Technical guide

Mercury Close Control Unit

Direct Expansion Unit

EDAB / EUAB / EDAV / EUAV / EDWB / EUWB / EDWV / EUWV
1105-1106-2107-2207-2109-2209-2111-2211-2113-2213-2216-2218-2222-4222-2225-4225-4228

Chilled Water Unit

EDCB / EUCB / EDCV / EUCV
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Contents

GENERAL INSTRUCTIONS 4
Information contained in the manual 4
Symbols 4
Storage 4
Storage after use 4
Disposal 4
Disposal of the machine 4
SAFETY 6
General Instructions 6
Warning for lifting and transportation 6
Warnings for installation 6
Intended use 6
Warnings for use 6
Safety during maintenance work 6
INTRODUCTION 7
Presentation of the system 7
MERCURY - DIRECT EXPANSION 10
Technical characteristics 10
Operating description 13
Name and description of the main components 14
Checks to be made on delivery 17
Unloading the unit 17
Characteristics of the installation area 17
Positioning of the unit 17
Door opening and removal of the panels 18
Door opening 18
Internal protection panels 19
Electrical connections 20
Connection to the drains 21
Connection to the gas drain 21
Refrigerant connections on air cooled units 22
Choosing the diameter of the discharge tube 22
R410A 23
BACKFLOW LINE DIMENSIONING (LIQUID) 26
Type of oil recommended with MANEUROP compressors 28
Type of oil recommended with SANYO compressors 28
Type of oil recommended with Scrolltech HCJ 072-HLJ 083 compressors 28
Connection for water cooled units 29
MANUAL START UP AND SHUT DOWN OF THE UNIT 30
SETTING AND ADJUSTMENT 31
Selecting the power supply of the fans 31
Setting the regulation and safety devices 34
Setting the pressostatic valve (optional on chilled water cooled models only) 34
Setting the air flow sensor 34
Setting the dirty filter sensors 35
MAINTENANCE 35
Check every three months 35
Check every six months 35
Annual checks 35
Checks to be performed every sixty months 35
Cleaning and replacing the filters 36
Troubleshooting 37
MERCURY - CHILLED WATER 41
Technical characteristics 41
Operating description 42
Name and description of the main components 43
Checks to be made on delivery 45
Unloading the unit 45
Characteristics of the installation area 45
Positioning of the unit 46
Opening of the door and removal of the panels 46
Internal protection panels 47
Electrical connections 48
Connection to the water drain 49
Hydraulic connections 50
Filling the hydraulic circuit 50
Filling the primary circuit 50
Filling the hydraulic circuits of the conditioners 50
MANUAL START UP AND SHUT DOWN OF THE UNIT 51
SETTING AND ADJUSTMENT 52
Selecting the power supply of the fans 52
Setting the regulation and safety devices 56
Setting the air flow sensor 57
Setting the dirty filter sensors 57
MAINTENANCE 57
Check every three months 57
Check every six months 57
Annual checks 57
Cleaning and replacing the filters 58
Servomotor and chilled water valve 59
Servomotor and hot water valve 59
Troubleshooting 60
ACCESSORIES 62
Humidifier 62
Operating principle 63
Feed water 63
Connections 63
Maintenance 64
Electric heaters 65
Temperature and humidity sensor 66
Connection to fresh air intake 67
Maintenance 68
Discharge temperature threshold sensor (only on CHILLED WATER models) 68

GENERAL INSTRUCTIONS

Information contained in the manual

The present manual describes the Mercury conditioning units. It supplies general information and safety instructions, unit transportation and installation information, as well as necessary information about how to use the units.
It is an integral part of the product.
The descriptions and illustrations in this manual are unbinding; Trane reserves the right to make any alterations it sees fit in order to improve the product without having to update this document.
The illustrations and images in this manual are examples only and may differ from practical situations.

Symbols

The following graphic and linguistic symbols have been used in this manual:

WARNING! This message may appear before certain procedures. Failure to observe this message may cause damage to equipment.

WARNING! This message may appear before certain procedures. Failure to observe this message may cause injury to the operators and damage the equipment.

Storage

The following conditions must be respected should the unit require storing for a given period of time:
The packing must be kept intact.
The place of storage must be dry (<85% R.H.) and protected against the sun (temperature <50°C).

Storage after use

The unit must be packaged when stored for a long time.

Disposal

The unit is mainly made of recyclable materials which should be separated from the rest of the unit before it is disposed. When disposing of the gas and oil inside the refrigerating circuit, consult a specialist company.

Disposal of the machine

The following instructions deal with the disposal of Trane machines.
The procedures described below are guidelines only, provided to make the machine disassembling easier. The purpose of these operations is to achieve homogeneous material quantities for disposal or recycling.
These instructions are followed by a list of the possible typical CER 2002 codes to allow an easier disposal of the machine parts.

WARNING! Observe the safety precautions at work wearing the suitable individual protection devices (IPD) and using the appropriate equipments.

WARNING! Maintenance and service operations (disassembling included) must be performed by qualified and expert personnel, aware of the essential precautions.

PRELIMINARY OPERATIONS

Power supply and data processing system:

- Turn the machine off and unplug it from the power supply and from the communication system.

WARNING! The circuits can be pressurised; any maintenance and service operation must only be carried out by expert and qualified personnel, aware of the essential safety precautions.

WARNING! The machine can contain hot water: adopt all of the essential safety cautions.

Hydraulic circuit:

- Drain the hydraulic circuit and disconnect the hydraulic line.

Refrigerating circuit:

- Purge the refrigeration system with suitable recovery equipments to avoid gas leakage in the environment.

DISASSEMBLING THE MACHINE

The following paragraphs describe the main macrocomponents to facilitate the disassembling, disposal and recycling of materials with appropriate features.
To disassemble the machine properly, follow the guidelines provided below.

- **ELECTRICAL PANEL**
  Remove the electrical panel and dispose its parts following the procedures provided by the relevant standards. The models equipped with a «clock board» in the electrical panel have a service battery which must be disposed separately.
  - Materials: electronic parts, electrical cables, metal and plastic supports, batteries.
- **COVER PANELS**
  Remove the metal cover and protection panels of the machine.
  The panels can be made of polypaired materials, that is insulating material together with metal. In this case, separate the different elements.
  - Materials: galvanized sheet, aluminium, soundproof panels: expanded polyurethane, thermoinsulating panels: mineral wool.
- **AIR FILTERS**
  Remove the air filters.
  - Materials: metallic net, synthetic fibre.

- **FINNED COIL**
  Remove the finned coils from the machine.
  - Materials: copper, aluminium, steel.
- **HUMIDIFIER**
  If a humidifier is installed, remove it.
  - Materials: polypropylene, iron materials.
- **ELECTRO-MECHANICAL PARTS**
  Find and remove valves, electro-mechanical and electronic parts (three-way valves, sensors, etc.) from the machine.
- **RESISTANCES**
  Remove the resistances if they are installed.
  - Materials: aluminium, inseparable copper + magnesium oxide.
- **PIPES AND PARTS OF THE REFRIGERATING CIRCUIT**
  Find the connection pipes installed in the machine and separate them from the other elements.
  Pipes can be caulked: in this case, before recovery, separate the insulating material from the metal pipe.
  Even the elements of the refrigerating circuit are considered as pipes: joints or valves.
  - Materials: copper, brass, cast iron, steel and plastic.
- **PUMP**
  Remove the pump from the machine.
  - Materials: pump.
- **CONDENSER**
  Remove the condenser, if installed.
  The condenser contains the elements of a machine, equipped with a small electrical panel, fans and a thermal exchange battery, usually characterized by aluminium structure and feet made of varnished steel.
  - Materials: electrical elements, aluminium, steel (varnished).
- **BRAZED PLATE EXCHANGER**
  If installed, remove the brazed plate exchanger.
  - Materials: INOX AISI braze welding, with an alloy containing a large amount of silver.
- **FANS**
  Remove the fans. Disassemble the metal frame and proceed with the recycling of the metal alloy.
  - Materials: electro-mechanical elements, iron wrecks.

WARNING! The fans of some machine models are integral part of the carrying structure. Removing the fans can compromise the stability of the frame. We recommend to pay attention during disassembling operations.

- **COMPRESSORS AND LIQUID SEPARATORS**

WARNING! Pay attention to oil contained in the compressors. Avoid any loss of oil during operations. If possible, dispose of oil and compressors separately.

Finally remove the liquid separators and the compressors from the machine base.
- Materials: liquid separators and compressors

- **METAL BASE**
  Proceed with the recycling of the metal base.
  - Materials: galvanised sheet.

WARNING! Waste deriving from machine disassembly must be disposed of and classified according to CER codes only consulting authorised and specialist companies.

The following chart contains a partial list of the typical CER codes applied to waste deriving from disassembling, so it must be considered just as an indication.

ELEMENTS	CER 2002 CODES
Electrical cables	17 04 11
Plastic materials	16 01 19
Metal supports	16 01 17
Galvanised sheet	17 04 07
Aluminium	17 04 02
Metallic net	17 04 05
Synthetic fibre	15 02 03
Copper	17 04 01
Brass	17 04 01
Cast iron	17 04 05
Steel	17 04 07
Refrigerating gas	14 06 01
Battery	16 06 04
Pumps, electro-mechanical elements, compressors	16 02 13 or 16 02 14

SAFETY

General Instructions

WARNING! Removal of, or tampering with, safety devices is a violation of EUROPEAN SAFETY STANDARDS.

WARNING! During installation authorised personnel must wear individual safety devices.

Trane will only consider itself responsible for the safety, reliability and performance of the machine if:

- repair work has only been carried out by authorised personnel;
- the electric installation conforms to the standards currently in force;
- the devices are used in conformity with the relative instructions.

Carefully read this instruction manual before carrying out any kind of use or maintenance work on the units.
Installation, maintenance and use must be carried out respecting all of the work safety standards.
The operator responsible for the above mentioned services must be suitably specialised and possess expert knowledge of the devices.
Trane refuses all responsibility for damage to people or objects due to the inobservance of the safety standards.

Warning for lifting and transportation

Lifting and transportation of the units must be carried out by specialised personnel as described in the relative paragraphs.
The load must always be solidly anchored to the bearing element of the lifting equipment and means of transport. No-one must remain near the suspended load, nor in the working area of the crane, forklift truck or any other lifting equipment or means of transport. Adopt all of the cautions provided by the relevant safety standards, in order to prevent any possible damage to people or objects.

Warnings for installation

Any type of work on the electrical installation must only be carried out by specialised technicians who are experts in this field.
Specialised technical personnel must use appropriate equipment when checking the grounding of devices.
Installation may only take place in locations where there is NO public access.

Intended use

Mercury air conditioning units have been designed and produced to carry out air conditioning, within the limits and methods described in the present manual. The air conditioners must be used exclusively in internal environments.
No modifications may be made to the units or their parts without explicit written consent from Trane.

Warnings for use

Only use the machinery for the purpose for which it was designed and manufactured.

Environmental limits for use

The environmental conditions for the use of Mercury air conditioners must fall within the following values:

- Tmin=18°C
- Tmax=30°C
- %rHmin=30%
- %rHmax=70%

Safety during maintenance work

All repair work must be carried out by professionally qualified personnel authorised by Trane.
Unplug the machine form the power supply before starting any maintenance work.
While drawing up this manual, we have considered all of the operations which are part of normal maintenance operations.
N.B. Do not carry out any work which has not been specified in this manual.

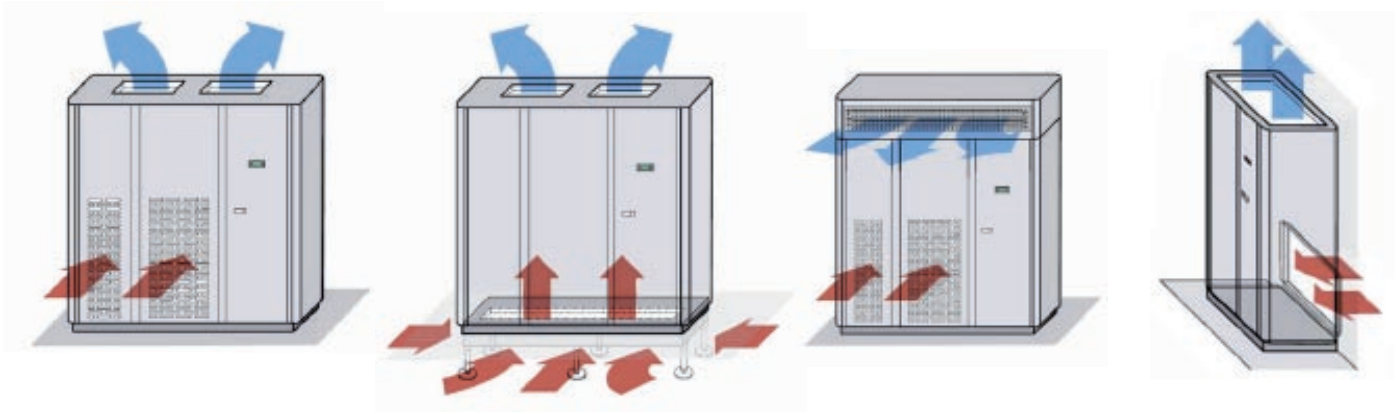
INTRODUCTION

Presentation of the system

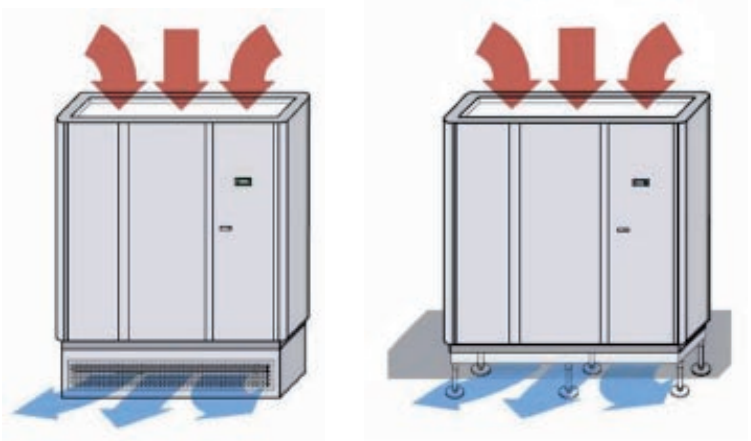
The Mercury precision air conditioners are designed for environments which are characterised by the presence of highly technologically advanced equipment: telecomms and internet centres, data processing rooms and any type of environment which is characterized by high concentrations of power.
The Mercury series consists of 2 types of conditioners:

- Direct expansion
- Chilled water

AIR FLOW
In the MERCURY conditioners, the air can flow upwards or downwards (UPFLOW / DOWNFLOW).
UPFLOW
Upflow units (with upwards air discharge) are designed to distribute the air through a system of ducts or by means of a false ceiling. Air intake is usually through the front of the unit, but versions are also available with air intake through the rear or the base of the unit.



DOWNFLOW
Downflow units (with downwards air discharge) handle large volumes of air which are distributed uniformly into the environment by means of a void under a raised access floor. The air enters the unit directly from the environment, or through a ventilated or false ceiling.



MODELS

The code which distinguishes the models is composed of 9 characters:

Identifying prefix of the Mercury family

Air discharge

U = Upflow (upwards discharge)
D = Downflow (downwards discharge)

Operating typology

C = Chilled water units
A = Air cooled direct expansion units
W = Water cooled direct expansion units

Fan typology

V = Radial Electronically Commutated fans
B = Radial fans

Number of compressors installed

Number of cooling circuits

Indicative cooling capacity

Power supply voltage

A = 400 V / 3Ph (+N) / 50 Hz

IDENTIFICATON PLATE

The units can be identified by the identification plate which is placed in the electrical panel of the machine. The model and any eventual accessories which are installed are indicated by an «X» in the corresponding box
The plate carries the following data:

- Model and series number of the machine.
- Type of power supply.
- Power absorbed by the unit and the single components.
- Current absorbed by the unit and the single components.
- The set points of the cooling circuit pressostatic valve and safety valve.
- Type of refrigerant.
- Loading or pre-loading of each cooling circuit.

rev. D

☐ EDAB2113A(H)
☐ EUAB2113A(H)
☐ EDWB2113A(H)
☐ EUWB2113A(H)

FAC-SIMILE

S.R.N. N°:

TENS.	400V/3Ph+N/50Hz				AUX.	24	VOLT
		NO.	TENS. (V)	OA (A) [/1]	FLA (A) [/1]	LRA (A) [/1]	P (kW) [TOT]
COMPRESSOR		2	400/3	11,1	17,2	100	10,4
FAN		2	400/3	4,7	5,3	15	5,6
HUMIDIFIER		1	400/3	8,3			5,77
☐ HEATERS STD		1	400/3	21,7			15
☐ ENHANCED HEATERS		1	400/3	26,0			18
☐ **UNIT (STD HEATERS) (*)**				**53,2**			**31,00**
☐ **UNIT (ENHANCED HEATERS) (*)**				**57,5**			**34,00**
☐ **UNIT (STD HEATERS+CAP max) (*)**				**42,1+3,2x1Ph**			**31,62**
☐ **UNIT (ENH. HEATERS+CAP max) (*)**				**46,4+3,2x1Ph**			**34,62**
Icu=15kA (CEI EN 60947-2) / (*) in operating conditions at 400V							
TSR	STOP:	310	°C		MAN.	RESET	
TSRA	STOP:	328	°C		MAN.	RESET	
AP1	STOP:	40,5	bar		MAN.	RESET	
SAFETY VALVE OPENS AT:					45	bar	
CHARGE:	☐ R410A			kg/circ.			
PRECHARGE:	☐ DRY NITROGEN N_2						

rev. D

☐ EDAB1105A(H)
☐ EUAB1105A(H)
☐ EDWB1105A(H)
☐ EUWB1105A(H)

FAC-SIMILE

S.R.N. N°:

TENS.	400V/3Ph+N/50Hz				AUX.	24	VOLT
		NO.	TENS. (V)	OA (A) [/1]	FLA (A) [/1]	LRA (A) [/1]	P (kW) [TOT]
COMPRESSOR		1	400/3	9,5	15,0	87	4,50
FAN		1	230/1	5,5	6,6	12,5	0,92
HUMIDIFIER		1	400/3	5,2			3,61
☐ HEATERS STD		1	400/3	8,7			6
☐ ENHANCED HEATERS		1	400/3	13,0			9
☐ **UNIT (STD HEATERS) (*)**				**18,2+5,5x1Ph**			**11,42**
☐ **UNIT (ENHANCED HEATERS) (*)**				**22,5+5,5x1Ph**			**14,42**
☐ **UNIT (STD HEATERS+CAP max) (*)**				**18,2+5,5x1Ph**			**12,04**
☐ **UNIT (ENH. HEATERS+CAP max) (*)**				**22,5+5,5x1Ph**			**15,04**
Icu=15kA (CEI EN 60947-2) / (*) in operating conditions at 400V							
TSR	STOP:	310	°C		MAN.	RESET	
TSRA	STOP:	328	°C		MAN.	RESET	
AP	STOP:	40,5	bar		MAN.	RESET	
SAFETY VALVE OPENS AT:					45	bar	
CHARGE:	☐ R410A			kg/circ.			
PRECHARGE:	☐ DRY NITROGEN N_2						

SYMBOLS APPLIED TO THE MACHINES

SYMBOL	MEANING
	High voltage
	Sharp edges
	Moving parts

SYMBOLS APPLIED TO THE PACKAGES

SYMBOL	MEANING
	FRAGILE: handle with care
	DO NOT STORE IN DAMP CONDITIONS: the packaged unit must be stored in a dry place
	CENTRE OF GRAVITY: shows the centre of gravity of the packaged unit
	KEEP AWAY FROM HEAT: the unit must be stored away from heat sources
	THIS SIDE UP: indicates the correct position of the packaged unit
	TEMPERATURE LIMITS: the packaged unit must be stored in a place within the indicated temperature limits
	DO NOT USE HOOKS: do not lift the packaged units using hooks
	DO NOT STACK: the packaged units must not be stacked

MERCURY - DIRECT EXPANSION

Technical characteristics

AIR COOLED DIRECT EXPANSION UNITS WITH BACKWARD CURVED BLADE FANS

Model EDAB - EUAB		1105A	1106A	2107A	2207A	2109A	2209A
Height	mm	1960	1960	1960	1960	1960	1960
Width	mm	1010	1010	1310	1310	1310	1310
Depth	mm	750	750	865	865	865	865
Weight	kg	280	310	430	447	430	447
Number of refrigerant circuits		1	1	1	2	1	2
Number of compressors		1	1	2	2	2	2
Power supply voltage	V	400V/3ph+N/50Hz					

Model EDAB - EUAB		2111A	2211A	2113A	2213A	2216A	2218A
Height	mm	1960	1960	1960	1960	1960	1960
Width	mm	1721	1721	1721	1721	2172	2172
Depth	mm	865	865	865	865	865	865
Weight	kg	548	559	575	585	714	714
Number of refrigerant circuits		1	2	1	2	2	2
Number of compressors		2	2	2	2	2	2
Power supply voltage	V	400V/3ph+N/50Hz					

Model EDAB		2222A	4222A	2225A	4225A	4228A
Height	mm	2175	2175	2175	2175	2175
Width	mm	2580	2580	2580	2580	2580
Depth	mm	865	865	865	865	865
Weight	kg	910	910	918	930	1040
Number of refrigerant circuits		2	2	2	2	2
Number of compressors		2	4	2	4	4
Power supply voltage	V	400V/3ph+N/50Hz				

AIR COOLED DIRECT EXPANSION UNITS WITH EC BACKWARD CURVED BLADE FANS

Model EDAV - EUAV		1105A	1106A	2107A	2207A	2109A	2209A
Height	mm	1960	1960	1960	1960	1960	1960
Width	mm	1010	1010	1310	1310	1310	1310
Depth	mm	750	750	865	865	865	865
Weight	kg	280	280	430	447	430	447
Number of refrigerant circuits		1	1	1	2	1	2
Number of compressors		1	1	2	2	2	2
Power supply voltage	V	400V/3ph+N/50Hz					

Model EDAV - EUAV		2111A	2211A	2113A	2213A	2216A	2218A
Height	mm	1960	1960	1960	1960	1960	1960
Width	mm	1720	1720	1720	1720	2171	2171
Depth	mm	865	865	865	865	865	865
Weight	kg	548	559	575	585	714	714
Number of refrigerant circuits		1	2	1	2	2	2
Number of compressors		2	2	2	2	2	2
Power supply voltage	V	400V/3ph+N/50Hz					

Model EDAV		2222A	4222A	2225A	4225A	4228A
Height	mm	2175	2175	2175	2175	2175
Width	mm	2580	2580	2580	2580	2580
Depth	mm	865	865	865	865	865
Weight	kg	910	910	918	930	1040
Number of refrigerant circuits		2	2	2	2	2
Number of compressors		2	4	2	4	4
Power supply voltage	V	400V/3ph+N/50Hz				

CHILLED WATER DIRECT EXPANSION UNITS WITH BACKWARD CURVED BLADE FANS

Model EDWB - EUWB		1106A	2109A	2113A	2216A	2218A
Height	mm	1960	1960	1960	1960	1960
Width	mm	1010	1310	1720	2171	2171
Depth	mm	750	865	865	865	865
Weight	kg	310	430	575	714	714
Number of refrigerant circuits		1	1	1	2	2
Number of compressors		1	2	2	2	2
Power supply voltage	V	400V/3ph+N/50Hz				

Model EDWB		4222A	4225A	4228A
Height	mm	2175	2175	2175
Width	mm	2580	2580	2580
Depth	mm	865	865	865
Weight	kg	996	1020	1120
Number of refrigerant circuits		2	2	2
Number of compressors		4	4	4
Power supply volatge	V	400V/3ph+N/50Hz		

CHILLED WATER DIRECT EXPANSION UNITS WITH EC BACKWARD CURVED BLADE FANS

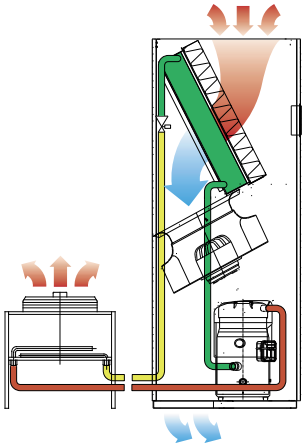
Model EDWV - EUWV		1106A	2109A	2113A	2216A	2218A
Height	mm	1960	1960	1960	1960	1960
Width	mm	1010	1310	1720	2171	2171
Depth	mm	750	865	865	865	865
Weight	kg	280	430	575	714	714
Number of refrigerant circuits		1	1	1	2	2
Number of compressors		1	2	2	2	2
Power supply voltage	V	400V/3ph+N/50Hz				

Model EDWV		4222A	4225A	4228A
Height	mm	2175	2175	2175
Width	mm	2580	2580	2580
Depth	mm	865	865	865
Weight	kg	996	1020	1120
Number of refrigerant circuits		2	2	2
Number of compressors		4	4	4
Power supply volatge	V	400V / 3 ph+N / 50 Hz		

Operating description

AIR COOLED DIRECT EXPANSION UNITS (DXA)

The air cooled DX units extract heat from the room and transfer it to the outside using air cooled refrigerant heat exchangers (condensers). The room unit and external condenser form an autonomous sealed circuit once installed. The TRANE remote condensers used with MERCURY units include a precise electronic system to regulate the fan speed to ensure trouble-free operation throughout the year under a wide range of external air temperatures. Special attention has been paid to the acoustic design of the condensers to minimise noise levels. A wide range of combinations is available to meet different site requirements.



