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**Data Book**

T\_bAVDX\_1119\_EN - HFC R410A

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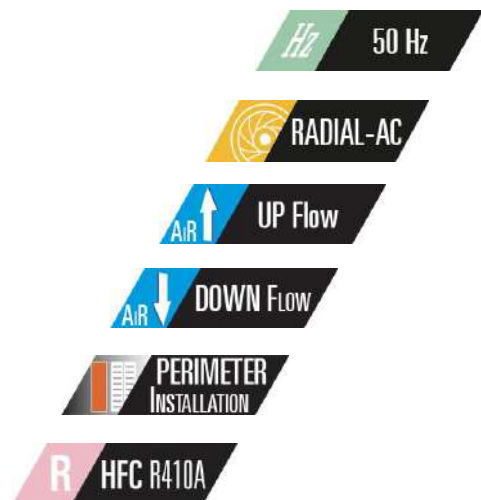
# b-AV DX

6-147 kW

Direct expansion air conditioners for IT Cooling.  
To be matched with remote air-cooled condenser.



The picture of the unit is indicative and may vary depending on the model



- Perimeter installation
- Fully hermetic ON/OFF compressors
- Single or double refrigerant circuit

- Air delivery from the bottom or from the top
- Plug fans with AC electric motors
- Air suction temperature up to 35°C

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## CERTIFICATIONS



### SYSTEM CERTIFICATIONS

**ISO 9001 CERTIFICATION**  
Quality Management System

**ISO 14001 CERTIFICATION**  
Environmental Management System

**BS OHSAS 18001 CERTIFICATION**  
Occupational Health and Safety Management System

### PRODUCT CERTIFICATIONS BY COUNTRY



**CE MARKING**

**CCC – CQC CERTIFICATION**  
(People's Republic of China)

**EAC CERTIFICATION**  
(Russian Federation, Belarus, Kazakhstan)



## GENERAL CHARACTERISTICS



**UNDER**  
Downflow air delivery

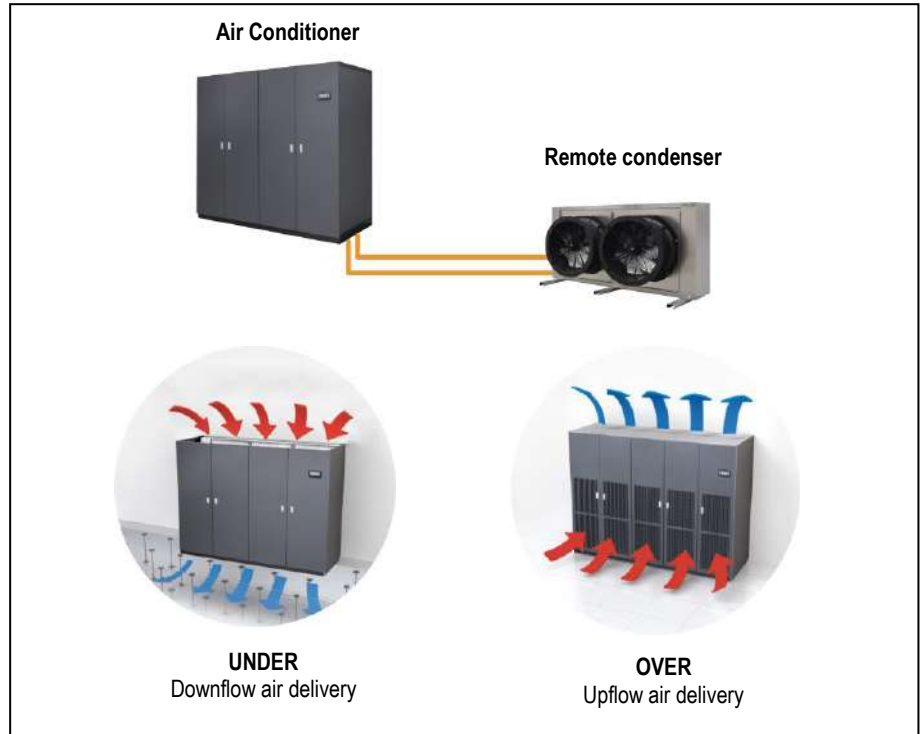


**OVER**  
Upflow air delivery

**Air cooled direct expansion air conditioners for IT Cooling** for matching with remote air cooled condenser. This series is offered in 22 models available in the following versions:

- The upflow version (Over) is characterized by air intake from the front through honeycomb grille and air delivery from the top of the unit.
- The downflow version (Under) is characterized by air intake from the top and air delivery from the bottom of the unit.

Cooling capacity: 6 ÷ 147 kW



The machines are made for indoor installation.

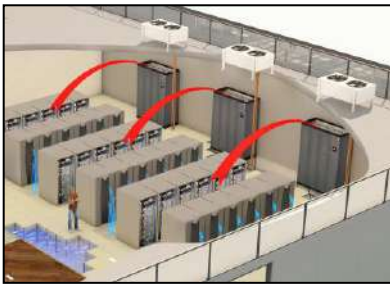
The constructive solutions and the internal lay-out allow high application flexibility and the frontal access to the main components for the inspection and routine maintenance.

The installation requires refrigerant charge, electrical and hydraulic connections.

Final assembly on all machines before shipment including running test, reading and monitoring of operating parameters, alarms simulation and visual check.



## INSTALLATION



The series is particularly suitable for installation in Data Center of medium / small size with constant load.

### DOWNFLOW VERSION (Under)

Typical installation is on the perimeter.

The units are placed along the perimeter of the Data Center. Air suction from the top of the unit and air delivery in the underfloor void.

The air distribution is achieved by special tiles placed in front of the racks row, forming cold aisle for air diffusion. On the rear of the racks is expelled the hot then aspirated by the unit.

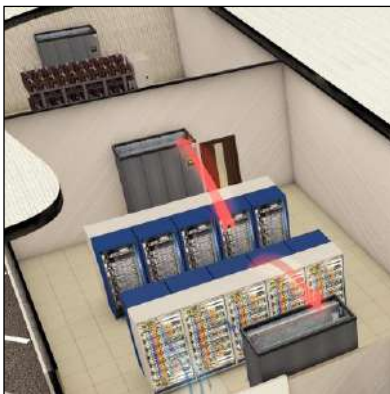
For an optimal installation is advisable to provide the cold aisle containment.



Some solutions provide a service corridor around the server rooms where to place the units. In this case, it is necessary to provide the air intake plenum for each unit. With this solution, all the space in the Data Center is available for the installation of racks.

### UPFLOW VERSION (Over)

The type of installation is practically like the previous. The only difference is that for the air distribution in the Data Center is not used the raised floor but ducts in the ceiling.



The series is also suitable for installation in UPS, Batteries, Distribution rooms and in all service areas of the Data Center that need a service of conditioning.

### OPTIONAL

An extensive list of accessories allows the unit to adapt effectively to the real needs of the system, reducing the time and cost of installation.

## PRODUCT FEATURES AND BENEFITS

- EER up to 4,32;
- New plug fans with AC electric motors and impeller in composite material, which guarantees a reduction of power consumption;
- New fans electric motor that do not require maintenance;
- Improvement of the control software with advanced control logic;
- Single or double refrigerant circuit;
- Hinged frontal panels and lateral panels fully removable to facilitate the operations of extraordinary maintenance;

## F-GAS DIRECTIVE

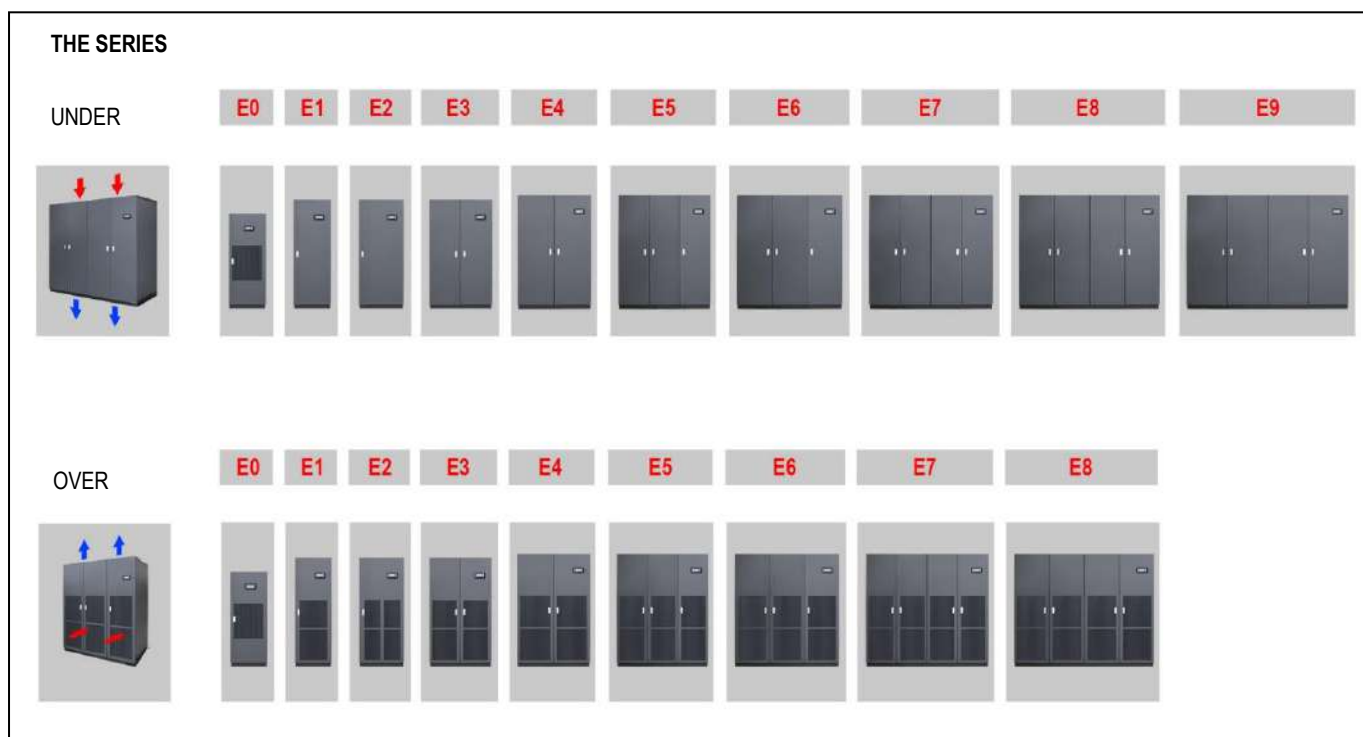
The units highlighted in this publication contain <HFC R410A [GWP<sub>100</sub> 2088]> fluorinated greenhouse gases.

## MODEL IDENTIFICATION

Air conditioners for IT Cooling

model: b-AV DX O 041 P1 S E4

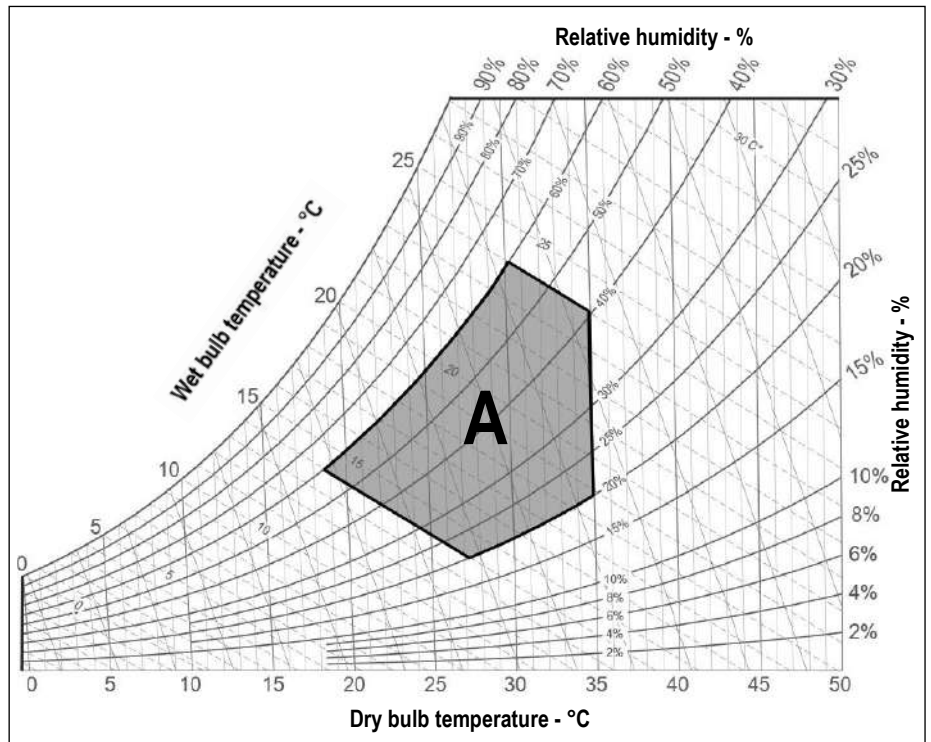
|             |   |
|-------------|---|
| <b>b-AV</b> | <b>Series</b>   |
| <b>DX</b>   | <b>Unit type</b><br>DX – direct expansion, air cooled   |
| <b>O</b>    | <b>Air delivery</b><br>O = over – upflow air delivery<br>U = under – downflow air delivery        |
| <b>041</b>  | <b>Model / Cooling capacity (kW) at nominal conditions</b>  |
| <b>P1</b>   | <b>Compressor type and number</b><br>P = scroll compressor for R410A<br>1 = number of compressors |
| <b>S</b>    | <b>Refrigerant circuit</b><br>S = single<br>D = double  |
| <b>E4</b>   | <b>Size</b>   |



## TRANSPORT AND STORAGE TEMPERATURE

During transport and if the machine is not installed at the reception, do not remove the packaging and place the machine in an enclosed, dry and protected from sunlight site at temperatures ranging between -30°C and 50°C in absence of superficial condensation.

**WORKING LIMITS**



**ROOM AIR CONDITIONS**

Room air temperature:

- 14°C            minimum temperature with wet bulb.
- 24°C            maximum temperature with wet bulb.
- 18°C            minimum temperature with dry bulb.
- 35°C            maximum temperature with dry bulb.

**AREA "A". Machine operating envelope.**

Room air humidity:

- 20%RH        minimum relative humidity.
- 60%RH        maximum relative humidity.

**AMBIENT AIR TEMPERATURE**

- 45°C            Maximum ambient air temperature
- 20°C          Minimum ambient air temperature

With "Kit for air -45°C" for low ambient temperature operation (optional)

- 45°C            minimum ambient air temperature with remote condensers with AC fans

All the values are indicative. The working temperatures are influenced by a series of variables as:

- Working conditions;
- Thermal load;
- Set of the microprocessor control.

**POWER SUPPLY**

- ± 10%            Maximum tolerance of the supply voltage (V)
- ± 2%            Maximum unbalancing of the phases.



## MAIN COMPONENTS



### FRAMEWORK

- Base in aluminium extrusion, painted with epoxy powders. Colour RAL 9005;
- Frame in aluminium profile, painted with epoxy powders. The inner frame is provided with seals for the panels. Colour RAL 9005;
- Panels in galvanized steel sheet with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders. Colour RAL 7016 hammered;
- Panels insulated with polyurethane foam and seals to ensure air tight.
- Hinged front panels with quick release removal system.
- Total front access for routine maintenance.
- Removable lateral and back side panels.
- Air flow OVER version:
  - Air intake from the front through honeycomb type grille and air delivery from the top.
- Air flow UNDER version:
  - Air intake from the front through honeycomb type grille and air delivery from the bottom.
- Machine size E0:
  - Air intake from the front through honeycomb type grille and air delivery from the bottom.
- Machine size E1, E2, E3, E4, E5, E6, E7, E8, E9:
  - Air intake from the top and air delivery from the bottom.
- Compartment for electrical panel on unit front for direct access to control and regulation devices;

### FILTER SECTION

- Size E0:
  - Washable air filters with COARSE 40% efficiency (according to ISO EN 16890), with cells in synthetic fibre and metallic frame.
- Size E1, E2, E3, E4, E5, E6, E7, E8, E9:
  - Washable air filters with COARSE 60% efficiency (according to ISO EN 16890), with cells in synthetic fibre and metallic frame.
- Air filters access:
  - OVER version
    - Frontal access for all machines
  - UNDER version
    - For machines size E0 - E1 - E2 - E3 frontal access
    - For machines size E4 - E5 - E6 - E7 - E8 - E9 access from upper side

### ON / OFF COMPRESSORS SECTION

Units size E0, E1 and E2:

- Rotary vane compressors for R410A refrigerant
- 2-pole 3-phase electric motor with direct on line starting.
- Crankcase heater.
- Rubber supports.

Units size E3, E4, E5, E6, E7, E8 and E9

- Scroll rotary compressors with spiral profile optimized for R410A refrigerant.
- 2-pole 3-phase electric motor with direct on line starting.
- Crankcase heater.
- Rubber supports.

### FANS SECTION

The fan section is contained within the machine and includes:

- Centrifugal fans with backward curved blades with wing profile, single suction and without scroll housings (Plug-fans), directly coupled to external rotor electric motor.
- Impeller in composite material exempt from rust formation.
- AC type electric motor with fixed speed.
- Fan thermal protection alarm.
- Fan guard with rubber support (UNDER version)



### COOLING SECTION

- Heat exchanger coil with internally corrugated copper tubes and high efficiency aluminium fins, specifically developed to provide high heat transfer and lower pressure drops.
- Frame in galvanized steel or peraluman.
- Condensate tray in peraluman with PVC flexible discharge pipe.
- Temperature sensor on air intake with control and regulation functions.
- Temperature sensor on air delivery with function of temperature display.



### REFRIGERANT CIRCUIT

The air conditioner is supplied with a minimum R410A refrigerant charge.

Components for each refrigerant circuit:

- Mechanical expansion valve.
- Sight glass.
- Filter dryer on liquid line.
- Pressure transducers with indication, control and protection functions, on low and high refrigerant pressure.
- High pressure safety switch with manual reset.
- Liquid receiver.
- Pressure relief valve on liquid receiver for models 041 P1, 045 P1, 075 P2, 082 P2, 092 P2, 102 P2, 117 P4, 146 P4.
- Refrigerant circuit with copper tubing with anticondensate insulation of the suction line.
- Lubricant oil charge.
- Valves on gas delivery and liquid return for coupling to remote air-cooled condenser.
- 0÷10V proportional signal to manage the condensing control system of the remote air-cooled condenser.
- Condensing control by continuous variation of remote condenser fan rotation speed for operations with ambient temperature down to -20°C.



### ELECTRICAL PANEL

In accordance with EN60204-1 norms, suitable for indoor installation, complete with:

- Main switch with door lock safety on frontal panel.
- Magnetothermic switches for each compressor.
- Magnetothermic switches for supply fans.
- Contactors for each load.
- Transformer for auxiliary circuit and microprocessor supply.
- Numbered wirings.
- Terminals:
  - OUTLETS
    - Voltage free deviating contact for General Alarm 1-2
    - Voltage free contact for supply fans status.
    - Voltage free contact for smoke / fire sensor (the sensors are accessory)
  - INLETS
    - External enabling.
- Power supply 400/3+N/50.

### CONTROL SYSTEM

Microprocessor control system with graphic display for control and monitor of operating and alarms status. The system includes:

- Built-in clock for alarms date and time displaying and storing;
- Built-in memory for the storing of the intervened events (up to 200 events recorded);
- Predisposition for additional connectivity board housing (MODBUS, LON, BACNET MS/TP RS485, BACNET OVER IP). The electronic cards are optional accessories.
- Main components hour-meter;
- Non-volatile "Flash" memory for data storage in case of power supply faulty;
- Menu with protection password;
- Demand Limit function (for machines with double refrigerant circuit only);
- LAN connection (max 10 units).



**REMOTE AIR-COOLED CONDENSERS**

The descriptions of these series can be found in Chapter REMOTE AIR-COOLED CONDENSERS.

|  |   |
|--|---|
|  | <p>..... <b>Remote air-cooled condenser:</b><br/>                 Remote air-cooled condenser in PERALUMAN aluminium alloy with microchannel condensing coil:</p> <ul style="list-style-type: none"> <li>- with AC axial fans and standard acoustic version series <b>GX-Z A B 50</b>;</li> <li>- with AC axial fans and low noise acoustic version series <b>GX-Z A L 50</b>;</li> <li>- with EC axial fans and standard acoustic version series <b>GX-Z E B 50</b>;</li> <li>- with EC axial fans and low noise acoustic version series <b>GX-Z E L 50</b>.</li> </ul> <p>Remote air-cooled condenser with condensing coil with copper tubes and aluminium fins:</p> <ul style="list-style-type: none"> <li>- with AC axial fans and standard acoustic version series <b>BVE2 DX-A B</b>;</li> <li>- with AC axial fans and low noise acoustic version series <b>BVE2 DX-A L</b>;</li> <li>- with EC axial fans and standard acoustic version series <b>BVE2 DX-E B</b>;</li> <li>- with EC axial fans and low noise acoustic version series <b>BVE2 DX-E L</b>.</li> <li>- with EC plug-fans series <b>BVE DX-PF-E</b>.</li> </ul> |
|--|---|

**OPTIONAL ACCESSORIES**

The descriptions of these additional components can be found in Chapter OPTIONAL ACCESSORIES.

|  |  |
|--|--|
|  | <p><b>P121</b>..... <b>Front air intake + bottom panel.</b> Unit base noise insulation with special bottom panel for OVER version (size E0 excluded). Restriction: Non-compatible with "P122 Bottom air intake + blind panels" for OVER version.</p> <p><b>P122</b>..... <b>Bottom air intake+blind panels.</b> Blind frontal panel for OVER version (size E0 excluded). The accessory allows the intake air from the bottom of the machine. Restriction: Not compatible with "P121 Front air intake + bottom panel" for OVER version.</p> <p><b>601</b>..... <b>Solenoid valve on liquid line.</b></p> <p><b>P091</b>..... <b>Back-up module controller.</b> The system guarantees the microprocessor power supply for a few minutes, in case of supply voltage failure. (size E0, E1 excluded).</p> <p><b>P171</b>..... <b>Kit for air -45°C MCH axial AC</b> (condenser series GX-Z A B). Kit for operations with low ambient air temperature down to -45°C. For machine start up and operation with very low ambient air temperatures (between -20°C and -45°C).</p> <p><b>P172 (1)</b>..... <b>Kit for air -45°C axial AC</b> (condenser series BVE2 DX-A B). Kit for operations with low ambient air temperature down to -45°C. For machine start up and operation with very low ambient air temperatures (between -20°C and -45°C).</p> <p><b>P191</b>..... <b>Power supply for condenser.</b> Electrical power supply for remote condenser from the indoor machine electrical board. The optional includes magneto-thermic switches for condenser fans and the control/alarm signals.</p> <p><b>383</b>..... <b>Numbered wirings + UK requests;</b><br/> <b>4181 / 4182 / 4184 / 4185</b>... <b>Serial cards:</b><br/> <b>4181</b> – Serial card MODBUS;<br/> <b>4182</b> – Serial card LON;<br/> <b>4184</b> – Serial card BACNET MS/TP RS485;<br/> <b>4185</b> – Serial card BACNET OVER IP.</p> <p><b>A491</b>..... <b>Water leakage detector.</b> Supplied in mounting kit.</p> <p><b>A492</b>..... <b>Water leakage detector + additional sensor.</b> Supplied in mounting kit.</p> <p><b>A501</b>..... <b>Clogged filter sensor.</b> Differential pressure switch on the air side for clogged filters alarm signal.</p> <p><b>A511</b>..... <b>Smoke detector.</b> Supplied in mounting kit.</p> <p><b>A521</b>..... <b>Fire detector.</b> Supplied in mounting kit.</p> |
|--|--|



|                                 |   |
|---------------------------------|---|
| P141.....                       | <b>Analogue set-point compensation.</b> - Analogue set point compensation according to an external analogue signal at Customer care (size E0 excluded).   |
| P181.....                       | <b>Network analyser</b> (standard machine) Multifunction utility for calculating and displaying the machine electrical measurements.  |
| P182.....                       | <b>Network analyser</b> (full optional machine) Multifunction utility for calculating and displaying the machine electrical measurements.   |
| P183.....                       | <b>Kit network analyser</b> (standard machine) Multifunction utility for calculating and displaying the machine electrical measurements. Supplied in mounting kit.  |
| P184.....                       | <b>Kit network analyser</b> (full optional machine) Multifunction utility for calculating and displaying the machine electrical measurements. Supplied in mounting kit.   |
| A812 (2) .....                  | <b>Free-cooling direct control.</b> Size E0 excluded.   |
| A431.....                       | <b>Electric heater.</b> Heating with electric heaters.  |
| A432.....                       | <b>Extra power electric heater.</b> Size E0, E1, E2 excluded.   |
| 4301 / 4303 / 4305 (3).....     | <b>Humidification:</b> Modulating steam humidifier with immersed electrodes with electronic control.<br><b>4301 - Steam humidifier 3kg/h</b><br><b>4303 - Steam humidifier 8kg/h</b><br><b>4305 - Steam humidifier 15kg/h</b>   |
| P161.....                       | <b>T/rH air intake sensor.</b> Combined Temperature / Humidity sensor on air intake. The optional replace the standard temperature sensor on machine air intake.  |
| 4666 .....                      | <b>External air probe.</b> External air temperature probe.  |
| P071.....                       | <b>Remote T/rH probe.</b> Combined Temperature / Humidity sensor for remote installation. The optional is added to the standard temperature sensor on machine air intake.   |
| P111 / P112 / P113 / P114 ..... | <b>Dual power supply.</b> Dual power supply with automatic change-over.<br><b>P111 - Dual power supply.</b><br><b>P112 - Dual power supply + optional.</b><br><b>P113 - Dual power supply kit.</b> Supplied in mounting kit<br><b>P114 - Dual power supply kit + optional.</b> Supplied in mounting kit |
| A381.....                       | <b>Drain pump.</b> Supplied in mounting kit. The system includes pump with activation float and 10 linear meters long discharge pipe.   |
| P084.....                       | <b>Air filter ePM<sub>10</sub> 50%.</b> Washable high efficiency air filter (according to ISO EN 16890) – size E0 excluded. Not compatible with “P017 / P018 / P019 Plenum + filter ePM <sub>2.5</sub> 50%, ePM <sub>1</sub> 50%, ePM <sub>1</sub> 85% (according to ISO EN 16890)”.                    |
| A531 (4) .....                  | <b>On-off damper.</b> Non-return air damper with frame driven by electric servomotor installed on the machine air delivery (size E0 excluded).  |
| P011.....                       | <b>Empty plenum</b> (size E0 excluded).   |
| P012.....                       | <b>Empty plenum CL.A1.</b> Plenum with fire reaction in class “0” or “A1”. (size E0 excluded).  |
| P013.....                       | <b>Plenum + 3 grilles</b> on three sides with double adjustable row.  |
| P014.....                       | <b>Plenum + 3 grilles CL.A1.</b> Plenum with grilles on three sides with double adjustable row, with fire reaction in class “0” or “A1”.  |
| P015.....                       | <b>Silenced plenum.</b> – size E0 excluded. Not compatible with “P084 Air filter ePM <sub>10</sub> 50%.”.   |
| P016.....                       | <b>Silenced plenum + 1 grille.</b> Grille with double adjustable row on front side and sound absorbers (size E0 excluded).  |
| P017.....                       | <b>Plenum + filter ePM<sub>2.5</sub> 50%.</b> Plenum with high efficiency air filter (according to ISO EN 16890) – size E0 excluded. Not compatible with “P084 Air filter ePM <sub>10</sub> 50%.”.  |
| P018.....                       | <b>Plenum + filter ePM<sub>1</sub> 50%.</b> Plenum with high efficiency air filter (according to ISO EN 16890) – size E0 excluded. Not compatible with “P084 Air filter ePM <sub>10</sub> 50%.”.  |
| P019.....                       | <b>Plenum + filter ePM<sub>1</sub> 85%.</b> Plenum with high efficiency air filter (according to ISO EN 16890) – size E0 excluded. Not compatible with “P084 Air filter ePM <sub>10</sub> 50%.”.  |
| P031 (5) .....                  | <b>Empty intake plenum.</b> (size E0 excluded).   |
| P032 (5) .....                  | <b>Empty intake plenum CL.A1.</b> Plenum with fire reaction in class “0” or “A1”. (size E0 excluded).   |
| P034 (6) .....                  | <b>Intake free-cooling plenum.</b> Size E0 excluded.  |

|                                 |  |
|---------------------------------|--|
| <b>P041 / P042 / P043</b> ..... | <b>Support frame</b> with height adjusting rubber holders. Supplied in mounting kit. It is not possible to match the support frame with plenum installed under the machine.<br><b>P041 – Support frame h 255-350mm</b><br><b>P042 – Support frame h 355-450mm</b><br><b>P043 – Support frame h 400-510mm</b> |
| <b>3601</b> .....               | <b>Compressor operating signal contact.</b> Voltage free contact for compressor status signalling.   |
| <b>2411</b> .....               | <b>Phase sequence relay.</b> Phases sequence control relay for the machine.  |
| <b>1511</b> .....               | <b>Soft starter.</b> Compressor motors soft-starter system (size E0, E1, E2 excluded).   |
| <b>3301</b> .....               | <b>Compressor rephasing.</b> Compressors capacitor for power factor - cosφ 0,9 (sizes E0, E1, E2 excluded).  |
| <b>A181</b> .....               | <b>Compressor soundproof jacket.</b> Compressor soundproof jacket for a sound level reduction of 2 dB(A).  |
| <b>A272</b> .....               | <b>CL. 0 or A1 (EN 13501-1) insulation:</b> Panelling with fire reaction in class "0" or "A1";   |
| <b>P151</b> .....               | <b>Lowered display for Under –</b> for UNDER units equipped with plenum under the unit; (size E0 excluded).  |
| <b>9973</b> .....               | <b>Wooden cage packing.</b> The machines are delivered on wooden pallet, covered with shrink wrap and packaged in wooden cage.   |
| <b>BQ39900001</b> .....         | <b>Remote terminal.</b> Graphic display for remote installation, the optional is added to the standard graphic display placed on machine frontal panel.  |

**WARNING**

The Manufacturers reserves the right to accept the matching of the optional installed on the machine.

