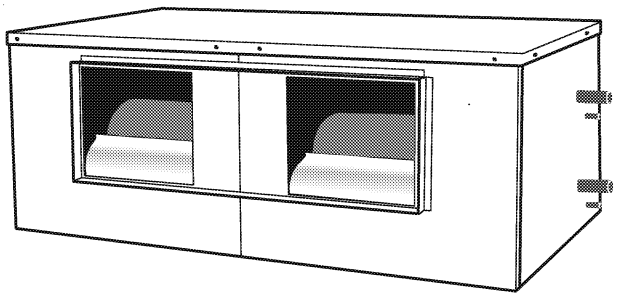
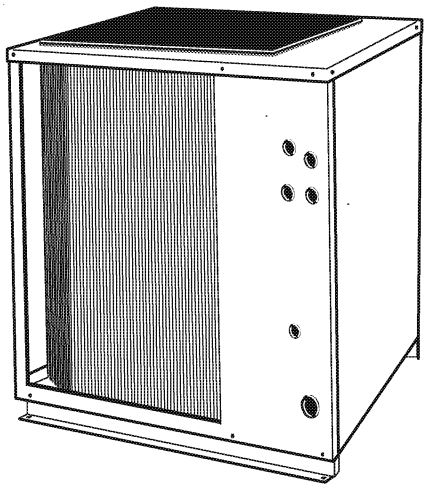
Installation and maintenance manual

EMD

2200 RC

2800 RC



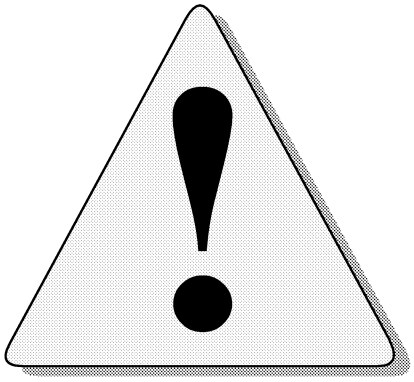


English

SPLIT SYSTEM AIR CONDITINNERS

R22

TH 3891 E - Part number: **3990137**
Supersedes: **None**



SWITCHING OFF POWER SUPPLY IS MANDATORY BEFORE ANY WORK IN THE ELECTRIX BOXES

GENERAL RECOMMENDATIONS

Congratulatlions on having selected an **Electra** air conditioner.

SAFETY HINTS

When you are working on your equipment, follow the safety rules in force.

The installation and its maintenance should be performed only by qualified professionals.

Make sure that the power supply and its frequency are adapted to requirements, taking into account the specific conditions in relation to the location of the appliance and the power required for any other equipment connected with the same circuit.

WARNING

Switch off power supply before starting maintenance of the appliance.

The manufacturer declines any responsibility and the warranty will be void if these installation instructions are not followed.

If you meet difficulties, please call our Technical Service in your area.

Before placing the appliance on its final location, assemble if possible the accessories, if any.
(See instructions supplied with each accessory).

The information contained in this document are subject to modification without advance notice.

This appliance is in compliance with **EEC STANDARDS**.

SUMMARY

CONTENTS OF PARCEL

1 (indoor unit)
1 Bag with reference materiel.

FINISHED PRODUCT NUMBERS

R22

INDOOR UNIT	
HEATPUMP	Finished product part numbers
EMD 2200 RC	7SP051089 A
EMD 2800 RC	7SP051090 A

OUTDOOR UNIT	
HEATPUMP	Finished product part numbers
EMD 2200 RC	7SP112059 A
EMD 2800 RC	7SP112060 A

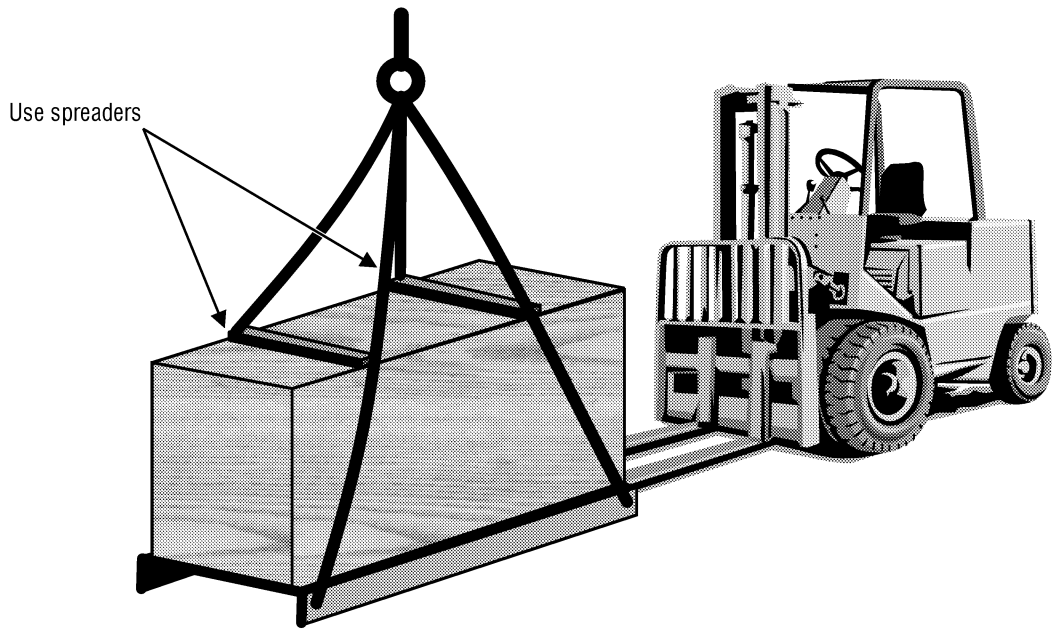
REFRIGERANT CHARGE

R22

Models	REFRIGERANT CHARGE CHARGE FOR 4m PIPE LENGTH (g)	ADDITIONAL CHARGE (g/m over of 4 m)	
		Connecting pipes 1/2" "vapour" pipe	Connecting pipes 5/8" "vapour" pipe
EMD 2200 RC	7010	125	210
EMD 2800 RC	7880	125	210

CAUTION
The units are supplied with a dry nitrogen charge.