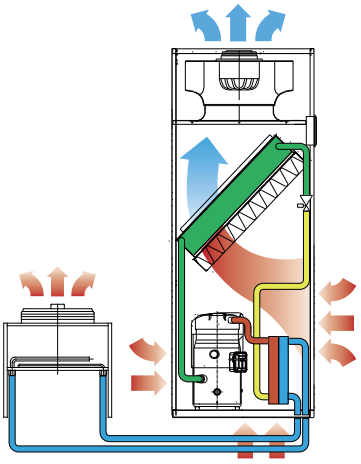
WATER COOLED DIRECT EXPANSION UNITS (DXW)

In the DX water cooled units, the heat extracted from the room is transferred to water via a stainless steel brazed plate exchanger within the unit.

The cooling water may be fed from the mains supply, a cooling tower or a well (open circuit), or recycled in a closed loop cooled by external coolers.

In the latter case, an anti-freeze mixture of water and ethylene glycol is normally used.

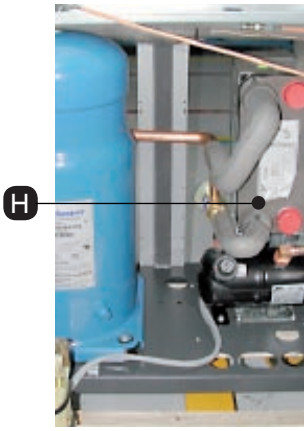
The water cooled units have the advantage that the refrigerant circuits are charged and sealed in the factory. This makes installation extremely simple, eliminating the need for any site-installed refrigerant pipework.



Name and description of the main components

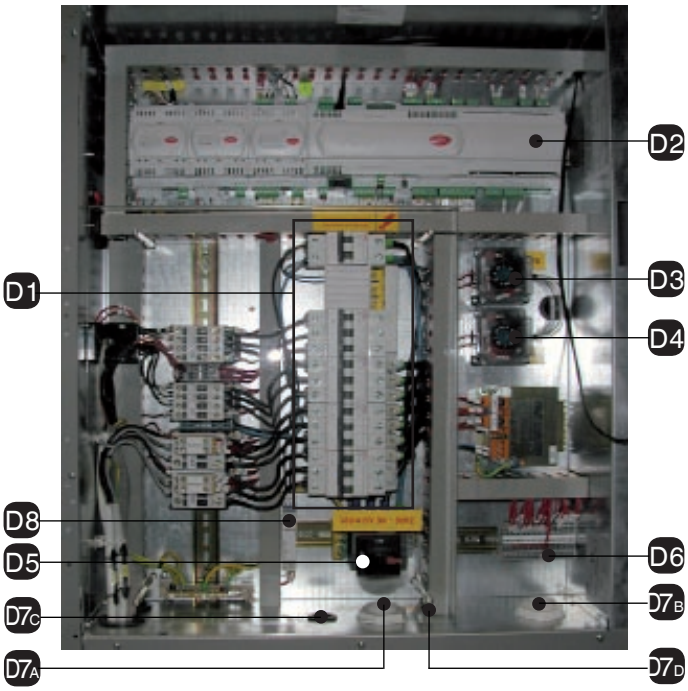
A User terminal
B Electrical panel door
C Cover panels
D Electrical panel
E Filters
F Fans
G Cooling circuit
H Brazed plate heat exchanger (present in chilled water models)

MODELS ED/EU 1105 - 2218

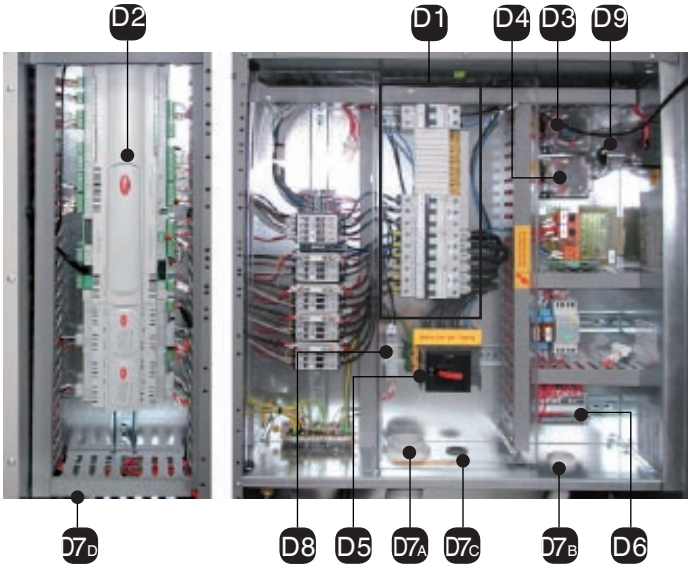


MODELS ED/EU 2222 - 4228

MODELS ED/EU 1105 - 2218



MODELS ED/EU 2222 - 4228



Description of the components

A - User terminal

Allows the unit to be turned on or off and the configuration and visualization of the condition of the machine.

- A1 LCD Display
- A2 **ALARM** key: visualization and reset of alarms; when the alarm is activated, it flashes red.
- A3 **PRG** key: access to the configuration menu
- A4 **ESC** key : exit from the screens
- A5 **UP** key : scroll through the menu
- A6 **ENTER** key : confirm
- A7 **DOWN** key: scroll through the menu

B - Electrical panel door

Allows access to the electrical panel of the machine.

C - Cover panels

Allow access to the internal components of the machine.

D - Electrical panel

- D1 Magnetothermic
  - auxiliary
  - heater (optional)
  - humidifier (optional)
  - fans
  - compressors
- D2 Interface board
- D3 Dirty filter sensor
- D4 Air flow sensor
- D5 Main switch
- D6 Terminal board
- D7A Input/output electrical supply cables
- D7B Input/output electrical auxiliary cables
- D7C Input/output condensing unit supply
- (optional) - Only on units with air cooling
- D7D Entrance/exit signal cables (RS485 and/or LAN)
- D8 Phase sequence relay
- D9 Maximum pressure manostat (only for mod. ED. 2222 ÷ 4228)

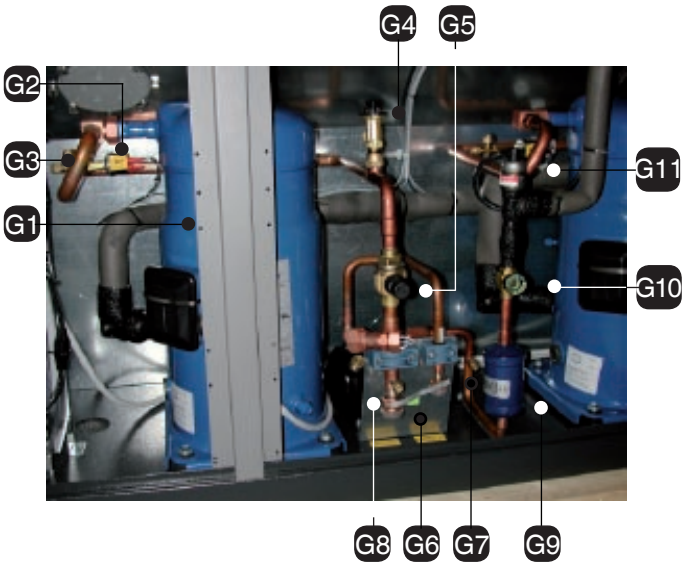
E - Filters

Filter the air released into the environment

F - Fans

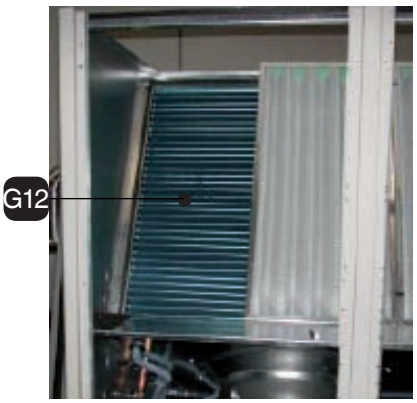
Allow the diffusion of air into the room

- F1 ATR Transformer: allows the setting of the fan rotation speed

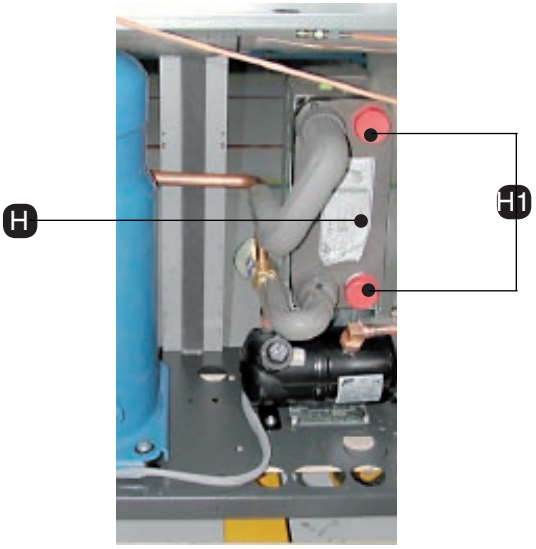


G - Cooling circuit

- G1 Compressor
- G2 High pressure switch
- G3 Schrader Valve
- G4 Safety Valve
- G5 Shut -off valve
- G6 Circuit Exit
- G7 Circuit entrance
- G8 Liquid receiver
- G9 Dehydration filter
- G10 Flow sight glass
- G11 Electronic thermostatic valve



- G12 Evaporating coil



H - Brazed plate heat exchanger (present on water cooled units)

- H1 Input/output hydraulic circuit

I

I - Room temperature and humidity sensor

Checks to be made on delivery

WARNING! Dispose of the packaging in appropriate collection points.

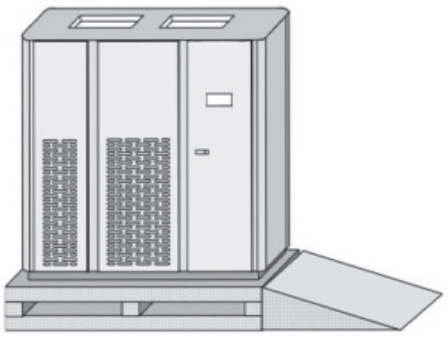
The Mercury units are packaged in wooden crates or anchored to a pallet and covered in cardboard.
Check that the delivery is complete and inform the carrier of any damage to the unit which may be attributed too careless or inappropriate transportation. In particular, check any eventual damage to the panel in which the user terminal is mounted.
Lifting and moving the unit must be carried out by a mechanical lifter, supplied with a sling made up of textile belts, which, fixed under the machine, limits excessive stress on the upper edges.
The following must be contained within the packaging:

- The Mercury unit;
- Mercury Use and Installation Manual;
- Mercury unit electrical diagrams;
- Mercury unit cooling circuit diagrams;
- Mercury unit installation diagrams;
- List of spare parts;
- CE declaration with a list of the European standards to which the machine must conform;
- guarantee conditions

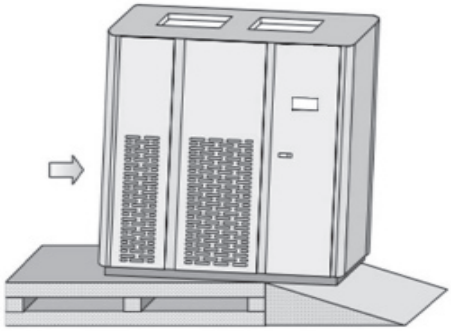
Unloading the unit

To unload the unit from the pallet, carry out the following procedure:

- move the pallet as near as possible to where the unit is to be installed;
- not tilt or turn the unit upsidedown;
- use a ramp to avoid any damage to the unit during unloading;



- remove the blocking screws which fix the unit to the pallet;
- carefully push the unit along the ramp until it reaches the floor.

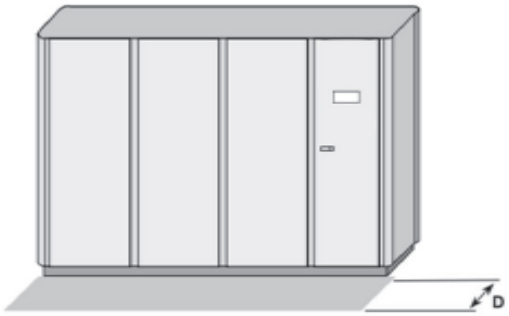


Characteristics of the installation area

WARNING! The unit must be installed internally and protected from adverse conditions.

The unit is predisposed for installation on raised access flooring using mounting frames or appropriate floor stands supplied on request from Trane. However, the upflow units (upwards air flow) with air intake through the rear or front can also be installed on floors which are not raised.
The area of installation must have the following characteristics:

- to facilitate maintenance, leave a clearance (distance D) of at least 700mm free in front of the unit. Check that the air intake and discharge connections are not blocked in any way, not even partially;
- a horizontal and even floor;



- the electrical energy distribution system has been produced in respect of CEI standards, suitable for the characteristics of the unit;
- a cold water distribution implant (if a humidifier is to be installed);
- implant for connection to the condensing unit;
- external air outlet (if a fresh air intake is to be installed);
- if or the refrigerating gas drain see paragraph «Connection to gas drain»;
- drainage system.

WARNING! The preparation of the installation area must be carried out as indicated in the installation drawing attached to the machine documentation.

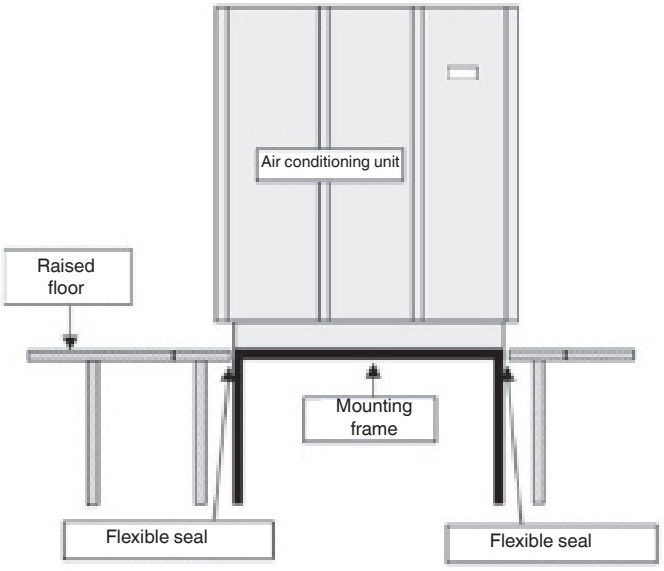
Positioning of the unit

WARNING! If the surface where the unit is placed is not even and horizontal, there is a risk of an overflow from the condensation tray. A maximumheight difference of 5mm between the ends of the unit is allowed.

Installation on raised access flooring
Installation on raised access flooring occurs by means of a mounting frame. The frame enables the installation of the unit before the raised floor is installed, increased absorption of noise and vibrations and the facilitation of connecting ipes and cables.
The upflow models (upwards air flow) with rear or frontal air intake may be installed without using the mounting frame.

Installation of the mounting frame
To install the unit on raised flooring using the mounting frame, carry out the following procedures:

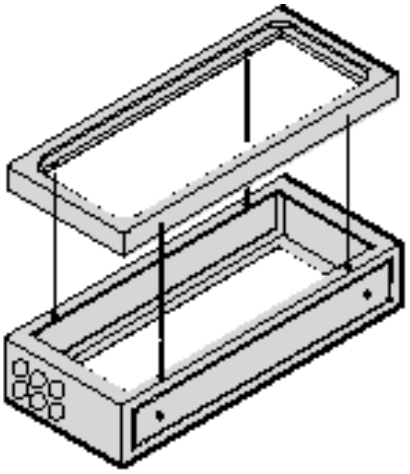
- a flexible seal at least 5 mm thick should be fitted between the raised floor panels and the mounting frame which should also be isolated from the metallic floor structure;
- position the unit of the mounting frame and fix it using the M8 screw inserts found on the base of the unit.



Installation on flooring which is not raised
Installation on flooring which is not raised can occur without using bases, but only on upflow models
(upwards air flow) with rear or frontal air intake. Installation on this type of floor does not require any additional operation besides that of normal positioning.

Installation of the floor stand
To install the unit on the floor stand, carry out the following procedures:

- position the unit on the floor stand;
- fix the unit to the floor stand using the M8 screw inserts found on the base of the unit.



Base of unit

Floor stand

Door opening and removal of the panels

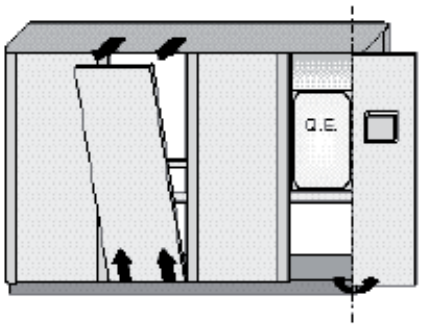
Door opening

To open the door of the unit, carry out the following procedure:

- push the button and pull the handle lightly outwards;
- turn the handle downwards until the door opens.

Removal of the front and side panels
To remove the front and side panels, carry out the following procedure:

- firmly hold the panel;
- lift and incline the panel outwards until it is completely removed.



NOTE: After having removed the side panels, the non-removable protective panel, blocks accessibility to the inside of the machine.

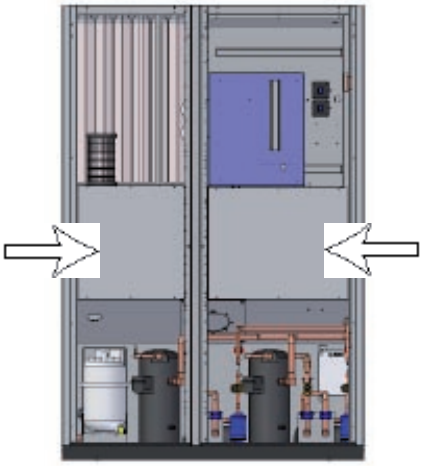
Removal of the rear panels
To remove the rear panels, carry out the following procedure:

- unscrew, using a star screwdriver, the screws which fix the panel;
- firmly hold the panel and pull.

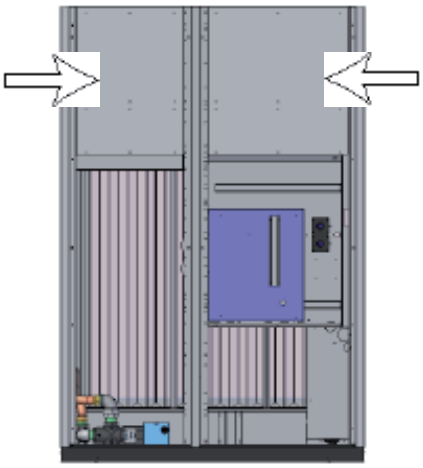
Internal protection panels

The technical compartment, the electric heaters and the autotransformer fans are protected by internal protection panels for safety reasons and to allow the opening of the external panels without triggering the unit's safety alarms. In the figures below, the different types of internal protection panels are shown on various types of machines.

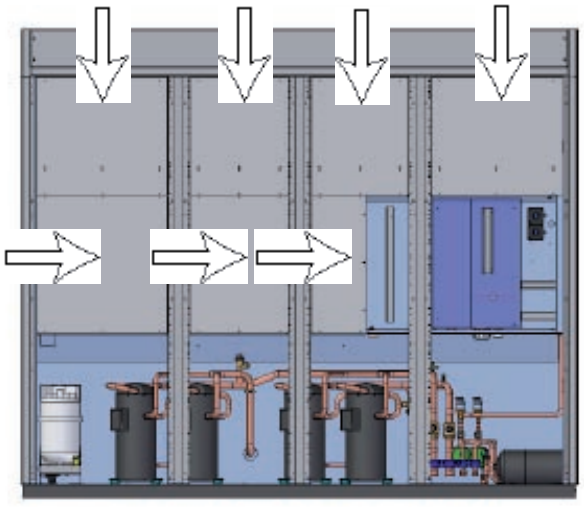
MODELS ED. 1105 - 2218



MODELS EU. 1105 - 2218



MODELS ED. 2222 - 4228



Before removing the internal protection panels, disconnect the power supply by turning the main isolating switch D5 to position «O», then wait until the fans stop and the electrical heaters cool down.

Electrical connections

WARNING! Electrical connection of the machine to the power supply must ONLY be carried out by a qualified electrician.

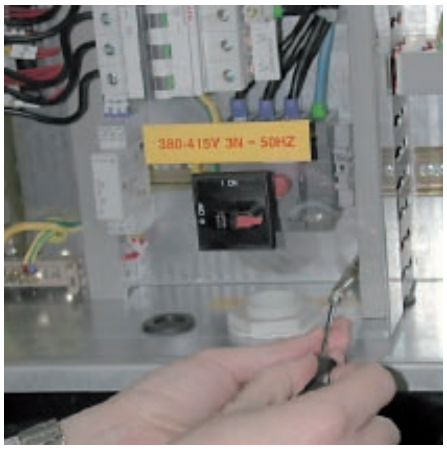
WARNING! Electrical lines must be established in full respect of CEI standards.

WARNING! Before establishing the electrical connection, make sure that the power supply is off. Also ensure that it is not possible to reconnect the power during the operation.

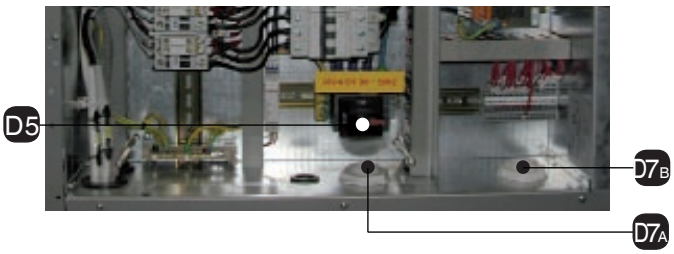
WARNING! The power supply voltage must be ± 10%

To carry out the electrical connections of the machine to the power supply, carry out the following procedures:

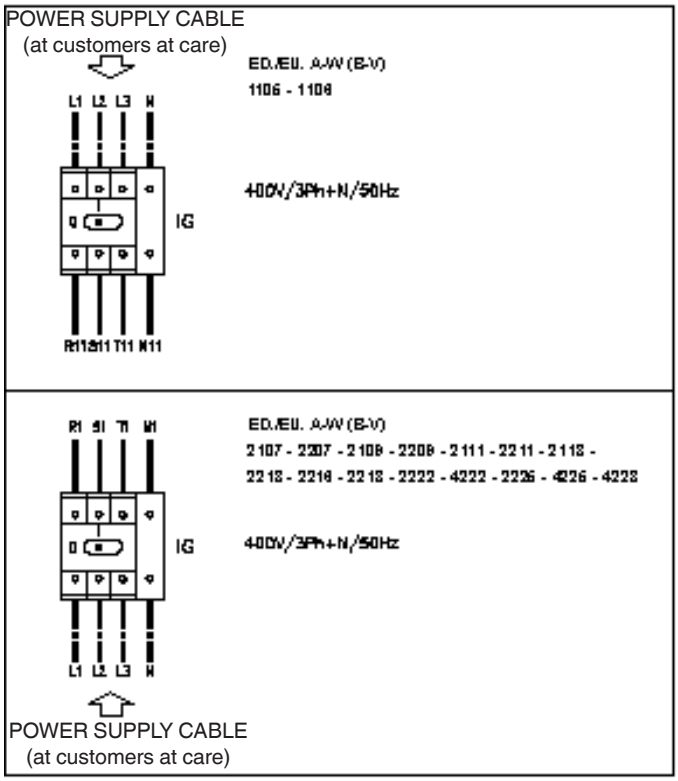
- use suitable equipment to check the efficiency of the grounding system;
- check that the voltage and network frequency correspond to those of the machine (see identification label);
- open the door of the electrical panel;
- remove the plastic screen of the electrical panel using a star screwdriver;



- pass the cables inside using the power supply cable inlet D7A which connects to the main switch D5;



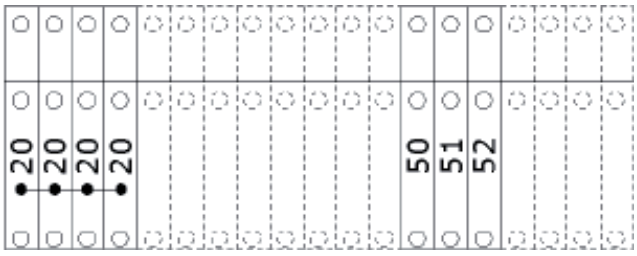
- refer to the wiring diagram and connect the cable to the main switch D5.



To connect the auxiliary connections to the terminal board, carry out the following procedures:

- pass the cables through the power supply cable inlet D7B;

- refer to the wiring diagram and carry out the connection to the terminal board.



