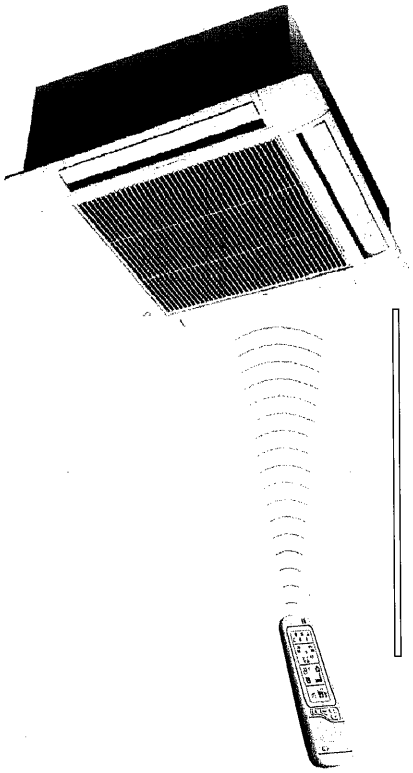
GB

ELECTRA

Comfort Range

Heat pump

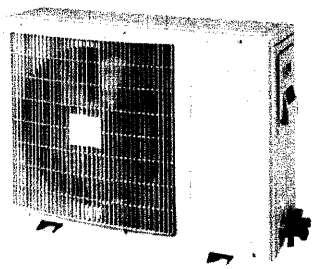


Cassette model 15

Cassette model 18

Cassette model 24

Remote control I.R.



Read these instuctions carefully before starting installation and keep them safely for future reference

INSTALLATION MANUAL 3990060/02

Contents

Model cross reference details

Unit model	*Ref. commerciale*	*Manual ref.*	*Oracle n°*
Cassette model 15	**ECF 15 RC INDOOR UNIT**	***15***	**853661**
Cassette model 18	**ECF 18 RC INDOOR UNIT**	***18***	**853659**
Cassette model 24..	**ECF 24 RC INDOOR UNIT**	***24***	**853657**

EC Statement of

Hereby states that: the units in the CASSETTES type comfort range, models:

ECF 15 RC INDOOR UNUT
ECF 18 RC INDOOR UNUT
ECF 24 RC INDOOR UNUT

under the code:

7 OG 04

- *Are in compliance with the provisions of the EEC directives mentioned hereunder and with the national legislation transposing them:*

Machines Directive 98/37/ECC
Low tension Directive (DBT) 73/23/EEC
Electromagnetic compatibility Directive 89/336/EEC

and that
- *the following paragraphs of the harmonized standards have been applied:*

NF EN 60 204-1 / 1998
NF EN 60 335-1 / 1995
NF EN 60 335-2-40 / 1994
NF EN 55 022 / 1998
NF EN 61 000-3-2 / 1998
NF EN 50 082-1 / 1998
NF EN 814 / 1997
NF EN 378 / 99
NF EN 255 / 1997

At Tillières sur Avre
27570 - FRANCE
On: 09/03/2000
Richard FALCO
Quality Director

1 Safety precautions

ELECTRICAL POWER MUST BE SWITHCHED OFF BEFORE STARTING ANY WORK ON JUNCTION BOXES

The aim of this manual is to provide cassette users with instructions for installation, commissioning, operation and maintenance.

It does not contain the complete description of all the maintenance operations guaranteeing the unit's long life and reliability. Only the services of a qualified technician can guarantee the unit's safe operation over a long service life.

WARNING !

The installation, commissioning and maintenance of these units should be performed by qualified personnel having a good knowledge of standards and local regulations, as well as experience of this type of equipment.

Take care !

The unit should be handled using lifting and handling equipment appropriate to the unit's size and weight.

WARNING !

Any wiring produced on site must comply with local electrical regulations.

Take care !

It is forbidden to start any work on the electrical components without switching off the electrical supply to the unit.

WARNING !

Ensure that the electrical supply corresponds to the specification indicated on the unit's maker's plate before proceeding with the connection in accordance with the wiring diagram supplied.

Take care !

It is forbidden to start any work on the electrical components if water or high humidity is present on the installation site.

WARNING !

The unit must be EARTHED to avoid any risks caused by insulation defects.

Take care !

When the unit is being connected, ensure that no impurities are introduced into the pipe work and the circuits.

WARNING !

No wiring must come in contact with the heat source or the fan rotating parts.

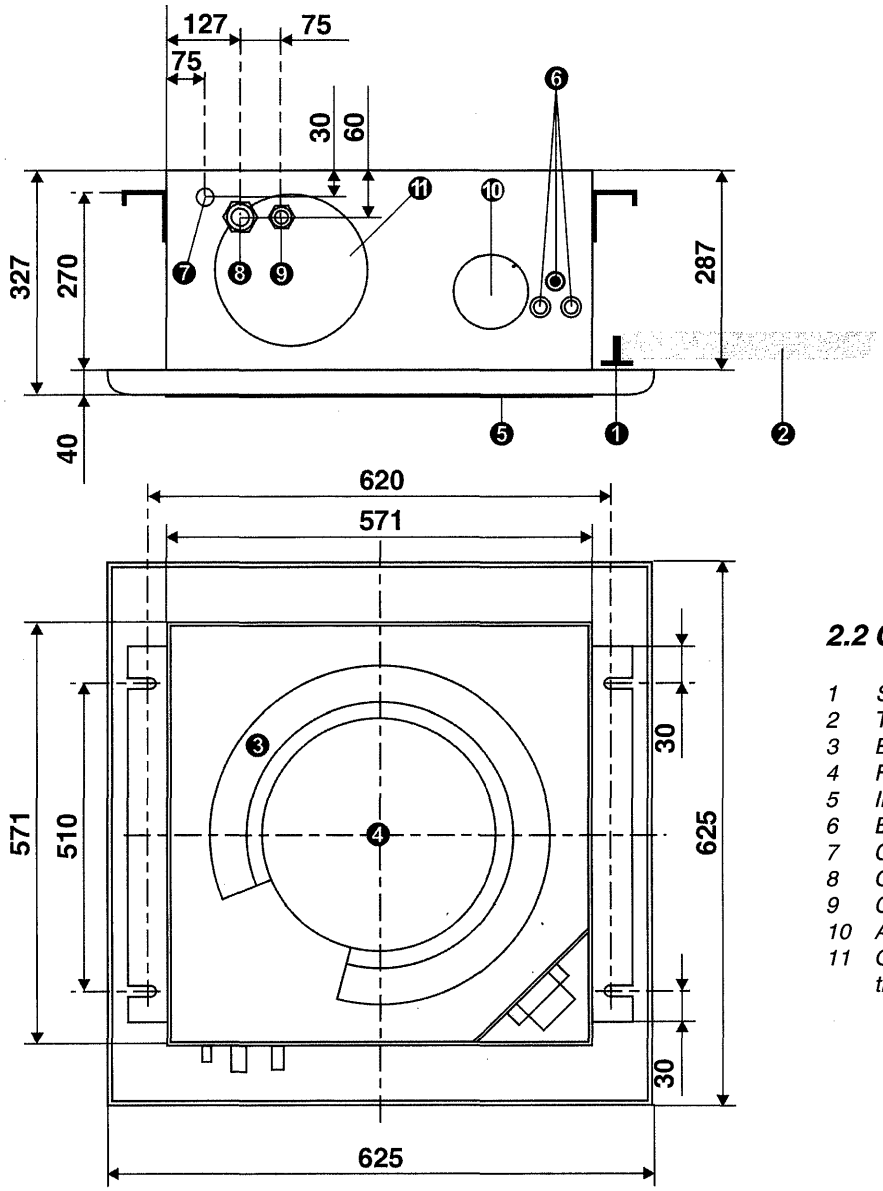
The Manufacturer's warranty will not apply if the installation recommendations listed in this manual are not followed.

