78	Normal		

11.7.6 Outdoor Coil Deicing Protection

11.7.6.1 Deicing Starting Conditions

Deicing operation will start when either one of the following conditions exist:

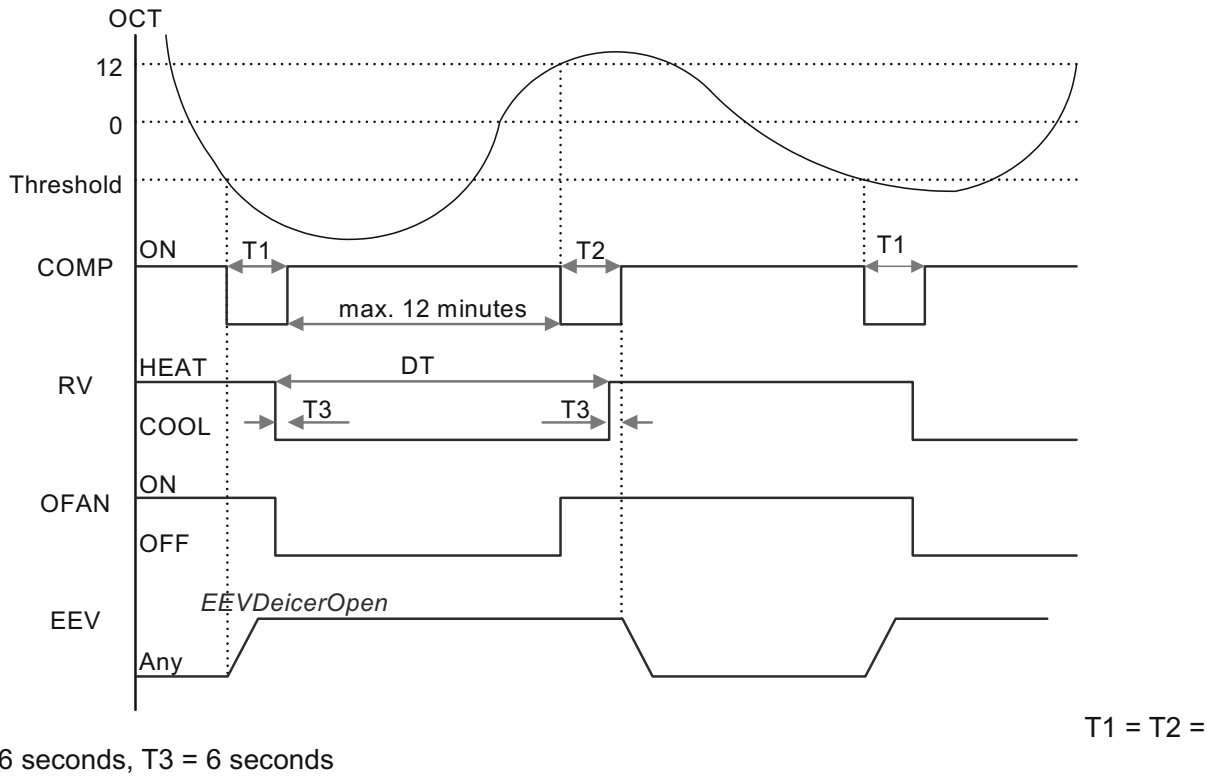
- Case 1: OCT < OAT – 8 AND TLD > DI
- Case 2: OCT < OAT – 12 AND TLD > 30 minutes.
- Case 3: OCT is Invalid AND TLD > DI
- Case 4: Unit is just switched to STBY AND OCT < OAT - 8
- Case 5: NLOAD = 0 AND OCT < OAT -8

- OCT – Outdoor Coil Temperature
- OAT – Outdoor Air Temperature
- TLD – Time from Last Deicing
- DI – Deicing Interval (Time Interval Between Two Deicing)

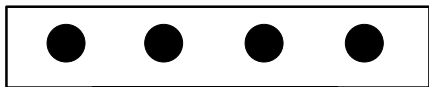
Deicing interval time when compressor is first started in heat mode, is 10 minutes if OCT < -2, and is 40 minutes in other cases.

Deicing interval time is changed (increased/ decreased in 10 minutes steps) as a function of deicing time. If deicing time is shorter then former deicing time, the deicing interval time will be increased. If deicing time is longer then former deicing time, the deicing interval time will be decreased.

11.7.6.2 Deicing Protection Procedure



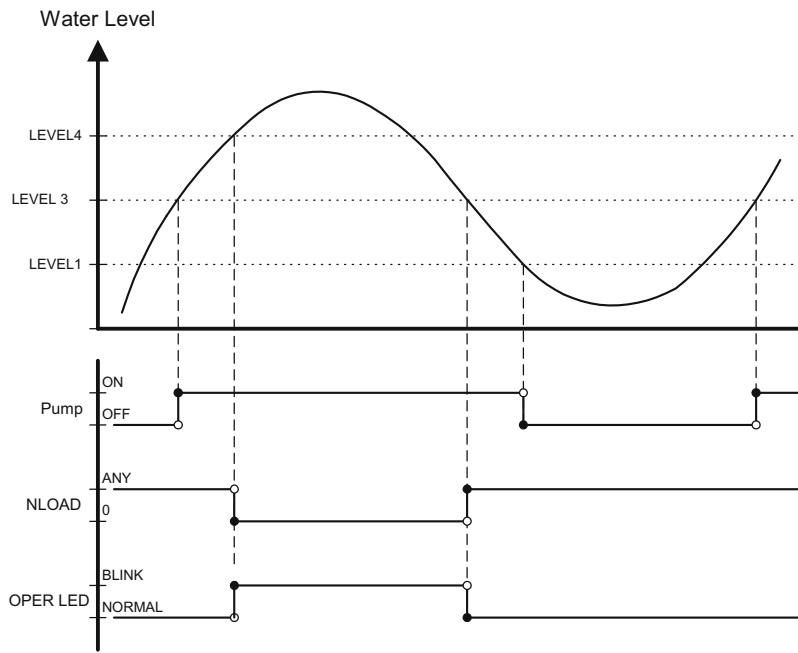
11.8 Condensate Water Over Flow Protection



Each of the pins P1, P2, P3 can have two options:
 1 – When it is shorted with P4
 0 – When it is not shorted to P4

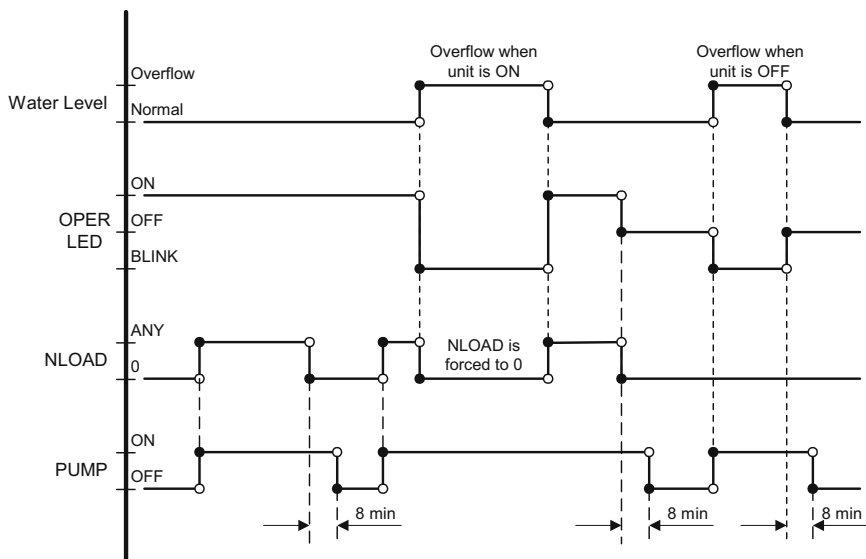
11.8.1 3 Levels Logic (used in floor/ceiling models)

P2	P3	Level
0	0	L0
1	0	L1
1	1	L2&3
0	1	L4



11.8.2 1 Level Logic (used in all models except for floor/ceiling models)

P2	P3	Level
Don't care	1	Normal
Don't care	0	Overflow



11.9 Indoor Unit Dry Contact

Indoor unit Dry contact has two alternative functions that are selected by J8.

	Function	Contact = Open	Contact = Short
J8 = Open	Presence Detector Connection	No Limit	Forced to STBY
J8 = Open	Power Shedding Function	No Limit	Limit NLOAD

11.10 Operating the Unit from the Mode Button

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

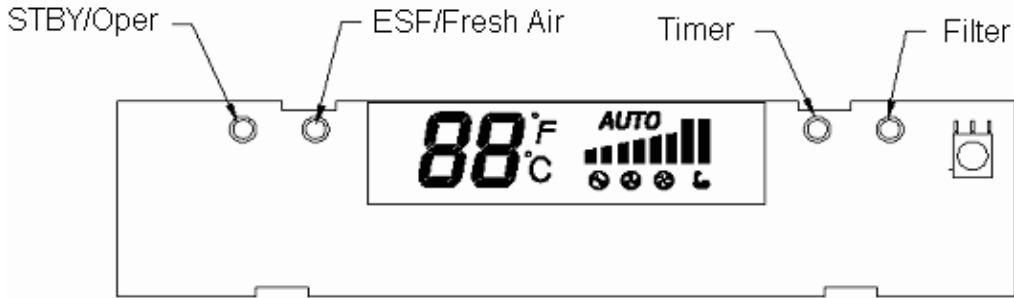
Forced operation Mode	Pre-set Temperature
Cooling	20°C
Heating	28°C

11.11 On Unit Controls and Indicators

11.11.1 Indoor Unit Controller Controls and Indicators For All Models Except for Floor/Ceiling model

STAND BY INDICATOR	Lights up when the Air Conditioner is connected to power and ready to receive the R/C commands
OPERATION INDICATOR	Lights up during operation. Blinks for 300 msec., to announce that a R/C infrared signal has been received and stored. Blinks continuously during protections (according to the relevant spec section).
TIMER INDICATOR	Lights up during Timer and Sleep operation.
FILTER INDICATOR	Lights up when Air Filter needs to be cleaned.
COOLING INDICATOR	Lights up when system is switched to Cool Mode by using the Mode Switch on the unit.
HEATING INDICATOR	Lights up when system is switched Heat Mode by using the Mode Switch on the unit.
Mode SWITCH (COOL/HEAT/OFF)	Every short pressing, the next operation mode is selected, in this order : SB → Cool Mode → Heat Mode → SB → In long pressing system enters diagnostic mode.
RESET / FILTER SWITCH	For short pressing: When Filter LED is on - turn off the FILTER INDICATOR after a clean filter has been reinstalled. When Filter LED is off able/disable the buzzer announcer, if selected.

11.11.2 Indoor Unit Controls and Indicators for LCD Display



	STBY	Cool	Heat	Auto	Fan	Dry
88	OFF	SPT(1*)	SPT(1*)	SPT(1*)	SPT(1*)	SPT(1*)
C	OFF(2*)	ON(2*)	ON(2*)	ON(2*)	ON(2*)	ON(2*)
F	OFF(2*)	OFF(2*)	OFF(2*)	OFF(2*)	OFF(2*)	OFF(2*)
(Low)	OFF	User setting IFAN speed	User setting IFAN speed	User setting IFAN speed	User setting IFAN speed	User setting IFAN speed
(Med)	OFF					
(High)	OFF					
(Turbo)	OFF					
AUTO (Auto)	OFF					
Backlight(red)	OFF	OFF	ON(3*)	ON(3*)	ON(3*)	OFF
Backlight(green)	OFF	ON(3*)	OFF	ON(3*)	ON(3*)	ON(3*)

11.11.3 Indoor Unit Controller Controls and Indicators for Floor/Ceiling Model

STANDBY INDICATOR	Lights up when the Air Conditioner is connected to power and is ready for operation
OPERATE INDICATOR ⁽⁴⁾	1. Lights up during operation. 2. Blinks for 300 msec., to announce that a R/C infrared signal has been received and stored. 3. Blinks continuously during protections (according to the relevant spec section).
TIMER INDICATOR	Lights up during Timer and Sleep operation.
FILTER INDICATOR	1. Lights up when Air Filter needs to be cleaned. 2. Blinks during Water Over Flow in PXD models. (Cf. Sect. 7.3)
COOLING INDICATOR	Lights up when system is switched to Cool Mode by using the Mode Switch <u>on the unit</u> .
HEATING INDICATOR	Lights up when system is switched Heat Mode by using the Mode Switch <u>on the unit</u> .
FAN MODE INDICATOR ⁽⁴⁾	Lights up in Fan Mode activated by <u>local switches</u> .
FAN SPEED INDICATORS	L -- Lights up when IFAN setting is Low. M -- Lights up when IFAN setting is Medium. H -- Lights up when IFAN setting is High. A -- Lights up when IFAN setting is Auto.
TEMP. SETTING INDICATORS	Each one of the seven indicators indicates the following SPT: 18, 20, 22, 24, 26, 28, 30]°c[. The odd number temperatures are indicated by turning on the two adjacent indicators.
FAN SPEED BUTTON	Press this button to change the speed of the IFAN. Each pressing change the speed in the sequence of: L → M → H → Auto → L → ...
TEMP. SETTING UP BUTTON	Pressing this button increases the SPT by 1°C. Note: The Max SPT is 30°C.
TEMP. SETTING DOWN BUTTON	Pressing this button decreases the SPT by 1°C. Note: The Min SPT is 18°C.
MODE BUTTON	Every short pressing , the next operation mode is selected, in this order : SB → Cool Mode → Heat Mode → SB → In long pressing system enters diagnostic mode.
POWER BUTTON	Toggle the unit between OPER & STBY modes.
RESET / FILTER BUTTON	For short pressing: When Filter LED is on - turn off the FILTER INDICATOR after a clean filter has been reinstalled. When Filter LED is off able/disable the buzzer announcer, if selected. In long pressing system enters set up mode (if in SB).