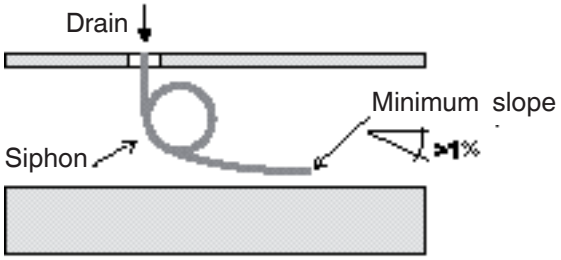
DIGITAL CONFIGURABLE INPUTS
Terminal board 51-20
- User
- ON - OFF Remote
- Flooding sensor (SAS)
Terminal board 52-20
- User
- ON-OFF Remote
- Fire-smoke (SFF)
Terminal board 50-20
- User
- ON-OFF Remote
- Tools (ATA-BTA-AUA-BUA)

Connection to the drains

The condensed water drains from the tray through a siphoned flexible tube fitted in the unit.
If the conditioner is fitted with a humidifier, the condensate drain tray and the humidifier drain connection must be connected to the drains of the building.

Direct connection to the drains of the building

Connect the drainage tube of the unit to the drains of the building using a rubber or plastic tube with an internal diameter of 25 mm.
The external drainage tube must be siphoned in order to avoid unpleasant odours. Maintain a minimum slope of 1% downstream of the siphon.

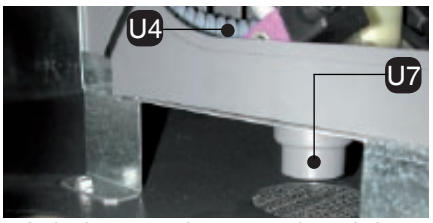


Once the connections have been made, pour water into the condensate drain until the siphon inside the unit is full.

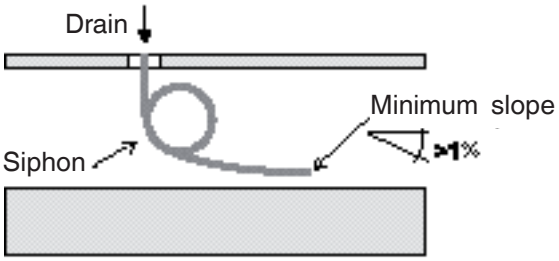
Connection to the humidifier (optional) and to the drains of the building

WARNING! The water discharged from the humidifier is at a very high temperature. The drainage tube has to withstand high temperatures (at least 100°C) and must be kept away from electrical cables.

Connect the drainage tube of the unit to the collection tray (U4) of the humidifier.
Connect the drainage tube of the humidifier (U7) to the drains of the building using a rubber or plastic tube, which is resistant to high temperatures (minimum 100 °C) with an internal diameter of 32 mm.



The external drainage tube must be siphoned to avoid unpleasant odours and an overflow of the water from the tray of the humidifier. Maintain a minimum slope of 1% downstream of the siphon.

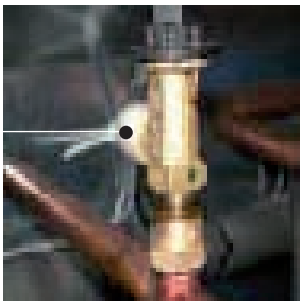


Once the connections have been made, pour water into the condensate collection tray of the Mercury unit and in the condensate collection tray of the humidifier until both siphons are full.

Connection to the gas drain

The cooling circuit is equipped with a safety valve for the discharge of the refrigerant gas.
The intervention of the valve pressurises the discharge of the refrigerant fluid, possibly also to high temperatures; in the case of installation in a closed environment, where there is the risk of causing damage to people nearby, a conveying tube must be used from the discharge to outside the room; this must be done in such a way that the operation of the valve is not affected: it must not create a full flow, a counter-pressure higher than 10% of the pressure of the calibration.
Where it is not possible to install a conveying tube it is good practice to create adequate aeration of the environment, and indicate, through specific signs, the presence of the drain. Also check that the discharge of the valve does not take place behind the electrical boards or electrical equipment.

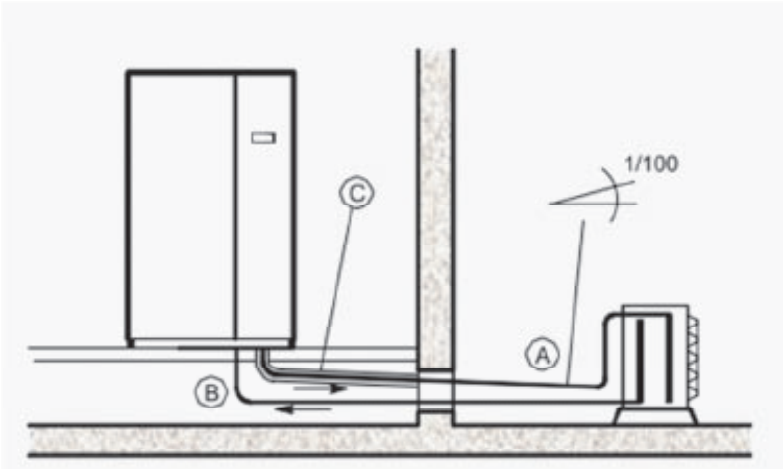
SAFETY VALVE OUTLET

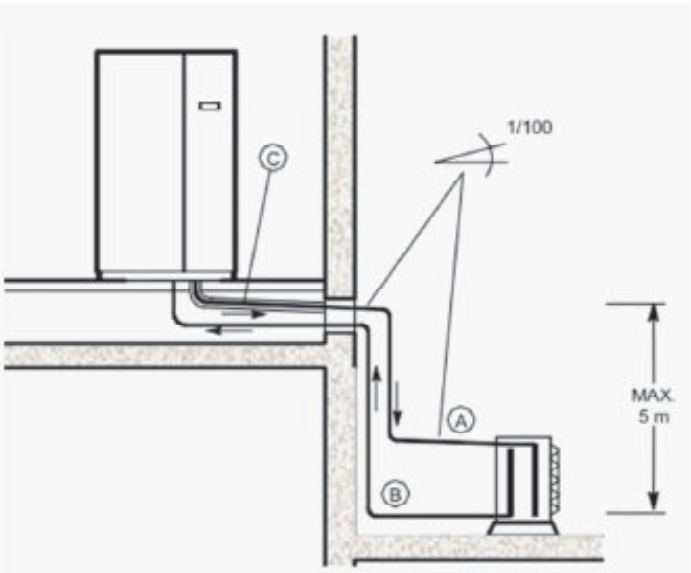


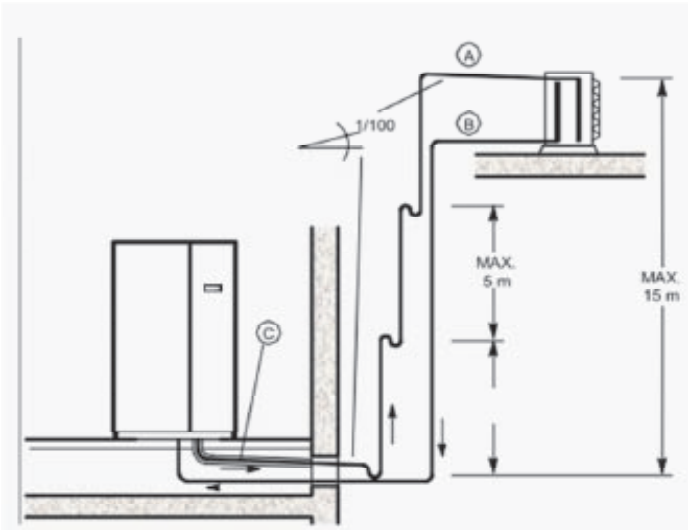
Refrigerant connections on air cooled units

Installation guide

WARNING! The pipes must always be protected from the sun.







Choosing the diameter of the discharge tube

The discharge line must be sized in such a way that it guarantees the flow of oil, in particular when operating at partial load, avoiding the return of the condensate refrigerant to the head of the compressor and prevent excessive vibration and noise due to the pulsations of hot gas, vibrations of the compressor, or both.

Even if it would be preferable to have low losses of the load along the line, an oversized discharge line is necessary to reduce the speed of the refrigerant so that it does not provoke a reduction in its speed and therefore reduce the flow of oil. Moreover, when the machine uses more compressors for the cooling circuit, the discharge line must transport the oil at all operating levels.

The minimum diameters needed to guarantee the flow of oil can be found in Graphics 1 -2 for the horizontal and vertical lines respectively.

In the installation of machines which have more compressors per circuit, the vertical discharge line, sized in order to guarantee the flow of oil at minimum load, may cause excessive loss of load when operating at its maximum level; in this case it is possible to use pipes with a larger diameter together with an oil separator.

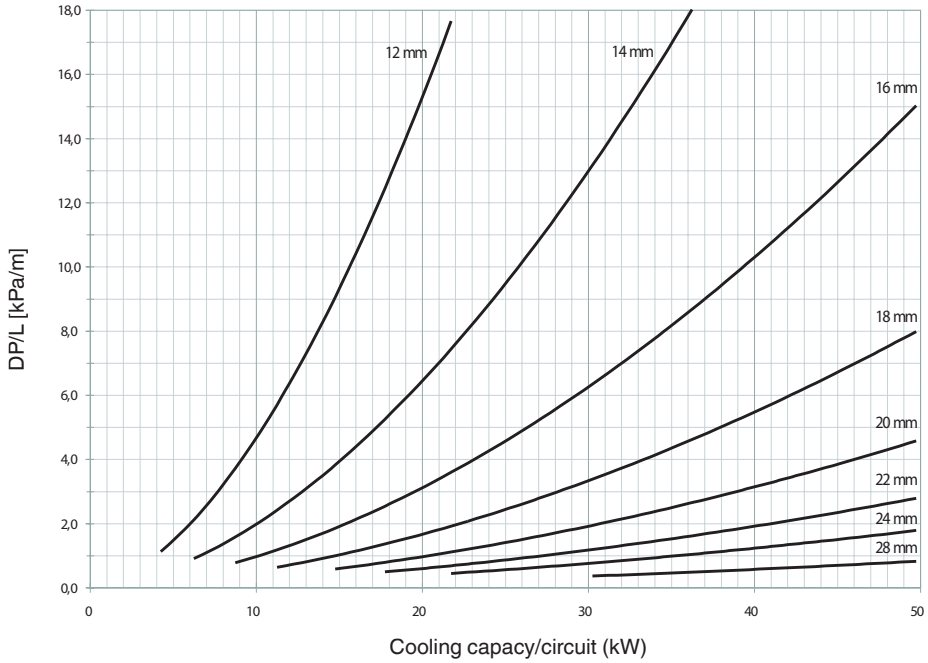
The loss of load along the discharge line causes an increase in the condensing temperature and therefore a decrease in the cooling capacity of the conditioner. Please note that each percentage point of decrease in the cooling capacity corresponds to a decrease of 1°C of the maximum operating temperature. Normally the systems are sized in such a way that the loss of load from the discharge line does not cause a decrease in the efficiency of the machine of more than -3%.

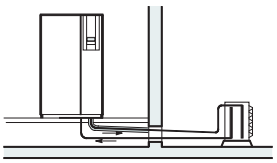
The responsibility of establishing the refrigerant line between the condensing unit and the external unit lies with the installer.

R410A

Graphic 1

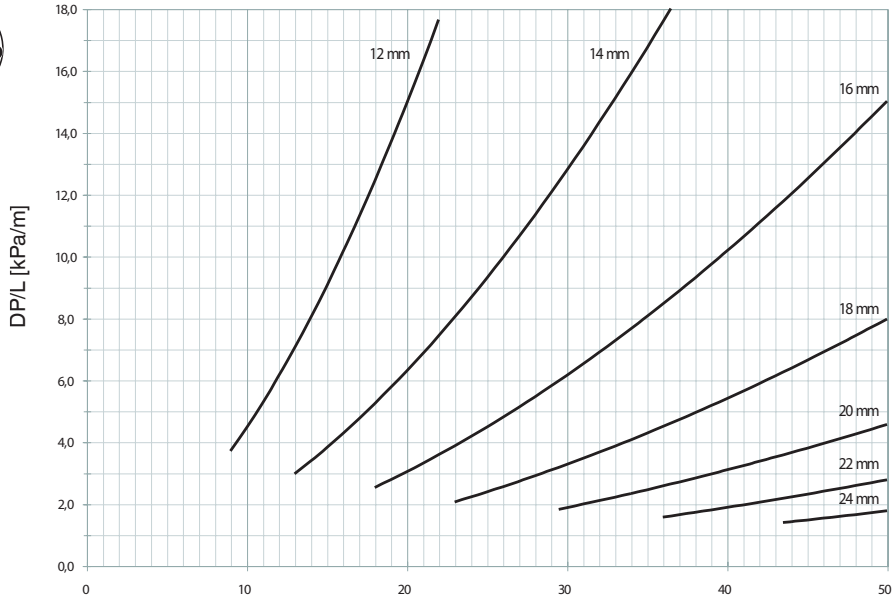
Discharge tube - horizontal line

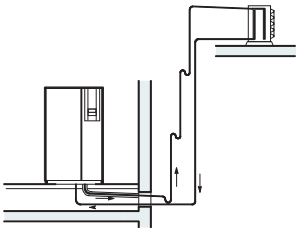




Graphic 2

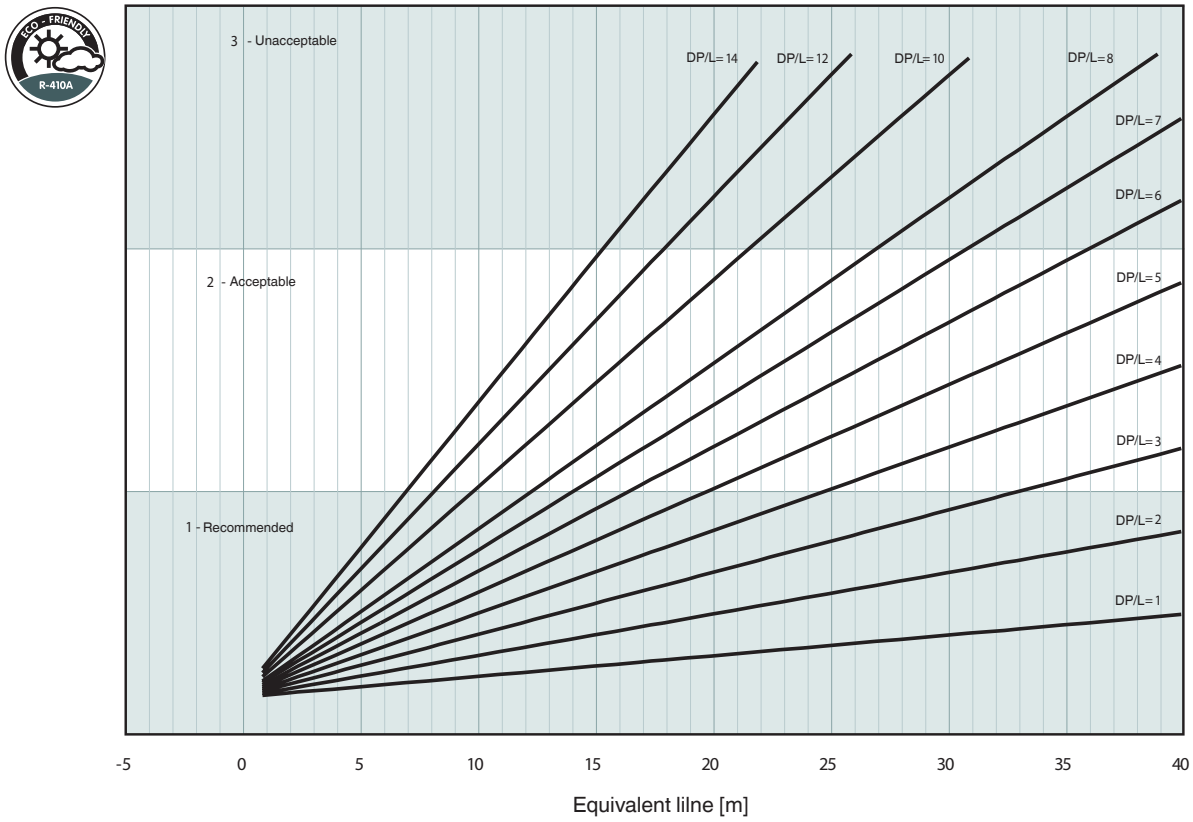
Discharge tube - vertical line





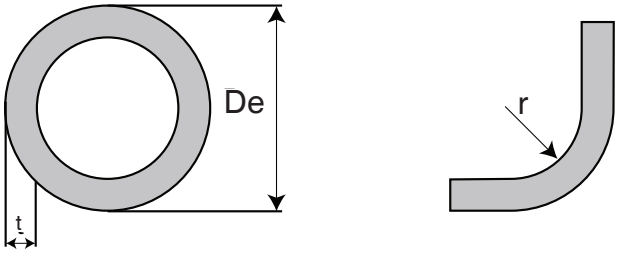
DP/L: pressure drop per meter based on R410A

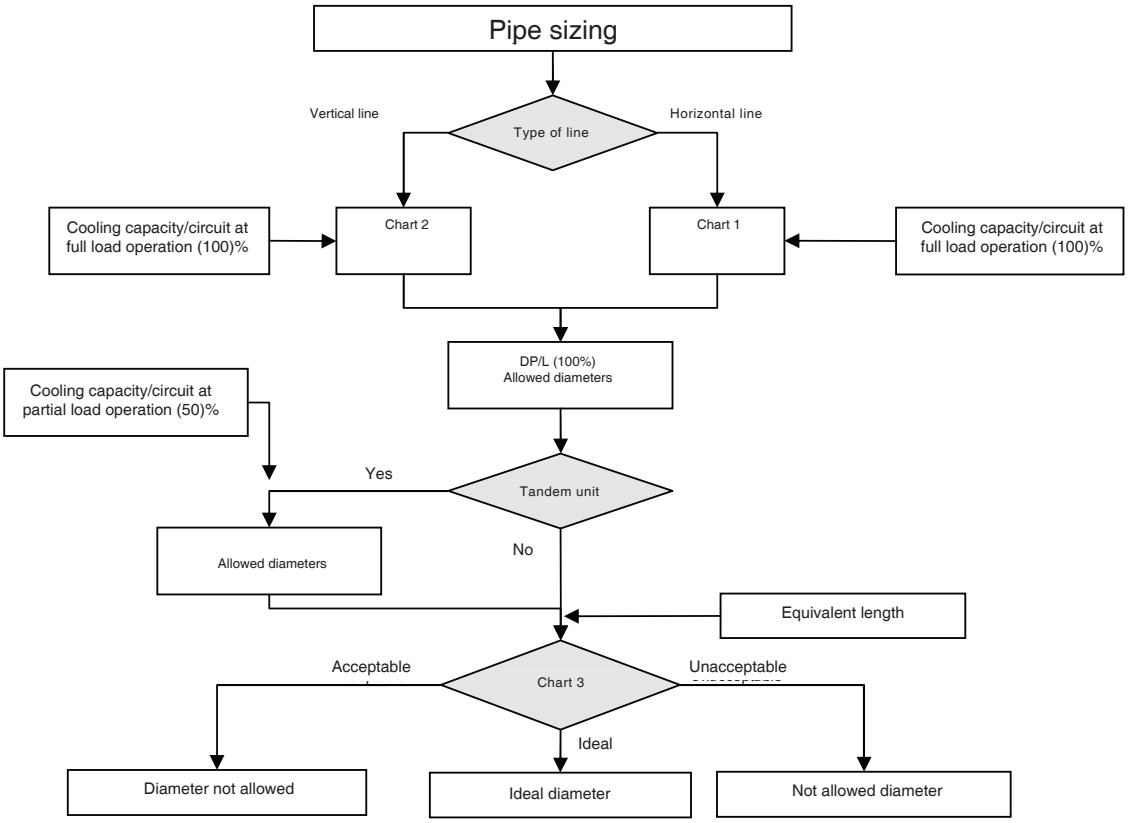
Graphic 3


3 - Unacceptable
2 - Acceptable
1 - Recommended
DP/L= 14
DP/L= 12
DP/L= 10
DP/L= 8
DP/L= 7
DP/L= 6
DP/L= 5
DP/L= 4
DP/L= 3
DP/L= 2
DP/L= 1
-5
0
5
10
15
20
25
30
35
40
Equivalent lilne [m]

Conforming to the Standards EN 14276-1 and EN 14276-2 the minimum recommended thickness for the gas supply pipe where bends are made for the air cooled units with R410A refrigerant, must be equal to the values present in the attached table below. The value `R' refers to the minimum allowed radius of the bend.

External diameter	Radius of the bend	Thickness
De (mm)	r [mm]	t [mm]
28	100	1,2
22	66	1
18	27	1
16	26	1
12	20	1





EXAMPLE -Discharge line sizing

Conditioner selected: EDAB 2107A
Cooling capacity per circuit: 24 Kw
Discharge line: vertical
Discharge equivalent length: 20 m
1) Graphic 2:
Operating at 100% (2 compressors - cooling capacity = 24KW):
possible diameters:
20mm DP/L= 1,5 Kpa/m
18mm DP/L= 2,2 Kpa/m
16mm DP/L= 4,1 Kpa/m
14mm DP/L= 8,8 Kpa/m

Operating at 50% (1 compressor - cooling capacity = 12 KW):
possible diameters:
16mm DP/L= 2,1 Kpa/m
14mm DP/L= 3,0 Kpa/m
2) Graphic 3:
Operating at 100% (2 compressors)
Pipe size 16mm DP/L= 4,1 Kpa/m Acceptable
Pipe size 14mm DP/L= 8,8 Kpa/m Acceptable
Raccomanded sizes are both 14 mm or 16 mm.

BACKFLOW LINE DIMENSIONING (LIQUID)

To avoid gas development inside the line and to ensure an adequate pressure is reached inside the laminating unit, the liquid line must be correctly dimensioned. Generally, the systems are dimensioned so that pressure loss along the line causes a variation of the saturation temperature between 0,5 K and 1 K

During the installation of the cooling unit, a solenoid valve should be fitted on the liquid line between the inner unit and the external condenser, to avoid malfunctioning and to protect the compressor from unwanted liquid migration during start- up.

Liquid line external diameters

	EDA* - EUA*							
MODEL	**1105**	**1106**	**2107 - 2109**	**2207 - 2209**	**2213 - 2216**	**2222**	**2225**	**-**
			2110 - 2113	**2211 - 2213**	**2218**	**4222**	**4225**	**4228**
R410A	1 x 16 mm	1 x 16 mm	1 x 16 mm	2 x 16 mm	2 x 16 mm	2 x 18 mm	2 x 18 mm	2 x 22 mm

Remote air cooled condenser

	EDA* - EUA*					
MODEL	**1105**	**1106**	**2107**	**2207**	**2109**	**2209**
Number/ Suggested model (1) (2)	1 x CAP0661	1 x CAP0661	1 x CAP0801	2 x CAP0331	1 x CAP1011	2 x CAP0361

	EDA* - EUA*					
MODEL	**2111**	**2211**	**1113**	**2213**	**2216**	**2218**
Number/ Suggested model (1) (2)	1 x CAP1301	2 x CAP0511	1 x CAP1301	1 x CAP1802 2 x CAP0661	1 x CAP2002 2 x CAP0801	1 x CAP3002 2 x CAP1011

	EDA* - EUA*				
MODEL	**2222**	**4222**	**2225**	**4225**	**4228**
Number/ Suggested model (1) (2)	1 x CAP2002	1 x CAP2002	1 x CAP3002	2 x CAP3002	1 x CAP4002

(1) With fan speed control
(2) External temperature = 35°C

Dry coolers

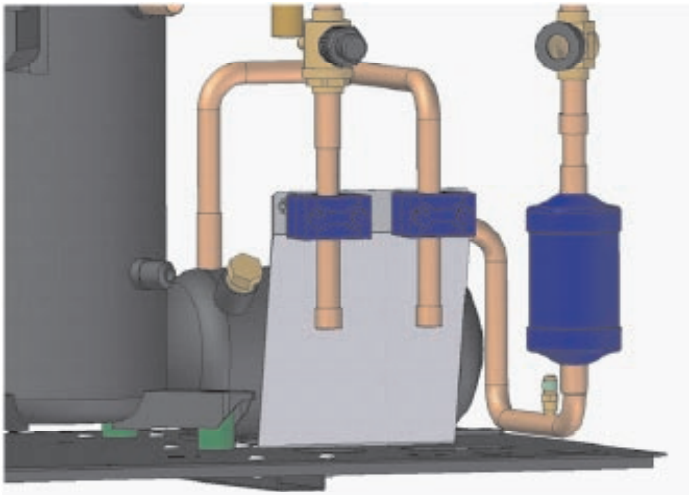
	EDW*- EUW*				
MODEL	**1106**	**2109**	**2113**	**2216**	**2218**
Number/ Suggested model	1 x RAL1500	1 x RAL1500	1 x RAL2300	1 x RAL3600	1 x RAL3600
Max outdoor temperature	40,0°C	40,0°C	43,5°C	44,2°C	43,4°C

	EDW*		
MODEL	**4222**	**4225**	**4228**
Number/ Suggested model	1 x RAL2300	1 x RAL3600	1 x RAL3600
Max outdoor temperature	40°C	42°C	41°C

Installation

WARNING! The laying of the lines and the refrigerant connections must be carried out by a qualified refrigerant circuit technician.