NOTE: ***Please refer to the technical manual for the limitations of use and technical characteristics.***

2 Description

2.1 PACKAGE CONTENTS

1 *Cassette*
2 *Angle attachment fittings*
1 *Fastener bag: Angle brackets + screws*
Rubber shock absorbing pads
Treated air distribution frame screws
Fascia clips
1 *Documentation bag*
1 *Fascia assembly*
1 *Remote control*



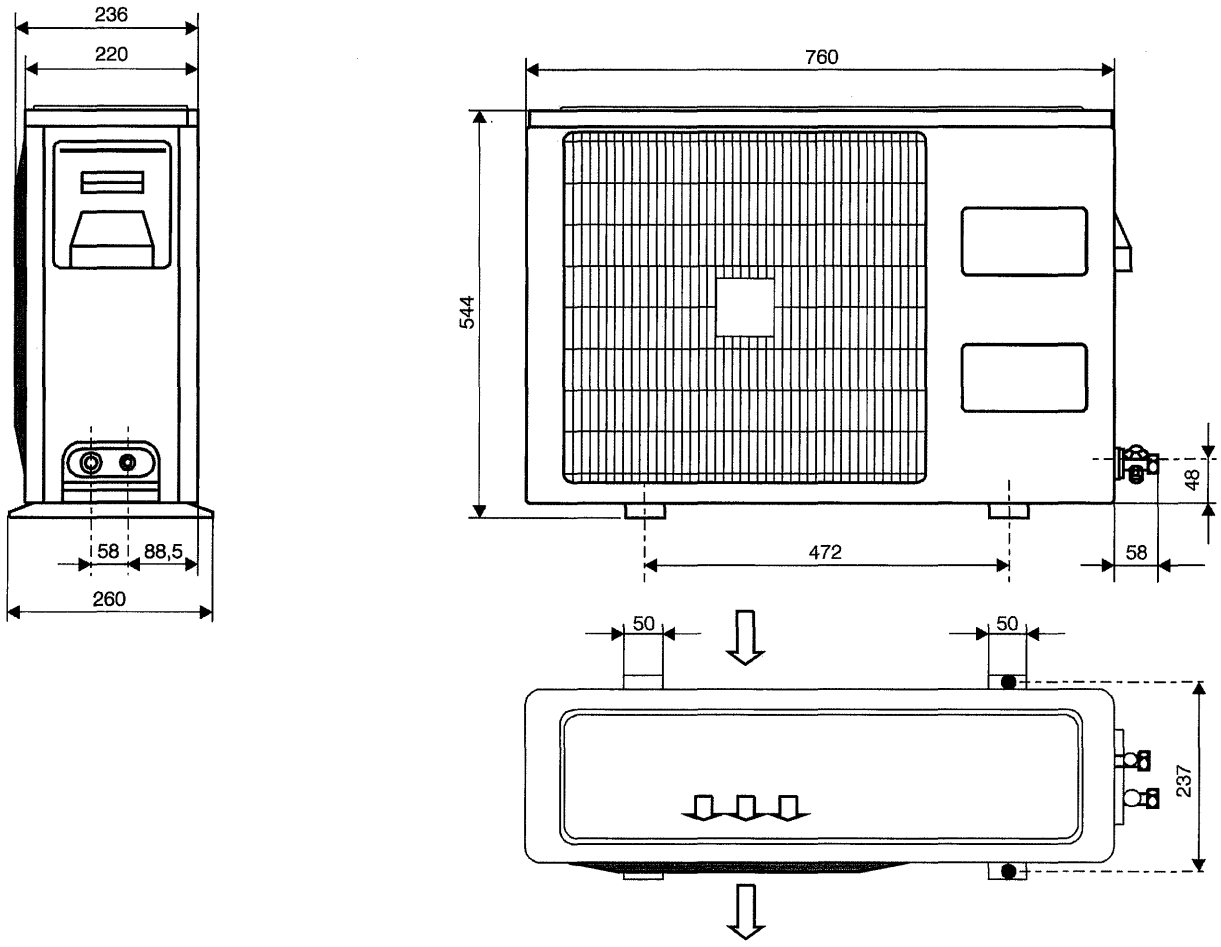
2.2 CASSETTE DIMENSIONS

1 *Suspended ceiling*
2 *T bar (suspended ceiling)*
3 *Evaporator*
4 *Fan*
5 *Intake grille*
6 *Electrical connection*
7 *Condensate evacuation Ø 15*
8 *Connection GAS*
9 *Connection LIQUID*
10 *Air inlet*
11 *Opening for ducted air distribution into the adjacent room (ready to punch out)*