11.11.4 Outdoor Unit Controller Indicators

Unit has three LED

SB LED is ON when power is ON (230 VAC, even when no communication).

STATUS LED is ON when COMP is ON, and Blinks according to diagnostics mode definitions when either fault or protection occurs.

FAULT LED Blinks according to diagnostics mode definitions when either fault or protection occurs.

11.12 Jumper Setting

11.12.1 Indoor Unit Controller

0 = Open Jumper (connect jumper).

1 = Close Jumper (connect jumper).

Self test Jumper – J1

OPERATION	J1
SELF-TEST	1
NORMAL	0

Compensation Jumper – J2

Model	J2 (Default)	Compensation
Wall Mounted	0	Activated
Floor/Ceiling	1	Deactivated
Ducted/cassette	1	Activated

Family selection Jumper – J3, J4 and J5

Family	J5	J4	J 3
Reserved	0	0	0
Reserved	0	0	1
Reserved	0	1	0
Wall Mounted (WNG/FLO)	0	1	1
Floor/Ceiling (PXD)	1	0	0
Reserved	1	0	1
Ducted (LS)	1	1	0
Cassette (K)	1	1	1

Model selection Jumper – J6, J7

Model	J7	J6
9000 Btu/hr	0	0
12000 Btu/hr	0	1
18000 Btu/hr	1	0
24000 Btu/hr	1	1

J8 - Clock/Power Shedding

OPERATION	J8
Clock	0
Power Shedding	1

J9 – IFAN Cycling Disabling

Display Mode (wall mounted units only)	J9
LCD	0
LED	1

11.12.2 Outdoor Unit Controller

JP9 JUMPER LAYOUT

Reserved (PIN 9)	ODU3 (PIN 7)	ODU2 (PIN 5)	ODU1 (PIN 3)	ODU0 (PIN 1)
GND (PIN 10)	GND (PIN 8)	GND (PIN 6)	GND (PIN 4)	GND (PIN 2)

ODU MODEL SELECTION

ODU3	ODU2	ODU1	ODU0	ODU Model
OFF	OFF	OFF	OFF	Reserved
OFF	OFF	OFF	ON (PIN1 & PIN2)	A (DCI 25)
OFF	OFF	ON (PIN3 & PIN4)	OFF	B (DCI 35)
OFF	OFF	ON (PIN3 & PIN4)	ON (PIN1 & PIN2)	C (DCI 50)
OFF	ON (PIN5 & PIN6)	OFF	OFF	D
OFF	ON (PIN5 & PIN6)	OFF	ON (PIN1 & PIN2)	E (Duo)
OFF	ON (PIN5 & PIN6)	ON (PIN3 & PIN4)	OFF	F
OFF	ON (PIN5 & PIN6)	ON (PIN3 & PIN4)	ON (PIN1 & PIN2)	G
ON (PIN7 & PIN8)	OFF	OFF	OFF	H
ON (PIN7 & PIN8)	OFF	OFF	ON (PIN1 & PIN2)	I
ON (PIN7 & PIN8)	OFF	ON (PIN3 & PIN4)	OFF	J
ON (PIN7 & PIN8)	OFF	ON (PIN3 & PIN4)	ON (PIN1 & PIN2)	K
ON (PIN7 & PIN8)	ON (PIN5 & PIN6)	OFF	OFF	L
ON (PIN7 & PIN8)	ON (PIN5 & PIN6)	OFF	ON (PIN1 & PIN2)	M
ON (PIN7 & PIN8)	ON (PIN5 & PIN6)	ON (PIN3 & PIN4)	OFF	N
ON (PIN7 & PIN8)	ON (PIN5 & PIN6)	ON (PIN3 ? PIN4)	ON (PIN1 & PIN2)	O

11.13 Test Mode

11.13.1 Entering Test Mode

System can enter Test mode in two ways:

Automatically when the following conditions exists for 30 minutes continuously:

Mode = Cool, Set point =16, Room temperature = 27 ± 1 , Outdoor temperature = 35 ± 1

Or

Mode = Heat, Set point = 30, Room temperature = 20 ± 1 , Outdoor temperature = 7 ± 1

Manually when entering diagnostics with the following settings:

Mode = Cool, Set point = 16

Mode = Heat, Set point = 30

11.13.2 Unit Operation in Test Mode

In test mode, the unit will operate in fixed settings according to the indoor fan speed setting:

Indoor Fan Speed Setting	Unit Setting
Low	Minimum Capacity Setting
High	Nominal Capacity Setting
Auto	Maximum Capacity Setting

During test mode, protections are disabled, except for stop compressor status.

11.14 SW Parameters

11.14.1 Indoor Units SW Parameters

General Parameters for All Models:

Parameters defining the indoor fan speed as a function of Indoor Coil temperature in heat mode (ICT):

ICTST Speed	ICT to stop indoor fan	25
ICTVLSpeed	ICT to go down to very low speed	28
ICTLSpeed	ICT to start in very low speed	30
ICTHSpeed	ICT to start in increase speed from very low	32
ICTTSpeed	ICT to enable Turbo fan speed	40

Model Depended Parameters:

Parameter name	Wall Mounted Models			
	DCI 25	DCI 35		
NLOAD limits as a function of selected indoor fan speed				
MaxNLOADIF1C	40	40		
MaxNLOADIF2C	53	53		
MaxNLOADIF3C	120	120		
MaxNLOADIF4C	127	127		
MaxNLOADIF5C	127	127		
Indoor Fan speeds				
IFVLOWC	700	700		
IFLOWC	800	800		
IFMEDC	900	950		
IFHIGHC	1050	1100		
IFTURBOC	1150	1200		
IFVLOWH	700	700		
IFLOWH	800	850		
IFMEDH	950	1000		
IFHIGHH	1100	1150		
IFTURBOH	1200	1250		
Nominal Compressor Frequency				
NomLoadC	40	62		
NomLoadH	55	67		
Parameter Name	Cassette Models			
	K 25	K 35	K 35S	K 50
NLOAD limits as a function of selected indoor fan speed				
MaxNLOADIF1C	40	40	40	40
MaxNLOADIF2C	53	56	56	60
MaxNLOADIF3C	120	90	90	90
MaxNLOADIF4C	127	90	90	90
MaxNLOADIF5C	127	90	90	90
Nominal Compressor Frequency				
NomLoadC	40	60	56	63
NomLoadH	55	69	73	80

11.14.2 Outdoor Units SW Parameters

Parameter Name	DCI25	DCI35	DCI 50	DCI50 DUO
Compressor Parameters				
MinFreqC	30	33	20	20
MaxFreqC	64	80	85	97
MinFreqH	30	35	20	26
MaxFreqH	81	93	99	106
Step1Freq	60	60	60	60
Step2Freq	70	70	70	80
Step3Freq	90	90	90	90
Frequency limits as a function of outdoor air temperature				
MaxFreqAsOATC	50	50	64	62
MaxFreqAsOAT1H	65	75	85	85
MaxFreqAsOAT2H	60	60	60	60
Compressor Over Heating Protection				
CTTOH1	94	94	94	90
CTTOH2	98	98	98	95
CTTOH3	102	102	102	102
CTTOH4	105	105	105	105
Compressor Over Current Protection [A]				
CCR01	7.1	7.1	10	10
CCR02	7.5	7.5	10.5	10.5
CCR03	7.9	7.9	10.8	10.8
CCR04	8.3	8.3	11.2	11.2
Outdoor Fan Speed (RPM)				
VL	200	200	200	200
OFLOWC	550	550	600	600
OFMEDC	700	700	760	830
OFMAXC	830	830	920	920
OFLOWH	550	550	600	600
OFMEDH	700	700	830	920
OFMAXH	830	830	1000	1000
Outdoor Fan Limit Control				
OFLowFreq	45	45	40	40
OFMedFreq	57	57	70	70

12. TROUBLESHOOTING

Warning

When Power Up – the whole outdoor unit controller, including the wiring, is under HIGH VOLTAGE

Never open the Outdoor unit before turning off the PowerHIG

When turned off, the system is still charged (400V)le

It takes about 4 Min. to discharge the system.

Touching the controller before discharging may cause an electrical shock

For safe handling of the controller please refer to section 12.6 below.

12.1 Single Split system failures and corrective actions

No	SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
1	Power supply indicator (Red LED) does not light up.	No power supply	Check power supply. If power supply is OK, check display and display wiring. if OK, replace controller.
2	Unit does not respond to remote control message	Remote control message not reached the indoor unit	Check remote control batteries, if batteries are OK, check display and display wiring, if OK, replace display PCB. If still not OK replace controller.
3	Unit responds to remote control message but Operate indicator (Green LED) does not light up	Problem with display PCB	Replace display PCB. If still not OK replace controller.
4	Indoor fan does not start (louvers are opened and Green LED does light up)	Unit in heat mode and coil is still not warm.	Change to cool mode and check.
		Problem with PCB or capacitor	Change to high speed and Check power supply to motor is higher than 130VAC (for triack controlled motor) or higher than 220VAC for fixed speed motors, if OK replace capacitor, if not OK replace controller
5	Indoor fan works when unit is OFF, and indoor fan speed is not changed by remote control command.	PCB problem	Replace controller
6	Compressor does not start	Electronics control problem or protection	Perform diagnostics (See 12.3 below), and follow the actions described.
7	Compressor stops during operation and Green LED remains on	Electronic control or power supply problem	Perform diagnostics (See 12.3 below), and follow the actions described.

No	SYMPTOM	PROBABLE CAUSE	CORRECTIVE ACTION
8	Compressor is on but outdoor fan does not work	Problem with outdoor electronics or outdoor fan	Check outdoor fan motor according to the procedure in section 12.5.3 below, if not OK replace controller
9	Unit works in wrong mode)cool instead of heat or heat instead of cool(Electronics or power connection to RV	Check RV power connections, if OK, Check RV operation with direct 230VAC power supply, if OK, Replace outdoor controller.
10	All components are operating properly but no cooling or no heating	Refrigerant leak	Check refrigeration system.
11	Compressor is over heated and unit does not generate capacity	EEV problem	Check EEV
12	Units goes into protections and compressor is stopped with no clear reason	Control problem or refrigeration system problem	Perform diagnostics)See 12.3 below(, and follow the actions described.
13	Compressor motor is generating noise and no suction occurs	Phase order to compressor is wrong	Check compressor phase order.
14	Water leakage from indoor unit	Indoor unit drainage tube is blocked	Check and open drainage tube.
15	Freezing of outdoor unit in heat mode and outdoor unit base is blocked with ice		Connect base heater.
16	Unit operates with wrong fan speeds or wrong frequency	Wrong jumper settings	Perform diagnostics (See 12.3 below), and check if units is operating by EEPROM parameters.

12.2 Checking the refrigeration system

Checking system pressures and other thermodynamic measures should be done when system is in Test Mode (in Test mode, system operates in fixed settings). The performance curves given in this manual are given for unit performance in test mode when high indoor fan speed is selected.

Entering test mode:

Set unit to Cool/16 degrees/High indoor fan speed, or Heat/30 degrees/High indoor fan speed, and enter diagnostics.

12.3 Judgment by Indoor/Outdoor Unit Diagnostics

Enter diagnostics mode - press for five seconds Mode button in any operation mode.

Acknowledgment is by 3 short beeps and lights of COOL and HEAT LEDs. Then, every short pressing of Mode button will scroll between Indoor and Outdoor unit diagnostic modes by the acknowledgment of 3 short beeps and lighting of COOL and HEAT LED's.

During the Outdoor unit diagnostics all four Indoor LED's, (STBY, Operate, Filter and Timer) are blinking. When Indoor diagnostics is displayed, all four LED's (STBY, Operate, Filter and Timer) are ON.

When system enters diagnostics mode, only one fault code is shown. Order of priority is from the lower to the higher number. Diagnostics is continuously ON as long as power is ON. The current system operation mode will not be changed.

If no fault occurred in the system, no fault code will be displayed during normal operation mode. The last fault code will be displayed even if the system has recovered from that fault. The last fault will be deleted from the EEPROM after the system has exit diagnostics mode.

In diagnostics mode, system fault / status will be indicated by blinking of Heat d Cool LEDs.