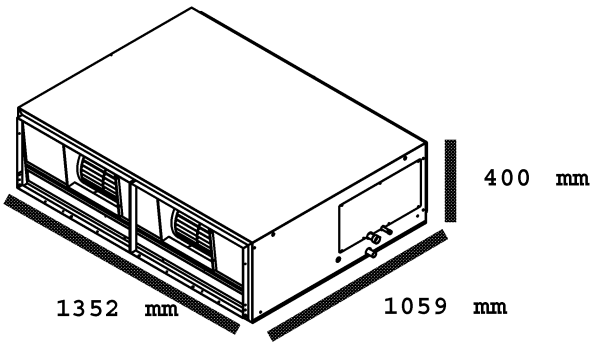
HANDLING

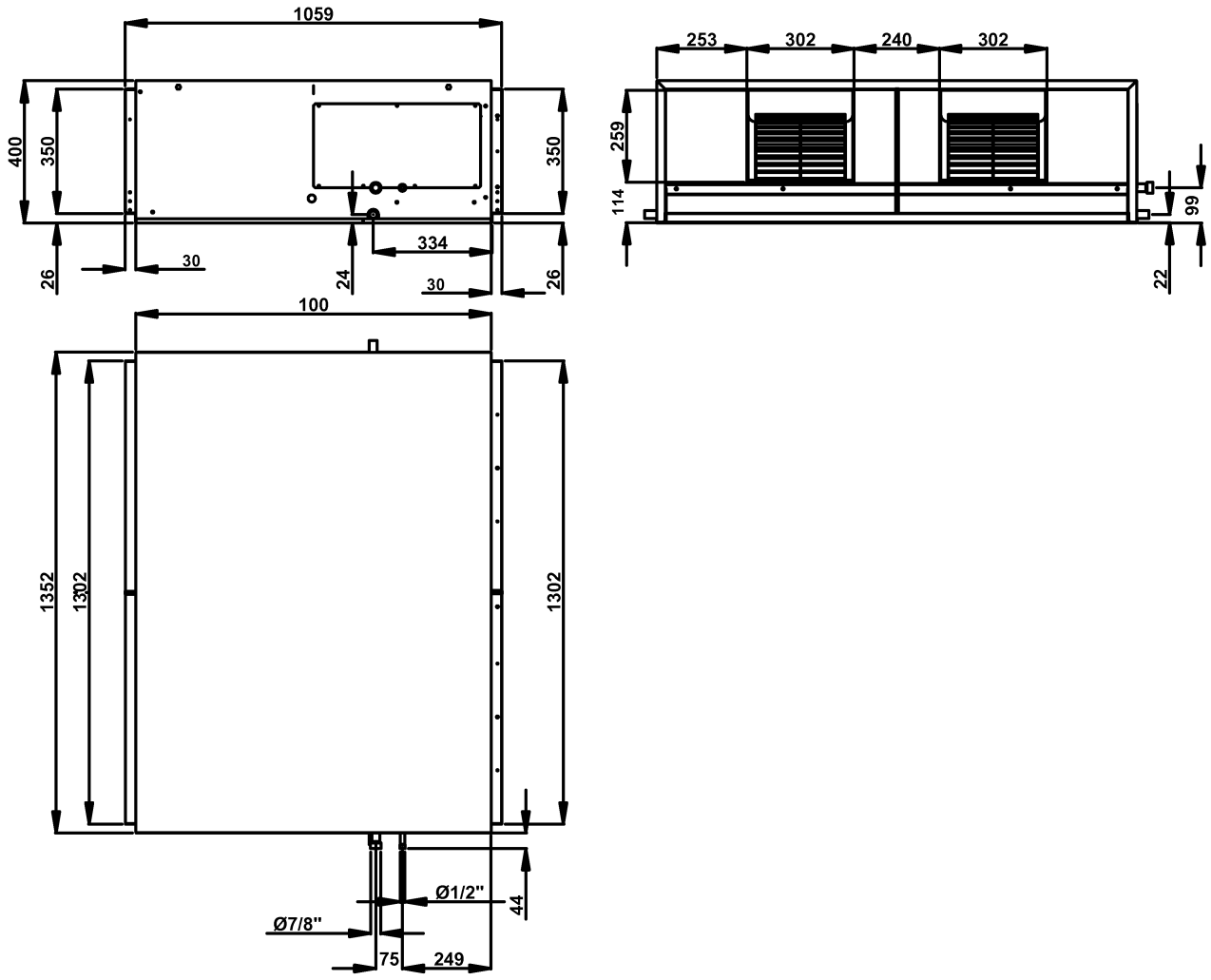


	INDOOR UNIT (KG)		OUTDOOR UNIT (KG)	
MODEL	EMD 2200 RC	EMD 2800 RC	EMD 2200 RC	EMD 2800 RC
☼	100	150	164	187

DIMENSIONS OF INDOOR UNIT EMD 2200

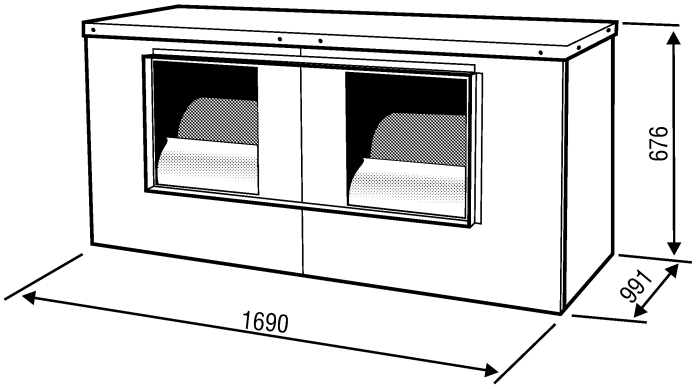
Dimensions in mm

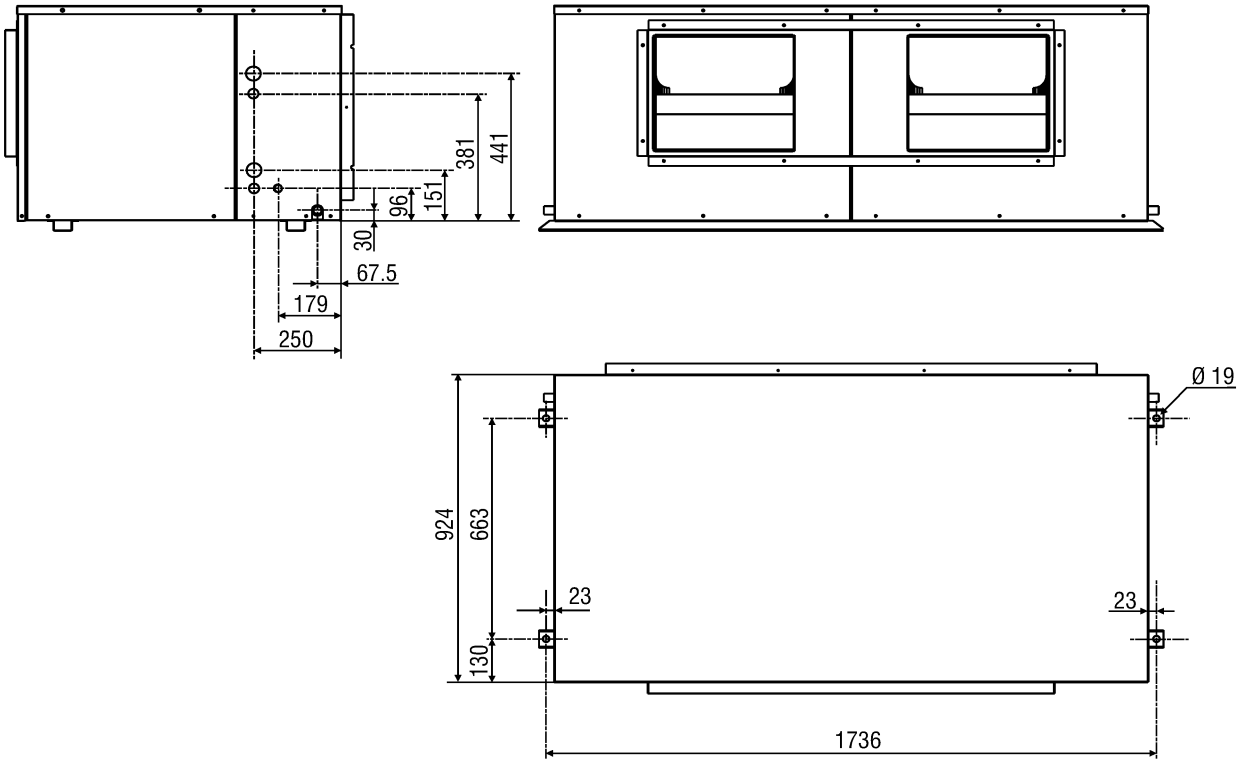




DIMENSIONS OF INDOOR UNIT EMD 2800

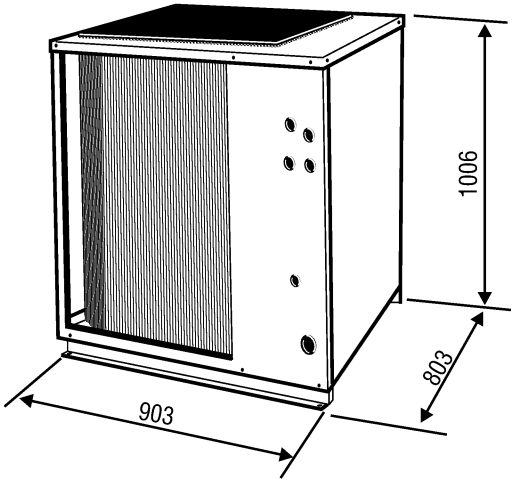
Dimensions in mm

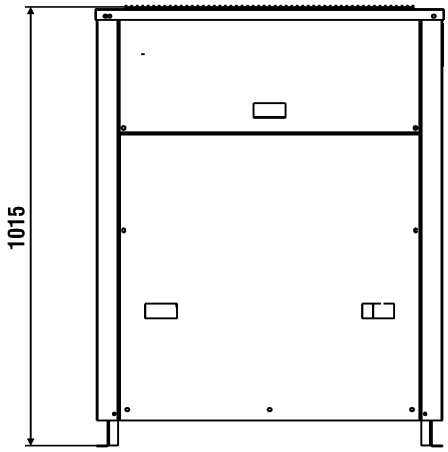


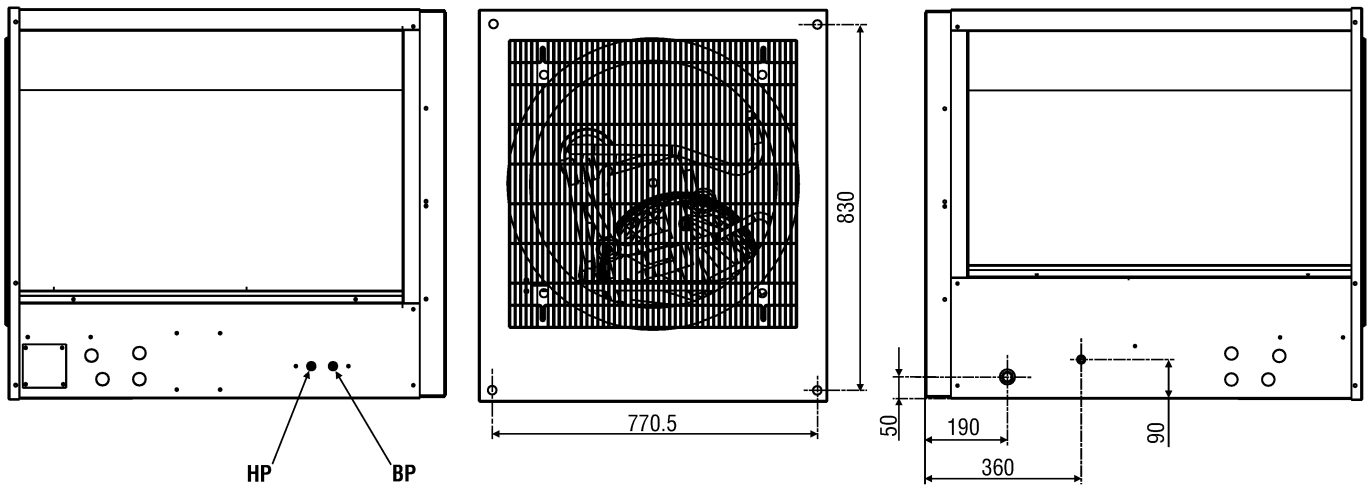


DIMENSIONS OF OUTDOOR UNIT EMD 2200

Dimensions in mm

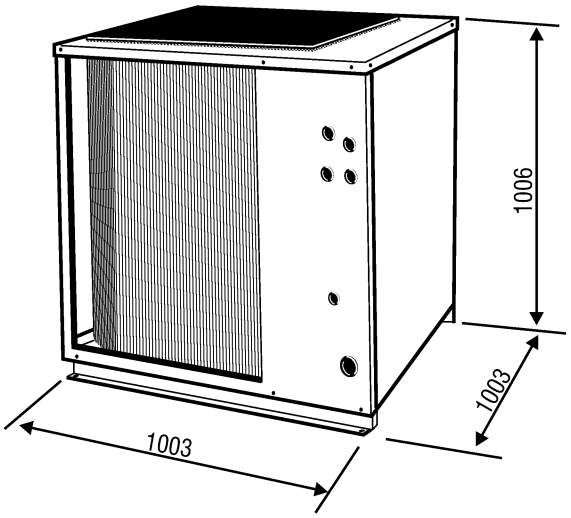


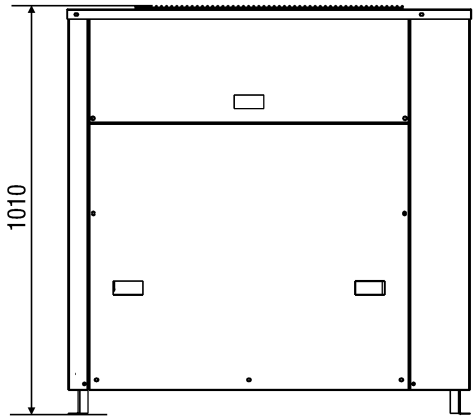