**MANDATORY COMBINATIONS OF ACCESSORIES**

1. When optional accessory "P172 Kit for air -45°C axial AC" is present, it requires mandatory accessory "P191 Power supply for condenser".
2. When optional accessory "A812 Free cooling direct control" is present, it requires mandatory accessories "P161 T/rH air intake sensor" and "4666 External air probe".
3. When optional accessories "4301 / 4303 / 4305 Steam humidifier" are present, they require mandatory accessory "P161 T/rH air intake sensor".
4. When optional accessory "A531 On-off damper" is present, it requires mandatory accessory "9973 Wooden cage packing".
5. When optional accessories "P031 Empty intake plenum, for OVER version" and "P032 Empty intake plenum CL.A1, for OVER version" are present, they require mandatory accessory "P122 Bottom air intake+blind panels, for OVER version only"
6. When optional accessory "P034 Intake free-cooling plenum" is present, it requires mandatory accessories "P161 T/rH air intake sensor", "4666 External air probe", "A812 Free-cooling direct control" and "P122 Bottom air intake+blind panels, for OVER version only"

## TECHNICAL DATA

| VERSION (1)                            |                   | U / O           | U / O           | U / O           | U / O           | U / O           |
|--|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| <b>MODEL</b>                           |                   | <b>007 P1 S</b> | <b>009 P1 S</b> | <b>011 P1 S</b> | <b>014 P1 S</b> | <b>016 P1 S</b> |
| <b>SIZE</b>                            |                   | <b>E0</b>       | <b>E0</b>       | <b>E1</b>       | <b>E2</b>       | <b>E2</b>       |
| <b>COOLING CAPACITY (2)</b>            |                   |                 |                 |                 |                 |                 |
| <b>Total</b>                           | <b>kW</b>         | <b>6,37</b>     | <b>7,73</b>     | <b>11,00</b>    | <b>14,00</b>    | <b>15,00</b>    |
| <b>Sensible</b>                        | <b>kW</b>         | <b>6,29</b>     | <b>7,05</b>     | <b>10,10</b>    | <b>14,00</b>    | <b>15,00</b>    |
| SHR (3)                                |                   | 0,99            | 0,91            | 0,92            | 1,00            | 1,00            |
| Total power input (Comp. + Fans)       | kW                | 1,65            | 2,02            | 2,74            | 3,45            | 3,84            |
| <b>"AC" SUPPLY FANS</b>                | n.                | 1               | 1               | 1               | 1               | 1               |
| Air flow                               | m <sup>3</sup> /h | 1660            | 1660            | 3120            | 4340            | 4340            |
| Nominal external static pressure       | Pa                | 20              | 20              | 20              | 20              | 20              |
| Maximum external static pressure       | Pa                | 66              | 66              | 92              | 92              | 92              |
| Fans power input (4)                   | kW                | 0,12            | 0,12            | 0,46            | 0,68            | 0,68            |
| <b>ON/OFF COMPRESSORS</b>              |                   | rotary vane     | rotary vane     | rotary vane     | rotary vane     | rotary vane     |
| Compressors number                     | n.                | 1               | 1               | 1               | 1               | 1               |
| Capacity steps                         | n.                | 1               | 1               | 1               | 1               | 1               |
| Compressors power input                | kW                | 1,53            | 1,90            | 2,28            | 2,77            | 3,16            |
| <b>AIR FILTERS</b>                     | n.                | 1               | 1               | 1               | 1               | 1               |
| Filter area                            | m <sup>2</sup>    | 0,28            | 0,28            | 0,61            | 0,78            | 0,78            |
| Efficiency (ISO EN 16890)              | COARSE            | 40%             | 40%             | 60%             | 60%             | 60%             |
| <b>REFRIGERANT CIRCUITS</b>            | n.                | 1               | 1               | 1               | 1               | 1               |
| <b>POWER SUPPLY</b>                    | V/Ph/Hz           | 400/3+N/50      | 400/3+N/50      | 400/3+N/50      | 400/3+N/50      | 400/3+N/50      |
| <b>ENERGY EFFICIENCY INDEX (2) (5)</b> |                   |                 |                 |                 |                 |                 |
| EER Energy Efficiency Ratio            | kW/kW             | 3,86            | 3,83            | 4,01            | 4,06            | 3,91            |
| <b>DIMENSIONS</b>                      |                   |                 |                 |                 |                 |                 |
| Length                                 | mm                | 655             | 655             | 650             | 785             | 785             |
| Width                                  | mm                | 445             | 445             | 675             | 675             | 675             |
| Height                                 | mm                | 1680            | 1680            | 1925            | 1925            | 1925            |
| <b>NET WEIGHT OVER</b>                 | kg                | 160             | 160             | 228             | 260             | 265             |
| <b>NET WEIGHT UNDER</b>                | kg                | 160             | 160             | 238             | 270             | 275             |
| <b>REFRIGERANT CONNECTIONS</b>         |                   |                 |                 |                 |                 |                 |
| Gas delivery                           | ODS Ø             | 12              | 12              | 12              | 16              | 16              |
| Liquid return                          | ODS Ø             | 12              | 12              | 12              | 12              | 12              |
| <b>HYDRAULIC CONNECTIONS</b>           |                   |                 |                 |                 |                 |                 |
| <b>CONDENSATE DISCHARGE</b>            |                   |                 |                 |                 |                 |                 |
| Rubber pipe – internal diameter        | Ø mm              | 19              | 19              | 19              | 19              | 19              |

### THE COOLING CAPACITY DOES NOT CONSIDER THE SUPPLY FAN MOTOR THERMAL LOAD

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4. Corresponding to the nominal external static pressure
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## TECHNICAL DATA

| VERSION (1)                            |         | U / O      | U / O      | U / O      | U / O      | U / O      |
|--|---------|------------|------------|------------|------------|------------|
| MODEL                                  |         | 020 P1 S   | 022 P1 S   | 026 P1 S   | 032 P1 S   | 037 P1 S   |
| SIZE                                   |         | E3         | E3         | E3         | E4         | E4         |
| <b>COOLING CAPACITY (2)</b>            |         |            |            |            |            |            |
| Total                                  | kW      | 20,60      | 22,50      | 26,30      | 31,80      | 36,40      |
| Sensible                               | kW      | 20,60      | 22,50      | 25,80      | 31,70      | 34,20      |
| SHR (3)                                |         | 1,00       | 1,00       | 0,98       | 1,00       | 0,94       |
| Total power input (Comp. + Fans)       | kW      | 5,15       | 5,94       | 7,03       | 7,48       | 8,43       |
| <b>"AC" SUPPLY FANS</b>                |         |            |            |            |            |            |
| "AC" SUPPLY FANS                       | n.      | 1          | 1          | 1          | 1          | 1          |
| Air flow                               | m³/h    | 6650       | 6650       | 6650       | 8150       | 8150       |
| Nominal external static pressure       | Pa      | 20         | 20         | 20         | 20         | 20         |
| Maximum external static pressure       | Pa      | 120        | 120        | 120        | 151        | 151        |
| Fans power input (4)                   | kW      | 1,48       | 1,48       | 1,48       | 1,28       | 1,28       |
| <b>ON/OFF COMPRESSORS</b>              |         |            |            |            |            |            |
| ON/OFF COMPRESSORS                     |         | scroll     | scroll     | scroll     | scroll     | scroll     |
| Compressors number                     | n.      | 1          | 1          | 1          | 1          | 1          |
| Capacity steps                         | n.      | 1          | 1          | 1          | 1          | 1          |
| Compressors power input                | kW      | 3,67       | 4,46       | 5,55       | 6,20       | 7,15       |
| <b>AIR FILTERS</b>                     |         |            |            |            |            |            |
| AIR FILTERS                            | n.      | 2          | 2          | 2          | 2          | 2          |
| Filter area                            | m²      | 1,24       | 1,24       | 1,24       | 2,07       | 2,07       |
| Efficiency (ISO EN 16890)              | COARSE  | 60%        | 60%        | 60%        | 60%        | 60%        |
| <b>REFRIGERANT CIRCUITS</b>            |         |            |            |            |            |            |
| REFRIGERANT CIRCUITS                   | n.      | 1          | 1          | 1          | 1          | 1          |
| <b>POWER SUPPLY</b>                    |         |            |            |            |            |            |
| POWER SUPPLY                           | V/Ph/Hz | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 |
| <b>ENERGY EFFICIENCY INDEX (2) (5)</b> |         |            |            |            |            |            |
| EER Energy Efficiency Ratio            | kW/kW   | 4,00       | 3,79       | 3,74       | 4,25       | 4,32       |
| <b>DIMENSIONS</b>                      |         |            |            |            |            |            |
| Length                                 | mm      | 1085       | 1085       | 1085       | 1305       | 1305       |
| Width                                  | mm      | 775        | 775        | 775        | 930        | 930        |
| Height                                 | mm      | 1925       | 1925       | 1925       | 1980       | 1980       |
| <b>NET WEIGHT OVER</b>                 |         |            |            |            |            |            |
| NET WEIGHT OVER                        | kg      | 300        | 305        | 305        | 410        | 415        |
| <b>NET WEIGHT UNDER</b>                |         |            |            |            |            |            |
| NET WEIGHT UNDER                       | kg      | 320        | 325        | 325        | 420        | 425        |
| <b>REFRIGERANT CONNECTIONS</b>         |         |            |            |            |            |            |
| Gas delivery                           | ODS Ø   | 16         | 16         | 22         | 22         | 22         |
| Liquid return                          | ODS Ø   | 16         | 16         | 16         | 16         | 16         |
| <b>HYDRAULIC CONNECTIONS</b>           |         |            |            |            |            |            |
| <b>CONDENSATE DISCHARGE</b>            |         |            |            |            |            |            |
| Rubber pipe – internal diameter        | Ø mm    | 19         | 19         | 19         | 19         | 19         |

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## TECHNICAL DATA

| VERSION (1)                            |                   | U / O      | U / O      | U / O      | U / O      | U / O      |
|--|-------------------|------------|------------|------------|------------|------------|
| MODEL                                  |                   | 041 P1 S   | 045 P1 S   | 039 P2 D   | 048 P2 D   | 055 P2 D   |
| SIZE                                   |                   | E4         | E4         | E5         | E5         | E6         |
| <b>COOLING CAPACITY (2)</b>            |                   |            |            |            |            |            |
| Total                                  | kW                | 40,90      | 44,80      | 36,90      | 47,70      | 56,50      |
| Sensible                               | kW                | 39,30      | 41,60      | 35,30      | 44,40      | 53,60      |
| SHR (3)                                |                   | 0,96       | 0,93       | 0,96       | 0,93       | 0,95       |
| Total power input (Comp. + Fans)       | kW                | 9,86       | 10,90      | 8,69       | 11,80      | 13,90      |
| <b>"AC" SUPPLY FANS</b>                |                   |            |            |            |            |            |
|  | n.                | 1          | 1          | 1          | 1          | 2          |
| Air flow                               | m <sup>3</sup> /h | 9800       | 9800       | 8450       | 10350      | 15200      |
| Nominal external static pressure       | Pa                | 20         | 20         | 20         | 20         | 20         |
| Maximum external static pressure       | Pa                | 143        | 143        | 131        | 138        | 139        |
| Fans power input (4)                   | kW                | 1,76       | 1,76       | 1,27       | 1,69       | 2,74       |
| <b>ON/OFF COMPRESSORS</b>              |                   |            |            |            |            |            |
|  |                   | scroll     | scroll     | scroll     | scroll     | scroll     |
| Compressors number                     | n.                | 1          | 1          | 2          | 2          | 2          |
| Capacity steps                         | n.                | 1          | 1          | 2          | 2          | 2          |
| Compressors power input                | kW                | 8,10       | 9,12       | 7,42       | 10,20      | 11,20      |
| <b>AIR FILTERS</b>                     |                   |            |            |            |            |            |
|  | n.                | 2          | 2          | 3          | 3          | 3          |
| Filter area                            | m <sup>2</sup>    | 2,07       | 2,07       | 2,59       | 2,59       | 3,16       |
| Efficiency (ISO EN 16890)              | COARSE            | 60%        | 60%        | 60%        | 60%        | 60%        |
| <b>REFRIGERANT CIRCUITS</b>            |                   |            |            |            |            |            |
|  | n.                | 1          | 1          | 2          | 2          | 2          |
| <b>POWER SUPPLY</b>                    |                   |            |            |            |            |            |
|  | V/Ph/Hz           | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 |
| <b>ENERGY EFFICIENCY INDEX (2) (5)</b> |                   |            |            |            |            |            |
| EER Energy Efficiency Ratio            | kW/kW             | 4,15       | 4,11       | 4,25       | 4,04       | 4,06       |
| <b>DIMENSIONS</b>                      |                   |            |            |            |            |            |
| Length                                 | mm                | 1305       | 1305       | 1630       | 1630       | 1875       |
| Width                                  | mm                | 930        | 930        | 930        | 930        | 930        |
| Height                                 | mm                | 1980       | 1980       | 1980       | 1980       | 1980       |
| <b>NET WEIGHT OVER</b>                 |                   |            |            |            |            |            |
|  | kg                | 427        | 435        | 520        | 530        | 610        |
| <b>NET WEIGHT UNDER</b>                |                   |            |            |            |            |            |
|  | kg                | 437        | 445        | 530        | 540        | 620        |
| <b>REFRIGERANT CONNECTIONS</b>         |                   |            |            |            |            |            |
| Gas delivery                           | ODS Ø             | 22         | 22         | 2x16       | 2x16       | 2x22       |
| Liquid return                          | ODS Ø             | 22         | 22         | 2x16       | 2x16       | 2x16       |
| <b>HYDRAULIC CONNECTIONS</b>           |                   |            |            |            |            |            |
| <b>CONDENSATE DISCHARGE</b>            |                   |            |            |            |            |            |
| Rubber pipe – internal diameter        | Ø mm              | 19         | 19         | 19         | 19         | 19         |

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## TECHNICAL DATA

| VERSION (1)                            |                   | U / O      | U / O      | U / O      | U / O      | U / O      |
|--|-------------------|------------|------------|------------|------------|------------|
| MODEL                                  |                   | 062 P2 D   | 075 P2 D   | 082 P2 D   | 092 P2 D   | 102 P2 D   |
| SIZE                                   |                   | E6         | E7         | E7         | E8         | E8         |
| <b>COOLING CAPACITY (2)</b>            |                   |            |            |            |            |            |
| Total                                  | kW                | 63,20      | 74,70      | 82,00      | 91,10      | 103,00     |
| Sensible                               | kW                | 58,70      | 74,10      | 78,10      | 85,20      | 91,50      |
| SHR (3)                                |                   | 0,93       | 0,99       | 0,95       | 0,94       | 0,89       |
| Total power input (Comp. + Fans)       | kW                | 15,10      | 17,90      | 19,80      | 21,60      | 25,40      |
| <b>"AC" SUPPLY FANS</b>                |                   |            |            |            |            |            |
|  | n.                | 2          | 2          | 2          | 2          | 2          |
| Air flow                               | m <sup>3</sup> /h | 15200      | 19200      | 19200      | 20350      | 20350      |
| Nominal external static pressure       | Pa                | 20         | 20         | 20         | 20         | 20         |
| Maximum external static pressure       | Pa                | 139        | 138        | 138        | 147        | 147        |
| Fans power input (4)                   | kW                | 2,74       | 3,60       | 3,60       | 3,38       | 3,38       |
| <b>ON/OFF COMPRESSORS</b>              |                   |            |            |            |            |            |
|  |                   | scroll     | scroll     | scroll     | scroll     | scroll     |
| Compressors number                     | n.                | 2          | 2          | 2          | 2          | 2          |
| Capacity steps                         | n.                | 2          | 2          | 2          | 2          | 2          |
| Compressors power input                | kW                | 12,40      | 14,30      | 16,20      | 18,20      | 22,00      |
| <b>AIR FILTERS</b>                     |                   |            |            |            |            |            |
|  | n.                | 3          | 4          | 4          | 5          | 5          |
| Filter area                            | m <sup>2</sup>    | 3,16       | 3,83       | 3,83       | 4,47       | 4,47       |
| Efficiency (ISO EN 16890)              | COARSE            | 60%        | 60%        | 60%        | 60%        | 60%        |
| <b>REFRIGERANT CIRCUITS</b>            |                   |            |            |            |            |            |
|  | n.                | 2          | 2          | 2          | 2          | 2          |
| <b>POWER SUPPLY</b>                    |                   |            |            |            |            |            |
|  | V/Ph/Hz           | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 |
| <b>ENERGY EFFICIENCY INDEX (2) (5)</b> |                   |            |            |            |            |            |
| EER Energy Efficiency Ratio            | kW/kW             | 4,19       | 4,17       | 4,14       | 4,22       | 4,06       |
| <b>DIMENSIONS</b>                      |                   |            |            |            |            |            |
| Length                                 | mm                | 1875       | 2175       | 2175       | 2499       | 2499       |
| Width                                  | mm                | 930        | 930        | 930        | 930        | 930        |
| Height                                 | mm                | 1980       | 1980       | 1980       | 1980       | 1980       |
| <b>NET WEIGHT OVER</b>                 |                   |            |            |            |            |            |
|  | kg                | 630        | 688        | 695        | 785        | 785        |
| <b>NET WEIGHT UNDER</b>                |                   |            |            |            |            |            |
|  | kg                | 640        | 745        | 750        | 845        | 845        |
| <b>REFRIGERANT CONNECTIONS</b>         |                   |            |            |            |            |            |
| Gas delivery                           | ODS Ø             | 2x22       | 2x22       | 2x22       | 2x22       | 2x22       |
| Liquid return                          | ODS Ø             | 2x16       | 2x22       | 2x22       | 2x22       | 2x22       |
| <b>HYDRAULIC CONNECTIONS</b>           |                   |            |            |            |            |            |
| <b>CONDENSATE DISCHARGE</b>            |                   |            |            |            |            |            |
| Rubber pipe – internal diameter        | Ø mm              | 19         | 19         | 19         | 19         | 19         |

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## TECHNICAL DATA

| VERSION (1)                            |                   | U          | U          |
|--|-------------------|------------|------------|
| MODEL                                  |                   | 117 P4 D   | 146 P4 D   |
| SIZE                                   |                   | E9         | E9         |
| <b>COOLING CAPACITY (2)</b>            |                   |            |            |
| Total                                  | kW                | 119,00     | 147,00     |
| Sensible                               | kW                | 115,00     | 134,00     |
| SHR (3)                                |                   | 0,97       | 0,91       |
| Total power input (Comp. + Fans)       | kW                | 30,00      | 37,60      |
| <b>"AC" SUPPLY FANS</b>                |                   |            |            |
|  | n.                | 3          | 3          |
| Air flow                               | m <sup>3</sup> /h | 29400      | 29400      |
| Nominal external static pressure       | Pa                | 20         | 20         |
| Maximum external static pressure       | Pa                | 147        | 147        |
| Fans power input (4)                   | kW                | 5,24       | 5,24       |
| <b>ON/OFF COMPRESSORS</b>              |                   |            |            |
|  |                   | scroll     | scroll     |
| Compressors number                     | n.                | 4          | 4          |
| Capacity steps                         | n.                | 4          | 4          |
| Compressors power input                | kW                | 24,80      | 32,40      |
| <b>AIR FILTERS</b>                     |                   |            |            |
|  | n.                | 6          | 6          |
| Filter area                            | m <sup>2</sup>    | 5,24       | 5,24       |
| Efficiency (ISO EN 16890)              | COARSE            | 60%        | 60%        |
| <b>REFRIGERANT CIRCUITS</b>            |                   |            |            |
|  | n.                | 2          | 2          |
| <b>POWER SUPPLY</b>                    |                   |            |            |
|  | V/Ph/Hz           | 400/3+N/50 | 400/3+N/50 |
| <b>ENERGY EFFICIENCY INDEX (2) (5)</b> |                   |            |            |
| EER Energy Efficiency Ratio            | kW/kW             | 3,97       | 3,91       |
| <b>DIMENSIONS</b>                      |                   |            |            |
| Length                                 | mm                | 2899       | 2899       |
| Width                                  | mm                | 930        | 930        |
| Height                                 | mm                | 1980       | 1980       |
| <b>NET WEIGHT OVER</b>                 |                   |            |            |
|  | kg                | --         | --         |
| <b>NET WEIGHT UNDER</b>                |                   |            |            |
|  | kg                | 1020       | 1080       |
| <b>REFRIGERANT CONNECTIONS</b>         |                   |            |            |
| Gas delivery                           | ODS Ø             | 2x28       | 2x28       |
| Liquid return                          | ODS Ø             | 2x22       | 2x22       |
| <b>HYDRAULIC CONNECTIONS</b>           |                   |            |            |
| <b>CONDENSATE DISCHARGE</b>            |                   |            |            |
| Rubber pipe – internal diameter        | Ø mm              | 19         | 19         |

### THE COOLING CAPACITY DOES NOT CONSIDER THE SUPPLY FAN MOTOR THERMAL LOAD

1. U = Under, downflow / O = Over, upflow
2. Gross value. Characteristics referred to entering air at 26°C-40%RH; condensing temperature 45°C. ESP=20Pa.
3. SHR = Sensible cooling capacity / Total cooling capacity.
4. Corresponding to the nominal external static pressure
5. The Energy Efficiency Index does not consider the remote air-cooled condenser.

The units highlighted in this publication contain <HFC R410A [GWP<sub>100</sub> 2088]> fluorinated greenhouse gas

## REFRIGERANT CHARGE

The air conditioner is supplied with a minimum R410A refrigerant charge. **Refrigerant must be charged.** The following table shows the refrigerant charge that must be introduced for the air conditioner only. Remote condenser, connections pipes and optional are excluded.

| VERSION (1)                                    |        | U / O    | U / O    | U / O    | U / O    | U / O    |
|--|--------|----------|----------|----------|----------|----------|
| MODEL  |        | 007 P1 S | 009 P1 S | 011 P1 S | 014 P1 S | 016 P1 S |
| SIZE   |        | E0       | E0       | E1       | E2       | E2       |
| REFRIGERANT                                    |        | R410A    | R410A    | R410A    | R410A    | R410A    |
| Refrigerant circuits x Refrigerant charge (2)  | n x kg | 1 x 2,3  | 1 x 2,3  | 1 x 3,2  | 1 x 3,4  | 1 x 3,4  |
| HFC R410A - F Gas - CO <sub>2</sub> equivalent | t      | 4,80     | 4,80     | 6,68     | 7,10     | 7,10     |

| VERSION (1)                                    |        | U / O    | U / O    | U / O    | U / O    | U / O    |
|--|--------|----------|----------|----------|----------|----------|
| MODEL  |        | 020 P1 S | 022 P1 S | 026 P1 S | 032 P1 S | 037 P1 S |
| SIZE   |        | E3       | E3       | E3       | E4       | E4       |
| REFRIGERANT                                    |        | R410A    | R410A    | R410A    | R410A    | R410A    |
| Refrigerant circuits x Refrigerant charge (2)  | n x kg | 1 x 4,0  | 1 x 4,0  | 1 x 4,0  | 1 x 5,7  | 1 x 5,7  |
| HFC R410A - F Gas - CO <sub>2</sub> equivalent | t      | 8,35     | 8,35     | 8,35     | 11,90    | 11,90    |

| VERSION (1)                                    |        | U / O    | U / O    | U / O    | U / O    | U / O    |
|--|--------|----------|----------|----------|----------|----------|
| MODEL  |        | 041 P1 S | 045 P1 S | 039 P2 D | 048 P2 D | 055 P2 D |
| SIZE   |        | E4       | E4       | E5       | E5       | E6       |
| REFRIGERANT                                    |        | R410A    | R410A    | R410A    | R410A    | R410A    |
| Refrigerant circuits x Refrigerant charge (2)  | n x kg | 1 x 8,6  | 1 x 8,6  | 2 x 4,5  | 2 x 4,5  | 2 x 4,9  |
| HFC R410A - F Gas - CO <sub>2</sub> equivalent | t      | 17,96    | 17,96    | 18,79    | 18,79    | 20,46    |

| VERSION (1)                                    |        | U / O    | U / O    | U / O    | U / O    | U / O    |
|--|--------|----------|----------|----------|----------|----------|
| MODEL  |        | 062 P2 D | 075 P2 D | 082 P2 D | 092 P2 D | 102 P2 D |
| SIZE   |        | E6       | E7       | E7       | E8       | E8       |
| REFRIGERANT                                    |        | R410A    | R410A    | R410A    | R410A    | R410A    |
| Refrigerant circuits x Refrigerant charge (2)  | n x kg | 2 x 4,9  | 2 x 8,1  | 2 x 8,1  | 2 x 8,7  | 2 x 8,7  |
| HFC R410A - F Gas - CO <sub>2</sub> equivalent | t      | 20,46    | 33,83    | 33,83    | 36,33    | 36,33    |

| VERSION (1)                                    |        | U        | U        |
|--|--------|----------|----------|
| MODEL  |        | 117 P4 D | 146 P4 D |
| SIZE   |        | E9       | E9       |
| REFRIGERANT                                    |        | R410A    | R410A    |
| Refrigerant circuits x Refrigerant charge (2)  | n x kg | 2 x 10,8 | 2 x 10,8 |
| HFC R410A - F Gas - CO <sub>2</sub> equivalent | t      | 45,10    | 45,10    |

1. U = Under, downflow / O = Over, upflow
2. Refrigerant charge required for the air conditioner only operation. Remote condenser, connections pipes and optional are excluded. For air conditioners with double refrigerant circuit is indicated the number of circuits x the charge of a single circuit.

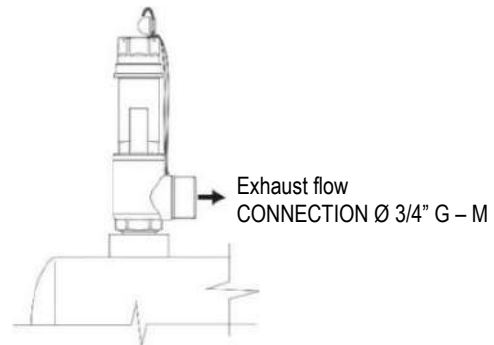
## PRESSURE RELIEF VALVE

The pressure relief valve of the refrigerant circuit is installed in the machines when required by Directive 2014/68/EU. The valve is installed on liquid receiver of each refrigerant circuit of the machine with the purpose to protect the circuit from overpressure.

**It is up to the installer to check whether the system complies with the 2014/68 / EU standard regarding the installation of the pressure relief valve. By plant we mean the complete system that includes the internal machine, the remote condenser and the connecting pipes**

The installer must calculate the amount of refrigerant contained in the system and, if the refrigerant charge is higher than 10 kg, he must install the pressure relief valve.

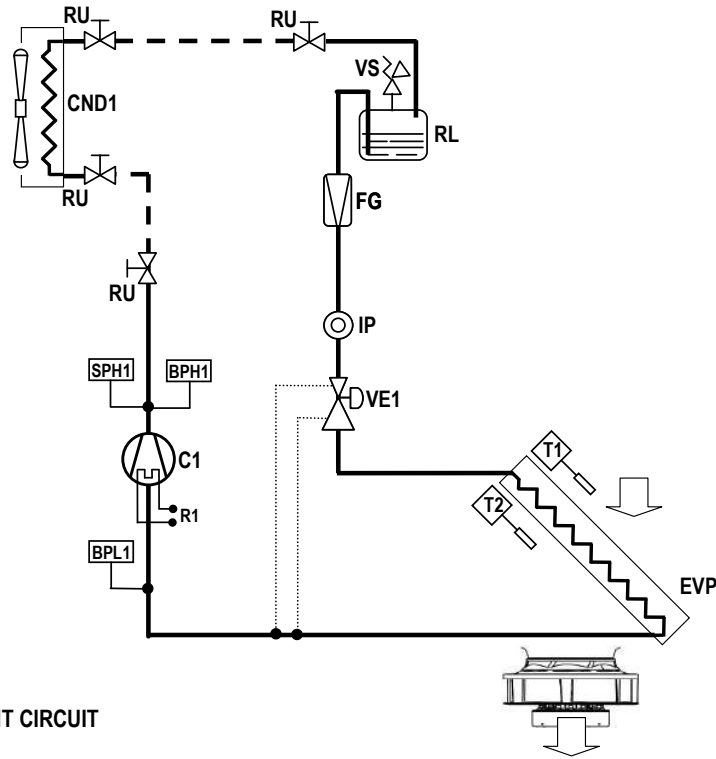
|          | Factory installed components             | At Installer care              |
|----------|--|--------------------------------|
|          | Pressure relief valve on liquid receiver | Possible pressure relief valve |
| Model    | [bar]                                    | [bar]                          |
| 007 P1 S | ---                                      | 41,5                           |
| 009 P1 S | ---                                      | 41,5                           |
| 011 P1 S | ---                                      | 41,5                           |
| 014 P1 S | ---                                      | 41,5                           |
| 016 P1 S | ---                                      | 41,5                           |
| 020 P1 S | ---                                      | 45,0                           |
| 022 P1 S | ---                                      | 45,0                           |
| 026 P1 S | ---                                      | 45,0                           |
| 032 P1 S | ---                                      | 45,0                           |
| 037 P1 S | ---                                      | 45,0                           |
| 041 P1 S | 45,0                                     | ---                            |
| 045 P1 S | 45,0                                     | ---                            |
| 039 P2 D | ---                                      | 45,0                           |
| 048 P2 D | ---                                      | 45,0                           |
| 055 P2 D | ---                                      | 45,0                           |
| 062 P2 D | ---                                      | 45,0                           |
| 075 P2 D | 45,0                                     | ---                            |
| 082 P2 D | 45,0                                     | ---                            |
| 092 P2 D | 45,0                                     | ---                            |
| 102 P2 D | 45,0                                     | ---                            |
| 117 P4 D | 45,0                                     | ---                            |
| 146 P4 D | 45,0                                     | ---                            |



**REFRIGERANT CIRCUIT**

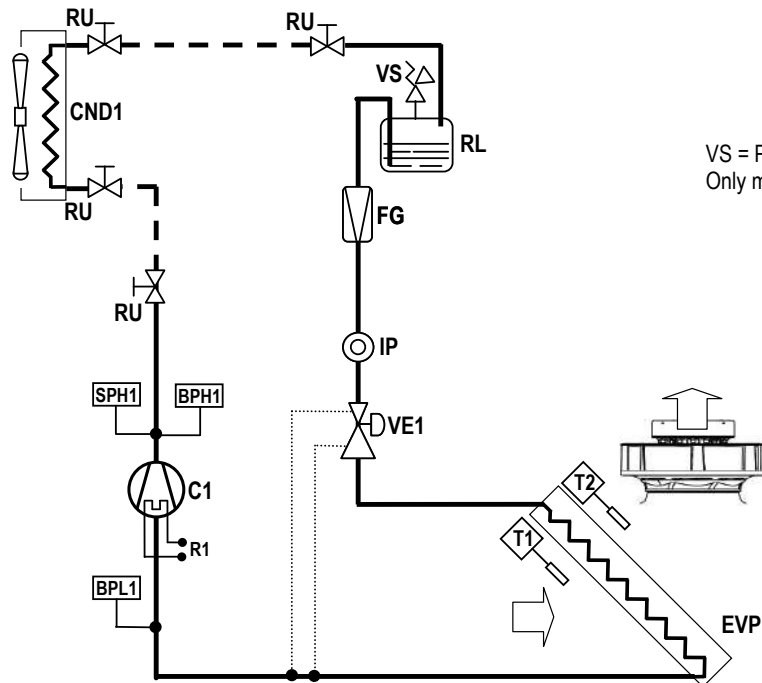
Below refrigerant diagrams for version with single or double refrigerant circuit. The diagrams refer to the standard configuration, without optional.

**UNDER - SINGLE REFRIGERANT CIRCUIT**



VS = Pressure relief valve  
Only models 041 P1, 045 P1

**OVER - SINGLE REFRIGERANT CIRCUIT**



VS = Pressure relief valve  
Only models 041 P1, 045 P1

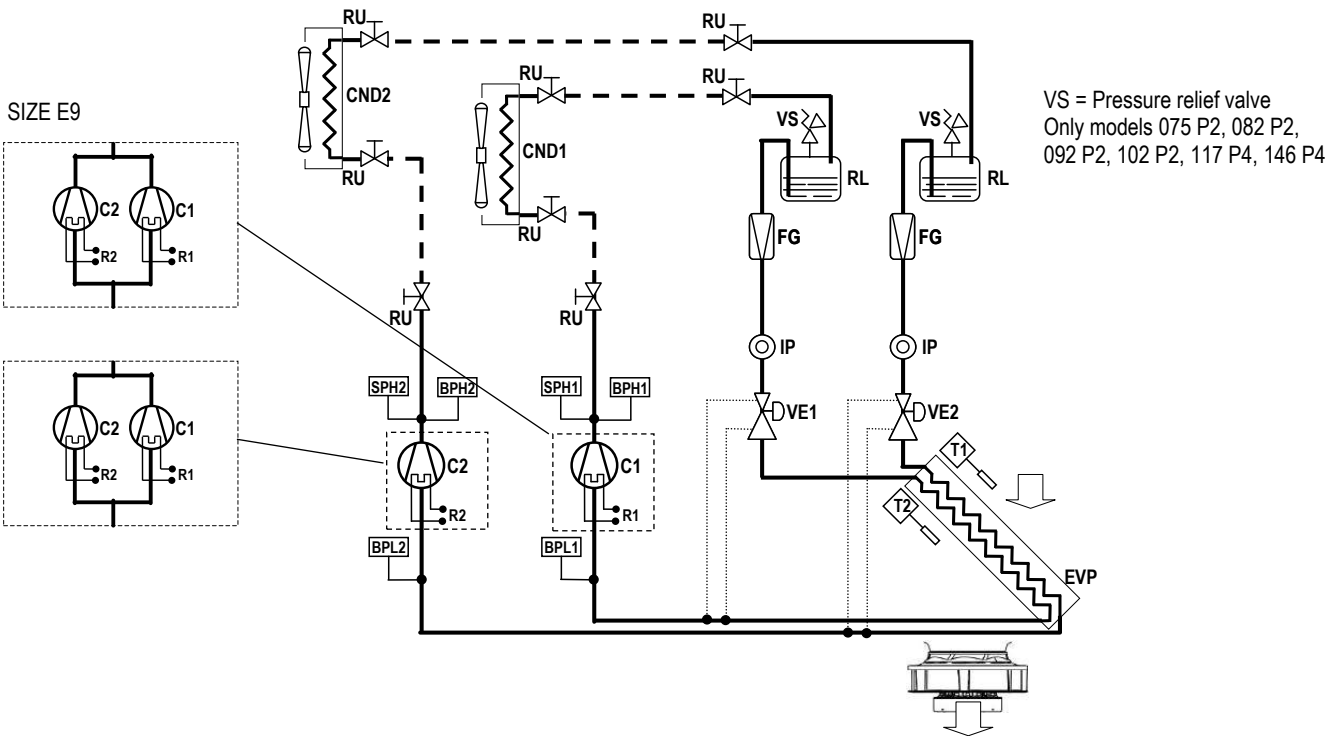
**LEGENDA**

- C1 Compressor
- R1 Crankcase heater
- CND Condenser.
- EVP Evaporator.
- BPH High pressure transducer.

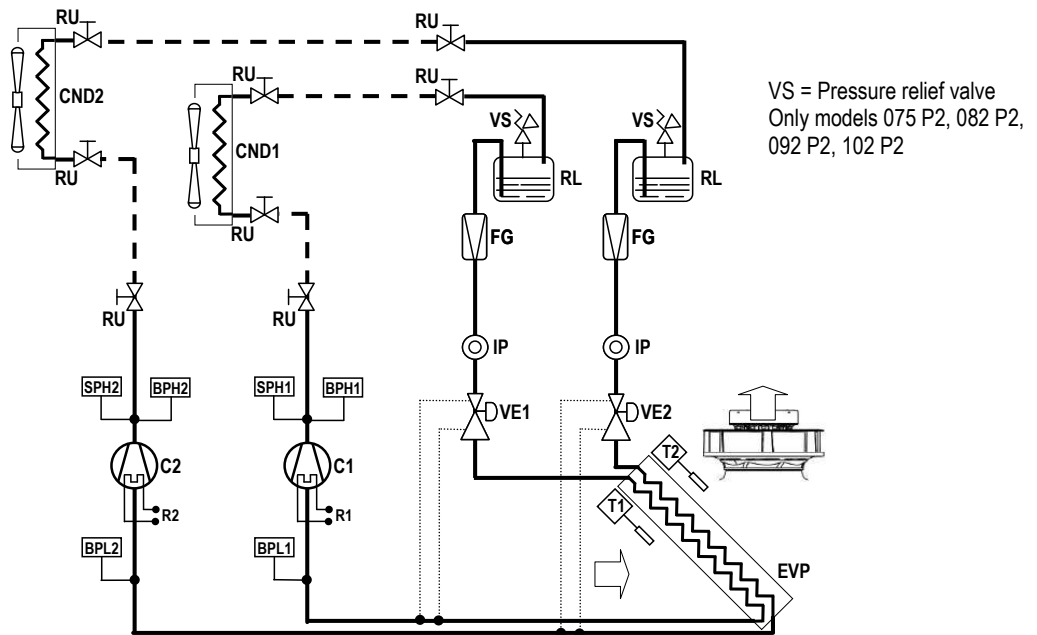
- BPL Low pressure transducer.
- SPH High pressure switch
- VS Pressure relief valve.
- FG Refrigerant filter.

- IP Sight glass.
- VE Expansion valve.
- T Temperature probes.
- RU Valves
- RL Liquid receiver

**UNDER - DOUBLE REFRIGERANT CIRCUIT**



**OVER - DOUBLE REFRIGERANT CIRCUIT**



**LEGENDA**

- C1...2 Compressor 1, 2
- R1...2 Crankcase heater 1, 2
- CND Condenser.
- EVP Evaporator.
- BPH High pressure transducer.