Dimensions in mm

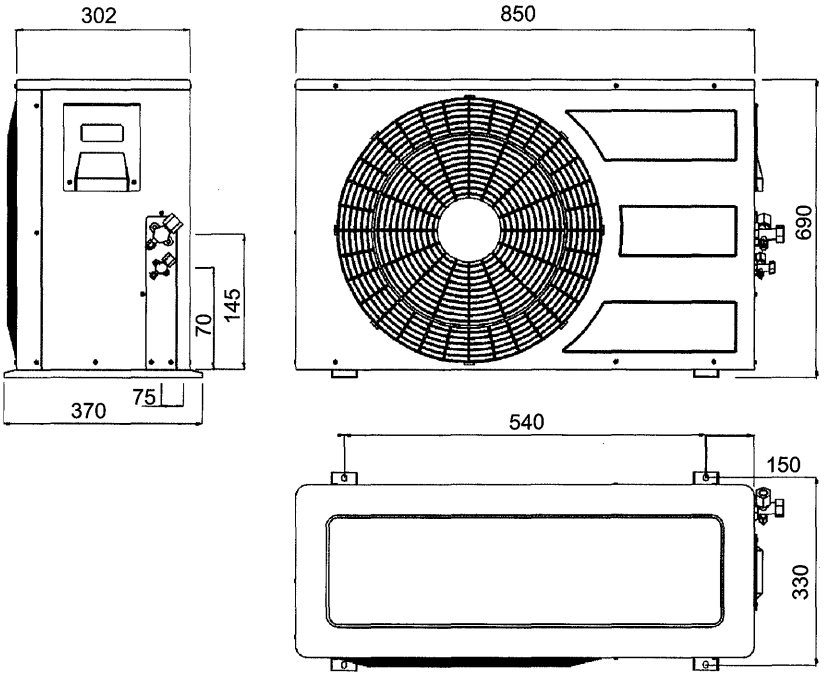
2 Description suite

2.3 DIMENSION OF OUTDOOR UNIT



2 Description continued

2.4 DIMENSION OF OUTDOOR UNIT
18 - 24



3 General continued

3.1 ELECTRICAL SPECIFICATIONS

Heat pump

TYPE OF APPLIANCE		15	18	24
1~230V - 50Hz		*	*	*
COOLING+VENTILTION (OR HEATPUMP HEATING)				
Herapt. heating	A	6.5	9.4	11.8
Nominal current				
Cooling + ventilation	A	7.9	10.1	12.5
Maximum current	A	11.5	14	17.7
Fuse rating aM	A	12	16	20
Fuse rating ASE/VDE*	A	16	16	20
Cable section*	mm^2	3G 1.5	3G 1.5	3G 2.5
Linking pipes				
Maximum current	A	10.5	13**	1
	A		1***	
Cable section*	mm^2	5G 1.5	6G 1.5***	6G 1.5***
	mm^2		5G 2.5**	5G 2.5**

**SCROLL compressor. Power supply by cassette
***Power supply by Outdoor unit

TYPE OF APPLIANCE		18	24
3N~400V - 50Hz		*	*
COOLING+VENTILTION (OR HEATPUMP HEATING)			
Herapt. heating	A	4.1	4.9
Nominal current			
Cooling + ventilation	A	4.4	5.4
Maximum current	A	6.1	7.4
Fuse rating aM	A	8	10
Fuse rating ASE/VDE*	A	10	10
Cable section*	mm^2	5G 1.5	5G 1.5
Linking pipes			
Maximum current	A	1	1
Cable section*	mm^2	6G 1.5	5G 1.5

* IMPORTANT

- *These values are given for information only; they should be checked and adjusted according to standards in force: they depend on the mode of installation and the type of wires selected.*

3 General continued

3.2 COOLING SPECIFICATIONS

- *The R22 charge depends on the length of the cooling linking pipes.*

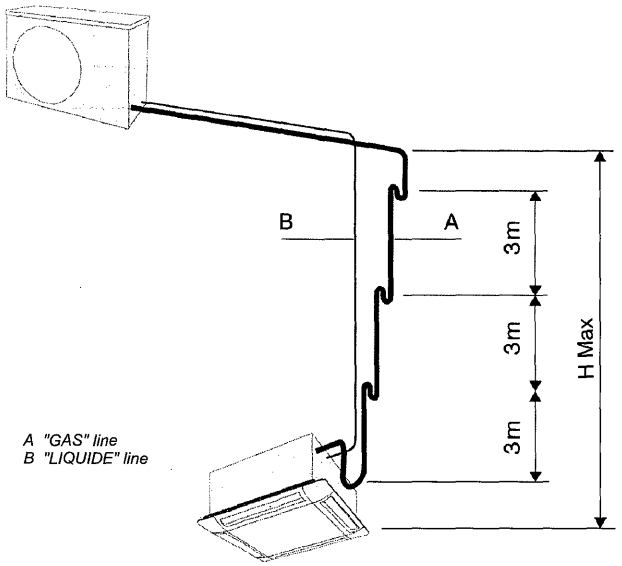
LENGTH OF THE LINKINGS PIPES	15*	LENGTH OF THE LINKINGS PIPES	18 HEATING PUMP	24 HEATING PUMP
1m		1m		
2m		2m		
3m		3m		
4m		4m		
5m	5grs	5m		
6m	10grs	6m		
7m	15grs	7.5m		
8m	20grs	8.5m	40grs	57grs
9m	29grs	9.5m	80grs	114grs
10m	38grs	10.5m	120grs	171grs
11m	47grs	11.5m	160grs	228grs
12m	56grs	12.5m	200grs	285grs
13m	65grs	13.5m	240grs	342grs
14m	74grs	14.5m	280grs	399grs
15m	83grs	15m	300grs	456grs
16m	92grs	16m	354grs	513grs
17m	101grs	17m	408grs	570grs
18m	110grs	18m	462grs	627grs
19m	119grs	19m	516grs	684grs
20m	128grs	20m	570grs	741grs
21m	137grs	21m	624grs	798grs
22m	146grs	22m	678grs	855grs
23m	155grs	23m	732grs	912grs
24m	164grs	24m	786grs	969grs
25m	173grs	25m	840grs	1026grs

* The cooling pipes of the model 15 heatpume are not to exceed 20 meters.

EXAMPLE:
- Installation of a model 15 with cooling pipes 15m long:
- Add 83 g of R22 on site.

MAXIMUM HEIGHT OF THE COOLING LINK

- *The maximum permissible difference in height between the outdoor unit and the indoor unit is indicated see below.*



A "GAS" line
B "LIQUIDE" line

	H. MAX.(m)
15	7*
18 / 24	10*

* WITHOUT siphon

3 General continued

3.3 INSPECTION AND HANDLING

In the event of shipping damage, write precise details of the damage on the shipper's delivery note and send a registered letter with acknowledgement of receipt to the shipper within 48 hours, clearly stating the damage caused. Forward a copy of the letter to the manufacturer or their representative.

N.B. *Writing "subject to unpacking" on the delivery note is not sufficient for the shipper's insurance company.*

WARNING!

The sharp edges and surfaces of the coils can cause injury. Avoid contact with them.

It is recommended to place the cassette as near as possible to the final installation site before unpacking.

Avoid placing heavy tools or weights on top of the packed cassette.

On opening the carton, check that all the accessories required for installation are present.

Keep the fascia grille in its packaging until it is to be finally installed.