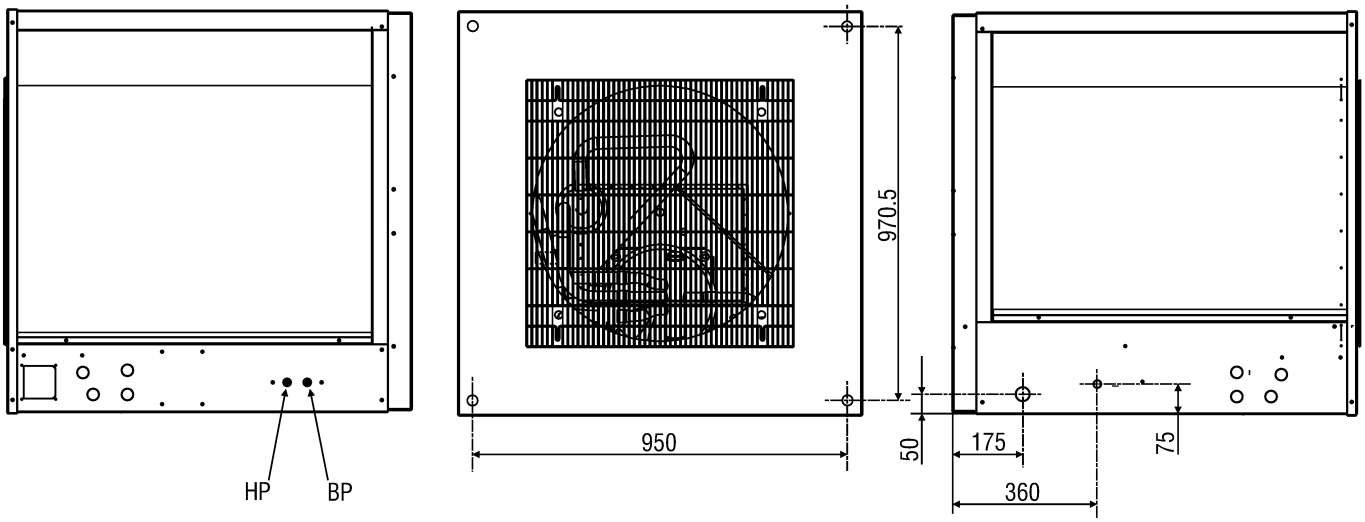


DIMENSIONS OF OUTDOOR UNIT EMD 2800

Dimensions in mm



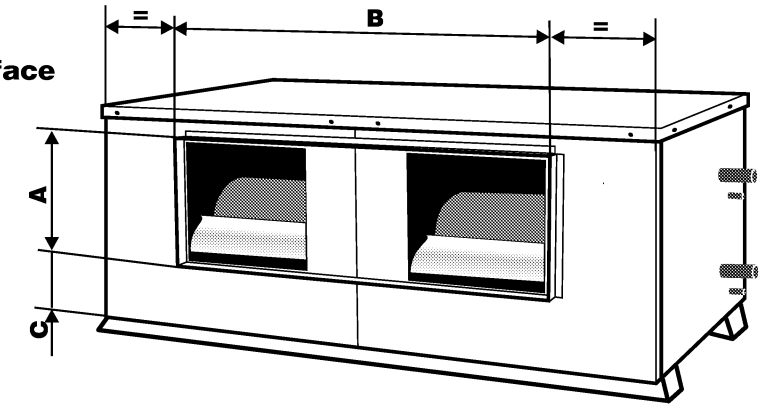




DUCT OUTLET DIMENSIONS

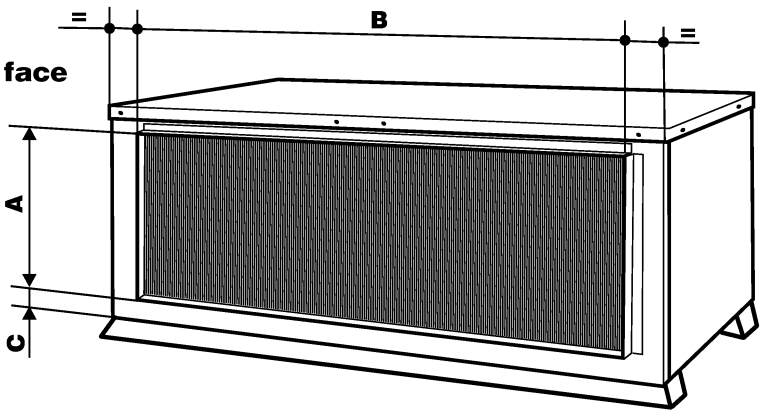
Dimensions in mm

Front face



	A	B	C
EMD 2200	350	1300	25
EMD 2800	380	1157	141

Rear face



	A	B	C
EMD 2200	350	1300	25
EMD 2800	556	1500	94

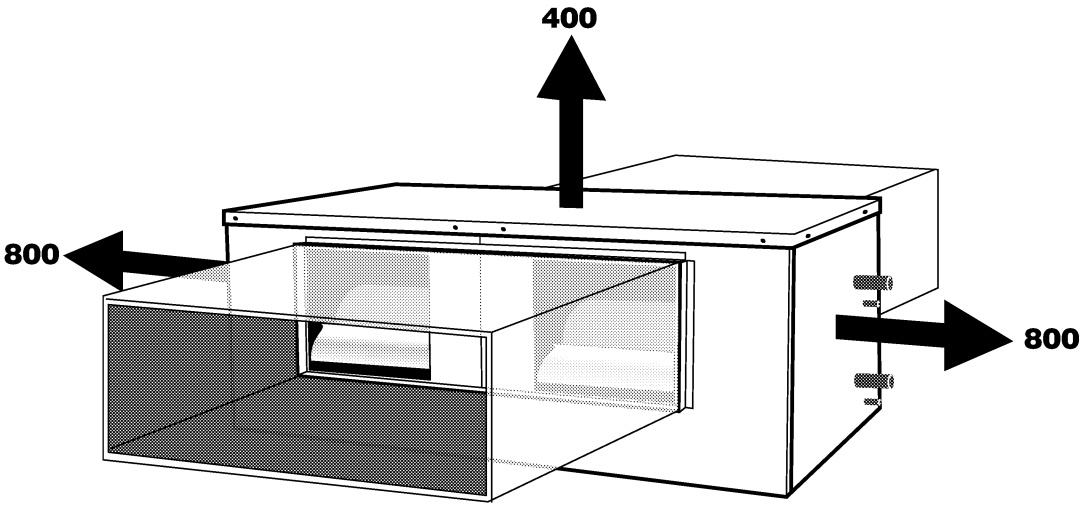
FLOW RATE / PRESSURE

		EMD 2200	EMD 2800
m^3/h		4680	5760
Pa	min		140
	max		230

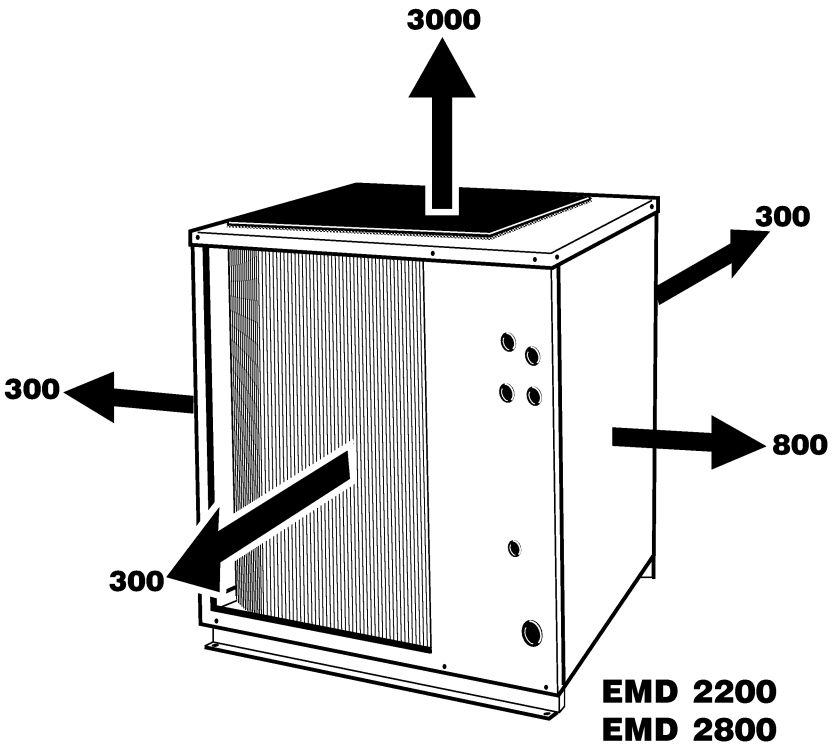
INSTALLING THE UNITS

Minimum clearance to be provided for maintenance access. Dimensions in mm

Dimensions depend on the facory configuration.