- BPL Low pressure transducer.
- SPH High pressure switch
- VS Pressure relief valve.
- FG Refrigerant filter.

- IP Sight glass.
- VE Expansion valve.
- T Temperature probes.
- RU Valves
- RL Liquid receiver

**RECOMMENDED REFRIGERANT LINES**

Diameter of the recommended refrigerant lines for connection to MEHITS S.p.A. air conditioners and referred to "EQUIVALENT LENGHT". Please always refer to the "INSTALLATION DIAGRAM" to properly select all necessary components. Verify the need to use pressure limiting devices (safety valves) where not already provided for by Directive 2014/68 / EU.

**Nominal diameter:** Refrigerant connection of the indoor unit. In some cases, the diameter of the refrigerant lines may not correspond with the nominal diameter. This is completely normal. It is enough to provide a reduction fitting to adjust the diameter.

**"SI" INTERNATIONAL SYSTEM PIPES DIAMETERS**

| SI system | Diameter  | mm | 6 | 8 | 10 | 12 | 16 | 18 | 22 | 28  | 35  |
|-----------|-----------|----|---|---|----|----|----|----|----|-----|-----|
|           | Thickness | mm | 1 | 1 | 1  | 1  | 1  | 1  | 1  | 1,5 | 1,5 |

**ON/OFF COMPRESSORS**

| Model       | Line   | Nominal diameter Ø [mm] | EQUIVALENT LENGHT FOR ON/OFF COMPRESSORS R410A |       |       |       |       |       |       |       |       |       |
|-------------|--------|-------------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|             |        |                         | 5[m]   | 10[m] | 15[m] | 20[m] | 25[m] | 30[m] | 35[m] | 40[m] | 45[m] | 50[m] |
| 007<br>P1 S | Gas    | 12                      | 12mm   |       |       |       |       |       |       |       |       |       |
|             | Liquid | 12                      | 12mm   |       |       |       |       |       |       |       |       |       |
| 009<br>P1 S | Gas    | 12                      | 12mm   |       |       |       |       |       |       |       |       |       |
|             | Liquid | 12                      | 12mm   |       |       |       |       |       |       |       |       |       |
| 011<br>P1 S | Gas    | 12                      | 12mm   |       |       |       |       | 16mm  |       |       |       |       |
|             | Liquid | 12                      | 12mm   |       |       |       |       |       |       |       |       |       |
| 014<br>P1 S | Gas    | 16                      | 16mm   |       |       |       |       |       |       |       |       |       |
|             | Liquid | 12                      | 12mm   |       |       |       |       | 16mm  |       |       |       |       |
| 016<br>P1 S | Gas    | 16                      | 16mm   |       |       |       |       |       |       |       |       |       |
|             | Liquid | 12                      | 12mm   |       |       |       |       | 16mm  |       |       |       |       |
| 020<br>P1 S | Gas    | 16                      | 16mm   |       |       |       |       | 18mm  |       |       |       |       |
|             | Liquid | 16                      | 16mm   |       |       |       |       |       |       |       |       |       |
| 022<br>P1 S | Gas    | 16                      | 16mm   |       |       |       |       | 18mm  |       |       |       |       |
|             | Liquid | 16                      | 16mm   |       |       |       |       |       |       |       |       |       |
| 026<br>P1 S | Gas    | 22                      | 18mm   |       |       |       |       | 22mm  |       |       |       |       |
|             | Liquid | 16                      | 16mm   |       |       |       |       | 18mm  |       |       |       |       |
| 032<br>P1 S | Gas    | 22                      | 18mm   |       |       |       |       | 22mm  |       |       |       |       |
|             | Liquid | 16                      | 16mm   |       |       |       |       | 18mm  |       |       |       |       |
| 037<br>P1 S | Gas    | 22                      | 18mm   |       |       |       |       | 22mm  |       |       |       |       |
|             | Liquid | 16                      | 16mm   |       |       |       |       | 18mm  |       |       |       |       |
| 041<br>P1 S | Gas    | 22                      | 22mm   |       |       |       |       |       |       |       |       |       |
|             | Liquid | 22                      | 22mm   |       |       |       |       |       |       |       |       |       |
| 045<br>P1 S | Gas    | 22                      | 22mm   |       |       |       |       |       |       |       |       |       |
|             | Liquid | 22                      | 22mm   |       |       |       |       |       |       |       |       |       |
| 039<br>P2 D | Gas    | 16                      | 16mm   |       |       |       |       | 18mm  |       |       |       |       |
|             | Liquid | 16                      | 16mm   |       |       |       |       |       |       |       |       |       |
| 048<br>P2 D | Gas    | 16                      | 16mm   |       |       |       |       | 18mm  |       |       |       |       |
|             | Liquid | 16                      | 16mm   |       |       |       |       | 18mm  |       |       |       |       |
| 055<br>P2 D | Gas    | 22                      | 18mm   |       |       |       |       | 22mm  |       |       |       |       |
|             | Liquid | 16                      | 16mm   |       |       |       |       | 18mm  |       |       |       |       |
| 062<br>P2 D | Gas    | 22                      | 18mm   |       |       |       |       | 22mm  |       |       |       |       |
|             | Liquid | 16                      | 16mm   |       |       |       |       | 18mm  |       |       |       |       |
| 075<br>P2 D | Gas    | 22                      | 22mm   |       |       |       |       |       |       |       |       |       |
|             | Liquid | 22                      | 22mm   |       |       |       |       |       |       |       |       |       |
| 082<br>P2 D | Gas    | 22                      | 22mm   |       |       |       |       |       |       |       |       |       |
|             | Liquid | 22                      | 22mm   |       |       |       |       |       |       |       |       |       |
| 092<br>P2 D | Gas    | 22                      | 22mm   |       |       |       |       |       |       |       |       |       |
|             | Liquid | 22                      | 22mm   |       |       |       |       |       |       |       |       |       |
| 102<br>P2 D | Gas    | 22                      | 22mm   |       |       |       |       | 28mm  |       |       |       |       |
|             | Liquid | 22                      | 22mm   |       |       |       |       |       |       |       |       |       |
| 117<br>P4 D | Gas    | 28                      | 22mm   |       |       |       |       | 28mm  |       |       |       |       |
|             | Liquid | 22                      | 22mm   |       |       |       |       |       |       |       |       |       |
| 146<br>P4 D | Gas    | 28                      | 22mm   |       |       |       |       | 28mm  |       |       |       |       |
|             | Liquid | 22                      | 22mm   |       |       |       |       | 28mm  |       |       |       |       |

For equivalent lengths over 50m, please contact the Manufacturer's Sales Office.



**“IMPERIAL” SYSTEM PIPES DIAMETERS**

| IMPERIAL system | Diameter  | inch | 1/4" | 3/8" | 1/2" | 5/8" | 3/4"  | 7/8"  | 1"    | 1 1/8" | 1 3/8" |
|-----------------|-----------|------|------|------|------|------|-------|-------|-------|--------|--------|
|                 |           | mm   | mm   | 6,35 | 9,52 | 12,7 | 15,87 | 19,05 | 22,22 | 25,4   | 28,57  |
|                 | Thickness | mm   | 1    | 1    | 1    | 1    | 1     | 1     | 1     | 1,25   | 1,25   |

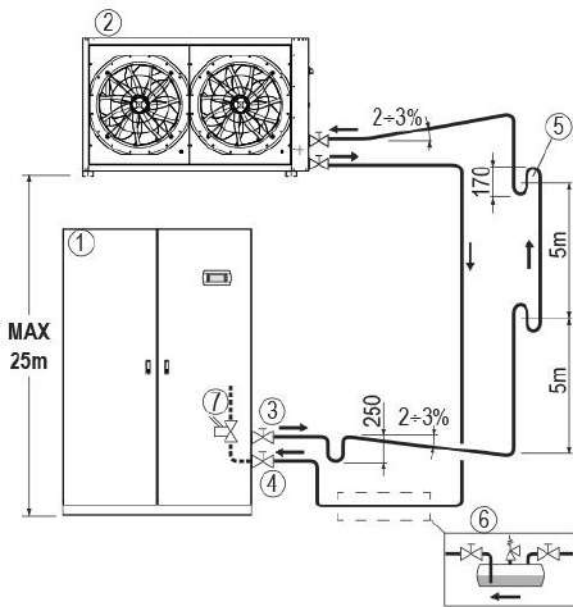
**ON/OFF COMPRESSORS**

| Model       | Line   | Nominal diameter Ø [mm] | EQUIVALENT LENGHT FOR ON/OFF COMPRESSORS R410A |              |              |              |              |               |               |               |               |               |
|-------------|--------|-------------------------|--|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|
|             |        |                         | 15[ft] 5[m]                                    | 35[ft] 10[m] | 50[ft] 15[m] | 65[ft] 20[m] | 80[ft] 25[m] | 100[ft] 30[m] | 115[ft] 35[m] | 130[ft] 40[m] | 150[ft] 45[m] | 165[ft] 50[m] |
| 007<br>P1 S | Gas    | 12                      | 1/2"   |              |              |              |              |               |               |               |               |               |
|             | Liquid | 12                      | 1/2"   |              |              |              |              |               |               |               |               |               |
| 009<br>P1 S | Gas    | 12                      | 1/2"   |              |              |              |              |               |               |               |               |               |
|             | Liquid | 12                      | 1/2"   |              |              |              |              |               |               |               |               |               |
| 011<br>P1 S | Gas    | 12                      | 1/2"   |              |              |              | 5/8"         |               |               |               |               |               |
|             | Liquid | 12                      | 1/2"   |              |              |              |              |               |               |               |               |               |
| 014<br>P1 S | Gas    | 16                      | 5/8"   |              |              |              |              |               |               |               |               |               |
|             | Liquid | 12                      | 1/2"   |              |              | 5/8"         |              |               |               |               |               |               |
| 016<br>P1 S | Gas    | 16                      | 5/8"   |              |              |              |              |               |               |               |               |               |
|             | Liquid | 12                      | 1/2"   |              |              | 5/8"         |              |               |               |               |               |               |
| 020<br>P1 S | Gas    | 16                      | 5/8"   |              |              |              |              | 3/4"          |               |               |               |               |
|             | Liquid | 16                      | 5/8"   |              |              |              |              |               |               |               |               |               |
| 022<br>P1 S | Gas    | 16                      | 5/8"   |              |              |              |              | 3/4"          |               |               |               |               |
|             | Liquid | 16                      | 5/8"   |              |              |              |              |               |               |               |               |               |
| 026<br>P1 S | Gas    | 22                      | 3/4"   |              |              |              |              | 7/8"          |               |               |               |               |
|             | Liquid | 16                      | 5/8"   |              |              | 3/4"         |              |               |               |               |               |               |
| 032<br>P1 S | Gas    | 22                      | 3/4"   |              |              | 7/8"         |              |               |               |               |               |               |
|             | Liquid | 16                      | 5/8"   |              |              | 3/4"         |              |               |               |               |               |               |
| 037<br>P1 S | Gas    | 22                      | 3/4"   |              |              | 7/8"         |              |               |               |               |               |               |
|             | Liquid | 16                      | 5/8"   |              |              | 3/4"         |              |               |               |               |               |               |
| 041<br>P1 S | Gas    | 22                      | 7/8"   |              |              |              |              |               |               |               |               |               |
|             | Liquid | 22                      | 7/8"   |              |              |              |              |               |               |               |               |               |
| 045<br>P1 S | Gas    | 22                      | 7/8"   |              |              |              |              |               |               |               |               |               |
|             | Liquid | 22                      | 7/8"   |              |              |              |              |               |               |               |               |               |
| 039<br>P2 D | Gas    | 16                      | 5/8"   |              |              |              |              | 3/4"          |               |               |               |               |
|             | Liquid | 16                      | 5/8"   |              |              |              |              |               |               |               |               |               |
| 048<br>P2 D | Gas    | 16                      | 5/8"   |              |              |              |              | 3/4"          |               |               |               |               |
|             | Liquid | 16                      | 5/8"   |              |              |              |              | 3/4"          |               |               |               |               |
| 055<br>P2 D | Gas    | 22                      | 3/4"   |              |              |              |              | 7/8"          |               |               |               |               |
|             | Liquid | 16                      | 5/8"   |              |              | 3/4"         |              |               |               |               |               |               |
| 062<br>P2 D | Gas    | 22                      | 3/4"   |              |              |              |              | 7/8"          |               |               |               |               |
|             | Liquid | 16                      | 5/8"   |              |              | 3/4"         |              |               |               |               |               |               |
| 075<br>P2 D | Gas    | 22                      | 7/8"   |              |              |              |              |               |               |               |               |               |
|             | Liquid | 22                      | 7/8"   |              |              |              |              |               |               |               |               |               |
| 082<br>P2 D | Gas    | 22                      | 7/8"   |              |              |              |              |               |               |               |               |               |
|             | Liquid | 22                      | 7/8"   |              |              |              |              |               |               |               |               |               |
| 092<br>P2 D | Gas    | 22                      | 7/8"   |              |              |              |              |               |               |               |               |               |
|             | Liquid | 22                      | 7/8"   |              |              |              |              |               |               |               |               |               |
| 102<br>P2 D | Gas    | 22                      | 7/8"   |              |              |              |              |               |               | 1"            |               |               |
|             | Liquid | 22                      | 7/8"   |              |              |              |              |               |               |               |               |               |
| 117<br>P4 D | Gas    | 28                      | 7/8"   |              |              |              |              | 1 1/8"        |               |               |               |               |
|             | Liquid | 22                      | 7/8"   |              |              |              |              |               |               |               |               |               |
| 146<br>P4 D | Gas    | 28                      | 7/8"   |              |              |              |              | 1 1/8"        |               |               |               |               |
|             | Liquid | 22                      | 7/8"   |              |              | 1 1/8"       |              |               |               |               |               |               |

For equivalent lengths over 165ft / 50m, please contact the Manufacturer's Sales Office.



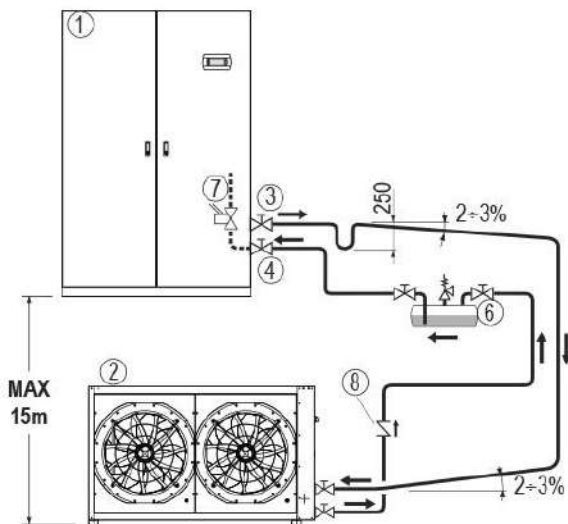
**INSTALLATION DIAGRAM**



**CARRY OUT PIPING WITH SLOPES INDICATED TO FAVOR THE RETURN OF THE LUBRICANT OIL TO THE COMPRESSOR**

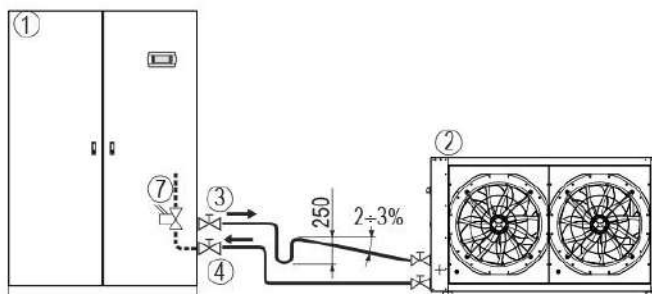
**APPLY THE DIAGRAM TO ANY REFRIGERANT CIRCUIT OF THE MACHINE.**

**Difference in height between the machine and the remote condenser: Value expressed in equivalent length**



**LEGENDA**

1. Air conditioner
2. Remote air-cooled condenser
3. Gas discharge line
4. Liquid return line
5. Trap. Foresee a trap every 5m of the rising pipe.
6. Additional liquid receiver, external to the machine – By the installer.  
It is suggested for:
  - Plants with refrigerant lines with an equivalent length of more than 25 meters
  - Plants with refrigerant lines of any length and operating at outdoor temperatures below 0°C.
7. “601 Solenoid valve on liquid line”. Optional accessory of the machine, suggested for plants with refrigerant pipe longer than 10m.
8. Check valve – By the Installer. The valve must be installed on the liquid line close to the condenser. The valve prevents the return of liquid in the condenser, particularly in the case of plant shutdown during the winter season.



**WARNING**

It is necessary to provide the refrigerant charge for the connection pipes and for the remote air-cooled condenser. Charge refrigerant in the suitable quantity and lubricant oil in 10% ratio of charged refrigerant. Lubricant oil must be the same type as the charged one as shown on the compressor plate.

## ACOUSTIC DATA

Acoustic data of the standard machine at full load working conditions.

### WARNING:

In a closed room the noise produced by a sound source reaches the listener in two different ways:

- Directly
- Reflected from the surrounding walls, floor, ceiling, from furniture.

With the same sound source, the noise produced in a closed room is greater than that produced outdoors. In fact, the sound pressure level generated by the source, must be added to the one reflected from the room. Also, the shape of the room affects the sound.

| MODEL                           |       | 007 P1 S | 009 P1 S | 011 P1 S | 014 P1 S | 016 P1 S | 020 P1 S |
|---------------------------------|-------|----------|----------|----------|----------|----------|----------|
| SIZE                            |       | E0       | E0       | E1       | E2       | E2       | E3       |
| <b>SOUND LEVEL ISO 3744 (1)</b> |       |          |          |          |          |          |          |
| On air delivery, Under          | dB(A) | 60,1     | 60,1     | 57,9     | 74,0     | 74,0     | 74,5     |
| On air intake, Under            | dB(A) | 48,7     | 48,7     | 50,0     | 59,9     | 59,9     | 60,6     |
| On front side, Under            | dB(A) | 42       | 42       | 41       | 50       | 50       | 51       |
| On air delivery, Over           | dB(A) | 60,1     | 60,1     | 57,9     | 73,9     | 73,9     | 74,5     |
| On air intake, Over (2)         | dB(A) | 51       | 51       | 50       | 56       | 56       | 57       |
| On front side, Over (3)         | dB(A) | 41,1     | 41,1     | 40,1     | 50,1     | 50,1     | 50,7     |

| MODEL                           |       | 022 P1 S | 026 P1 S | 032 P1 S | 037 P1 S | 041 P1 S | 045 P1 S |
|---------------------------------|-------|----------|----------|----------|----------|----------|----------|
| SIZE                            |       | E3       | E3       | E4       | E4       | E4       | E4       |
| <b>SOUND LEVEL ISO 3744 (1)</b> |       |          |          |          |          |          |          |
| On air delivery, Under          | dB(A) | 74,5     | 74,5     | 77,3     | 77,3     | 80,3     | 80,3     |
| On air intake, Under            | dB(A) | 60,6     | 60,6     | 63,4     | 63,4     | 67,8     | 67,8     |
| On front side, Under            | dB(A) | 51       | 51       | 54       | 54       | 58       | 58       |
| On air delivery, Over           | dB(A) | 74,5     | 74,5     | 77,3     | 77,3     | 80,3     | 80,3     |
| On air intake, Over (2)         | dB(A) | 57       | 57       | 60       | 60       | 63       | 63       |
| On front side, Over (3)         | dB(A) | 50,7     | 50,7     | 53,5     | 53,5     | 58,2     | 58,2     |

| MODEL                           |       | 039 P2 D | 048 P2 D | 055 P2 D | 062 P2 D | 075 P2 D | 082 P2 D |
|---------------------------------|-------|----------|----------|----------|----------|----------|----------|
| SIZE                            |       | E5       | E5       | E6       | E6       | E7       | E7       |
| <b>SOUND LEVEL ISO 3744 (1)</b> |       |          |          |          |          |          |          |
| On air delivery, Under          | dB(A) | 78,0     | 81,2     | 79,0     | 79,0     | 83,0     | 83,0     |
| On air intake, Under            | dB(A) | 64,1     | 68,6     | 65,2     | 65,2     | 70,5     | 70,5     |
| On front side, Under            | dB(A) | 55       | 59       | 56       | 56       | 61       | 61       |
| On air delivery, Over           | dB(A) | 78,0     | 81,2     | 79,0     | 79,0     | 83,0     | 83,0     |
| On air intake, Over (2)         | dB(A) | 61       | 64       | 62       | 62       | 66       | 66       |
| On front side, Over (3)         | dB(A) | 54,3     | 59,1     | 55,3     | 55,3     | 61,0     | 61,0     |

| MODEL                           |       | 092 P2 D | 102 P2 D | 117 P4 D | 146 P4 D |
|---------------------------------|-------|----------|----------|----------|----------|
| SIZE                            |       | E8       | E8       | E9       | E9       |
| <b>SOUND LEVEL ISO 3744 (1)</b> |       |          |          |          |          |
| On air delivery, Under          | dB(A) | 83,9     | 83,9     | 85,0     | 85,0     |
| On air intake, Under            | dB(A) | 71,4     | 71,4     | 72,5     | 72,5     |
| On front side, Under            | dB(A) | 62       | 62       | 63       | 63       |
| On air delivery, Over           | dB(A) | 83,9     | 83,9     | --       | --       |
| On air intake, Over (2)         | dB(A) | 67       | 67       | --       | --       |
| On front side, Over (3)         | dB(A) | 61,8     | 61,8     | --       | --       |

1. Noise pressure level at 1 meter in free field – ISO 3744
2. Air intake from the front
3. Air intake from the bottom

## ELECTRICAL DATA

Electrical data of the system at full load working conditions.

| VERSION (1)                 |         | U / O      | U / O      | U / O      | U / O      | U / O      |
|-----------------------------|---------|------------|------------|------------|------------|------------|
| MODEL                       |         | 007 P1 S   | 009 P1 S   | 011 P1 S   | 014 P1 S   | 016 P1 S   |
| SIZE                        |         | E0         | E0         | E1         | E2         | E2         |
| Power supply                | V/ph/Hz | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 |
| Maximum current input (FLA) | A       | 5,34       | 6,22       | 9,69       | 9,70       | 11,2       |

| VERSION (1)                 |         | U / O      | U / O      | U / O      | U / O      | U / O      |
|-----------------------------|---------|------------|------------|------------|------------|------------|
| MODEL                       |         | 020 P1 S   | 022 P1 S   | 026 P1 S   | 032 P1 S   | 037 P1 S   |
| SIZE                        |         | E3         | E3         | E3         | E4         | E4         |
| Power supply                | V/ph/Hz | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 |
| Maximum current input (FLA) | A       | 13,9       | 17,9       | 19,1       | 21,1       | 24,5       |

| VERSION (1)                 |         | U / O      | U / O      | U / O      | U / O      | U / O      |
|-----------------------------|---------|------------|------------|------------|------------|------------|
| MODEL                       |         | 041 P1 S   | 045 P1 S   | 039 P2 D   | 048 P2 D   | 055 P2 D   |
| SIZE                        |         | E4         | E4         | E5         | E5         | E6         |
| Power supply                | V/ph/Hz | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 |
| Maximum current input (FLA) | A       | 29,0       | 35,0       | 24,9       | 34,0       | 38,2       |

| VERSION (1)                 |         | U / O      | U / O      | U / O      | U / O      | U / O      |
|-----------------------------|---------|------------|------------|------------|------------|------------|
| MODEL                       |         | 062 P2 D   | 075 P2 D   | 082 P2 D   | 092 P2 D   | 102 P2 D   |
| SIZE                        |         | E6         | E7         | E7         | E8         | E8         |
| Power supply                | V/ph/Hz | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 | 400/3+N/50 |
| Maximum current input (FLA) | A       | 42,2       | 51,2       | 58,0       | 70,0       | 76,0       |

| VERSION (1)                 |         | U          | U          |
|-----------------------------|---------|------------|------------|
| MODEL                       |         | 117 P4 D   | 146 P4 D   |
| SIZE                        |         | E9         | E9         |
| Power supply                | V/ph/Hz | 400/3+N/50 | 400/3+N/50 |
| Maximum current input (FLA) | A       | 84,8       | 112,0      |

1. U = Under, downflow / O = Over, upflow

### WARNING:

The electric data indicated refer only to the indoor unit.

Optional accessory electric data are included within the dedicated chapters and must be added.

Please refer to ELCA WORLD selection program to calculate the electrical data of the air conditioner according to the requested optional accessories.

The remote air-cooled condenser is not included because it has independent power supply.

**MICROPROCESSOR CONTROL SYSTEM**



Controller



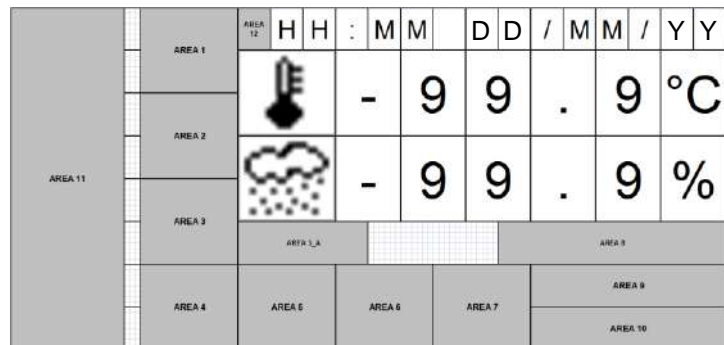
Keyboard and Display

The unit is equipped with the controller connected to a 6 keys keyboard with graphic display on which all information in English language or easily identifiable symbols are displayed.  
The controller disposes of a “flash” memory that preserves the information even in absence of power supply. Part of memory is dedicated to the registration of intervened events - up to 200 events.

**DISPLAY – KEYBOARD FUNCTIONS**

|  |            |  |
|--|------------|--|
|  | ALARM      | Alarm presence with red light.<br>Push for alarm description.<br>In case of more alarms scroll by UP / DOWN.                 |
|  | PRG        | Menu list, scrolled by UP/DOWN:<br><b>Unit; Set-point; In/Out; Clock; History; User; Service; Factory.</b> ENTER to execute. |
|  | ESC        | Home. Used to come back to the previous menu level or to the main screen.  |
|  | UP<br>DOWN | Changes pages and values of sets.<br>By pressing in HOME mask, the synoptic of the main controls is displayed.               |
|  | ENTER      | Moving the cursor on adjustable Program(s) fields to confirm the changes.<br>Press ENTER to get out the fields.              |

**DISPLAY - MAIN MASK**



The main mask shows time, date, room temperature and humidity values (if the relative probe is present) and areas for displaying operating and alarm status with dedicated icons:

- Area 1: Status of the unit: on / off
- Area 2: Status detail
- Area 3: Type of event (only in case of an event)
- Area 3\_A: Code and type of event
- Area 4: Active cooling devices
- Area 5: Active free-cooling devices
- Area 6: Active humidity devices
- Area 7: Active heating devices
- Area 8: on / off parameters
- Area 9: BMS address
- Area 10: LAN address
- Area 11: Schematic representation of units
- Area 12: Active function presence icon

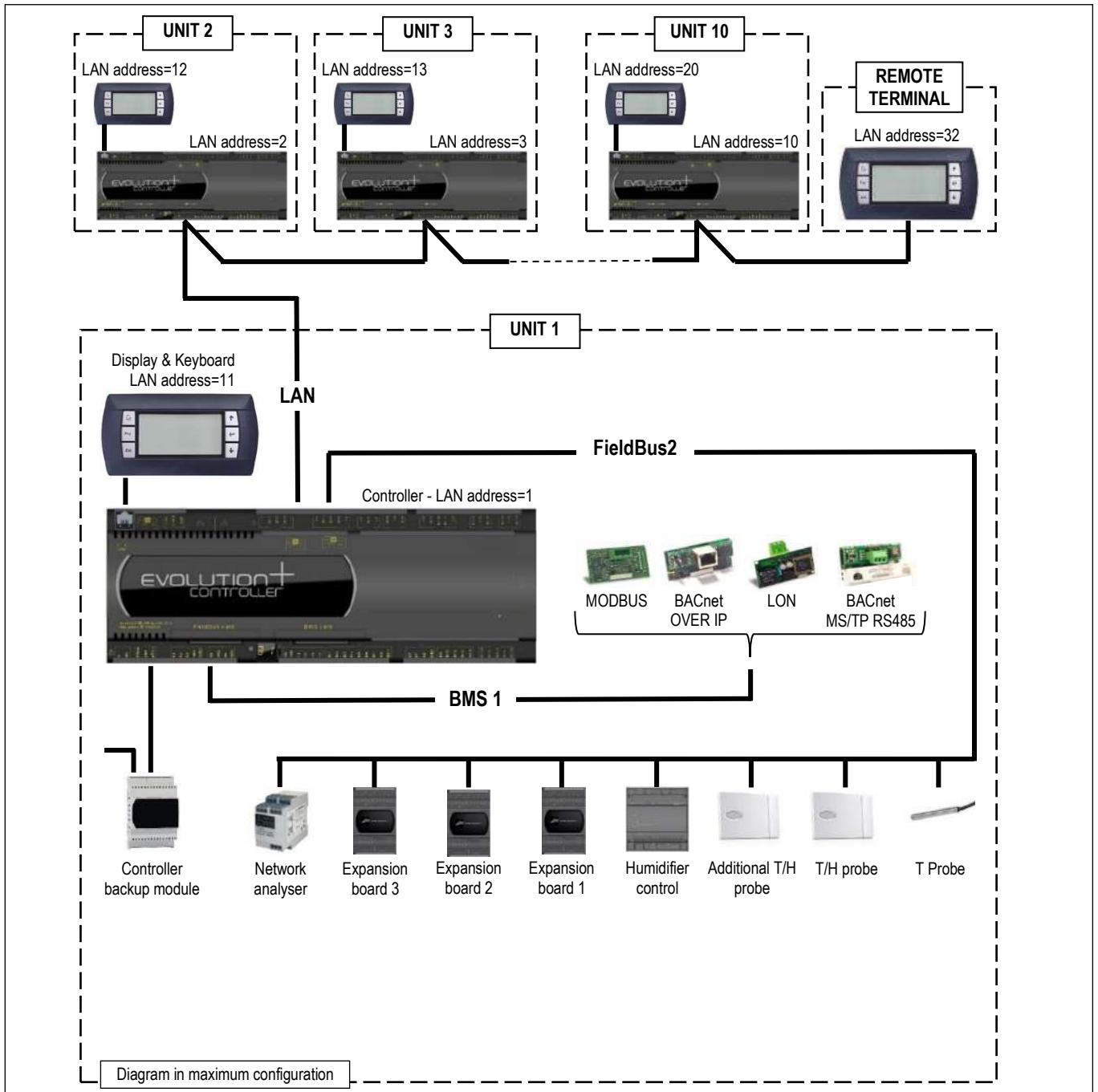
**CONNECTIVITY**

Through the optional serial port, the microprocessor control enables communication with the modern buildings BMS systems with the following protocols: MODBUS; LON; BACNET MS/TP RS485; BACNET OVER IP.

**PASSWORD**

- Level 1: On request of the End User. Allowing to reach USER menu
- Level 2: Asks to Service: Allowing to reach SERVICE menu
- Level 3: Asks to Service: Allowing to reach FACTORY menu
- No passwords request to enter: UNIT, SETPOINT, IN/OUT, CLOCK, HISTORY menu





**LAN NETWORK**

The LAN is part of the control software and it is possible to connect up to 10 units. This type of connection allows to control the units in coherent way, moreover the units can be controlled and managed from a shared remote terminal.

**LAN ADDRESS LIST**

| Unit #               | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | Remote Terminal |
|----------------------|----|----|----|----|----|----|----|----|----|----|-----------------|
| Mother board address | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | --              |
| Terminal address     | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 32              |

The unit connection to the local network (LAN) allows to perform the following functions:

- Balancing the operating hours among the different units by rotating the reserve units (Stand-by)
- Turning on the reserve units in case other units should turn off due to an alarm, maintenance or power feed interruption
- Turning on reserve units to offset the excessive thermal load
- Checking up to 10 units with a single user terminal (shared user terminal)

**DEMAND LIMIT**

Demand Limit function is part of the control software for machines with double refrigerant circuit. It allows to limit the absorbed current of the machine.  
 The function must be activated and configured. A digital inlet on electrical panel connecting terminals allows the remote enabling of the function with an external signal without tension.  
 The software allows to select the resources to disable (compressors, electric heaters,...).

**TEMPERATURE PROBE ON AIR RETURN / DELIVERY**



Temperature probe installed on the air return and delivery.  
 Temperature control and regulation function on air return.

**POSSIBLE AIR INTAKE FOR OVER VERSIONS**

**OVER VERSION - AIR INTAKE FROM THE BOTTOM**

Thanks to the basement design, it is possible to have the unit air intake from the bottom side.  
 With this solution, it is necessary to foresee the optional blind frontal panels

**OVER VERSION - AIR INTAKE FROM THE BACK SIDE**

(Size E0, E4, E5, E6, E7, E8, E9 excluded)

It is possible to have the unit air intake from the back side.

Due to the limited size of the air intake, the air flow is limited to the 20% of the nominal one.

The air intake must be made by Customer during installation.

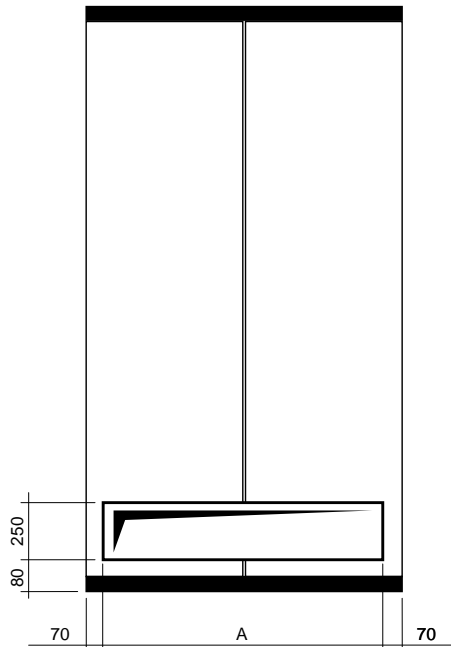
In case the air intake is used for fresh air, it is necessary the temperature / humidity probe reposition in front of the heat exchanger, to allow for optimum reading of the values of temperature / humidity.

