

# INSTALLATION MANUAL

precision air-conditioners

# ACCURATE

**Direct expansion**

**Air-cooled**

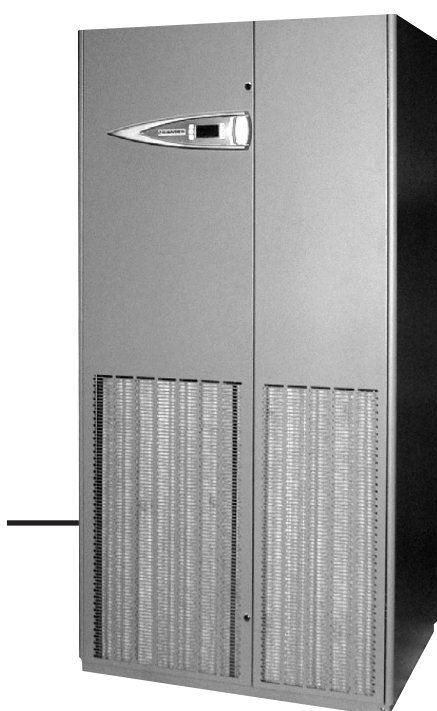
**AXO** air outlet from the top

**AXU** air outlet from the bottom

**Water-cooled**

**AWO** air outlet from the top

**AWU** air outlet from the bottom



Ⓜ

**frame 1: 07-10**

**frame 2: 15-18**

**frame 3: 20-26-29**

**frame 4: 39-30-40-50**

**frame 5: 55-60-70**



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The following symbols are used in this publication and inside the unit:



**User**



**Important**



**Installer**



**Prohibition**



**Assistance**

In some parts of this manual, the following symbols are used:



**WARNING** = for actions that require special care and suitable preparation



**PROHIBITED** = for actions that absolutely **MUST NOT** be performed

**Specialist personnel**  
(electrician)

Person with in-depth knowledge and experience such as to be able to recognise risks and avoid dangers that may derive from electricity (IEV 826-09-01).

**DOCUMENTS ENCLOSED WITH THE UNIT**

Each unit is delivered complete with the following documents:

- Air-conditioner installation manual;
- Air-conditioner user and maintenance manual;
- Instruction manual for the microprocessor controller;
- Wiring diagram;
- List of spare parts;
- CE declaration with list of European directives and standards that the unit is compliant with;
- Warranty conditions.

**DIRECT EXPANSION UNIT CONFIGURATION**

digit	type							8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
	1	2	3	4	5	6	7															
exe	A	X	O	2	9	M	E															

**Digit 1**

RANGE	A	ACCURATE air-conditioner Climaveneta Version
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**Digit 2**

VERSION	L	Air-cooled "LT" (low temperature)
	W	Water-cooled
	X	Air-cooled

**Digit 3**

AIR FLOW	B	Over (intake from the bottom)
	O	Over (intake from the front)
	R	Over (intake from the rear)
	U	Under (intake from the top)

**Digit 4-5**

FRAME/POTENZA	07	Frame 1 (7 kw)
	10	Frame 1 (10 kw)
	15	Frame 2 (15 kw)
	18	Frame 2 (18 kw)
	20	Frame 3 (20 kw)
	26	Frame 3 (26 kw)
	29	Frame 3 (29 kw)
	30	Frame 4 (30 kw)
	39	Frame 4 (39 kw)
	40	Frame 4 (40 kw)
	50	Frame 4 (50 kw)
	55	Frame 5 (55 kw)
	60	Frame 5 (60 kw)
70	Frame 5 (70 kw)	

**Digit 6**

COMPRESSORS AND CIRCUITS	B	N° 2 Compressors N° 2 Circuits
	M	N° 1 Compressor N° 1 Circuit

**Digit 7**

FANS	C	Centrifugal direct traction (standard from 07 to 18 kw)
	E	EC Inverter fans high efficiency
	P	Centrifugal direct traction high ESP, 3 speeds (from 07 to 18 kw)
	T	Centrifugal V-belts ESP 20 Pa (from 21 to 88 kw)
	U	Centrifugal V-belts ESP 50 Pa (from 21 to 88 kw)
	X	Centrifugal V-belts ESP 100 Pa (from 21 to 88 kw)
	Y	Centrifugal V-belts ESP 150 Pa (from 21 to 88 kw)
Z	Centrifugal V-belts ESP 200 Pa (from 21 to 88 kw)	

**Digit 8**

VOLTAGE	M	230 V 1Ph+N 50Hz
	T	400 V 3Ph+N 50Hz

**Digit 9**

FLUID + CONDENSER CONTROL	0	R407 C
	1	R407 C + pressostatic valve x condenser control
	3	R22
	4	R22 + pressostatic valve x condenser control

**Digit 10**

CONTROL	0	Semi-graphic user terminal on the unit
	1	Without user terminal
	2	Semi-graphic user terminal + wall mounting kit

**Digit 11**

THERMOSTATIC VALVE	0	Mechanical thermostatic valve
	1	Electronic thermostatic valve

**Digit 12**

HEATING	0	No post-heating
	1	STD heaters with 3 steps
	3	Hot water post-heating coil
	4	Hot water post-heating coil + STD heaters with 3 steps
	6	Hot gas post-heating coil
	7	Hot gas post-heating coil + STD heaters with 3 steps

**Digit 13**

HUMIDITY CONTROL	0	No humidity and condensate management
	1	Probe for humidity reading only
	2	Humidifier
	4	Dehumidification with partial coil operation
	6	Humidifier + Dehumidification / part coil
	8	Humidifier + Dehumidification / part coil + condensate drain pump
	9	PPump for draining the condensate and/or the steam cylinder

**Digit 14**

ELECTRONIC BOARDS	0	No board
	A	Clock board
	B	RS485 board
	C	RS232 board (GSM modem)
	D	Ethernet board
	E	LON board
	F	Trend board
	G	Clock board + RS485 board
	H	Clock board + RS232 board
	L	Clock board + Ethernet board
	M	Clock board + LON board
	N	Clock board + Trend board

**Digit 15**

SENSORS	0	No sensor
	1	Dirty filter sensor
	2	Fire sensor
	3	Smoke sensor
	4	Fire + smoke sensor
	5	Fire + smoke + flooding sensor
	6	Flood sensor
	7	Dirty filter + fire + smoke sensor
	8	Dirty filter + flood sensor
	9	Dirty filter + fire + smoke + flood sensor

**Digit 16**

HEAT AND SOUND INSULATION	0	Class 0 panels (A1-DIN 4102)
	1	Class 1 panels STD insulation
	2	Class 1 panels soundproof insulation
	3	Class 0 panels (A1-DIN 4102) + soundproofing hoods on the compressors
	4	Class 1 panels STD insulation + soundproofing hoods for compressors
	5	Class 1 soundproofed panels + soundproofing hoods for compressors

**Digit 17**

DAMPERS	0	No damper
	1	Pressure-relief damper (Over units only)
	2	Motor-driven damper
	3	Motor-driven damper with spring return, in view
	4	Motor-driven damper + side panel
	5	Motor-driven damper + rwith spring return + side panel

**Digit 18**

AIR FILTER	2	Air filter with EU2 efficiency
	4	Air filter with EU4 efficiency
	5	Air filter with EU5 efficiency
	6	Air filter with EU2 efficiency + air change filter
	7	Air filter with EU4 efficiency + air change filter
	8	Air filter with EU5 efficiency + air change filter

**Digit 19**

PACKAGING	0	Thermoplastic perimeter protection + cardboard lid
	1	Wooden crate

**Digit 20**

EXTRAS	0	No extras requested
	S	No Digit for request

**DESCRIPTION OF THE UNIT**

Ductable precision air-conditioners with capacities from 7 to 70 kW for vertical installation, cooling only, with the possibility of electric or hot water post-heating, humidifier and dehumidifier option for the precision control of the temperature-humidity conditions.

Ideal for air-conditioning technological environments, server rooms and data processing centres, and technological applications in general.

Units fitted with centrifugal fans with air outlet from the bottom.

**OUTDOOR CONDENSER.**

The packaged precision air-conditioners operate with R407c refrigerant and are suitable for indoor installation.

The units conform to the essential requisites established in EC directive 89/392.

They are factory tested and on site installation is limited to the refrigerant and electrical connections.

**STRUCTURE**

Base made from painted galvanised steel plate; frame complete with service panels that allow the unit to operate correctly during maintenance operations.

The cosmetic panelling, coated with an innovative double layer of plastic, is lined on the inside with special soundproofing material.

**COMPRESSORS**

HERMETIC SCROLL compressors, complete with thermal overload protection and Rotolock fittings (7.5 HP).

Fitted on rubber vibration dampers and complete with oil charge.

**FANS**

Dual intake centrifugal fans, directly coupled to electric motors with external impeller positioned in the centre of the fan and suspended on rubber vibration dampers.

The fans have the blades curved forwards to ensure maximum efficiency and low noise.

**FILTER**

Pleated filters, supported by a frame, with protective metal mesh, and regenerable polyester fibre filtering media treated with synthetic resins. G4 efficiency according to the CEN-EN 779 standard with average separation efficiency 90.1% (ASHRAE). The filter is flame retardant.

**AIR HEAT EXCHANGER**

Finned coil, made from staggered rows of copper tubes and aluminium fins with a high heat exchange surface.

Hydrophilic treatment to assist the drainage of condensate.

**ELECTRICAL PANEL**

Built and wired in compliance with the IEC 204-1/EN60204-1 standards, complete with contactor and overload protection for the compressors and fans, disconnecting switch with door interlock safety device.

**CONTROL**

The microprocessor, by managing the compressor activation times, controls the cooling capacity and the operating alarms, with the possibility of connection to supervisor systems.

**REFRIGERANT CIRCUIT**

Dewatering filter, liquid flow indicator, moisture indicator, high/low pressure switch, solenoid valve, thermostatic expansion valve with equaliser.

**AIR FLOW SENSOR**

Activates an alarm in the event of insufficient air flow.

**COOLING COIL**

Large front surface, made from copper tubes expanded mechanically onto aluminium fins; the coil, installed upstream of the fans for perfect air distribution, is fitted with a stainless steel pan with hose to drain the condensate.

**ELECTRIC POST-HEATING (versions R or T)**

Finned aluminium heaters complete with safety thermostat to cut off power and activate an alarm in the event of overheating.

**IMMERSED ELECTRODE HUMIDIFIER (versions H or T)**

Modulating steam production and automatic control of the salt concentration in the boiler to allow the use of untreated water.

**MICROPROCESSOR CONTROL SYSTEM**

For the control of the ambient parameters and the management of the unit monitoring and control functions (compliant with EEC directive 89/336).

**DIRECT EXPANSION MODELS**

HERMETIC SCROLL COMPRESSOR with high energy efficiency and low noise level, and inbuilt thermal overload protection.

REFRIGERANT CIRCUIT including:

- liquid receiver;
- dewatering filter and flow indicator;
- thermostatic expansion valve;
- external connections with cocks;
- low and high pressure switches (with manual reset).

WATER CONDENSER (water-cooled models) with braze welded stainless steel plates.

**CONFIGURATION**

- O - OVER
- U - UNDER

**VERSION**

- ST - Standard
- LT - Low temperature

## AIR-COOLED DIRECT EXPANSION UNIT - VERSION AX\*

### Refrigerant circuit

All models have a single refrigerant circuit, and in some cases two circuits.

See the DIGIT on the previous page.

The compressor pumps the hot refrigerant gas into the outdoor condenser.

The liquid refrigerant then flows to a liquid receiver installed in the indoor unit, to ensure a constant flow of refrigerant to the thermostatic valve and subsequently the evaporator.

Here the liquid refrigerant absorbs the heat from the environment and changes state, becoming a gas, then returning to the compressor: the cycle is then repeated.

To ensure the correct discharge pressure of the refrigerant, the outdoor condenser is fitted as standard with fan speed control.

Valves for isolating the refrigerant circuit are supplied as standard to assist the routine maintenance operations.

The Scroll compressor is fitted with a non-return valve to prevent the migration of liquid from the outdoor condenser in the summer, and unwanted flows of refrigerant during start-up.

A second non-return valve, to be fitted by the installer, is recommended during operation in winter, to prevent the migration of the refrigerant charge from the liquid receiver to the outdoor condenser, with consequent low pressure alarms.

### Air-cooled condenser, outdoor installation

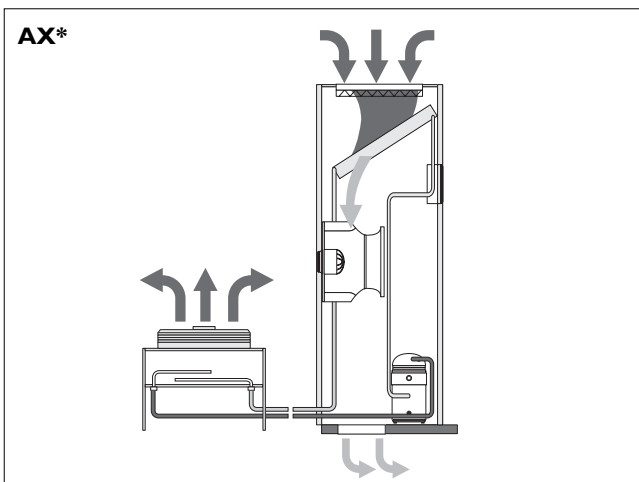
The indoor unit can be connected to different types of outdoor condensers, standard or low noise versions, with special treatments on the coils.

For the corresponding information refer to the manual on outdoor air-cooled condensers.

**Note 1:** the outdoor units and condensers are supplied separately

**Note 2:** the indoor unit is delivered charged with nitrogen at near atmospheric pressure. The outdoor condenser, on the other hand, is supplied pressurised with dry air (around 3 bar.)