The coding method will be as follows:

Heat LED will blink 5 times in 5 seconds, and then will be shut off for the next 5 seconds. Cool LED will blink during the same 5 seconds according to the following Indoor / Outdoor unit tables:

Note: 0 – OFF, 1-ON

12.3.1 Indoor unit Diagnostics

No	Problem	5	4	3	2	1
1	RT-1 is disconnected	0	0	0	0	1
2	RT-1 is shorted	0	0	0	1	0
3	RT-2 is disconnected	0	0	0	1	1
4	RT-2 is shorted	0	0	1	0	0
5	Reserved	0	0	1	0	1
7	Communication mismatch	0	0	1	1	1
8	No Communication	0	1	0	0	0
9	No Encoder	0	1	0	0	1
10	Reserved	0	1	0	1	0
11	Outdoor Unit Fault	0	1	0	1	1
...	Reserved					
17	Defrost protection	1	0	0	0	1
18	Deicing Protection	1	0	0	1	0
19	Outdoor Unit Protection	1	0	0	1	1
20	Indoor Coil HP Protection	1	0	1	0	0
21	Overflow Protection	1	0	1	0	1
22	Reserved					
24	EEPROM Not Updated	1	1	0	0	0
25	Bad EEPROM	1	1	0	0	1
26	Bad Communication	1	1	0	1	0
27	Using EEPROM data	1	1	0	1	1
28	Model A	1	1	1	0	0
29	Model B	1	1	1	0	1
30	Model C	1	1	1	1	0
31	Model D	1	1	1	1	1

12.3.2 Indoor unit diagnosis and corrective actions

No.	Fault	Probable Cause	Corrective Action
1	Sensor failures of all types		Check sensor connections or replace sensor.
2	Communication mismatch	Indoor and Outdoor controllers are with different Versions.	Replace Indoor controller.
3	No Communication	Communication or grounding wiring is not good.	Check Indoor to Outdoor wiring and grounding.
4	No Encoder	Indoor electronics or motor.	Check motor wiring, if ok, replace motor, if still not ok, replace Indoor controller.
5	Outdoor Unit Fault	Outdoor controller problem.	Switch to Outdoor diagnostics.
6	EEPROM Not Updated	System is using ROM parameters and not EEPROM parameters.	No action, unless special parameters are required for unit operation.
7	Bad EEPROM		No action, unless special parameters are required for unit operation.
8	Bad Communication	Communication quality is low Reliability.	Check Indoor to Outdoor wiring and grounding.
9	Using EEPROM data	No problem. System is using EEPROM parameters.	

12.3.3 Outdoor unit Diagnostics

No	Problem	5	4	3	2	1
1	OCT is disconnected	0	0	0	0	1
2	OCT is shorted	0	0	0	1	0
3	CTT is disconnected	0	0	0	1	1
4	CTT is shorted	0	0	1	0	0
5	HST is disconnected (when enabled)	0	0	1	0	1
6	HST is shorted (when enabled)	0	0	1	1	0
7	OAT is disconnected (when enabled)	0	0	1	1	1
8	OAT is shorted (when enabled)	0	1	0	0	0
9	TSUC is disconnected (when enabled)	0	1	0	0	1
10	TSUC is shorted (when enabled)	0	1	0	1	0
11	IPM Fault	0	1	0	1	1
12	Bad EEPROM	0	1	1	0	0
13	DC under voltage	0	1	1	0	1
14	DC over voltage	0	1	1	1	0
15	AC under voltage	0	1	1	1	1
16	IDU/ODU Communication mismatch	1	0	0	0	0
17	No Communication	1	0	0	0	1
18	Reserved	1	0	0	1	0
20	Heat sink Over Heating	1	0	1	0	0
21	Deicing	1	0	1	0	1
22	Compressor Over Heating	1	0	1	1	0
23	Compressor Over Current	1	0	1	1	1
24	No OFAN Feedback	1	1	0	0	0
25	OFAN locked	1	1	0	0	1
26	Compressor Lock	1	1	0	1	0
27	Bad Communication	1	1	0	1	1

1 – ON, 0 – OFF

Only one code is shown. Order of priority is 1-24. Diagnostics is continuously ON as long power is on.

12.3.4 Outdoor unit diagnosis and corrective actions

d.	Fault	Probable Cause	Corrective Action
	Sensors failures of all types		Check sensors connections or replace sensors.
	IPM Fault	Electronics HW problem	Check all wiring and umper settings, if OK, replace electronics.
	Bad EEPROM		No action, unless special parameters are required for unit operation.
	DC under/over Voltage	Electronics HW problem	Check outdoor unit power supply voltage
	AC under Voltage		Check outdoor unit power supply voltage
	Indoor / Outdoor unit Communication mismatch	Indoor and Outdoor controllers are with different versions	Replace Indoor controller
	No Communication	Communication or grounding wiring is not good.	Check Indoor to Outdoor wiring and grounding
	Compressor Lock		Switch unit to STBY and restart
	Bad Communication	Communication quality is low reliability	Check Indoor to Outdoor wiring and grounding

12.4 Judgment by MegaTool

MegaTool is a special tool to monitor the system states.

Using MegaTool requires:

- A computer with RS232C port.
- A connection wire for MegaTool.
- A special MegaTool software.

Use MegaTool according to following procedure:

- Setup MegaTool software: copy the software to the computer.
- Connect RS232C port in computer with MegaTool port in Indoor/Outdoor unit controller by the connection wire.
- Run the software and choose the COM port, you can monitor the A/C system state in monitor tab.

12.5 Simple procedures for checking the Main Parts

12.5.1 Checking Mains Voltage.

Confirm that the Mains voltage is between 198 and 264 VAC. If Mains voltage is out of this range, abnormal operation of the system is *expected*. If in range check the Power (Circuit) Breaker and look for broken or loosed cable lugs or wiring mistake(s).

12.5.2 Checking Power Input.

If Indoor unit power LED is unlighted, power down the system and check the fuse of the Indoor unit. If the fuse is OK replace the Indoor unit controller. If the fuse has blown, replace the fuse and power up again.

Checking Power Input procedure for the Outdoor unit is the same as with the Indoor unit.

12.5.3 Checking the Outdoor Fan Motor.

Enter Test Mode (where the OFAN speed is high)

Check the voltage between lead wires according to the normal value as following:

- Between red wire and black wire: 310VDC +/- 20V
- Between orange wire and black wire: 15VDC +/- 1V
- Between yellow wire and black wire: 2-6VDC

12.5.4 Checking the Compressor.

The compressor is brushless permanence magnetic DC motor. Three coil resistance is same. Check the resistance between three poles. The normal value should be below 0.5 ohm (TBD).

12.5.5 Checking the Reverse Valve (RV).

Running in heating mode, check the voltage between two pins of reverse valve connector, normal voltage is 220VAC.

12.5.6 Checking the electrical expansion valve (EEV).

The EEV has two parts, drive part and valve. The drive part is a step motor the valve. Check the drive voltage (12VDC). When Outdoor unit is power on, EEV shall run and have click and vibration.

12.6 Precaution, Advise and Notice Items

12.6.1 High voltage in Outdoor unit controller.

Whole controller, including the wires that are connected to the Outdoor unit controller may have the potential hazard voltage when power is on. Touching the Outdoor unit controller may cause an electrical shock.

Advise: Don't touch the naked lead wire and don't insert finger, conductor or anything else into the controller when power is on.

12.6.2 Charged Capacitors

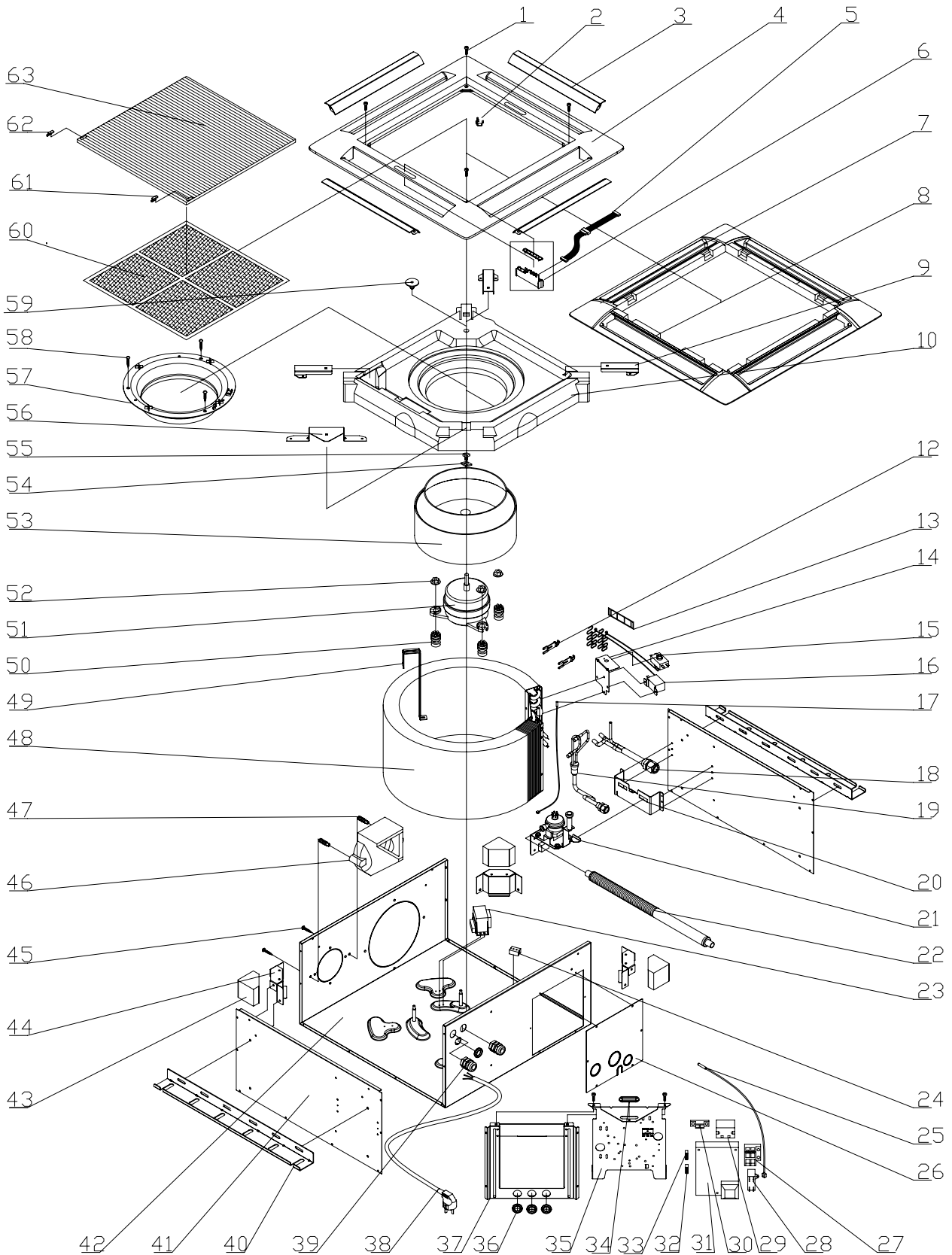
Three large-capacity electrolytic capacitors are used in the Outdoor unit controller. Therefore, charging voltage (380VDC) remains after power down. Discharging takes about four minutes after power is off. Touching the Outdoor unit controller before discharging may cause an electrical shock.

12.6.3 Additional advises

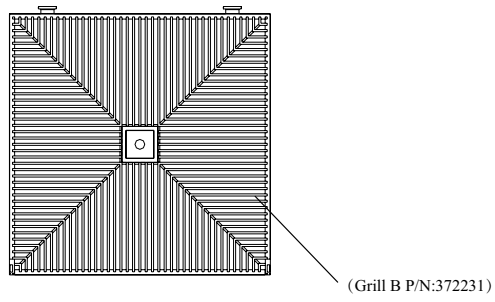
- When disassemble the controller or the front panel, turn off the power supply.
- When connecting or disconnecting the connectors on the PCB, hold the whole housing, don't pull the wire.
- There are sharp fringes and sting on shell. Use gloves when disassemble the A/C units.