DO NOT LIFT THE CASSETTE BY THE CONDENSATE EVACUATION TUBE

4 Installation

4.1 USAGE CONFIGURATION

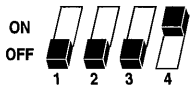
- *To change the configuration from STANDARD to HEAT PUMP:*
- *On the electronic circuit board: Replace the configuration plug marked **K-ST** by the configuration plug marked **K-RC** (supplied).*
- *To change the configuration from STANDARD + Electric heating to HEAT PUMP + Electric heating:*
- *On the electronic circuit board: Replace the configuration plug marked **K-RH** by the configuration plug marked **K-SH** (supplied).*

A SINGLE HEATING ELEMENT SHOULD OPERATE WITH THIS CONFIGURATION:

- *Disconnect the BLACK wire linked to **HE2** and isolate it (refer to the **STORM** electronic circuit board diagram).*

On the remote control:

- *In the battery compartment, set the switches as follows and then reset the remote control (Refer to the remote control manual).*



USAGE CONFIGURATION

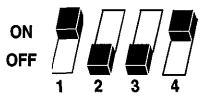
- *To change the configuration from HEAT PUMP to STANDARD:*
- *On the electronic circuit board: Replace the configuration plug marked **K-RC** by the configuration plug marked **K-ST** (supplied).*
- *To change the configuration from HEAT PUMP + Electric heating to STANDARD + Electric heating:*
- *On the electronic circuit board: Replace the configuration plug marked **K-SH** by the configuration plug marked **K-RH** (supplied).*

BOTH THE HEATING ELEMENTS SHOULD OPERATE WITH THIS CONFIGURATION:

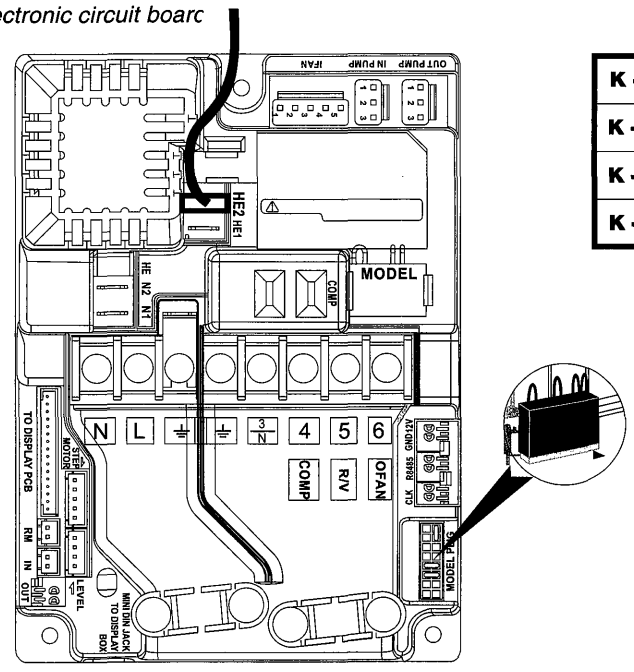
- *Connect the **BLACK** wire linked to **HE2** and isolate it (refer to the **STORM** electronic circuit board diagram).*

On the remote control:

- *In the battery compartment, set the switches as follows and then reset the remote control (Refer to the remote control manual).*



***STORM** electronic circuit boarc*



K - ST ⇨ 243195	*Cooling only WITHOUT electric heating*
K - RC ⇨ 243196	*Heat pump WITHOUT electric heating*
K - RH ⇨ 243197	*Cooling only WITH electric heating*
K - SH ⇨ 243198	*Heat pump WITH electric heating*

TAKE CARE TO PLUG IN THE RIGHT WAY.
The small arrow on the PLUG should point towards the nearest outside edge of the electronic circuit board.

4 Installation

4.2 INSTALLATION LOCATION

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 Indoors unit is to be built into a suspended ceiling with panels dimensions of 60 x 60 cm, or multiples thereof.

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.

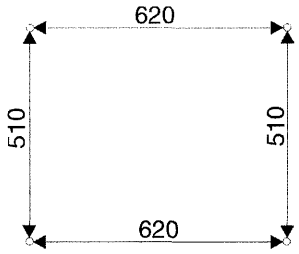
It is recommended to install the cassette, as far as is possible, in the centre of the room, in order to optimise treated air distribution.

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.

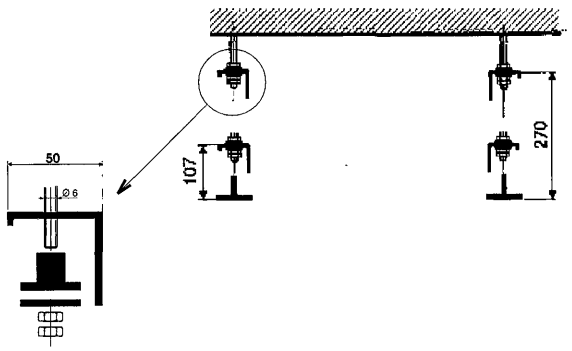
4.3 CEILING MOUNTING

Mark the position of each support rod.

Refer to Chapter 2 "Dimensions"



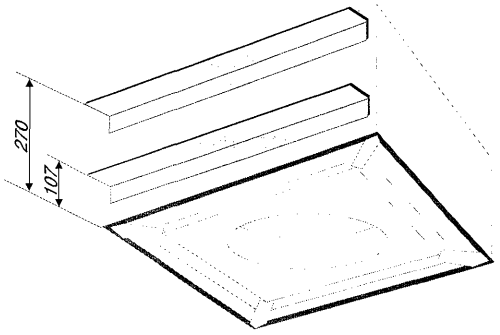
Fit the angle attachment fittings supplied with the cassette onto the threaded rods (not supplied). Recommended Ø 6 mm maximum Ø 8 mm. Take care to distance them from the suspended ceiling by 270 mm or 107 mm.



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 are the connections have been completed.

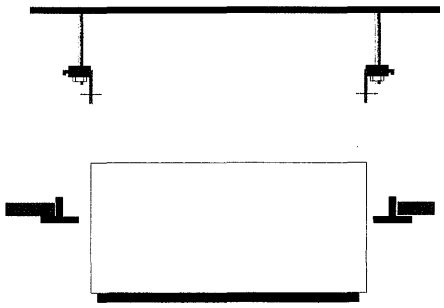


4 Installation continued

WARNING ! *If it is indented to install ducting to an adjacent room, refer to* ***§ 4.4*** *for removal of the pre-punched panel before installing the cassette.*

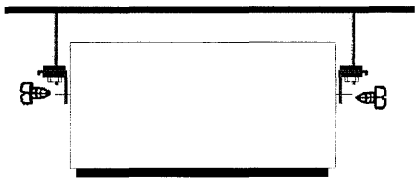
4.4 CASSETTE FITTING

Present the cassette to the support rods.