**Note 3:** the customer is considered responsible for making the correct connections between the indoor and outdoor unit, as clearly indicated in the Installation manual, and for ensuring the gas and oil charges, where necessary.



## WATER-COOLED DIRECT EXPANSION UNIT - VERSION AW AW\*

### Refrigerant circuit

All models have a single refrigerant circuit, and in some cases two circuits.

See the DIGIT on the previous page.

The compressor pumps the hot refrigerant gas into the indoor condenser made from braze welded steel plates.

The liquid refrigerant then flows to a liquid receiver installed in the indoor unit, to ensure a constant flow of refrigerant to the thermostatic valve and subsequently the evaporator.

Here the liquid refrigerant absorbs the heat from the environment and changes state, becoming a gas, then returning to the compressor: the cycle is then repeated.

To ensure the correct discharge pressure of the refrigerant, the outdoor condenser is fitted as standard with fan speed control.

Valves for isolating the refrigerant circuit are supplied as standard to assist the routine maintenance operations.

The Scroll compressor is fitted with a non-return valve to prevent the migration of liquid from the outdoor condenser in the summer, and unwanted flows of refrigerant during start-up.

A second non-return valve, to be fitted by the installer, is recommended during operation in winter, to prevent the migration of the refrigerant charge from the liquid receiver to the outdoor condenser, with consequent low pressure alarms.

### Water condenser

The units are fitted with an internal braze welded steel plate heat exchanger.

During installation, a pressure control valve should be fitted (available in the price list) to manage the condensing pressure. (See the User and Maintenance Manual)

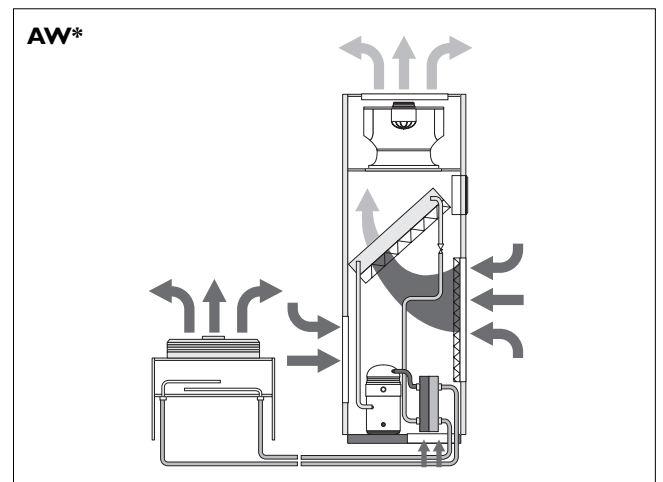
This circuit works with primary water or with a closed circuit connected to an external Dry Cooler or an evaporative tower. For "closed" circuits, the water should be mixed with antifreeze to prevent frost during the winter, with consequent damage to the systems: see the installation manual to calculate the required percentage of antifreeze fluid.

The Dry Coolers are supplied as an accessory (see the price list), while the antifreeze fluid and fluid circulating pump are generally supplied by other companies.

For "open" circuits, mechanical filters are required to protect against impurities and prevent the braze welded plate heat exchanger from blocking.

To reduce energy consumption (pump), a valve should be fitted to close the circuit when the indoor unit is off.

**Note 1:** the water-cooled indoor units (AW\*) come with the refrigerant circuit completely charged and tested in the factory before being delivered.



The **ACCURATE** air-conditioners are available in different configurations, based on the air intake and outlet positions; the main distinction is between **OVER** and **UNDER** units. The versions defined as **OVER** with air outlet from the top gen-

erally have the air intake at the front, rear and/or from the bottom, as required by the customer, and the air outlet from the top of the unit, in ducts, false-ceilings, or from outlet plenums at the front.

**AXO - AWO**

fig. 1

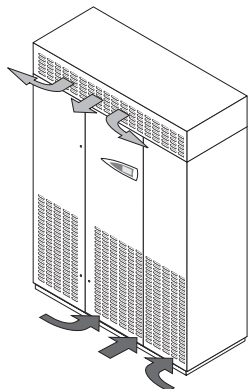
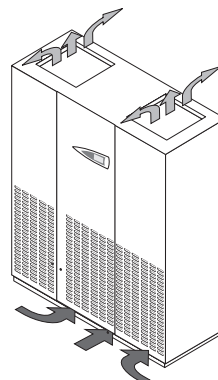


fig. 2



1 OVER units with intake from the front and outlet plenum

2 OVER units with intake from the front and outlet from the top

fig. 3

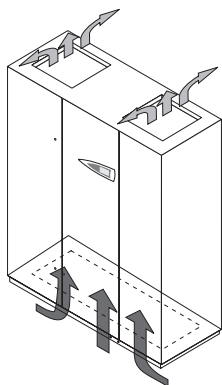
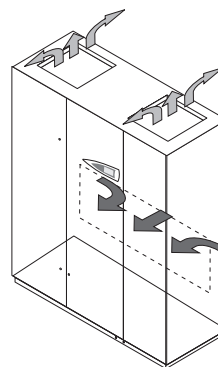


fig. 4



3 OVER units with intake from under the floor and outlet from the top

4 OVER units with intake from the rear and outlet from the top

The versions defined as **UNDER** with air outlet from under the floor have the air intake through the top of the unit directly from the environment, or via ducts and/or intake plenums.

**AXU - AWU**

fig. 5

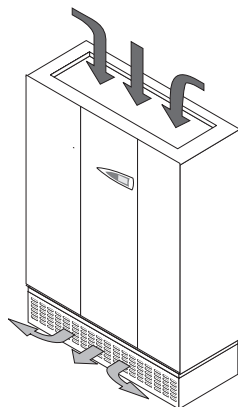
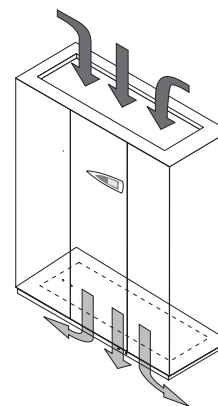


fig. 6



5 UNDER units with intake from the top and front outlet plenum.

6 UNDER units with intake from the top and outlet under the floor



## RATING PLATE



The air-conditioner rating plate is positioned on a panel inside the unit, and provides the following information:

- Model and serial number of the unit;
- Power supply (voltage, phases and frequency);
- Power input of the unit and the individual components;
- Current input of the unit and the individual components: OA (Operating current), FLA (Full load current) and LRA (Locked rotor current);
- Settings of the pressure switches in the refrigerant circuit (HP and LP);
- Type of refrigerant (R407C/R22);
- Charge or pre-charge in each refrigerant circuit (AW\* versions only)

MODEL _____		SERIAL NUMBER _____		CE
		CODE _____		
COOLING CAPACITY		kW	_____	
POTENZA TERMICA		kW	_____	
PRESSIONE MASSIM		bar	_____	
ALIMENTAZIONE ELETTRICA DI POTENZ		V ~ ~ Hz	_____	
ALIMENTAZIONE ELETTRICA AUSILIARI		V ~ ~ Hz	_____	
POTENZA ELETTRICA MAX. ASSORBIT		kW	_____	
CORRENTE MAX. ASSORBIT		A	_____	
CORRENTE DI SPUNT		A	_____	
GRADO DI PROTEZIONE		IP X 4	_____	
SCHEMA ELETTRIC		N°	_____	
PESO IN FUNZIONAMENT		kg	_____	
ANNO DI FABBRICAZIONE			_____	

## GENERAL TECHNICAL DATA



ACCURATE AX air cooled		07	10	15	18	20	26	29	
Total cooling capacity (1)	kW	7,2	10	15	18	20,8	26,6	29,5	
Sensible cooling capacity (1)	kW	7,2	9,1	14,6	17,5	20,8	25,6	27	
SHR (1)		1	0,91	0,97	0,97	1	0,96	0,91	
Total cooling capacity (2)	kW	6,8	9,1	13,5	16,2	18,9	24,2	26,6	
Sensible cooling capacity(2)	kW	6,8	8,7	13,3	16	18,9	23,7	25,2	
SHR (2)		1	0,95	0,98	0,99	1	0,98	0,95	
No. of compressors	n°	1	1	1	1	1	1	1	
Total power input	kW	1,72	2,52	3,83	4,4	5,05	6,75	7,65	
N° circuits	n°	1	1	1	1	1	1	1	
Air flow-rate	mc/h	2400	2400	4900	4800	6500	8000	8000	
No. of fans	n°	1	1	2	2	1	1	1	
Total power input	kW	0,49	0,49	0,9	0,9	1,8	2,2	2,2	
ESP (3)	Pa	20	20	20	20	20	20	20	
Noise level (5)		49	51	55	55	55	56	56	
Standard power supply	V/ph/Hz	400/3+N/50							
Width	mm	600			1000				
Depth	mm	500			790				
Height	mm	1980							
<b>ARC outdoor condenser</b>		<b>014m</b>	<b>014m</b>	<b>021m</b>	<b>025m</b>	<b>030m</b>	<b>040m</b>	<b>040m</b>	

ACCURATE AX air cooled		39	30	40	50	55	60	70	
Total cooling capacity (1)	kW	39,4	30,2	40,5	50,4	55,8	61,6	70,6	
Sensible cooling capacity (1)	kW	39,4	30,2	40,5	48,4	55,8	61,6	65	
SHR (1)		1	1	1	0,97	1	1	0,92	
Total cooling capacity (2)	kW	35,8	27,5	36,8	45,4	50,8	56	63,6	
Sensible cooling capacity (2)	kW	35,8	27,5	36,8	45	50,8	56	60,4	
SHR (2)		1	1	1	0,99	1	1	0,95	
No. of compressors	n°	1	2	2	2	2	2	2	
Total power input	kW	9,75	7,66	10,1	13,5	13,1	15,6	19,6	
N° circuits	n°	1	2	2	2	2	2	2	
Air flow-rate	mc/h	13500	10500	13500	13500	19000	19000	19000	
No. of fans	n°	2	2	2	2	3	3	3	
Total power input	kW	4	3,2	4	4	6	6	6	
ESP (3)	Pa	20	20	20	20	20	20	20	
Noise level (5)		57	54	56	56	57	57	57	
Standard power supply	V/ph/Hz	400/3+N/50							
Width	mm	1550				2100			
Depth	mm	790							
Height	mm	1980							
<b>ARC outdoor condenser</b>		<b>052m</b>	<b>042b</b>	<b>051b</b>	<b>077b</b>	<b>077b</b>	<b>088b</b>	<b>93b</b>	

1 - 24°C-50%, 35°C ext  
2 - 20°C-50%, 35°C ext

3 - Standard centrifugal fans  
5 - measured at 1,5 m height and 2 m front in free field

<b>ACCURATE AW water cooled</b>		<b>07</b>	<b>10</b>	<b>15</b>	<b>18</b>	<b>20</b>	<b>26</b>	<b>29</b>
Total cooling capacity (1)	kW	7,5	10	15	18,9	20,8	27,4	30,8
Sensible cooling capacity (1)	kW	7,5	9,1	14,6	17,2	20,8	26	27,6
SHR (1)		1	0,91	0,97	0,9	1	0,95	0,9
Total cooling capacity (2)	kW	6,8	9,1	13,5	17	18,9	24,7	27,4
Sensible cooling capacity (2)	kW	6,8	8,7	13,5	16,5	18,9	24,2	26,1
SHR (2)		1	0,95	1	0,97	1	0,98	0,95
No. of compressors	n°	1	1	1	1	1	1	1
Compressor power input	kW	1,68	2,52	3,83	4,15	5,05	6,2	7,2
N° circuits	n°	1	1	1	1	1	1	1
Air flow-rate	mc/h	2400	2400	4900	4800	6500	8000	8000
No. of fans	n°	1	1	2	2	1	1	1
Fans power input	kW	0,49	0,49	0,9	0,9	1,8	2,2	2,2
ESP(3)	Pa	20	20	20	20	20	20	20
Noise level (5)		49	51	55	55	55	56	56
Water flow-rate (1)	l/h	1570	2150	3250	3975	4455	5780	6540
Pressure drop Dp (1)	kPa	12	19,5	11	10,8	13	14	17,9
Water content	l	0,66	0,66	1,16	1,53	1,53	1,77	2,2
Standard power supply	V/ph/Hz	400/3+N/50						
Width	mm	600			1000			
Depth	mm	500			790			
Height	mm	1980						
<b>ADC outdoor condenser</b>		<b>013</b>	<b>013</b>	<b>025</b>	<b>025</b>	<b>030</b>	<b>038</b>	<b>051</b>

<b>ACCURATE AW water cooled</b>		<b>39</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>55</b>	<b>60</b>	<b>70</b>
Total cooling capacity (1)	kW	39,4	30,2	42	50,4	58	61,6	70,6
Sensible cooling capacity (1)	kW	39,4	30,2	42	48,4	58	61,6	68,4
SHR (1)		1	1	1	0,97	1	1	0,97
Total cooling capacity (2)	kW	35,8	27,5	38,3	45,4	52,8	56	63,6
Sensible cooling capacity (2)	kW	35,8	27,5	38,3	45	52,8	56	63
SHR (2)		1	1	1	0,99	1	1	0,93
No. of compressors	n°	1	2	2	2	2	2	2
Compressor power input	kW	9,75	7,66	9,4	13,1	12,6	15,6	19,6
N° circuits	n°	1	2	2	2	2	2	2
Air flow-rate	mc/h	13500	10500	13500	13500	19000	19000	19000
No. of fans	n°	2	2	2	2	3	3	3
Fans power input	kW	4	3,2	4	4	6	6	6
ESP (3)	Pa	20	20	20	20	20	20	20
Noise level (5)		57	54	56	56	57	57	57
Water flow-rate (1)	l/h	8465	2x3260	2x4420	2x5460	2x6070	2x6640	2x7760
Pressure drop Dp (1)	kPa	24,1	10,5	13	15,9	15,5	18,3	21,8
Water content	l	02,8	2x1,16	2x1,53	2x1,77	2x2,2	2x2,2	2,5,6
Standard power supply	V/ph/Hz	400/3+N/50						
Width	mm	1550				2100		
Depth	mm	790						
Height	mm	1980						
<b>ADC outdoor condenser</b>		<b>062</b>	<b>078</b>	<b>078</b>	<b>078</b>	<b>078</b>	<b>092</b>	<b>102</b>

1 - 24°C-50%, water IN / OUT 30°-35°c  
2 - 20°C-50%, water IN / OUT 30°-35°c

3 - standar centrifugal fans  
5 - measured at 1,5 m haight and 2 m front in free field

The air-conditioner is accessible from all sides by removing the various panels.