13. EXPLODED VIEWS AND SPARE PARTS LISTS

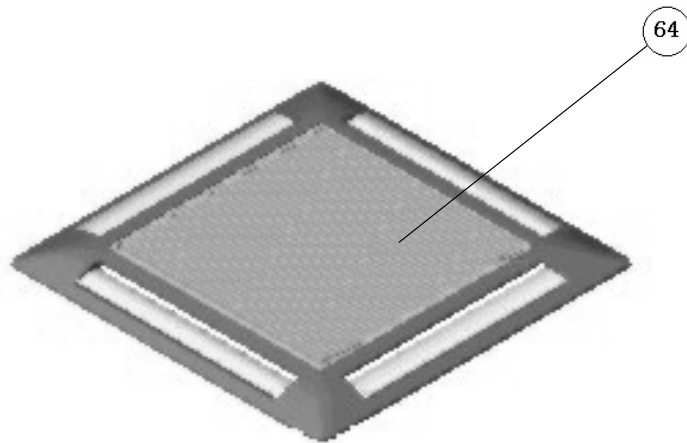
13.1 Indoor Unit: K 25, 35, 35S, 50 DCI



13.2 Indoor Unit: K 25, 35, 35S 50 DCI (page 2)



CASSETTE AUTO LOUVER



13.3 Indoor Unit: K 25, 35 DCI

No.	Part No.	Name	Total Quan.	Version
1	200014	SCREW 4X16	4	1
2	208023	Clip	2	1
3	372273	Flap(White)	4	1
4	4521915	Front(White)	1	1
5	391746	Signal Line	1	1
6	234132	RECEIVER ASSEMBLY 908-081-00	1	1
7	377135	Front EPS I	3	1
8	377138	Front EPS II	1	1
9	4520900	Grill Attachment Assy.	3	1
10	4520923	Drain Pan	1	1
17	232299	Indoor Sensor BLACK	1	1
18	4527521	Gas Pipe Assy K9 DCI R410A	1	1
19	4527523	Liquid pipe assy K9 DCI R410A	1	1
20	323436	PUMP PLACEMENT	1	1
21	4522038	Pump assy	1	1
22	369055	DRAIN TUBE	1	1
23	452827401	AUTO-TRANSFORMER 80W FOR K18 DCI	1	1
24	243139	Free Poles terminal block	1	1
25	438413	ROOM Sensor RED	1	1
26	323460	CONNECTION SUPPORT	1	1
28	455000000	single patch Capacitor for fan motor 1.5uF (CBB61S)	1	1
31	4526212	STORM DCI CONTROLLER 916-521-00	1	1
32	452908900	MODEL PLUG K-9 DCI R410A	1	1
34	4520925	Rubber Ring 1	1	1
35	4520901	Electrical Plate Assy.	1	1
36	4520927	Rubber Ring 3	3	1
37	4520894	Support Assy.	1	1
39	4520947	Joint for power cord	2	1
40	326196	Install Support	2	1
41	305136	Side Wall Assy.	2	1
42	300323	CHASSIS ASSY	1	1
43	377131	EPS BLOCK	3	1
44	323432	Corner Support	3	1
45	4520768	Bolt M4x16	4	1
46	4520909	Fresh Air EPS	1	1
47	4520948	Plastical Screw	2	1
48	4527563	coil K9 DCI R410A (2 rows)	1	1
49	4527274	Evaporator Fixing Plate(two rows) K9 R410A	1	1
50	4522157	Rubber Foot for metal-shell motor	3	1
51	261752	MOTOR 36W/4P 230/1/50	1	1
52	4520772	Screw M6x25	3	1
53	293288	Fan	1	1
54	245138	Fan Rubber	1	1
55	4521023	Bolt M5x16	1	1
56	4520898	Fixation Assy.	1	1
57	374152	AIR INTAKE PANEL	1	1
58	4520770	Screw 4.8x40	3	1
59	374019	Drain Plug	1	1
60	221504	FILTER K	1	1
61	4521919	Left Lock (white)	1	1
62	4521920	Right Lock (white)	1	1
63	4521916	Grill A for Cassette (white)	1	1

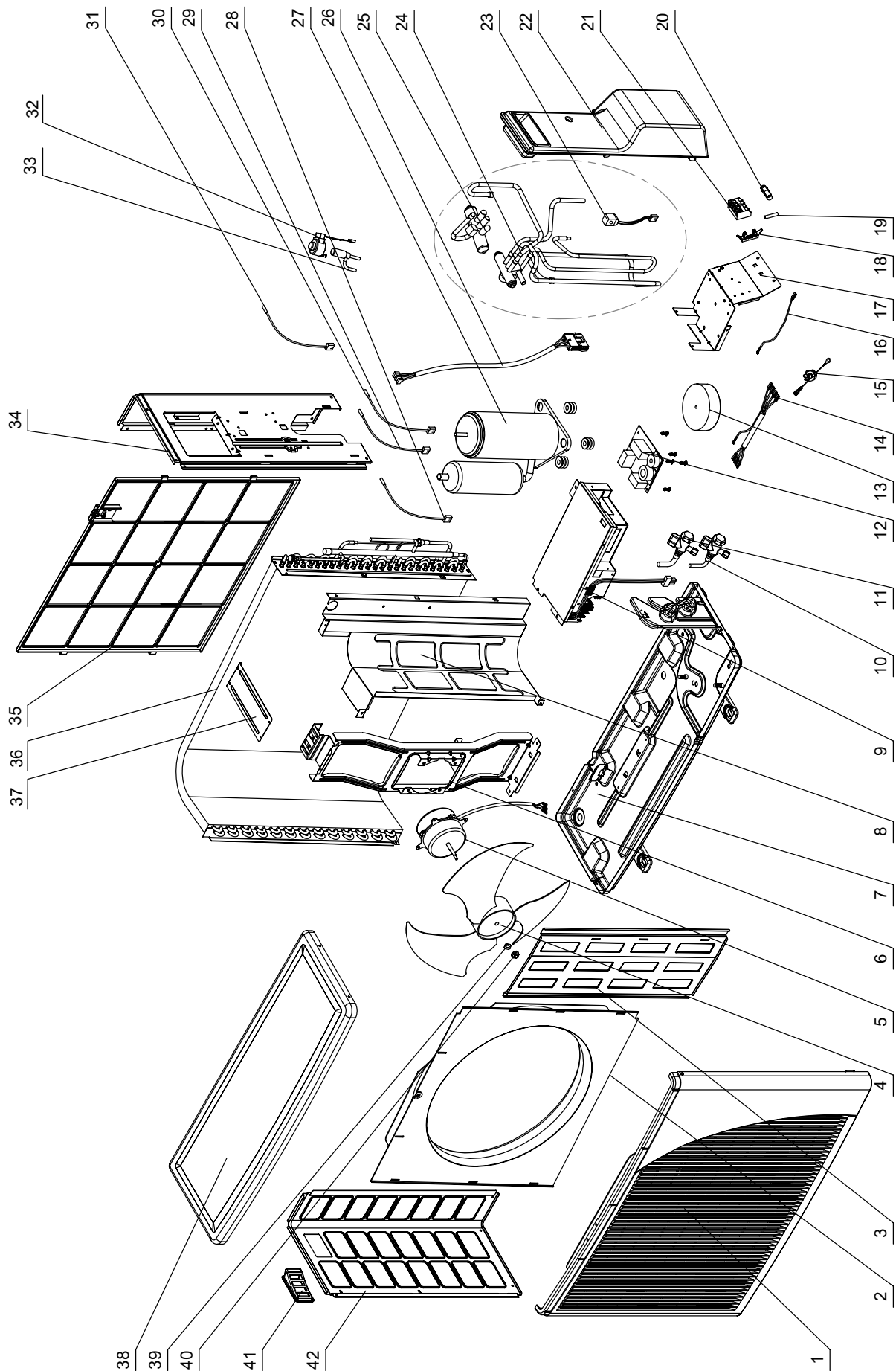
13.4 Outdoor Unit: K 35S DCI

No.	Part No.	Name	Total Quan.	Version
1	200014	SCREW 4X16	4	1
2	208023	Clip	2	1
3	372273	Flap(White)	4	1
4	4521915	Front(White)	1	1
5	391746	Signal Line	1	1
6	234132	RECEIVER ASSEMBLY 908-081-00	1	1
7	377135	Front EPS I	3	1
8	377138	Front EPS II	1	1
9	4520900	Grill Attachment Assy.	3	1
10	4520923	Drain Pan	1	1
17	232299	Indoor Sensor BLACK	1	1
18	4527517	Gas Pipe Assy K12 DCI R410A	1	1
19	4527518	Liquid pipe assy K12 DCI R410A	1	1
20	323436	PUMP PLACEMENT	1	1
21	4522038	Pump assy	1	1
22	369055	DRAIN TUBE	1	1
23	452827401	AUTO-TRANSFORMER 80W FOR K18 DCI	1	1
24	243139	Free Poles terminal block	1	1
25	438413	ROOM Sensor RED	1	1
26	323460	CONNECTION SUPPORT	1	1
28	455000000	single patch Capacitor for fan motor 1.5uF (CBB61S)	1	1
31	4526212	STORM DCI CONTROLLER 916-521-00	1	1
32	452908901	MODEL PLUG K-12 DCI R410A	1	1
34	4520925	Rubber Ring 1	1	1
35	4520901	Electrical Plate Assy.	1	1
36	4520927	Rubber Ring 3	3	1
37	4520894	Support Assy.	1	1
39	4520947	Joint for power cord	2	1
40	326196	Install Support	2	1
41	305136	Side Wall Assy.	2	1
42	300323	CHASSIS ASSY	1	1
43	377131	EPS BLOCK	3	1
44	323432	Corner Support	3	1
45	4520768	Bolt M4x16	4	1
46	4520909	Fresh Air EPS	1	1
47	4520948	Plastical Screw	2	1
48	4527561	coil K12 DCI R410A (3 rows)	1	1
49	4526909	Evaporator Fixing Plate(three rows) K12 R410A	1	1
50	4522157	Rubber Foot for metal-shell motor	3	1
51	261752	MOTOR 36W/4P 230/1/50	1	1
52	4520772	Screw M6x25	3	1
53	293288	Fan	1	1
54	245138	Fan Rubber	1	1
55	4521023	Bolt M5x16	1	1
56	4520898	Fixation Assy.	1	1
57	374152	AIR INTAKE PANEL	1	1
58	4520770	Screw 4.8x40	3	1
59	374019	Drain Plug	1	1
60	221504	FILTER K	1	1
61	4521919	Left Lock (white)	1	1
62	4521920	Right Lock (white)	1	1
63	4521916	Grill A for Cassette (white)	1	1
64	452864200	Front Plate Assy./Motorized Louver Cassette White Grill A	1	1

13.5 Indoor Unit: K 50 DCI

No.	Part No.	Name	Total Quan.	Version
1	200014	SCREW 4X16	4	1
2	208023	Clip	2	1
5	391746	Signal Line	1	1
6	234132	RECEIVER ASSEMBLY 908-081-00	1	1
9	4520900	Grill Attachment Assy.	3	1
10	4520923	Drain Pan	1	1
17	232299	Indoor Sensor BLACK	1	1
18	452783900	Gas Pipe Assy K18 DCI R410A	1	1
19	452784000	Liquid pipe assy K18 DCI R410A	1	1
20	323436	PUMP PLACEMENT	1	1
21	4522038	Pump assy	1	1
22	369055	DRAIN TUBE	1	1
23	452827400	AUTO-TRANSFORMER 80W FOR K18 DCI	1	1
24	243139	Free Poles terminal block	1	1
25	438413	ROOM Sensor RED	1	1
26	323460	CONNECTION SUPPORT	1	1
28	455000000	single patch Capacitor for fan motor 1.5uF (CBB61S)	1	1
31	4526212	STORM DCI CONTROLLER 916-521-00	1	1
32	452807400	MODEL PLUG K-18 DCI R410A	1	1
34	4520925	Rubber Ring 1	1	1
35	4520901	Electrical Plate Assy.	1	1
36	4520927	Rubber Ring 3	3	1
37	4520894	Support Assy.	1	1
39	4520947	Joint for power cord	2	1
40	326196	Install Support	2	1
41	305136	Side Wall Assy.	2	1
42	300323	CHASSIS ASSY	1	1
43	377131	EPS BLOCK	3	1
44	323432	Corner Support	3	1
45	4520768	Bolt M4x16	4	1
46	4520909	Fresh Air EPS	1	1
47	4520948	Plastical Screw	2	1
48	452783800	coil k18 DCI R410A (3+1)	1	1
49	4526910	Evaporator Fixing Plate(four rows) K15/K18 R410A	1	1
50	4522157	Rubber Foot for metal-shell motor	3	1
51	261752	MOTOR 36W/4P 230/1/50	1	1
52	4520772	Screw M6x25	3	1
53	293288	Fan	1	1
54	245138	Fan Rubber	1	1
55	4521023	Bolt M5x16	1	1
56	4520898	Fixation Assy.	1	1
57	374152	AIR INTAKE PANEL	1	1
58	4520770	Screw 4.8x40	3	1
59	374019	Drain Plug	1	1
60	221504	FILTER K	1	1
61	4521919	Left Lock (white)	1	1
62	4521920	Right Lock (white)	1	1
63	4521916	Grill A for Cassette (white)	1	1
64	452864200	Front Plate Assy./Motorized Louver Cassette White Grill A	1	1
65	4525353	Step motor	2	1
66	4523557	Automatic Flap / White	1	1
67	4523556	Front Plate / White	1	1
68	4524175-4	EPS 4	1	2
69	4524175-3	EPS 3	1	2
70	4524175-2	EPS 2	1	2
71	4524175-1	EPS 1	1	2
72	4525039	Left Bracket for Motor White	1	1
73	4523563	Shaft Adapter	4	1
74	4523562	Gimbal	4	1
75	4523561	Transmission Shaft	2	1
76	4525041	Right Bracket for Motor White	1	1