The electric cable of the probe has enough length for the repositioning.

**AIR INTAKE FROM THE BACK SIDE**

**Back side view**

**OVER  
E1 – E2 – E3**



| SIZE         |                   | E1  | E2   | E3   |
|--------------|-------------------|-----|------|------|
| A            | mm                | 510 | 645  | 945  |
| Max air flow | m <sup>3</sup> /h | 600 | 1000 | 1500 |

## REMOTE AIR-COOLED CONDENSER

Remote air-cooled condensers for matching to air conditioners for IT Cooling. The constructive solutions allow high application flexibility. Horizontal air flow, from coil to fan. The series has an independent power supply from the indoor unit. Among the indoor unit and the condenser is necessary the refrigerant connection and electrical connection of the condensing proportional control signal and the alarms.

Is available the optional "P191 power supply for condenser" from the indoor machine electrical board. The optional includes magnetothermic switches for condenser fans.

### GX-Z SERIES



The machines are made with Peraluman alluminum alloy and suitable for outdoor installation.

- GX-Z A B 50:** Remote condenser equipped with AC fan, microchannel condensing coil and Standard acoustic version.
- GX-Z A L 50:** Remote condenser equipped with AC fan, microchannel condensing coil and Low noise acoustic version.
- GX-Z E B 50:** Remote condenser equipped with EC fan, microchannel condensing coil and Standard acoustic version.
- GX-Z E L 50:** Remote condenser equipped with EC fan, microchannel condensing coil and Low noise acoustic version.

#### **IMPORTANT**

For further information about the units, please refer to "GX-Z" technical bulletin

### BVE2 DX SERIES



The machines are made with painted steel plates and suitable for outdoor installation.

- BVE2 DX-A B:** Remote condenser equipped with AC fan, condensing coil with copper tubes and aluminium fins and Standard acoustic version.
- BVE2 DX-A L:** Remote condenser equipped with AC fan, condensing coil with copper tubes and aluminium fins and Low noise acoustic version.
- BVE2 DX-E B:** Remote condenser equipped with EC fan, condensing coil with copper tubes and aluminium fins and Standard acoustic version.
- BVE2 DX-E L:** Remote condenser equipped with EC fan, condensing coil with copper tubes and aluminium fins and Low noise acoustic version.

#### **IMPORTANT**

For further information about the units, please refer to "BVE2" technical bulletin

### BVE DX-PF-E SERIES



**BVE DX-PF-E:** Remote air-cooled condensers equipped with EC plug fans and condensing coil with copper tubes and aluminium fins. The machines are designed for indoor installation and ducting for air suction and discharge. For outdoor installation, the machine must be installed under a cover or anyway protected against atmospheric agent.

#### **IMPORTANT**

For further information about the units, please refer to "BVE DX-PF-E" technical bulletin

#### **WARNING:**

Please refer to ELCA WORLD selection program to calculate the cooling capacity of the air conditioner according to the selected remote condenser.

### OPTIONAL ACCESSORIES: P121 – FRONT AIR INTAKE+BOTTOM PANEL

Available for OVER units.

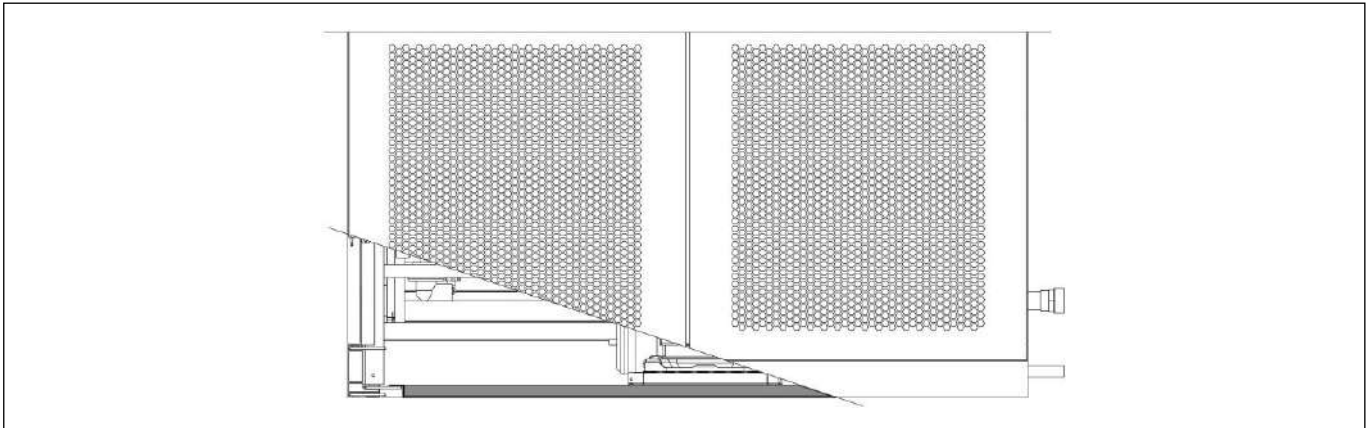
The optional is not compatible with “P122 Bottom air intake+blind panels” for OVER units.

With this accessory, it is possible a noise insulation of the machine base, when the machine is installed directly on floor as raised floor, wood floor etc.

The accessory includes:

- Panel in galvanized steel sheet.
- Noise insulation with special soundproof material.

The bottom panel is supplied assembled inside the unit base and does not modify the unit dimensions.



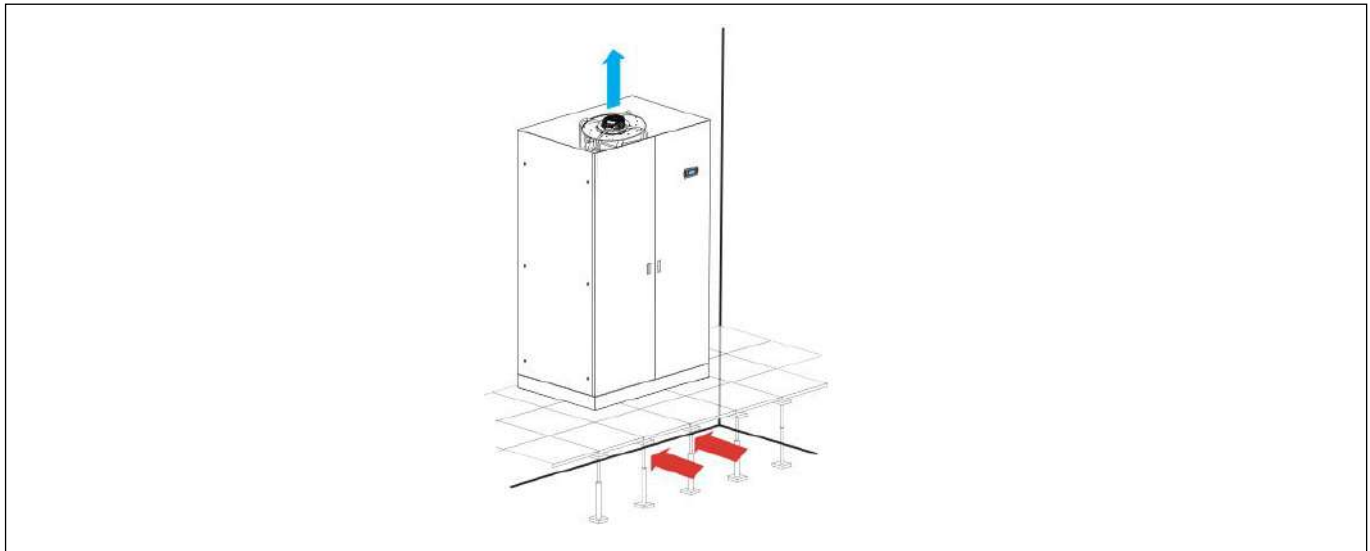
### OPTIONAL ACCESSORIES: P122 - BOTTOM AIR INTAKE+BLIND PANELS

Available for OVER units.

The optional is not compatible with “P121 Front air intake+bottom panel” for OVER units.

Thanks to the design of the basement is possible the air suction from the unit bottom. The air flow rate is the nominal one

The accessory foresees the blind frontal panels.





### OPTIONAL ACCESSORIES: 601 – SOLENOID VALVE ON LIQUID LINE



The accessory has the function of closing the liquid line, in the event of the machine stopping or blackout, avoiding the risk of liquid refrigerant migration into the evaporator.

Recommended accessory for:

- Refrigerating lines greater than 10m in equivalent length.
- Machines equipped with electronic expansion valve.

### OPTIONAL ACCESSORIES: P091 - BACK-UP MODULE CONTROLLER



The optional is installed within the electrical panel.

The optional is not available for size E0, E1.

The system powers the microprocessor for a few minutes in the event of a power failure or voltage surges, preventing the re-boot of the controller.

### OPTIONAL ACCESSORIES: P171 – KIT FOR AIR -45°C MCH AXIAL AC

### OPTIONAL ACCESSORIES: P172 – KIT FOR AIR -45°C AXIAL AC

**P171 – KIT FOR AIR -45°C MCH AXIAL AC (GX-Z A B 50)**

**P172 – KIT FOR AIR -45°C AXIAL AC (BVE2 DX-A B)**

The optional is available only for air conditioners matched with remote air-cooled condensers with axial fans with AC electric motors:

- **BVE2 DX-A B.** Condensing coil with copper tubes and aluminium fins. Standard acoustic version, up to M140 model included.
- **GX-Z A B 50.** Condensing coil with microchannel coils. Standard acoustic version.

The system is necessary for the correct machine start up and operation with very low ambient air temperatures: between -20°C and -45°C.

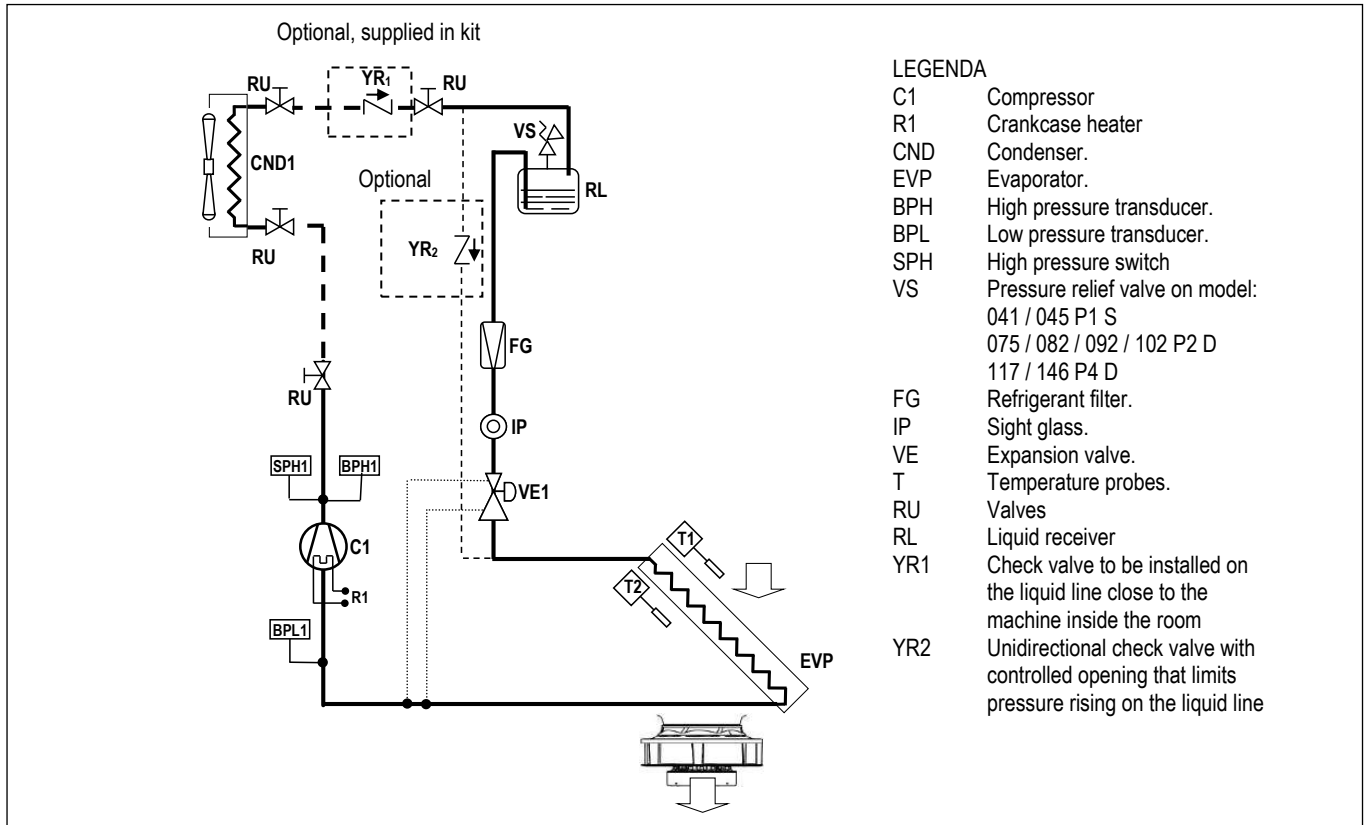
Components for each refrigerant circuit:

- A check valve (YR<sub>1</sub>), supplied in kit. The valve must be installed indoor, near to the air conditioner, on the liquid line on the return of the remote condenser. This valve avoids the migration of the refrigerant at liquid state in presence of very low ambient air condition.
- A check valve (YR<sub>2</sub>), with controlled opening, installed in factory within the unit. It limits the pressure raising on the liquid pipe between the expansion valve and the check valve (YR<sub>1</sub>).

Electrical components installed on the electric board of the indoor unit, only for optional accessory P172 KIT FOR AIR -45°C AXIAL AC (BVE2 DX-A B):

- Electronic phase-cut regulators for fans speed control;
- Terminals for electric connections to the remote condenser;
- Electrical power supply for remote condenser from the indoor machine electrical board.

The optional "P172 Kit for air -45°C axial AC" requires mandatory accessory "P191 Power supply for condenser".



**OPTIONAL ACCESSORIES: P191 – POWER SUPPLY FOR CONDENSER**

The accessory allows the power supply of the remote condenser from the internal machine. The electrical panel of the internal machine is set up with the electrical control components and terminal board for the electrical connection to the condenser.

**OPTIONAL ACCESSORIES: 383 – NUMBERED WIRINGS + UK REQUESTS**

The machine's electrical cables are all numbered for easy identification. For the power section it is possible to change the colour for the UK market.

| CABLE        | 383 – COLOUR FOR UK |
|--------------|---------------------|
| EARTH        | YELLOW / GREEN      |
| NEUTRAL      | BLUE SKY            |
| PHASE 1 (L1) | BROWN               |
| PHASE 2 (L2) | BLACK               |
| PHASE 3 (L3) | GREY                |
| AUXILIARIES  | RED                 |

**OPTIONAL ACCESSORIES: 4181 – SERIAL CARD MODBUS**



The card is factory installed. Consult the Interface Manual for all technical information.

### OPTIONAL ACCESSORIES: 4182 – SERIAL CARD LON



The card is factory installed.  
The manufacturer will supply the serial card and .NXE file and a .XIF files necessary for LonWorks technicians to configure the network.  
The board is programmed by the technician in charge of the integration.  
Consult the Interface Manual for all technical information.

### OPTIONAL ACCESSORIES: 4184 – SERIAL CARD BACNET MS/TP RS485



The card is factory installed.  
The supervision network is set up by the technicians developing the BACnet interface.  
The Modbus protocol database is used for interfacing.  
Consult the Interface Manual for all technical information.

### OPTIONAL ACCESSORIES: 4185 – SERIAL CARD BACNET OVER IP



The card is factory installed.  
The supervision network is set up by the technicians developing the BACnet interface. The Modbus protocol database is used for interfacing.  
The manufacturer will supply the card and .MIB file necessary for technicians to configure the network.  
The board is programmed by the technician in charge of the integration.  
Consult the Interface Manual for all technical information and what is necessary for Internet connection to view and modify variables.

### OPTIONAL ACCESSORIES: A491 – WATER LEAKAGE DETECTOR



The system includes an electronic relay installed in the electrical panel of the machine and a water detector.  
The electrical connections for the probe and the alarm contact are present in the machine's terminal board.  
Sensor is supplied to be connected and installed at customer care.

### OPTIONAL ACCESSORIES: A492 – WATER LEAKAGE DETECTOR + ADDITIONAL DETECTOR



The system includes an electronic relay installed in the electrical panel of the indoor machine and 2 water detectors to be connected in series.  
The electrical connections for the probe and the alarm contact are present in the indoor machine's terminal board.  
The sensors are supplied to be connected and installed at customer care.

### OPTIONAL ACCESSORIES: A501 - CLOGGED FILTERS SENSOR



The system includes a differential pressure switch installed in the electrical panel or in the front of the indoor unit and the plastic hoses for the relief of the pressure upstream and downstream the air filters.

Control range: 0.3 ... 4.0 mbar (30 ... 400 Pa)  
Differential for intervention: 0.15 mbar (15 Pa)

**OPTIONAL ACCESSORIES: A511 - SMOKE DETECTORS**

**OPTIONAL ACCESSORIES: A521 – FIRE DETECTORS**



Is possible to install one or both of the following sensors. Sensors are supplied in mounting kit. Installation within the room at customer care.

**A511 - SMOKE DETECTOR**

The device is supplied in mounting kit.  
 The optical smoke detector senses the presence of combustion by-products (visible smoke) and activates an alarm.  
 The operating principle is based on the light scattering technique (Tyndall effect).  
 The device is in conformity to EN 54-7 standard.  
 Technical features:

|                       |                   |                     |                     |
|-----------------------|-------------------|---------------------|---------------------|
| Material              | ABS               | Relative humidity   | <93% not-condensing |
| Power supply          | 12...28 Vdc       | Index of protection | IP 20               |
| Normal current        | 50µA 24 Vdc       | Testing by magnet   | Yes                 |
| Alarm current         | 25mA 24 Vdc       | Relay               | max. 1A 30Vdc       |
| LED visibility        | 360° (double led) | Signal repeater     | 14mA 24 Vdc         |
| Storage temperature   | -10...+70°C       | Covered area        | 40m² max.           |
| Operating temperature | -10...+70°C       | Shielded connection | Min. 0.5 mm²        |
| Max. speed air        | 0.2 m/s           | Colour              | White               |

Supplied with unit to be connected and installed at customer care close to the unit.



**A521 - FIRE DETECTOR**

The device is supplied in mounting kit.  
 The fire detector has been designed to identify temperatures at which fires may start. When the temperature exceeds the set threshold or when there is a rapid variation in temperature, the relay is activated to signal an alarm.  
 The device is in conformity to EN 54-5 standard.  
 Technical features:

|                       |                     |                     |               |
|-----------------------|---------------------|---------------------|---------------|
| Material              | ABS                 | Index of protection | IP 20         |
| Power supply          | 12...28 Vdc         | Testing by magnet   | Yes           |
| Normal current        | 50µA 24 Vdc         | Relay               | max. 1A 30Vdc |
| Alarm current         | 25mA 24 Vdc         | Signal repeater     | 14mA - 24 Vdc |
| LED visibility        | 360° (double LED)   | Alarm temperature   | 62°C          |
| Storage temperature   | -10...+70°C         | Covered area        | 40m² max.     |
| Operating temperature | -10...+70°C         | Shielded connection | Min. 0.5 mm²  |
| Relative humidity     | <93% non-condensing | Colour              | White         |

Supplied with unit to be connected and installed at customer care close to the unit.

**OPTIONAL ACCESSORIES: P141 – ANALOGUE SET-POINT COMPENSATION**

Analogue set point compensation according to an external analogue signal at Customer care.  
 The microprocessor control, through the additional module "expansion card", can manage a compensation signal of the return air setpoint by analogue input (0...1V; 0...5V; 0,5...4,5V; 4...20mA; 0...20mA). The compensation curve allows to assign a temperature setpoint offset respectively to the minimum and maximum signal managed by the input.

**OPTIONAL ACCESSORIES: P181 – NETWORK ANALYZER**  
**OPTIONAL ACCESSORIES: P182 – NETWORK ANALYZER+OPTIONAL**  
**OPTIONAL ACCESSORIES: P183 – KIT NETWORK ANALYZER**  
**OPTIONAL ACCESSORIES: P184 – KIT NETWORK ANALYZER+OPTIONAL**



INTERNAL installation



EXTERNAL installation

The optional is not available for size E0.

This device provides continuous measurement of power consumption, monitoring current, voltage and power. These values are sent to unit microprocessor via RS485 serial cable, as shown on the unit wiring diagram.

The displayed variables are:

- Phase to phase voltage, only for three-phase units;
- Phase voltage (phase-neutral);
- Phase current;
- Neutral current only for three-phase units;
- Active phase power, only for three-phase units;
- Total active power;
- Active energy;
- Hour counts

**INSTALLATION**

| Frame | Power Supply | Installation                          | Code            |
|-------|--------------|---------------------------------------|-----------------|
| E0    | 400/3+N/50   | --                                    | --              |
| E1    | 400/3+N/50   | EXTERNAL to the unit, supplied in kit | P183 / P184 (*) |
| E2    | 400/3+N/50   | EXTERNAL to the unit, supplied in kit | P183 / P184 (*) |
| E3    | 400/3+N/50   | EXTERNAL to the unit, supplied in kit | P183 / P184 (*) |
| E4    | 400/3+N/50   | INTERNAL (on unit electrical panel)   | P181 / P182 (*) |
| E5    | 400/3+N/50   | INTERNAL (on unit electrical panel)   | P181 / P182 (*) |
| E6    | 400/3+N/50   | INTERNAL (on unit electrical panel)   | P181 / P182 (*) |
| E7    | 400/3+N/50   | INTERNAL (on unit electrical panel)   | P181 / P182 (*) |
| E8    | 400/3+N/50   | INTERNAL (on unit electrical panel)   | P181 / P182 (*) |
| E9    | 400/3+N/50   | INTERNAL (on unit electrical panel)   | P181 / P182 (*) |

(\*) P182, P184 for units with optional (with electric heaters and/or humidifier)

**INTERNAL INSTALLATION**

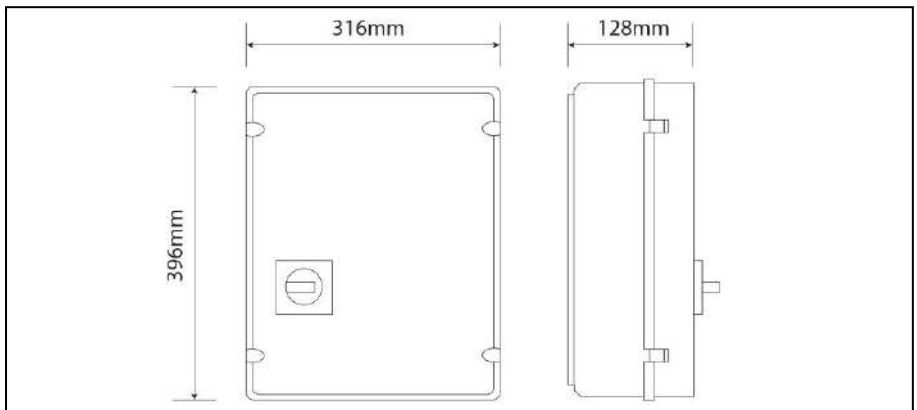
The optional is installed within the electrical box downstream the main switch with door safety lock and includes:

- Network transducer;
- Current transformers, one for each power supply phase cable.
- 

**MOUNTING KIT**

The optional is supplied in box for external installation to the machine with the dimensions showed in the figure below, and includes:

- Main switch with door lock safety;
- Fuse;
- Network transducer;
- Current transformers, one for each power supply phase cable;
- Terminals.



**OPTIONAL ACCESSORIES: A812 – FREE-COOLING DIRECT CONTROL**

Preparation of the machine and the electrical panel for the direct free-cooling system "P034 Intake free-cooling plenum "

**OPTIONAL ACCESSORIES: A431 – ELECTRIC HEATERS**

**OPTIONAL ACCESSORIES: A432 – EXTRA POWER ELECTRIC HEATERS**



**A431 –ELECTRIC HEATERS**

Electric heater consisting of finned aluminum elements, ensuring low surface temperature and deleting the air ionization problems. The optional is installed downstream the main cooling coil. In electric heaters with three working steps the activation is binary type.

Components:

- Electric heater in aluminium armoured elements with integral fins
- Electrical control
- Safety thermostat.

**TECHNICAL DATA**

| VERSION (1)             |           | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|-------------------------|-----------|----------|----------|----------|----------|----------|----------|
| MODEL                   |           | 007 P1 S | 009 P1 S | 011 P1 S | 014 P1 S | 016 P1 S | 020 P1 S |
| SIZE                    |           | E0       | E0       | E1       | E2       | E2       | E3       |
| <b>THERMAL CAPACITY</b> | <b>kW</b> | 2,5      | 2,5      | 5,1      | 5,1      | 5,1      | 6,0      |
| Absorbed current (OA)   | A         | 3,6      | 3,6      | 7,4      | 7,4      | 7,4      | 8,7      |
| First working step      | kW        | 2,5      | 2,5      | 5,1      | 5,1      | 5,1      | 3,0      |
| Second working step     | kW        | --       | --       | --       | --       | --       | 3,0+3,0  |
| Third working step      | kW        | --       | --       | --       | --       | --       | --       |
| <b>NET WEIGHT (2)</b>   | <b>kg</b> | 3        | 3        | 4        | 4        | 4        | 7        |

| VERSION (1)             |           | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|-------------------------|-----------|----------|----------|----------|----------|----------|----------|
| MODEL                   |           | 022 P1 S | 026 P1 S | 032 P1 S | 037 P1 S | 041 P1 S | 045 P1 S |
| SIZE                    |           | E3       | E3       | E4       | E4       | E4       | E4       |
| <b>THERMAL CAPACITY</b> | <b>kW</b> | 6,0      | 6,0      | 9,0      | 9,0      | 9,0      | 9,0      |
| Absorbed current (OA)   | A         | 8,7      | 8,7      | 13,0     | 13,0     | 13,0     | 13,0     |
| First working step      | kW        | 3,0      | 3,0      | 3,0      | 3,0      | 3,0      | 3,0      |
| Second working step     | kW        | 3,0+3,0  | 3,0+3,0  | 6,0      | 6,0      | 6,0      | 6,0      |
| Third working step      | kW        | --       | --       | 3,0+6,0  | 3,0+6,0  | 3,0+6,0  | 3,0+6,0  |
| <b>NET WEIGHT (2)</b>   | <b>kg</b> | 7        | 7        | 9,5      | 9,5      | 9,5      | 9,5      |

| VERSION (1)             |           | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|-------------------------|-----------|----------|----------|----------|----------|----------|----------|
| MODEL                   |           | 039 P2 D | 048 P2 D | 055 P2 D | 062 P2 D | 075 P2 D | 082 P2 D |
| SIZE                    |           | E5       | E5       | E6       | E6       | E7       | E7       |
| <b>THERMAL CAPACITY</b> | <b>kW</b> | 13,5     | 13,5     | 13,5     | 13,5     | 13,5     | 13,5     |
| Absorbed current (OA)   | A         | 19,5     | 19,5     | 19,5     | 19,5     | 19,5     | 19,5     |
| First working step      | kW        | 4,5      | 4,5      | 4,5      | 4,5      | 4,5      | 4,5      |
| Second working step     | kW        | 9,0      | 9,0      | 9,0      | 9,0      | 9,0      | 9,0      |
| Third working step      | kW        | 4,5+9,0  | 4,5+9,0  | 4,5+9,0  | 4,5+9,0  | 4,5+9,0  | 4,5+9,0  |
| <b>NET WEIGHT (2)</b>   | <b>kg</b> | 10       | 10       | 9,5      | 9,5      | 9,5      | 9,5      |

| VERSION (1)             |           | U / O    | U / O    | U        | U        |
|-------------------------|-----------|----------|----------|----------|----------|
| MODEL                   |           | 092 P2 D | 102 P2 D | 117 P4 D | 146 P4 D |
| SIZE                    |           | E8       | E8       | E9       | E9       |
| <b>THERMAL CAPACITY</b> | <b>kW</b> | 18,0     | 18,0     | 18,0     | 18,0     |
| Absorbed current (OA)   | A         | 26,0     | 26,0     | 26,0     | 26,0     |
| First working step      | kW        | 4,5      | 4,5      | 4,5      | 4,5      |
| Second working step     | kW        | 13,5     | 13,5     | 13,5     | 13,5     |
| Third working step      | kW        | 4,5+13,5 | 4,5+13,5 | 4,5+13,5 | 4,5+13,5 |
| <b>NET WEIGHT (2)</b>   | <b>kg</b> | 10       | 10       | 9,5      | 9,5      |

1. U = Under, downflow / O = Over, upflow
2. Value to be added to the weight of the standard unit.

## A432 - EXTRA POWER ELECTRIC HEATERS

The optional is not available for sizes E0, E1, E2.

The components are the same of the standard accessory

### TECHNICAL DATA

| VERSION (1)             |           | U / O    | U / O    | U / O    | U / O    | U / O    | U / O      |
|-------------------------|-----------|----------|----------|----------|----------|----------|------------|
| MODEL                   |           | 007 P1 S | 009 P1 S | 011 P1 S | 014 P1 S | 016 P1 S | 020 P1 S   |
| SIZE                    |           | E0       | E0       | E1       | E2       | E2       | E3         |
| <b>THERMAL CAPACITY</b> | <b>kW</b> | --       | --       | --       | --       | --       | <b>9,0</b> |
| Absorbed current (OA)   | A         | --       | --       | --       | --       | --       | 13,0       |
| First working step      | kW        | --       | --       | --       | --       | --       | 4,5        |
| Second working step     | kW        | --       | --       | --       | --       | --       | 4,5+4,5    |
| Third working step      | kW        | --       | --       | --       | --       | --       | --         |
| <b>NET WEIGHT (2)</b>   | <b>kg</b> | --       | --       | --       | --       | --       | <b>7</b>   |

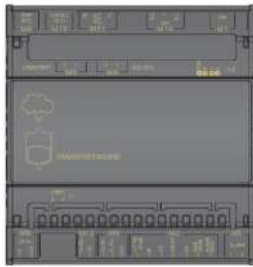
| VERSION (1)             |           | U / O      | U / O      | U / O       | U / O       | U / O       | U / O       |
|-------------------------|-----------|------------|------------|-------------|-------------|-------------|-------------|
| MODEL                   |           | 022 P1 S   | 026 P1 S   | 032 P1 S    | 037 P1 S    | 041 P1 S    | 045 P1 S    |
| SIZE                    |           | E3         | E3         | E4          | E4          | E4          | E4          |
| <b>THERMAL CAPACITY</b> | <b>kW</b> | <b>9,0</b> | <b>9,0</b> | <b>13,5</b> | <b>13,5</b> | <b>13,5</b> | <b>13,5</b> |
| Absorbed current (OA)   | A         | 13,0       | 13,0       | 13,0        | 13,0        | 13,0        | 13,0        |
| First working step      | kW        | 4,5        | 4,5        | 4,5         | 4,5         | 4,5         | 4,5         |
| Second working step     | kW        | 4,5+4,5    | 4,5+4,5    | 9,0         | 9,0         | 9,0         | 9,0         |
| Third working step      | kW        | --         | --         | 4,5+9,0     | 4,5+9,0     | 4,5+9,0     | 4,5+9,0     |
| <b>NET WEIGHT (2)</b>   | <b>kg</b> | <b>7</b>   | <b>7</b>   | <b>9,5</b>  | <b>9,5</b>  | <b>9,5</b>  | <b>9,5</b>  |

| VERSION (1)             |           | U / O       | U / O       | U / O       | U / O       | U / O       | U / O       |
|-------------------------|-----------|-------------|-------------|-------------|-------------|-------------|-------------|
| MODEL                   |           | 039 P2 D    | 048 P2 D    | 055 P2 D    | 062 P2 D    | 075 P2 D    | 082 P2 D    |
| SIZE                    |           | E5          | E5          | E6          | E6          | E7          | E7          |
| <b>THERMAL CAPACITY</b> | <b>kW</b> | <b>18,0</b> | <b>18,0</b> | <b>18,0</b> | <b>18,0</b> | <b>18,0</b> | <b>18,0</b> |
| Absorbed current (OA)   | A         | 26,0        | 26,0        | 26,0        | 26,0        | 26,0        | 26,0        |
| First working step      | kW        | 4,5         | 4,5         | 4,5         | 4,5         | 4,5         | 4,5         |
| Second working step     | kW        | 13,5        | 13,5        | 13,5        | 13,5        | 13,5        | 13,5        |
| Third working step      | kW        | 4,5+13,5    | 4,5+13,5    | 4,5+13,5    | 4,5+13,5    | 4,5+13,5    | 4,5+13,5    |
| <b>NET WEIGHT (2)</b>   | <b>kg</b> | <b>12</b>   | <b>12</b>   | <b>11,5</b> | <b>11,5</b> | <b>11,5</b> | <b>11,5</b> |

| VERSION (1)             |           | U / O       | U / O       | U           | U           |
|-------------------------|-----------|-------------|-------------|-------------|-------------|
| MODEL                   |           | 092 P2 D    | 102 P2 D    | 117 P4 D    | 146 P4 D    |
| SIZE                    |           | E8          | E8          | E9          | E9          |
| <b>THERMAL CAPACITY</b> | <b>kW</b> | <b>27,0</b> | <b>27,0</b> | <b>27,0</b> | <b>27,0</b> |
| Absorbed current (OA)   | A         | 39,0        | 39,0        | 39,0        | 39,0        |
| First working step      | kW        | 9,0         | 9,0         | 9,0         | 9,0         |
| Second working step     | kW        | 18,0        | 18,0        | 18,0        | 18,0        |
| Third working step      | kW        | 9,0+18,0    | 9,0+18,0    | 9,0+18,0    | 9,0+18,0    |
| <b>NET WEIGHT (2)</b>   | <b>kg</b> | <b>14,5</b> | <b>14,5</b> | <b>14,5</b> | <b>14,5</b> |

1. U = Under, downflow / O = Over, upflow
2. Value to be added to the weight of the standard unit.

**OPTIONAL ACCESSORIES: 4301 – STEAM HUMIDIFIER 3KG/H**  
**OPTIONAL ACCESSORIES: 4303 – STEAM HUMIDIFIER 8KG/H**  
**OPTIONAL ACCESSORIES: 4305 – STEAM HUMIDIFIER 15KG/H**



Humidifier control board

Modulating steam humidifier with immersed electrodes fitted with safety and running accessories  
 The optional includes the control board.