The front and/or side panels are opened in 2 different ways:

### FRONT PANELS

All the front panels are hinged and fitted with locking latches and seal.

All the front panels are opened and closed using a tool (typically a screwdriver) to open and close the latches.

Once the latches have been opened, the front panels can be swung open and then removed vertically to simplify the service operations on the air-conditioner, especially where there is little space available.

Opening the front panels provides access to all the components in the air-conditioner involved in routine maintenance.

The number of front panels depends on the capacity of the air-conditioner.

### SIDE PANELS

All the side panels are accessible and removable.

Nonetheless, these do not need to be removed for routine maintenance operations. This means that, if necessary, a series of units can be installed next to each other.

The side panels are fastened by screws.

These are accessible directly on the side panel by removing the black plastic caps.

### BACK PANELS

Fastened by normal self-tapping screws, these are not accessible as when installed the back of the unit is against the wall

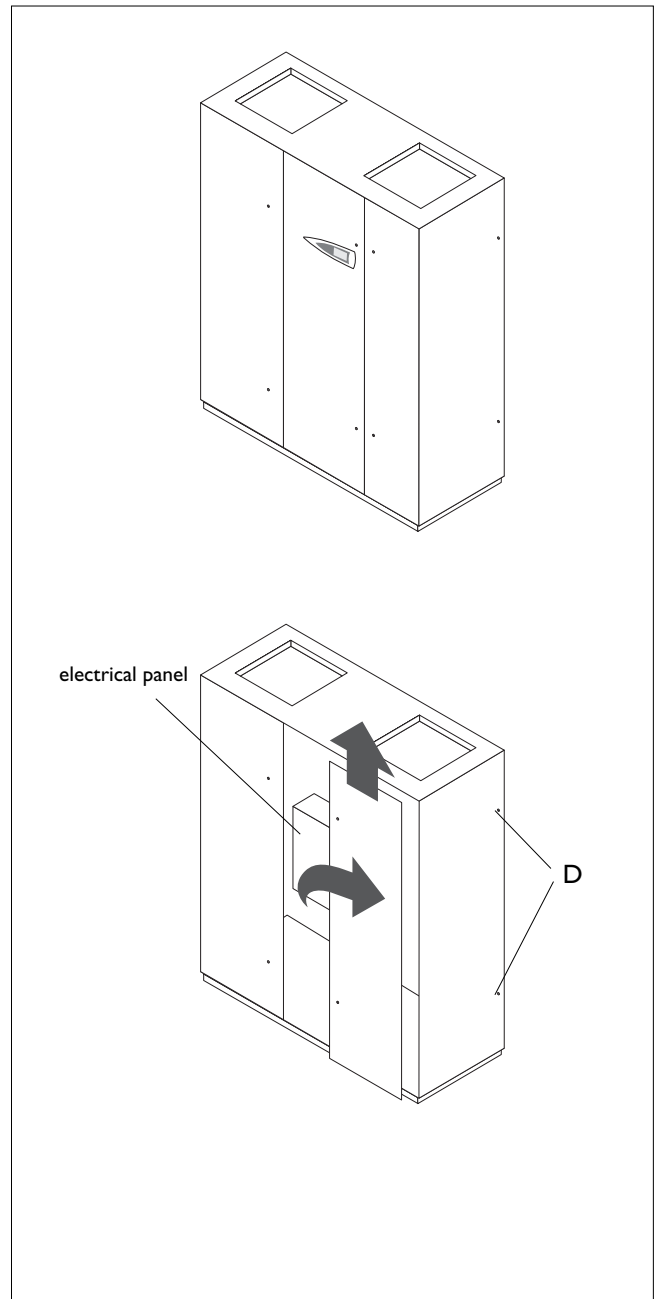
### INSIDE PANELS

The compartment that contains the fans and the heaters is protected and insulated by a metal plate.

This is for safety reasons, so as to not have to shut the unit down during normal maintenance operations.



**WARNING:** before restarting the air-conditioner, always check that all the panels have been correctly replaced.

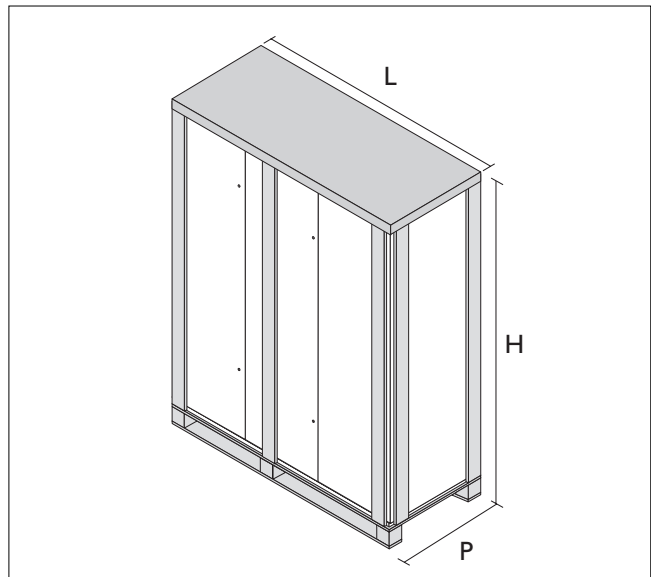


Move the air-conditioner, which must not be reclined or tipped over, nor exposed to the elements, as near as possible to the site of installation before removing the packaging and the pallet.

The units can be lifted:

- using a forklift, sliding the forks through the openings in the pallet;
- using fabric slings underneath the unit, making sure that when the slings are in tension these do not apply pressure on the top edges.

The air-conditioner must be stored indoors, preferably in its own packaging, and protected against excessive humidity (<85% RH) and temperature (< 50°C).



	07	10	15	18	20	26	29	39	30	40	50	55	60	70		
L mm	660		1060				1610				2160					
H mm	2150								2185							
P mm	560								850							

The symbols shown on the packaging are compliant with the ISO 7000 standard; the meaning of the symbols is shown in the table.

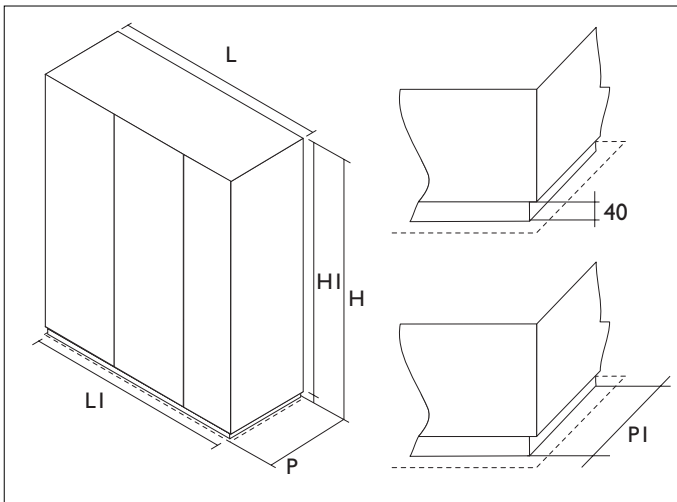
	<b>FRAGILE:</b> handle with care.		<b>THIS SIDE UP:</b> indicates the correct position of the packaged unit.
	<b>KEEP DRY:</b> indicates that the packaged unit must be kept in a dry place.		<b>TEMPERATURE LIMITS:</b> indicates the temperature limits for storing and handling the packaged unit.
	<b>CENTRE OF GRAVITY:</b> indicates the centre of gravity of the packaged unit.		<b>USE NO HOOKS:</b> indicates that hooks cannot be used to handle or lift the packaged unit.
	<b>KEEP AWAY FROM HEAT:</b> indicates that the packaged unit must be kept away from sources of heat.		<b>DO NOT STACK</b> the packages.

## RECEIVING THE UNIT

Check, upon delivery, that the air-conditioner is intact and in perfect condition; immediately notify the carrier in writing of any damage that may be due to transport.

In particular, check that the panel where the user terminal is fitted has not been damaged.

If the side panels have been damaged during transport, they must be replaced before installing the unit.



The values are indicated without tolerances, to the average level of precision required according to UNI EN 22768-1.

	07	10	15	18	20	26	29	39	30	40	50	55	60	70
L (mm)	600	1000	1000			1000				1550				2100
LI (mm)	600	1000				980				1530				2080
H (mm)	1980	1980				1980				1980				1980
HI (mm)	1940	1940				1940				1940				1940
P (mm)	500	500				790				790				790
PI (mm)	485*	485*				770				770				770

\* for F1, F2 the base is aligned with the back panel

**Dry weight**

	07	10	15	18	20	26	29	39	30	40	50	55	60	70
(kg)	175	210	230	245	415	425	430	570	575	605	625	665	680	695

**POSITIONING THE AIR-CONDITIONER**

The air-conditioner can rest directly on the floor, perfectly level, with a maximum difference in height of 5 mm between the ends of the base: incorrect levelling may cause the condensate to leak from the collection pan.



**WARNING:** the air-conditioner must be installed indoors and in non-aggressive environments. Apply an elastic gasket around the perimeter of the base to prevent the transmission of noise and vibrations.

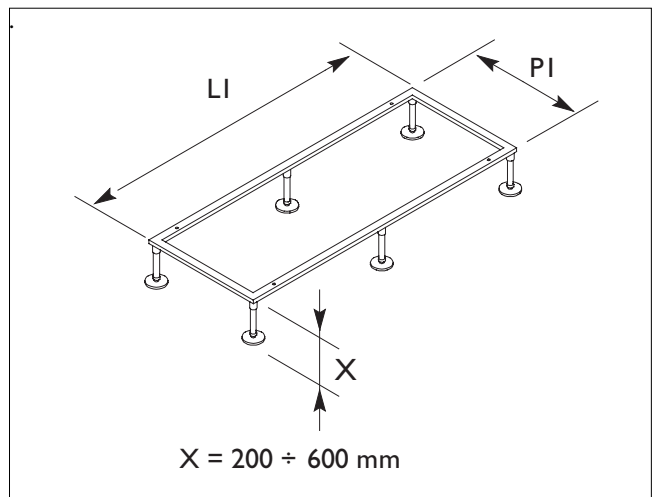
**SUPPORT FRAME (optional accessory)**

A support frame is recommended:

- to allow the air-conditioner to be installed before assembling the raised floor;
- to totally dampen any mechanical vibrations;
- to assist the laying of pipes and cables.

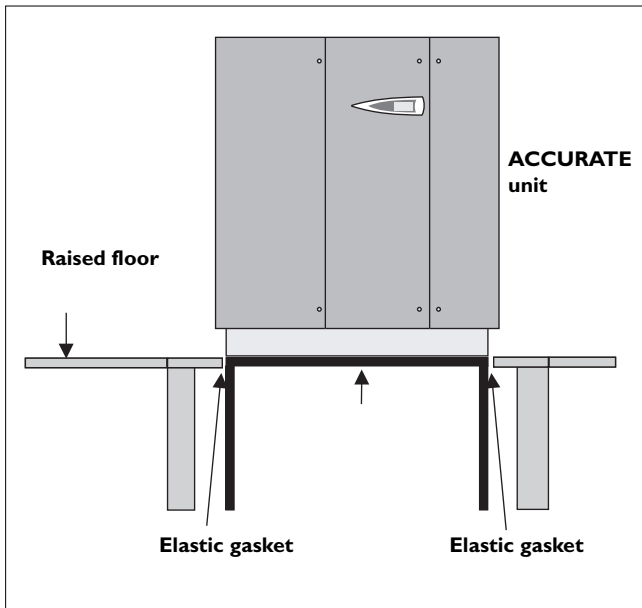
The support frame is available as an accessory and is adjustable in height, indicated in the figure by the distance X, between 200 and 600 mm.

To prevent the transmission of noise and vibrations, an elastic gasket, at least 5 mm thick, should be inserted between the panels of the raised floor and the frame, which must also be insulated from the metallic structure of the floor.



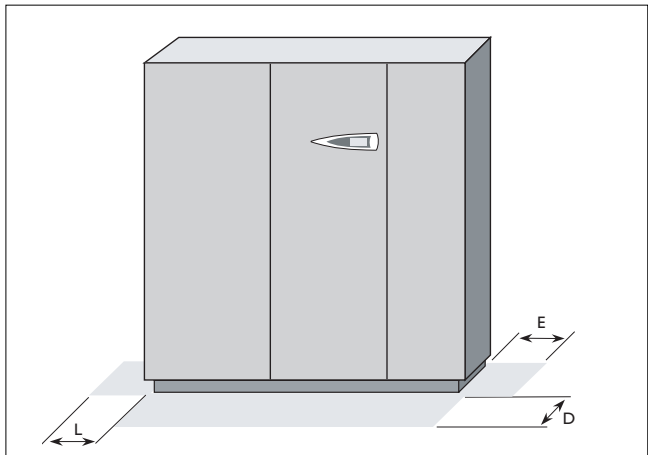
**NOTE:** the frame must be fitted by the installer following the instructions shown inside the packaging.