The refrigeration circuit must be connected to the condensing unit with copper pipes.
The diameter of the pipes must be chosen according to the length of the refrigerant line itself (preferably less than 30 m) therefore the diameter of the welding connections prepared by Trane may not match with the diameter of the pipes, if so we recommend to use the special reductions.



Evacuation of the refrigeration circuit and charging of refrigerant

WARNING! The charging and maintenance of the refrigeration circuit must only be carried out by a qualified hydraulic technician.

The refrigeration circuit is pre-charged with nitrogen.
To load the refrigerant, carry out the following procedure:

R410A

- open any shut-off valves present in the machine to ensure that all of the components will be evacuated;
- connect a pump to empty the schrader connections efficiently, or to the 1/4» SAE connections present on the intake and delivery sides of the compressors;
- connect the refrigerant cylinder to the loading connections;
- create a vacuum within the lines whilst maintaining the pressure below 10 Pa absolute (0,07 mm Hg) for a long time in order to evacuate the air as well as any trace of humidity. It is preferable that the vacuum is reached slowly and maintained for a long period of time;
- wait for a build up period of 100 seconds and check that the pressure has not exceeded 200 Pa absolute. Generally, in the case of suspicion of strong hydration of the circuit or an extremely extensive system, it will be necessary to break the vacuum with anhydrous nitrogen and then repeat the evacuation procedure as described;
- break the vacuum by performing a preload in liquid phase from the R410A coolant cylinder;
- after having started the compressor, slowly complete the loading phase until the pressure within the lines has been stabilised and the gaseous bubbles have disappeared from the flow sight glass;
- the loading process must be controlled in environmental conditions with a delivery pressure of approximately 18 bar (equivalent to a dew temperature of 48 °C and a bubble temperature of 43 °C); in the case of units with ON/OFF condensation controls, avoid switching the condenser fan on and off, which may partially obstruct the intake surface. It is wise to check that the sub-cooling of the liquid at the entry of the thermostatic valve is between 3 and 5 °C below the condensation temperature read on the scale of the pressure gauge and that the overheating of the vapour at the exit of the evaporator is equal to approximately 5-8 °C.

Type of oil recommended with MANEUROP compressors

R410A (POE)	Maneurop 160 SZ

Type of oil recommended with SANYO compressors

R410A (PVE)	FV68S

Type of oil recommended with Scrolltech HRH-HLH-HLJ-HCJ compressors

R410A (PVE)	PVE FVC68D

Connection for water cooled units

WARNING! The laying of the lines and hydraulic connections must only be carried out by a qualified plumber.

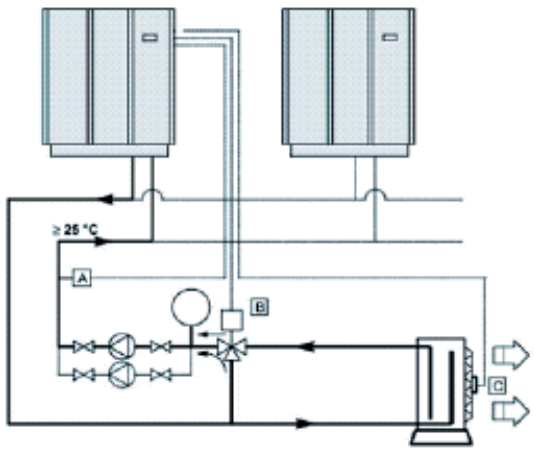
WARNING! The chilled water must contain a percentage of ethylene glycol (of the passive type, which is therefore not corrosive) according to the minimal external temperature predicted (see the table below).

Percentage of ethylene glycol	10%	20%	30%	40%	50%
Freezing temperature	-4°C	-10°C	-17°C	-25°C	-37°C

If the temperature of the chilled water is not checked it may fall to under 25°C, therefore it is necessary to use a pressostatic valve (available as an optional) for each condenser; in this case the pressure of the supply must not be less then 200 kPa (2 bar).

WARNING! Do not use chilled water with an evaporating tower because the condensers will quickly become encrusted with limescale.

The condenser must be connected to the chilled water distribution network, paying attention to the direction of the water inlet and outlet.
The condensers are supplied by water pumped in a closed circuit and chilled by external refrigerators; check that the section of piping and the characteristics of the circulation pump are suitable: an insufficient flow of water can have a negative effect on the capacity of the conditioner.
The chilled water temperature must be checked to ensure that it does not fall to below 25°C, preferably according to the plan indicated in the figure.
The microprocessor control system is predisposed for measuring the temperature of the water using probes (A) and modulating the servomotor of the valve (B) or by driving the fans (C) of the external refrigerators.



If the water temperature falls to below the dew point of the air conditioner, isolate the piping with closed cell material (e.g.: Armaflex or equivalent) to avoid condensation; the isolation must allow the accessibility of the valves and the three piece joints. Seal the piping holes through the base of the conditioner to avoid a bypass of air.

WARNING! The water cooled pressure must not be above 6 bar.

Table of condenser fitting dimensions

	1106	2109 2113	2216 2218	4222 4225 4228
Water condenser inlet	1»	1.1/4»	2x1.1/4»	2x1.1/4»
Water condenser outlet	1»	1.1/4»	2x1.1/4»	2x1.1/4»

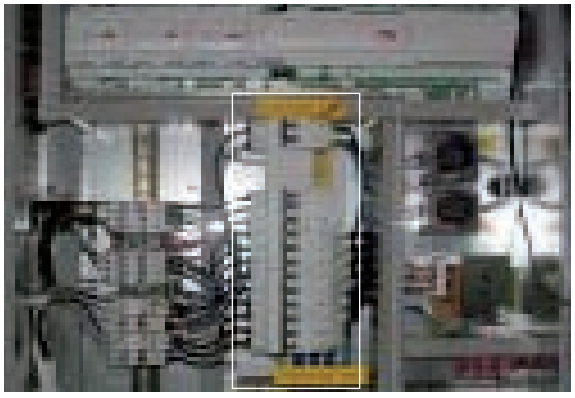
Once the connections have been made to the hydraulic circuit, the system can be filled.

MANUAL START UP AND SHUT DOWN OF THE UNIT

WARNING! Check that the refrigerant circuit has been filled.

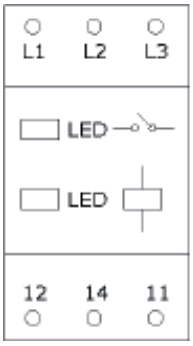
To start up the unit, carry out the following procedure:

- open the door of the electrical panel and the front panels;
- position the automatic switch of the auxiliary circuit to «I» (on);
- position all of the automatic switches on the electrical board to «I» (on);



- fuel the unit by positioning the main switch to «I» (on);

- check that both of the led RSF sequence phases (D8) are lit up; the green led indicates that the power is on, the yellow led indicates that the phase sequence is correct. In the event of incorrect phase sequence, invert 2 of the 3 phases of power supply following the instructions indicated in the paragraph «electrical connections» and return to the start up procedure;



WARNING! During prolonged breaks a spontaneous migration of the refrigerant may occur in the casing of the compressor, which may cause foaming of the oil and consequent damage by the lack of lubrification. It is recommended that the main switch is not turned off during weekly breaks.

- wait at least 12 hours before start up so that the oil in the compressors warms up sufficiently;
- open the shut off valves (I5) of the refrigerating circuits;

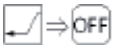
- check that the remote condensers are powered (on air cooled models);
- check that the external dry coolers are powered and check the presence of the water flow for condensation (on water cooled models);
- check that the tracts of siphoned corrugated pipe, both internal and external to the conditioner, have been filled with water in the installation phase;
- close the door and the front panels;
- wait for the oil in the compressors to heat (12 hours for compressors equipped with heaters);
- press the ENTER key (A6) of the user terminal; a sliding bar and a ventilator icon will appear on the display;

- if an alarm is indicated, consult the user interface manual mP40;

To shut down the unit carry out the following procedure:

WARNING! During prolonged breaks a spontaneous migration of the refrigerant may occur in the casing of the compressor, which may cause foaming of the oil and consequent damage because of the lack of lubrification. It is recommended that the main switch is not turned off during weekly breaks.

- on the first screen of the user terminal, press keys A5 or A7 until the SWITCH OFF UNIT screen appears;
- press the ENTER key to confirm;
- the following icons will appear



Press the ENTER to confirm

SETTING AND ADJUSTMENT

Selecting the power supply of the fans

WARNING! Before establishing the electrical connection, make sure that the power supply is off. Also ensure that it is not possible to reconnect the power during the operation.

WARNING! In the case of a unit with ducts, the load loss from the exhaust duct must be less than 100 Pa.

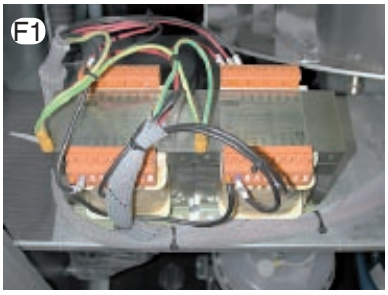
In the following table the voltage levels for each model working in the standard version are given.

E*AB - E*WB: Air and water condensing direct expansion unit				
Refrigerant: R410A				
20 Pa	EU4	EU5	Post heating	Post heating+ EU5
1105 - 1106	180	180	180	190
2107 - 2207 - 21 09 2209	260	260	260	270
2111 - 2211 - 2113 - 2213 - 2216 - 2218	250	260	260	270
2222 - 4222 - 2225 - 4225	270	270	270	280
2222A - 2242A - 2522A - 2542A	230	240	240	240
4228	240	240	240	260

SERIES	**E*AB - E*WB**		
Model	**2107 - 2207 2109 - 2209**	**2111 - 2211 2113 - 2213**	**2216 2218**
Refrigerant	**R410A**		
Air flow [m³/h]	**8180**	**11650**	**5740**
Power supply voltage			
[V]	**[Pa]**	**[Pa]**	**[Pa]**
230	-	-	-
250	-	20	-
260	20	25	-
270	37	55	20
280	62	83	36
290	89	113	65
300	114	142	124
310	143	173	125
320	166	200	153
340	204	245	196
360	255	305	256
380	307	363	315
400	389	457	403

HOW TO ADJUST FAN SPEED

In the ED*B and EU*B units, the speed of the fan rotation can be varied by using the ATR transformer (F1).



To obtain the required prevalence of the implant, it is possible to vary the voltage by selecting one of the following levels:

Models 0511-0611

140V -160V -180V -190 - 200V -210V -220V -230V

Models 0721-1822

230V - 250V - 260V - 270V - 280V - 290V - 300V - 310V - 320V - 340V - 360V - 380V - 400V.

Models 2222 - 2242 - 2522 - 2542 - 2842 - 3342 : 150V - 180V - 200V - 230V - 240V - 260V - 280V - 300V - 320V - 340V - 360V - 380V - 400V.

In the following table the maximum pressure available (expressed in Pa) for each voltage level of the transformer is indicated. The values are given for the maximum air flow (expressed in m3/h).

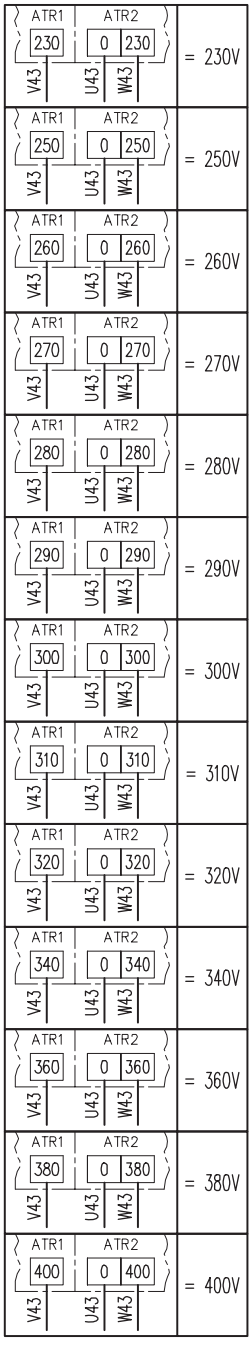
Model	**E*AB - E*WB 1105 - 1106**
Air flow [m³/h]	**5740**
Refrigerant	**R410A**
Power supply voltage	
[V]	**[Pa]**
140	-
160	20
180	44
190	71
200	101
210	137
220	176
230	196

SERIES	**E*AB - E*WB**		
Model	**2222 - 4222**	**2225 - 4225**	**4228**
Refrigerant	**R410A**		
Air flow [m³/h]	**22000**	**23000**	**23500**
Power supply voltage			
[V]	**[Pa]**	**[Pa]**	**[Pa]**
150	-	-	-
180	-	-	-
200	-	-	-
230	20	-	-
240	54	20	-
260	145	111	20
280	193	155	88
300	236	197	129
320	275	235	163
340	309	265	195
360	338	295	222
380	362	320	295
400	369	327	305

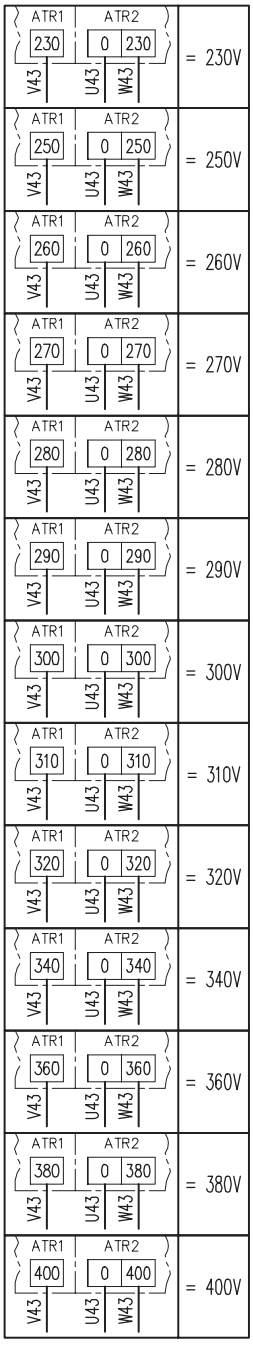
After having selected the voltage level, carry out the connection in the following way:

- with the unit turned off, open the front panels and the door of the electrical panel and the internal protection panels;
- select the supply voltage by positioning the main switch to «0» (D5);
- Follow the diagrams displayed below and refer to the wiring diagram enclosed to connect the two electric wires found on the fan, or on the connector block, to the corresponding terminals on the autotransformer

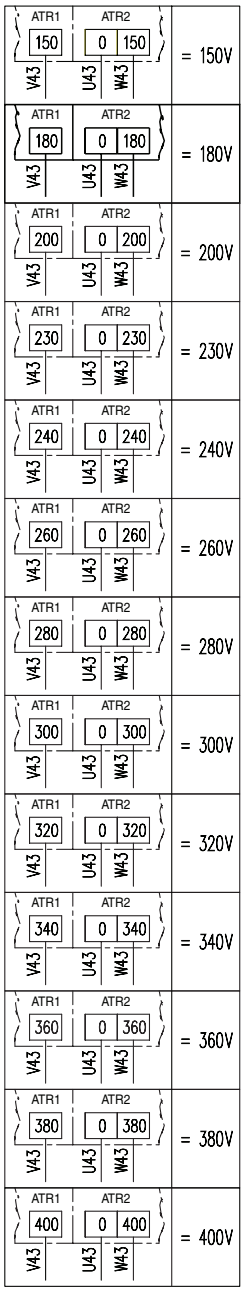
MODELS
1105-1106



MODELS
da 2107 - 2218



MODELS
da 2222 - 4228



MODELS WITH A PHASE CONTROL VOLTAGE REGULATOR

To reach the head required by the system for conditioners with fans carrying a CE marking, the input voltage percentage can be adjusted from the user terminal (A).

To select the voltage percentage to be applied, carry out the following procedures:

- on the user terminal press the PRG button;
- using the UP or DOWN key select SERVICE MENU and confirm using the ENTER key;
- enter the password (see the envelope attached to the manual);
- using the UP or DOWN key select HARDWARE SETTING and confirm using the ENTER key;
- using the UP or DOWN key select EVAPORATING FAN and confirm using the ENTER key;
- set the amount and confirm using the ENTER key.

In the following table the maximum pressure available (expressed in Pa) for each voltage level of the transformer is indicated. The values are given for the maximum air flow (expressed in m3/h).

E*AV - E*WV: Air and water condensing direct expansion unit				
20 Pa Refrigerant: R410A				
20 Pa	EU4	EU5	Post heating	Post heating + EU5
	Power supply voltage			
	[%]	[%]	[%]	[%]
0511A - 0611A	58	59	59	60
0721A - 0722A - 0921A 0922A - 1021A - 1022A	68	69	69	70
1121A - 1122A - 1321A - 1322A	61	63	62	64
1422A - 1622A - 1822A	70	71	71	72
2222A - 2242A	62	63	63	64
2522A - 2542A	65	66	66	67
2842A	66	67	67	69

Model	E*AV - E*WV 1105 - 1106
Air flow [m³/h]	5740
Refrigerant	R410A
Power supply voltage	
[%]	[Pa]
50	-
55	-
59	-
60	20
65	125
70	218
75	298
80	385
85	455
90	525
95	593
100	660

SERIES	E*AV - E*WV		
Model	2107 - 2207 2109 - 2209	2111 - 2211 2113 - 2213	2216 2218
Refrigerant	R410A		
Air flow [m³/h]	8220	12320	5740
Power supply voltage			
[%]	[Pa]	[Pa]	[Pa]
50	-	-	-
55	-	-	-
60	-	-	-
65	-	70	-
70	63	145	10
75	140	215	87
80	237	300	182
85	338	385	270
90	420	475	370
95	533	577	475
100	667	707	604

SERIES	E*AV - E*WV		
Model	2222 - 4222	2225 - 4225	4228
Refrigerant	R410A		
Air flow [m³/h]	22000	23000	23500
Power supply voltage			
[%]	[Pa]	[Pa]	[Pa]
55	-	-	-
60	-	-	-
65	20	-	-
70	90	50	25
75	170	140	120
80	260	230	207
85	351	320	305
90	440	410	400
95	555	520	492
100	728	697	680

Setting the regulation and safety devices

After starting up the unit, set the following set points (see the microprocessor control manual):

- Room temperature (cooling and heating set point);
- Relative room humidity (humidification and dehumidification set point);
- Dirty filter differential pressure switch: see paragraph «Setting the dirty filter sensor».

The settings of the safety devices must not be modified.

R410A

Code	Description	Opening	Model	Re-set
AP1-AP2	High pressure switch	40,5 bar (opening)	All	Manual Reset
TSR	First emergency safety thermostat	310 °C (opening)	All	Manual Reset
TSRA	Second emergency safety thermostat	328 °C (opening)	All	Manual Reset
VS	Safety valve	45 bar	All	-

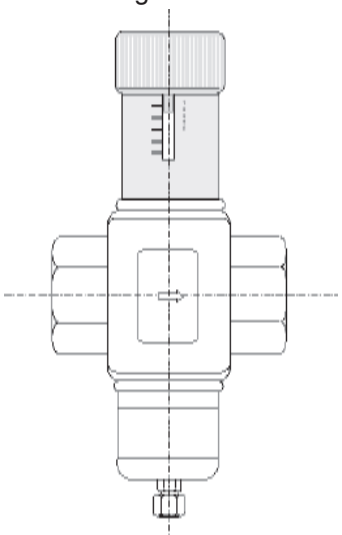
Maximum and minimum water temperatures

The maximum and minimum water temperatures for chilled water circuits and for hot water re-heat circuits are: 5°C ÷ 90°C.

The accepted maximum amount of ethylene glycol is 50%.

Setting the pressostatic valve (optional on chilled water cooled models only)

The pressostatic valve, by controlling the water flow, prevents the condensing pressure falling too low and at the same time minimises water consumption. When necessary, set the pressostatic valve by turning the regulation knob (the pressure increases when turning it clockwise) until the condensation pressure stabilizes to recommended* checking the pressure with a gauge fitted to the pressure tapping of the compressor discharge valve.



* R410A : pressure 26 bar = temperature 45°C

Setting the air flow sensor

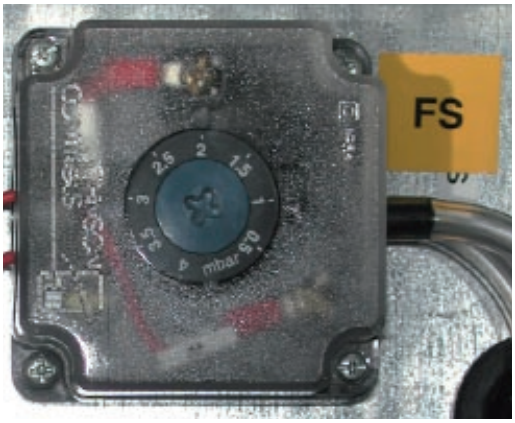
The FS differential pressure switch intervenes if the fan (or one of the fans) stops working.

The factory set point of the FS differential pressure switch is at 0.8 mbar (= 80 Pa).

As the difference in pressure between the suction and discharge of the fans depends on the air flow, it may be necessary to calibrate the instruments after installation, checking that the contact closes when the fans are in operation.

To set the FS pressure switch, carry out the following procedure:

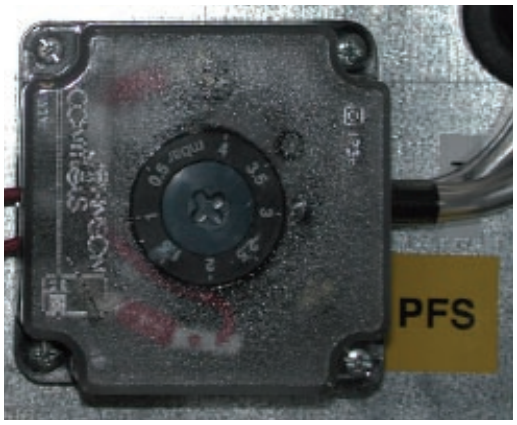
- simulate a fan fault by stopping a fan; check that the pressure switch intervenes;
- if the pressure switch does not intervene, gradually increase the setting until the pressure switch switches off:
  - using an adjustment screw, set the differential pressure switch on a scale (from 0.8 to 4.0 mbar - from 80 to 400 Pa).



Setting the dirty filter sensors

The PFS differential pressure switch is set according to the loss of load dependent on the dirt inside the filters and the air flow.
The PFS differential pressure switch must be set at 3 mbar (=300 Pa).
To set the PFS pressure switch, carry out the following procedure:

- gradually cover the surface of the air filter and check that the pressure switch intervenes when the filter is about 50-60 % covered;
- if the pressure switch does not intervene, gradually lower the setting, if it cuts in too soon, increase the setting:
  - using a star screw driver turn the regulation screws of the pressure switch to the desired value.



MAINTENANCE

Check every three months:

Carry out the following checks every three months:

- check the power supply;
- check the alarm status;
- check the working pressures and temperatures;
- check the correct operation of the local/remote controls;
- check the air filters, cleaning and replacing them if necessary;
- check the efficiency of the condensing drain;
- check the steam cylinder is clean, replacing it if necessary;
- check and clean if necessary the condensing coil.

Check every six months:

Carry out the following checks every six months:

- repeat these checks every three months;
- check and clean if necessary the cooling coil;
- check the operation of the humidifier (if present).

Annual checks

Carry out the following checks every year:

- repeat these checks on a every six months;
- check the varnish and the nuts and bolts;
- check the hinges, rabbets and gaskets;
- check the cables and wiring;
- tighten the terminal blocks;
- check and reset if necessary the safety device settings (pressure switches, thermostats, protection devices);
- check the operation of the post heating electrical heaters
- check the fittings, operation and absorption of the evaporating fan/s;
- check the fittings, operation and absorption of the compressor/s;
- check and if necessary replace the seal of the refrigerant circuit/s and tighten the joints and connections of the unit;
- check and top up if necessary the refrigerant gas and/or oil;
- check and if necessary reset the regulation devices setting;
- check and if necessary replace the seal of the hydraulic circuits/s and tighten the unit couplings;
- check the fittings and operation of the condensing fan/s;
- check and reset if necessary the condensing speed setting.

Checks to be performed every sixty months

- Check and if necessary replace the gas filters;
- check and if necessary replace the compressor oil.

Cleaning and replacing the filters

Models ED. 2222 ÷ 4228

To clean and replace the filters carry out the following procedures:

- remove the front cover of the filters by turning counterclockwise the panels screws;

- remember the direction of the air flow indicated on the label of each filter and draw the filters;

- clean them using a blast of compressed air or replace them;
- clean them using a blast of compressed air or replace them;
- mount the front cover of the filters.