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,

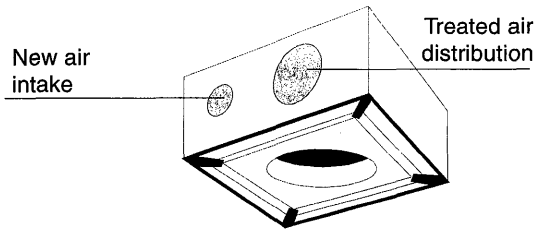


then the threaded rods nuts and lock nuts, after having set the cassette level, maintaining a gap of around 10 mm between the metal chassis and the suspended ceiling.

4.5 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.



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

Plug the gaps between the ducts and the opening edge with anti-condensation insulation.

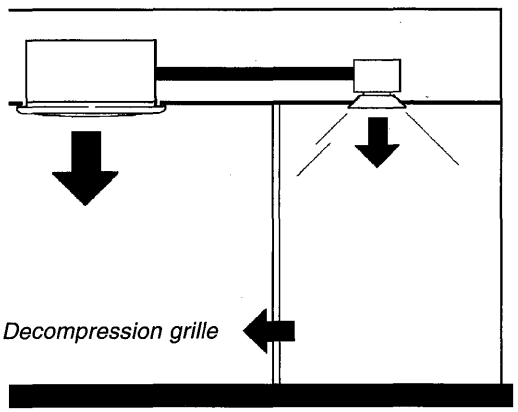
Use material which can withstand a continuous operating temperature of 60° C. The ducts can be of the flexible type with a spring core or of corrugated aluminium, covered inside with an insulating material (12 to 25 mm thick glass fibre).

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.

Distributing air to an adjacent room requires one or two of the corresponding ducts' air distribution flaps to be closed.

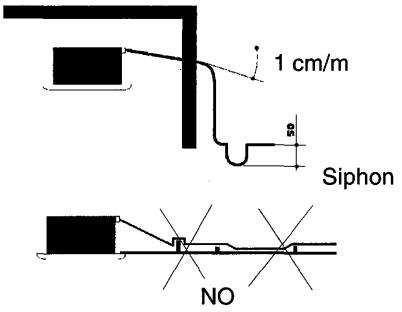
A decompression grille must be fitted in the partition between the air conditioned room (where the cassette is installed) and the adjacent room.



5 Connections

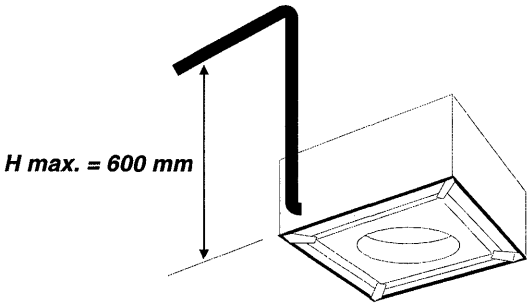
5.1 CONDENSATE EVACUATION

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



The condensate extraction height is limited to a maximum of 0.60 metre (refer to above diagram)

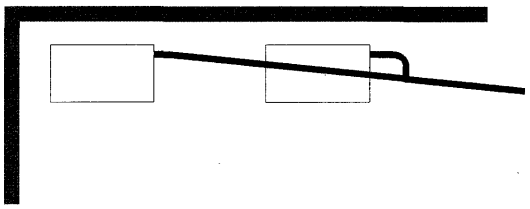
For heights above 0.60 m, an auxiliary condensate pump with a level regulator should be installed.



Furthermore, a siphon with a height of at least 50 mm must be provided to avoid any unpleasant odours in the room.

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.

If several cassettes are installed in the room, the evacuation system can be designed as illustrated below.



5.2 HYDRAULIC CONNECTIONS

WARNING !

For the system to operate in complete safety, regulating valves must be fitted, if they are not already fitted at the factory.

A lock spanner must be used for tightening the valves.

5 Connections suite

5.3 REFRIGERANT LINES AND CONNECTIONS

- The cassettes are designed to be connected to the outdoor units using flare lines (refrigerant grade copper pipe fitted at both ends with flare nuts and insulated over the full length).

PIPE PREPARATION

- Use refrigerant grade copper pipe with a diameter suited to each model (see table, page 5).
- The gas pipe and liquid pipe must mandatorily be covered with insulating material at least 6 mm thick.
- Fit the flare nuts on the ends of the pipes before flaring the pipes.
- The separately insulated pipes and their fittings can then be attached to the condensate drain and power cables with a clamp.

INSTALLATION OF REFRIGERANT LINES

- Drill an 80 mm diameter hole through the wall for the crossing of the lines between the outdoor unit and indoor unit

ROUTING OF THE PIPES

- The pipe bending radius must be greater than or equal to 3.5 times the pipe diameter .Do not bend the pipes more than three times in a row and do not make more than 12 bends in the total length of the line.
- If the suction pipe has a vertical section more than 8 meters in length, it is MANDATORY to provide a trap every 3 meters when the outdoor unit is installed above (model 18 / 24)

DEPRESSURIZATION OF REFRIGERANT LINES AND INDOOR UNIT

- The R22 charge is contained only in the outdoor unit. The indoor unit contains a small amount of neutral gas. That is why it is necessary to depressurize the lines and indoor unit after installing the lines.The outdoor unit has a valve used for depressurizing the system (large valve).

INSTALLATION PROCEDURE

- The outdoor unit a valve (large valve) used for depressurizing the complete system.

1 Connect the pipes of the line to the outdoor unit and indoor unit.

- Cover the surface with refrigerant oil to tighten the fittings correctly . Always use a counterwrench to tighten the valves.
- The table below shows the tightening torques.

Ø of the pipes	Torque
1/4" Pipe	15-20 Nm
3/8" Pipe	30-35 Nm
1/2" Pipe	50-54 Nm
5/8" Pipe	70-75 Nm

2 Connect the vacuum pump to the flare coupling of the outdoor unit fitted with the large service valve (large coupling).

3 Turn on the vacuum pump and check that the dial pointer drops to -0.1 MPa (-76 cm Hg).
The pump should remain in operation for at least 15 minutes.

4 Before removing the vacuum pump, check that the vacuum dial remains stable for five minutes.

5 Disconnect the vacuum pump and reclose the service valve.

6 Remove the caps from the GAS and LIQUID valves and open them with a socket wrench to release the R22 contained in the outdoor unit.

7 It may be necessary to adjust the charge according to the length of the line and the processing unit (see pages 11 and 12 to calculate the charge to be added). Put the caps back.