	07	10	15	18	20	26	29	39	30	40	50	55	60	70
LI (mm)	600	1000				980				1530				2080
PI (mm)	485*	485*				770				770				770



## OPERATING SPACE U I A

Access is from the front only for all models. This feature ensures easy access to all the main components in the unit for installation and periodical maintenance. Thanks to this feature, the units can be installed next to one another, or alternatively fitted in racks. To ensure easy maintenance, a space of at least 700 mm must be left in front of the air-conditioner, as shown in the figure.



**⚠ Make sure that the air intake and outlet are never blocked, even partially.**

	07	10	15	18	20	26	29	39	30	40	50	55	60	70
D mm	>600													
E mm	0													
L mm	0													

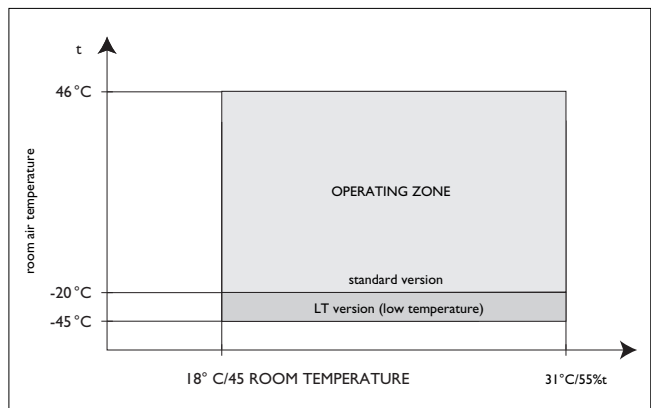
## OPERATING LIMITS U I A

**All versions.** The AX units are designed for operation within the following operating ranges (the limits are considered for new units that have been correctly installed and maintained):

**Environmental conditions**  
from 18.0°C, 45% RH at 31.0°C, 55% RH

**Outside conditions**  
from -20.0°C to +46.0°C in the standard version.  
from -45.0°C to +46.0°C in the LT version (low temperature).

For the correct operation of the air-conditioner, the conditions shown in the following graph must be observed:



The "OVER" units are designed for the connections to pass through the base of the unit; nonetheless, if there is no raised floor (units with intake from the rear or front), **to simplify the connection of the pipes and cables, a base moulding must be used.**

The base moulding, available as an accessory, is epoxy-polyester powder painted, in the same colour as the external panels on the air-conditioner, measures 200 mm in height and is fitted with an inspection panel at the front fastened by two latches tightened 1/4 of a turn.

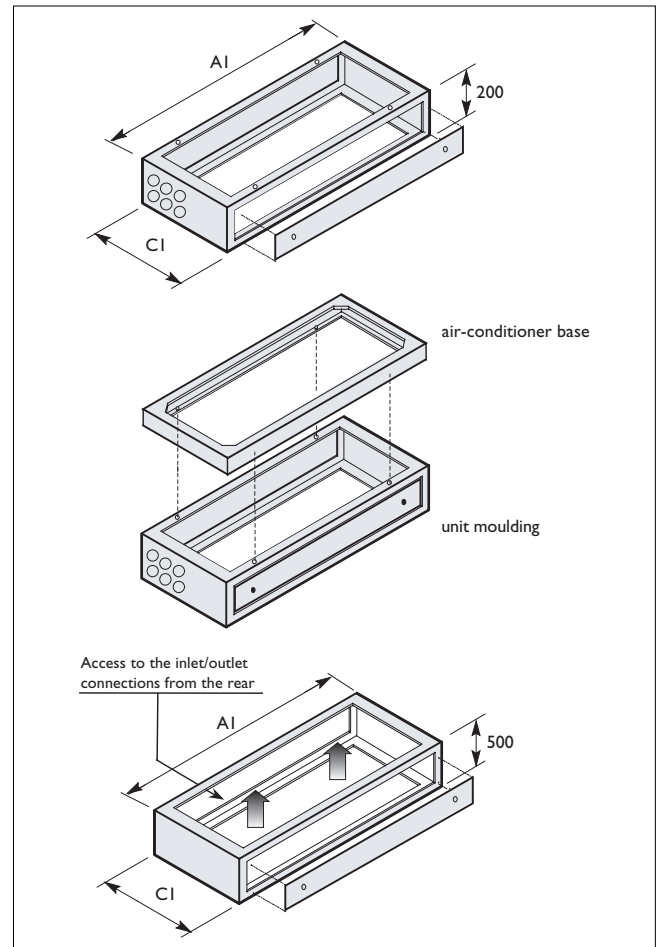
The inside walls are lined with soundproofing material.

On the right- and left-hand sides of the base moulding are six pre-cut sections for passing the cables and pipes;

The moulding must be fastened to the air-conditioner using the M6 threaded inserts already arranged on the base.

For the OVER units with intake from the bottom, base mouldings are available with a height of 500 mm.

In this case too, the air-conditioner must be screwed to the base moulding during the positioning phase.



	07	10	15	18	20	26	29	39	30	40	50	55	60	70
AI mm	600		1000			980			1530				2080	
CI mm	485		485			770			770				770	

In the units with air outlet from the bottom, the following details must be ensured to allow for sufficient air flow-rate:

- a) **connection opening between the unit and the raised floor;** make a hole in the raised floor and position the air-conditioner over the centre of the hole: the air outlet opening must not be blocked, even partially, by parts of panels, beams, pipes or other objects; insert an elastic gasket around the perimeter of the base to prevent the transmission of noise and vibrations;
- b) **free air flow along the cavity of the raised floor;** the duct represented by the underfloor space must be sufficiently high (at least 200-250 mm of free space, net of the panels and the beams of the raised floor) and free of obstructions, especially near the air-conditioner;
- c) **grills and air distribution openings in the room;** the air exits the underfloor space through openings or grills, the position and surface area of which must be proportional to the layout of the thermal load of the environment.

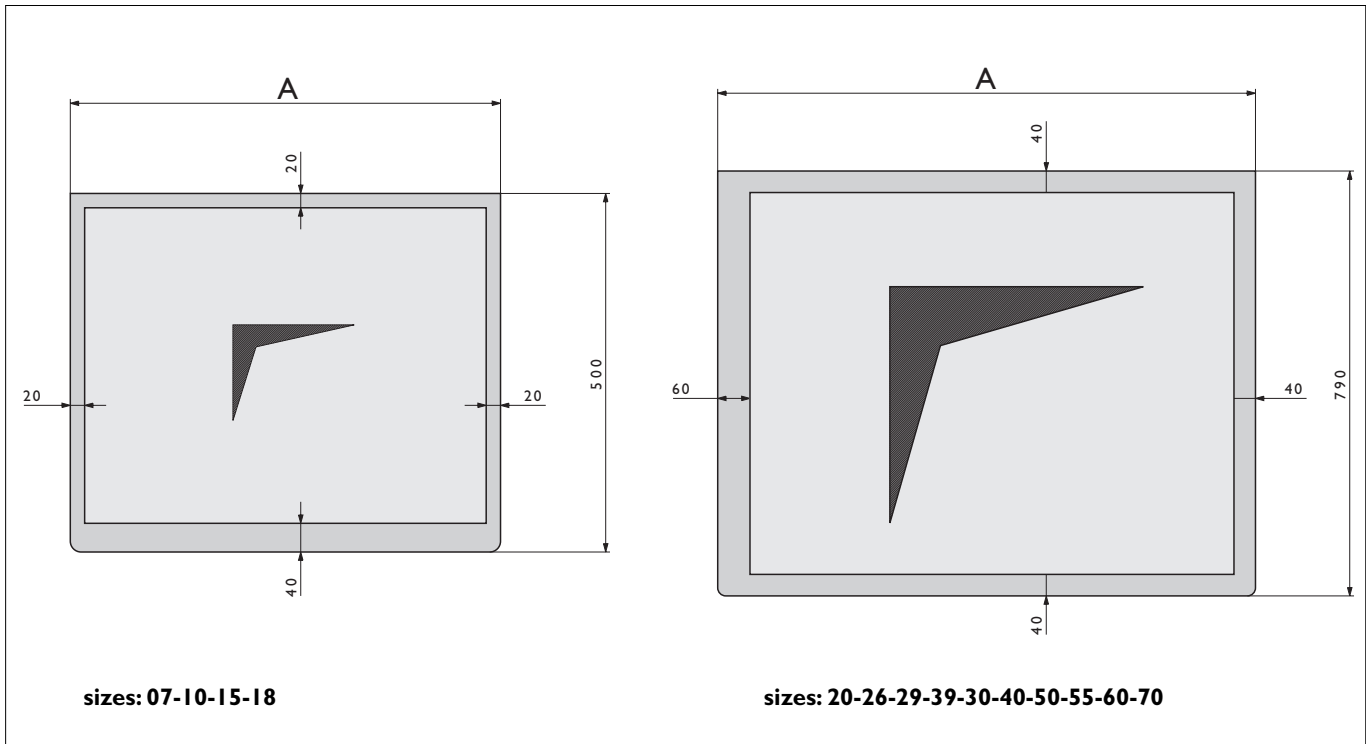
For units with air outlet from the bottom, the recommended air outlet speed from the raised floor is between 1 and 2.5 m/s; consequently, the cross-section of the grills should be sized based on this value

The total outflow area (sum of the areas of the openings and net space of the grills) required for each model must be calculated by dividing the total air flow-rate (in m<sup>3</sup>/s) by the required outlet speed (in m/s).



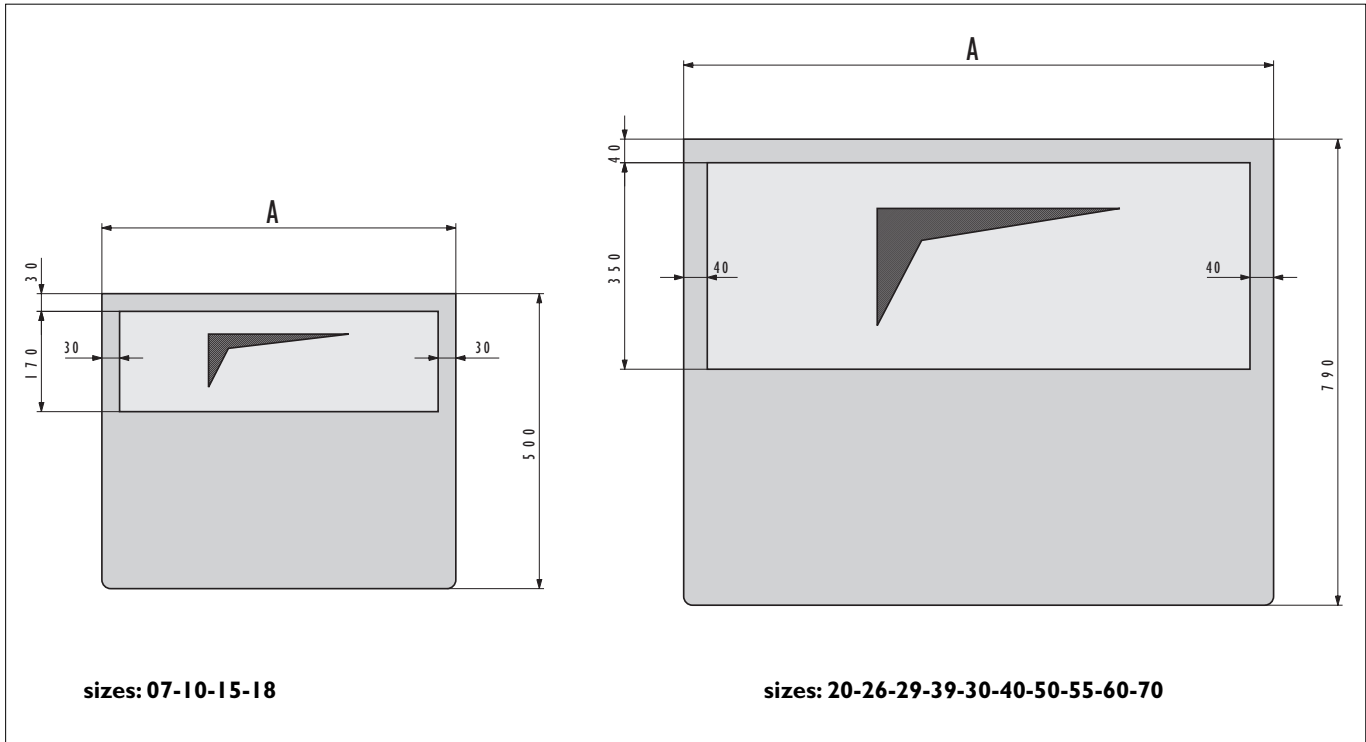
**WARNING:** the air outlet must be completely free, as an insufficient air outflow air will reduce the flow-rate, the performance of the air-conditioner and may affect reliability.