EMD 2200
EMD 2800



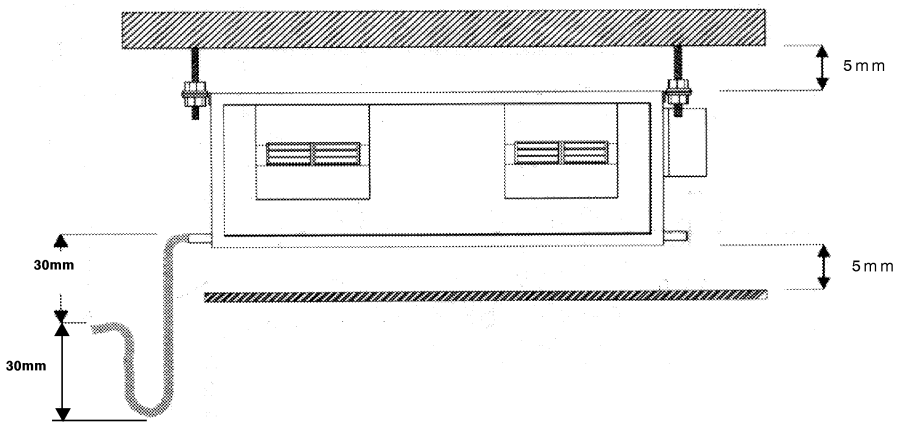
EMD 2200
EMD 2800

LOCATION OF THE EMD 2800 INDOOR UNITS

CAUTION
The indoor units are supplied with a dry nitrogen charge at a pressure of a 40 PSI.

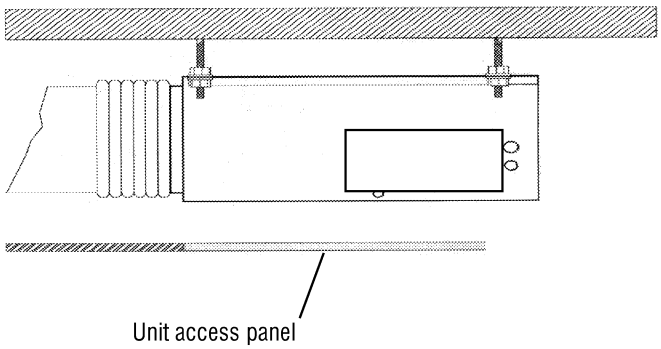
The indoor unit is designed for installation in a double ceilling supported by four anchor points used to attachment and leveling.

Install away from smoke, odors and dust that could foul the inlet filter, decrease the equipement performance and affect the quality of the conditioned air.



The 5 mm clerance shuwn in the sketch prevent moise transmission through the double ceilling.

As shown in the drawning, a siphon is to be made on site (minimum 30 mm) on the condensate drain line to be ensure condensate drainage during operation of the indoor fan.If there is not sufficient height for the siphon , provide a special pump (not supplied).



It is recommended to provide a flexible coupling between the supply duct and the indoor unit to prevent noise from being transmitted in the air processed.

NOTE :
If in the indoor unit is installed in a region where the relative humidity is high, provide additional insulation in appliance to prevent risks of condensation spots.

CONDENSATE DRAIN LINE

CAUTION
Never braze the condensate drain pipe to the appliance outlet fittings.

- Raise the appliance to provide traps on the condensate drain lines.
- Drain port : diameter 7/8 " (**EMD 2200**).
- Drain port : diameter 1" (**EMD 2800**).

Right or Left outlet

REFRIGERANT CONNECTIONS

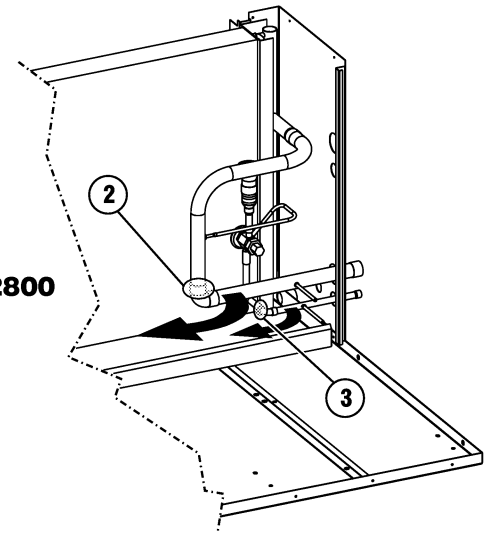
EMD 2800

On the **EMD 2800** units the refrigerant pipes outlet can be on the left or right hand side.

To change the outlet side, break the brazing on the pipes marked **2** and **3** and pivot them through 180°.

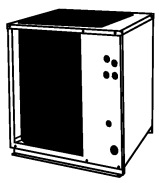
Re-brazed the tubes, after repositioning, in accordance with best practices for air conditioning installation.

Example of EMD 2800



REFRIGERANT CONNECTIONS

EMD 2200



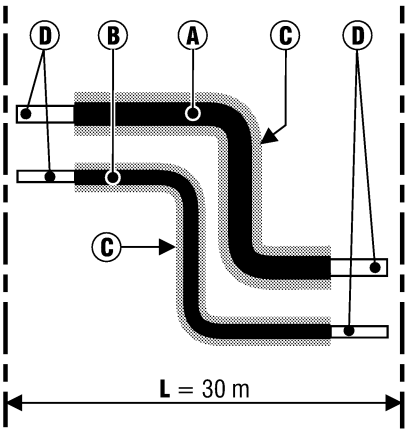
Union

1'' 1/8''

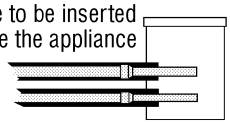
5/8''

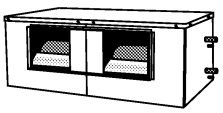
Connections

< 20 m	> 20 m
	1'' 1/8''
1'' 1/8''	1'' 3/8''
1/2''	5/8''



Insulating pipe to be inserted inside the appliance



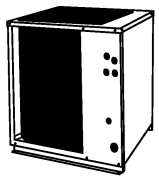


Union

1'' 1/8''

1/2''

EMD 2800



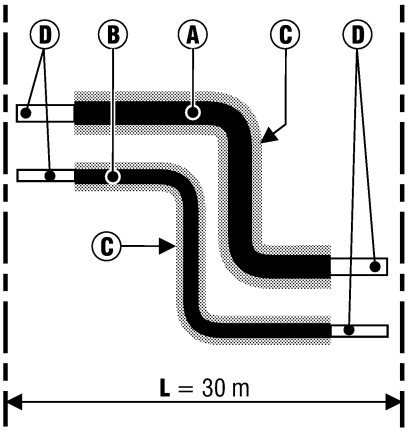
Union

1'' 1/8''

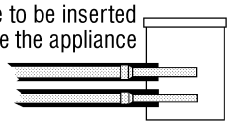
5/8''

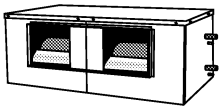
Connections

< 10 m	> 10 m
	1'' 1/8''
1'' 1/8''	1'' 3/8''
1/2''	5/8''



Insulating pipe to be inserted inside the appliance





Union

1'' 1/8''

1/2''

In the event of VERTICAL connection

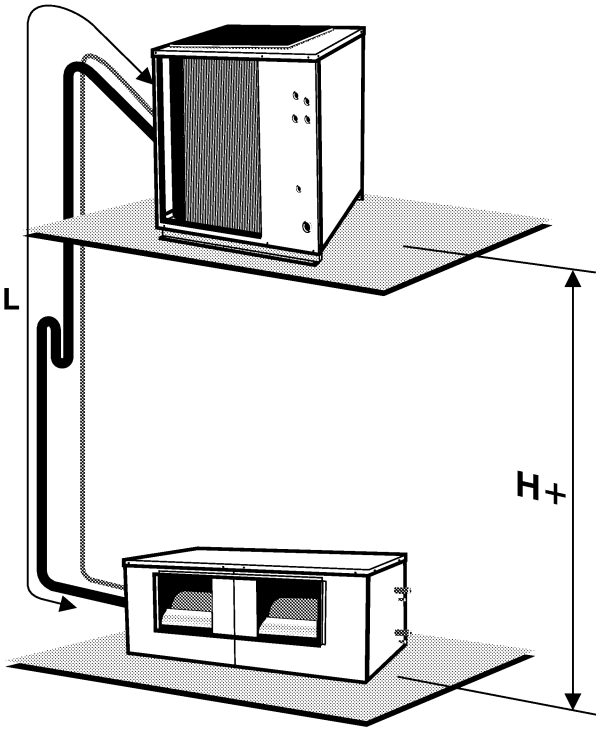
7/8'' 1'' 1/8''

(A) GAS pipe
(B) LIQUID pipe
(C) Pipe insulation (6 mm min.)
(D) Side to the brazed

REFRIGERANT PIPING

OUTDOOR UNIT ON AN UPPER LEVEL

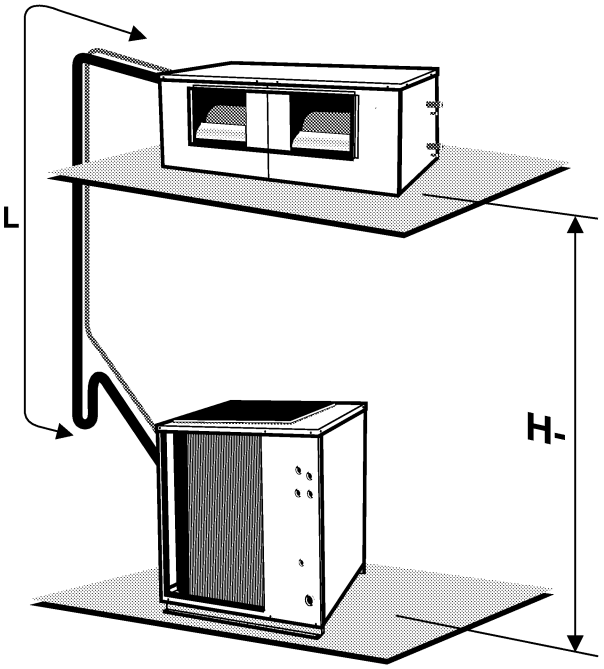
Fit a siphon on the **GAS** line every 5 m.