OTHER MODELS

To clean and replace the filters carry out the following procedures:

- open the front panels of the machine;
- remove the filter blocking supports;

- remove the filters checking the direction of the air flow indicated on the label of each filter;

- clean them using a blast of compressed air or replace them;
- reposition the filters in the unit checking the direction of the air flow which was previously noted;
- reposition the filter blocking supports.

Troubleshooting

Troubleshooting is made easier by the indications on the control panel display: when an alarm signal is displayed, consult the control panel instruction manual. If necessary, call the nearest Service Centre describing the nature of the fault and its possible cause displayed on the control.

PROBLEM	POSSIBLE CAUSE	CHECK/CORRECTIVE ACTION
THE UNIT DOES NOT START	A) No power supply to the unit's electrical panel.	Check that the power is on and the unit main switch on the electrical panel is closed.
	B) No power to the auxiliary circuits.	1) Check that the IM automatic circuit breaker on the AUX circuit is set.
		2) Check the fuse on the main board.
	C) The control panel does not start the unit.	Check that the control panel connectors are correctly located in their sockets.

TEMPERATURE CONTROL

PROBLEM	POSSIBLE CAUSE	CHECK/CORRECTIVE ACTION
THE ROOM TEMPERATURE IS TOO HIGH	A) The parameter settings on the control panel are not correct.	See control panel instruction manual
	B) The air flow is low or absent.	See «LACK OF / ABSENT AIR FLOW».
	C) The temperature sensor is not working.	Check the electrical connections and the control configuration.
	D) The thermal load is higher than expected.	Check the room's thermal load.
	E) The three-way valve is not working.	Check the electrical connections of the servomotor valve.
		Open the valve by means of the manual control knob.
		Check the chilled water supply; check that the shut-off valves are open.
	F) There is an insufficient chilled water flow.	Check the chilled water funtion.
	G) The chilled water temperature is too high.	See «THE COMPRESSOR(S) DOESN'T / DON'T WORK».
	H) The compressor(s) not working despite control call	See «THE COMPRESSOR(S) DOESN'T / DON'T WORK».
ROOM TEMPERATURE TOO LOW	A) The parameter settings on the control are not correct	See the microprocessor control manual.
	B) There is insufficient power supply to the elcttric heaters or the heaters are not working	1) Check that the IM of the heating element is armed.
		2) Check the electric feeding circuit of the heaters.
		3) If there is a heater alarm, remove the cause and re-set the safety thermostat.
	C) The hot water coil is not working.	1) Check the hot water capacity and temperature.
		2) Check the function of the regulation valve (see valve and servomotor).
	D) The hot gas coil is not working during dehumidification with re-heat.	1) Check the hot gas 3 way valve function.
		2) Check the function of the compressor serving the re-heat. See «THE COMPRESSOR(S) DOESN'T / DON'T WORK».
	E) The three way valve of the chilled water circuit is blocked open.	Close the valve using the manual control knob and replace the servomotor.

HUMIDITY CONTROL

PROBLEM	POSSIBLE CAUSE	CHECK/CORRECTIVE ACTION
ROOM HUMIDITY TOO HIGH	A) The parameter settings on the control panel are not correct.	See control panel instruction manual.
	B) The latent load is higher then expected.	Check the latent load, fresh air conditions and volume; external air infiltration.
	C) The compressor does not function during dehumidification.	See «THE COMPRESSOR(S) DOESN'T / DON'T WORK».
	D) The chilled water is not sufficiently cold for the dehumidification function (in energy saving and twin cool units).	Lower the chilled water temperature until condensate is present on the surface of the coil.
ROOM HUMIDITY TOO LOW	A) The parameter settings on the control panel are not correct.	Check the room humidity settings (see control panel instruction manual).
	B) The latent load is lower than expected.	Check the quantity of latent heat.
	C) The humidifier doesn't work.	1) Check the water supply pressure.
		2) Check the function of the manual control system and of the steam production group (see panel instruction manual).
	D) The control system does not work.	See the control panel instruction manual; check that the control panel and/or sensors work properly.

FANS

PROBLEM	POSSIBLE CAUSE	CHECK/CORRECTIVE ACTION
ABSENT OR LOW AIR FLOW	A) There is no power to the fans.	Check the power supply to the fans
	B) The air filters are clogged (dirty filter alarm enabled).	1) Shake the dust out of the cartridge and clean with a vacuum cleaner. Replace the filter if it is completely blocked.
		2) Check the correct setting of the dirty filter pressure switch PFS.
	C) The air flow is obstructed.	Check that the air flow is not obstructed, not even partially.
	D) The fans' thermal protection intervenes.	Check the resistance of the fan motor windings. Re-set then measure the voltage and absorption.
	E) (In EDA/EUA units with backward curved blade fans). The power supply to the fans is insufficient.	Change the power supply voltage to the fans. (See paragraph. 'Setting and adjustment).
	F) The air distribution output pressure is too high.	Check the air pressure distribution (ducts, ceiling or floor plenum, grilles).

ELECTRIC HEATER

PROBLEM	POSSIBLE CAUSE	CHECK/CORRECTIVE ACTION
ELECTRIC HEATER SAFETY THERMOSTAT INTERVENES	A) There is insufficient air flow.	See «LACK OF / ABSENT AIR FLOW».
	B) The thermostat connection wire is interrupted	Check the connection between the safety thermostat and the control system.
	C) The thermostat is faulty.	Replace the thermostat.

REFRIGERANT CIRCUIT

PROBLEM	POSSIBLE CAUSE	CHECK/CORRECTIVE ACTION
HIGH COMPRESSOR DISCHARGE PRESSURE	A) There is non-condensable air or gas in the refrigerant circuit, with bubbles in the flow sight glass; excessive sub-cooling.	Evacuate the refrigerant circuit and recharge.
	B) The air flow to the remote heat exchanger is insufficient or too warm.	1) Check the fan operation and rotation direction in the remote heat exchanger.
		2) Check to see if the exchanger is dirty and if necessary remove any obstructing material (leaves, paper, seeds, dust, etc.) with a blast of compressed air or a brush;
		3) In the external unit check for obstructions in the air flow and in the recirculation of the cooling air.
		4) Check that the temperature of the cooling air is within the planned limits.
	C) The water flow to the condenser is insufficient or too warm.	1) Check the condenser water flow, pressure and temperature in the closed circuit water system.
		2) Check the setting and function of the pressostatic regulation valve.
	D) There is too much refrigerant in the circuit; the condenser is partially flooded. The refrigerant subcooling is too high at the condenser outlet	Remove some refrigerant from the circuit.
	E) The discharge valves are partially closed	Check the opening of the valves.
AP HIGH PRESSURE SWITCH INTERVENES (high compressor discharge pressure)	A) The condensing pressure control system is not functioning efficiently.	1) Check the fan function of the condenser and of the relative protection; re-set or replace the faulty fans.
		2) Check the setting and function of the fan speed regulator of the remote condenser.
	B) The system discharge pressure is too high	See «HIGH COMPRESSOR DISCHARGE PRESSURE».
LOW COMPRESSOR DISCHARGE PRESSURE	A) The condensing pressure control system is not functioning efficiently (see control panel manual).	Check the setting and function of the condenser fan pressure switch or speed regulator.
	B) The water flow to the condenser is too high or too cold.	1) Check the condenser water flow and temperature;
		2) Check the setting and function of the pressure regulating valve (if fitted).
		3)Fit a pressure regulating valve to control the water pressure according to the condensing pressure.
	C) The suction pressure is too low.	See «LOW COMPRESSOR SUCTION PRESSURE».
HIGH COMPRESSOR SUCTION PRESSURE	A) The thermal load is too high.	Check the room's thermal load; check in case of over dehumidification, check the air flow and conditions of external air, check the external air infiltration.
	B) The discharge pressure is too high.	See «HIGH COMPRESSOR DISCHARGE PRESSURE».
	C) There is an overcharge of refrigerant in the circuit.	Remove some refrigerant from the circuit.
	D) There is a return of liquid refrigerant to the compressor intake	Check that the super heat setting of the thermostatic valve is correct.

COMPRESSORS

PROBLEM	POSSIBLE CAUSE	CHECK/CORRECTIVE ACTION
LOW COMPRESSOR SUCTION PRESSURE (and possible freezing of the coil)	A) The room temperature is too low.	See «ROOM TEMPERATURE TOO LOW».
	B) The air flow is too low or is absent.	See «LOW AIR FLOW».
	C) The liquid line solenoid valve is not completely open.	Check the valve opening.
	D) The refrigerant filter is obstructed.	Check the refrigerant filter.
	E) The thermostatic valve is incorrectly calibrated or defective.	Check the super heat setting of the thermostatic valve; check that the sensor bulb has not lost its charge and is well positioned, fixed and insulated.
	F) There is an insufficient refrigerant charge.	Check the sub-cooling of the refrigerant liquid at the condenser outlet;check to see if there are any leaks and re-charge the unit.

PROBLEM	POSSIBLE CAUSE	CHECK/CORRECTIVE ACTION
THE COMPRESSOR(S) DOESN'T/DON'T WORK	A) The short circuit protection has intervened.	Re-set the automatic switch and check the cause of the short circuit.Before re-starting the compressor, check the resistance and continuity of the compressor motor windings.
	B) The contactor is not working.	Check the contacts and the contactor coil.
THE COMPRESSOR'S INTERNAL PROTECTION INTERVENES	A) A phase is missing.	Check the resistance of the compressor motor windings. After re-setting, measure the voltage and current absorption of the three phases.
	B) The motor is overloaded.	Check that the unit pressure operates within the planned limits.
	C) The power supply voltage is too high or too low.	Check that the voltage is within -10% and +10% of the nominal value.
	D) The rotor is blocked.	Replace the compressor.
THE COMPRESSOR IS NOISY	A) The compressor is damaged.	Call the nearest Service Centre in order to replace the compressor.
	B) There is liquid return to the compressor.	Check the setting and function of the thermostatic valve.

MERCURY - CHILLED WATER
Technical characteristics
CHILLED WATER UNITS WITH BACKWARD CURVED BLADE FANS

Model EDCB - EUCB		**0070**	**0100**
Height	mm	1960	1960
Width	mm	1010	1010
Depth	mm	750	865
Weight	kg	220	306
Chilled water flow (*)	kW	18,6	25,5
Chilled water flow (**)	l/h	3240	4480
Electric supply voltage	V	400V/3ph+N/50Hz	

Model EDCB - EUCB		**0120**	**0170**	**0200**	**0250**
Height	mm	1960	1960	1960	1960
Width	mm	1310	1721	2172	2172
Depth	mm	865	865	865	865
Weight	kg	314	395	443	458
Chilled water flow (*)	l/h	7510	9660	11950	15090
Chilled water flow (**)	l/h	5370	6340	8240	10650
Electric supply voltage	V	400V/3ph+N/50Hz			

Model EDCB		**0270**	**0340**	**0400**
Height	mm	1960	1960	1960
Width	mm	2170	2580	2580
Depth	mm	865	865	865
Weight (Complete version) (1)	kg	502	720	740
Chilled water flow (*)	l/h	16854	19279	21658
Chilled water flow (**)	l/h	12817	14617	16059
Electric supply voltage	V	400V/3ph+N/50Hz		

(*) Based on 24°C@50% air temperature, ESP=20Pa, chilled water 7/12°C, ethylene glycol 0%
(**) Based on 24°C@50% air temperature, ESP=20Pa, chilled water 10/15°C, ethylene glycol 0%

CHILLED WATER UNITS WITH EC BACKWARD CURVED BLADE FANS

Model EDCV - EUCV		0070	0100	0120	0170	0200	0250
Height	mm	1960	1960	1960	1960	1960	1960
Width	mm	1010	1310	1310	1721	2172	2172
Depth	mm	750	865	865	865	865	865
Weight	kg	280	306	314	395	443	458
Chilled water flow (*)	l/h	4690	5750	7270	9210	11950	15230
Chilled water flow (**)	l/h	3380	4420	4990	6060	8240	10740
Electric supply voltage	V	400V/3ph+N/50Hz					

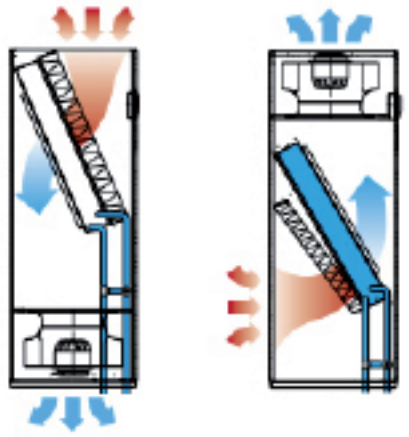
Model EDCV		0270	0340	0400
Height	mm	1960	1960	1960
Width	mm	2170	2580	2580
Depth	mm	865	865	865
Weight (Complete version) (1)	kg	502	720	740
Chilled water flow (*)	l/h	16887	19000	21680
Chilled water flow (**)	l/h	13063	14675	16059
Electric supply voltage	V	400V/3ph+N/50Hz		

(*) Based on 24°C@50% air temperature, ESP=20Pa, chilled water 7/12°C, ethylene glycol 0%
(**) Based on 24°C@50% air temperature, ESP=20Pa, chilled water 10/15°C, ethylene glycol 0%

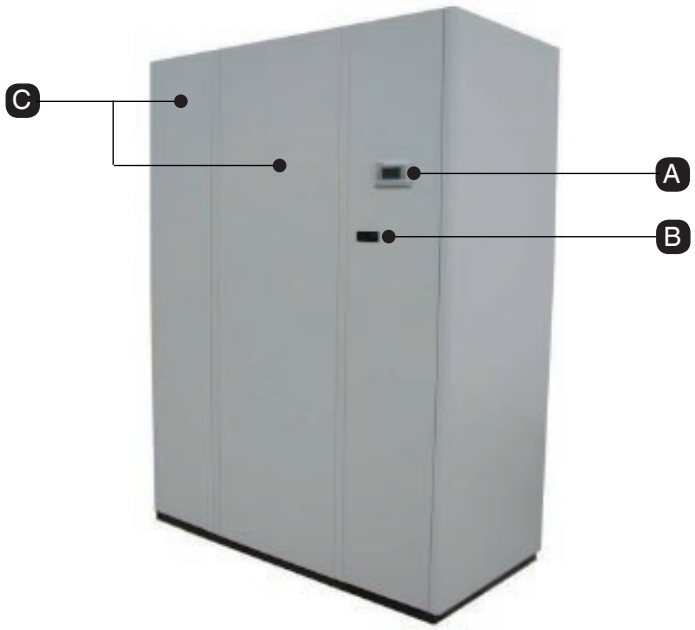
Operating description

CW CHILLED WATER UNITS

The CW uses the availability of chilled water to control the room conditions.
This version of MERCURY has a relatively simple construction and gives outstanding reliability.
The microprocessor controls the modulating action of the 3 way (or optional 2 way) chilled water valve to give accurate control.
Careful sizing of the heat exchanger coils allows a high sensible to total cooling ratio under most operating conditions.



Name and description of the main components



A User terminal
B Electrical panel door
C Cover panels
D Electrical panel
E Filters
F Fans
G Chilled water valve

Description of the components

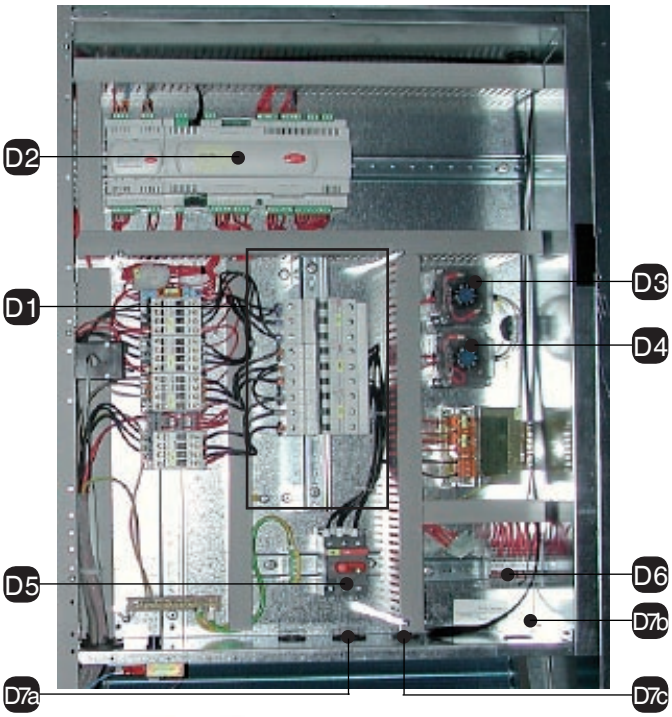
A - User terminal

Allows the unit to be turned on or off and the configuration and visualization of the condition of the machine.

- A1 LCD Display
- A2 ALARM key: visualisation and re-set of alarms; when the alarm is activated, it flashes red.
- A3 PRG key : access to the configuration menu
- A4 ESC key : exit from the screens
- A5 UP key : scroll through the menu
- A6 ENTER key : confirm
- A7 DOWN key: scroll through the menu

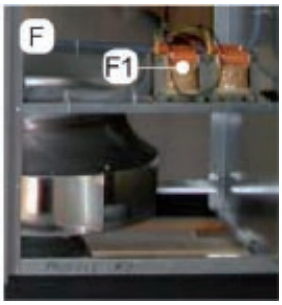
B - Electrical panel door

Allows access to the electrical panel of the machine



C - Cover panels
Allow access to the internal components of the machine.

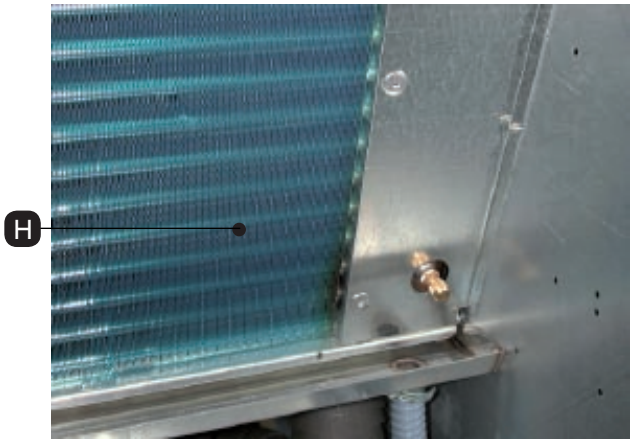
D - Electric panel
- D1 Magnetothermic
  - auxiliary
  - heater (optional)
  - humidifier (optional)
  - fans
- D2 Interface board
- D3 Dirty filter sensor
- D4 Air flow sensor
- D5 Main switch
- D6 Terminal board
- D7A Input/output electrical supply cables
- D7B Input/output electrical auxiliary cables
- D7C Input/output signal cables (RS485 and/or LAN)



E - Filters
Filter the air released into the environment

F - Fans
Allow the diffusion of air into the room
- F1 ATR Transformer: allows the setting of the fan rotation speed of the ED*B and EU*B units.

G - Chilled water valve
- G1 Servomotor
- G2 Manual control knob
- G3 Valve stem



H - Cooling coil

Checks to be made on delivery

WARNING! Dispose of the packaging in appropriate collection points.

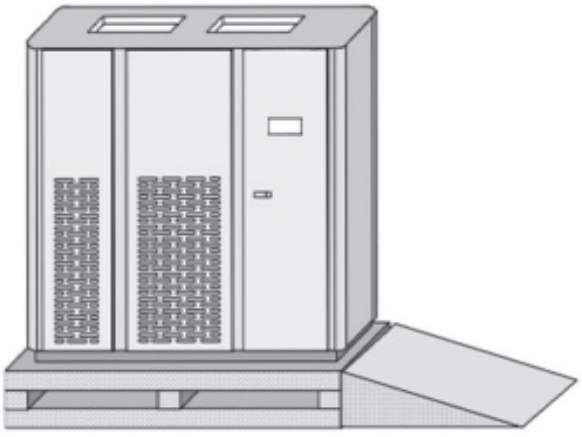
The Mercury units are packaged in wooden crates or anchored to a pallet and covered in cardboard.
Check that the delivery is complete and inform the carrier of any damage to the unit which may be attributed too careless or inappropriate transportation. Check, in particular, any eventual damage to the panel in which the user terminal is mounted.
Lifting and moving the unit must be carried out by a mechanical lifter.
The following must be container within the packaging:

- The Mercury unit;
- Mercury Use and Installation Manual;
- Mercury unit electrical diagrams;
- Mercury unit cooling circuit diagrams;
- Mercury unit installation diagrams;
- List of spare parts;
- CE declaration with a list of the European standards to which the machine must conform;
- guarantee conditions

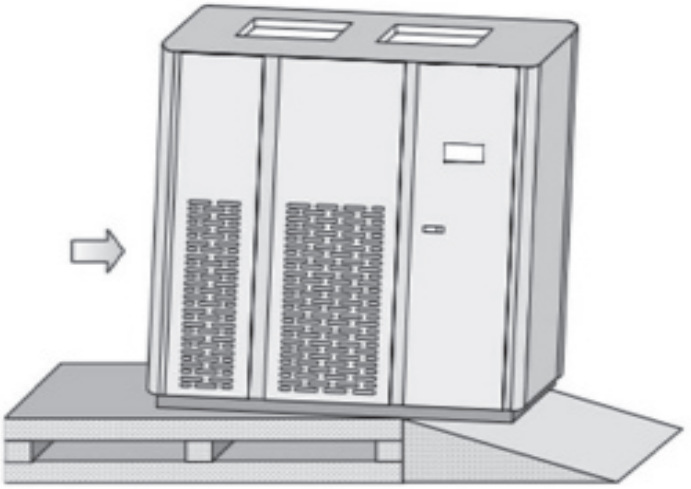
Unloading the unit

To unload the unit from the pallet, carry out the following procedure:

- move the pallet as near as possible to where the unit is to be installed;
- use a ramp to avoid any damage to the unit during unloading;



- remove the blocking screws which fix the unit to the pallet;
- carefully push the unit along the ramp until it reaches the floor.

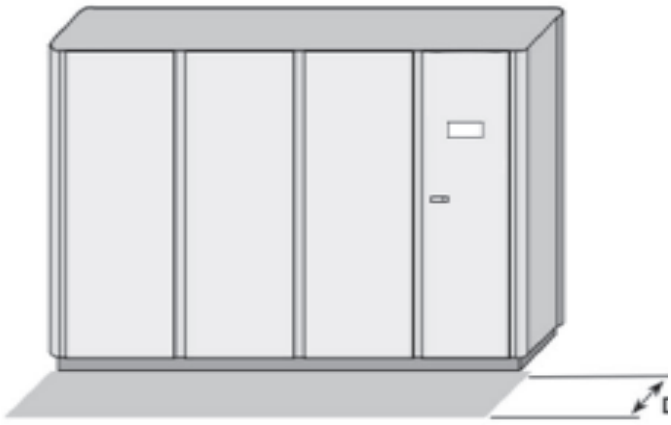


Characteristics of the installation area

WARNING! The unit must be installed internally and protected from adverse conditions.

The unit is predisposed to be installed on raised access flooring using mounting frames or appropriate floor stands supplied on request from Trane. However, the upflow units (upwards air flow) with air intake through the rear or front can be installed also on floors which are not raised.
The area of installation must have the following characteristics:

- make sure to leave a 700mm clearence (distance D) in front of the unit once it has been fitted. Check that air intake and discharge connections are not blocked in any way, not even partially;
- a horizontal and even floor;



- the electrical energy distribution system has been produced in respect of CEI standards, suitable for the characteristics of the unit;
- a cold water distribution implant (if a humidifier is to be installed);
- implant for connection to the condensing unit;
- external air outlet (if a fresh air intake is to be installed);
- for the refrigerating gas drain see paragraph “Connection to gas drain”;
- drainage system.

WARNING! The preparation of the installation area must be carried out as indicated in the installation drawing attached to the machine documentation.

Positioning of the unit

WARNING! If the surface where the unit is placed is not even and horizontal there, is a risk of an overflow from the condensation tray.

Installation on raised access flooring

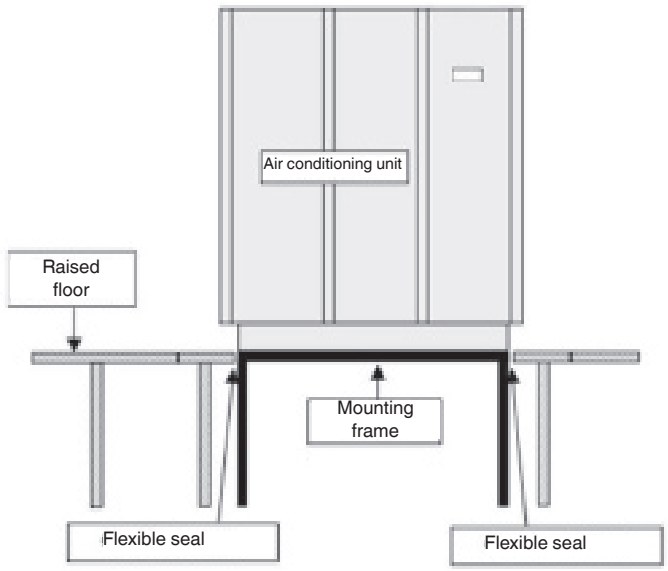
Installation on raised access flooring occurs by means of a mounting frame. The frame enables the installation of the unit before the raised floor is installed, increased absorption of noise and vibrations and the facilitation of connecting pipes and cables.