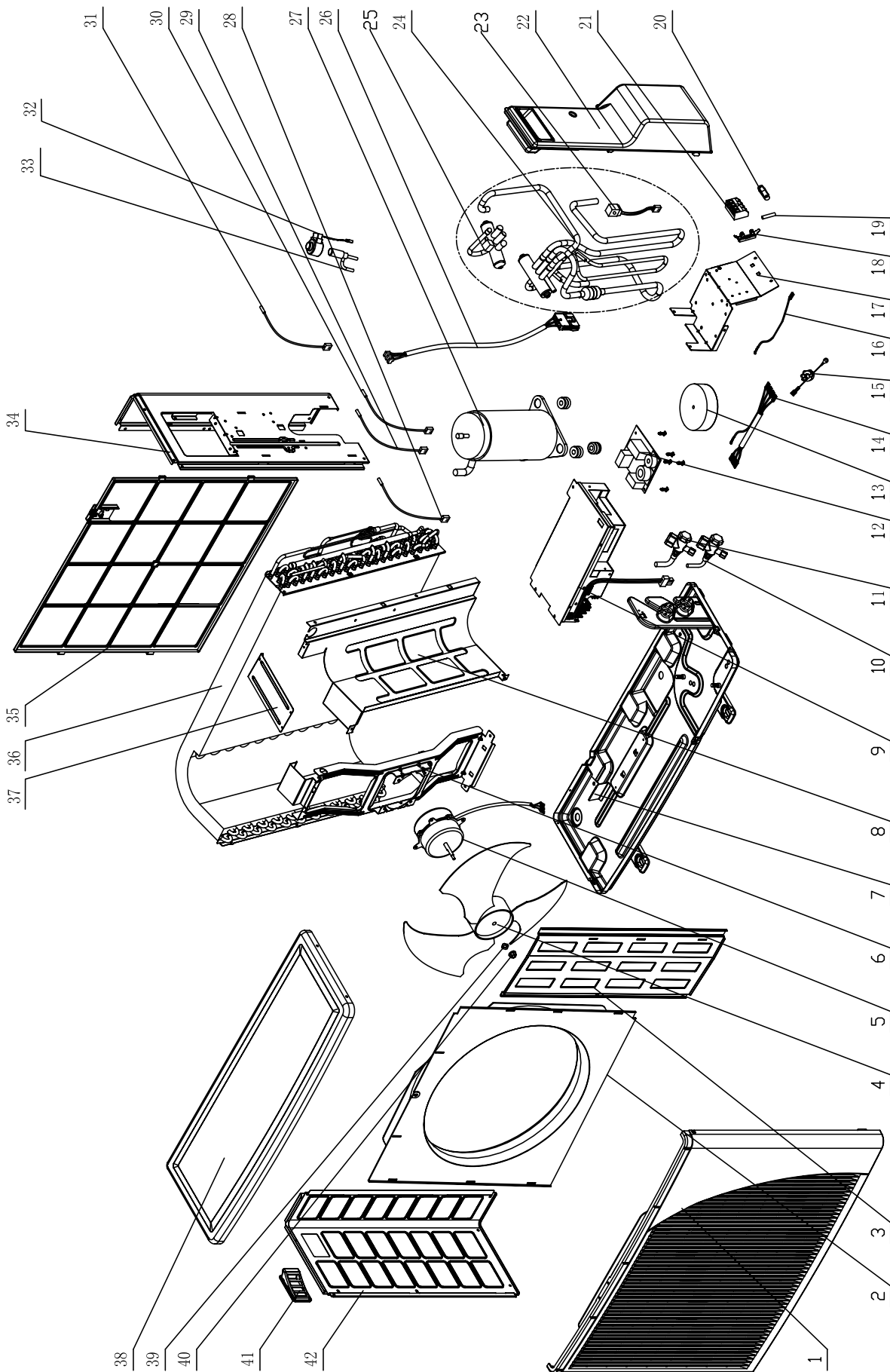
13.6 Outdoor Unit: ONG3 25, 35, 35S DCI



13.7 Outdoor Unit: ONG3 25, 35, 35S DCI

No.	Part No.	Description	Unit
1	433218	Front panel A	1
2	4526340	Air inlet ring-420	1
3	433223	Painting insulation plate	1
4	4526476	Axial fan OD=401	1
5	4527092	DC motor for DCI25/35	1
6	433215	Motor support	1
7	4523060	Base painting Assy.	1
8	4526299	Partition	1
9	4526403	Outdoor DC inverter controller (English)	1
10	4524177	Gas valve (R410A)	1
11	4524176	Liquid valve(R410A)	1
12	4526224	EMI filter board 901-098-00	1
13	4526396	Chock Assy. 167-021-01	1
14	4526223	AC-IN connected wire	1
15	4526968	Earthing wire for DCI	1
16	4526222	Fuse connecting wire	1
17	4526300	Terminal sheet	1
18	4526220	Fuse stand JEF-511B(EHK P/N:150-038-00)	1
19	4526219	Fuse 65TS(15A,230)150-031-00	1
20	204107	Cable clip nylon	1
21	4519188	4 poles terminal block	1
22	433229	Value cover	1
23	4522509	4-Way valve coil	1
24	4526367	4-way valve welding Assy. (DCI25)	1
	4526393	4-way valve welding Assy. (DCI35)	1
25	4518952	4-way valve (DCI25)	1
	4518951	4-way valve (DCI35)	1
26	4526221	Compressor wire	1
27	4526204	DC Inverter compressor Assy. 5RS102XAB	1
28	4526775	Compressor top thermistor(CTT)	1
29	4526774	Outside air thermistor(OAT)	1
30	4526776	Outside coil thermistor(OCT)	1
31	4526969	Suction coil thermistor(SUCT)	1
32	4526828	EEV Coil (CAN-MD 12FKS-1 White)	1
33	4526827	Electronic expansion valve (CAMB20YGFKS-1)	1
34	4519606	Right side panel	1
35	433228	Back side net	1
36	4526368	Condenser soldering assy	1
37	4526298	Bridge	1
38	4519614	Painting top cover	1
39	4526480	Gasket for axial fan	1
40	4519300	Nut M5 L	1
41	433225	Handle	1
42	4519607	Left side panel painting plate	1

13.8 Outdoor Unit: K 50 DCI



13.9 Outdoor Unit: K 50 DCI

No.	Part No.	Description	Unit
1	433218	Front panel A	1
2	4526340	Air inlet ring-420	1
3	433223	Painting insulation plate	1
4	4526476	Axial fan OD=401	1
5	4526475	DC motor for DCI 50	1
6	4526457	Motor support	1
7	4527363	Base painting Assy.	1
8	4526459	Partition	1
9	4526203	Outdoor DC inverter controller (English)	1
10	4524595	Gas valve (R410A)	1
11	4524176	Liquid valve(R410A)	1
12	4526224	EMI fliter board 901-098-00	1
13	4526396	Chock Assy. 167-021-01	1
14	4526223	AC-IN connected wire	1
15	4526968	Earthing wire for DCI	1
16	4526222	Fuse connecting wire	1
17	4526300	Therminal sheet	1
18	4526220	Fuse stand JEF-511B(EHK P/N:150-038-00)	1
19	4526533	Fuse 65TS(20A,230)150-031-00	1
20	204107	Cable clip nylon	1
21	4519188	4 poles terminal block	1
22	433229	Value cover	1
23	4522509	4-Way valve coil	1
24	4527327	4-way valve welding Assy.	1
25	4518952	4-way valve	1
26	4526221	Compressor wire	1
27	4523446	DC Inverter compressor Assy. 5CS130XCC03	1
28	4526775	Compressor top thermistor(CTT)	1
29	4526774	Outside air thermistor(OAT)	1
30	4526776	Outside coil thermistor(OCT)	1
31	4526969	Suction coil thermistor(SUCT)	1
32	4526215	Electronic expansion valve ZDPF(L)-1.6C-01-RK for R410A	1
33	4526216	EEV COIL QA(L)12-HR-01A-RK	1
34	4519606	Right side panel	1
35	433228	Back side net	1
36	4526459	Condenser soldering assy	1
37	4526298	Bridge	1
38	4519614	Painting top cover	1
39	4526480	Gasket for axial fan	1
40	4519300	Nut M5 L	1
41	433225	Handle	1
42	4519607	Left side panel painting plate	1

APPENDIX A

INSTALLATION AND OPERATION MANUAL

- ▶ OPERATION MANUAL K 25, 35, 35S 50 DCI
- ▶ INSTALLATION MANUAL K 25, 35, 35S 50 DCI

CLIMATISEUR SPLIT MURAL

FRANÇAIS

AIR CONDITIONER SPLIT CASSETTE

ENGLISH

KLIMAGERÄT IN SPLIT BAUWEISE

DEUTSCH

CLIMATIZADOR SPLIT MURAL

ESPAÑOL

CONDIZIONATORE D'ARIA A PARETE SPLIT

ITALIANO



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

CONTENTS

INTRODUCTION **1**

SYSTEM DESCRIPTION **2**

MODES OF OPERATION, FUNCTIONS AND FEATURES **3**

ON-UNIT INDICATORS AND CONTROLS **5**

● **On-unit Operation** **5**

PROTECTION MODES **6**

CARE AND MAINTENANCE **7**

OPERATING TIPS **8**

PRECAUTIONS **9**

BEFORE CALLING FOR SERVICE **10**

EXCEPTION FOR MULTI SPLIT TYPE **11**

*PLEASE READ THESE
INSTRUCTIONS **BEFORE**
OPERATING THE AIR
CONDITIONER*

INTRODUCTION

Dear customer:

The DC Inverter air conditioner you have purchased is one of the most advanced units of its kind. The DC Inverter air conditioner is a variable capacity air conditioner which uses high efficiency DC motors for the compressor and the outdoor fan. Unlike other models, it can adjust its capacity according to the user setting and the environmental condition, thus saving up to 30% of the seasonal power consumption, while keeping maximum comfort level.

Detailed instruction as to the DC Inverter air conditioner (including Single & Multi Split type) functions and way of operation are provided in the following pages.

This Split Air Conditioner is designed for versatile application:



● Cooling.



● Dehumidifying.



● Heating.



● Filtration.



● Ventilation



OPERATING TEMPERATURE RANGE:

-15°C ~ 46°C

IMPORTANT NOTICE:

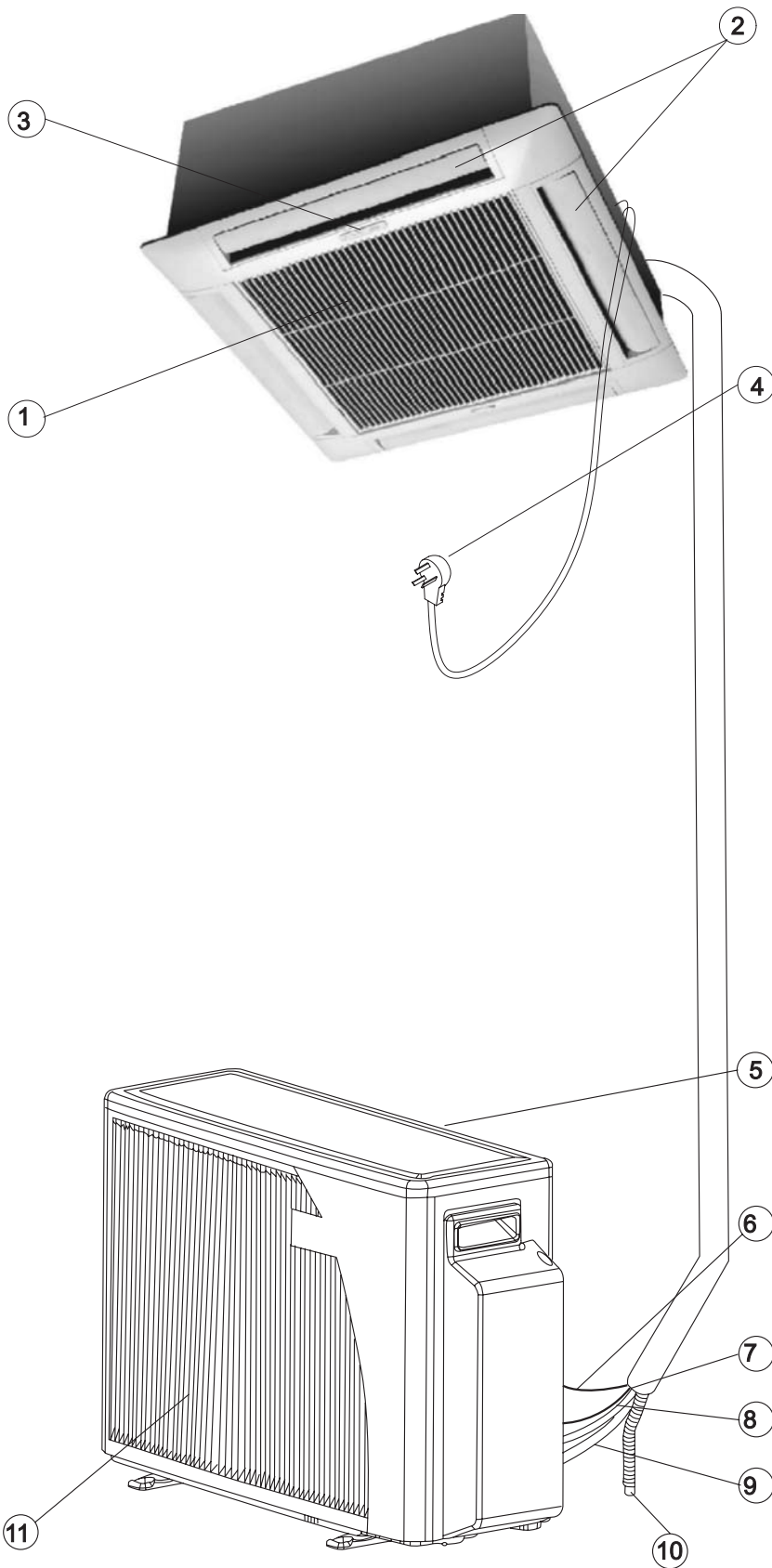
- *This air conditioner must be grounded to protect against electrical shock.*
- *Installation of the air conditioner must be performed by an experienced air conditioning installer, observing good refrigeration practice.*
- *Electrical connections and power cord replacement should only be made by authorized electricians and in accordance with electrical regulations and local codes. The appliance must be positioned so that the plug is accessible*
- *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.*