**Air outlet for OVER versions**



	07	10	15	18	20	26	29	39	30	40	50	55	60	70
A	600	1000	1000	1000	1000	1000	1000	1550	1550	1550	1550	1550	2100	2100

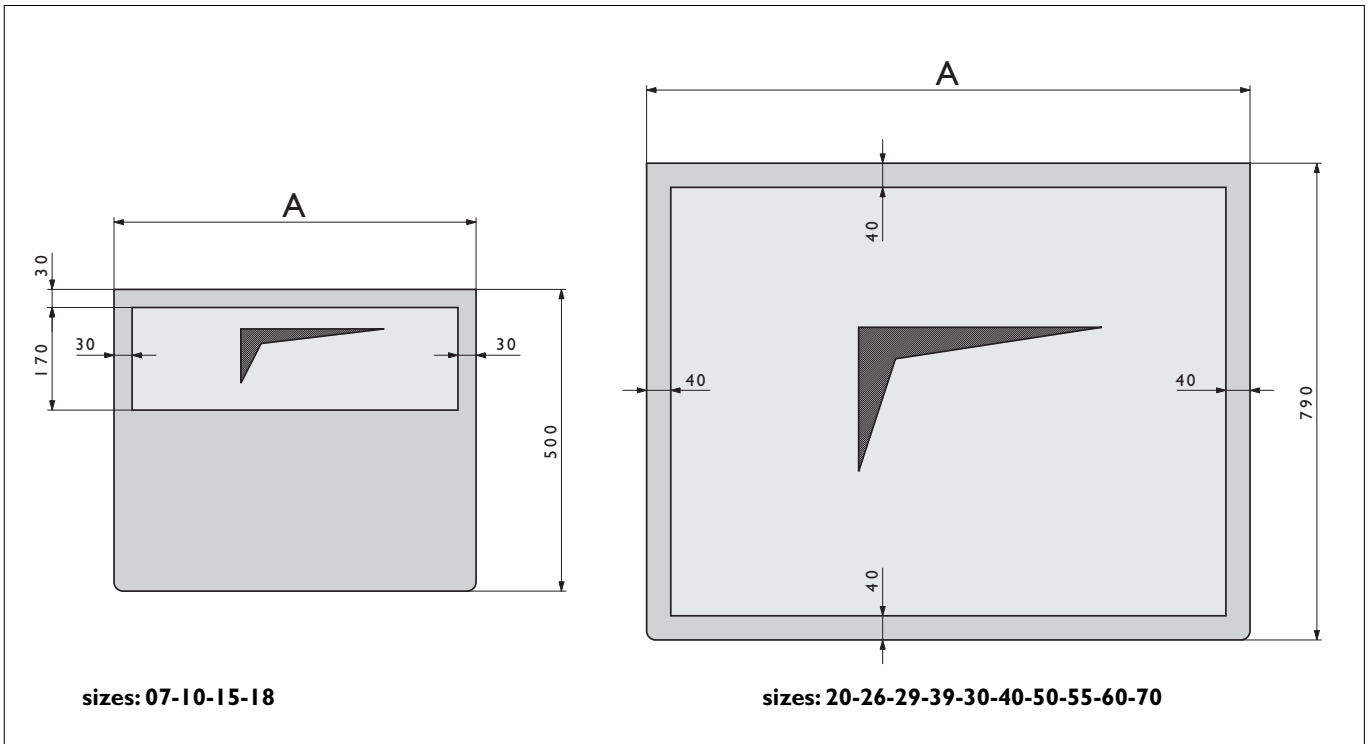
**Air outlet for UNDER versions**



	07	10	15	18	20	26	29	39	30	40	50	55	60	70
A	600	1000	1000	1000	1000	1000	1000	1550	1550	1550	1550	1550	2100	2100

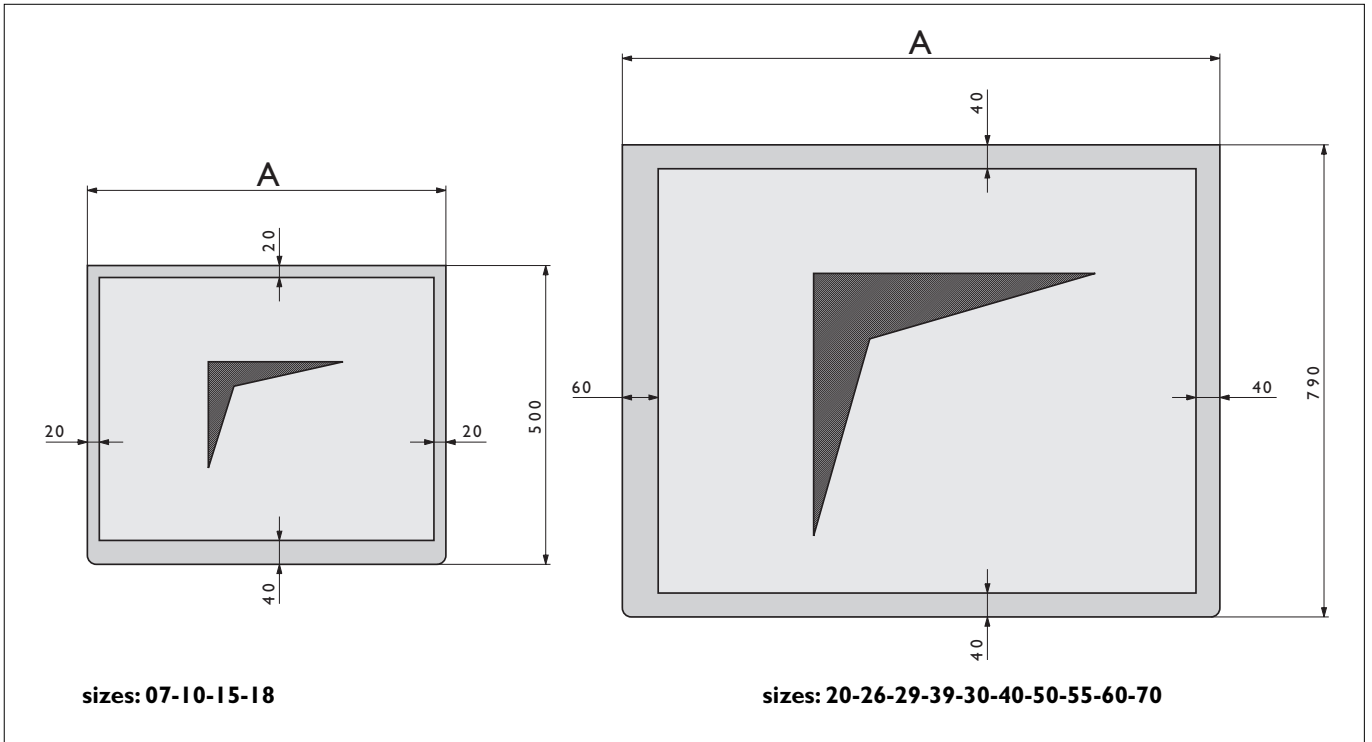


**Air intake from the bottom for OVER versions**



	07	10	15	18	20	26	29	39	30	40	50	55	60	70
A	600	1000	1000	1000	1000	1550	1550	1550	1550	1550	1550	1550	2100	2100

**Air intake from the top for UNDER versions**



	07	10	15	18	20	26	29	39	30	40	50	55	60	70
A	600	1000	1000	1000	1000	1550	1550	1550	1550	1550	1550	1550	2100	2100

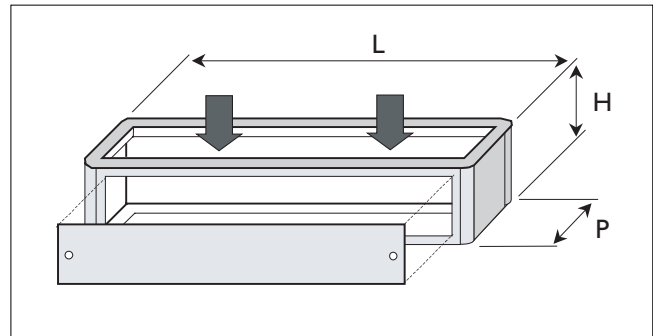
## INTAKE PLENUM, UNDER VERSIONS (A\*U UNITS)

U I A

For ducting the air intake, plenums are available to be fitted between the top of the unit and the air return duct or the false-ceiling.

**NOTE:** The standard air filters (EU2/EU4) and optional filters (EU5) are fitted inside the air-conditioner, upstream of the finned coil; the optional high efficiency air filters (up to EU8 efficiency) are fitted on the outlet plenum.

The plenums available as an optional accessory may be sound-proofed and may feature access from the front for removing the filters.



	07	10	15	18	20	26	29	39	30	40	50	55	60	70
L (mm)	600	1000	1000	1000	1000	1000	1000	1550	1550	1550	1550	1550	2100	2100
P (mm)	500	500	500	500	500	790	790	790	790	790	790	790	790	790
H (mm)	350				500									

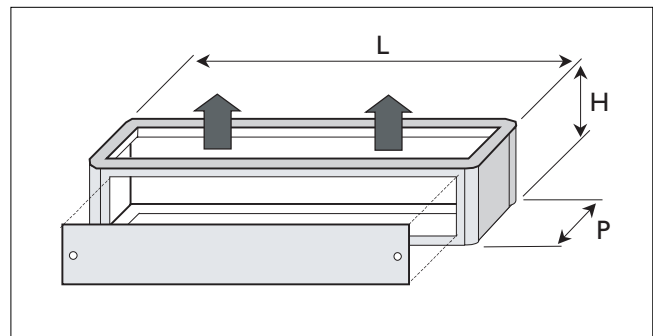
## INTAKE PLENUM, UNDER VERSIONS (A\*O UNITS)

U I A

For ducting the air intake, plenums are available to be fitted between the top of the unit and the air return duct or the false-ceiling.

**NOTE:** The standard air filters (EU2/EU4) and optional filters (EU5) are fitted inside the air-conditioner, upstream of the finned coil; the optional high efficiency air filters (up to EU8 efficiency) are fitted on the outlet plenum.

The plenums available as an optional accessory may be sound-proofed and may feature access from the front for removing the filters.



	07	10	15	18	20	26	29	39	30	40	50	55	60	70
L (mm)	600	1000	1000	1000	1000	1000	1000	1550	1550	1550	1550	1550	2100	2100
P (mm)	500	500	500	500	500	790	790	790	790	790	790	790	790	790
H (mm)	350				500									

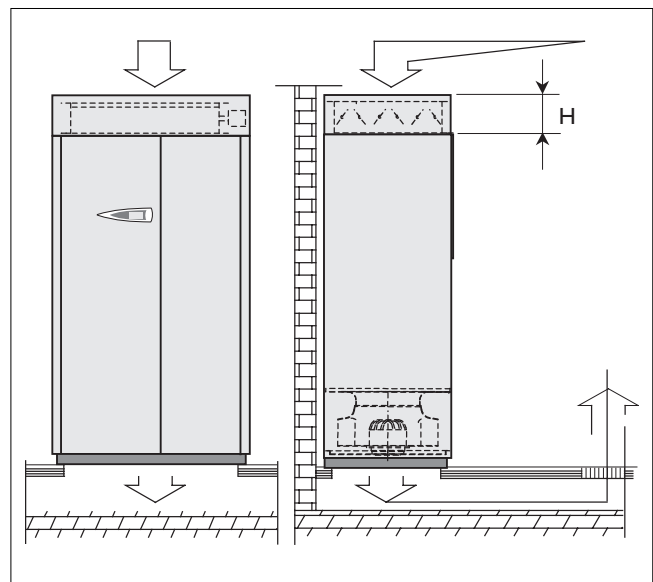
## MOTOR-DRIVEN DAMPER OVER/UNDER (UNIT A\*O/U)

U I A

The motor-driven damper, available as an optional accessory, is located inside a plenum measuring 150 mm high.

The OVER and UNDER units are delivered with the damper already fitted, on the intake, as shown in the figure.

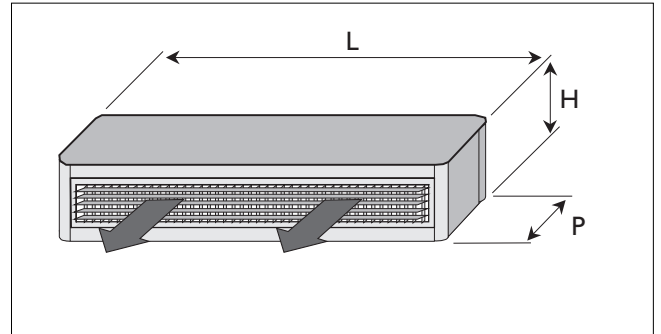
	07÷18	20÷70
H (mm)	100	150



## FRONT OUTLET PLENUM (A\*O UNITS)



The figure shows the front outlet plenum (optional for A\*O units).

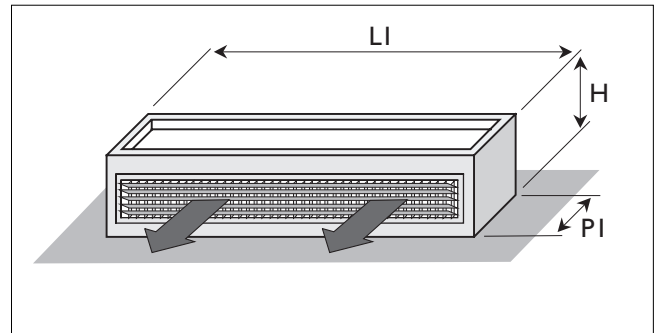


	07	10	15	18	20	26	29	39	30	40	50	55	60	70
L (mm)	600	1000			1000				1550			2100		
P (mm)	500	500			790				790			790		
H (mm)	350								500					

## FRONT OUTLET MOULDING (A\*U UNITS)

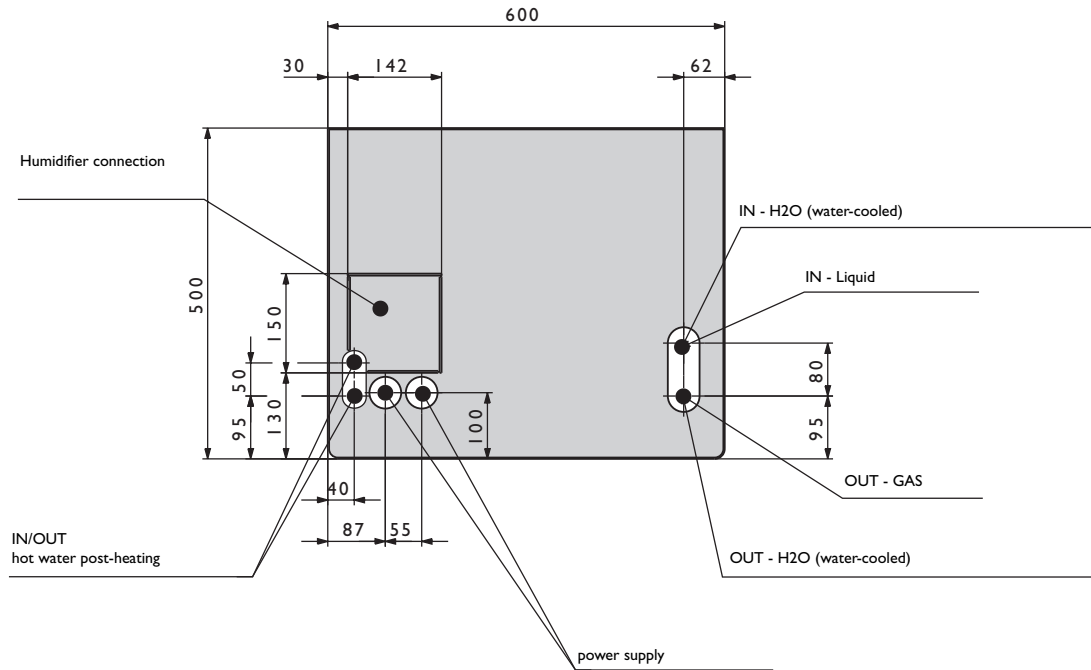


The figure shows the moulding for the front air outlet (optional for A\*U units).