The optional requires mandatory accessory "P161 T/rH air intake sensor".

The optional is factory installed and requires only water filling connection.

**Humidifier water charge and discharge pipes are not supplied.**

It is recommended to install a filter and a shut-off valve on the pipe to the water inlet.

This humidifier produces non-pressurized steam by electrodes immersed in the water inside the cylinder: they bring the electric phase in the water that works as an electrical resistance and overheats. The steam so produced is distributed with dedicated distributors and used for ambient humidification or for industrial processes.

**CHARACTERISTICS OF THE SUPPLY WATER**

The quality of the used water influences the evaporation process, so the humidifier can be fed with **not-treated water, only when potable and non-demineralised.**

**LIMIT VALUES**

|                                       |                                     | Min     | Max |
|---------------------------------------|-------------------------------------|---------|-----|
| Hydrogen ions                         | pH                                  | 7       | 8,5 |
| Specific conductivity at 20°C         | $\sigma_{R, 20^\circ C}$ $\mu S/cm$ | 350     | 750 |
| Total dissolved solids                | TDS mg/l                            | (1)     | (1) |
| Dry residue at 180°C                  | R <sub>180</sub> mg/l               | (1)     | (1) |
| Total hardness                        | TH mg/l CaCO <sub>3</sub>           | 100 (2) | 400 |
| Temporary hardness                    | mg/l CaCO <sub>3</sub>              | 60 (3)  | 300 |
| Iron + Manganese                      | mg/l Fe + Mn                        | 0       | 0,2 |
| Chlorides                             | ppm Cl                              | 0       | 30  |
| Silica                                | mg/l SiO <sub>2</sub>               | 0       | 20  |
| Residual chlorine                     | mg/l Cl <sup>-</sup>                | 0       | 0,2 |
| Calcium sulphate                      | mg/l CaSO <sub>4</sub>              | 0       | 100 |
| Metallic impurities                   | mg/l                                | 0       | 0   |
| Solvents, diluents, soaps, lubricants | mg/l                                | 0       | 0   |

(1) Values depending on specific conductivity; in general: TDS  $\cong$  0,93 \*  $\sigma_{R, 20^\circ C}$ ; R<sub>180</sub>  $\cong$  0,65 \*  $\sigma_{R}$

(2) Not lower than 200% of the chloride content in mg/l di Cl<sup>-</sup>

(3) Not lower than 300% of the chloride content in mg/l di Cl<sup>-</sup>

**WARNING:**

- Use only with drinking water.
- There is no reliable relationship between hardness and water conductivity
- Do not treat water with softeners! This could cause corrosion of the electrodes or the formation of foam, leading to potential operating problems or failures.
- Do not add disinfectants or corrosion inhibitors to water, as these substances are potentially irritant.
- Is absolutely forbidden to use well water, industrial water or water drawn from cooling circuits; in general, avoid using potentially contaminated water, either from a chemical or bacteriological point of view.

**TECHNICAL DATA**

| VERSION (1)                      |      | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|----------------------------------|------|----------|----------|----------|----------|----------|----------|
| MODEL                            |      | 007 P1 S | 009 P1 S | 011 P1 S | 014 P1 S | 016 P1 S | 020 P1 S |
| SIZE                             |      | E0       | E0       | E1       | E2       | E2       | E3       |
| <b>STEAM PRODUCTION</b>          | kg/h | 3,0      | 3,0      | 3,0      | 3,0      | 3,0      | 3,0      |
| Power input                      | kW   | 2,3      | 2,3      | 2,3      | 2,3      | 2,3      | 2,3      |
| Absorbed current (OA)            | A    | 3,2      | 3,2      | 3,2      | 3,2      | 3,2      | 3,2      |
| Max absorbed current (FLA)       | A    | 4,5      | 4,5      | 4,5      | 4,5      | 4,5      | 4,5      |
| Water content                    | l    | 3,9      | 3,9      | 3,9      | 3,9      | 3,9      | 3,9      |
| Max water supply pressure        | Bar  | 1÷8      | 1÷8      | 1÷8      | 1÷8      | 1÷8      | 1÷8      |
| <b>NET WEIGHT (2)</b>            | kg   | 4        | 5        | 4        | 5        | 5        | 6        |
| <b>HYDRAULIC CONNECTION</b>      |      |          |          |          |          |          |          |
| WATER INLET - ISO 228/1 – G M    | Ø    | 3/4"     | 3/4"     | 3/4"     | 3/4"     | 3/4"     | 3/4"     |
| WATER OUTLET - external diameter | Ø mm | 19       | 19       | 19       | 19       | 19       | 19       |

1. U = Under, downflow / O = Over, upflow

2. Value to be added to the weight of the standard unit. Does not include the weight of the water content.



## TECHNICAL DATA

| VERSION (1)                      |             | U / O      | U / O      | U / O      | U / O      | U / O      | U / O      |
|----------------------------------|-------------|------------|------------|------------|------------|------------|------------|
| MODEL                            |             | 022 P1 S   | 026 P1 S   | 032 P1 S   | 037 P1 S   | 041 P1 S   | 045 P1 S   |
| SIZE                             |             | E3         | E3         | E4         | E4         | E4         | E4         |
| <b>STEAM PRODUCTION</b>          | <b>kg/h</b> | <b>3,0</b> | <b>3,0</b> | <b>8,0</b> | <b>8,0</b> | <b>8,0</b> | <b>8,0</b> |
| Power input                      | kW          | 2,3        | 2,3        | 6,0        | 6,0        | 6,0        | 6,0        |
| Absorbed current (OA)            | A           | 3,2        | 3,2        | 8,7        | 8,7        | 8,7        | 8,7        |
| Max absorbed current (FLA)       | A           | 4,5        | 4,5        | 12,4       | 12,4       | 12,4       | 12,4       |
| Water content                    | l           | 3,9        | 3,9        | 6,0        | 6,0        | 6,0        | 6,0        |
| Max water supply pressure        | Bar         | 1÷8        | 1÷8        | 1÷8        | 1÷8        | 1÷8        | 1÷8        |
| <b>NET WEIGHT (2)</b>            | <b>kg</b>   | <b>6</b>   | <b>6</b>   | <b>10</b>  | <b>10</b>  | <b>10</b>  | <b>10</b>  |
| <b>HYDRAULIC CONNECTION</b>      |             |            |            |            |            |            |            |
| WATER INLET - ISO 228/1 – G M    | Ø           | 3/4"       | 3/4"       | 3/4"       | 3/4"       | 3/4"       | 3/4"       |
| WATER OUTLET - external diameter | Ø mm        | 19         | 19         | 19         | 19         | 19         | 19         |

| VERSION (1)                      |             | U / O      | U / O      | U / O      | U / O      | U / O      | U / O      |
|----------------------------------|-------------|------------|------------|------------|------------|------------|------------|
| MODEL                            |             | 039 P2 D   | 048 P2 D   | 055 P2 D   | 062 P2 D   | 075 P2 D   | 082 P2 D   |
| SIZE                             |             | E5         | E5         | E6         | E6         | E7         | E7         |
| <b>STEAM PRODUCTION</b>          | <b>kg/h</b> | <b>8,0</b> | <b>8,0</b> | <b>8,0</b> | <b>8,0</b> | <b>8,0</b> | <b>8,0</b> |
| Power input                      | kW          | 6,0        | 6,0        | 6,0        | 6,0        | 6,0        | 6,0        |
| Absorbed current (OA)            | A           | 8,7        | 8,7        | 8,7        | 8,7        | 8,7        | 8,7        |
| Max absorbed current (FLA)       | A           | 12,4       | 12,4       | 12,4       | 12,4       | 12,4       | 12,4       |
| Water content                    | l           | 6,4        | 6,4        | 6,4        | 6,4        | 6,4        | 6,4        |
| Max water supply pressure        | Bar         | 1÷8        | 1÷8        | 1÷8        | 1÷8        | 1÷8        | 1÷8        |
| <b>NET WEIGHT (2)</b>            | <b>kg</b>   | <b>10</b>  | <b>10</b>  | <b>10</b>  | <b>10</b>  | <b>10</b>  | <b>10</b>  |
| <b>HYDRAULIC CONNECTION</b>      |             |            |            |            |            |            |            |
| WATER INLET - ISO 228/1 – G M    | Ø           | 3/4"       | 3/4"       | 3/4"       | 3/4"       | 3/4"       | 3/4"       |
| WATER OUTLET - external diameter | Ø mm        | 19         | 19         | 19         | 19         | 19         | 19         |

| VERSION (1)                      |             | U / O      | U / O      | U          | U          |
|----------------------------------|-------------|------------|------------|------------|------------|
| MODEL                            |             | 092 P2 D   | 102 P2 D   | 117 P4 D   | 146 P4 D   |
| SIZE                             |             | E8         | E8         | E9         | E9         |
| <b>STEAM PRODUCTION</b>          | <b>kg/h</b> | <b>8,0</b> | <b>8,0</b> | <b>8,0</b> | <b>8,0</b> |
| Power input                      | kW          | 6,0        | 6,0        | 6,0        | 6,0        |
| Absorbed current (OA)            | A           | 8,7        | 8,7        | 8,7        | 8,7        |
| Max absorbed current (FLA)       | A           | 12,4       | 12,4       | 12,4       | 12,4       |
| Water content                    | l           | 6,4        | 6,4        | 6,4        | 6,4        |
| Max water supply pressure        | Bar         | 1÷8        | 1÷8        | 1÷8        | 1÷8        |
| <b>NET WEIGHT (2)</b>            | <b>kg</b>   | <b>10</b>  | <b>10</b>  | <b>10</b>  | <b>10</b>  |
| <b>HYDRAULIC CONNECTION</b>      |             |            |            |            |            |
| WATER INLET - ISO 228/1 – G M    | Ø           | 3/4"       | 3/4"       | 3/4"       | 3/4"       |
| WATER OUTLET - external diameter | Ø mm        | 19         | 19         | 19         | 19         |

1. U = Under, downflow / O = Over, upflow
2. Value to be added to the weight of the standard unit. Does not include the weight of the water content.

**EXTRA POWER HUMIDIFIERS**

The optional is not available for size E0, E1.  
The components are the same of the standard accessory

**TECHNICAL DATA**

| VERSION (1)                      |      | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|----------------------------------|------|----------|----------|----------|----------|----------|----------|
| MODEL                            |      | 007 P1 S | 009 P1 S | 011 P1 S | 014 P1 S | 016 P1 S | 020 P1 S |
| SIZE                             |      | E0       | E0       | E1       | E2       | E2       | E3       |
| <b>VAPOUR PRODUCTION</b>         | kg/h | --       | --       | --       | 8        | 8        | 8        |
| Power input                      | kW   | --       | --       | --       | 6,0      | 6,0      | 6,0      |
| Absorbed current (OA)            | A    | --       | --       | --       | 8,7      | 8,7      | 8,7      |
| Max absorbed current (FLA)       | A    | --       | --       | --       | 12,4     | 12,4     | 12,4     |
| Water content                    | l    | --       | --       | --       | 6,0      | 6,0      | 6,0      |
| Max water supply pressure        | Bar  | --       | --       | --       | 1÷8      | 1÷8      | 1÷8      |
| <b>NET WEIGHT (2)</b>            | kg   | --       | --       | --       | 10       | 10       | 10       |
| <b>HYDRAULIC CONNECTION</b>      |      |          |          |          |          |          |          |
| WATER INLET - ISO 228/1 – G M    | Ø    | --       | --       | --       | 3/4"     | 3/4"     | 3/4"     |
| WATER OUTLET - external diameter | Ø mm | --       | --       | --       | 19       | 19       | 19       |

| VERSION (1)                      |      | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|----------------------------------|------|----------|----------|----------|----------|----------|----------|
| MODEL                            |      | 022 P1 S | 026 P1 S | 032 P1 S | 037 P1 S | 041 P1 S | 045 P1 S |
| SIZE                             |      | E3       | E3       | E4       | E4       | E4       | E4       |
| <b>VAPOUR PRODUCTION</b>         | kg/h | 8        | 8        | 15       | 15       | 15       | 15       |
| Power input                      | kW   | 6,0      | 6,0      | 11,3     | 11,3     | 11,3     | 11,3     |
| Absorbed current (OA)            | A    | 8,7      | 8,7      | 16,2     | 16,2     | 16,2     | 16,2     |
| Max absorbed current (FLA)       | A    | 12,4     | 12,4     | 23       | 23       | 23       | 23       |
| Water content                    | l    | 6,0      | 6,0      | 10,3     | 10,3     | 10,3     | 10,3     |
| Max water supply pressure        | Bar  | 1÷8      | 1÷8      | 1÷8      | 1÷8      | 1÷8      | 1÷8      |
| <b>NET WEIGHT (2)</b>            | kg   | 10       | 10       | 16       | 16       | 16       | 16       |
| <b>HYDRAULIC CONNECTION</b>      |      |          |          |          |          |          |          |
| WATER INLET - ISO 228/1 – G M    | Ø    | 3/4"     | 3/4"     | 3/4"     | 3/4"     | 3/4"     | 3/4"     |
| WATER OUTLET - external diameter | Ø mm | 19       | 19       | 19       | 19       | 19       | 19       |

| VERSION (1)                      |      | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|----------------------------------|------|----------|----------|----------|----------|----------|----------|
| MODEL                            |      | 039 P2 D | 048 P2 D | 055 P2 D | 062 P2 D | 075 P2 D | 082 P2 D |
| SIZE                             |      | E5       | E5       | E6       | E6       | E7       | E7       |
| <b>VAPOUR PRODUCTION</b>         | kg/h | 15       | 15       | 15       | 15       | 15       | 15       |
| Power input                      | kW   | 11,3     | 11,3     | 11,3     | 11,3     | 11,3     | 11,3     |
| Absorbed current (OA)            | A    | 16,2     | 16,2     | 16,2     | 16,2     | 16,2     | 16,2     |
| Max absorbed current (FLA)       | A    | 23       | 23       | 23       | 23       | 23       | 23       |
| Water content                    | l    | 10,3     | 10,3     | 10,3     | 10,3     | 10,3     | 10,3     |
| Max water supply pressure        | Bar  | 1÷8      | 1÷8      | 1÷8      | 1÷8      | 1÷8      | 1÷8      |
| <b>NET WEIGHT (2)</b>            | kg   | 16       | 16       | 16       | 16       | 16       | 16       |
| <b>HYDRAULIC CONNECTION</b>      |      |          |          |          |          |          |          |
| WATER INLET - ISO 228/1 – G M    | Ø    | 3/4"     | 3/4"     | 3/4"     | 3/4"     | 3/4"     | 3/4"     |
| WATER OUTLET - external diameter | Ø mm | 19       | 19       | 19       | 19       | 19       | 19       |

| VERSION (1)                      |      | U / O    | U / O    | U        | U        |
|----------------------------------|------|----------|----------|----------|----------|
| MODEL                            |      | 092 P2 D | 102 P2 D | 117 P4 D | 146 P4 D |
| SIZE                             |      | E8       | E8       | E9       | E9       |
| <b>VAPOUR PRODUCTION</b>         | kg/h | 15       | 15       | 15       | 15       |
| Power input                      | kW   | 11,3     | 11,3     | 11,3     | 11,3     |
| Absorbed current (OA)            | A    | 16,2     | 16,2     | 16,2     | 16,2     |
| Max absorbed current (FLA)       | A    | 23       | 23       | 23       | 23       |
| Water content                    | l    | 10,3     | 10,3     | 10,3     | 10,3     |
| Max water supply pressure        | Bar  | 1÷8      | 1÷8      | 1÷8      | 1÷8      |
| <b>NET WEIGHT (2)</b>            | kg   | 16       | 16       | 16       | 16       |
| <b>HYDRAULIC CONNECTION</b>      |      |          |          |          |          |
| WATER INLET - ISO 228/1 – G M    | Ø    | 3/4"     | 3/4"     | 3/4"     | 3/4"     |
| WATER OUTLET - external diameter | Ø mm | 19       | 19       | 19       | 19       |

1. U = Under, downflow / O = Over, upflow
2. Value to be added to the weight of the standard unit. Does not include the weight of the water content.



**OPTIONAL ACCESSORIES: P161 - T/RH AIR INTAKE SENSOR**

**OPTIONAL ACCESSORIES: P071 - REMOTE T/RH PROBE**



**P161: T/RH AIR INTAKE SENSOR**

The accessory replaces the temperature sensor installed on the air intake in the unit and allows the displaying of the relative humidity room value

The sensor is mandatorily required with following option:

- 4301 / 4303 / 4305 Humidifier;
- P034 Intake free-cooling plenum.

**P071: REMOTE T/RH PROBE**

The accessory is added to the standard temperature sensor or to the temperature / humidity sensor (optional) on the machine air intake. For indoor installation in a specific point of the room to be conditioned.

**OPTIONAL ACCESSORIES: 4666 – EXTERNAL AIR PROBE**



The probe must be installed protected against atmospheric agent and allows the displaying of the external air temperature.

The sensor is mandatorily required with following option:

- P034 Intake free-cooling plenum.

**OPTIONAL ACCESSORIES: P111 – DUAL POWER SUPPLY**

**OPTIONAL ACCESSORIES: P112 – DUAL POWER SUPPLY + OPTIONAL**

**OPTIONAL ACCESSORIES: P113 – KIT DUAL POWER SUPPLY**

**OPTIONAL ACCESSORIES: P114 – KIT DUAL POWER SUPPLY + OPTIONAL**



The motorised changeover switches automatically manage changeover under load between two three-phase power supplies, or manually for emergency operations.

These devices are suitable for low voltage systems with interruption of the supply to the load during transfer.

The model supplied in the automatic version checks the source and switches over automatically, based on configurable parameters.

**OPEN TRANSITION TYPE TRANSFER SWITCH WITH A MINIMUM INTERRUPTION OF THE SUPPLY DURING TRANSFER.**

To maintain the microprocessor powered and avoid its restarts it is suggested the “P091 Back-up module controller” optional accessory. The back-up module guarantees the microprocessor power supply for a few minutes, in case of supply voltage failure.

The remote condenser must be powered by the automatic transfer switch.

It is suggested the optional “P191 power supply for condenser” from the indoor machine electrical board. The optional includes magnetothermic switches for condenser fans.



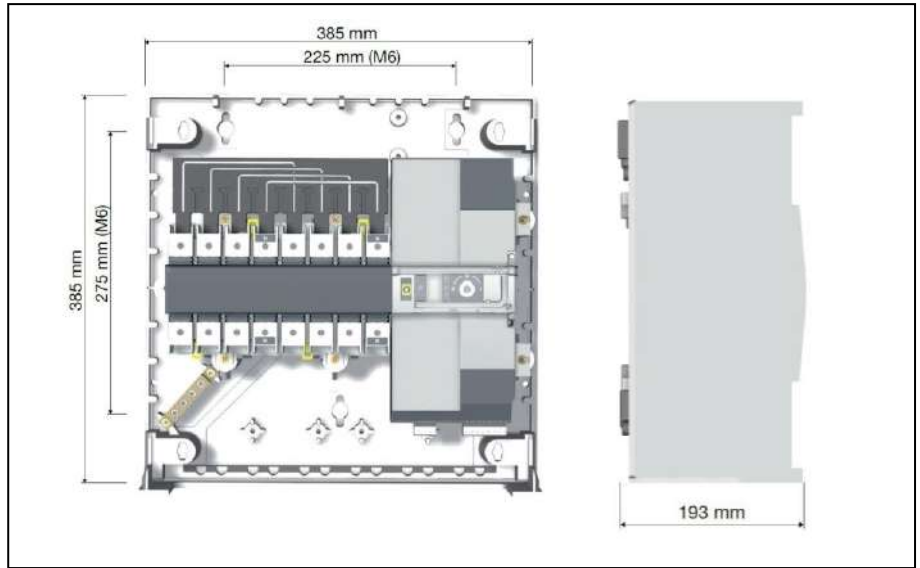
**INSTALLATION**

| Frame | Power Supply | Installation                          | Code           |
|-------|--------------|---------------------------------------|----------------|
| E0    | 400/3+N/50   | EXTERNAL to the unit, supplied in kit | P113, P114 (*) |
| E1    | 400/3+N/50   | EXTERNAL to the unit, supplied in kit | P113, P114 (*) |
| E2    | 400/3+N/50   | EXTERNAL to the unit, supplied in kit | P113, P114 (*) |
| E3    | 400/3+N/50   | EXTERNAL to the unit, supplied in kit | P113, P114 (*) |
| E4    | 400/3+N/50   | EXTERNAL to the unit, supplied in kit | P113, P114 (*) |
| E5    | 400/3+N/50   | INTERNAL (on unit electrical panel)   | P111, P112 (*) |
| E6    | 400/3+N/50   | INTERNAL (on unit electrical panel)   | P111, P112 (*) |
| E7    | 400/3+N/50   | INTERNAL (on unit electrical panel)   | P111, P112 (*) |
| E8    | 400/3+N/50   | INTERNAL (on unit electrical panel)   | P111, P112 (*) |
| E9    | 400/3+N/50   | INTERNAL (on unit electrical panel)   | P111, P112 (*) |

(\*) P112, P114 for units with optional (with electric heaters and/or humidifier)

**MOUNTING KIT**

For EXTERNAL installation, the optional accessory is supplied in special box with IP 3X ingress protection, with the dimensions shown in the figure below.



**OPTIONAL ACCESSORIES: A381 - DRAIN PUMP**



A plastic case contains the vertical type pump, the water tank with float plus safety switch and hydraulic and electric connection.

Together the pump 10 linear meters anti-crushing plastic discharge spiral tube is supplied

The optional must be installed as shown in the documentation delivered together with the unit.

Wiring includes power supply and an alarm, displayed on microprocessor, that includes motor pump thermal protection and tank overflow.

The condensate discharge pump operation is fully automatic.

**WARNING**

For all the machines the optional accessory is supplied in mounting kit.

**TECHNICAL DATA**

Power supply: 230V~ 50Hz

Electrical data: 70W – 0,67A

Maximum water flow: 500 l/h

Maximum delivery height: 5.0 m

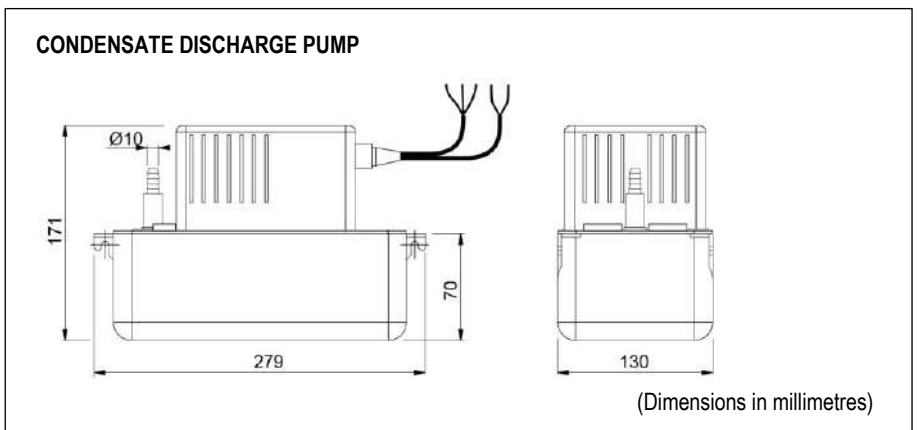
Sound level: 45dBA a 1 m

Maximum water temperature: 70°C

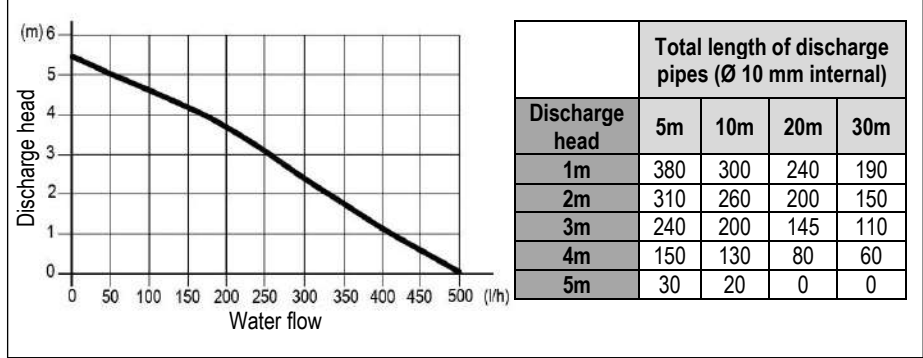
Water acidity: pH>2.5

Tray volume: 2.0 l

Protection IP 20



**OPERATING DATA**



**OPTIONAL ACCESSORIES: P084 – AIR FILTER ePM10 50%**

The optional is not available for size E0.  
 The ePM<sub>10</sub> 50% air filters (according to ISO EN 16890), replace the standard one.  
 The filters generate a pressure drops higher than the standard ones.  
 The filters are made of glass micro-fibre and are not regenerable.

| VERSION (1)                   |    | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|-------------------------------|----|----------|----------|----------|----------|----------|----------|
| MODEL                         |    | 007 P1 S | 009 P1 S | 011 P1 S | 014 P1 S | 016 P1 S | 020 P1 S |
| SIZE                          |    | E0       | E0       | E1       | E2       | E2       | E3       |
| Additional pressure drops (2) | Pa | -        | -        | 65       | 76       | 76       | 74       |

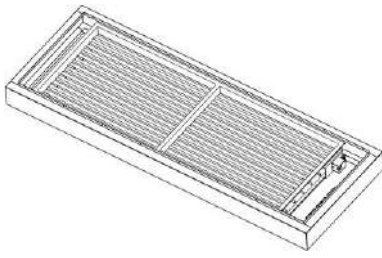
| VERSION (1)                   |    | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|-------------------------------|----|----------|----------|----------|----------|----------|----------|
| MODEL                         |    | 022 P1 S | 026 P1 S | 032 P1 S | 037 P1 S | 041 P1 S | 045 P1 S |
| SIZE                          |    | E3       | E3       | E4       | E4       | E4       | E4       |
| Additional pressure drops (2) | Pa | 74       | 74       | 26       | 26       | 37       | 37       |

| VERSION (1)                   |    | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|-------------------------------|----|----------|----------|----------|----------|----------|----------|
| MODEL                         |    | 039 P2 D | 048 P2 D | 055 P2 D | 062 P2 D | 075 P2 D | 082 P2 D |
| SIZE                          |    | E5       | E5       | E6       | E6       | E7       | E7       |
| Additional pressure drops (2) | Pa | 17       | 27       | 42       | 42       | 47       | 47       |

| VERSION (1)                   |    | U / O    | U / O    | U        | U        |
|-------------------------------|----|----------|----------|----------|----------|
| MODEL                         |    | 092 P2 D | 102 P2 D | 117 P4 D | 146 P4 D |
| SIZE                          |    | E8       | E8       | E9       | E9       |
| Additional pressure drops (2) | Pa | 42       | 42       | 62       | 62       |

1. U = Under, downflow / O = Over, upflow
2. Additional pressure drops referred to nominal air flow and clean filter.

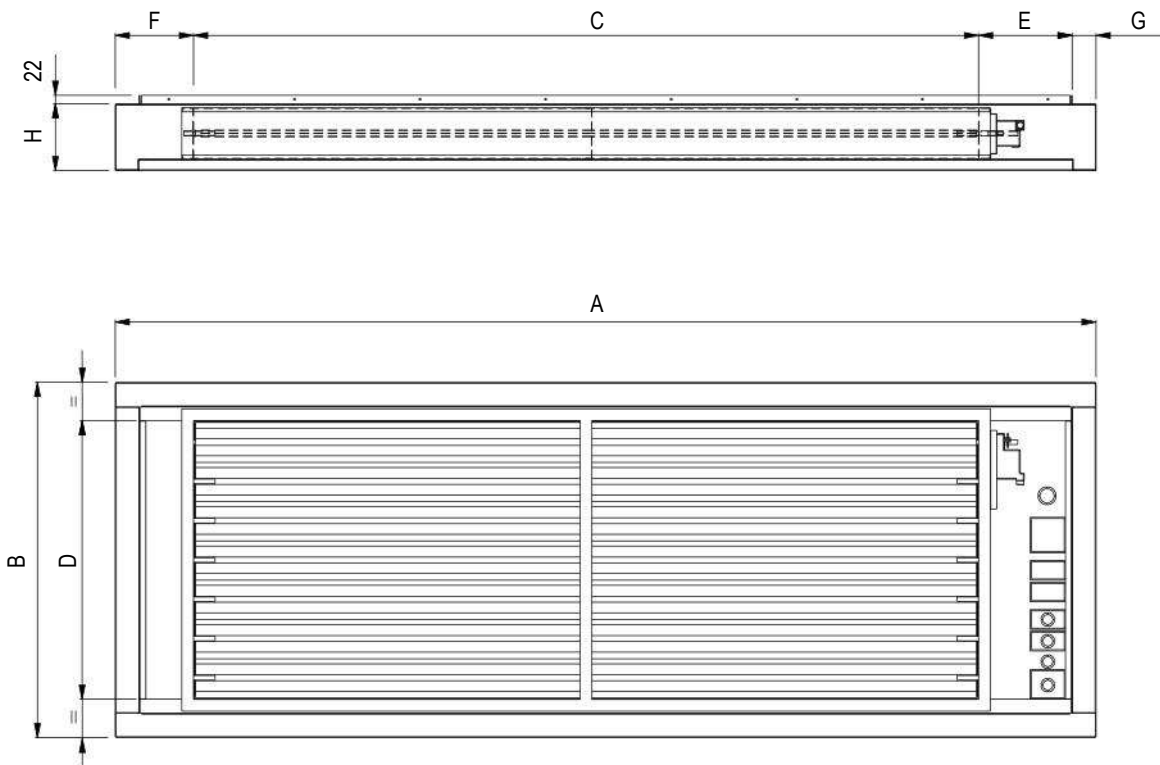
**OPTIONAL ACCESSORIES: A531 – ON-OFF DAMPER**



The optional is not available for size E0.  
 Non-return air damper with frame driven by electric servomotor.  
 Accessory installed on units air delivery and it can be matched to plenums and floor stand.  
 The accessory requires mandatory accessory "9973 Wooden cage packing".

**FRAMEWORK**

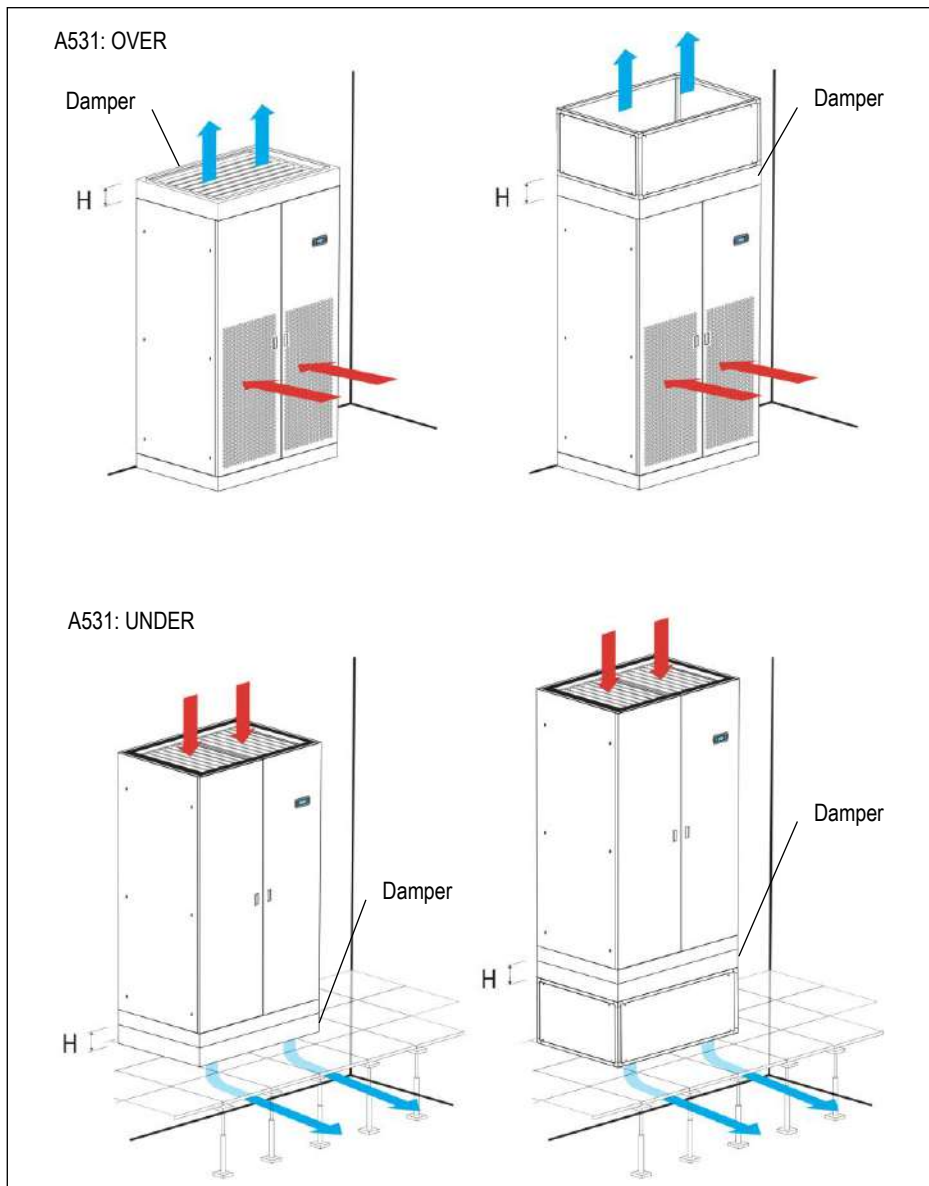
- Frame in galvanized steel sheet with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders. Colour RAL 9005;
- Opposed blade dampers in galvanized steel sheet.
- Actuator for damper control.
- Terminals for electric connection to the unit.



| VERSION (1) |    | U / O | U / O | U / O | U / O | U / O | U / O | U / O | U / O | U     |       |
|-------------|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| SIZE        |    | E0    | E1    | E2    | E3    | E4    | E5    | E6    | E7    | E8    | E9    |
| A           | mm | -     | 650   | 785   | 1085  | 1305  | 1630  | 1873  | 2175  | 2499  | 2899  |
| B           | mm | -     | 650   | 650   | 750   | 905   | 905   | 905   | 905   | 905   | 905   |
| C           | mm | -     | 300   | 450   | 750   | 900   | 1250  | 1500  | 1750  | 2000  | 2300  |
| D           | mm | -     | 510   | 510   | 610   | 710   | 710   | 710   | 710   | 710   | 710   |
| E           | mm | -     | 231   | 216   | 216   | 142   | 204   | 250,5 | 226,5 | 238,5 | 288,5 |
| F           | mm | -     | 73    | 73    | 73    | 202   | 115   | 61,5  | 137,5 | 199,5 | 249,5 |
| G           | mm | -     | 46    | 46    | 46    | 61    | 61    | 61    | 61    | 61    | 61    |
| H           | mm | -     | 170   | 170   | 170   | 170   | 170   | 170   | 170   | 170   | 170   |
| Weight (2)  | kg | -     | 20    | 23    | 30    | 40    | 50    | 58    | 65    | 75    | 90    |

1. U = Under, downflow / O = Over, upflow  
 2. Add this value to the total unit weight

INSTALLATION EXAMPLE



WORKING LOGIC

The damper opens at supply fans activation to allow air flow.