8 Check the lines for leaks using an electronic leak tester or a sponge soaked with sudsy water.

CHARGE ADJUSTMENT

- This operation must only be carried out by qualified personnel in accordance with the rules of good workmanship in refrigeration. The extra charge is added through the service valve of the outdoor unit flare coupling (large coupling).
- All work on the refrigerating lines requires compliance with CECOMAF Recommendations GT1 001 (recommendation concerning R22 emissions).

FINAL TASKS

- Check that the valve caps are correctly tightened.
- Attach the cables and lines to the wall with clamps if necessary.

6 Electrical connection

6.1 ELECTRICAL CONNECTION

WARNING !

Before starting any electrical connection, check that the electrical supply corresponds to the specification indicated on the unit's maker's plate. Each cassette in equipped with a terminal block located inside the cassette cabinet.

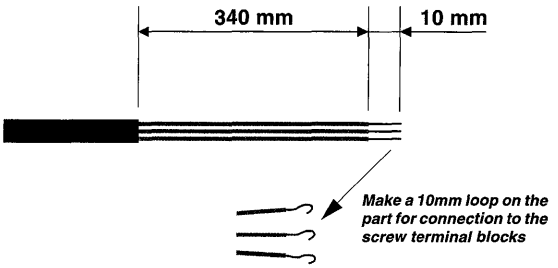
Connection to the electrical network must comply with current electrical standards.

THE UNIT MUST BE EARTHED.

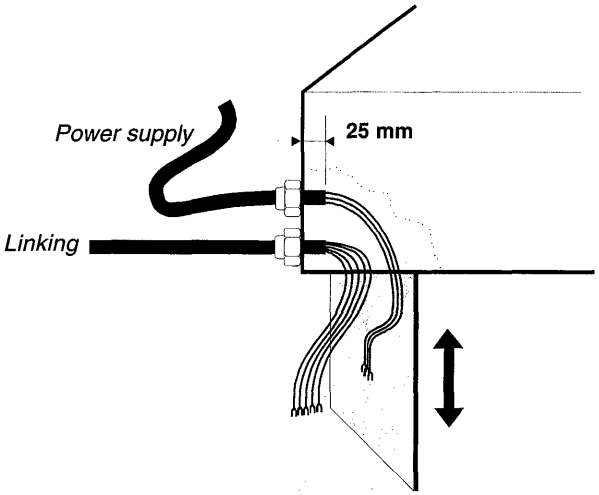
The manufacturer and their representatives decline all responsibility for any accidents caused by inadequate or non-existent earthing of the installation.

All the cassettes are intended to operate on a normal voltage of 230 V ± 10% / Single phase / 50 Hz + Earth.

The connection is made by the cassette unit or by the outdoors unit following the principle on the following pages.

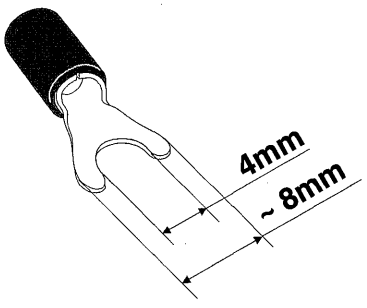


Prepare and put in place the conductor wires ensuring provision for movement of the electrical box, without straining the existing wiring.



All the connections are made to screw terminals.

For the liaison cable, the use of flexible cables and pre-insulated fork connectors is strongly recommended.

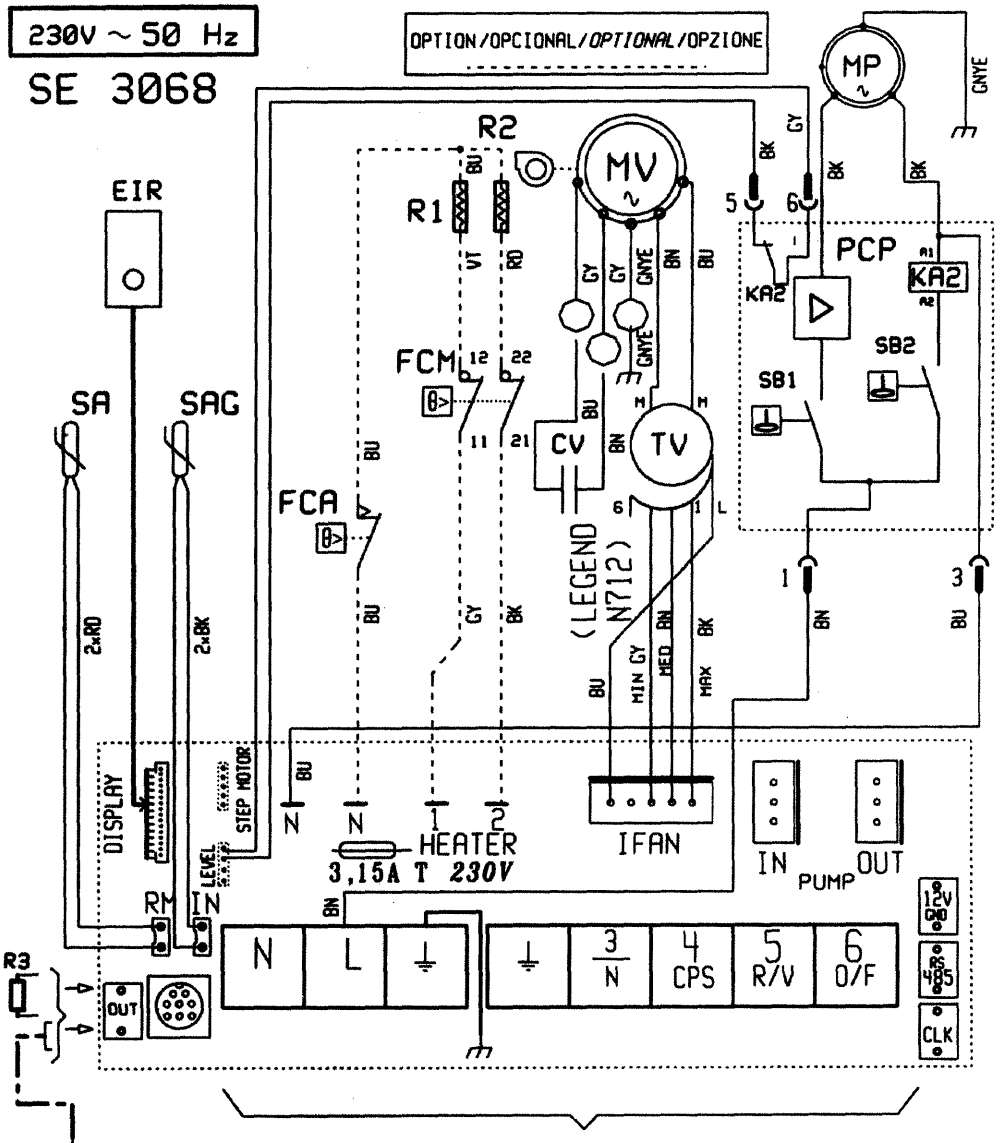


6.2 FAULT WARNING REPEATER

*When the upper water level is reached (SB2 sensor), the logic circuits on the **"STORM"** board stop the ventilation, the heating and the compressor.*

6 Electrical connection *continued*

TAKE CARE !
This wiring diagram is correct at the time of publication. Manufacturing changes can lead to modifications. Always refer to the diagram supplied with the product.