The up flow models (upwards air flow) with rear or frontal air intake may be installed without using the mounting frame.

Installation of the mounting frame

To install the unit on raised flooring using the mounting frame, carry out the following procedures:

- a flexible seal at least 5 mm thick should be fitted between the raised floor panels and the mounting frame which should also be isolated from the metallic floor structure;
- position the unit of the mounting frame and fix it using the M8 screw inserts found on the base of the unit.



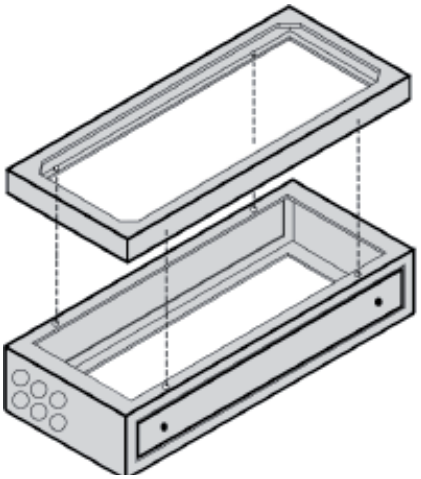
Installation on flooring which is not raised

Installation on flooring which is not raised can occur without using bases, but only on upflow models (upwards air flow) with rear or frontal air intake. Installation on this type of floor does not require any additional operation besides that of normal positioning.

Installation of the floor stand

To install the unit on the floor stand carry out the following procedures:

- position the unit on the floor stand;
- fix the unit to the floor stand using the M8 screw inserts found on the base of the unit.



Installation of discharge temperature limit probe (STM) - optional -

To install the discharge temperature limit probe, refer to the chapter entitled “Accessories”.

Opening of the door and removal of the panels

Opening the door

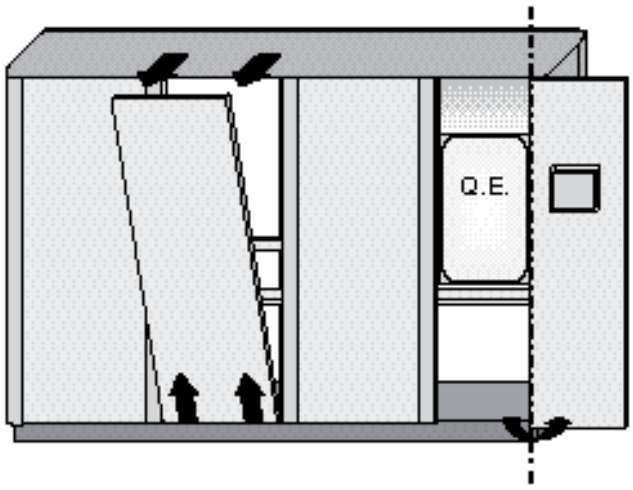
To open the door of the unit carry out the following procedures:

- push the button and pull the handle lightly outwards;
- turn the handle downwards until the door opens.

Removal of the front and side panels

To remove the front and side panels carry out the following procedure:

- firmly hold the panel;
- lift and incline the panel outwards until it is completely removed.

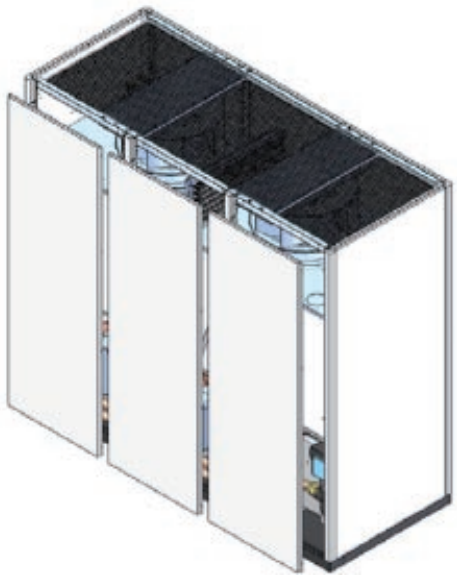


NOTE: After having removed the side panels, the non-removable protective panel, blocks accessibility to the inside of the machine.

Removal of the rear panels

To remove the rear panels, carry out the following procedure:

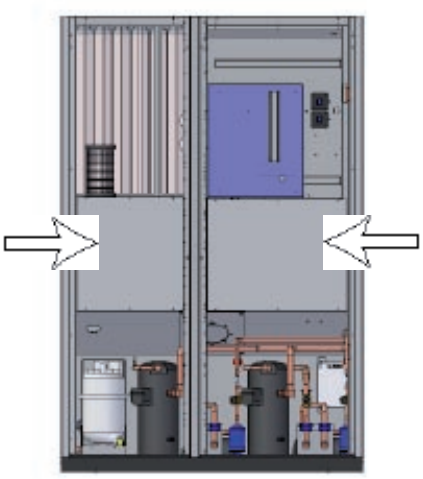
- unscrew, using a star screwdriver, the screws which fix the panel;
- firmly hold the panel and pull.



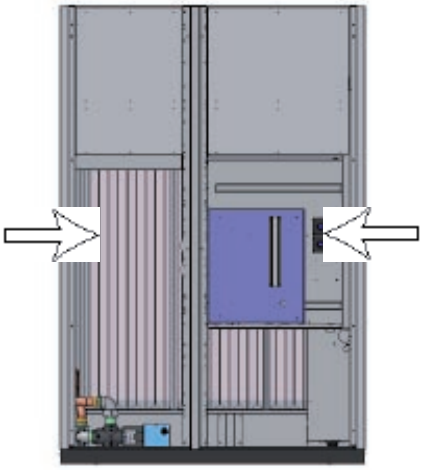
Internal protection panels

The technical compartment, the electric heaters and the autotransformer fans are protected by internal protection panels for safety reasons and to allow the opening of the external panels without triggering the unit's safety alarms. In the figures below the different types of internal protection panels are shown on various types of machines.

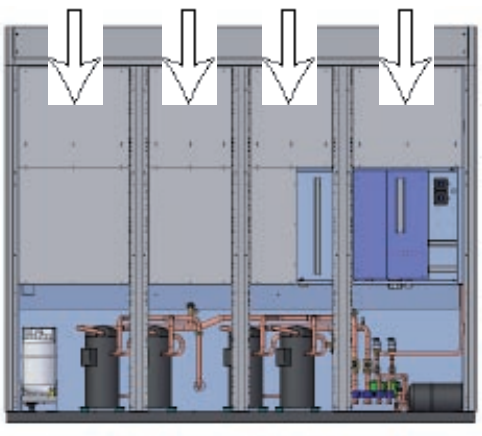
MODELS EUCB - EUCV 0070, 0100, 0120, 0170,0200, 0250



MODELS EDCB - EDCV 0070, 0100, 0120, 0170,0200, 0250, 0270



MODELS EDCB 0340, 0400, EDCV0340, 0400



Before removing the internal protection panels, disconnect the power supply by turning the main isolating switch D5 to position "O", then wait until the fans stop and the electrical heaters cool down.

Electrical connections

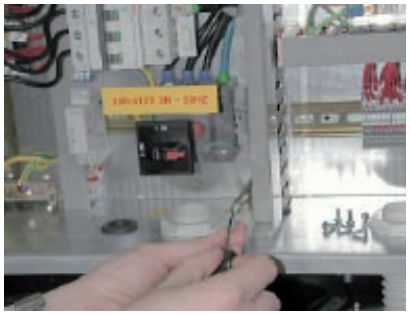
WARNING! Electrical connection to the machine to the power supply must ONLY be carried out by a qualified electrician.

WARNING! Electrical lines must be established in full respect of CEI standards.

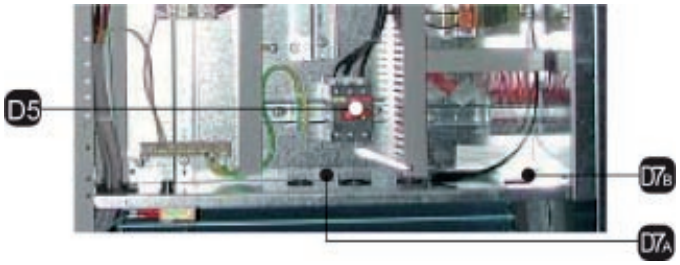
WARNING! Before establishing the electrical connection, make sure that the power supply is off. Also ensure that it is not possible to reconnect the power during the operation.

To carry out the electrical connections of the machine to the power supply, carry out the following procedures:

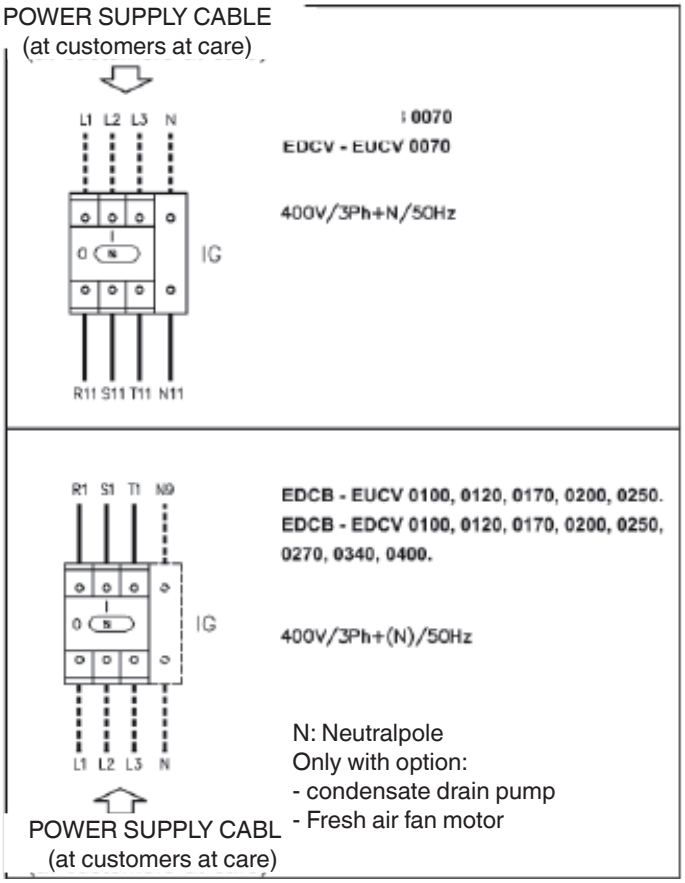
- use suitable equipment to check the efficiency of the grounding system;
- check that the voltage and network frequency correspond to those of the machine (see identification label);
- open the door of the electrical panel;
- remove the plastic screen of the electrical panel using a star screwdriver;



- pass the cables inside using the power supply cable inlet D7A which connects to the main switch D5;

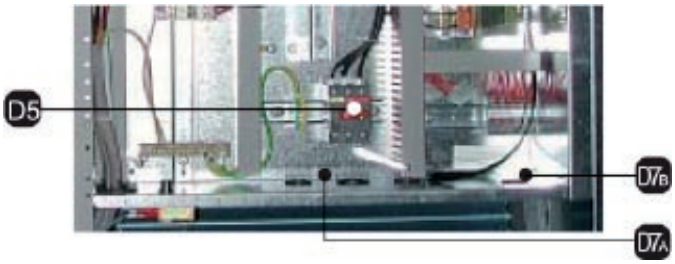


- refer to the wiring diagram and connect the cable to the main switch D5.

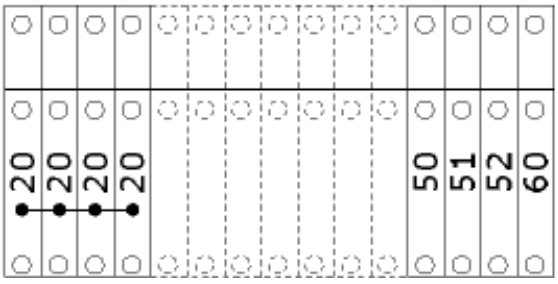


To connect the auxiliary connections to the terminal board carry out the following procedures:

- pass the cables through the power supply cable inlet D7B;



- refer to the wiring diagram and carry out the connection to the terminal board.



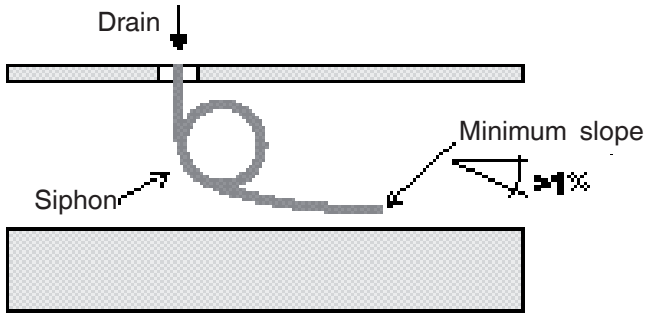
DIGITAL CONFIGURABLE INPUTS

Terminal board 51-20
- User
- ON - OFF Remote
- Flooding sensor (SAS)
Terminal board 52-20
- User
- ON-OFF Remote
- Fire-smoke (SFF)
Terminal board 50-20
- User
- ON-OFF Remote
- Tools (ATA-BTA-AUA-BUA)
Terminal board 60-20
- Summer-Winter remote
- Water flow meter

Connection to the water drain

Condensation water drains from the tray by means of a flexible siphoned tube, which is fitted in the unit.
If the unit is fitted with a humidifier, the condensate drain tray and the humidifier drain connection must be connected to the drains of the building.

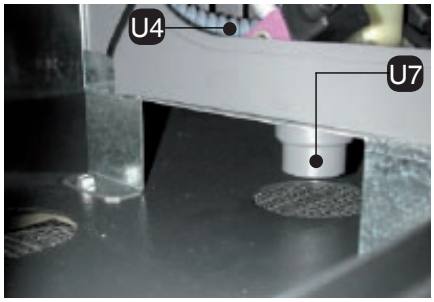
Direct connection to the drains of the building
Connect the drainage tube of the unit to the drains of the building using a rubber or plastic tube with an internal diameter of 25 mm.
The external drainage tube must be siphoned in order to avoid unpleasant odours. Maintain a minimum slope of 1% downstream of the siphon.
Once the connections have been made, pour water into the condensate collection tray until the siphons have been filled.



Connection of the humidifier (additional fitting) and to the storm sewer system

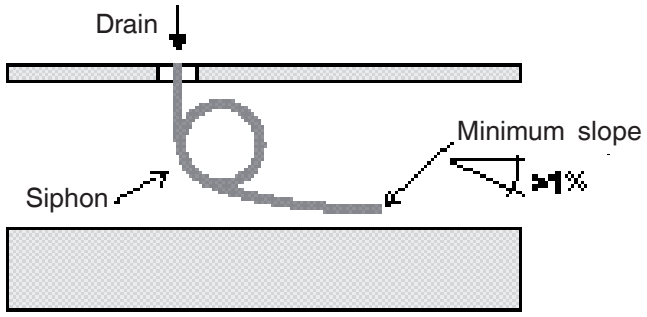
WARNING! The water discharged from the humidifier is at a very high temperature. The drainage tube has to withstand high temperatures (at least 100°C) and must be kept away from electrical cables.

Connect the drainage tube of the unit to the collection tray (U4) of the humidifier.
Connect the drainage tube of the humidifier (U7) to the drains of the building using a rubber or plastic tube, which is resistant to high temperatures (minimum 100 °C) with an internal diameter of 32 mm.



The external drainage tube must be siphoned to avoid unpleasant odours and an overflow of the water from the tray of the humidifier.

Maintain a minimum slope of 1% downstream of the siphon.



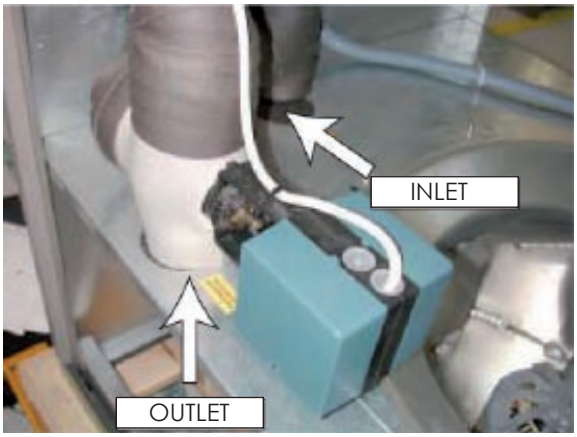
Once the connections have been made, pour water into the condensate collection tray of the Mercury unit and in the condensate collection tray of the humidifier until both siphons are full.

Hydraulic connections

For all hydraulic connections (except for the condensate drain) it is recommended to use the following:

- flexible hoses to avoid the transmission of vibrations and to allow the unit to be moved;
- three piece joints near the connections;
- shut off valves to isolate the unit from the water circuit: if possible, use full sphere valves to minimise the pressure drop.

Check that the chilled water pipe sizes and the circulating pump characteristics are adequate: an insufficient water flow affects the performance of the unit.
Check that the water flow directions are respected.
Insulate all of the chilled water pipes with closed cell insulating material (e.g.: Armaflex or equivalent) to avoid condensation; the insulation must allow accessibility to the valves and three piece joints.
Check that the hydraulic circuits (both chilled and hot water) are fed with a maximum water pressure of 6 bar: to this purpose the installer must install a safety valve in the hydraulic with a set point of not more than 6 bar.
The minimum and maximum water temperatures inside the unit (for the chilled water circuit and the post- heating with hot water) are: 5°C ÷ 90°C.
The maximum amount of ethylene glycol is 50%.



Filling the hydraulic circuit

WARNING! The water used to fill the hydraulic circuit must be filtered.

WARNING! Filling the hydraulic circuit must only be carried out exclusively by a qualified hydraulic technician.

WARNING! Before carrying out any type of intervention, disconnect the power supply.

Filling the primary circuit

WARNING! The primary circuits must be equipped with mechanical filters.

WARNING! Check that all of the shut off valves are closed.

Open the drain valve of the primary circuit and regulate the pressure switch to 5 bar;
bleed the air from the circuits;
turn on the primary circulation pumps;
clean the circuits leaving the pumps on; check for any loss from the primary circuits.

Filling the hydraulic circuits of the conditioners

WARNING! Clean the primary circuits before filling the conditioners.

WARNING! Check that all of the bleeding valves on the conditioners are closed.

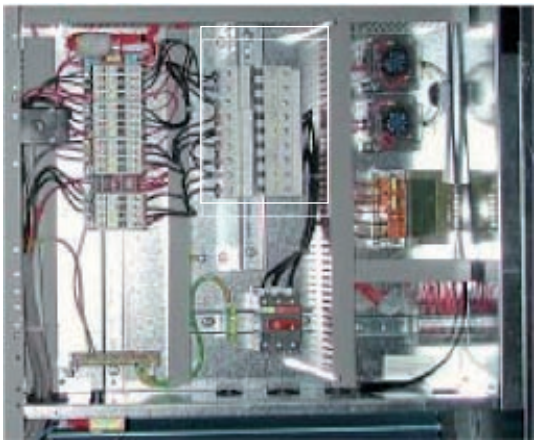
Open the shut off valves of the conditioner;
Open the bleeding valve (on the upper part of the cooling coil) and wait for the water to come out.

MANUAL START UP AND SHUT DOWN OF THE UNIT

WARNING! Check that the refrigerant circuit has been filled

To start up the unit carry out the following procedure:

- open the door of the electrical panel and the front panels;
- position the automatic switch of the auxiliary circuit to "I" (on);
- position all of the automatic switches on the electrical board to "I" (on);



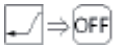
- fuel the unit by positioning the main switch to "I" (on);

- check that the tracts of corrugated pipe with siphon, both internal and external to the conditioner, have been filled with water in the installation phase;
- close the door and the front panels;
- press the ENTER key (A6) of the user terminal; a sliding bar and a ventilator icon will appear on the display;

- if an alarm is indicated, consult the user interface manual mP40;
- check the rotation direction of the fans; the correct direction is indicated with an arrow which is on the fan itself. If the rotation is in the wrong direction, invert two of the three power supply phases following the instructions indicated in the paragraph entitled "Electrical connections" and then restart the start-up procedure

To turn the unit off, carry out the following procedure:

- on the first screen of the user terminal, press the A5 or A7 buttons until the SWITCH OFF UNIT screen appears;
- press the ENTER button to confirm;
- the following icons will appear



Press the ENTER button to confirm

SETTING AND ADJUSTMENT

Selecting the power supply of the fans

WARNING! Before establishing the electrical connection, make sure that the power supply is off. Also ensure that it is not possible to reconnect the power during the operation.

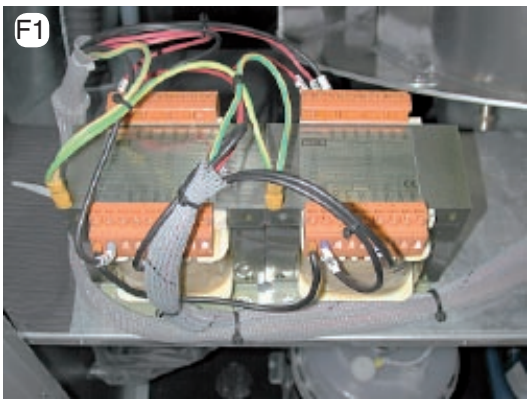
WARNING! In the case of a unit with ducts, the load loss from the exhaust duct must be less than 100 Pa.

In the following table the voltage levels for each model working in the standard version are given.

Models	V
0070	195
0100 - 0200	310
0120	340
0170	260
0250	320
0270	340
0340	280
0400	300

HOW TO ADJUST FAN SPEED

In the E*CB three phase models the rotation speed of the fans be varied by using the ATR transformer (F1).



To obtain the required prevalence of the implant, it is possible to vary the voltage by selecting one of the following levels,
suitable for models from 0070:
140V -160V -180V -190V -200V -210V -220V -230V
models from 0100 to 0270:
230V - 250V - 260V - 270V - 280V - 290V - 300V - 310V - 320V - 340V - 360V - 380V - 400V.
models 0340 - 0400:
150V - 180V - 200V - 230V - 240V - 260V - 280V - 300V - 320V - 340V - 360V - 380V - 400V.
In the following table the maximum pressure available (expressed in Pa) for each voltage level of the transformer is indicated. The values are given for the maximum air flow (expressed in m3/h).