Test Mode

Test Mode is set only for performance testing purposes, and not for user operation. Test mode can be initiated by either one of the following conditions:

- 1) Operating the unit with the following remote control settings and temperature conditions:
Cool Mode, SPT=16°C and RAT=27±1°C,
OAT=35±1°C for 30 minutes;
Heat Mode, SPT=30°C and RAT=20±1°C,
OAT=7±1°C for 30 minutes.*
- 2) Entering Diagnostics with Cool/SPT=16°C or Heat/SPT=30°C.*

SYSTEM DESCRIPTION



1. Air intake grille
(with air filter in it)

2. Air outlet louver

3. Unit's indicators

4. Power cord ※

5. Outdoor unit air intake

6. Power cable

7. Fresh-air controls wire
(optional)

8. Liquid tube

9. Suction tube

10. Drain hose

11. Outdoor unit air outlet

※ Not connected in multi split applications

MODES OF OPERATION, FUNCTIONS AND FEATURES



COOL

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



HEAT

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



AUTO

Automatically select between cool and heat operation modes, according to the requested room temperature and the actual 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 FAN

The air conditioner automatically selects the FAN speed in accordance to the room temperature.

During the first 30 minutes of unit operation after being turned ON, the unit operates at high fan speed to maximize the cooling/heating effect. As the room air approaches to the desired temperature, the fan switches to a lower speed for quieter operation.

HOT KEEP

In HEATING, when unit is started, the indoor fan will not be turned on until the indoor coil reaches adequate temperature. This HOT KEEP feature prevents uncomfortable cold air drafts.



I FEEL

Switches the temperature sensing point to the place where the remote control (optional) is located.(Generally the temperature sensor is located behind the intake grille of the air conditioner).This function is designed to provide a personalized environment by transmitting the temperature control command from the location next to you. The communication between the Remote Control and the unit is done by infra-red signal. Therefore, in using this function, the Remote Control should always be aimed, without obstructions, at the air conditioner.



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 after each consecutive hour, up 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, up to three hour, rom the start of the mode. When in SLEEP mode, the air conditioner will be automatically turned off after having operated for seven hours. The result is a more comfortable and Invigorating sleep, which leaves you feeling fresh and energetic in the morning.

ROOM TEMPERATURE

Measures and displays room temperature.

AUTO FLAP

The air flap (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.

**AIR DIRECTION POSITIONING**

Manual positioning of the air flap to provide desirable air flow angle.

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 failure, it will resume operating in the same mode as before the power was disrupted.

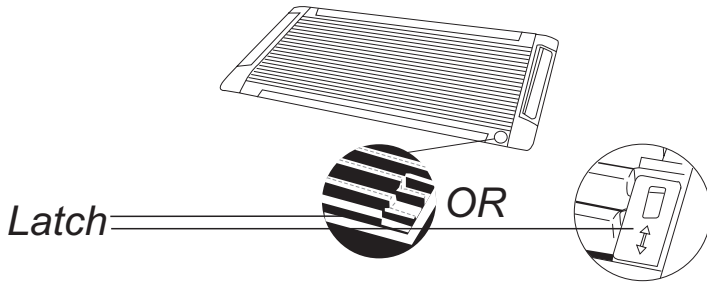
LOCK

Freezes the last operation setting on the remote control. When LOCK is activated, the remote control will not be able to control the air-conditioner.

ILLUMINATED KEYPAD AND LCD DISPLAY (optional)

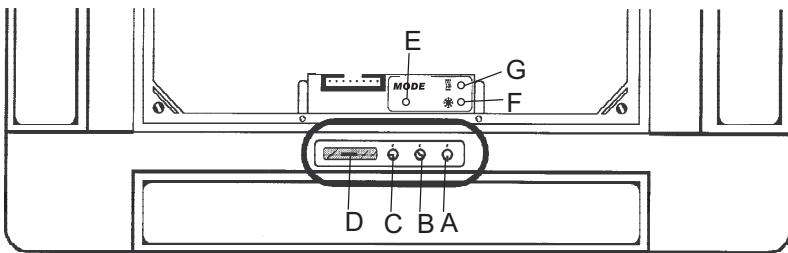
By pressing any button in dark environment, the keypad and the LCD display will be illuminated.

ON-UNIT INDICATORS AND CONTROLS



In case the user has his remote control not anymore, the air conditioner can be operated by a control panel located under the suction grille.

To gain access to this panel, open the front panel (2 latches) and remove the air filter.



ON-UNIT OPERATION

If the air-conditioner can not be operated by the Remote Control unit, it can be turned on for cooling or heating, or completely turned off, by pressing MODE button (E) on the air-conditioner. The MODE button will change the operating status of the unit between - COOLING - HEATING - STAND BY positions. Every time it is pressed, Indicators (F),(G) or (A) will light up respectively, to indicate in which mode the air-conditioner operates.

- A. Stand-by indicator
Lights up when the unit is connected to power and ready to receive the remote control commands.
- B. Operation indicator
Lights up during operation. Blinks to announce that a Remote Control signal has been received and stored; Blinks continuously during protections.
- C. Timer/warning indicator
Lights up during timer and sleep operation; Blinks when any invalid operation or failure occurs.
- D. Infrared signal receiver
Receive signals from remote control.
- E. Unit mode button
Used to switch the unit to cooling or heating or off without the remote control.
- F. Cooling indicator
Lights up only when Mode (E) is pressed for cooling.
- G. Heating indicator
Lights up only when Mode (E) is pressed for heating

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

Note: When switching the unit to OFF after heating operation, the unit may perform outdoor coil deicing operation. In such a case, the compressor will continue to run for some time after the unit has switched to OFF, and the indoor unit louvers are closed. This feature is a part of the normal unit operation.

CARE AND MAINTENANCE

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

CLEANING THE AIR FILTER

- The air filter can prevent the dust of other particle from going inside. In case of blockage of the filter, the working efficiency of the air conditioner may greatly decrease. Therefore, the filter must be cleaned during long time usage.
- To remove the air filters, open the front panel by pushing the 2 latches. Clean the filters (Vacuum cleaner or pure water may be used to clean the air filter. If the dust accumulation is too heavy, please use soft brush and mild detergent to clean it and dry out in cool place).

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 inner unit from direct sun or lighting.
-

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.
- Adjust the air flow direction properly to avoid winding toward your body and naturalize the room temperature evenly to enjoy it more comfortably.
- 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 in cooling mode.
- 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. However, if the timer was used, the unit will be turned off by the timer only if the remote control is aimed at the unit. Otherwise the power failure will cause the timer data to be erased from the microprocessor memory.
- After turning on, allow more than 3 minutes for cooling, heating or dry operation to start.
- When COOL or DRY modes are used, make sure that the room's relative humidity is below 78%. If the unit is used for a prolonged period 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 8 meters. If you are out of range, the Remote control may have difficulties in transmitting signals.

PRECAUTIONS

- To avoid the risk of serious electrical shock, never spill water or liquid on the indoor unit and the remote control.
- To avoid the risk of fire, please keep inflammables such as hair-glue, spray lacquer and gasoline away from the air conditioner.
- Don't touch the grille while the air flow is running, or your finger or machine parts may be hurt.
- Please use the ON/OFF button on the remote controller to start or stop the air conditioner, instead of the main power switch.
- Use the proper electrical fuse.
- 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.
- To guarantee your absolute safety, please turn off the power before any routine maintenance.

BEFORE CALLING FOR SERVICE

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

Problem	Cause	Remedy
● Unit does not operate. Stand-by indicator does not light up.	<input type="checkbox"/> Unit not connected to power <input type="checkbox"/> Power failure	<input checked="" type="checkbox"/> Plug in the power cord <input checked="" type="checkbox"/> Check main fuse
● Unit does not operate. Stand-by indicator lights.	<input type="checkbox"/> Remote control malfunctions <input type="checkbox"/> The remote control is locked.	<input checked="" type="checkbox"/> Check remote control batteries. <input checked="" type="checkbox"/> Try to operate from a closer distance. <input checked="" type="checkbox"/> Start from on-unit controls. <input checked="" type="checkbox"/> Unlock the remote control.
● Unit does not respond properly to remote control command.	<input type="checkbox"/> IR signal does not reach unit. <input type="checkbox"/> Distance between remote control and unit too large or aimed at from improper angle. <input type="checkbox"/> IR receiver on-unit exposed to strong light source.	<input checked="" type="checkbox"/> Check for obstruction between unit and remote control, Clear if needed. <input checked="" type="checkbox"/> Get closer to unit. <input checked="" type="checkbox"/> Dim lights, fluorescents especially
● Air does not blow out from indoor unit.	<input type="checkbox"/> De-icing protection mode is activated.	<input checked="" type="checkbox"/> Normal operation in HEATING mode.
● COOLING, DRY or HEATING does not start immediately.	<input type="checkbox"/> 3-min. Compressor delayed start	<input checked="" type="checkbox"/> Normal operation for these modes.
● Unit functions but does not perform sufficiently.	<input type="checkbox"/> Improper temperature setting. <input type="checkbox"/> Unit capacity insufficient for load or room size.	<input checked="" type="checkbox"/> Reset temperature. <input checked="" type="checkbox"/> Consult your dealer
● Filter indicator lights up	<input type="checkbox"/> Air Filter needs cleaning	<input checked="" type="checkbox"/> Clean filter, reinstall and reset indicator

EXCEPTION FOR MULTI-SPLIT TYPE

In multi split applications where more than a single indoor unit is connected to the same outdoor unit, it may happen that the requested operation mode can not be operated.

The reason for that is that the system is currently operating in a different mode.

The system operation mode can be either cooling or heating and is set by the outdoor unit controls, based on indoor and outdoor unit settings.

The rules for the mode settings may be different from one application to another.

In most applications the system operation mode will not be changed as long as there is an operating indoor unit requesting the active mode. The operation mode in such application will be set by the first indoor unit that is turned ON from Stand By.

The following table shows the indoor unit operation modes that can be operated per active system mode:

		System Active Mode	
		Cooling	Heating
Requested indoor unit operation mode	Cooling	v	X
	Heating	X	v
	Dry	v	X
	Auto Cool/Heat	v (cooling only)	v (heating only)
	Ventilation	v	X

(v - enabled indoor unit operation mode, X - disabled indoor unit operation mode)

Indoor unit operation when the requested mode is disabled is as following:

- Louver opens (for model with motorized louver only);
- Green (OPER) LED blinks once in two seconds;
- Indoor fan is forced off;



DCINVERTER

INSTRUCTIONS D'INSTALLATION

FRANÇAIS

INSTALLATION INSTRUCTIONS

ENGLISH

INSTALLATION SANLEITUNG

DEUTSCH

INSTRUCCIONES DE INSTALACIÓN

ESPAÑOL

ISTRUZIONE PER L'INSTALLAZIONE

ITALIANO

INSTALLATION INSTRUCTIONS

ENGLISH

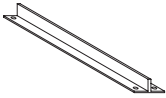




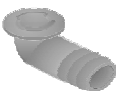

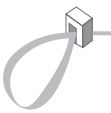


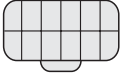
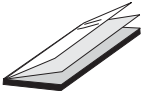
1. ACCESSORIES SUPPLIED WITH THE AIR CONDITIONER
2. LOCATION OF INDOOR AND OUTDOOR UNIT
3. INSTALLATION OF THE INDOOR UNIT
4. CONDENSATE HOSE CONNECTION
5. ELECTRICAL CONNECTION BETWEEN INDOOR AND OUTDOOR UNIT
6. REFRIGERANT TUBING
7. FINAL TASKS

The appliance shall not be installed in the laundry.

NOTE: This manual is for single split applications.
For multi split applications please use installation manual supplied within outdoor unit package.