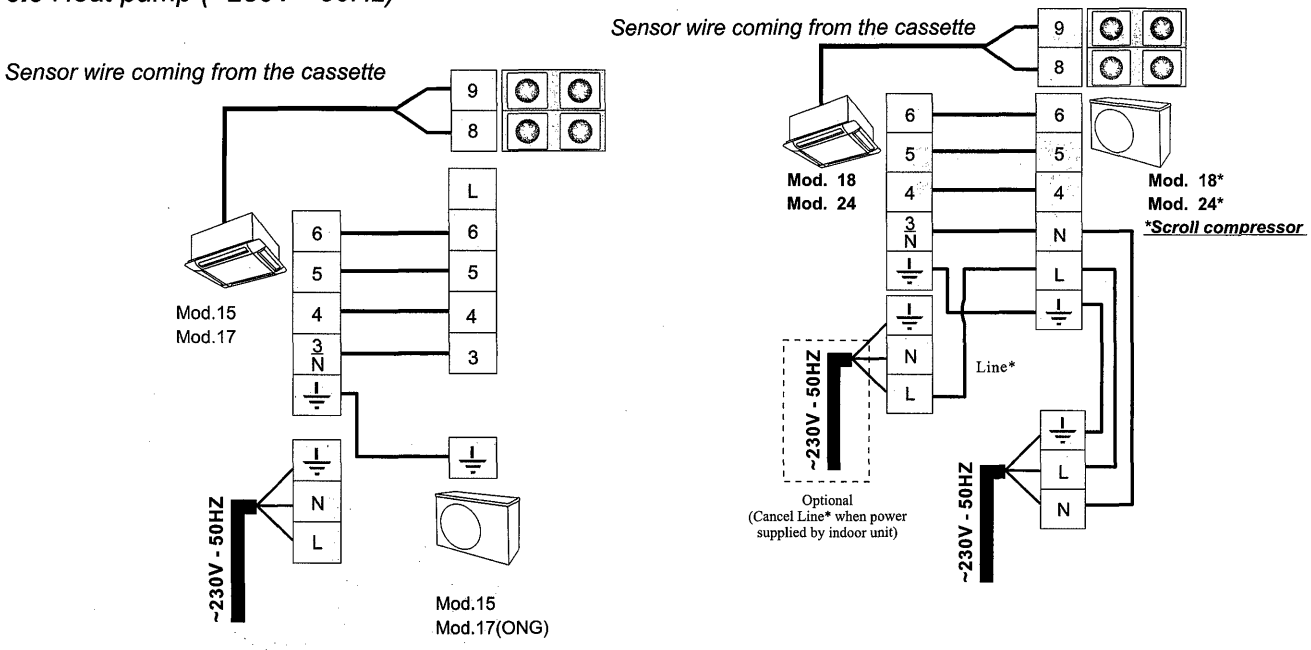
CONNECTIONS ACCORDING TO MODEL

BK	*Black*
BN	*Brown*
BU	*Blue*
GNYE	*Green/Yellow*
GY	*Grey*
OG	*Orange*
RD	*Red*
VT	*Violet*
WH	*White*

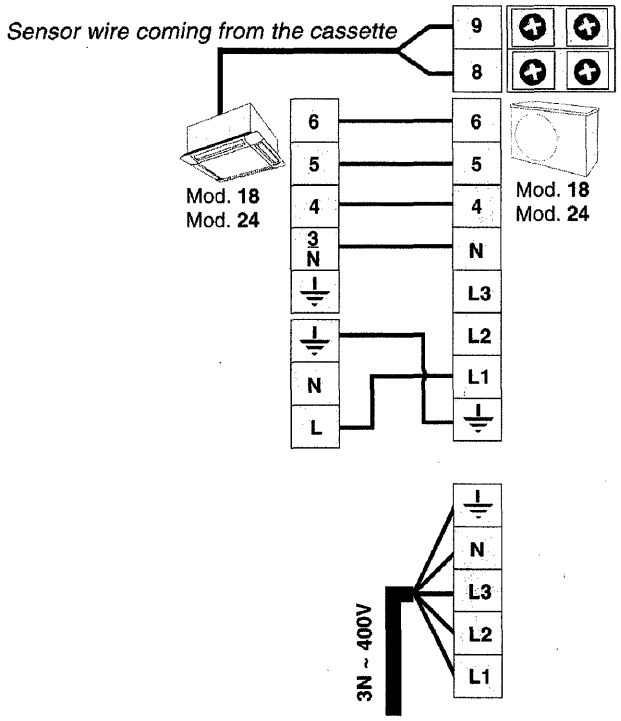
MP	CONDENSATE PUMP HOTOR
MV	FAN MOTOR THERMALLY PROTECTED
CV	CAPACITDR
TV	AUTOTRANSFDRMER (FAN MOTOR MV)
SB1	WATER LEVEL SENSOR HP ON
SB2	WATER LEVEL SENSOR DEFAULT
PCP	PUMP CONTRDL BOARD
PCB	"STORM"ELECTRONIC CONTROL BOARD
SA	ROOM TEMPERATURE SENSOR
SAG	DEFROST TEMPERATURE SENSOR
ST3	DEICE TEMP. SENSOR (IN GC)
R3	RESISTOR FOR COOLING DNLY MODELS
EIR	DISPLAY PCB
R1/R2	ELECTRIC HEATER
FCA	SECURITY THERMOSTAT
FCM	HANUAL SECURITY THERMOSTAT