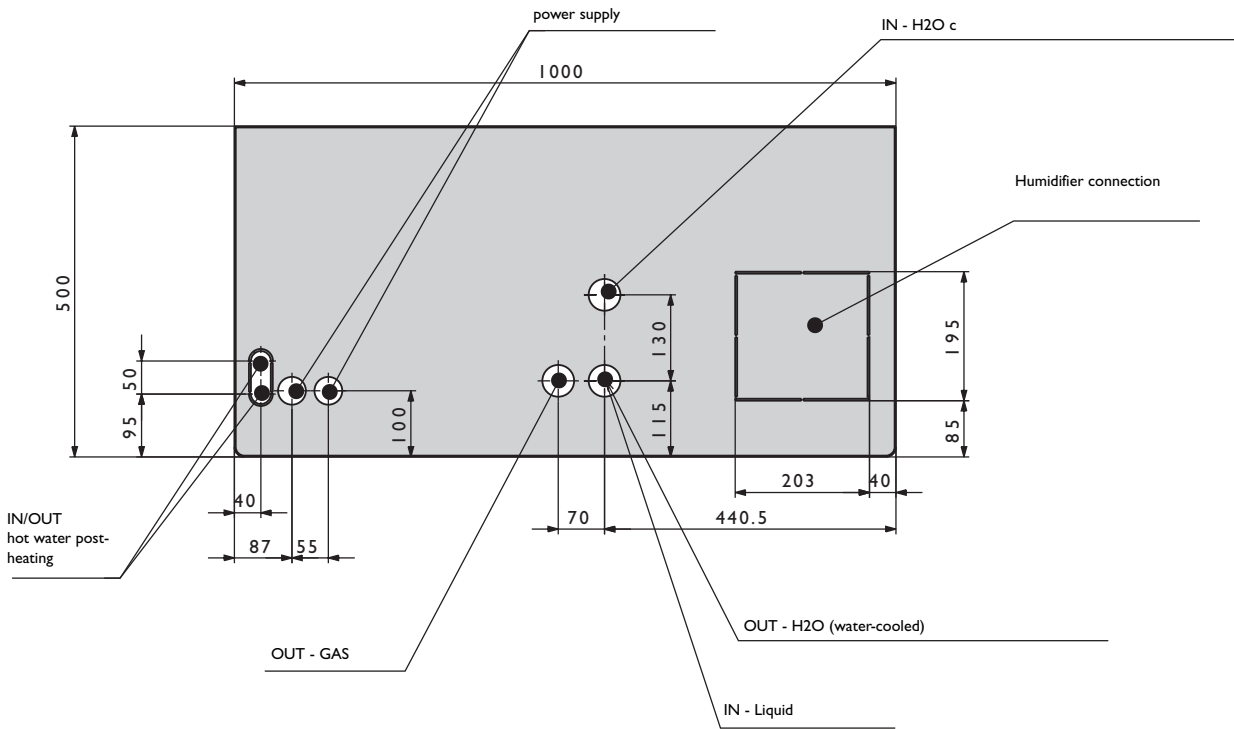


	07	10	15	18	20	26	29	39	30	40	50	55	60	70
LI (mm)	600	1000			980				1530			2080		
PI (mm)	485*	485*			770				770			770		
H (mm)	350								500					

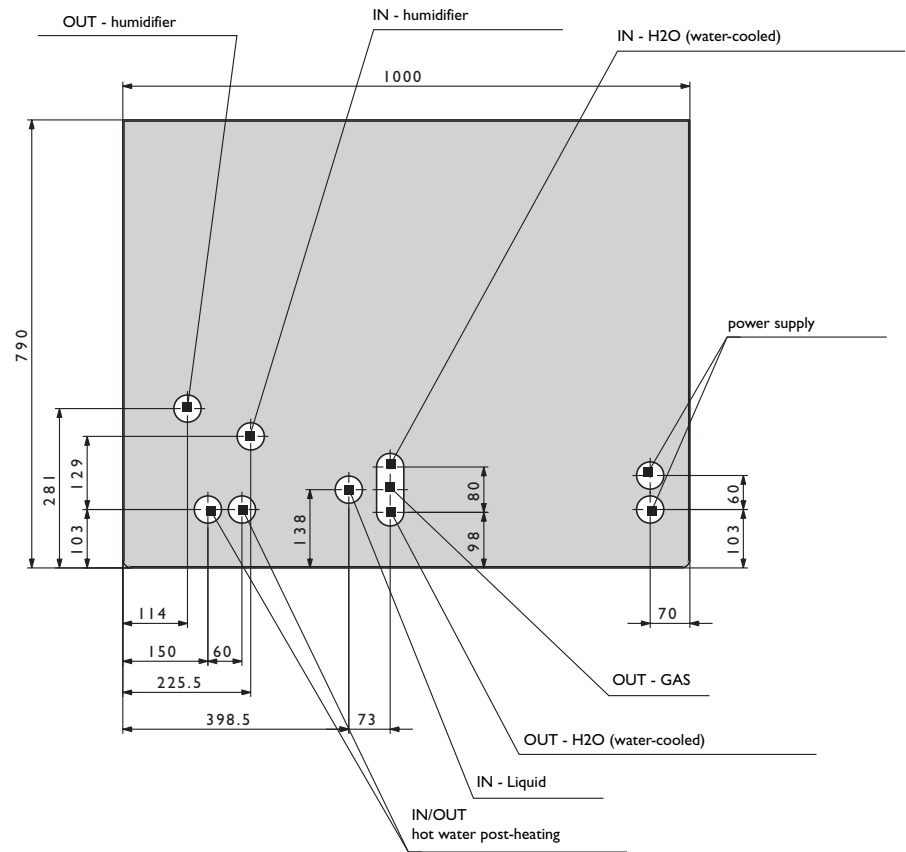
**OVER - UNDER CONNECTIONS**  
**sizes 07 - 10**



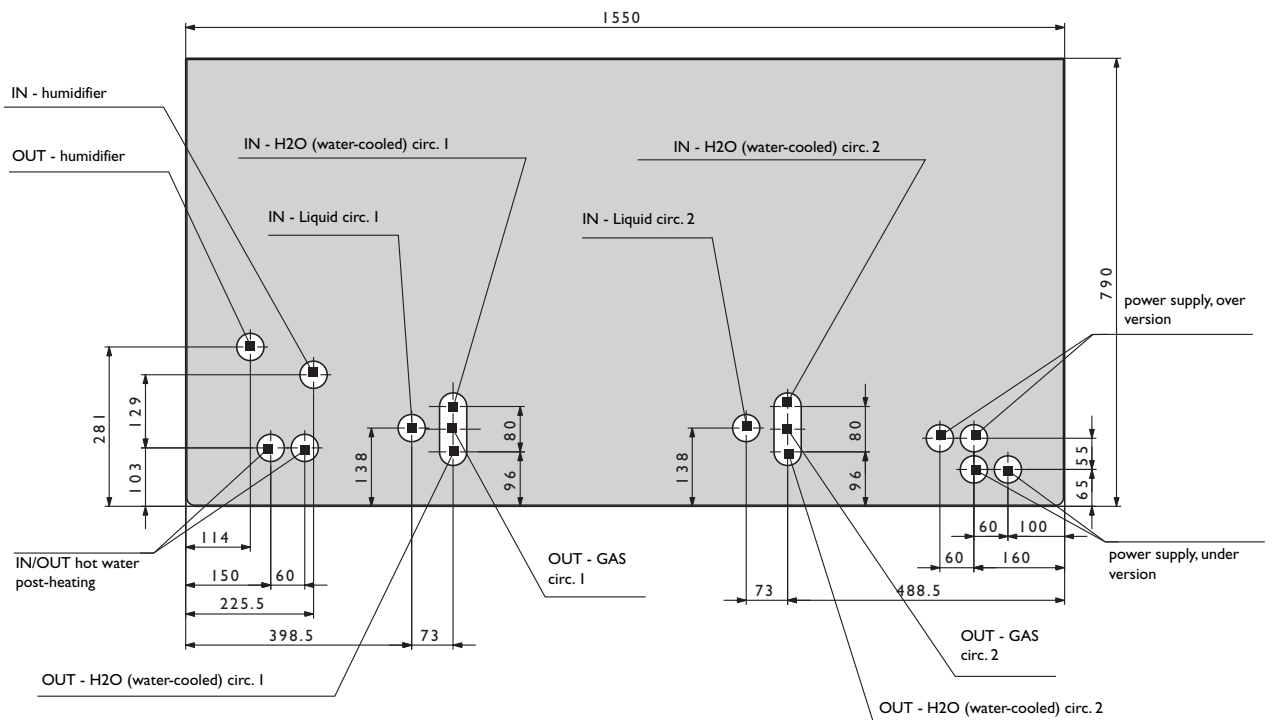
**OVER - UNDER CONNECTIONS**  
**sizes 15 - 18**



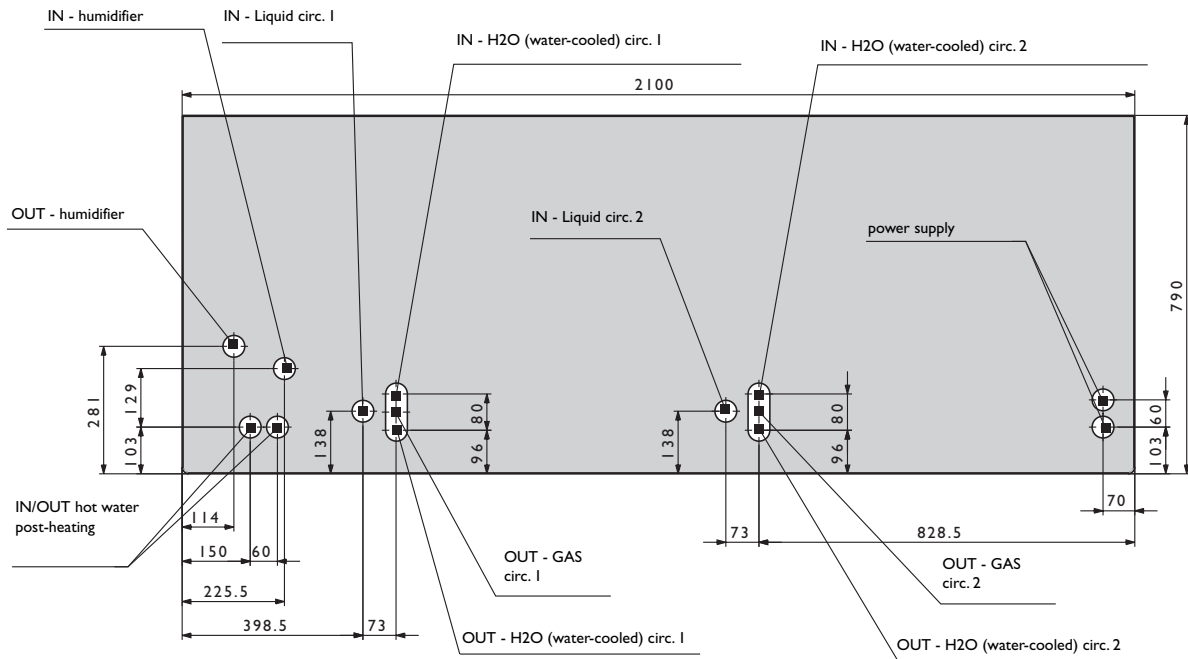
**OVER - UNDER CONNECTIONS**  
**sizes 20 - 26 - 29**



**OVER - UNDER CONNECTIONS**  
**sizes 39 - 30 - 40 - 50**



**OVER - UNDER CONNECTIONS**  
**sizes 55 - 60 - 70**



**HOT WATER RE-HEATING**



<b>HOT WATER COIL (4)</b>		<b>07</b>	<b>10</b>	<b>15</b>	<b>18</b>	<b>20</b>	<b>26</b>	<b>29</b>
Heating capacity (4)	kW	6,5	6,5	11	11	15,4	17,2	17,2
Heating capacity (6)	kW	3,2	3,2	5,3	5,3	7,4	8,3	8,3
Water flow(4)	l/h	570	570	940	940	1340	1500	1500
Coil drops Dp(4)	kPa	15	15	13	13	7	9	9
Circuit drops Dp(4)	kPa	4	4	4	4	4	4	4
Water charge	l	0,74	0,74	1,2	1,2	1,5	1,5	1,5
Connections	inch	3/4	3/4	3/4	3/4	3/4	3/4	3/4
3-way valve connections	inch	3/4	3/4	3/4	3/4	3/4	3/4	3/4
3-way valve drops (4)	kPa	5,5	5,5	14,5	14,5	13	16,5	16,5
total drops valve + circuit (4)	kPa	24,5	24,5	31,5	31,5	24	29,5	29,5

<b>HOT WATER COIL (4)</b>		<b>39</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>55</b>	<b>60</b>	<b>70</b>
Heating capacity (4)	kW	30,2	26,4	30,2	30,2	41,4	41,4	41,4
Heating capacity (6)	kW	14,8	12,9	14,8	14,8	20,1	20,1	20,1
Water flow(4)	l/h	2640	2300	2640	2640	3610	3610	3610
Coil drops Dp(4)	kPa	31,5	25	31,5	31,5	14,5	14,5	14,5
Circuit drops Dp(4)	kPa	4	4	4	4	4	4	4
Water charge	l	2,3	2,3	2,3	2,3	3,3	3,3	3,3
Connections	inch	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
3-way valve connections	inch	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4	1 1/4
3-way valve drops (4)	kPa	17,6	13,5	17,6	17,6	32,5	32,5	32,5
total drops valve + circuit (4)	kPa	53,1	42,5	53,1	53,1	51	51	51

4 -water IN / OUT 70°C/60°C, ambient 20°C -50%

6 - water IN / OUT 45°C/40°C, ambient 20°C -50%

For all the water connections (with the exception of the condensate drain), the following are recommended:

- flexible connections to avoid transmitting vibrations and allow small movements of the air-conditioner;
- joints in three pieces, near the fittings, to simplify the removal of the unit;
- on-off valves to disconnect the unit from the water circuit: where possible use ball valves with full opening to minimise pressure drop.