INSTALLATION INSTRUCTIONS FOR DCI SPLIT WALL MOUNTED AIR CONDITIONER

1 ACCESSORIES SUPPLIED WITH THE AIR CONDITIONER

Shape	Name	Qty	Used for
	T support	2	Ceiling mounting of the indoor unit
	Remote control with batteries	1	Operation of unit
	Remote control bracket	1	Wall mounting of the remote control
	Screws	4	Ceiling mounting of indoor unit
	Screws dowels	4 2	Ceiling mounting of indoor unit Wall mounting of remote control bracket
	Outdoor unit drain connector	1	Outdoor unit water drain
	Mounting pads	4 4	Padding of indoor unit Padding of outdoor unit bottom support
	Cable ties	2	Securing wires in the indoor and outdoor unit
	Power input cable (Optional)	1	Connecting indoor unit power
	Nut	8	Ceiling mounting of indoor unit
	Air purifying filter (Optional)	1	Cleaning the air filter
	<ul style="list-style-type: none"> Remote control Unit operation Installation manual 	3	Users and installers reference

Indoor Unit's Accessories Only for One Unit.

2 LOCATION OF INDOOR AND OUTDOOR UNIT

Select the location considering the following:

INDOOR UNIT

- Do not install the cassette in a room where gasses, acids or inflammable products are stored, in order to avoid damage to the aluminium and copper evaporators and the internal plastic parts.
- Do not install the cassette in a workshop or a kitchen. Oil vapour attracted by the treated air could form deposits on the cassette evaporators and modify their performance or damage the cassette's internal plastic parts.
- Do not install the cassette in a laundry, or a room where steam is produced.
- The appliance must be positioned so that the plug is accessible.
- The indoor unit is to be built into a suspended ceiling with panels dimensions of 60 x 60cm².
- Installing the cassette will be easier with the use of a fork lift truck. Use the packing base by placing it between the cassette and the truck forks.
- It is recommended to install the cassette, as far as is possible, in the centre of the room, in order to optimise treated air distribution.
- For the chosen location, check that the distribution grilles can be removed and that there is sufficient space available for access for maintenance and repairs.

OUTDOOR UNIT

- The location must allow easy servicing and provide good air circulation as shown in fig 4.
- 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).
- If the unit is suspended, ensure that the bracket is firmly connected and the wall is strong enough to withstand vibrations.
- Unit location should not disturb neighbors with noise or exhaust air stream.
- Place the mounting pads under the unit legs.
- Refer to figure 4 for allowed installation distances.
- When the unit is installed on a wall, install the drain connector hose and drain plug as shown in fig 1 and fig 2.

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

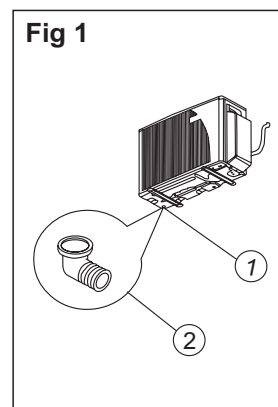
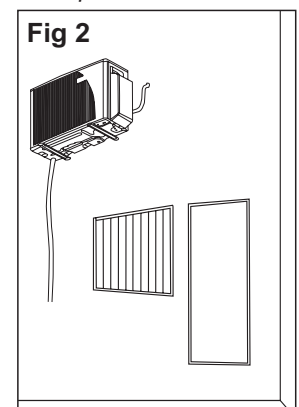
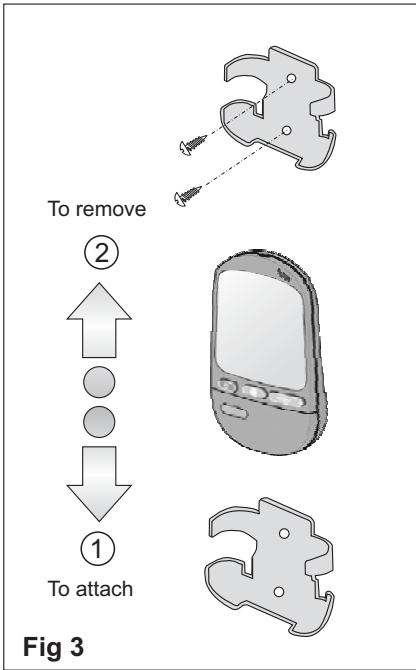


Fig.2
Drain installation Example





Capacity	L.MAX.(m)	H.MAX.(m)
9000 Btu (2500 W) model	20	10
12000 Btu (3500 W) model	30	10
18000 Btu (5000 W) model	30	10

NOTE:

- No additional charge is required.

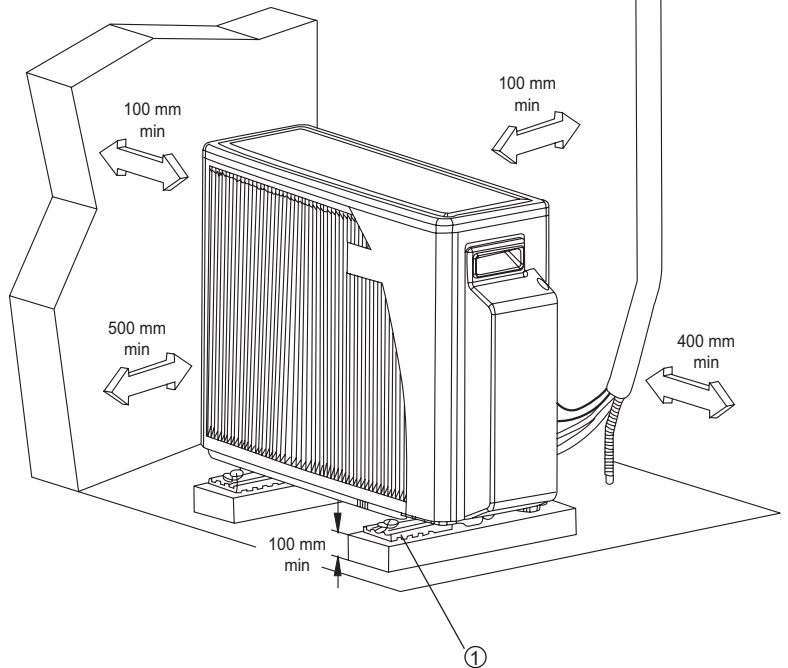


Fig.4
1. Mounting pads (× 4)

INSTALLATION OF THE INDOOR UNIT

CEILING MOUNTING

Mark the position of each support rod.

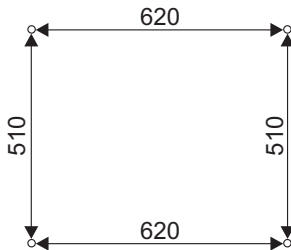


Fig 5

1. Fit the angle attachment fittings supplied with the cassette onto the threaded rods (not supplied). Recommended $\varnothing 6$ mm maximum $\varnothing 8$ mm. Take care to distance them from the suspended ceiling by 270mm or 107mm.

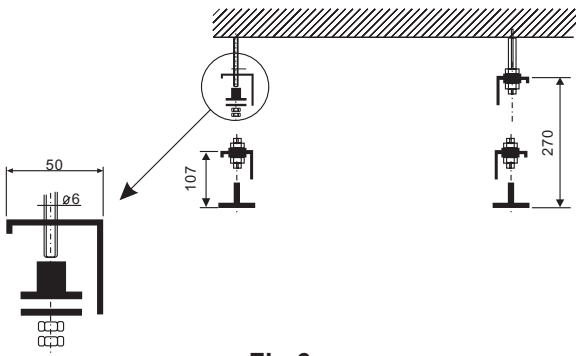


Fig 6

- When fitting the angle attachment fittings in the low position, remove the insulating foam from around the mounting nuts.
- The possibility of fitting the angle attachment fittings at different heights, leaves the installer the choice of mounting them on the cassette in the high or low position. Mounting them in the low position provides for more flexible installation.
- Do not tighten the nuts or lock nuts. This will be done only after having set the cassette in its final horizontal position, when all the connections have been completed.

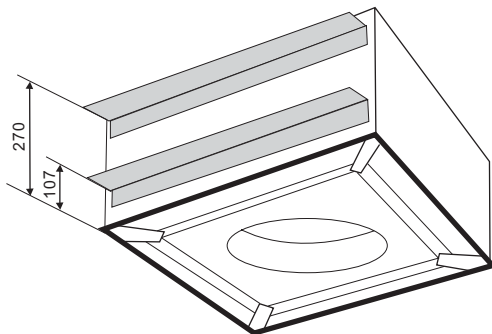


Fig 7

WARNING !

If it is intended to install ducting to an adjacent room, refer to Ceiling mounting for removal of the pre-punched panel before installing the cassette.

CASSETTE FITTING

Present the cassette to the support rods.

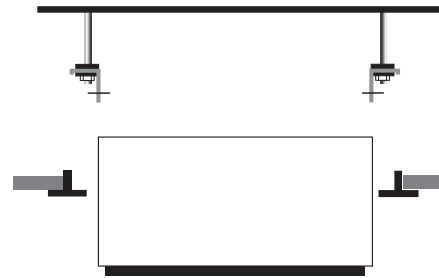


Fig 8

- In the event that the suspended ceiling is 300 mm from the ceiling (minimum permitted height), it might be necessary to temporarily remove some of the suspended ceiling T supports.
- Position the cassette on the suspended ceiling support rods, and start by tightening the side mounting bolts.



Fig 9

- Then screw the threaded rods nuts and lock nuts, after having set the cassette level, maintaining a gap of around 10 mm between the metal chassis and the suspended ceiling.

CASSETTE INSTALLATION

- Side openings are provided for installing separate ducts for outside air intake and treated air distribution to an adjacent room.
- Use a punch to remove the condensation protection insulation and the pre-punched panels from the openings.

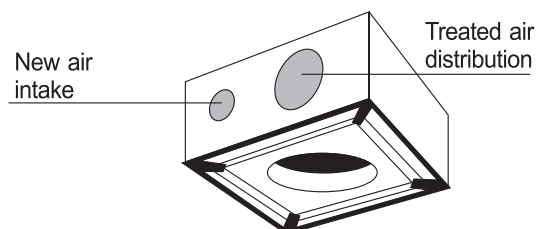


Fig 10

TAKE CARE not to damage the heat exchanger coil located behind the openings.

3. Plug the gaps between the ducts and the opening edge with anti-condensation insulation.
4. Use material which can withstand a continuous operating temperature of 60°C. The ducts can be of the flexible type with a spring core or of corrugated aluminium, covered inside with an insulating material (12 to 25 mm thick glass fibre).
5. When the installation is finished, all the surfaces of the non-insulated ducts must be covered with anti-condensation insulation material (6 mm thick expanded polystyrene or expanded neoprene). Fireproofing classification: M1)

IF THE ABOVE INSTRUCTIONS ARE NOT FOLLOWED, CONDENSATE FLOWS WILL BUILD UP.

6. Distributing air to an adjacent room requires one or two of the corresponding ducts' air distribution flaps to be closed.
7. A decompression grille must be fitted in the partition between the air conditioned room (where the cassette is installed) and the adjacent room.

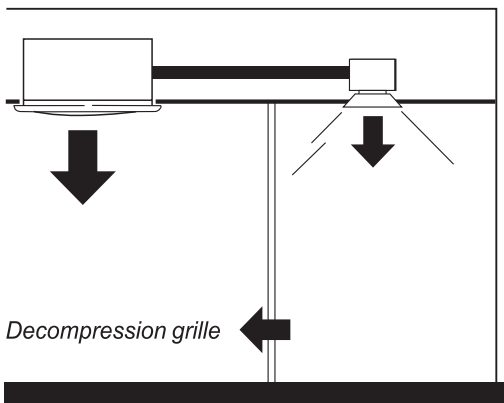


Fig 11

4 CONDENSATE HOSE CONNECTION

CONDENSATE HOSE CONNECTION

1. To ensure effective condensate evacuation, the downward slope must be 1cm per metre without any restricted or ascending section.

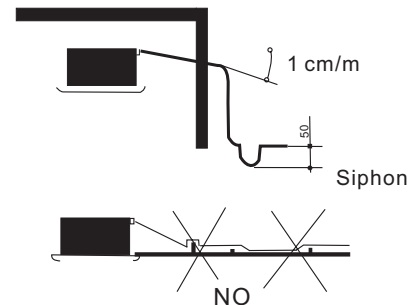


Fig 12

2. The condensate extraction height is limited to a maximum of 0.60 metre (refer to above diagram)
3. For heights above 0.60 m, an auxiliary condensate pump with a level regulator should be installed.

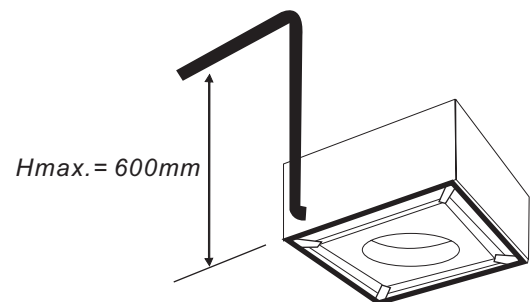


Fig 13

4. Furthermore, a siphon with a height of at least 50 mm must be provided to avoid any unpleasant odours in the room.
5. The condensate evacuation pipe must be heat insulated to a thickness of 5 to 10 mm with insulating material such as polyurethane, propylene or neoprene (Fireproofing classification: M1) to prevent condensation.
6. If several cassettes are installed in the room, the evacuation system can be designed as illustrated below.