ALL MODELS	
H + (maxi.)	15 m
H – (maxi.)	15 m
Max. **L**ength	30 m

OUTDOOR UNIT ON AN LOWER LEVEL

Provide a trap at the base of the column (**GAS** line) in this case of installation.



PIPES TO BE MADE ON SITE

This operation should be performed expertly by qualified professionals (refrigeration engineer) (brazing, vacuum, charge, etc ...).

REFRIGERANT LINKING PIPES

The bending radius of the pipes should be equal to or more than 3,5 times the outside diameter of the pipe.
Do not bend the pipes consecutively more than three times and do not make more than 12 bends over the complete length of the link.

FINAL TASKS

If needed, fix the cables and the pipes on the wall with clamping collars.
Operate the air conditioner in the presence of the user and explain all functions. Show him how to remove, clean and place back the filters.

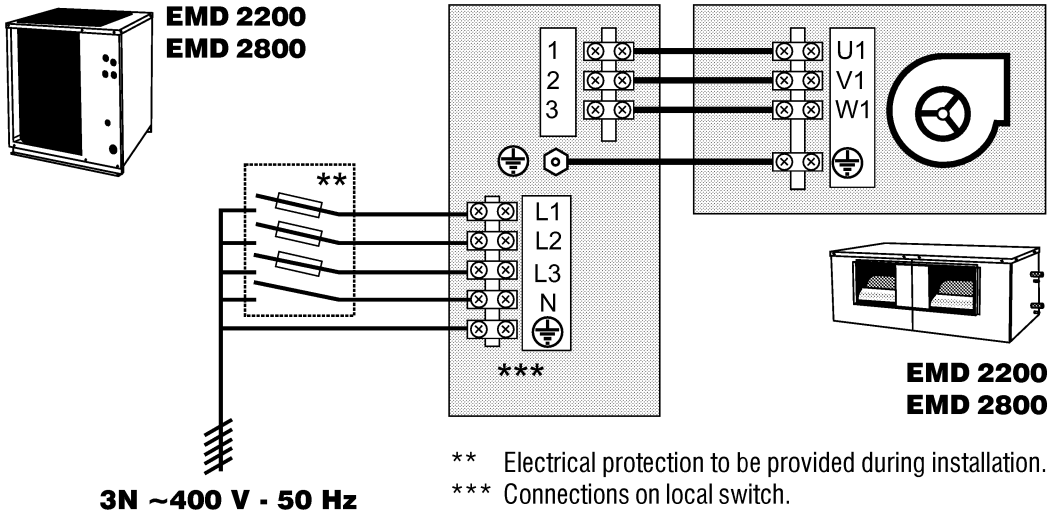
ELECTRICAL SPECIFICATIONS

Type of appliance		EMD 2200	EMD 2800
Power supply 3N ~ 400 V - 50 Hz		•	•
Cooling + Fan (or heatpump heating)			
Maximum Current	A	21	25
Fuse Rating A M	A	25	32
Fuse rating ASE / VDE*	A	35	35
Total Starting Current	A	85	113
Power supply cable*	mm^2	5 G 4	5 G 6
DK/DN Connections			
Maximum Current	A	2,8	3,5
Cable section*	mm^2	4 G 1,5	4 G 1,5

*** CAUTION**

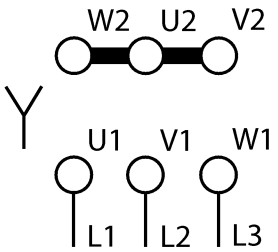
These values are given for guidance, they must be checked and ajusted according to prevailing standards : they depend on the system installed and the cables used.

ELECTRICAL CONNECTIONS

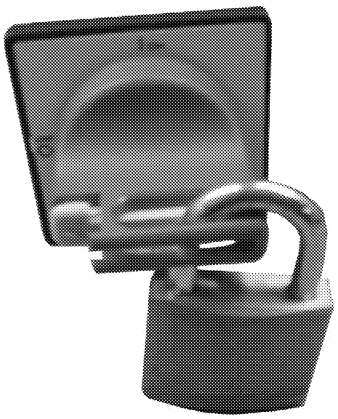


** Electrical protection to be provided during installation.
*** Connections on local switch.

CAUTION
Observe the correct order for the electrical connections, including the mains supply (phase, neutral, earth, etc...), in accordance with the makings on the terminal strip.



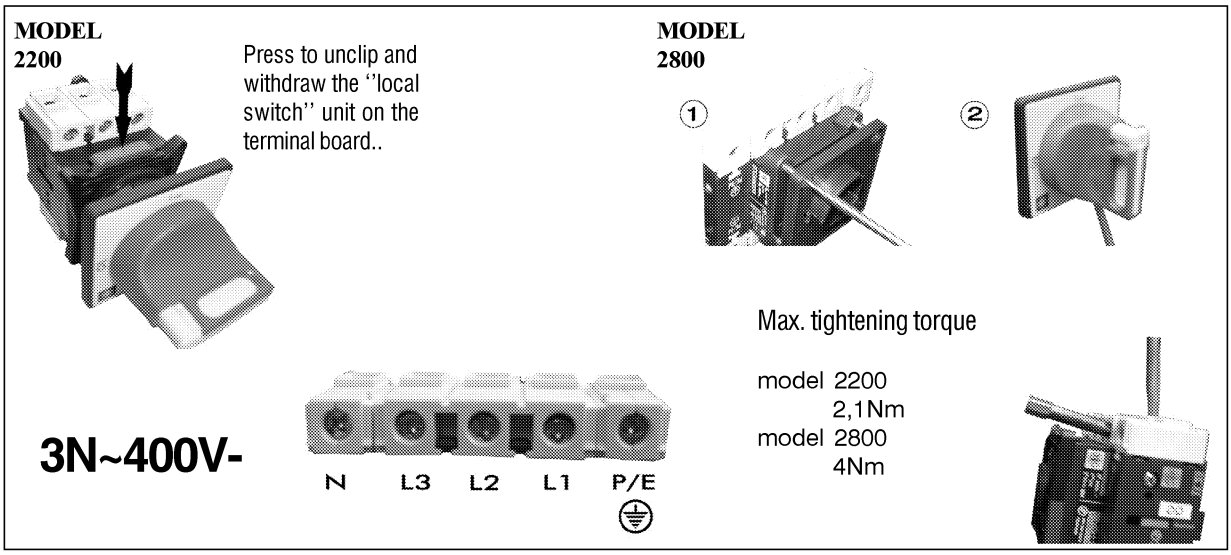
ELECTRICAL CONNECTIONS



These units are equipped with a local switch used as general terminal board.

The switch can be padlocked.

A circuit breaker or fuse holder (not supplied) must be installed upstream of of the unit in accordance with the circuit diagram; for the raitings, refer to the electrical specifications on page 16.



Use a pozidrive M3.5 screwdriver, Form Z, to make the connections.

LEGEND

N 708

KEY OF ELECTRAL DIAGRAMS

SE 3033 **emd 2200 / 2800**
3-Phase 400/230 V+/–10% 50 Hz

1°) POWER CIRCUIT :

Voltage : 400 V~ + Neutral + Earth.
On Earth N - L1 - L2 - L3 : Isolator terminal Q1 of outdoor unit.
This power supply comes from a main switchboard in accordance with Table 1. FFGsupplied by installer.
The Electrical Installation and Wiring of this unit must be in accordance with Local Wiring Regulations.
Isolator Q2 in Indoor unit must be field fitted in accordance with **Table 1** and must be mounted adjacent to the unit.

Table 1 :

Models **EMD**	FFG fuse Type aM	Q2 "X & M" Rating (min. requirements)
2200	25 A	X = 10 A M = 20 A
2800	32 A	X = 10 A M = 25 A

2°) DESIGNATION OF POINT OF ELECTRAL DIAGRAMS

2.1 Compressor/safety circuit :

K1 power contactor of compressor M1
K2 power contactor of compressor M2 (1)
LP1 low pressure switch (AUTO-RESET CONTROL)
LP2 low pressure switch (1) (AUTO-RESETCONTROL)
HP1 high pressure switch (AUTO-RESET CONTROL)
HP2 high pressure switch (1) (AUTORESETCONTROL)
R1 crankcase heater
R2 crankcase heater (1)
M1 3-phase refrigerant compressor
M2 3-phase refrigerant compressor (1)
RV1 reversing valve solenoid (Heatpump models)
RV2 reversing valve solenoid (1) (Heatpump models)
RT room temperature sensor
ICT thermal sensor – indoor coil temperature
OCT thermal sensor – outdoor coil temperature
OCT2 thermal sensor – outdoor coil temperature (1)
SM1 ON/OFF remote switch (not supplied) (on PCB, disconnect shunt SHM)
X terminal.