EDCB/EUCB 0070

FA[m³/h=]		4280	4500	5000	5500	6060	6500
%	V	Pa					
40	142	68	54	15	-	-	-
50	168	140	122	75	21	-	-
55	180	180	160	109	50	-	-
60	195	238	216	158	92	20	-
70	215	335	307	238	162	67	-
80	222	375	346	272	191	91	20
90	227	403	373	296	212	108	24
100	230	427	395	315	228	122	35

EDCB/EUCB 0100

FA[m³/h=]	5700	7000	8000	9000	10200	11440
V	Pa					
230	129	73	14	-	-	-
250	181	124	65	-	-	-
260	206	150	91	8	-	-
270	232	175	117	34	-	-
280	257	201	142	59	-	-
290	283	226	168	85	-	-
300	309	252	194	111	-	-
310	334	278	219	136	-	-
320	360	303	245	162	20	-
340	411	355	296	213	69	-
360	462	406	347	264	121	-
380	514	457	399	316	172	-
400	565	508	450	367	223	20

EDCB/EUCB 0120						
FA[m³/h=]	5700	7000	8000	9000	10200	11440
V	Pa					
230	123	64	3	-	-	-
250	174	115	54	-	-	-
260	200	141	80	-	-	-
270	225	166	105	20	-	-
280	251	192	131	46	-	-
290	277	218	157	71	-	-
300	302	243	182	97	-	-
310	328	269	208	123	-	-
320	354	294	234	148	-	-
340	405	346	285	199	20	-
360	456	397	336	251	71	-
380	507	448	387	302	122	20
400	559	499	439	353	189	56

EDCB/EUCB 0250						
FA[m³/h=]	10000	12000	16000	18680	19500	20570
V	Pa					
230	58	20	-	-	-	-
250	117	59	-	-	-	-
260	147	89	-	-	-	-
270	176	118	-	-	-	-
280	205	147	20	-	-	-
290	235	177	60	-	-	-
300	264	206	94	-	-	-
310	294	236	124	-	-	-
320	323	265	153	-	-	-
340	382	324	212	20	-	-
360	441	383	271	88	20	-
380	500	442	330	157	80	-
400	579	523	379	205	137	20

EDCB/EUCB 0170						
FA[m³/h=]	7800	9000	11000	14920	17000	19380
V	Pa					
230	125	70	-	-	-	-
250	184	129	68	-	-	-
260	213	159	90	-	-	-
270	243	188	119	-	-	-
280	272	217	149	-	-	-
290	301	247	178	20	-	-
300	321	276	208	60	-	-
310	360	306	237	93	-	-
320	390	335	267	152	-	-
340	449	394	326	211	50	-
360	507	453	384	270	109	-
380	566	512	443	300	168	-
400	611	569	503	352	230	20

EDCB/EUCB 0270							
FA[m³/h=]	13530	16030	17000	18725	19000	19500	20650
V	Pa						
230	-	-	-	-	-	-	-
250	22	-	-	-	-	-	-
260	54	-	-	-	-	-	-
270	87	-	-	-	-	-	-
280	119	6	-	-	-	-	-
290	150	35	-	-	-	-	-
300	181	63	14	-	-	-	-
310	210	91	41	-	-	-	-
320	238	118	67	-	-	-	-
340	290	168	117	20	4	-	-
360	338	214	162	64	48	17	-
380	380	256	204	105	88	57	-
400	418	294	242	142	125	94	20

EDCB/EUCB 0200						
FA[m³/h=]	10000	12000	15000	18680	19500	20810
V	Pa					
230	80	40	-	-	-	-
250	140	91	-	-	-	-
260	170	120	30	-	-	-
270	200	150	55	-	-	-
280	277	180	91	-	-	-
290	259	217	116	-	-	-
300	289	250	145	-	-	-
310	317	275	176	-	-	-
320	349	335	203	-	-	-
340	390	394	266	20	-	-
360	449	453	324	115	46	-
380	508	512	381	173	106	-
400	580	533	440	232	162	20

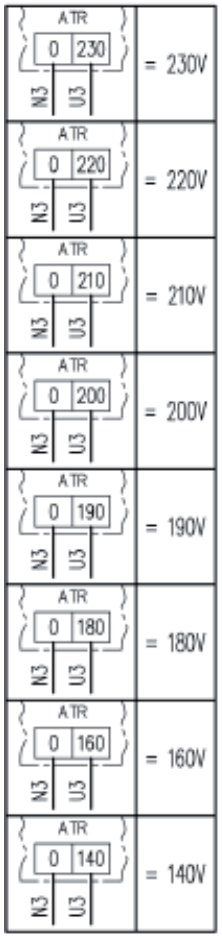
EDCB/EUCB 0340							
FA[m³/h=]	15300	19000	23000	24777	26000	28000	28520
V	Pa						
150	-	-	-	-	-	-	-
180	55	-	-	-	-	-	-
200	131	3	-	-	-	-	-
230	235	103	-	-	-	-	-
240	267	134	-	-	-	-	-
260	327	191	45	-	-	-	-
280	381	244	90	20	-	-	-
300	430	291	131	57	5	-	-
320	473	333	168	91	36	-	-
340	511	370	202	122	66	-	-
360	544	402	232	151	94	-	-
380	571	429	259	178	120	21	-
400	592	451	282	201	144	46	20

EDCB 0400							
FA[m³/h=]	15940	19000	23000	25200	26500	27500	28100
V	Pa						
150	-	-	-	-	-	-	-
180	20	-	-	-	-	-	-
200	96	-	-	-	-	-	-
230	200	89	-	-	-	-	-
240	232	120	-	-	-	-	-
260	292	177	28	-	-	-	-
280	346	230	73	-	-	-	-
300	395	277	114	20	-	-	-
320	439	319	151	53	-	-	-
340	477	356	185	84	22	-	-
360	509	388	215	112	49	-	-
380	536	415	242	139	75	25	-
400	227	437	265	162	99	50	20

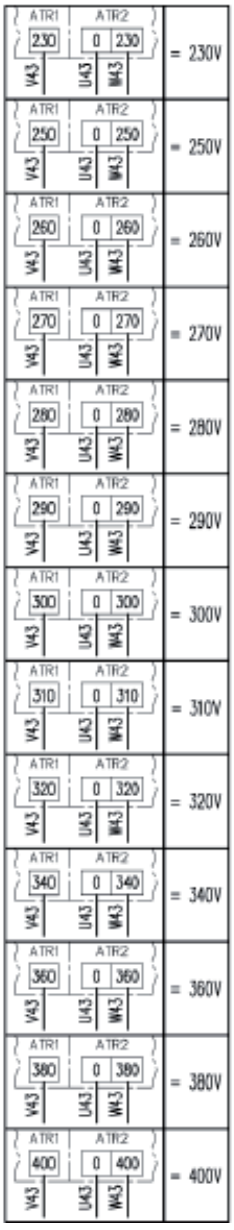
After having selected the voltage level, carry out the connection in the following way:

- with the unit turned off, open the front panels and the door of the electrical panel and the internal protection panels;
- select the supply voltage by positioning the main switch to “0” (D5);
- Follow the diagrams displayed below and refer to the wiring diagram enclosed to connect the two electric wires found on the fan, or on the connector block, to the corresponding terminals on the autotransformer

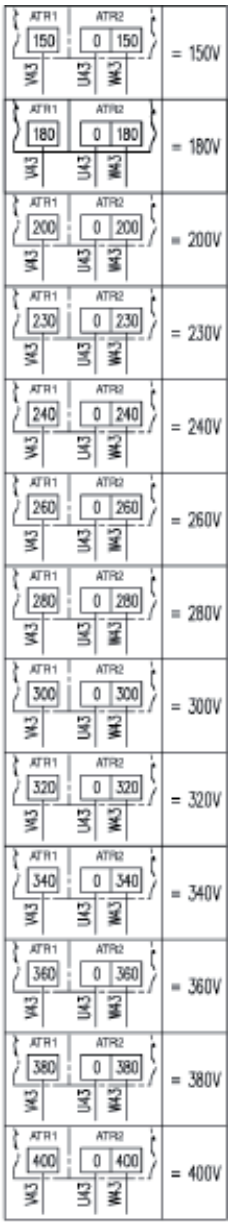
MODELS
from 0070



MODELS
from 0100to 0270



MODELS
from 0340 to 0400



MODELS WITH FANS CARRYING A CE MARKING

To reach the head required by the system for conditioners with fans carrying a CE marking, the imput voltage percentage can be adjusted from the user terminal (A).

To select the voltage, carry out the following procedure:

- on the user terminal press the PRG button;
- using the UP or DOWN key select SERVICE MENU and confirm using the ENTER key;
- enter the password (see the envelope attached to the manual);
- using the UP or DOWN key select HARDWARE SETTING and confirm using the ENTER key;
- using the UP or DOWN key select EVAPORATING FAN and confirm using the ENTER key;
- set the amount and confirm using the ENTER key.

In the following table the maximum pressure available (expressed in Pa) for each voltage level of the transformer is indicated. The values are given for the maximum air flow (expressed in m3/h).

EDCV/EUCV 0070							
FA[m³/h=]		4350	5000	6060	6500	7000	8000
%	V	Pa					
50	400	80	-	-	-	-	-
55	400	160	70	-	-	-	-
60	400	240	160	10	-	-	-
65	400	320	250	117	20	-	-
70	400	400	330	207	127	40	-
78	400	520	470	349	280	142	10
80	400	550	493	379	321	195	62
85	400	624	563	455	388	317	141
90	400	694	643	539	470	401	230
95	400	780	718	602	541	463	304
100	400	847	783	669	604	533	372

EDCV/EUCV 0170							
FA[m³/h=]		9790	11000	12000	14000	16000	20180
%	V	Pa					
50	400	20	-	-	-	-	-
55	400	69	-	-	-	-	-
60	400	125	55	-	-	-	-
65	400	186	120	63	-	-	-
70	400	252	189	135	4	-	-
75	400	323	264	212	86	-	-
80	400	400	343	293	171	20	-
85	400	481	426	378	260	110	-
90	400	568	514	467	352	205	-
95	400	660	606	560	446	302	-
100	400	757	703	657	555	402	21

EDCV/EUCV 0100							
FA[m³/h=]		5700	7000	8000	10000	11000	11830
%	V	Pa					
50	400	47	-	-	-	-	-
55	400	105	-	-	-	-	-
60	400	167	47	-	-	-	-
65	400	233	122	4	-	-	-
70	400	304	201	90	-	-	-
75	400	380	283	178	-	-	-
80	400	459	368	269	-	-	-
85	400	543	457	362	75	-	-
90	400	631	549	457	180	-	-
95	400	724	643	555	285	94	-
100	400	821	741	654	391	204	20

EDCV/EUCV 0200							
FA[m³/h=]		11090	12000	14000	16000	18680	21600
%	V	Pa					
50	400	0	-	-	-	-	-
55	400	60	-	-	-	-	-
60	400	118	80	-	-	-	-
65	400	181	117	-	-	-	-
70	400	250	190	75	-	-	-
75	400	335	267	157	59	-	-
80	400	420	348	242	153	-	-
85	400	508	432	331	250	22	-
90	400	595	521	422	345	130	-
95	400	687	614	517	445	240	-
100	400	784	724	615	525	325	20

EDCV/EUCV 0120							
FA[m³/h=]		5900	7000	8000	10000	11000	11740
%	V	Pa					
50	400	21	-	-	-	-	-
55	400	81	-	-	-	-	-
60	400	145	38	-	-	-	-
65	400	212	113	-	-	-	-
70	400	284	192	79	-	-	-
75	400	361	274	167	-	-	-
80	400	441	359	258	-	-	-
85	400	526	448	351	58	-	-
90	400	614	540	446	163	-	-
95	400	707	634	543	268	74	-
100	400	804	732	643	374	184	20

EDCV/EUCV 0250							
FA[m³/h=]		10540	12000	14000	16000	18680	21350
%	V	Pa					
50	400	20	-	-	-	-	-
55	400	80	0	-	-	-	-
60	400	140	70	-	-	-	-
65	400	202	137	14	-	-	-
70	400	269	205	95	-	-	-
75	400	341	280	175	41	-	-
80	400	419	337	258	136	-	-
85	400	501	422	347	234	-	-
90	400	587	511	448	324	90	-
95	400	679	604	543	424	200	-
100	400	763	712	621	504	280	20

EDCV 0270								
FA[m³/h=]		12350	15000	17500	18761	19500	21000	22420
%	V	Pa						
55	400	20	-	-	-	-	-	-
60	400	86	-	-	-	-	-	-
65	400	155	4	-	-	-	-	-
70	400	229	86	-	-	-	-	-
75	400	306	171	-	-	-	-	-
78	400	355	224	50	-	-	-	
80	400	388	259	88	-	-	-	-
82	400	421	295	126	20	-	-	-
85	400	473	349	184	80	12	-	-
90	400	562	443	282	181	115	-	-
95	400	655	539	382	284	219	71	-
100	400	752	637	484	387	324	179	20

EDCV 0400								
FA[m³/h=]		16570	19000	23000	25217	2700	28500	31920
%	V	Pa						
55	400	20	-	-	-	-	-	-
60	400	80	-	-	-	-	-	-
65	400	146	64	-	-	-	-	-
70	400	216	139	-	-	-	-	-
75	400	290	217	58	-	-	-	-
79	400	353	282	129	20	-	-	
80	400	369	299	147	39	-	-	-
82	400	418	350	201	95	-	-	-
85	400	452	385	238	133	36	-	-
90	400	540	475	332	230	135	45	-
95	400	632	568	428	329	236	148	-
100	400	729	665	527	429	338	252	20

EDCV 0340								
FA[m³/h=]		16900	18500	21500	24875	26500	28000	32250
%	V	Pa						
55	400	20	-	-	-	-	-	-
60	400	82	26	-	-	-	-	-
65	400	148	96	-	-	-	-	-
70	400	218	169	57	-	-	-	-
75	400	295	247	140	-	-	-	-
77	400	324	279	174	20	-	-	
80	400	372	328	226	76	-	-	-
83	400	422	379	279	132	46	-	-
85	400	456	413	315	170	85	-	-
90	400	544	503	407	266	183	98	-
95	400	636	596	202	364	284	200	-
100	400	733	693	600	464	385	303	20

Setting the regulation and safety devices

After starting up the conditioner, set the following set points (see Microprocessor Control Manual):

- Room temperature (cooling and heating set point);
- Relative room humidity (humidification and dehumidification set point);
- Dirty filter differential pressure switch: see paragraph “Setting the dirty filter sensor”.

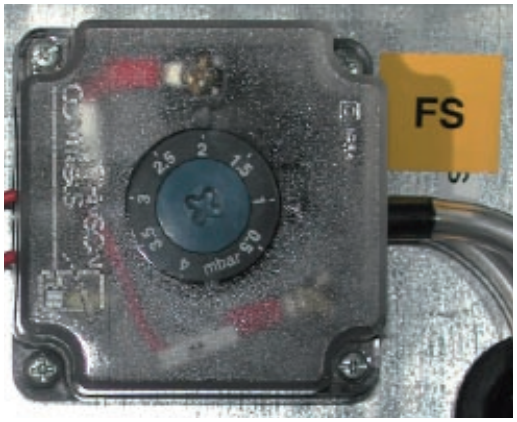
The settings of the safety devices must not be modified.

Code	Description	Opening	Differential	Re-set
TSR	Safety thermostat (T and H versions)	310 °C (opening)	-	Manual reset
TSRA	Safety thermostat (T and H versions)	328 °C (opening)	-	Manual reset

Setting the air flow sensor

The FS differential pressure switch intervenes if the fan (or one of the fans) stops working.
The factory set point of the FS differential pressure switch is at 0.8 mbar (= 80 Pa).
As the difference in pressure between the suction and discharge of the fans depends on the air flow, it may be necessary to set the instruments after installation, checking that the contact closes when the fans are in operation.
To set the FS pressure switch, carry out the following procedure:

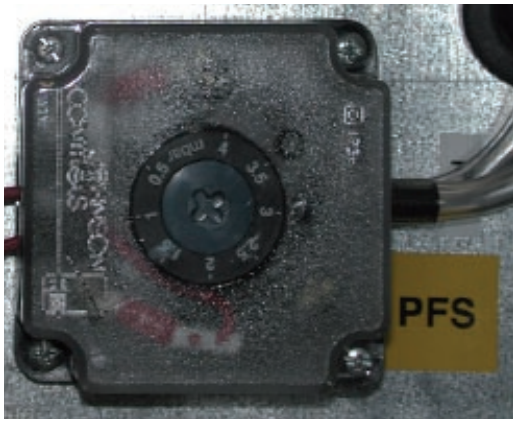
- simulate a fan fault by stopping a fan; check that the pressure switch intervenes;
- if the pressure switch does not intervene, gradually increase the setting until the pressure switch switches off:
  - using an adjustment screw, set the differential pressure switch on a scale from 0.8 to 4.0 mbar (from 80 to 400 Pa).



Setting the dirty filter sensors

The PFS differential pressure switch is set according to the loss of load dependent on the dirt inside the filters and the air flow.
The PFS differential pressure switch must be set at 3 mbar (=300 Pa).
To set the PFS pressure switch, carry out the following procedure:

- gradually cover the surface of the air filter and check that the pressure switch intervenes when the filter is about 50-60 % covered;
- if the pressure switch does not intervene, gradually lower the setting, if it cuts in too soon, increase the setting:
  - using a star screw driver, turn the regulation screws of the pressure switch to the desired value.



MAINTENANCE

Check every three months:

Carry out the following checks every three months:

- check the power supply;
- check the alarm status;
- check the working temperatures;
- check the correct operation of the local/remote controls;
- check the air filters, cleaning and replacing them if necessary;
- check the efficiency of the condensing drain;
- check the steam cylinder is clean, replacing it if necessary (see pag.78).

Check every six months:

Carry out the following checks every six months:

- repeat these checks every three months;
- check and clean if necessary the cooling coil;
- check the operation of the humidifier (if present: see pag.78).

Annual checks

Carry out the following checks annually:

- repeat these checks every six months
- check the varnish and the nuts and bolts
- check the hinges, rabbets and gaskets
- check the cables and wiring
- tighten the terminal blocks
- check and reset if necessary the safety device settings (pressure switches, thermostats, protection devices);
- check the operation of the post heating electrical heaters;
- check the fittings, operation and absorption of the fan/s motor;
- check and if necessary reset the regulation devices setting;
- check and if necessary replace the seal of the hydraulic circuits/s and tighten the unit couplings;
- check and reset if necessary the water regulation valve/ valves setting.

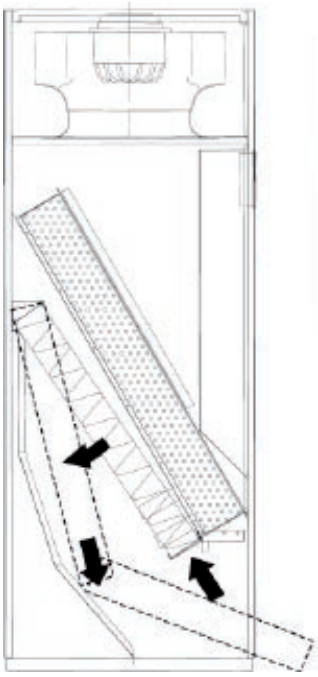
Cleaning and replacing the filters

To clean and replace the filters carry out the following procedure:

- open the front panels of the machine;

MODELS WITH REAR AIR INTAKE

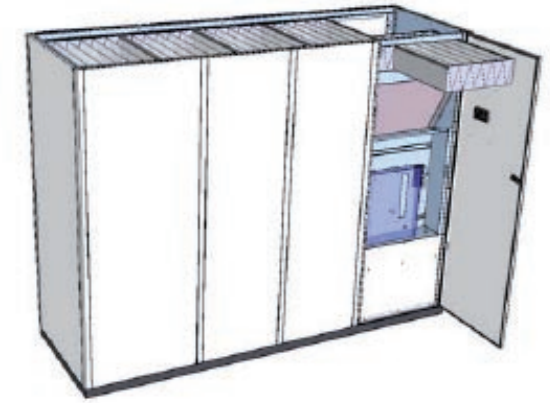
- follow the instructions below and check the direction of the air flow indicated with a sticker on each filter;

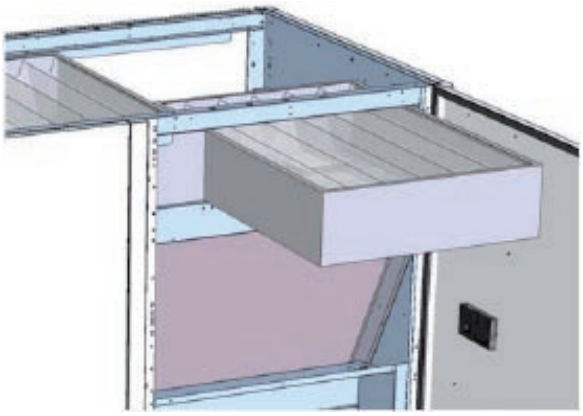


- clean them using a blast of compressed air or replace them;
- reposition the filters in the unit checking the direction of the air flow which was previously noted.

MODELS WITH HIGH INTAKE (MOD. EDCB/EDCV 0340-0400)

- remove the filter blocking supports;
- remove the filters checking the direction of the air flow indicated with a sticker on each filter;
- clean them using a blast of compressed air or replace them;
- reposition the filters in the unit checking the direction of theair flow which was previously noted;





OTHER MODELS

- remove the filter blocking supports;

- remove the filters checking the direction of the air flow indicated with a sticker on each filter;

- clean them using a blast of compressed air or replace them;
- reposition the filters in the unit checking the direction of theair flow which was previously noted;
- reposition the filter blocking supports.

Servomotor and chilled water valve

If necessary (in the event of a fault in the servomotor or the control system) manually move the valve as described below:

- pull the manual control knob (G2);
- turn the knob clockwise to lower the valve stem (G3) (OPEN) and counterclockwise to raise the valve stem (G3) (CLOSE).

In the 0070 model the following servomotor is installed:

To manually move the valve, use the hexagonal key and screw to open and unscrew to close.

Alternatively, it is possible to remove the servomotor from the body of the valve and move the valve stem itself.

Servomotor and hot water valve

To manually move the valve by turning the control knob clockwise to open and anti-clockwise to close.

Alternatively, it is possible to remove the servomotor from the body of the valve and move the valve stem itself.

Troubleshooting

Troubleshooting is made easier by the indications on the control panel display: when an alarm signal is displayed, consult the control panel instruction manual. If necessary, call the nearest Service Centre describing the nature of the fault and its possible cause displayed on the control.

PROBLEM	POSSIBLE CAUSE	CHECK/CORRECTIVE ACTION
THE UNIT DOES NOT START	A) No power supply to the unit's electrical panel.	Check that the power is on and the unit main switch on the electrical panel is closed.
	B) No power to the auxiliary circuits.	1) Check that the IM automatic circuit breaker on the AUX circuit is set.
		2) Check the fuse on the main board.
	C) The control panel does not start the unit.	Check that the control panel connectors are correctly located in their sockets.

TEMPERATURE CONTROL

PROBLEM	POSSIBLE CAUSE	CHECK/CORRECTIVE ACTION
THE ROOM TEMPERATURE IS TOO HIGH	A) The parameter settings on the control panel are not correct.	See control panel instruction manual
	B) The air flow is low or absent.	See "LACK OF / ABSENT AIR FLOW".
	C) The temperature sensor is not working.	Check the electrical connections and the control configuration.
	D) The thermal load is higher than expected.	Check the room's thermal load.
	E) The three-way valve is not working.	Check the electrical connections of the servomotor valve.
		Open the valve by means of the manual control knob.
		Check the chilled water supply; check that the shut-off valves are open.
	F) There is an insufficient chilled water flow.	Check the chilled water funtion.
	G) The chilled water temperature is too high.	See "THE COMPRESSOR(S) DOESN'T / DON'T WORK".
ROOM TEMPERATURE TOO LOW	A) The parameter settings on the control are not correct	See the microprocessor control manual.
	B) There is insufficient power supply to the elcttric heaters or the heaters are not working	1) Check that the IM of the heating element is armed.
		2) Check the electric feeding circuit of the heaters.
		3) If there is a heater alarm, remove the cause and re-set the safety thermostat.
	C) The hot water coil is not working.	1) Check the hot water capacity and temperature.
		2) Check the function of the regulation valve (see valve and servomotor).
	D) The hot gas coil is not working during dehumidification with re-heat.	1) Check the hot gas 3 way valve function.
		2) Check the function of the compressor serving the re-heat. See "THE COMPRESSOR(S) DOESN'T / DON'T WORK".
	E) The three way valve of the chilled water circuit is blocked open.	Close the valve using the manual control knob and replace the servomotor.

HUMIDITY CONTROL

PROBLEM	POSSIBLE CAUSE	CHECK/CORRECTIVE ACTION
ROOM HUMIDITY TOO HIGH	A) The parameter settings on the control panel are not correct.	See control panel instruction manual.
	B) The latent load is higher then expected.	Check the latent load, fresh air conditions and volume; external air infiltration.
	C) Dehumidification valve not shutting.	Check the feeding solenoid valve of the dehumidification circuit is working properly.
	D) Control system not working.	See: Control system user instruction manual; check the panel and/or the probe are working properly.
	E) The chilled water is not sufficiently cold for the dehumidification function (in energy saving and twin cool units).	Lower the chilled water temperature until condensate is present on the surface of the coil.
ROOM HUMIDITY TOO LOW	A) The parameter settings on the control panel are not correct.	Check the room humidity settings (see control panel instruction manual).
	B) The latent load is lower than expected.	Check the latent load, fresh air conditions and volume; external air infiltration.
	C) The humidifier doesn't work.	1) Check the water supply pressure.
		2) Check the function of the manual control system and of the steam production group (see panel instruction manual).
	D) The control system does not work.	See the control panel instruction manual; check that the control panel and/or sensors work properly.

FANS

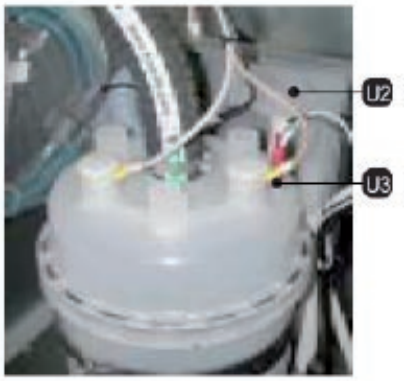
PROBLEM	POSSIBLE CAUSE	CHECK/CORRECTIVE ACTION
ABSENT OR LOW AIR FLOW	A) There is no power to the fans.	Check the power supply to the fans
	B) The air filters are clogged (dirty filter alarm enabled).	1) Shake the dust out of the cartridge and clean with a vacuum cleaner. Replace the filter if it is completely blocked.
		2) Check the correct setting of the dirty filter pressure switch PFS.
	C) Fans rotating in the wrong direction.	Reverse input phases and check if fans are rotating in the correct direction
	D) The air flow is obstructed.	Check paragraph "AIR DISTRIBUTION"
	E) The fans' thermal protection intervenes.	Check the resistance of the fan motor windings. Re-set then measure the voltage and absorption.
	F) Fan speed regulator not set correctly.	See paragraph FAN SPEED ADJUSTMENT AND SPEED REGULATOR SETTING.
	G) Excessive head loss in the air distribution sistem.	1) Check the dimensioning of the air distribution system, as well as all its parts (ducts, suspended ceilings, floor plenum, air grilles)
		2) ((For EDA/EUA models - having fans with backward curved blades) change the power supply voltage of the fans, in order to increase the fan rotation speed.