When the fans stop for failure or stop command, the damper closes, preventing air flow into the unit.

OPTIONAL ACCESSORIES: P011 - EMPTY PLENUM

OPTIONAL ACCESSORIES: P012 - EMPTY PLENUM CL.A1

OPTIONAL ACCESSORIES: P031 - EMPTY INTAKE PLENUM

OPTIONAL ACCESSORIES: P032 - EMPTY INTAKE PLENUM CL.A1

OPTIONAL ACCESSORIES: P013 - PLENUM + 3 GRILLES

OPTIONAL ACCESSORIES: P014 - PLENUM + 3 GRILLES CL.A1

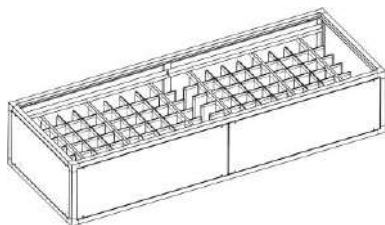
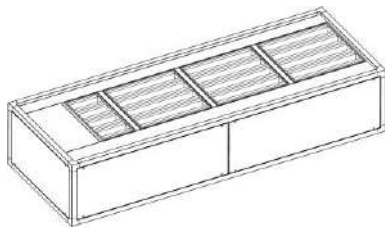
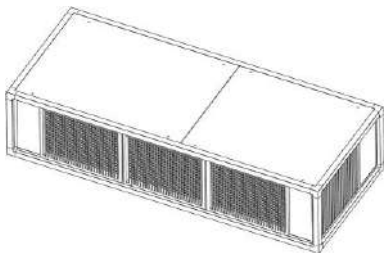
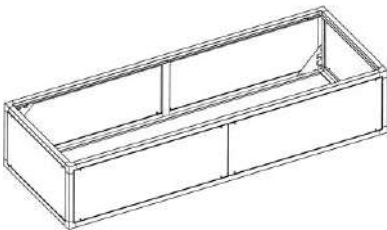
OPTIONAL ACCESSORIES: P015 - SILENCED PLENUM

OPTIONAL ACCESSORIES: P016 - SILENCED PLENUM + 1 GRILLE

OPTIONAL ACCESSORIES: P017 - PLENUM + FILTER EPM2.5 50%

OPTIONAL ACCESSORIES: P018 - PLENUM + FILTER EPM1 50%

OPTIONAL ACCESSORIES: P019 - PLENUM + FILTER EPM1 85%



The optional is supplied separately and the installation on the unit is at Customer care.  
The plenums have same technical characteristics and base dimensions of the machine cabinet.

**It is possible to install only a single plenum to ensure stability to the unit.**

#### FRAMEWORK

- Frame in aluminium extrusion, painted with epoxy powders. Colour RAL 9005;
- Panels in galvanized steel sheet with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders. Colour RAL 9005;
- Panels insulated with polyurethane foam and seals to ensure air tight.
- Panels fixed with screws.
- Removable panels.
- Set of fixing elements to fasten the plenum to the unit.

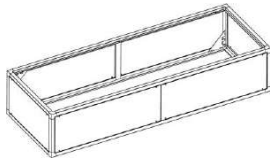
#### **WARNING**

**In UNDER version units the piping is inside the machine.**

**The air delivery plenums sometime don't allow the extension of the pipes downwards.**

**In special cases, to keep the connections inside the machine, foresee a plenum 200mm higher than the standard one.**





**P011 / P012 – P031 / P032: EMPTY PLENUM**

The optional is not available for size E0.

The plenum is void and can be used to rise the intake/delivery air inlet/outlet.

Remove the frontal panels for inspection.

Also available with fire reaction in class “0” or “A1” (EN 13501-1).

The optional accessories “P031 Empty intake plenum, for OVER version” and “P032 Empty intake plenum CL.A1, for OVER version” require mandatory accessory “P122 Bottom air intake+blind panels, for OVER version only”.

P011 / P012 OVER

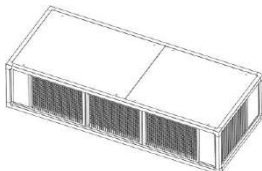
P031 / P032 OVER

P011 / P012 UNDER

P031 / P032 UNDER

| VERSION (1)                        |    | U/O | U/O | U/O | U/O | U/O | U/O | U/O | U/O | U   |     |
|------------------------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SIZE                               |    | E0  | E1  | E2  | E3  | E4  | E5  | E6  | E7  | E8  | E9  |
| A                                  | mm | -   | 490 | 490 | 490 | 510 | 510 | 510 | 510 | 510 | 510 |
| Weight (2)                         | kg | -   | 20  | 21  | 20  | 30  | 40  | 45  | 50  | 60  | 70  |
| Weight CL.0 or A1 (EN 13501-1) (2) | kg | -   | 25  | 27  | 27  | 39  | 50  | 56  | 62  | 74  | 85  |

1. U = Under, downflow / O = Over, upflow  
 2. Add this value to the total unit weight



**P013 / P014: PLENUM + 3 GRILLES**

The plenum must be installed on air delivery.

The plenum allows the air distribution directly into the room. The plenum is supplied with air distribution grilles with double row adjustable grilles on front and lateral side.

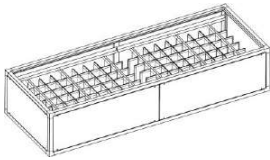
Also available with fire reaction in class “0” or “A1” (EN 13501-1).

P013 / P014 OVER

P013 / P014 UNDER

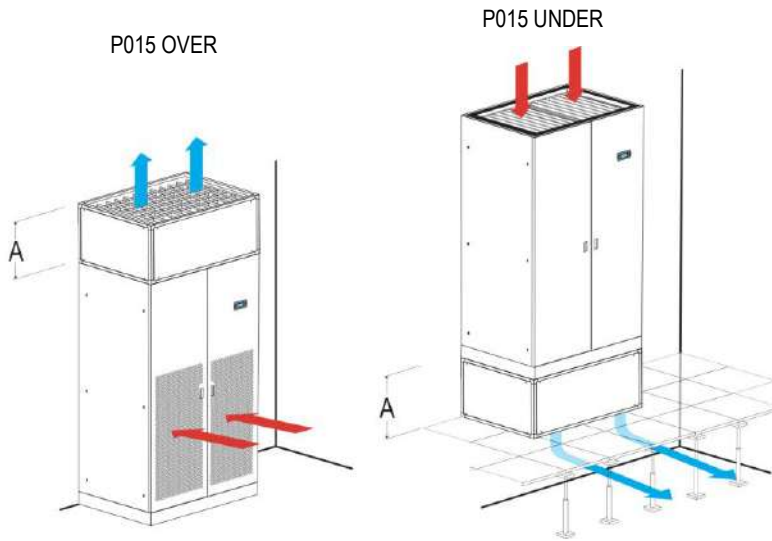
| VERSION (1)                        |    | U/O | U/O | U/O | U/O | U/O | U/O | U/O | U/O | U/O | U   |
|------------------------------------|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| SIZE                               |    | E0  | E1  | E2  | E3  | E4  | E5  | E6  | E7  | E8  | E9  |
| A                                  | mm | 490 | 490 | 490 | 490 | 510 | 510 | 510 | 510 | 510 | 510 |
| Weight (2)                         | kg | 15  | 21  | 23  | 30  | 45  | 50  | 65  | 75  | 90  | 100 |
| Weight CL.0 or A1 (EN 13501-1) (2) | kg | 18  | 25  | 28  | 37  | 54  | 61  | 77  | 89  | 106 | 118 |

1. U = Under, downflow / O = Over, upflow  
 2. Add this value to the total unit weight



**P015: SILENCED PLENUM**

The optional is not available for size E0.  
 The plenum must be installed on air delivery.  
 The plenum is fitted with noise absorption partitions to reduce the noise emission.  
 Remove the frontal panels for inspection.



| VERSION (1) |    | U / O | U / O | U / O | U / O | U / O | U / O | U / O | U / O | U   |     |
|-------------|----|-------|-------|-------|-------|-------|-------|-------|-------|-----|-----|
| SIZE        |    | E0    | E1    | E2    | E3    | E4    | E5    | E6    | E7    | E8  | E9  |
| A           | mm | -     | 490   | 490   | 490   | 510   | 510   | 510   | 510   | 510 | 510 |
| Weight (2)  | kg | -     | 25    | 27    | 30    | 45    | 50    | 65    | 80    | 90  | 100 |

1. U = Under, downflow / O = Over, upflow
2. Add this value to the total unit weight

**ACOUSTIC DATA**

| VERSION (1)                     |                   | U / O    | U / O    | U / O    | U / O    | U / O    |          |
|---------------------------------|-------------------|----------|----------|----------|----------|----------|----------|
| MODEL                           |                   | 007 P1 S | 009 P1 S | 011 P1 S | 014 P1 S | 016 P1 S | 020 P1 S |
| SIZE                            |                   | E0       | E0       | E1       | E2       | E2       | E3       |
| <b>SOUND LEVEL ISO 3744 (2)</b> |                   |          |          |          |          |          |          |
| On air delivery, Under          | dB(A)             | --       | --       | 53,9     | 69,2     | 69,2     | 70,0     |
| On air intake, Under            | dB(A)             | --       | --       | 49,5     | 59,7     | 59,7     | 60,4     |
| On front side, Under            | dB(A)             | --       | --       | 40,4     | 50,2     | 50,2     | 50,9     |
| On air delivery, Over           | dB(A)             | --       | --       | 53,9     | 69,2     | 69,2     | 70,0     |
| On air intake, Over (3)         | dB(A)             | --       | --       | 49,6     | 55,6     | 55,6     | 57,1     |
| On front side, Over (4)         | dB(A)             | --       | --       | 39,7     | 50,0     | 50,0     | 50,5     |
| Air flow (5)                    | m <sup>3</sup> /h | --       | --       | 3000     | 4200     | 4200     | 6500     |

| VERSION (1)                     |                   | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|---------------------------------|-------------------|----------|----------|----------|----------|----------|----------|
| MODEL                           |                   | 022 P1 S | 026 P1 S | 032 P1 S | 037 P1 S | 041 P1 S | 045 P1 S |
| SIZE                            |                   | E3       | E3       | E4       | E4       | E4       | E4       |
| <b>SOUND LEVEL ISO 3744 (2)</b> |                   |          |          |          |          |          |          |
| On air delivery, Under          | dB(A)             | 70,0     | 70,0     | 72,6     | 72,6     | 75,8     | 75,8     |
| On air intake, Under            | dB(A)             | 60,4     | 60,4     | 63,1     | 63,1     | 67,5     | 67,5     |
| On front side, Under            | dB(A)             | 50,9     | 50,9     | 53,6     | 53,6     | 58,1     | 58,1     |
| On air delivery, Over           | dB(A)             | 70,0     | 70,0     | 72,6     | 72,6     | 75,8     | 75,8     |
| On air intake, Over (3)         | dB(A)             | 57,1     | 57,1     | 59,8     | 59,8     | 63,0     | 63,0     |
| On front side, Over (4)         | dB(A)             | 50,5     | 50,5     | 53,1     | 53,1     | 57,9     | 57,9     |
| Air flow (5)                    | m <sup>3</sup> /h | 6500     | 6500     | 8000     | 8000     | 9600     | 9600     |

1. U = Under, downflow / O = Over, upflow
2. Noise pressure level at 1 meter in free field – ISO 3744
3. Air intake from the front
4. Air intake from the bottom
5. Nominal air flow with noise absorption partitions plenum installation and external static pressure 20 Pa.



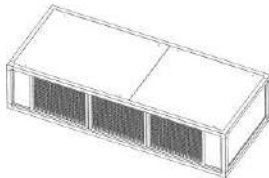
# b-AV DX

## ACOUSTIC DATA

| VERSION (1)                     |                   | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|---------------------------------|-------------------|----------|----------|----------|----------|----------|----------|
| MODEL                           |                   | 039 P2 D | 048 P2 D | 055 P2 D | 062 P2 D | 075 P2 D | 082 P2 D |
| SIZE                            |                   | E5       | E5       | E6       | E6       | E7       | E7       |
| <b>SOUND LEVEL ISO 3744 (2)</b> |                   |          |          |          |          |          |          |
| On air delivery, Under          | dB(A)             | 73,4     | 76,7     | 74,4     | 74,4     | 78,3     | 78,3     |
| On air intake, Under            | dB(A)             | 63,8     | 68,4     | 64,8     | 64,8     | 70,0     | 70,0     |
| On front side, Under            | dB(A)             | 54,3     | 59,0     | 55,3     | 55,3     | 60,6     | 60,6     |
| On air delivery, Over           | dB(A)             | 73,4     | 76,7     | 74,4     | 74,4     | 78,3     | 78,3     |
| On air intake, Over (3)         | dB(A)             | 60,3     | 63,7     | 61,3     | 61,3     | 65,6     | 65,6     |
| On front side, Over (4)         | dB(A)             | 53,9     | 58,8     | 54,9     | 54,9     | 60,4     | 60,4     |
| Air flow (5)                    | m <sup>3</sup> /h | 8300     | 10200    | 14800    | 14800    | 18500    | 18500    |

| VERSION (1)                     |                   | U / O    | U / O    | U        | U        |
|---------------------------------|-------------------|----------|----------|----------|----------|
| MODEL                           |                   | 092 P2 D | 102 P2 D | 117 P4 D | 146 P4 D |
| SIZE                            |                   | E8       | E8       | E9       | E9       |
| <b>SOUND LEVEL ISO 3744 (2)</b> |                   |          |          |          |          |
| On air delivery, Under          | dB(A)             | 79,2     | 79,2     | 80,4     | 80,4     |
| On air intake, Under            | dB(A)             | 71,0     | 71,0     | 72,1     | 72,1     |
| On front side, Under            | dB(A)             | 61,6     | 61,0     | 62,7     | 62,7     |
| On air delivery, Over           | dB(A)             | 79,2     | 79,2     | -        | -        |
| On air intake, Over (3)         | dB(A)             | 66,8     | 66,8     | -        | -        |
| On front side, Over (4)         | dB(A)             | 61,3     | 61,3     | -        | -        |
| Air flow (5)                    | m <sup>3</sup> /h | 19800    | 19800    | 28400    | 28400    |

1. U = Under, downflow / O = Over, upflow
2. Noise pressure level at 1 meter in free field – ISO 3744
3. Air intake from the front
4. Air intake from the bottom
5. Nominal air flow with noise absorption partitions plenum installation and external static pressure 20 Pa

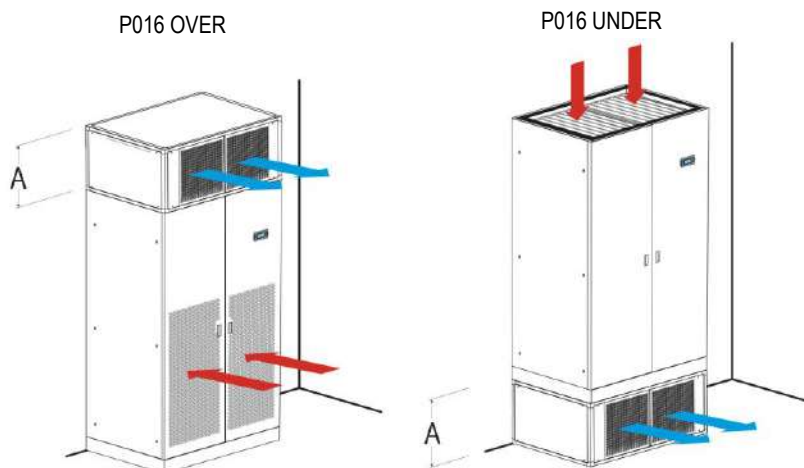


### P016: SILENCED PLENUM + 1 GRILLE

The optional is not available for size E0.

The plenum must be installed on air delivery.

The plenum allows the frontal air distribution directly into the room and a noise reduction of the air delivery. The plenum is supplied with air distribution grille with double row adjustable grilles on front side and noise absorption partitions,



| VERSION (1) |    | U / O | U / O | U / O | U / O | U / O | U / O | U / O | U / O | U   |     |
|-------------|----|-------|-------|-------|-------|-------|-------|-------|-------|-----|-----|
| SIZE        |    | E0    | E1    | E2    | E3    | E4    | E5    | E6    | E7    | E8  | E9  |
| A           | mm | -     | 490   | 490   | 490   | 510   | 510   | 510   | 510   | 510 | 510 |
| Weight (2)  | kg | -     | 30    | 30    | 37    | 67    | 72    | 78    | 88    | 110 | 130 |

1. U = Under, downflow / O = Over, upflow
2. Add this value to the total unit weight

## ACOUSTIC DATA

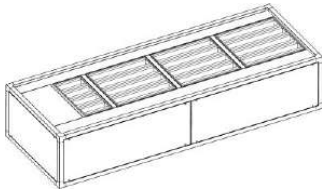
| VERSION (1)                          |                   | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|--------------------------------------|-------------------|----------|----------|----------|----------|----------|----------|
| MODEL                                |                   | 007 P1 S | 009 P1 S | 011 P1 S | 014 P1 S | 016 P1 S | 020 P1 S |
| SIZE                                 |                   | E0       | E0       | E1       | E2       | E2       | E3       |
| <b>SOUND LEVEL ISO 3744 (2)</b>      |                   |          |          |          |          |          |          |
| On air delivery, Under               | dB(A)             | -        | -        | 52,5     | 68,2     | 68,2     | 70       |
| On air intake, Under                 | dB(A)             | -        | -        | 49,3     | 58,8     | 58,8     | 60,7     |
| On front side, Under                 | dB(A)             | -        | -        | 40,7     | 49,4     | 49,4     | 50,8     |
| On air delivery, Over                | dB(A)             | -        | -        | 52,5     | 68,2     | 68,2     | 70       |
| On air intake, Over (3)              | dB(A)             | -        | -        | 49,3     | 54,9     | 54,9     | 57,1     |
| Irradiated Over (4)                  | dB(A)             | -        | -        | 39,8     | 49,5     | 49,5     | 50,5     |
| <b>ADDITIONAL PRESSURE DROPS (5)</b> | Pa                | -        | -        | 70       | 93       | 93       | 85       |
| <b>AIR FLOW</b>                      | m <sup>3</sup> /h | -        | -        | 2800     | 4000     | 4000     | 5700     |

| VERSION (1)                          |                   | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|--------------------------------------|-------------------|----------|----------|----------|----------|----------|----------|
| MODEL                                |                   | 022 P1 S | 026 P1 S | 032 P1 S | 037 P1 S | 041 P1 S | 045 P1 S |
| SIZE                                 |                   | E3       | E3       | E4       | E4       | E4       | E4       |
| <b>SOUND LEVEL ISO 3744 (2)</b>      |                   |          |          |          |          |          |          |
| On air delivery, Under               | dB(A)             | 70,0     | 70,0     | 72,6     | 72,6     | 75,8     | 75,8     |
| On air intake, Under                 | dB(A)             | 60,7     | 60,7     | 63,2     | 63,2     | 67,8     | 67,8     |
| On front side, Under                 | dB(A)             | 50,8     | 50,8     | 53,6     | 53,6     | 57,7     | 57,7     |
| On air delivery, Over                | dB(A)             | 70,0     | 70,0     | 72,6     | 72,6     | 75,8     | 75,8     |
| On air intake, Over (3)              | dB(A)             | 57,1     | 57,1     | 59,8     | 59,8     | 63,0     | 63,0     |
| Irradiated Over (4)                  | dB(A)             | 50,5     | 50,5     | 53,1     | 53,1     | 57,9     | 57,9     |
| <b>ADDITIONAL PRESSURE DROPS (5)</b> | Pa                | 85       | 85       | 60       | 60       | 88       | 88       |
| <b>AIR FLOW</b>                      | m <sup>3</sup> /h | 6100     | 6400     | 8200     | 8200     | 9600     | 9600     |

| VERSION (1)                          |                   | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|--------------------------------------|-------------------|----------|----------|----------|----------|----------|----------|
| MODEL                                |                   | 039 P2 D | 048 P2 D | 055 P2 D | 062 P2 D | 075 P2 D | 082 P2 D |
| SIZE                                 |                   | E5       | E5       | E6       | E6       | E7       | E7       |
| <b>SOUND LEVEL ISO 3744 (2)</b>      |                   |          |          |          |          |          |          |
| On air delivery, Under               | dB(A)             | 73,1     | 76,2     | 74,4     | 74,4     | 78,4     | 78,4     |
| On air intake, Under                 | dB(A)             | 63,2     | 68,0     | 64,5     | 64,5     | 70,2     | 70,2     |
| On front side, Under                 | dB(A)             | 54,3     | 58,3     | 55,6     | 55,6     | 60,6     | 60,6     |
| On air delivery, Over                | dB(A)             | 73,1     | 76,2     | 74,4     | 74,4     | 78,4     | 78,4     |
| On air intake, Over (3)              | dB(A)             | 60,1     | 63,4     | 61,3     | 61,3     | 65,7     | 65,7     |
| Irradiated Over (4)                  | dB(A)             | 53,6     | 58,4     | 54,9     | 54,9     | 60,6     | 60,6     |
| <b>ADDITIONAL PRESSURE DROPS (5)</b> | Pa                | 42       | 63       | 103      | 103      | 123      | 123      |
| <b>AIR FLOW</b>                      | m <sup>3</sup> /h | 8600     | 10000    | 14800    | 15300    | 18600    | 19000    |

| VERSION (1)                          |                   | U / O    | U / O    | U        | U        |
|--------------------------------------|-------------------|----------|----------|----------|----------|
| MODEL                                |                   | 092 P2 D | 102 P2 D | 117 P4 D | 146 P4 D |
| SIZE                                 |                   | E8       | E8       | E9       | E9       |
| <b>SOUND LEVEL ISO 3744 (2)</b>      |                   |          |          |          |          |
| On air delivery, Under               | dB(A)             | 79,3     | 79,3     | 79,2     | 79,2     |
| On air intake, Under                 | dB(A)             | 71,3     | 71,3     | 71,6     | 71,6     |
| On front side, Under                 | dB(A)             | 61,6     | 61,6     | 62,2     | 62,2     |
| On air delivery, Over                | dB(A)             | 79,3     | 79,3     | --       | --       |
| On air intake, Over (3)              | dB(A)             | 66,9     | 66,9     | --       | --       |
| Irradiated Over (4)                  | dB(A)             | 61,4     | 61,4     | --       | --       |
| <b>ADDITIONAL PRESSURE DROPS (5)</b> | Pa                | 103      | 103      | 161      | 161      |
| <b>AIR FLOW</b>                      | m <sup>3</sup> /h | 19900    | 19900    | 27000    | 27000    |

1. U = Under, downflow / O = Over, upflow
2. Noise pressure level at 1 meter in free field – ISO 3744
3. Air intake from the front
4. Air intake from the bottom
5. Value to be subtracted from the nominal external static pressure of the unit

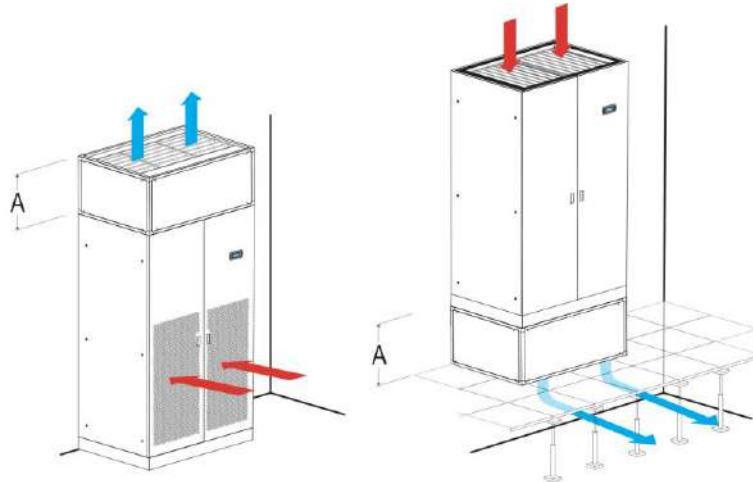


**P017 / P018 / P019: SUPPLY PLENUM + FILTER**

The optional is not available for size E0.  
 The plenum must be installed on air delivery.  
 The optional is not compatible with "P084 Air filter ePM10 50%".  
 The plenum is fitted with high efficiency rigid bag filters.  
 Filters are made of glass micro fibre and are not regenerable.  
 Remove the frontal panels for filters replacement.

P017 / P018 / P019 OVER

P017 / P018 / P019 UNDER



| VERSION (1) |    | U / O | U / O | U / O | U / O | U / O | U / O | U / O | U / O | U   |     |
|-------------|----|-------|-------|-------|-------|-------|-------|-------|-------|-----|-----|
| SIZE        |    | E0    | E1    | E2    | E3    | E4    | E5    | E6    | E7    | E8  | E9  |
| A           | mm | -     | 490   | 490   | 490   | 510   | 510   | 510   | 510   | 510 | 510 |
| Weight (2)  | kg | -     | 26    | 27    | 30    | 45    | 55    | 65    | 80    | 90  | 100 |

1. U = Under, downflow / O = Over, upflow
2. Add this value to the total unit weight

| VERSION (1)                        |    | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|------------------------------------|----|----------|----------|----------|----------|----------|----------|
| MODEL                              |    | 007 P1 S | 009 P1 S | 011 P1 S | 014 P1 S | 016 P1 S | 020 P1 S |
| SIZE                               |    | E0       | E0       | E1       | E2       | E2       | E3       |
| <b>PRESSURE DROPS (2)</b>          |    |          |          |          |          |          |          |
| Filters ISO ePM <sub>2.5</sub> 50% | Pa | -        | -        | 78       | 104      | 104      | 110      |
| Filters ISO ePM <sub>1</sub> 50%   | Pa | -        | -        | 96       | 127      | 127      | 135      |
| Filters ISO ePM <sub>1</sub> 85%   | Pa | -        | -        | 137      | 155      | 155      | 184      |

| VERSION (1)                        |    | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|------------------------------------|----|----------|----------|----------|----------|----------|----------|
| MODEL                              |    | 022 P1 S | 026 P1 S | 032 P1 S | 037 P1 S | 041 P1 S | 045 P1 S |
| SIZE                               |    | E3       | E3       | E4       | E4       | E4       | E4       |
| <b>PRESSURE DROPS (2)</b>          |    |          |          |          |          |          |          |
| Filters ISO ePM <sub>2.5</sub> 50% | Pa | 110      | 110      | 53       | 53       | 77       | 77       |
| Filters ISO ePM <sub>1</sub> 50%   | Pa | 135      | 135      | 65       | 65       | 94       | 94       |
| Filters ISO ePM <sub>1</sub> 85%   | Pa | 184      | 184      | 79       | 79       | 114      | 114      |

1. U = Under, downflow / O = Over, upflow
2. Data referred to the nominal air flow and clean filters. Value to be subtracted from the nominal external static pressure of the unit.

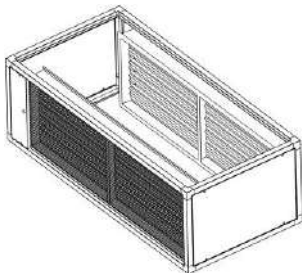
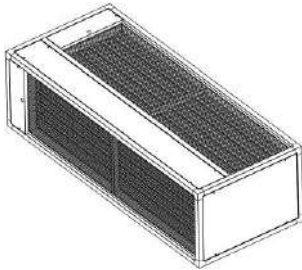
## b-AV DX

| VERSION (1)                        |    | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|------------------------------------|----|----------|----------|----------|----------|----------|----------|
| MODEL                              |    | 039 P2 D | 048 P2 D | 055 P2 D | 062 P2 D | 075 P2 D | 082 P2 D |
| SIZE                               |    | E5       | E5       | E6       | E6       | E7       | E7       |
| <b>PRESSURE DROPS (2)</b>          |    |          |          |          |          |          |          |
| Filters ISO ePM <sub>2.5</sub> 50% | Pa | 41       | 61       | 107      | 107      | 104      | 104      |
| Filters ISO ePM <sub>1</sub> 50%   | Pa | 49       | 75       | 132      | 132      | 127      | 127      |
| Filters ISO ePM <sub>1</sub> 85%   | Pa | 60       | 91       | 159      | 159      | 154      | 154      |

| VERSION (1)                        |    | U / O    | U / O    | U        | U        |
|------------------------------------|----|----------|----------|----------|----------|
| MODEL                              |    | 092 P2 D | 102 P2 D | 117 P4 D | 146 P4 D |
| SIZE                               |    | E8       | E8       | E9       | E9       |
| <b>PRESSURE DROPS (2)</b>          |    |          |          |          |          |
| Filters ISO ePM <sub>2.5</sub> 50% | Pa | 82       | 82       | 165      | 165      |
| Filters ISO ePM <sub>1</sub> 50%   | Pa | 102      | 102      | 178      | 178      |
| Filters ISO ePM <sub>1</sub> 85%   | Pa | 122      | 122      | 217      | 217      |

1. U = Under, downflow / O = Over, upflow
2. Data referred to the nominal air flow and clean filters. Value to be subtracted from the nominal external static pressure of the unit.

**OPTIONAL ACCESSORIES: P034 – INTAKE FREE-COOLING PLENUM**



The optional is supplied separately and the installation on the unit is at Customer care.

The optional is not available for size E0.

The optional requires mandatory accessories “P161 T/rH air intake sensor”, “4666 External air probe”, “A812 Free-cooling direct control” and “P122 Bottom air intake+blind panels, for OVER version only”

The plenums have same technical characteristics and base dimensions of the machine cabinet.

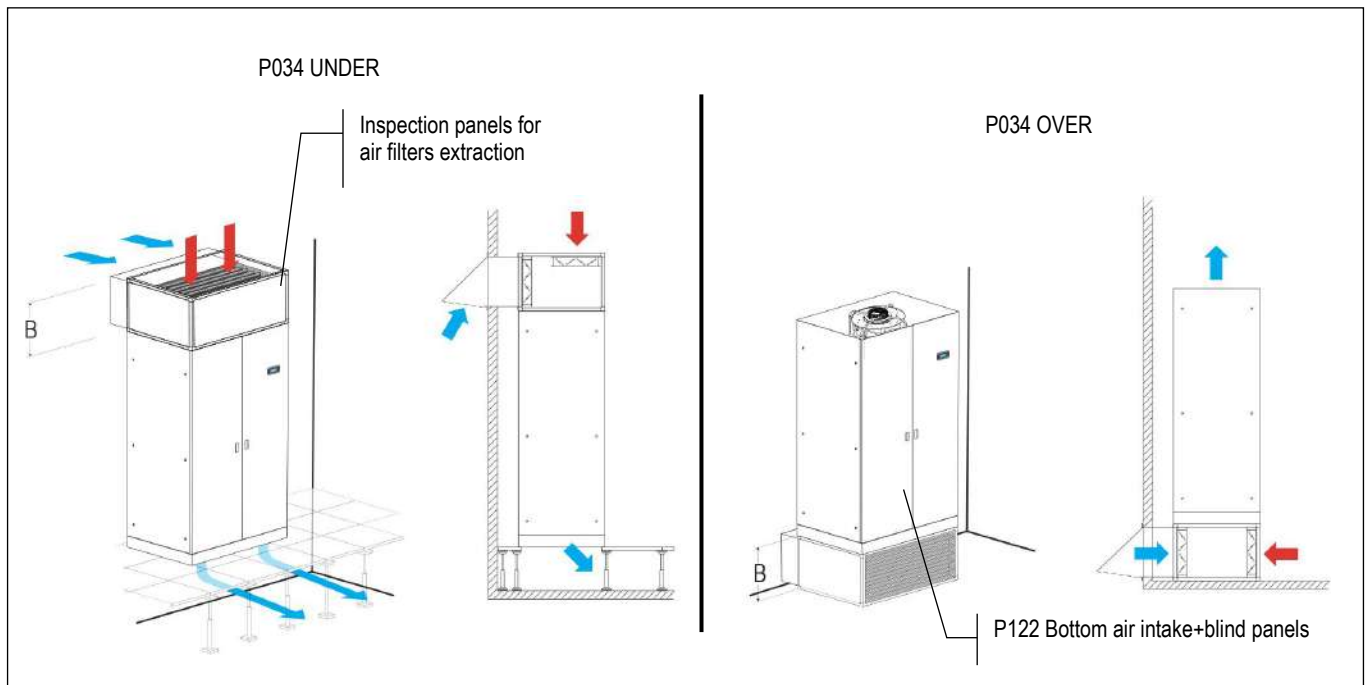
The optional allow to obtain free-cooling by direct ambient air intake into the room.