2.2 Fan motors & related equipement

MO1 fan motor of outdoor unit (see table 2)
MO2 fan motor of outdoor unit (2) (see table 2)
CO1 capacitor of motor MO1
CO2 capacitor of motor MO2 (2)
FO1 internal safety of motor MO1 (AUTO-RESET CONTROL)
FO2 internal safety of motor MO2 (2) (AUTO-RESET CONTROL)
FT3 thermal relay of fan motor MI3
K3 contactor of indoor unit fan motor
MI3 indoor unit fan motor
C3 capacitor of motor MI3 (single phasemotor only).

Table 2 :

Models	Low fab speed	Capacity value
EMD 2200	White wire	12 μF
EMD 2800	White wire	10 μF

3°) RANGE AND SETTING INDOOR FAN TERMINAL RELAYS CURRENT RATING OF UNIT CONTACTORS (CLASS AC 3)

Models		**2200**	**2800**
Ajustement of terminal relays FT3 / FF3	A	2,6 -3,7	2,6-3,7
Range adjustement	A	2,8	3,5
Contactor AC3			
K1	A	25	25
K2	A	-	-
K3	A	9	9

4°) ADJUSTEMENT OF PRESSUYRE SWITCHS AUTO - RESET CONTROLS

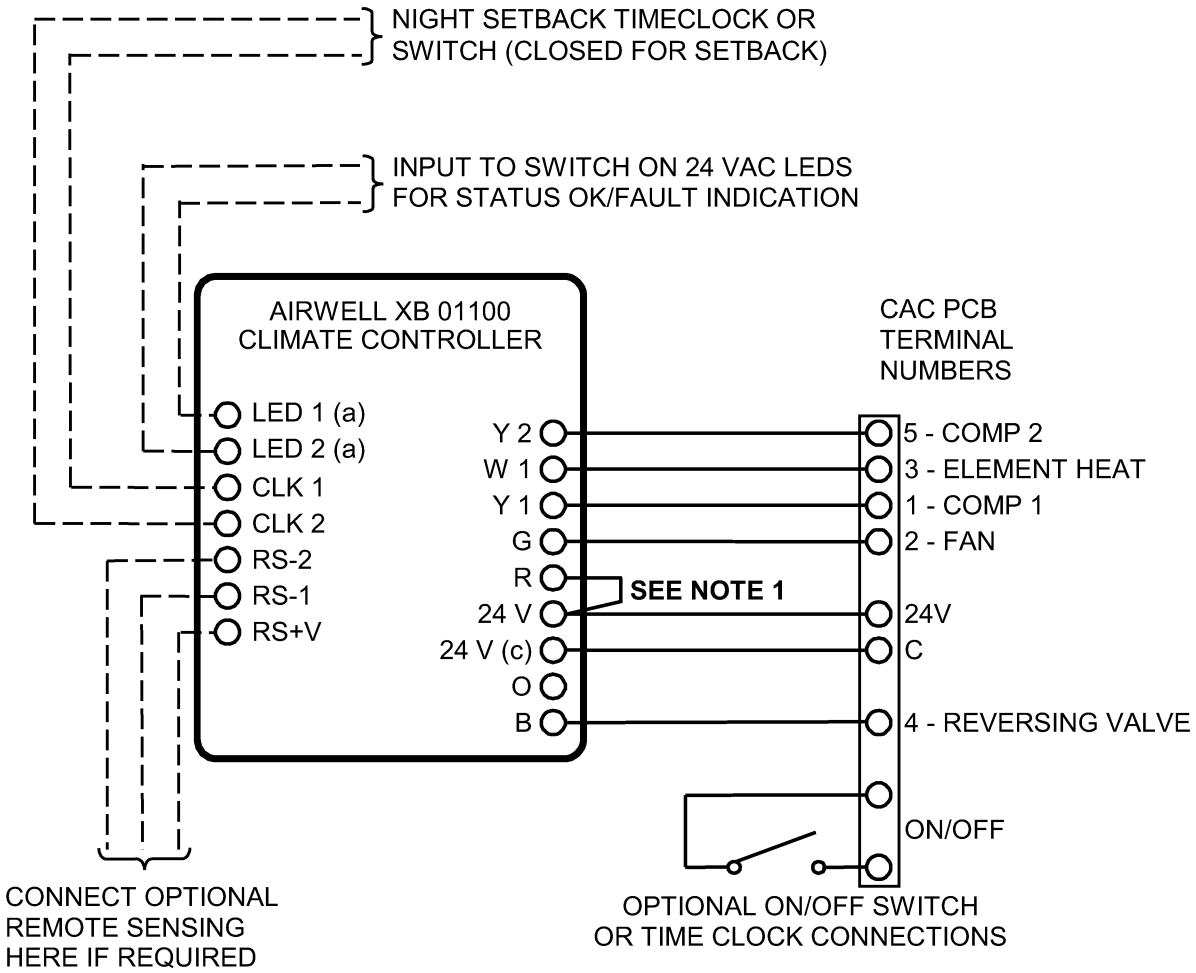
LP1 fixed adjustment low pressure, 50 kPa 0,5 bar (7,3 PSI)
LP2 fixed adjustment low pressure, 50 kPa 0,5 bar (7,3 PSI)
HP1 fixed adjustment high pressure, 2920 kPa 29,2 bar (423,7 PSI)
HP2 fixed adjustment high pressure, 2920 kPa 29,2 bar (423,7 PSI)

CODE OF COLORS	
BK	: black
OG	: orange
GNYE	: green/yellow
BN	: brown
WH	: white
RD	: red
BU	: blue
GY	: grey
VT	: purple

CONTROLS

CAC CONTROLLER

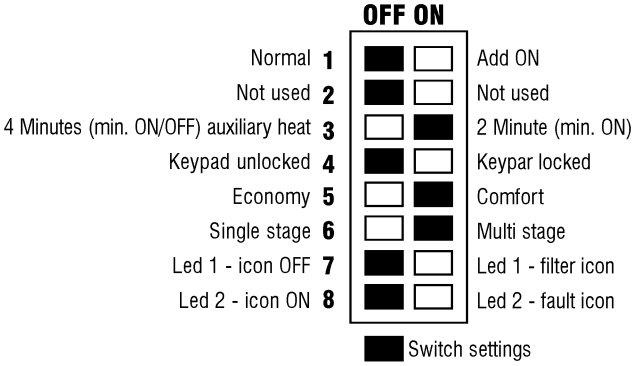
XB01100 Climaate controller 2 stage units with CAC CONTROLLER



NOTES

1. FIT CLIMATE CONTROLLER LINK BETWEEN R-24V **BEFORE** APPLYING POWER.
2. SLIDE SWITCH #6 WITHIN CLIMATE CONTROLLER MUST BE SET TO **ON**.
3. THE CLIMATE CONTROLLER LOGIC MAY PROVIDE SIGNIFICANT TIME DELAYS AT **INITIAL** START-UP 20 MINUTES ON COMP 2.
4. CAC CONTROLLER DIPSWITCH S5 (GROUP OF 12) MUST BE **ON.**
5. SHIELDED CABLE IS NOT REQUIRED FOR THIS CONTROL TYPE HOWEVER CONTROL WIRING MUST BE KEPT SEPARATE FROM POWER WIRING.
6. AN “RT” OR “Cont” ALARM MAY APPEAR IN INITIAL START UP. A SIGNAL FROM THE CONTROLLER WILL CLEAR THIS ALARM.

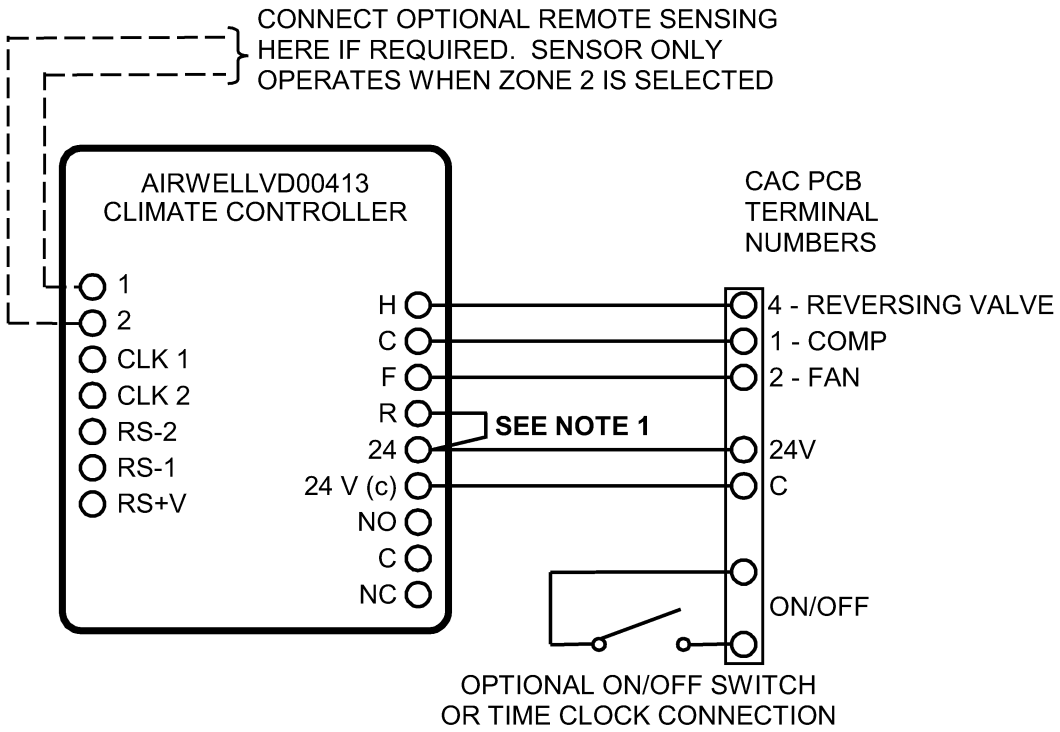
Climate controller slide switch functions