6 Electrical connection *continued*

6.3 Heat pump (~230V - 50Hz)



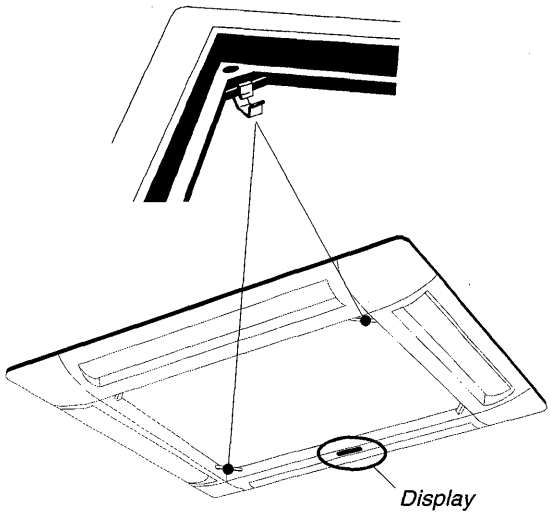
6.4 Heat pump (3N~400V)



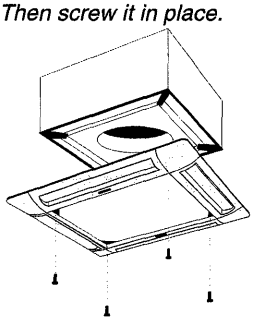
7 Air distribution

7.1 AIR DISTRIBUTION MODULE FITTING

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



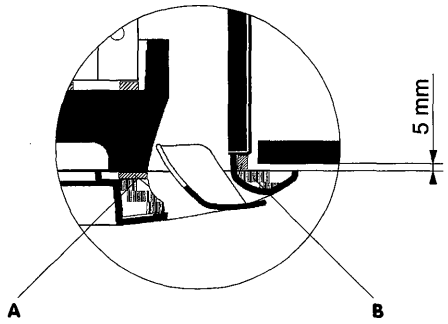
Present the frame to the unit, and apply pressure so that the clips engage. Then screw it in place.



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

A Air by pass

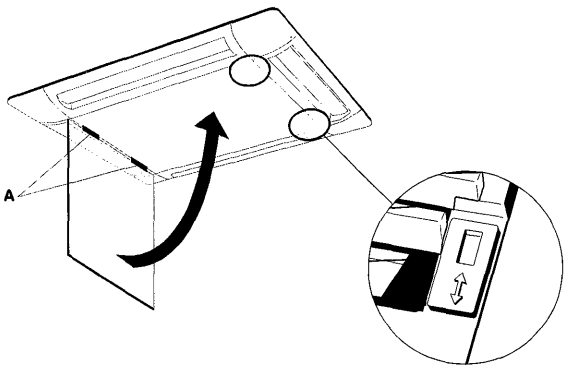
B Treated air being distributed into the suspended ceiling space.



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

7.2 FILTER INSTALLATION

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



Avoid 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.

8 Commissioning

8.1 CHECKS BEFORE COMMISSIONING

Ensure that the installation pipe work has been cleaned and bled of any air, before commissioning the unit.

Check that the condensate evacuation pipe is connected and provides effective condensate drainage.

Check that the filter is clean and correctly installed.

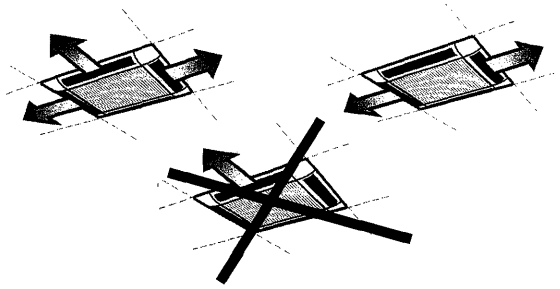
Check that the fan rotates freely.

Check that all hydraulic and electrical connections are correctly tightened.

Check that the air distribution flaps are open.

TAKE CARE !

Follow the directions for treated air distribution.



Check free flow by pouring water into the indoors unit tray. Check the connections seals and, if required, insulate the evacuation pipes to protect against frost or condensation.

8.2 GENERAL INSTALLATION

Carry out a visual inspection of the installation in operation.

Check the overall cleanliness of the installation and check that the condensate evacuation is not blocked, particularly that of the evaporator coil.

Check the condition of the condensate tray.

8.3 ELECTRICAL ELEMENTS

Check that the mains supply cable is free from any damage which might effect insulation.

Check the tightness of the electrical connections.

Check the earth connection.

For the installation to operate correctly, it is imperative that the air filter, located on the air intake of the treated air coil, is cleaned regularly.
Cleaning intervals vary depending on the amount of impurities in the air to be conditioned. It is recommended that the filter is replaced at regular intervals.

A dirty filter creates a decrease in air flow across the heat exchanger, which decreases the installation's output and hinders fan motor cooling.

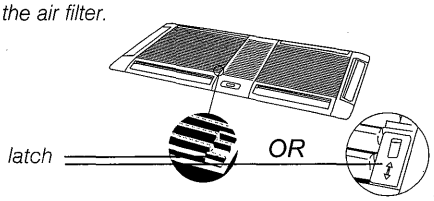
Check the state of cleanliness of the indoors coil.

This list is not comprehensive. Other checks can be carried out, in relation to the environment and the unit's operating conditions.

9 HOW TO USE MANUAL OPERATION

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.



THE PANEL IS USED AS FOLLOWS (FIG.A):

Press once on the MODE key - operation in COOLING
Press a second time on the MODE key - operation in HEATING
Press a third time on the MODE key - operation STOPS

FIG. B :

*1 As soon as the appliance is made alive, indicatorlamp **1** lights up and remains lighted.*

2 Green LED 2 comes on when the unit is turned on. Key ⏻ of the remote control unit.
*All information transmitted by the remote control to the appliance will make the green indicator light **2** blinking.*

*3 The orange indicator light **3** lights up when a program is sent by the remote control, and also when the appliance operates in the SLEEP function.*

Fig. A
Abb. A

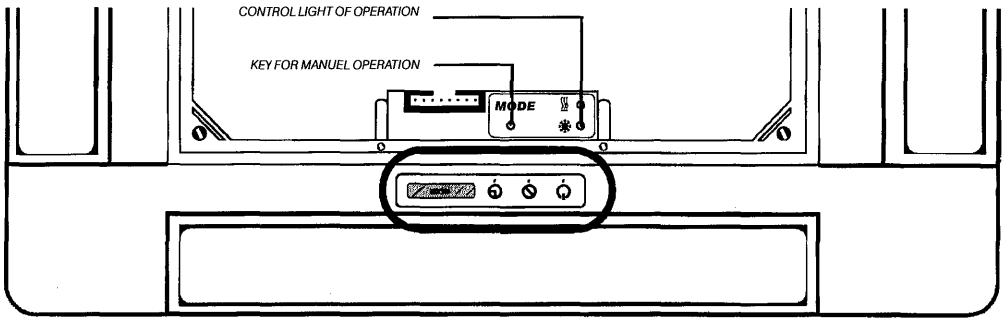


Fig. B
Abb.B