The dampers are proportionally managed by the microprocessor control, that regulates the quantity of the ambient air to put in the room per the set-point.

**COMPONENTS**

- Frame in aluminium extrusion, painted with epoxy powders. Colour RAL 9005;
- Panels in galvanized steel sheet with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders. Colour RAL 9005;
- Panels insulated with polyurethane foam and seals to ensure air tight.
- Removable panels with screws.
- Opposed blade dampers in galvanized steel sheet and safety grille for ambient air and room air suction.
- Actuator for each damper.
- Terminals for electric connection to the unit.
- Set of fixing elements to fasten the plenum to the unit.
- T / rH air intake sensor. The sensor must be moved outside the air conditioners for a proper read of the room temperature value.
- External air probe. The sensor must be installed in the outdoor air suction duct or anyway protected against atmospheric agent.
- Free contact for free-cooling operating status monitoring.
- Terminals on indoor unit for:
  - 24 Vac power supply for the overpressure damper servomotor
  - 0-10Vdc control signal for the servomotor

**INSTALLATION EXAMPLE**

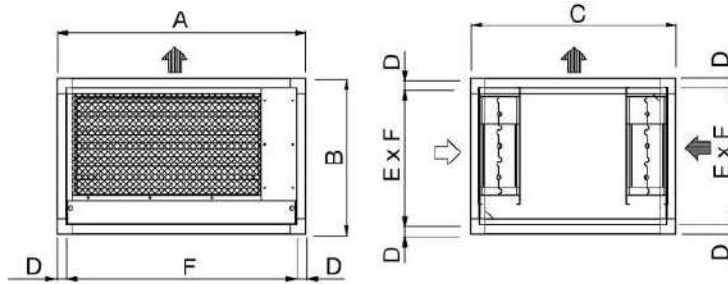


Ducting for ambient air suction are at Customer care.

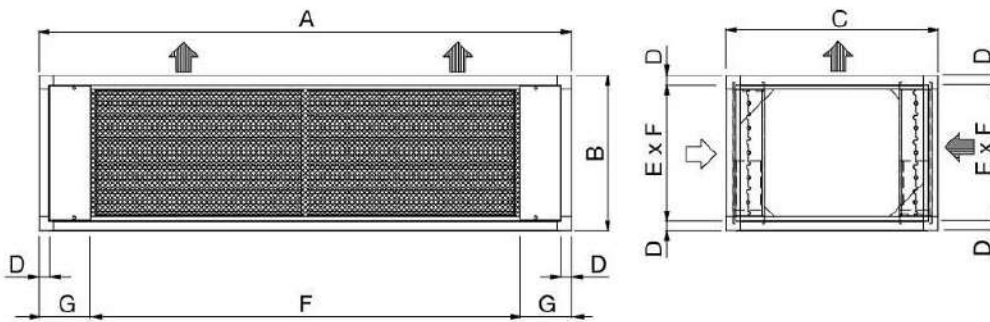
A rain cover with grille on ambient air intake is recommended.

OVER VERSION

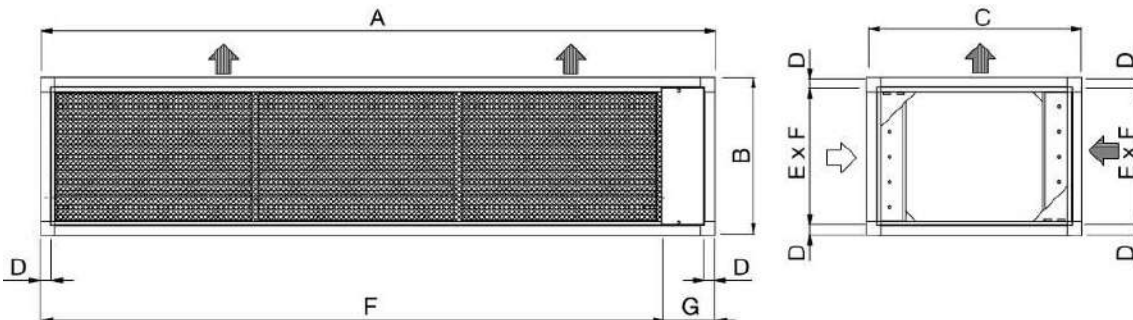
SIZE E1 / E2 / E3



SIZE E4 / E5



SIZE E6 / E7 / E8



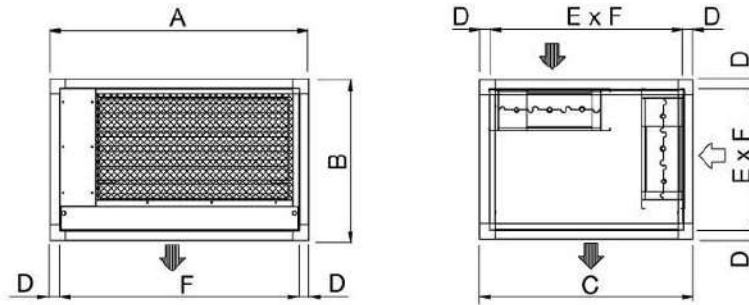
| VERSION (1) |    | O  | O   | O   | O    | O    | O     | O    | O    | O    | O  |
|-------------|----|----|-----|-----|------|------|-------|------|------|------|----|
| SIZE        |    | E0 | E1  | E2  | E3   | E4   | E5    | E6   | E7   | E8   | E9 |
| A           | mm | -- | 650 | 785 | 1085 | 1305 | 1630  | 1873 | 2175 | 2499 | -- |
| B           | mm | -- | 490 | 490 | 490  | 630  | 630   | 630  | 630  | 630  | -- |
| C           | mm | -- | 650 | 650 | 750  | 905  | 905   | 905  | 905  | 905  | -- |
| D           | mm | -- | 30  | 30  | 30   | 40   | 40    | 40   | 40   | 40   | -- |
| E           | mm | -- | 430 | 430 | 430  | 550  | 550   | 550  | 550  | 550  | -- |
| F           | mm | -- | 590 | 725 | 1025 | 1035 | 1335  | 1664 | 1965 | 2220 | -- |
| G           | mm | -- | --  | --  | --   | 135  | 147,5 | 209  | 210  | 279  | -- |
| Weight (2)  | kg | -- | 24  | 27  | 35   | 53   | 61    | 78   | 90   | 110  | -- |

1. U = Under, downflow / O = Over, upflow
2. Add this value to the total unit weight

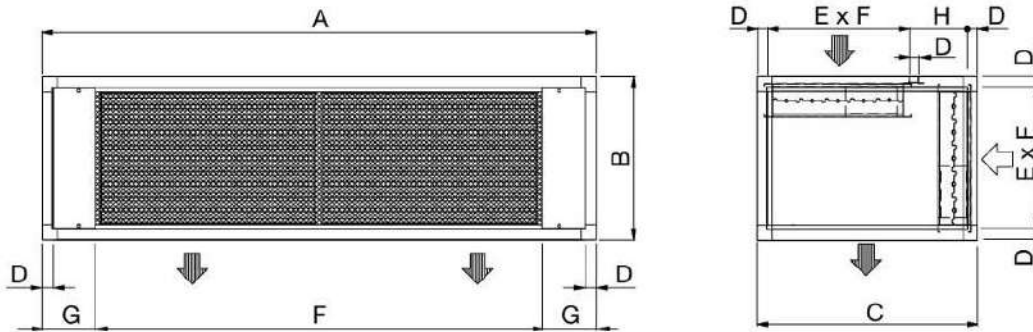


UNDER VERSION

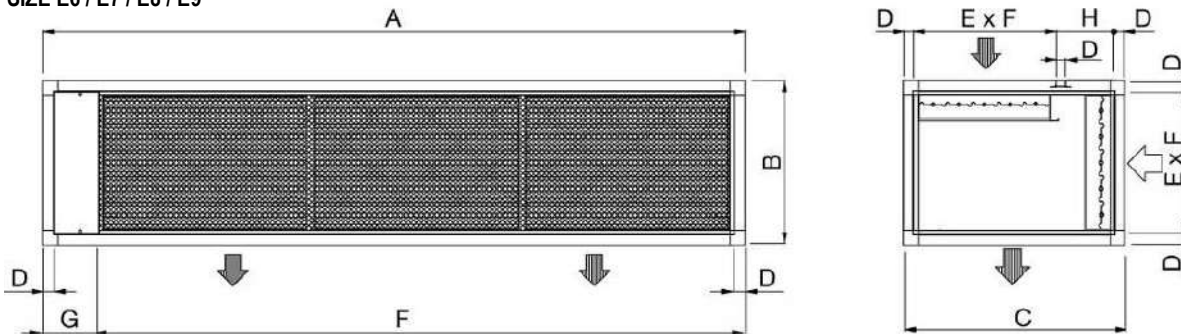
SIZE E1 / E2 / E3



SIZE E4 / E5



SIZE E6 / E7 / E8 / E9



| VERSION (1) |    | U  | U   | U   | U    | U    | U     | U    | U    | U    | U    |
|-------------|----|----|-----|-----|------|------|-------|------|------|------|------|
| SIZE        |    | E0 | E1  | E2  | E3   | E4   | E5    | E6   | E7   | E8   | E9   |
| A           | mm | -- | 650 | 785 | 1085 | 1305 | 1630  | 1873 | 2175 | 2499 | 2899 |
| B           | mm | -- | 490 | 490 | 490  | 630  | 630   | 630  | 630  | 630  | 630  |
| C           | mm | -- | 650 | 650 | 750  | 905  | 905   | 905  | 905  | 905  | 905  |
| D           | mm | -- | 30  | 30  | 30   | 40   | 40    | 40   | 40   | 40   | 40   |
| E           | mm | -- | 430 | 430 | 430  | 550  | 550   | 550  | 550  | 550  | 550  |
| F           | mm | -- | 590 | 725 | 1025 | 1035 | 1335  | 1664 | 1965 | 2220 | 2670 |
| G           | mm | -- | --  | --  | --   | 135  | 147,5 | 209  | 210  | 279  | 229  |
| H           | mm | -- | --  | --  | --   | 275  | 275   | 275  | 275  | 275  | 275  |
| Weight (2)  | kg | -- | 24  | 27  | 35   | 53   | 61    | 78   | 90   | 110  | 130  |

1. U = Under, downflow / O = Over, upflow
2. Add this value to the total unit weight

### **WARNING**

**IT IS COMPULSORY TO INSTALL INTO THE ROOM AN APPROPRIATELY SIZED OVERPRESSURE DAMPER TO ALLOW THE ROOM AIR EXHAUSTION DURING FREE-COOLING WORKING MODE**

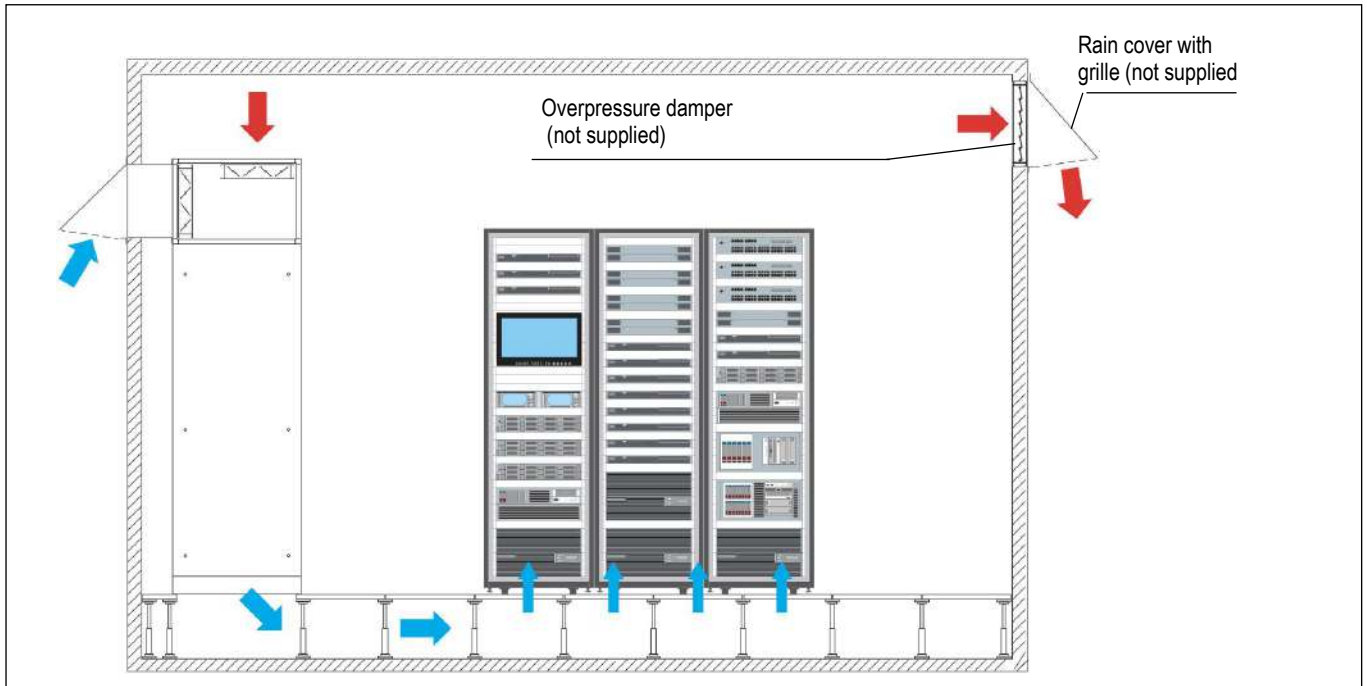
### **OVERPRESSURE DAMPER – Not supplied**

During free-cooling operation, the air conditioner supplies ambient air directly into the room, this causes an increase in air pressure inside the room.

The overpressure damper avoids the increase in pressure in the room.

The damper must be installed at the highest point of the room to expel excess hot air to the outside. Install the damper if possible in opposite position to air conditioner.

Air exhaustion must be protected with a rain cover and a grille (at Customer care).

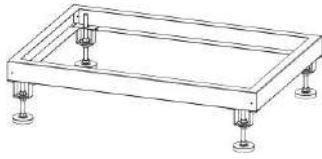


## b-AV DX

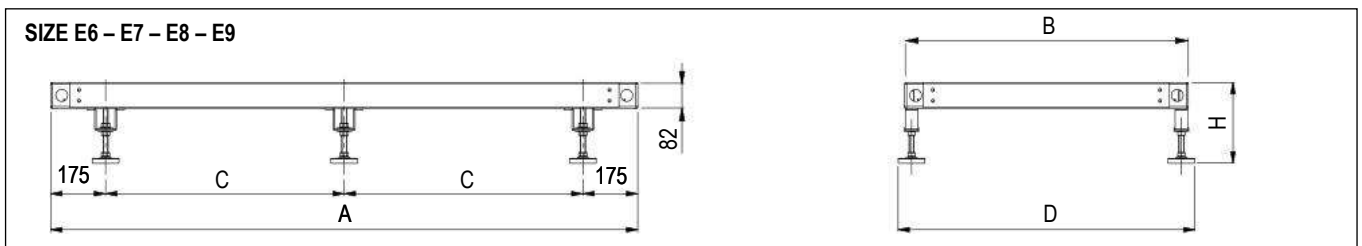
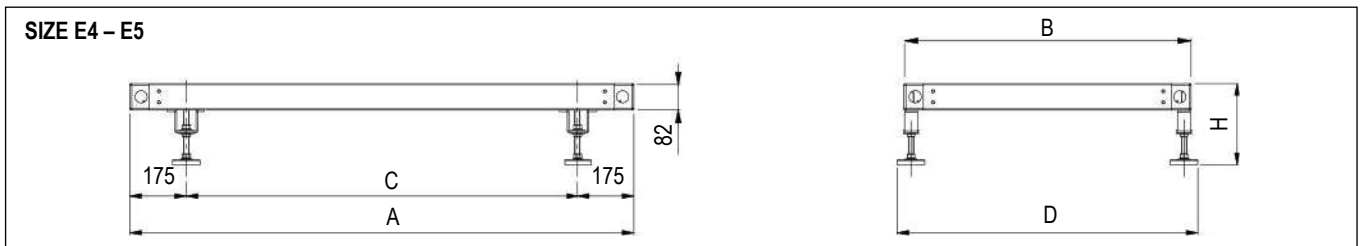
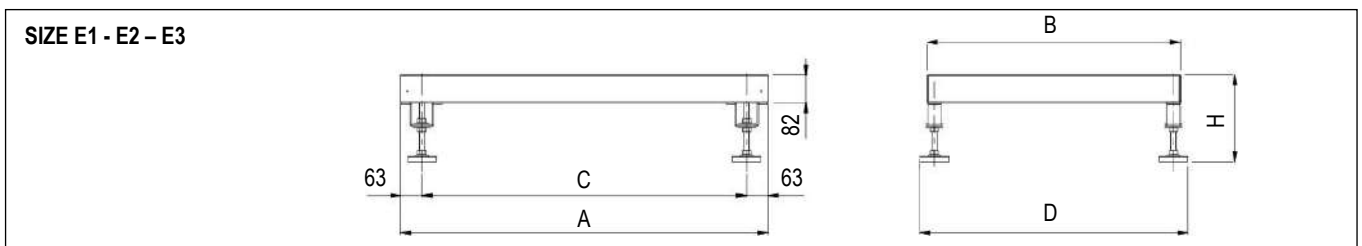
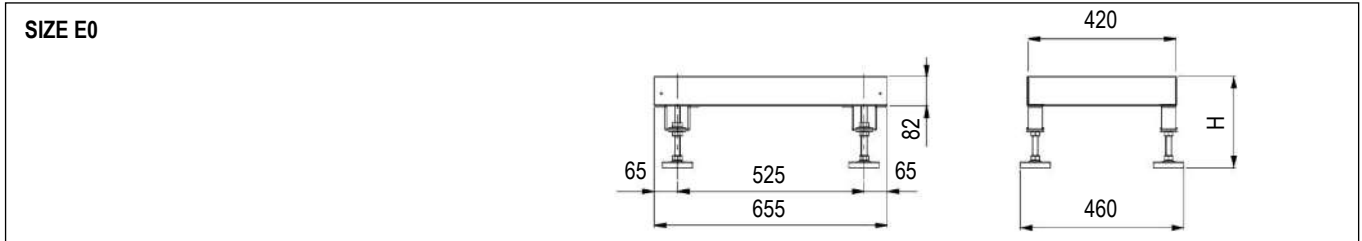
OPTIONAL ACCESSORIES: P041 – SUPPORT FRAME H 255-350MM

OPTIONAL ACCESSORIES: P042 – SUPPORT FRAME H 355-450MM

OPTIONAL ACCESSORIES: P043 – SUPPORT FRAME H 400-510MM



The accessory is supplied as an assembly kit.  
It is not possible to match the unit floor stand with plenum installed under the machine.  
The floor stand is available in 3 different heights.



| SIZE |    | E0  | E1  | E2  | E3   | E4   | E5   | E6    | E7    | E8     | E9     |
|------|----|-----|-----|-----|------|------|------|-------|-------|--------|--------|
| A    | mm | 655 | 650 | 785 | 1085 | 1305 | 1630 | 1873  | 2175  | 2499   | 2899   |
| B    | mm | 420 | 650 | 650 | 750  | 905  | 905  | 905   | 905   | 905    | 905    |
| C    | mm | 525 | 524 | 659 | 959  | 955  | 1280 | 761,5 | 912,5 | 1074,5 | 1274,5 |
| D    | mm | 460 | 691 | 691 | 791  | 945  | 945  | 945   | 945   | 945    | 945    |

| MODEL        |    | P041 - Hmax350 | P042 - Hmax450 | P043 - Hmax510 |
|--------------|----|----------------|----------------|----------------|
| H min height | mm | 255            | 355            | 400            |
| H max height | mm | 350            | 450            | 510            |

OPTIONAL ACCESSORIES: 3601 – COMPRESSOR OPERATING SIGNAL CONTACT

A voltage free electrical contact is supplied for remote signalling "Compressor operation".  
Electrical connection on the machine's terminal board.



**OPTIONAL ACCESSORIES: 2411 – PHASE SEQUENCE RELAY**



The system checks that the phase sequence of the power supply is correct to prevent the opposite rotation of the three phase electric motors of the machine as compressors. The optional is installed in the electrical box downstream the main switch with door lock safety and in case of wrong phase sequence prevents starting the machine.

**OPTIONAL ACCESSORIES: 1511 – SOFT STARTER**



The optional is not available for size E0, E1, E2. Compressor motors soft-starter system.

The system is contained in the electrical box.

Its function is to reduce the starting current of the motor with a monitored start.

The optional temporarily reduces the load in the power circuit and starting current of the motor during start-up. This reduces the mechanical stress and torque on the motor and mechanical parts, as well as the electrodynamic stresses on the power cables and electrical distribution network, extending the lifespan of the system.

| VERSION (1)                  |   | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|------------------------------|---|----------|----------|----------|----------|----------|----------|
| MODEL                        |   | 007 P1 S | 009 P1 S | 011 P1 S | 014 P1 S | 016 P1 S | 020 P1 S |
| SIZE                         |   | E0       | E0       | E1       | E2       | E2       | E3       |
| ON/OFF COMPRESSORS           |   | -        | -        | -        | -        | -        | scroll   |
| Compressors number           | # | -        | -        | -        | -        | -        | 1        |
| Total starting current [LRA] | A | -        | -        | -        | -        | -        | 64       |
| <b>WITH SOFT STARTER</b>     |   |          |          |          |          |          |          |
| Total starting current [LRA] | A | -        | -        | -        | -        | -        | 37       |

| VERSION (1)                  |   | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|------------------------------|---|----------|----------|----------|----------|----------|----------|
| MODEL                        |   | 022 P1 S | 026 P1 S | 032 P1 S | 037 P1 S | 041 P1 S | 045 P1 S |
| SIZE                         |   | E3       | E3       | E4       | E4       | E4       | E4       |
| ON/OFF COMPRESSORS           |   | scroll   | scroll   | scroll   | scroll   | scroll   | scroll   |
| Compressors number           | # | 1        | 1        | 1        | 1        | 1        | 1        |
| Total starting current [LRA] | A | 75       | 101      | 128      | 139      | 118      | 140      |
| <b>WITH SOFT STARTER</b>     |   |          |          |          |          |          |          |
| Total starting current [LRA] | A | 47       | 51       | 57       | 67       | 79       | 97       |

| VERSION (1)                  |   | U / O    | U / O    | U / O    | U / O    | U / O    | U / O    |
|------------------------------|---|----------|----------|----------|----------|----------|----------|
| MODEL                        |   | 039 P2 D | 048 P2 D | 055 P2 D | 062 P2 D | 075 P2 D | 082 P2 D |
| SIZE                         |   | E5       | E5       | E6       | E6       | E7       | E7       |
| ON/OFF COMPRESSORS           |   | scroll   | scroll   | scroll   | scroll   | scroll   | scroll   |
| Compressors number           | # | 2        | 2        | 2        | 2        | 2        | 2        |
| Total starting current [LRA] | A | 76       | 90       | 117      | 146      | 161      | 143      |
| <b>WITH SOFT STARTER</b>     |   |          |          |          |          |          |          |
| Total starting current [LRA] | A | 50       | 63       | 69       | 78       | 94       | 107      |

| VERSION (1)                  |   | U / O    | U / O    | U        | U        |
|------------------------------|---|----------|----------|----------|----------|
| MODEL                        |   | 092 P2 D | 102 P2 D | 117 P4 D | 146 P4 D |
| SIZE                         |   | E8       | E8       | E9       | E9       |
| ON/OFF COMPRESSORS           |   | scroll   | scroll   | scroll   | scroll   |
| Compressors number           | # | 2        | 2        | 4        | 4        |
| Total starting current [LRA] | A | 171      | 208      | 183      | 193      |
| <b>WITH SOFT STARTER</b>     |   |          |          |          |          |
| Total starting current [LRA] | A | 131      | 143      | 131      | 150      |

1. U = Under, downflow / O = Over, upflow

**OPTIONAL ACCESSORIES: 3301 – COMPRESSOR REPHASING**

Compressors capacitor for power factor -  $\cos\phi$  0,9 (sizes E1, E2 excluded).

**OPTIONAL ACCESSORIES: A181 – COMPRESSOR SOUNDPROOF JACKET**



A soundproof jacket for each compressor to obtain a reduction of 2dB(A) of the sound level of the unit.

**OPTIONAL ACCESSORIES: A272 – CL.0 or A1 (EN13501-1) INSULATION**

The optional is designed **TO SUPPLY THE PANELING ONLY WITH FIRE REACTION IN CLASS “0” OR “A1 (EN 13501-1)”**; furthermore, allows a noise insulation of the panels of the air conditioners. The pressure level reduction of the unit is about 2 dB(A). The reduction refers **ONLY** to the sound level radiated from the unit or in front of the unit. The noise level data on return and delivery air do not undergo reductions.

The accessory includes:

- External part as standard panel.
- Internal part in galvanized steel sheet.
- The inside noise insulation with special soundproof material.

**REACTION TO FIRE CLASSIFICATION**

On Italian territory, the classification is per the D.M. of June 26, 1984 and subsequent amendments, providing for a sort in "Classes" from 0 (non-combustible material) to 5 (extremely flammable material). The EN 13501-1 regulation is ordered in classes from A1 (non-combustible material) to F (extremely flammable material).

A comparison of the classes is not possible because the methods and evaluation criteria are completely different. The comparison table below is being considered purely indicative.

| Definition  | Italian classes | EN 13501-1 |
|---|-----------------|------------|
| Non-combustible material                                | Class 0         | A1         |
| Combustible material, very limited contribution to fire | Class 1         | A2 – B     |
| Combustible material, limited contribution to fire      | Class 2         | A2 – B - C |
| Combustible material, medium contribution to fire       | Class 3         | C – D      |
| Combustible material, highly contribution to fire       | Class 4         | E          |
| Combustible material, easily flammable                  | Class 5         | F          |

Is possible to provide the sandwich panels for the OVER units with air flow from the top.

This implies that the air intake must necessarily be from the base of the unit with front blind paneling.

The accessory increases the unit weight:

| OVER                  |    |    |    |    |    |    |    |    |     |     |    |
|-----------------------|----|----|----|----|----|----|----|----|-----|-----|----|
| SIZE                  |    | E0 | E1 | E2 | E3 | E4 | E5 | E6 | E7  | E8  | E9 |
| Weight increasing (1) | kg | 28 | 26 | 42 | 48 | 64 | 72 | 86 | 100 | 115 | -- |

| UNDER                 |    |    |    |    |    |    |    |     |     |     |     |
|-----------------------|----|----|----|----|----|----|----|-----|-----|-----|-----|
| SIZE                  |    | E0 | E1 | E2 | E3 | E4 | E5 | E6  | E7  | E8  | E9  |
| Weight increasing (1) | kg | 28 | 30 | 48 | 55 | 70 | 86 | 110 | 130 | 145 | 165 |

1. Add this value to the total unit weight

**OPTIONAL ACCESSORIES: P151 – LOWERED DISPLAY FOR UNDER**

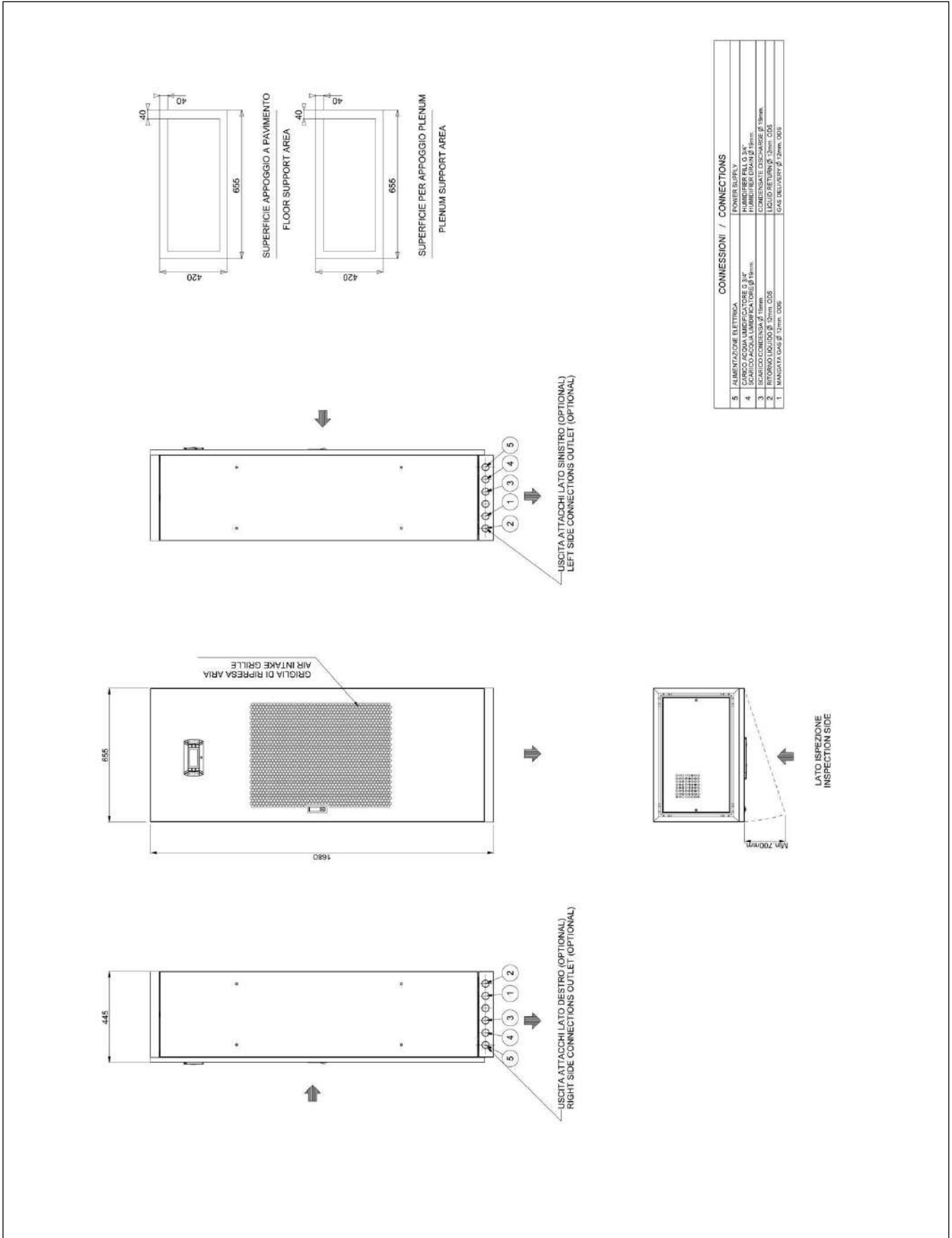
For machines installed above the supply plenum.

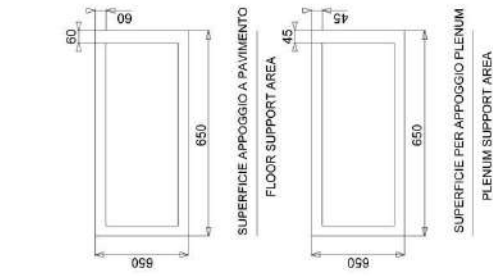
The display / keypad on the front panel of the machine is installed lowered by about 50cm to facilitate consultation and use.