CONTROLS

CAC CONTROLLER

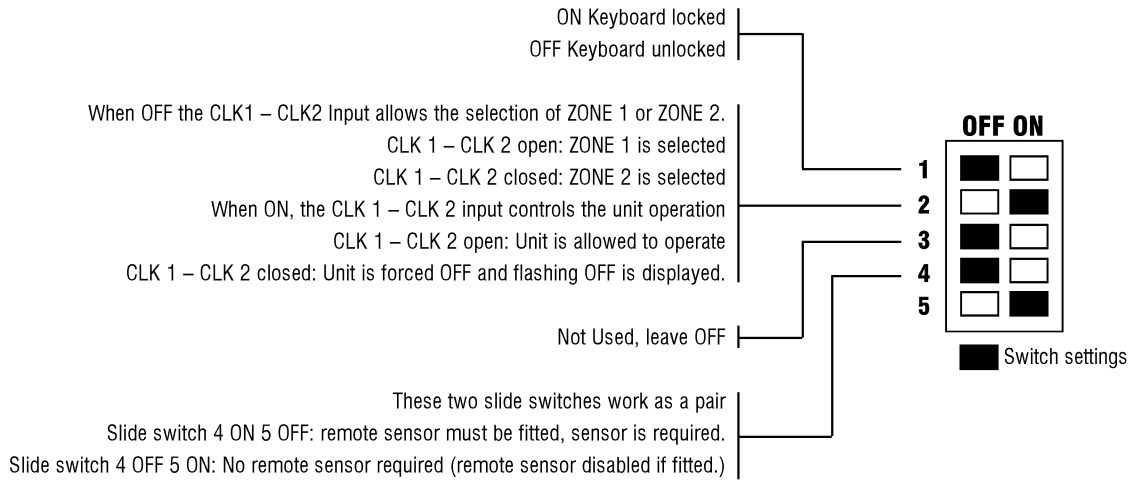
VD00413 Climaate controller single stage units with CAC CONTROLLER



NOTES

1. FIT CLIMATE CONTROLLER LINK BETWEEN R-24V **BEFORE** APPLYING POWER.
2. CAC CONTROLLER DIPSWITCH S5 (GROUP OF 12) MUST BE **ON.**
3. SHIELDED CABLE IS NOT REQUIRED FOR THIS CONTROL TYPE HOWEVER CONTROL WIRING MUST BE KEPT SEPARATE FROM POWER WIRING.
4. AN “RT” OR “Cont” ALARM MAY APPEAR IN INITIAL START UP. A SIGNAL FROM THE CONTROLLER WILL CLEAR THIS ALARM.

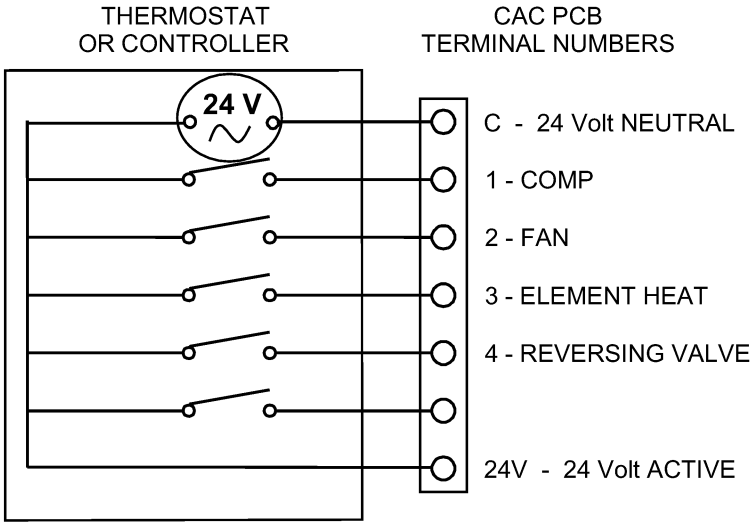
Climate controller slide switch functions



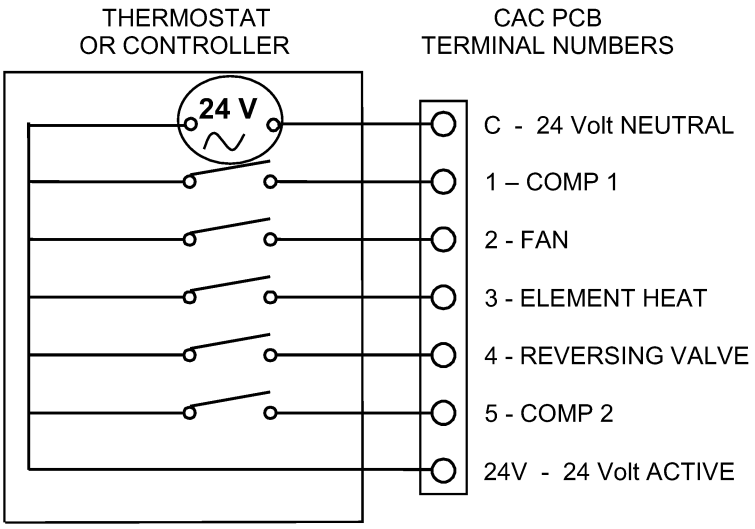
CONTROLS

CAC CONTROLLER

Other voltage free contact control types including BMS single stage units with CAC CONTROLLER heat pump control only



Other voltage free contact control types including BMS 2 stage units with CAC CONTROLLER heat pump control only



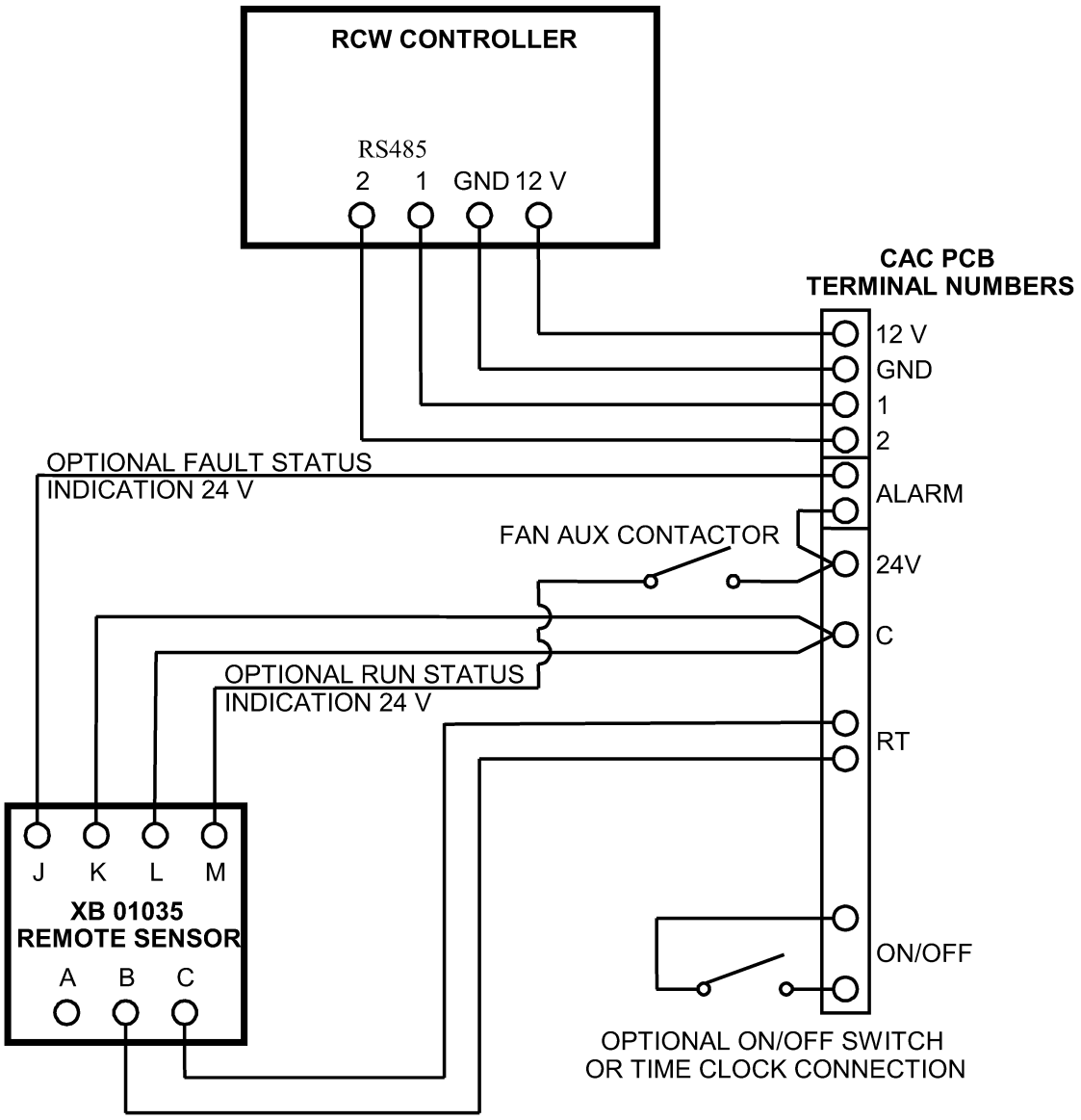
NOTES

1. CAC CONTROLLER DIPSWITCH S5 (GROUP OF 12) MUST BE **ON** FOR THIS CONTROL TYPE.
2. SHIELDED CABLE IS NOT REQUIRED FOR THIS CONTROL TYPE HOWEVER CONTROL WIRING MUST BE KEPT SEPARATE FROM POWER WIRING.
3. AN “RT” OR “Cont” ALARM MAY APPEAR IN INITIAL START UP. A SIGNAL FROM THE CONTROLLER WILL CLEAR THIS ALARM.