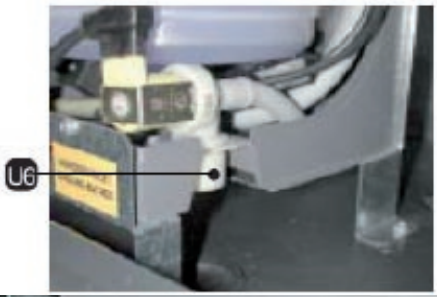
ELECTRIC HEATERS

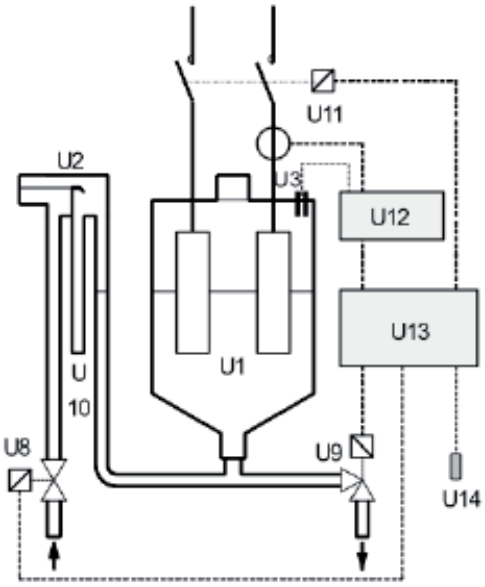
PROBLEM	POSSIBLE CAUSE	CHECK/CORRECTIVE ACTION
ELECTRIC HEATER SAFETY THERMOSTAT INTERVENES	A) There is insufficient air flow.	See "LACK OF / ABSENT AIR FLOW".
	B) The thermostat connection wire is interrupted	Check the connection between the safety thermostat and the control system.
	C) The thermostat is faulty.	Replace the thermostat.

ACCESSORIES

Humidifier







U1 Boiler cylinder
U2 Water supply tray
U3 High water level detector electrodes in the boiler cylinder
U4 Condenser drain
U5 Collector charge/discharge
U6 Water input
U7 Drain
U8 Feed water solenoid valve
U9 Boiler cylinder electric drainage valve
U10 Overflow pipe (behind the cylinder)
U11 Amperometric transformer for measuring the current (within the electrical panel)
U12 Humidifier interface board (inside the electrical panel)
U13 Microprocessor control board
U14 Temperature and humidity probe

Operating principle

In the electrode boiler humidifier, the current flowing between the electrodes in the water in the cylinder generates the heat necessary to boil the water.
By controlling the water level and the concentration of salt measured in the steam cylinder (U1) using the feed water solenoid valve (U8) and the boiler cylinder electric drainage valve (U9), the electric current is regulated by means of an amperometric transformer (U11).
When steam is needed, the humidifier contact is closed (see the electrical diagram) which provides power to the immersed electrodes. When the current falls below the value required as a result of the fall in the water level, the feed water solenoid valve is opened (U8).
The boiler cylinder electric drainage valve (U9) is opened at intervals depending on the characteristics of the feed water supply in order to maintain the optimum concentration of dissolved salts in the water in the cylinder (U1).

Feed water

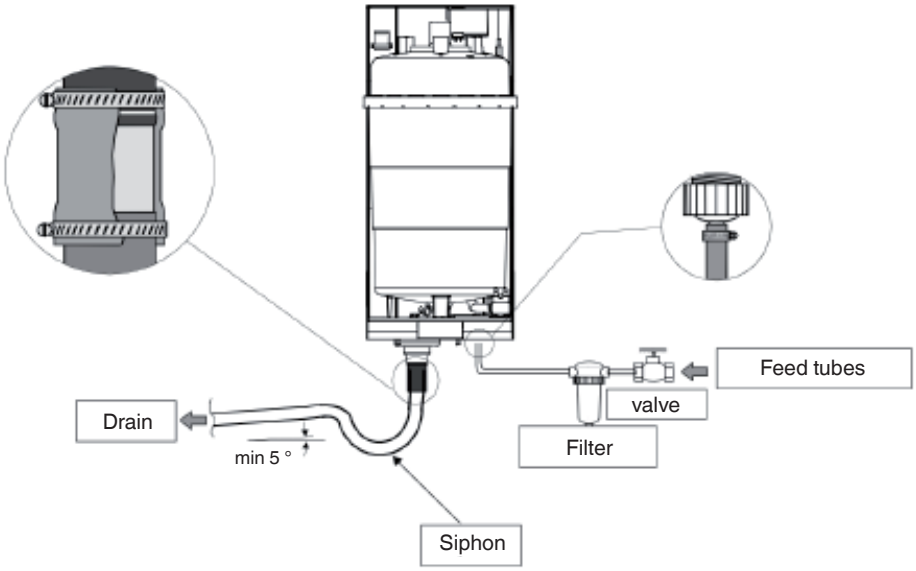
Values for the feed water for medium-high level of conductibility of a humidifier with immersed electrodes.

				LIMITS	
				Min.	Max.
Hydrogen ion activity	pH	-		7	8.5
Specific conductibility at 20 °C	σ_R, 20 °C	-	µS/cm	300	1250
Total dissolved solids	TDS	-	mg/l	(1)	(1)
Residual fixed at 180 °C	R180	-	mg/l	(1)	(1)
Total hardness	TH	-	mg/l CaCO3	100(2)	400
Temporary hardness		-	mg/l CaCO3	60(3)	300
Iron + Manganese		-	mg/l Fe + Mn	0	0.2
Chlorides		-	ppm Cl	0	30
Silica		-	mg/l SiO2	0	20
Residual chloride		-	mg/l Cl-	0	0.2
Calcium sulphate		-	mg/l CaSO4	0	100
Metallic impurities		-	mg/l	0	0
Solvents, dilutents, soaps, lubricants		-	mg/l	0	0

(1) Values dependent on the specific conductibility; in general: TDS @ 0,93 * s20; R180 @ 0,65 * s20
(2) not lower than 200% of the Chloride content in mg/l di Cl-
(3) not lower than 300% of the Chloride content in mg/l di Cl-

Connections

The installation of the humidifier requires connection to the feed tubes of the water drain.



Maintenance

The only maintenance required is periodic inspection and cleaning of the steam boiler components. This should be carried out at least once a year, preferably before the summer holiday shutdown.

BOILER CYLINDER

Limescale deposits must be cleaned periodically from the electrodes and particles of limescale must be removed from the filter at the base of the cylinder.

To dismantle the cylinder:

- - completely drain the water from the cylinder:
  - using the user terminal, press the UP or DOWN key until the INPUT/OUTPUT screen appears;
  - confirm by using the ENTER key;
  - press the UP or DOWN key until DO6 HUMIDIFIER DRAIN is selected;
  - confirm by using the ENTER key;
- disconnect the power supply by opening the main isolator on the electrical panel;
- disconnect the steam distributor hose from the top of the cylinder;
- disconnect the power connections to the electrodes by unscrewing the terminal connectors and pull off the connectors of the electrodes;
- unclip the cylinder fixing strap;
- pull the cylinder upwards.

The boiler cylinder can be used many times after the electrodes are cleaned: however, it will eventually require replacement when the electrode meshes are too worn out to make further cleaning worthwhile.

The spare part consists of only the cylinder itself (with the filter inside).

FEED AND DRAIN CONNECTIONS

Periodic inspections of the feed and drain connections are advisable in order to guarantee trouble-free operation of the humidifier.

Proceed as follows:

- - completely drain the water from the cylinder:
  - using the user terminal, press the UP or DOWN key until the INPUT/OUTPUT screen appears;
  - confirm by using the ENTER key;
  - press the UP or DOWN key until DO6 HUMIDIFIER DRAIN is selected;
  - confirm by using the ENTER key;
- disconnect the power supply by opening the main isolator on the electrical panel;
- disconnect the feed line at the ¾ GAS connection to the inlet solenoid valve connection (U8);
- extract, clean and replace the filter located inside the solenoid valve connection;
- remove the drain solenoid valve, clean out the water pathways and remove any particles of limescale from the drain siphon.

Electric heaters

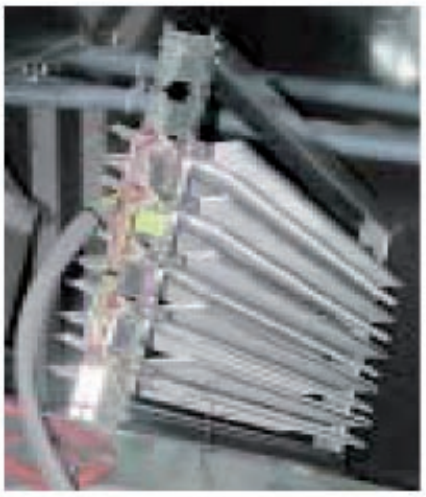
Mercury units can be equipped with electric heaters. For each model there are two levels available: standard and improved.
The finned elements are characterised by maintaining low power density of the surfaces in a highly efficient way, therefore limiting overheating of the elements and consequently increasing their lifespan.
Thanks to the low surface temperature of the heating elements, the ionisation effect on the air is limited. This heating system has two functions:

- heating the air to arrive at the set point conditions;
- post-heating during the phase of dehumidification, in such a way as to retain the air temperature at set point.

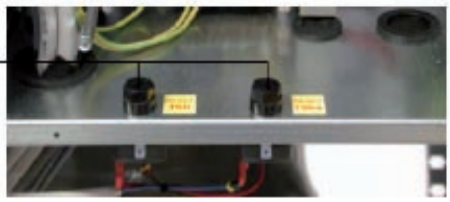
Therefore, the heating power installed is able to maintain the dry bulb temperature in the room during the dehumidification process.

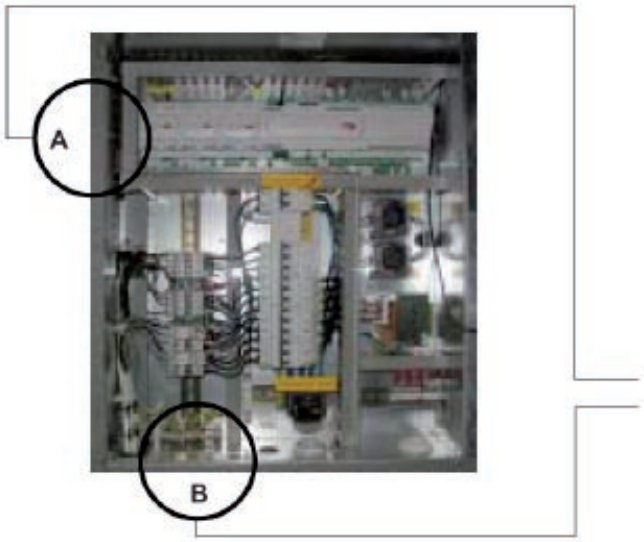
STANDARD CAPACITY	V	No	kW	OA
1105 - 1106 - 0070	400/3/50	2	6	8,7
2107 - 2207 - 2109 - 0100 - 0120	400/3/50	3	9	13,0
2111 - 2211 - 2113 - 2213 - 2216 - 2218 - 0170 - 0200 - 0250 - 0270	400/3/50	5	15	21,7
2222 - 2225 - 4222 - 4225	400/3/50	6	18	26
4228 - 0340 - 0400	400/3/50	8	24	34,7

IMPROVED CAPACITY	V	No	kW	OA
1105 - 1106 - 0070	400/3/50	3	9	13,0
2107 - 2207 - 2109 - 0100 - 0120	400/3/50	5	15	21,7
2111 - 2211 - 2113 - 2213 - 2214 2216 - 2218 - 0170 - 0200 - 0250 0270	400/3/50	6	18	26,0
2222 - 2225 - 4222 - 4225	400/3/50	8	24	34,7
4228 - 0340 - 0400	400/3/50	9	27	39



THERMOSTAT TSR AND TSRA





TSR and TSRA heaters safety thermostats are fixed on the external edges of the electrical panel.
In position A for UPFLOW models
In position B for DOWNFLOW models

Replacing the electrical heaters

WARNING! Before replacing the electrical heaters, disconnect the power supply from the unit. Make sure that it is not possible for the power to be turned on again while they are being replaced.

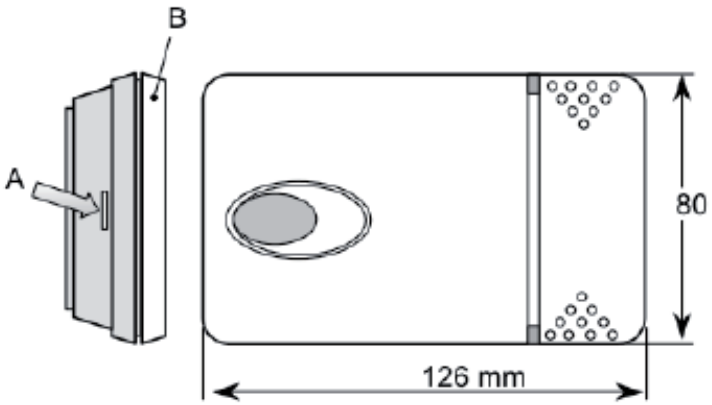
WARNING! The heaters must only be replaced by a qualified electrician.

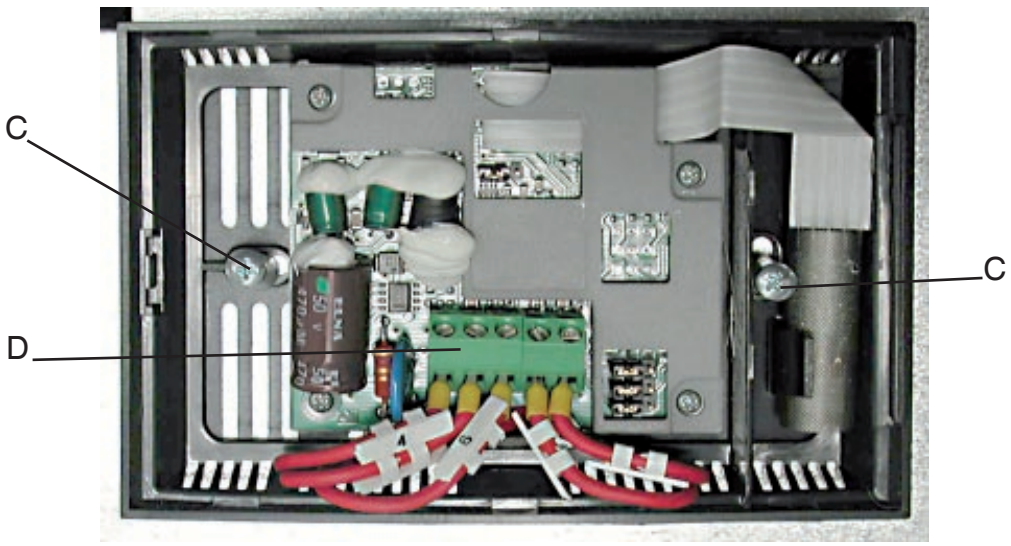
The total power of the electrical heaters is divided into different elements, each of 3 kW.
The colour of the wires on each element has the following meaning:
- BLACK wire = low power absorption (1 kW);
- WHITE wire = high power absorption (2 kW);
- RED wire = standard.

The wires of each element are connected to the CR1 and CR2 connectors on the electrical panel in such a way as to balance the load across the phases and create three stages of heating (refer to the electric diagram on the side of the machine).

Temperature and humidity sensor

The diagram shows an optional temperature and humidity sensor. When replacing the sensor, release the white plastic lid by pressing on point (A) with a screwdriver or a pointed tool; lifting the lid (B) to gain access to the fixing screws (C) and the terminals (D).
A screened cable is used for the electrical connections to the sensor; the connections to the terminals are shown on the electrical diagram.

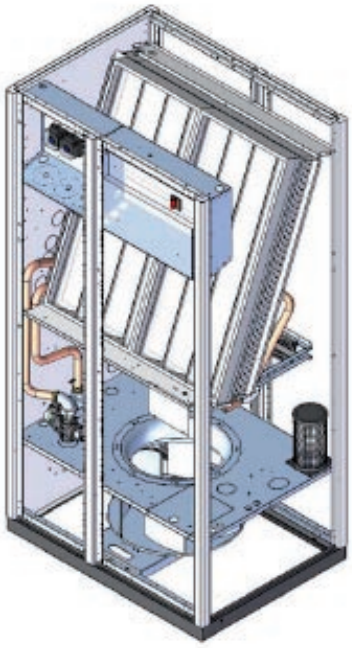




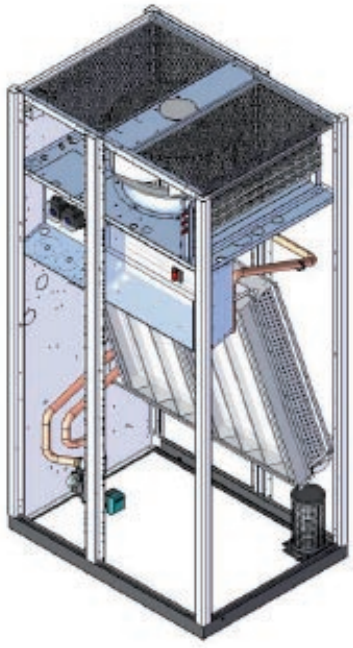
Connection to fresh air intake

The unit can be fitted with an optional fresh air filter.
During installation, connect the intake of the fresh air filter to the nearest external air inlet with a flexible hose which has a diameter of 100mm and secure the hose to the fresh air intake with a fastening collar.
The connection from the unit to the external air inlet must have the shortest and straightest path possible.

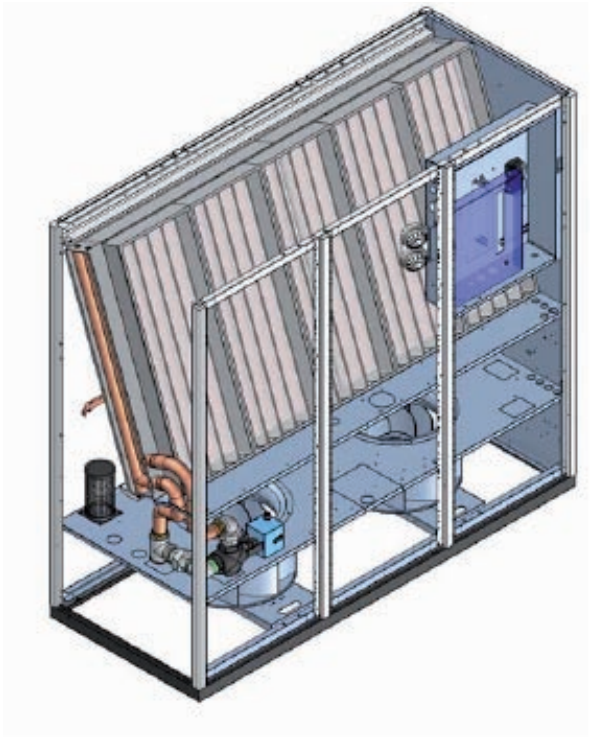
Unit EDC* 0070



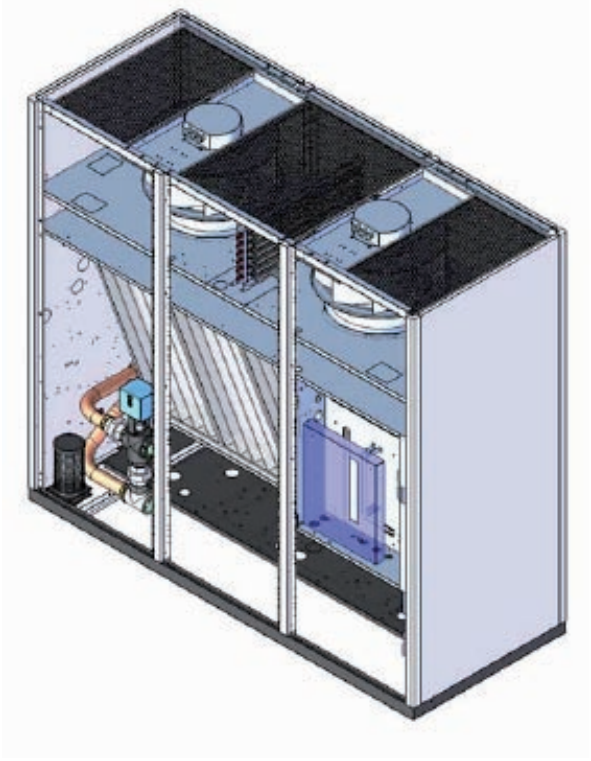
Unit EUC* 0070



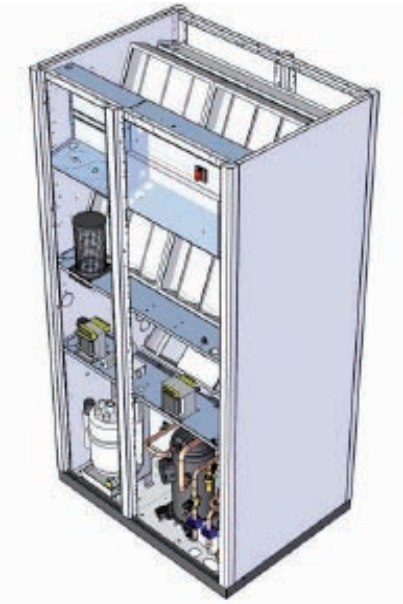
Unit EDC* 0100 ÷ 0250



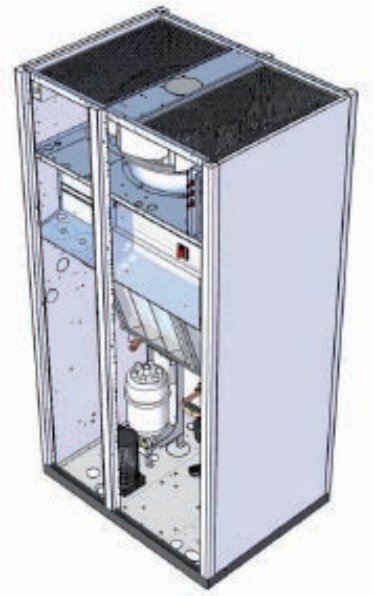
Unit EUC* 0100 ÷ 0250



Unit EDA*/EDW* 1105 - 1106



Unit EUA*/EUW* 1105 - 1106

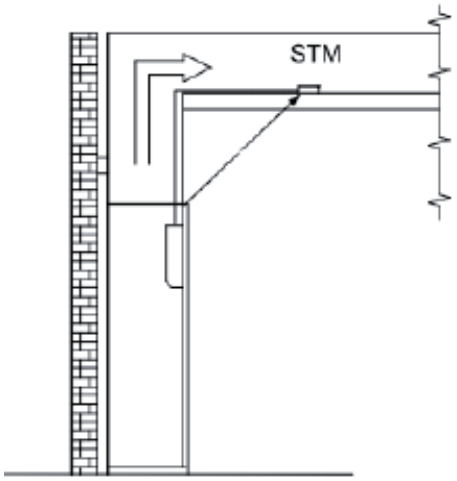


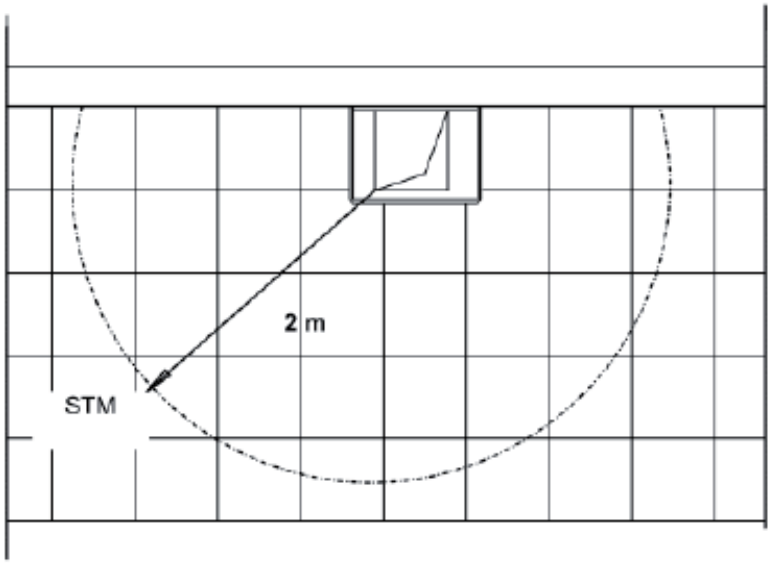
Maintenance

Clean, using a blast of compressed air, or replace the fresh air intake filters periodically.

Discharge temperature threshold sensor (only on CHILLED WATER models)

An NTC temperature sensor is an optional accessory which maintains the supply air temperature of the unit above a threshold value. The sensor is connected to the microprocessor control system as described in the electrical diagram of the unit.
The sensor has a temperature range of -50°C and +50°C and a protection level of IP67; it can be installed outside the unit by means of a cable which is 3 metres long. A minimum distance of 2 metres is advisable from the unit discharge, as shown in the diagram for upflow units.





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