(For AW\* models) check that the cross-section of the chilled water pipes and the characteristics of the circulating pump are suitable: an insufficient water flow-rate affects the performance of the air-conditioner.

Check that the water inlet and outlet connections are cor-

rect.

Insulate all the chilled water pipes with closed cell material (e.g.: Armaflex or equivalent), to prevent condensation; the insulation must allow access to the valves and the three-piece joints.

(For AW\* models) check that the water circuits (both chilled and heated water) are supplied with water at a maximum pressure of 6 bar: for this purpose, the installer must fit a safety valve in the water circuit set no higher than 6 bar.

(For AW\* models) check that the water circuit has been filled with an antifreeze mixture containing the right percentage of ethylene glycol.

## CONNECTION TO BRAZED PLATE CONDENSER

### AW\* water-cooled units

The condenser must be connected to the cooling water circuit, making sure that the water inlet and outlet connections are correct.

If the water temperature falls below the dew point of the conditioned air, insulate the pipes with closed cell material (e.g.: Armaflex or equivalent) to prevent condensation; the insulation must allow access to the valves and the three-piece joints.

Seal the holes where the pipes pass through the base of the air-

conditioner to avoid the bypass of air.

N.B.: the pressure of the cooling water circuit must not exceed 6 bar.

		07 - 10	15 - 18 20 - 26 29 - 39	30 - 40 50 - 55 - 60 - 70
IW	Condenser water inlet	3/4"	1.1/4"	2 x 1.1/4"
UW	Condenser water outlet	3/4"	1.1/4"	2 x 1.1/4"

## CORRECTION FACTORS

### ETHYLENE GLYCOLE

A mix of water plus glycole used has fluid instead of only water cause a cooling capacity reduction of the unit. Multiplay the cool-

ing capacity for the values reported of the following tables

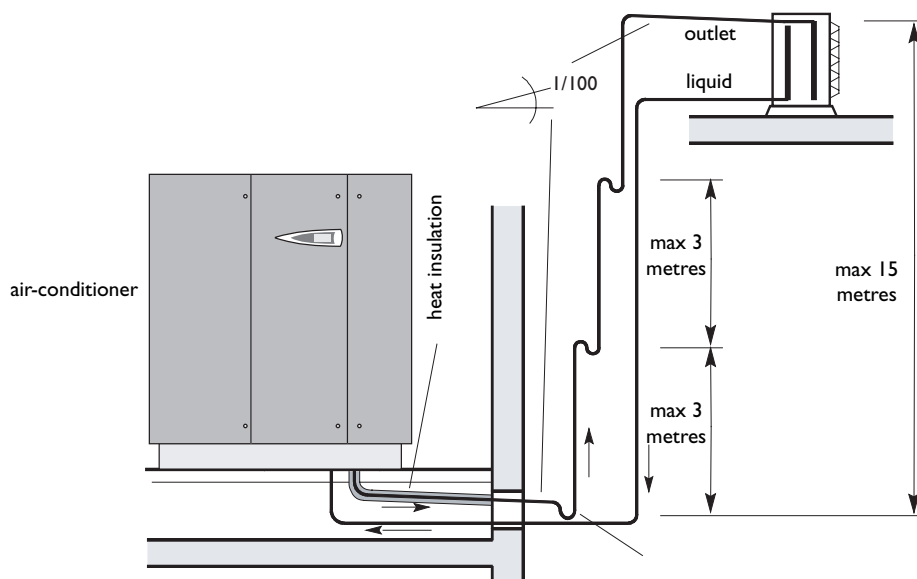
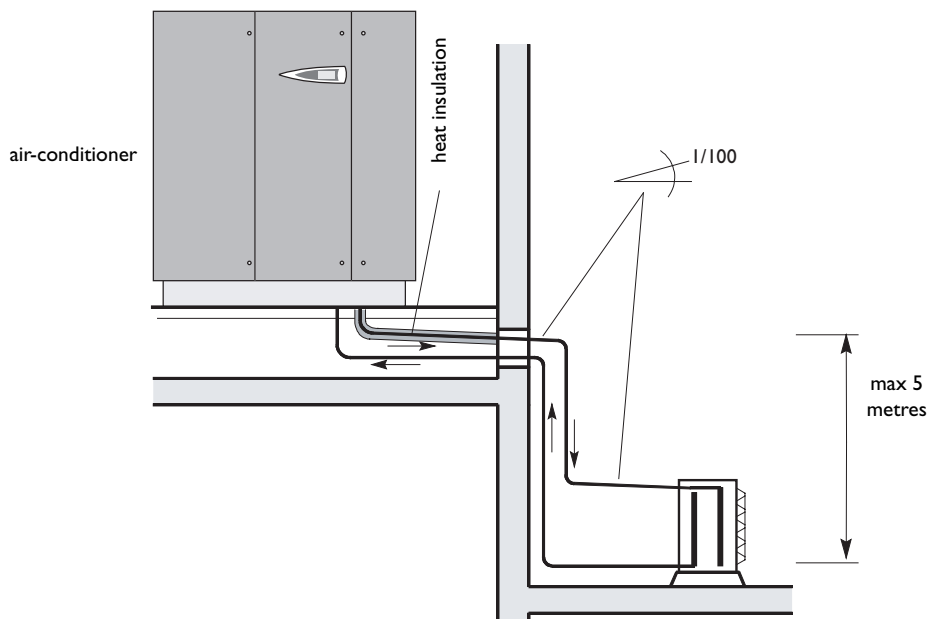
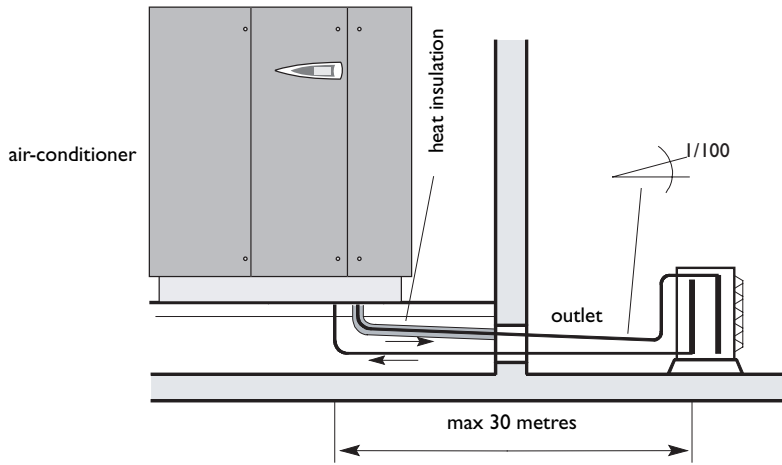
Iceing temperature		0	-5	-10	-15	-20	-25
% of glycole on tot. charge		0	12%	20%	28%	35%	40%
Power factor	cP	1	0,985	0,98	0,974	0,97	0,965
Flow factor	cQ	1	1,02	1,04	1,075	1,11	1,14
P. drops factor	cdp	1	1,07	1,11	1,18	1,22	1,24

### INCROSTATION FACTOR

All datas reported are refered to a complete clean brazed blade condenser (incrostation factor = 1).

For different values of incrostation factor multiplay all datas reported on cooling capacity tables for factors reported on following table.

Incrostation factor	(m2 °C/W)	4,4 x10-5	0,86x10-4	1,72x10-4
Incrostation factor	fl	---	0,96	0,93
Compressor factor	flkl	---	0,99	0,98
Total power factor	fxl	---	0,99	0,98



**N.B.:** the liquid pipes must be protected against solar radiation



## DIAMETERS OF THE CONNECTIONS INSIDE THE UNIT

	07	10 15	18	20	26	29	39	30	40	50 60	55 70
Liquid line (mm)	12	12	12	16	16	16	16	12	12	16	16
Gas outlet line (mm)	12	18	18	18	22	22	22	18	18	22	22

## RECOMMENDED OUTSIDE DIAMETERS OF THE LINES (for equivalent lengths up to 30m)

	07	10	15 20	18 26	29	39	30 50	40 55	60	70
Liquid line (mm)	12 mm	12 mm	16 mm	16 mm	18 mm	18 mm	2 x 14 mm	2 x 14 mm	2 x 16 mm	2 x 16 mm
Gas outlet line (mm)	18 mm	18 mm	22 mm	22 mm	24 mm	24 mm	2 x 22 mm	2 x 22 mm	2 x 24 mm	2 x 24 mm

**NOTE:** The diameter of the refrigerant lines between the air-conditioner and the remote condenser (OD) must be chosen according to the length of the lines, and therefore this will not always coincide with the inside diameter of the joint to be welded supplied by the manufacturer.

The lines, with a maximum length preferably less than 30 metres, must be laid by an expert refrigeration technician according to the criteria illustrated in the following figure; special care must be paid to the insulation of the hot gas pipes under the raised floor.

## CONDENSATE DRAIN

The condensate is removed from the pan located underneath the coil through a hose with drain trap, already fitted in the unit; the end of the hose should be connected to the sewerage system in the building via a rubber or plastic hose with an inside diameter of 20 mm.

If the air-conditioner is fitted with a humidifier, the condensate is drained from the humidifier pan, excluding A\*O units (see the following paragraph).

During installation, pour water into the condensate collection pan so as to fill the drain trap inside the unit with water.

## HUMIDIFIER AND CONDENSATE DRAIN (VERSIONS H AND T)

Underneath the drain solenoid valve on the steam production unit is an attachment for draining the water.

This is already fitted with a hose coupling for connecting the hose running to the sewerage system in the building.

A rubber or plastic hose should be used, resistant to 100°C, with an inside diameter of 32 mm.

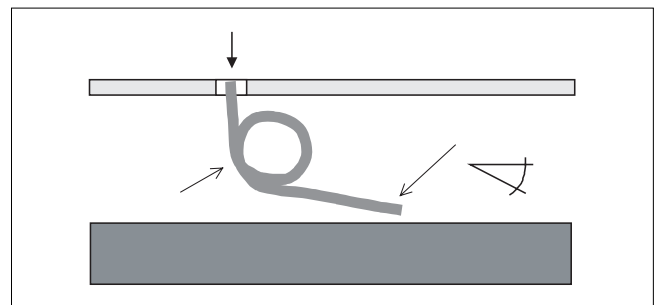
Fit a trap in the section of the hose outside of the unit to avoid bad odours and to prevent water from overflowing from the humidifier pan.

During installation, pour water into the condensate collection pan and the humidifier pan, so as to fill the drain traps inside and outside the unit with water.

Downstream of the drain trap ensure a minimum slope of 1%.

**WARNING:** the water exiting the steam cylinder is very hot.

The humidifier drain hose must not be fastened to electrical cables and must run down vertically so as to avoid any contact with these cables.



## CONDENSATE DRAIN PUMP AND HUMIDIFIER DRAIN PUMP

Depending on the version, a condensate drain pump is available (for versions B and R) or a humidifier drain pump (for versions H and T) with mechanical features such as to be able to resist the high temperatures of the water exiting the steam cylinder.

The pump must be located below the drain fitting, according to the instructions contained in the packaging.

Check that the head is sufficient to lift the condensate to the point of drainage.

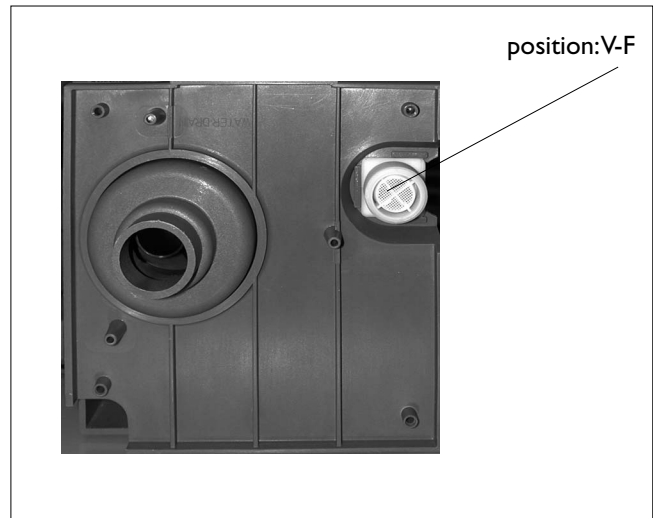
Underneath the fill solenoid valve on the steam production unit is the threaded male fitting (V) for the humidifier water supply. This is already fitted with a plastic hose, diameter 6 mm, for connection to the building's water supply (see figure, point F).