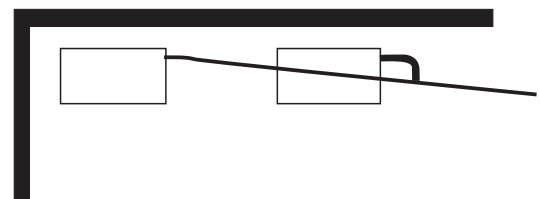


Fig 14

ELECTRICAL CONNECTION BETWEEN INDOOR AND OUTDOOR UNIT

ELECTRICAL REQUIREMENTS

Electrical wiring and connections should be made by qualified electricians and in accordance with local electrical codes and regulation. 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.

1. To connect the indoor unit to the outdoor unit use the following electrical cables.

Electrical connections:

Capacity	9000 Btu (2500 W) model 12000 Btu (3500 W) model	18000 Btu (5000 W) model
Power input cable	3 wires \times 1.5mm ²	3 wires \times 2.5mm ²
Cable between indoor and outdoor unit	4 wires \times 1.5mm ²	4 wires \times 2.5mm ²

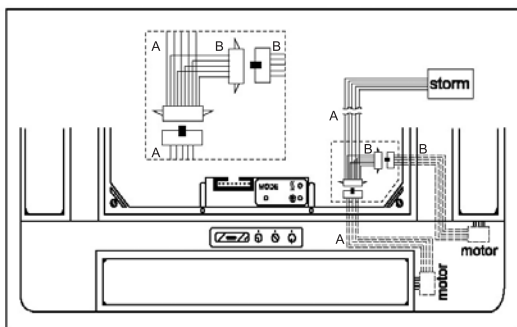
2. Prepare the cable ends for the power input and for the cables between outdoor and indoor units as shown in figure 15a and 15b respectively.
3. Connect the cable ends to the terminals of the indoor and outdoor units, as shown in fig 16.
4. Secure the multiple wire power cable with the cable clamps.

NOTES: The wire color code can be selected by the installer.

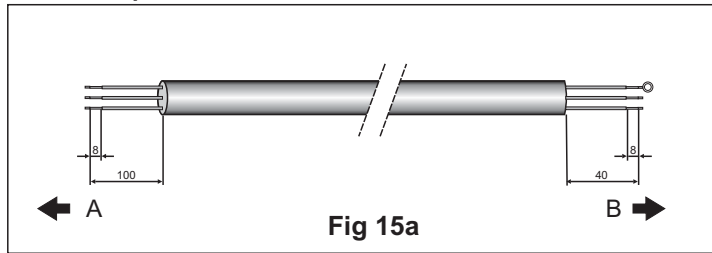
TAKE CARE! (Only auto louver models)

Dont touch the air flap by hand anytime. If the flap swings abnormally, please contact qualified personnel for service.

Please check carfully the electrical connection before commissioning, wrong connection may damage the front assy.



• Power input cable



• Cable between indoor and outdoor units

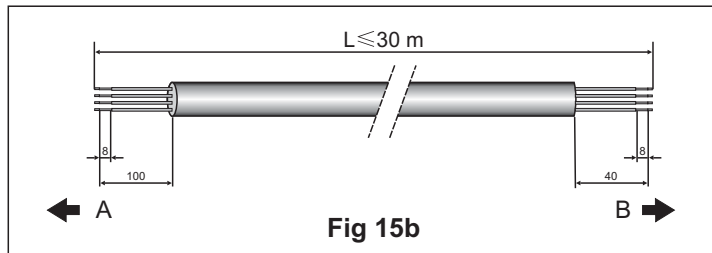


Fig.15 A. OUTDOOR B. INDOOR

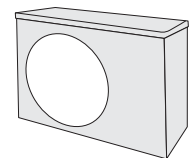
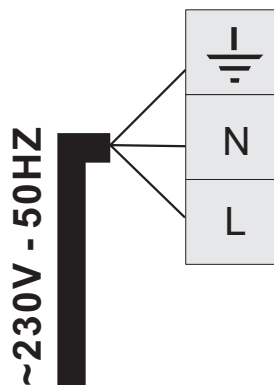
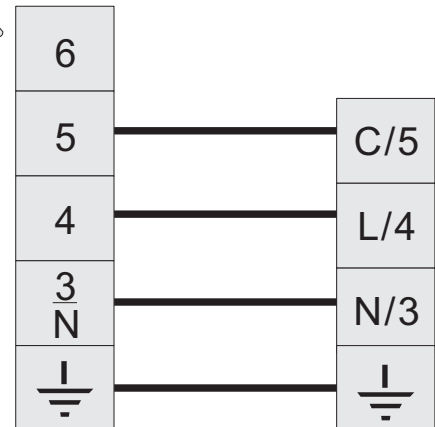
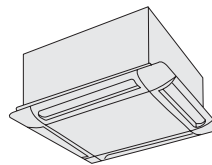


Fig 16

REFRIGERANT TUBING

CONNECT THE INDOOR TO THE OUTDOOR UNIT

The indoor unit contains a small quantity of nitrogen. 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 (R410A). Refer to outdoor unit nameplate.

To prevent crushing, bend tubes using a bending tool.

NOTE: Use refrigeration R410A type copper tubing only.

1. Open the valve cover.
2. 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.)
3. 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.
4. Connect the all ends of the tubing to the indoor and outdoor units. Notice the sign. All ends should correspond one by one.
5. Insulate each tube separately, and their unions, with at least 6 mm thick of insulation. Wrap the refrigerant tubing, drain hose and electric cables together with a vinyl tape (UV protected).

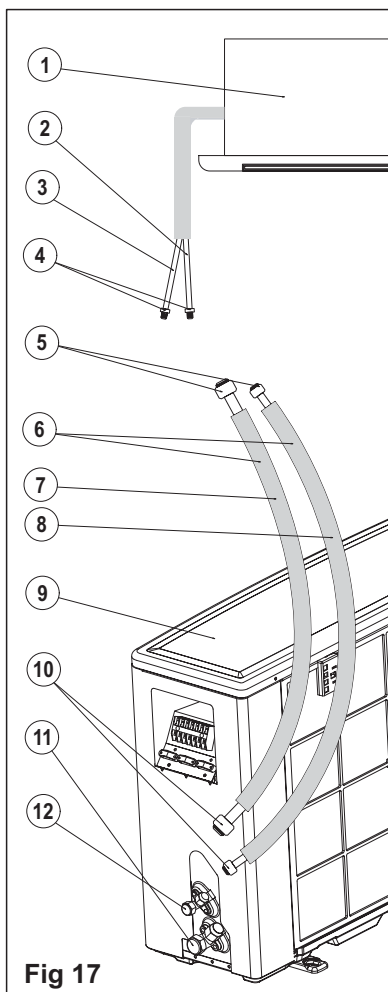


Fig 17

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.17
- 1.INDOOR UNIT
 - 2.Liquid tube (small dia.)
 - Suction tube (large dia.)
 - Plugs
 - Flare nuts
 - Tubing between units
 - Suction tube
 - Liquid tube
 - OUTDOOR UNIT
 - Flare nuts
 - Suction valve (large)
 - 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.

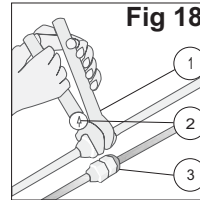


Fig 18

- Fig.18
- 1.Wrench
 - Torque wrench
 - Union

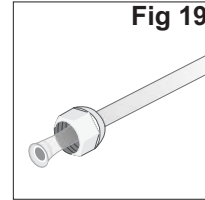


Fig 19

- Fig.19
- To prevent refrigerant leakage, coat the flared surface with refrigeration oil

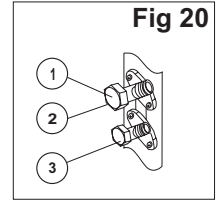


Fig 20

- Fig.20
- 1.Suction valve
 - Service port
 - Liquid valve

AIR DISTRIBUTION MODULE FITTING

1. Carefully unpack the module and fit the clips in the frame corners.

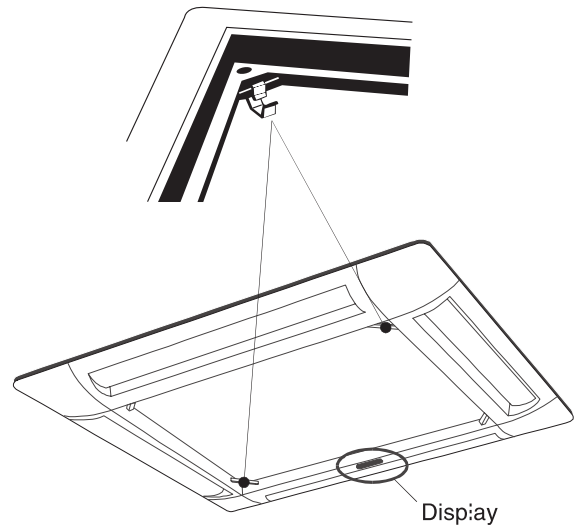


Fig 21

2. Present the frame to the unit, and apply pressure so that the clips engage. Then screw it in place.

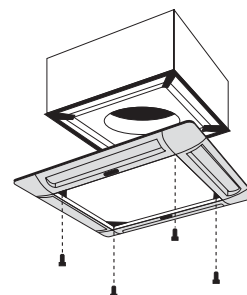


Fig 22

3. The seals are illustrated in the diagram below. They avoid:

- A Air by pass
- B Treated air being distributed into the suspended ceiling space.

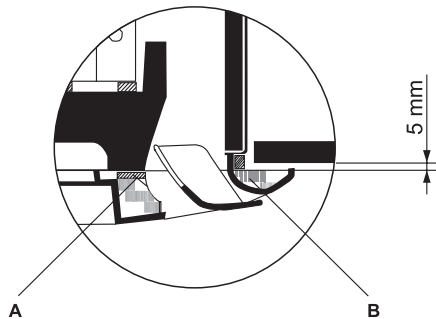


Fig 23

4. After installation, check that the gap between the frame and the suspended ceiling is less than 5 mm.

FILTER INSTALLATION

1. Place the air intake grille hinges in the openings marked A then close the grille with the locks on both sides.

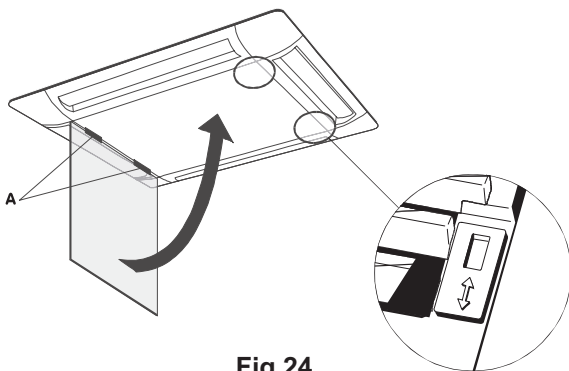


Fig 24

2. A void bending the frame with excessive pulling. The frame must be correctly centred in relation to the suspended ceiling and, above all, it must provide an hermetic separation between the air intake and the air distribution.

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 side of the charging set and the service port of the suction valve. 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, turn off the high side switch and make sure that the needle in the gauge moves from 0 MPa (0cm Hg) to -0.1 MPa (-76cm Hg). Let the pump run for fifteen minutes.
4. Close the valve of the low side 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. Not any problem for five minutes, turn on the power switch of the vacuum pump and open the valve of the low side of the charging set.
6. Disconnect the charging hose from the vacuum pump and from the service ports of the suction valve.
7. Tighten the service port caps of suction valve.
8. Redo 1 to 7 for other indoor units.
9. Remove the valve caps from all valves, and open them using a hexagonal Allen wrench.
10. Remount valve caps onto all of the valves.
11. Check for gas leaks from all the connecting position. Test with electronic leak detector or with a sponge immersed with soapy water for bubbles.

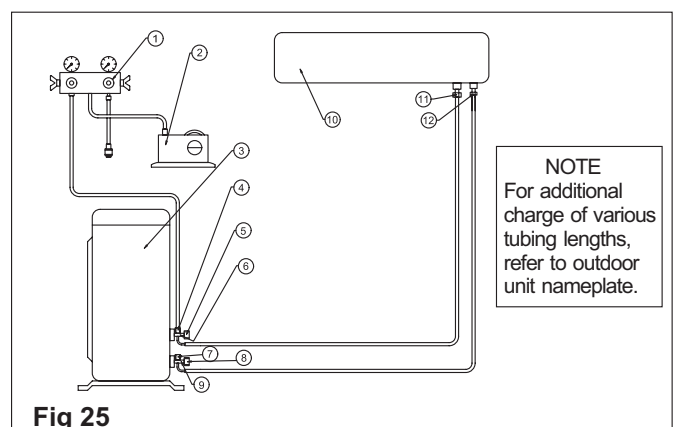


Fig 25

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

7

FINAL TASKS

1. Check all valve caps and ensure that they had been tightened properly. Close the valve cover.
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 unit for no less than 5 minutes at heating or cooling mode.
5. Explain filter removal, cleaning and installation.
6. Operate the air conditioner together with the customer and explain all functions.
7. Give the operating and installation manuals to the customer.