CONTROLS

CAC CONTROLLER

RCW 1 co ntrol options for single and two stage units with CAC CONTROLLER



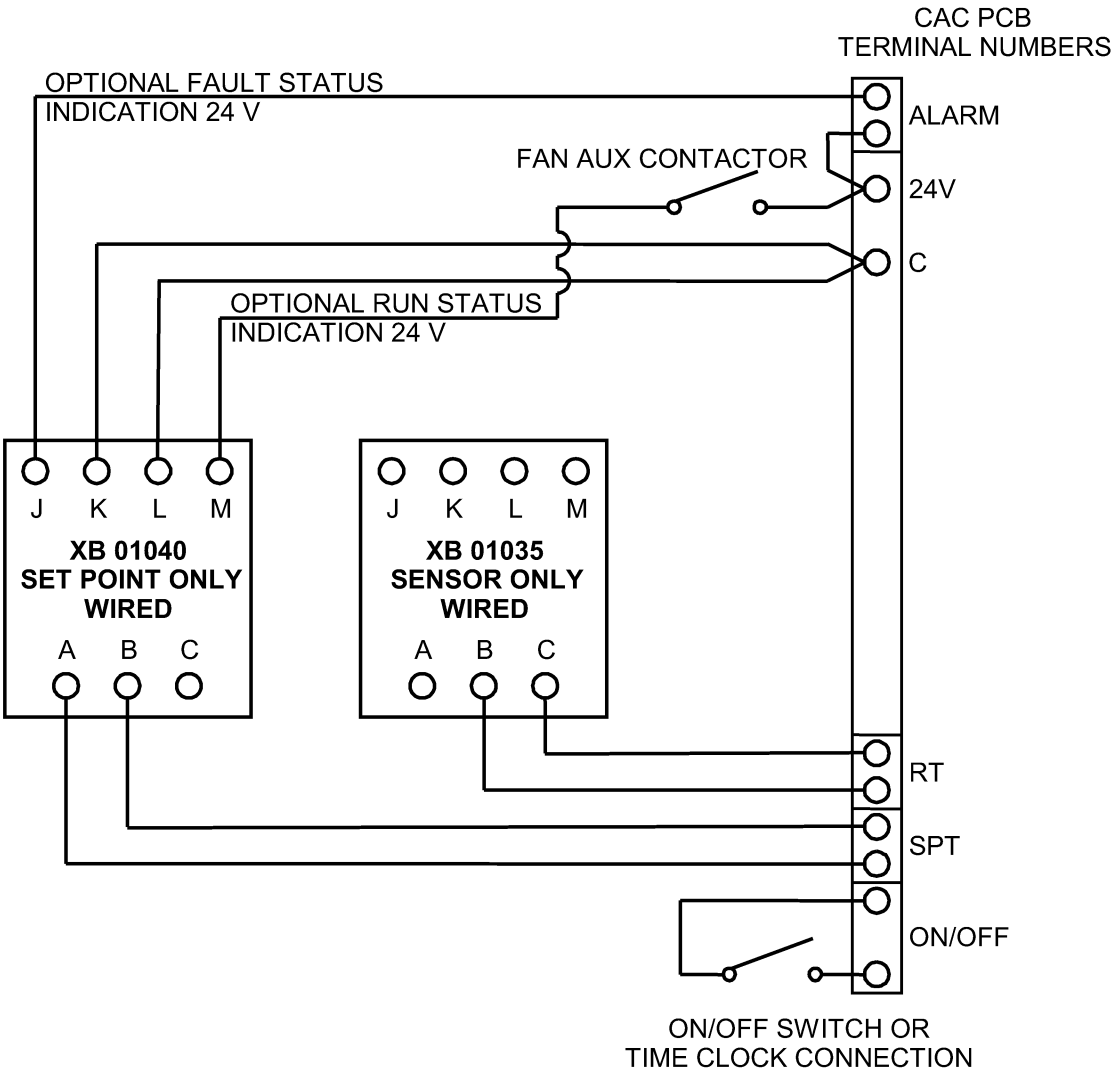
NOTES

1. WITH RCW1 AN XB01035 REMOTE SENSOR MUST BE FITTED.
2. RCW1 WILL NOT INDICATE IF THE UNIT IS TURNED ON OR OFF. HOWEVER IF THE SENSOR'S GREEN 24 V LED IS WIRED THROUGH THE INDOOR FAN CONTACTOR AUX CONTACT IT WILL INDICATE A RUN STATUS.
3. SHIELDED CABLE IS RECOMMENDED FOR THIS CONTROL. CONTROL WIRING MUST BE KEPT SEPARATE FROM POWER WIRING.
4. AN "RT" OR "Cont" ALARM MAY APPEAR IN INITIAL START UP. A SIGNAL FROM RCW WILL CLEAR THIS ALARM.
5. EARLY VERSIONS OF THE CAC CONTROLLER REQUIRE THE ON/OFF BUTTON ON THE RCW TO BE TURNED ON IF THE TIME CLOCK HAS TURNED THE UNIT OFF THEN ON.

CONTROLS

CAC CONTROLLER

Sensor and setpoint control options for single and two stage units with CAC CONTROLLER



NOTES

1. SETPOINT, SENSOR, WIRING AND CONTROLS MUST BE SPEARATE.
2. CAC CONTROLLER DIPSWITCH S5 (GROUP OF 12) MUST BE **OFF**.
3. SHIELDED CABLE IS REQUIRED FOR THIS CONTROL TYPE. CONTROL WIRING MUST BE KEPT SEPARATE FROM POWER WIRING.

MAINTENANCE

General system

- Perform a visual inspection of the entire system in operation.
- Before the summer, check that the system is clean and make sure that the system condensate drains are not clogged, specially the one in the indoor unit.
- Check the condition of the tray.
- Check the condition and the tension of the belt(s).

Refrigerant system

- Periodically clean the refrigerant/air exchanger using a special product for cleaning aluminum/copper batteries and rinse with water. Never use hot water or steam which would cause an increase in the refrigerant pressure.
- Check that the surface of the exchanger aluminum fins is not damaged by dents or scratches. If necessary, polish with a suitable tool.
- To ensure correct operation of the system, it is necessary to periodically clean the air filter located on the indoor unit air inlet.
  The cleaning frequency varies considerably according to the amount of impurities in the air to be conditioned. It is recommended to replace it periodically.
- A clogged filter decreases the air flow through the indoor unit battery, decreasing the system efficiency and making it more difficult to cool the fan motor.
- Check the cleanliness of the indoor unit.
- This list is not exhaustive; other checks can be made depending on the environment and the appliance's operating conditions.

Electrical part

- Check the general power supply line for damage that could affect the insulation.
- Tighten if necessary.
- Check the grounding.
- Make the same checks on the connecting cables between OUTDOR and INDOOR unit.

CAUTION
ALWAYS MAKE SURE THE POWER SUPPLY IS CUT OFF AND CANNOT BE APPLIED ACCIDENTALLY BEFORE PROCEEDING TO ANY WORK ON THE SYSTEM.
FAILURE TO COMPLY WITH THIS INSTRUCTION COULD LEAD TO INJURY OR DEATH BY ELECTROCUTION.

IT IS RECOMMENDED THAT THE LOCAL SWITCH BE PADLOCKED

CE Compliance declaration

Here by states that:The evaporation units in
the SPLIT SYSTEM PRESSION, type range models:
EMD 2200RC
EMD 2800 RC

Under our own responsability, we declare that the product designated in this manual comply comply with the provisions of the EEC directives listed hereafter and with the nationnal legisl-gislation into wich these directives have been transposed.

Machinery Directive 98 / 37 / EEC
Low Voltage directive (LVD) 73 / 23 /EEC amendée by directive 93/ 68 EEC
Electo-magnetic Compatibility Directive 89 / 336 EEC
Under module A1, catégorie II for the EMD 2200/ 2800 with suveillance by T UV Rheinland 0035

and that the following paragraphs of the harmonised standars have been applied.

NF EN 60 204-1 / 1998
NF EN 60 335-1 / 1995
NF EN 60 335-2-40 / 1994
NF EN 50 082-1 / 1998
NF EN 255 / 1997
NF EN 814 / 1997
NF EN 378 / 1999
NF EN 55 022 / 1998
NF EN 61 000-3-2 / 1998

A Tillières Sur Avre
27570 - FRANCE
Le: 08/07/2003
Richard FALCO
Directeur Qualité

ELECTRA