**V:** Steam production unit - inlet connection (threaded male fitting);

**F:** Rubber hose, diameter: 6mm.

To supply the humidifier, use drinking water without any chemical treatment or demineralisation.

The characteristics of the water that supplies the humidifier must be within the following values:



Characteristic	Minimum value	Maximum value
Mains pressure	1 bar	8 bar
Electrical conductivity at 25°C	125 µ S/cm	1250 µ S/cm
Phosphate content	-	5 mg/l
Chloride content	-	50 mg/l
Hardness	-	40°FH
Size of the impurities	-	0.1 mm

**Do not use water treated by demineralisation or softening systems.**

A mechanical filter with a mesh finer than 50 µm should be installed.

# MINIMUM CROSS-SECTION OF THE POWER CABLES

The cross-section of the power cable must be chosen according to the length of the cable and the type of installation, based on the maximum current input of the air-conditioner and so as to prevent excessive voltage drops (the power supply voltage must be between ± 10% of the rated value).

The following table shows the minimum recommended cross-sections for the power cables.

- **A backup fuse should be fitted upstream of the power line for short-circuit current up to 10 kA.**

The refrigerant circuits of the water-cooled chillers and air-conditioners are already charged with refrigerant, either R407C, R22 or R134a (check the rating plate on the unit and the compressors to see which type of refrigerant is used).

The air-cooled air-conditioners (AX\*) and the ECR units that require refrigerant connections to other units are pre-charged

with nitrogen (or dry air) to prevent moisture from entering the circuit; in this case, the refrigerant charge must be completed by the installer, following the instructions shown in this paragraph.

Refrigerant (*)	Type of oil	
R22 (Mineral oil)	Suniso 3 GS	White oil
R407C (POE)	Mobil EAL Arctic 22 CC	ICI EMKARATE RL 32S CF

R22	R407C
-----	-------

Open any valves in the unit or in the system to ensure that all the components are involved in the emptying operation;	
Connect a high efficiency vacuum pump to the Schrader fittings or to the 1/4" SAE fittings on the compressor suction and discharge side;	
Connect a cylinder of refrigerant to the charge fittings.	
Empty the lines, ensuring an absolute pressure of less than 100 Pa (0.7 mm Hg) for an extended period, so as to remove the air and any traces of moisture.	Empty the lines, ensuring an absolute pressure of less than 10 Pa (0.07 mm Hg) so as to remove the air and any traces of moisture.
The circuit should be emptied slowly and maintained for an extended period, rather than performed too quickly.	
In general, if there is the chance of significant moisture content in the circuit or for very large systems, the vacuum must be "broken" with nitrogen dioxide and then repeat the emptying operations as described.	
Break the vacuum by pre-charging from the cylinder of R22 refrigerant.	Break the vacuum by pre-charging from the cylinder of R407C refrigerant in the liquid phase.
After having started the compressor, complete the charge slowly, until the pressure stabilises in the lines and the gas bubbles disappear from the flow indicator;	
The charge must be checked at the environmental design conditions and with a discharge pressure of around 18 bar (equal to a saturated temperature of 48°C); for units with on-off condenser control, partially close the intake to stop the condenser fan from repeatedly starting-stopping. Make sure that the subcooling of the liquid at the thermostatic valve intake is between 3 and 5°C less than the condensing temperature read on the pressure gauge and that the superheating of the vapour at the evaporator outlet is around 5 °C. The charge must be checked at the environmental design conditions	and with a discharge pressure of around 18 bar (equal to a dew point of 48°C and boiling point of 43°C); for units with on-off condenser control, partially close the intake to stop the condenser fan from repeatedly starting-stopping. Make sure that the subcooling of the liquid at the thermostatic valve intake is between 3 and 5°C less than the condensing temperature read on the pressure gauge and that the superheating of the vapour at the evaporator outlet is around 5 °C.

(\*) recommended with COPELAND compressors.  
If a circuit already charged with refrigerant needs to be emptied, the first operation required is the removal of the refrigerant from the circuit using a special appliance with dry compressor for

recovering the refrigerant.  
If available, also switch on the sump heaters during the emptying operation.

## TOTAL UNIT POWER INPUT

Vers. mod.	V/ph/Hz	B		R		H		T		Main Switch
		kW	FLA	kW	FLA	kW	FLA	kW	FLA	Amp
07	400/3N/50	2,47	7,95	6,47	25,45	4,72	17,75	6,47	25,45	80
10	400/3N/50	3,22	9,85	7,22	27,35	5,47	19,65	7	27,35	80
15	400/3N/50	5,02	18,1	13,02	53,1	8,77	23,6	12,58	53,1	80
18	400/3N/50	5,66	17,8	13,66	52,8	9,41	23,3	13,22	52,8	80
20	400/3N/50	7,65	22,3	16,65	35,3	11,4	27,8	16,65	35,3	80
26	400/3N/50	8,35	24,3	17,35	37,3	12,1	29,8	17,35	37,3	80
29	400/3N/50	10,55	29,3	19,55	42,3	14,3	34,8	19,55	42,3	80
39	400/3N/50	18,3	50,4	33,3	72,4	22,05	55,9	33,3	72,4	80
30	400/3N/50	16,04	48,2	31,04	70,2	19,79	53,7	31,04	70,2	80
40	400/3N/50	18,5	53,4	33,5	75,4	22,25	58,9	33,5	75,4	80
50	400/3N/50	22,3	63,4	37,3	85,4	26,05	68,9	37,3	85,4	100
55	400/3N/50	20,8	60	38,8	86	26,8	68,7	38,8	86	100
60	400/3N/50	22,8	64	40,8	90	28,8	72,7	40,8	90	100
70	400/3N/50	27,1	74	45,1	100	33,1	82,7	45,1	100	100

B = cooling only

R = cooling only + heaters

H = cooling only plus humidifier / dehumidification

T = complete version (cooling only + heaters + humidifier/dehumid.)

## POWER INPUT OF THE INDIVIDUAL COMPONENTS

Mod	V/ph/Hz	Centrifugal fans					Radial fans					
		n°	kW	OA	FLA	LRA	n°	Volt	kW	OA	FLA	LRA
07	230/1/50	1	0,5	-	2,85	-	1	230/1/50	0,44	-	2,6	-
10	230/1/50	1	0,5	-	2,85	-	1	230/1/50	0,44	-	2,6	-
15	230/1/50	2	0,5	-	2,85	-	2	230/1/50	0,44	-	2,6	-
18	230/1/50	2	0,5	-	2,85	-	2	230/1/50	0,44	-	2,6	-
20	400/3N/50	1	2,4	-	7,3	-	1	400/3N/50	2,2	-	4,9	-
26	400/3N/50	1	2,4	-	7,3	-	1	400/3N/50	2,2	-	4,9	-
29	400/3N/50	1	2,4	-	7,3	-	1	400/3N/50	2,2	-	4,9	-
39	400/3N/50	1	4	-	11,7	-	2	400/3N/50	1,9	-	4,9	-
30	400/3N/50	1	4	-	11,7	-	2	400/3N/50	1,9	-	4,9	-
40	400/3N/50	1	4	-	11,7	-	2	400/3N/50	1,9	-	4,9	-
50	400/3N/50	1	4	-	11,7	-	2	400/3N/50	1,9	-	4,9	-
55	400/3N/50	1	6,5	-	20	-	3	400/3N/50	1,9	-	4,9	-
60	400/3N/50	1	6,5	-	20	-	3	400/3N/50	1,9	-	4,9	-
70	400/3N/50	1	6,5	-	20	-	3	400/3N/50	1,9	-	4,9	-

values for individual fan

Modelli	V/ph/Hz	Electric heaters			
		n°	kW	OA	FLA
07 - 10	230/1/50	2	4	17,5	-
15 - 18	230/1/50	2	8	35	-
20 - 26 - 29	400/3N/50	3	9	13	-
39 - 30 - 40 - 50	400/3N/50	5	15	22	-
55 - 60 - 70	400/3N/50	6	18	26	-

		Modulating humidifier				
models	V/ph/Hz	n°	kg/h	kW	OA	FLA
07 - 10	230/1/50	1	3	2,25	9,8	-
15 - 18	400/3N/50	1	5	3,75	5,5	-
20 - 26 - 29	400/3N/50	1	5	3,75	5,5	-
39 - 30 - 40 - 50	400/3N/50	1	5	3,75	5,5	-
55 - 60 - 70	400/3N/50	1	8	6	8,7	-

		Compressors				
models	V/ph/Hz	n°	kW	OA	FLA	LRA
07	400/3N/50	1	1,84	3,5	5,1	32
10	400/3N/50	1	2,72	5	7	46
15	400/3N/50	1	4,02	7,8	12,4	65,5
18	400/3N/50	1	4,66	8,3	12,1	74
20	400/3N/50	1	5,25	10	15	101
26	400/3N/50	1	5,95	12,2	17	123
29	400/3N/50	1	8,15	15,3	22	127
39	400/3N/50	1	10,3	17,8	27	167
30	400/3N/50	2	4,02	7,8	12,4	65,5
40	400/3N/50	2	5,25	10	15	101
50	400/3N/50	2	7,15	14,5	20	123
55	400/3N/50	2	7,15	14,5	20	123
60	400/3N/50	2	8,15	15,3	22	127
70	400/3N/50	2	10,3	17,8	27	167

values for individual compressor

kW = Abs. Kilowatts

FLA = max. current

LRA = starting current

OA = operating amps

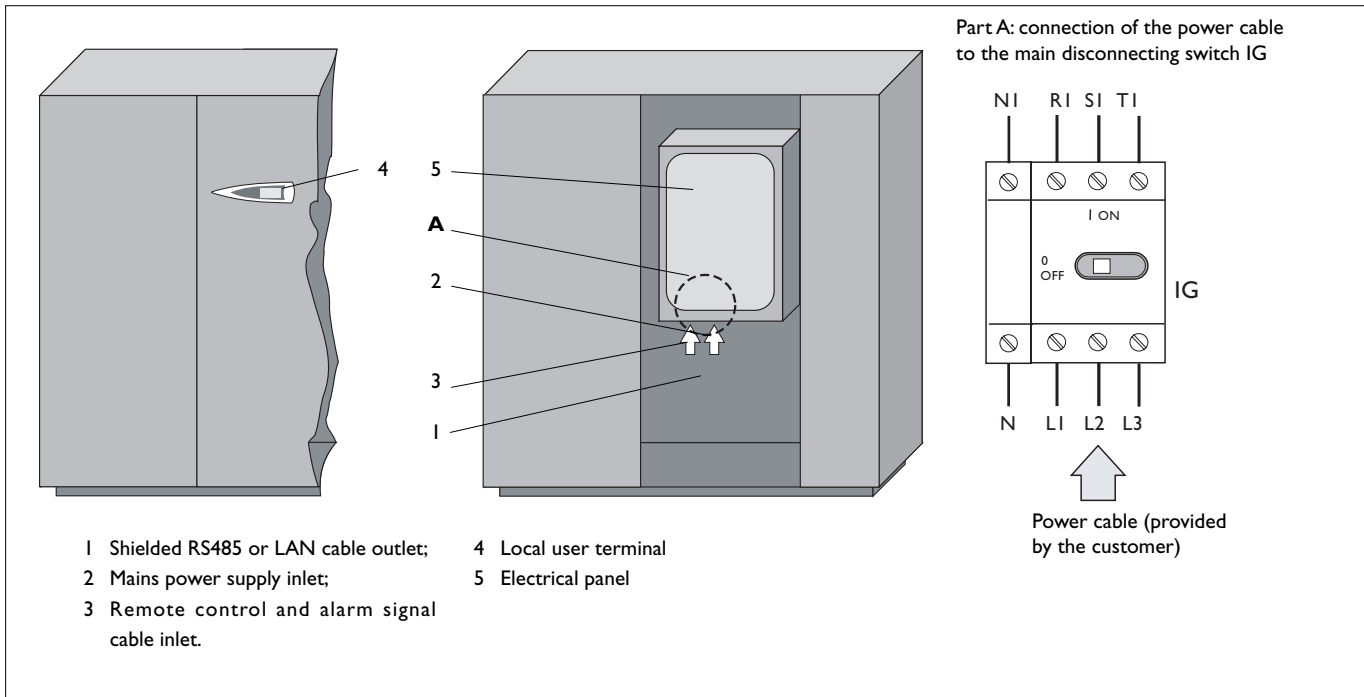
Correct electrical connection, performed in a workmanlike manner and in compliance with the standards in force, is important for the prevention of accidents and the good and long-lasting operation of the air-conditioner.

open (position "O");

The power section of the electrical panel is protected by a plastic screen; to remove the screen, open the main switch and remove the fastening screws.

## ACCESS TO THE ELECTRICAL PANEL AND CABLE INLETS

Before performing any work on the electrical parts, make sure that there is no live voltage and that the disconnecting switch is



## CONNECTION TO THE MAINS - CROSS-SECTION OF THE CABLES - PROTECTION DEVICES

- **Check that the mains voltage** corresponds to the rated values for the unit (voltage, no. of phases, frequency) shown on the electrical panel.

The power supply voltage must be between  $\pm 10\%$  of the rated value: operation at voltages outside of these limits may void the warranty.

- **Fasten the ends of the power cable** to the terminals on the main switch inside the electrical panel; fully tighten the screws. Connect the yellow-green earth wire to the special terminal marked 'PE'.

## ACCESS TO THE BOARD

To access the board, open the front panel and the thermoformed cover on the electrical panel.

The electronic components are sensitive to discharges of static electricity from the human body.

Touch an earthed object before handling any electronic component.





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