**MACHINE DRAWINGS**

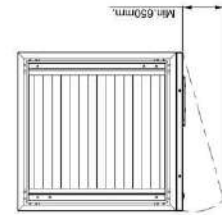
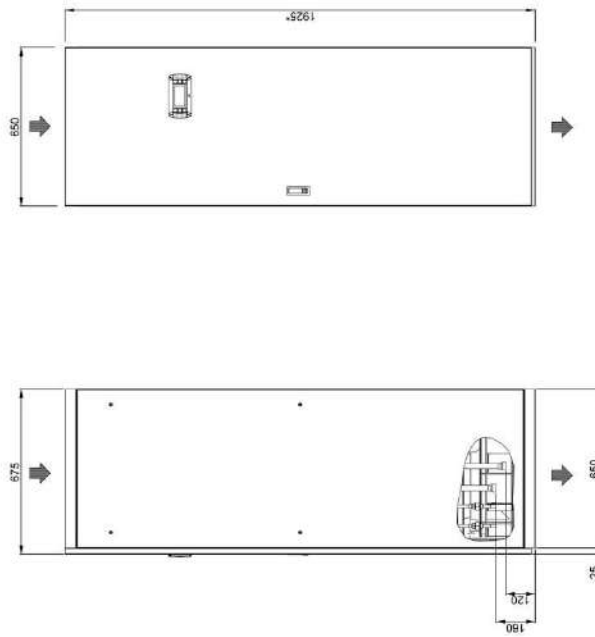
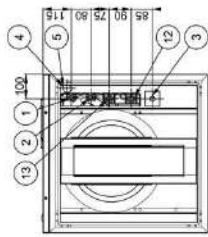
Dimensions in mm – UNDER E0



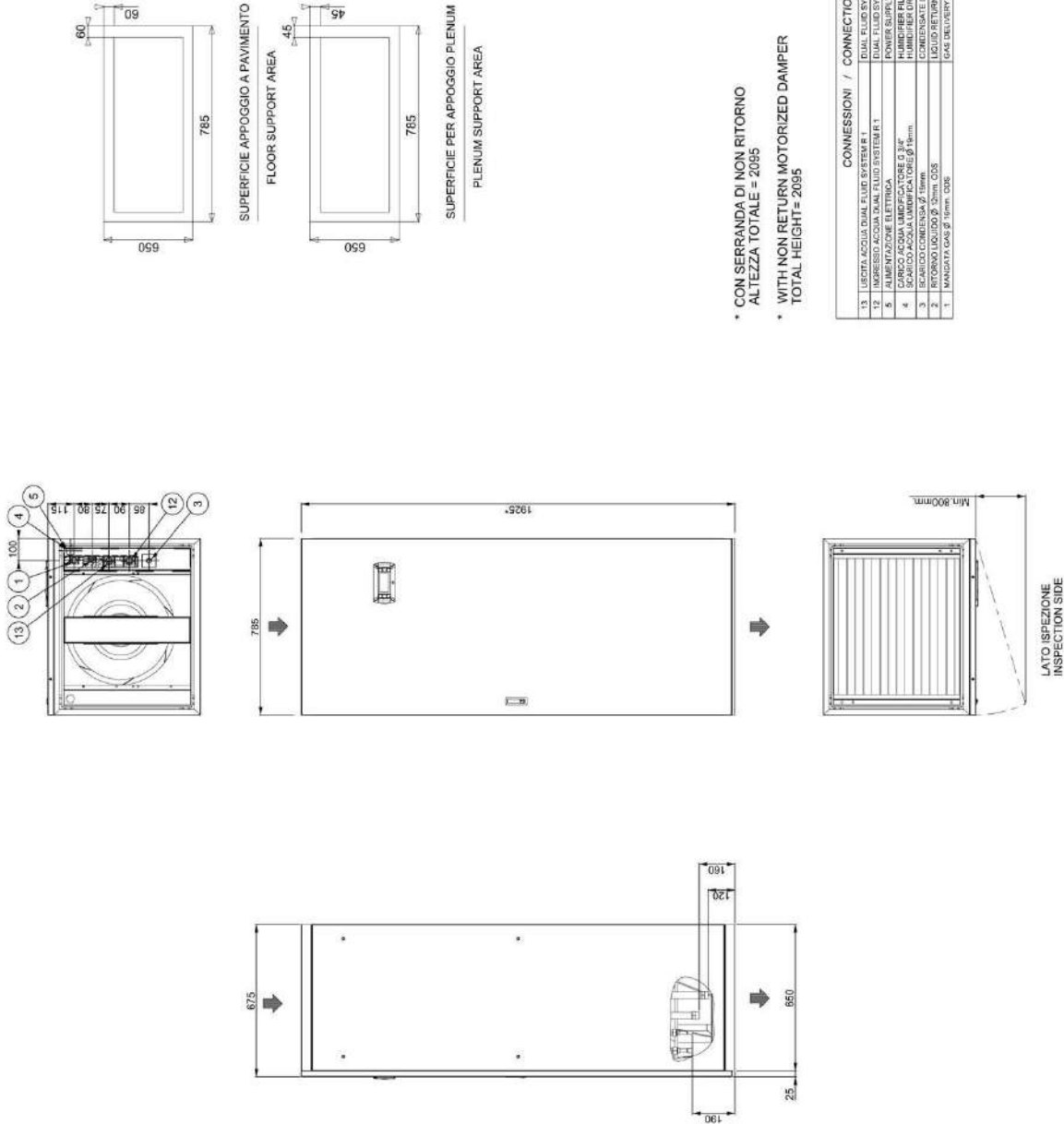


- \* CON SERRANDA DI NON RITORNO  
ALTEZZA TOTALE = 2095
- \* WITH NON RETURN MOTORIZED DAMPER  
TOTAL HEIGHT = 2095

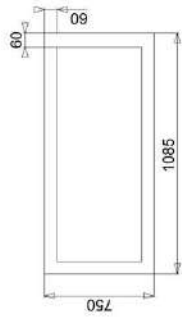
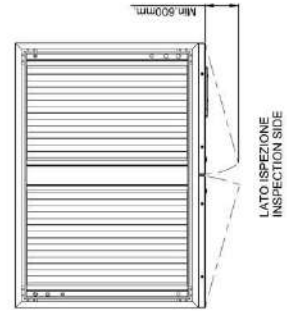
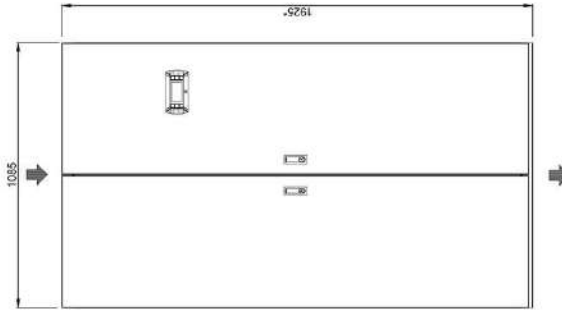
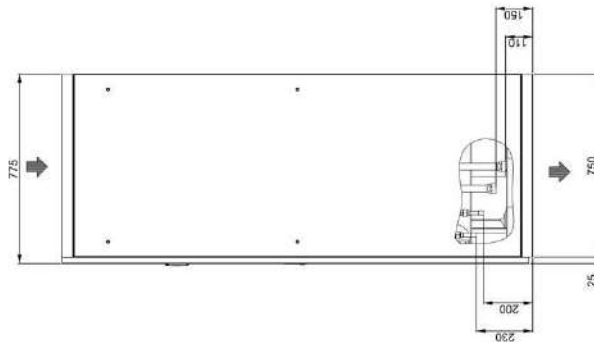
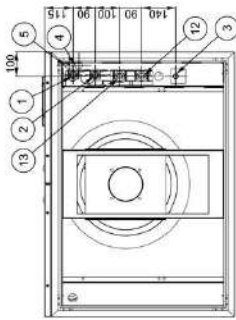
| CONNESSIONI / CONNECTIONS |                                      |
|---------------------------|--------------------------------------|
| 13                        | USCITA ACQUA DUAL FLUID SYSTEM R 1   |
| 12                        | INGRESSO ACQUA DUAL FLUID SYSTEM R 1 |
| 5                         | ALIMENTAZIONE ELETTRICA              |
| 4                         | SCARICO ACQUA UMIDIFICATORE Ø 38mm   |
| 3                         | SCARICO CONDENSATO Ø 19mm            |
| 2                         | RITORNO LIQUIDO Ø 37mm ODS           |
| 1                         | MANDATA GAS Ø 127mm ODS              |
|                           | DUAL FLUID SYSTEM OUTLET R 1         |
|                           | DUAL FLUID SYSTEM INLET R 1          |
|                           | POWER SUPPLY                         |
|                           | HUMIDIFIER DRAIN                     |
|                           | CONDENSATE DISCHARGE Ø 19mm          |
|                           | LIQUID RETURN Ø 37mm ODS             |
|                           | GAS DELIVERY Ø 127mm ODS             |



LATO ISPEZIONE  
INSPECTION SIDE







SUPERFICIE APPOGGIO A PAVIMENTO  
FLOOR SUPPORT AREA

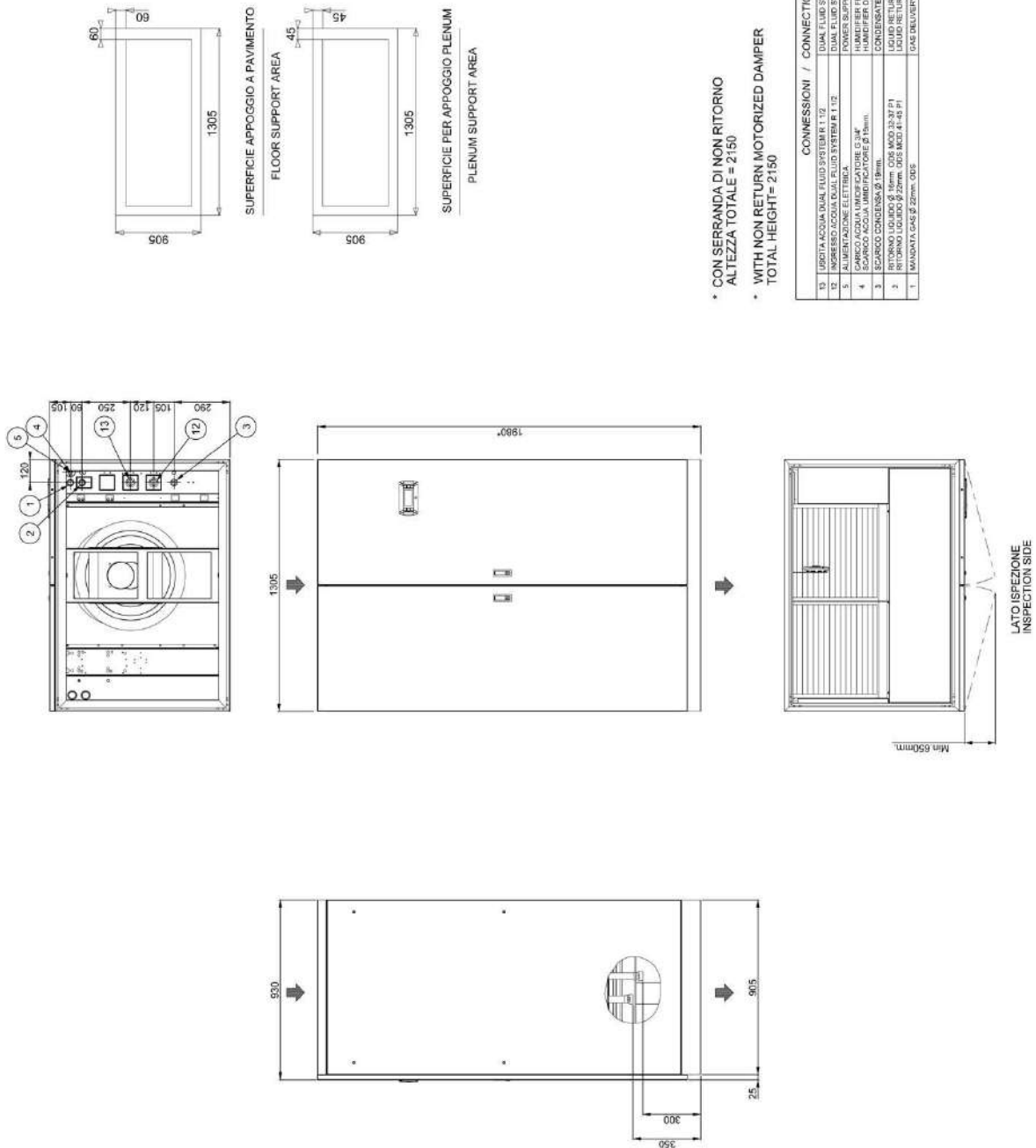


SUPERFICIE PER APPOGGIO PLENUM  
PLENUM SUPPORT AREA

\* CON SERRANDA DI NON RITORNO  
ALTEZZA TOTALE = 2085

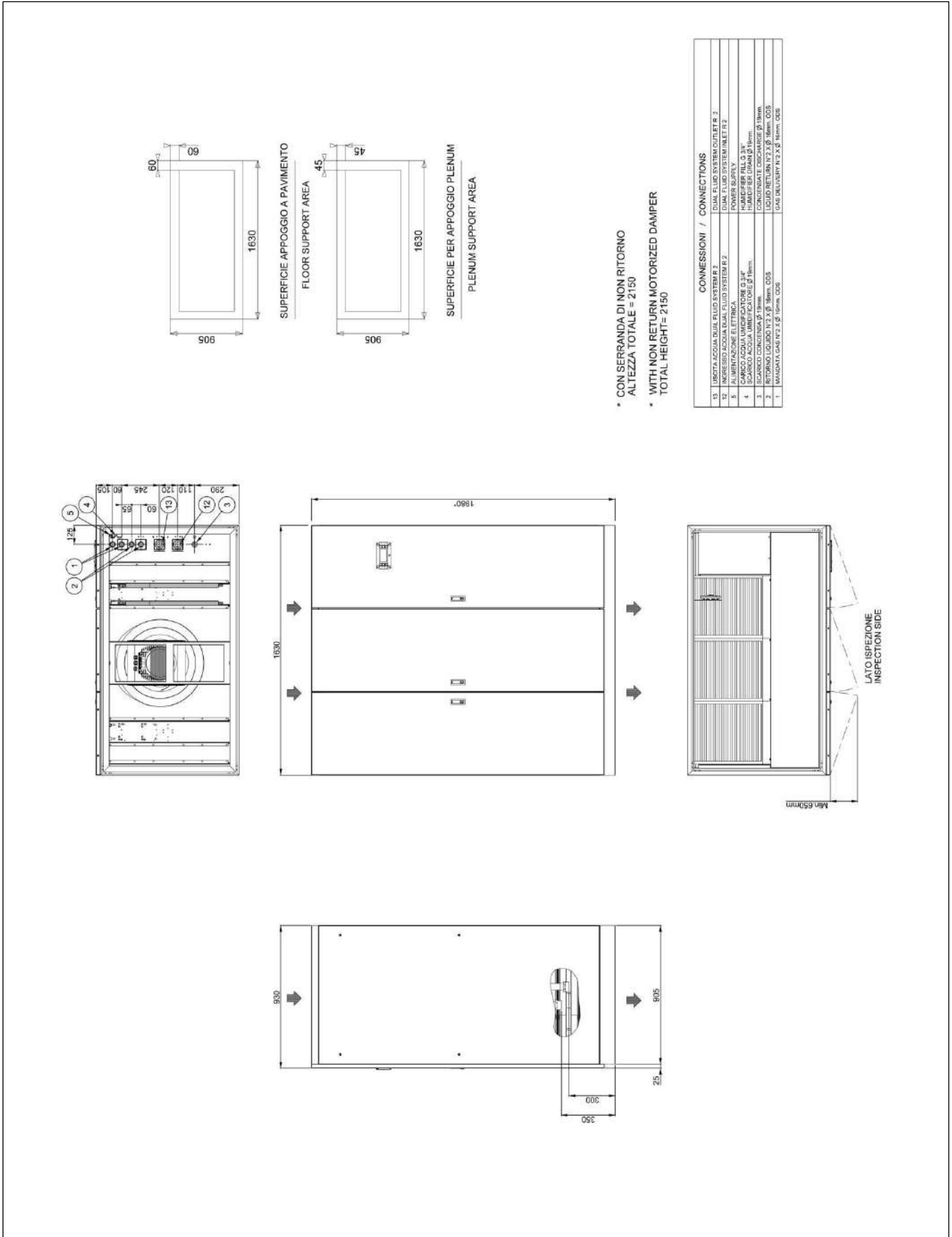
\* WITH NON RETURN MOTORIZED DAMPER  
TOTAL HEIGHT = 2085

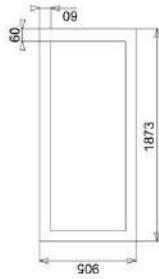
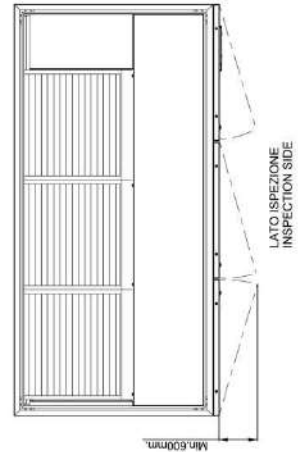
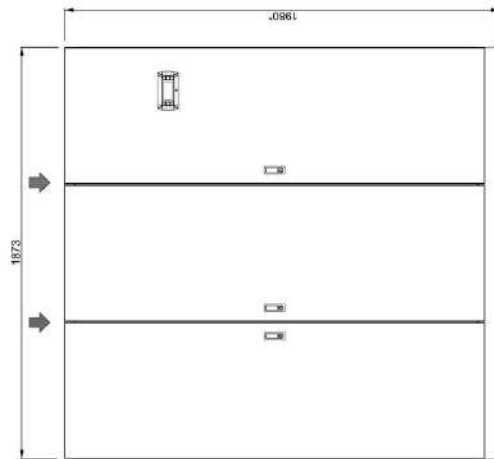
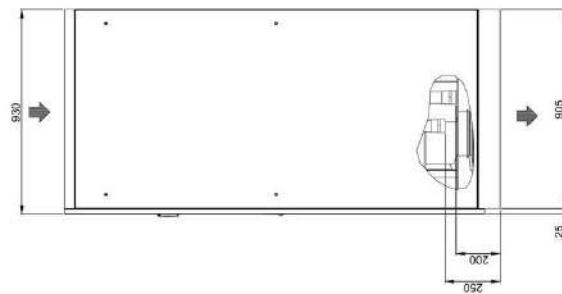
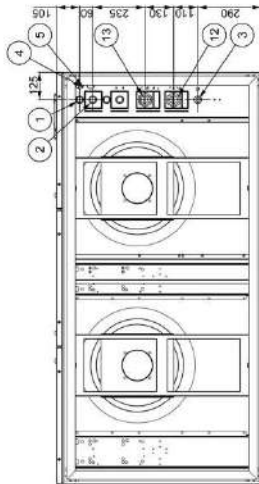
| CONNESSIONI / CONNECTIONS |   |
|---------------------------|---|
| 13                        | USCITA ACQUA DUAL FLUID SYSTEM R 1/4  |
| 12                        | INGRESSO ACQUA DUAL FLUID SYSTEM R 1/4                                      |
| 5                         | ALIMENTAZIONE ELETTRICA<br>POWER SUPPLY                                     |
| 4                         | CARICO ACQUA UMIDIFICATORE Ø 3/4"<br>HUMIDIFIER FILL 3/4"                   |
| 3                         | SCARICO COMPRESSA Ø 19mm<br>CONDENSATE DISCHARGE Ø 19mm                     |
| 2                         | RITORNO LIQUIDO Ø 19mm ODS<br>LIQUID RETURN Ø 19mm ODS                      |
| 1                         | MANDATA GAS Ø 19mm ODS Mod.20.22 P1<br>GAS DELIVERY Ø 19mm ODS Mod.20.22 P1 |
|                           | MANDATA GAS Ø 22mm ODS Mod.26 P1<br>GAS DELIVERY Ø 22mm ODS Mod.26 P1       |



\* CON SERRANDA DI NON RITORNO  
ALTEZZA TOTALE = 2150

\* WITH NON RETURN MOTORIZED DAMPER  
TOTAL HEIGHT= 2150





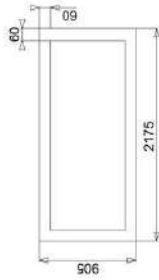
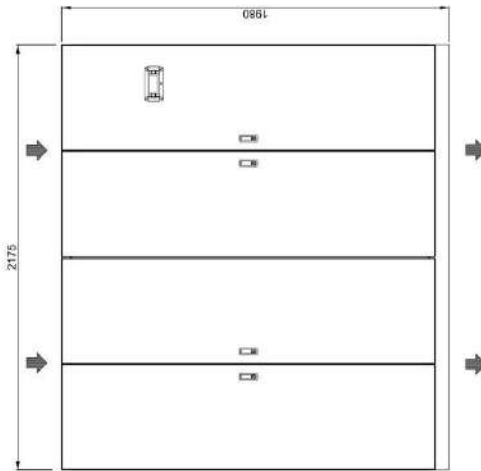
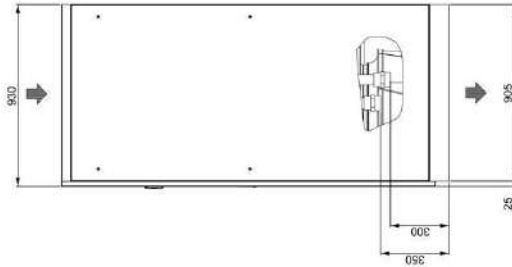
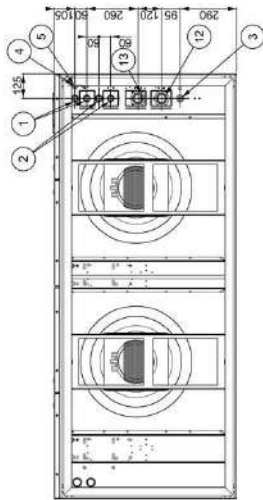
SUPERFICIE APPOGGIO A PAVIMENTO  
FLOOR SUPPORT AREA



SUPERFICIE PER APPOGGIO PLENUM  
PLENUM SUPPORT AREA

\* CON SERRANDA DI NON RITORNO  
ALTEZZA TOTALE = 2150  
\* WITH NON RETURN MOTORIZED DAMPER  
TOTAL HEIGHT= 2150

| CONNESSIONI / CONNECTIONS |  |
|---------------------------|--|
| 13                        | USCITA ACQUA DUAL FLUID SYSTEM R 2<br>DUAL FLUID SYSTEM OUTLET R 2   |
| 12                        | INGRESSO ACQUA DUAL FLUID SYSTEM R 2<br>DUAL FLUID SYSTEM INLET R 2  |
| 5                         | ALIMENTAZIONE ELETTRICA<br>POWER SUPPLY                              |
| 1                         | INLET ACQUA DUAL FLUID SYSTEM R 2<br>DUAL FLUID SYSTEM INLET R 2     |
| 4                         | SARCO ACQUA UMIDI CARICARE Ø 38mm<br>HUMIDIFIER FILLING Ø 38mm       |
| 3                         | SGARCO CONDENSATO Ø 13mm<br>CONDENSATE DISCHARGE Ø 13mm              |
| 2                         | RITORNO LIQUIDO N°2 X Ø 22mm, CO2<br>LIQUID RETURN N°2 X Ø 22mm, CO2 |
| 1                         | MANDATA GAS N°2 X Ø 22mm, CO2<br>GAS DELIVERY N°2 X Ø 22mm, CO2      |



SUPERFICIE APPOGGIO A PAVIMENTO  
FLOOR SUPPORT AREA

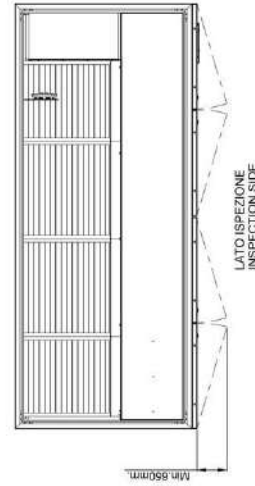


SUPERFICIE PER APPOGGIO PLENUM  
PLENUM SUPPORT AREA

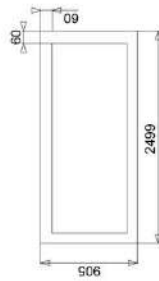
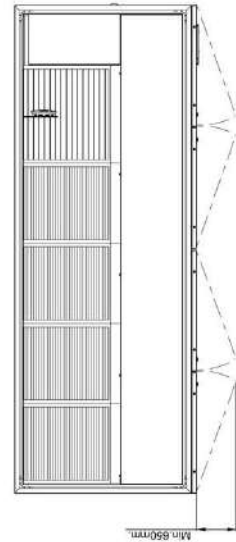
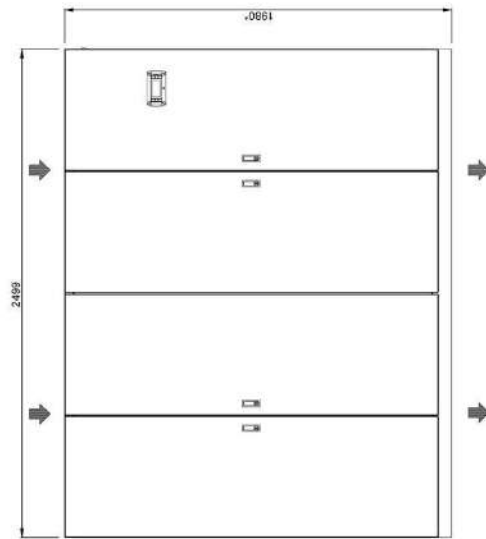
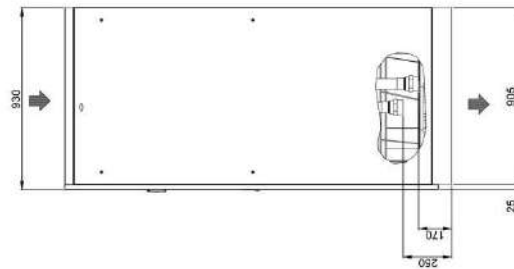
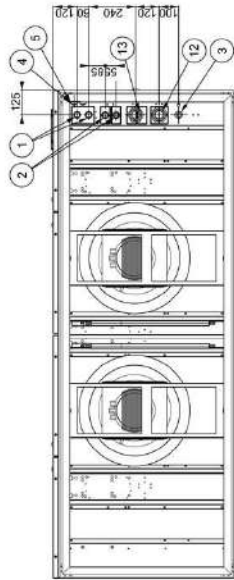
\* CON SERRANDA DI NON RITORNO  
ALTEZZA TOTALE = 2150

\* WITH NON RETURN MOTORIZED DAMPER  
TOTAL HEIGHT= 2150

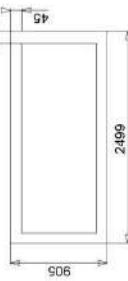
| CONNESSIONI / CONNECTIONS |  |
|---------------------------|--|
| 13                        | USCITA ACQUA DUAL FLUID SYSTEM R 2.1/2   |
| 12                        | INGRESSO ACQUA DUAL FLUID SYSTEM R 2.1/2 |
| 5                         | ALIMENTAZIONE ELETTRICA                  |
| 6                         | ALIMENTAZIONE ELETTRICA                  |
| 4                         | SCARICO ACQUA UMIDI CARICHI 0.7"         |
| 3                         | SCARICO CONDENSATI 1.3mm                 |
| 2                         | RITORNO LIQUIDO N°2 X Ø 22mm. CO2        |
| 1                         | MANDATA GAS N°2 X Ø 22mm. CO2            |
|                           | DUAL FLUID SYSTEM OUTLET R 2.1/2         |
|                           | DUAL FLUID SYSTEM INLET R 2.1/2          |
|                           | POWER SUPPLY                             |
|                           | POWER SUPPLY                             |
|                           | WET DISCHARGE 0.7"                       |
|                           | WET DISCHARGE 1.3mm                      |
|                           | CONDENSATE DISCHARGE Ø 13mm              |
|                           | LIQUID RETURN N°2 X Ø 22mm. CO2          |
|                           | GAS DELIVERY N°2 X Ø 22mm. CO2           |



LATO ISPEZIONE  
INSPECTION SIDE



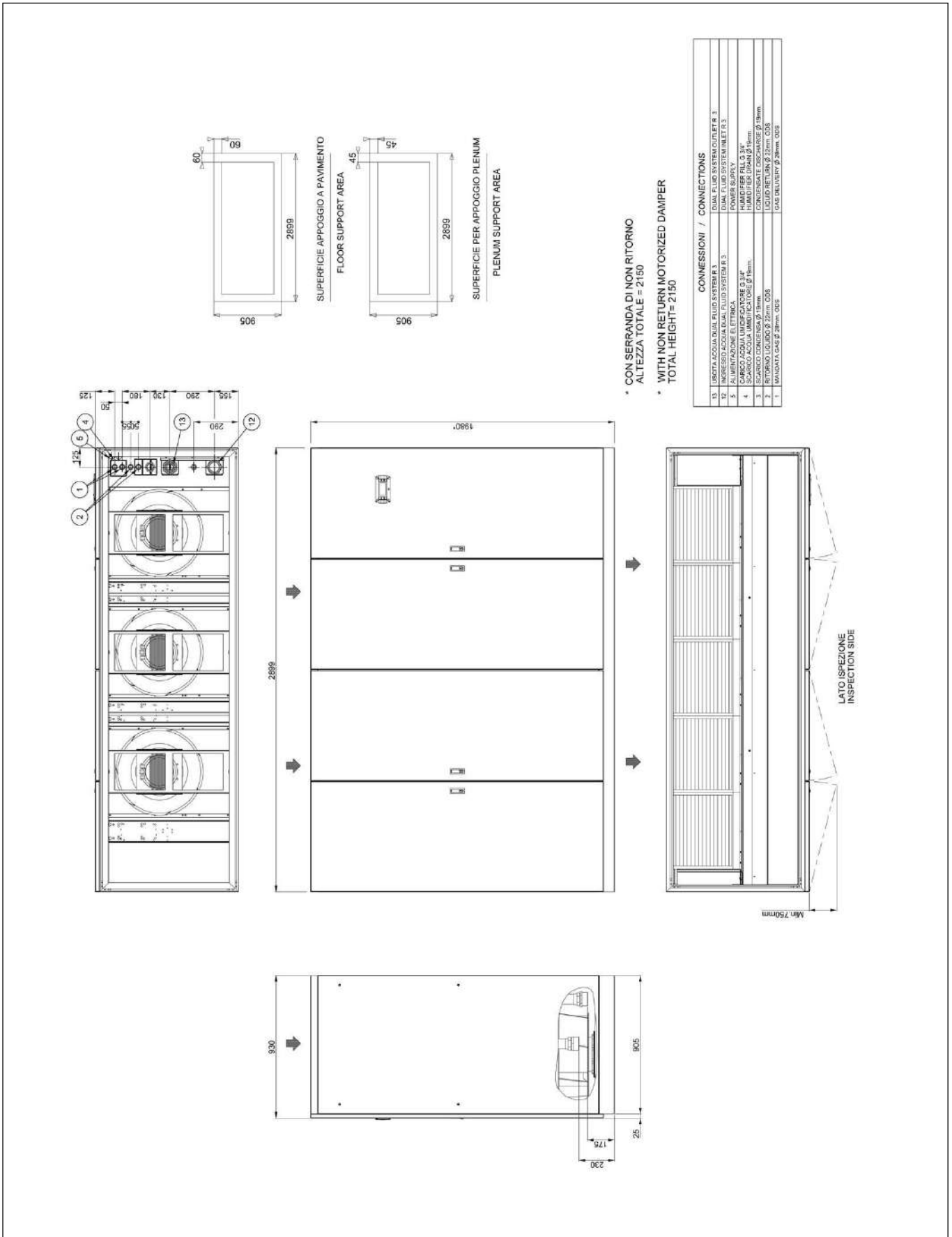
SUPERFICIE APPOGGIO A PAVIMENTO  
FLOOR SUPPORT AREA

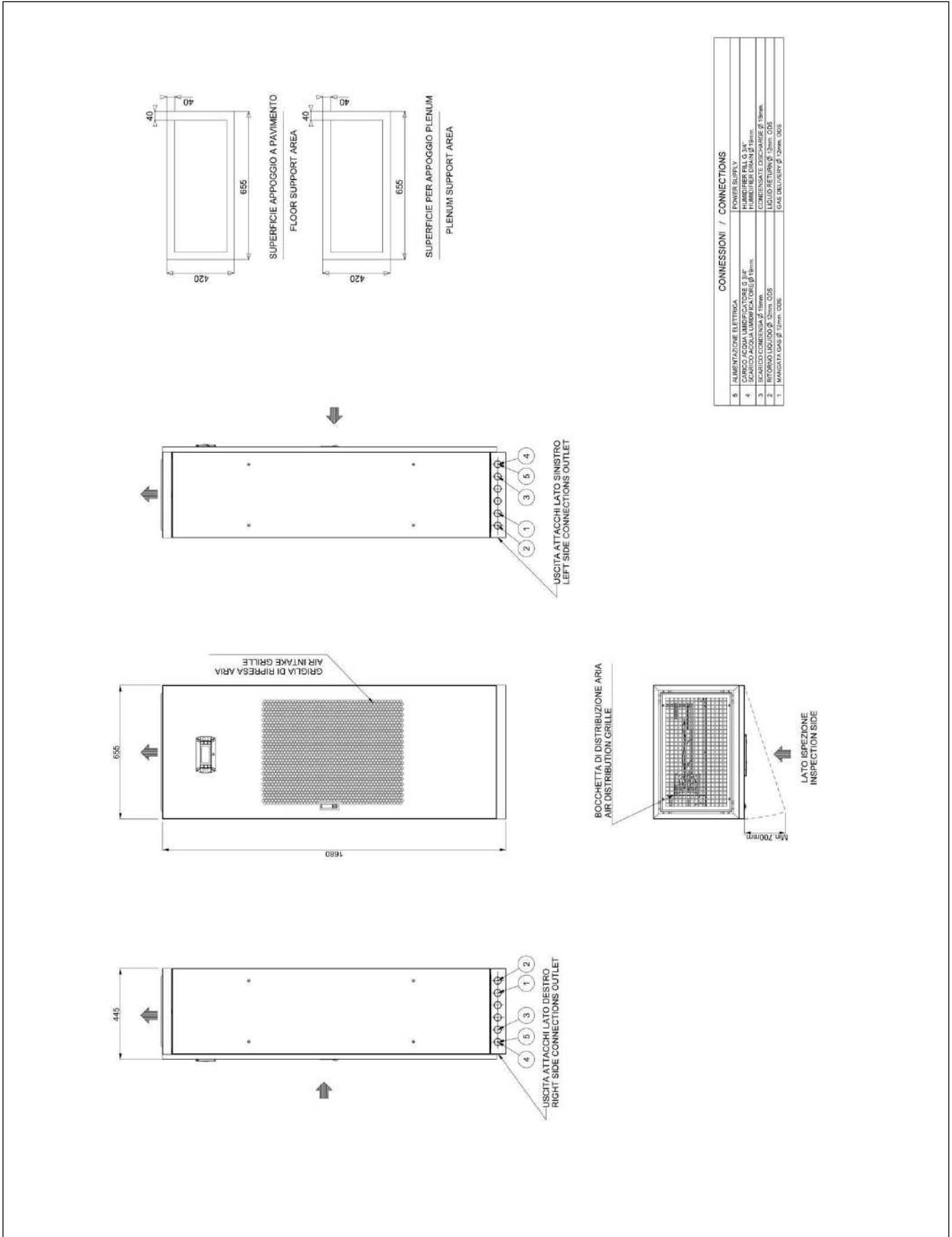


SUPERFICIE PER APPOGGIO PLENUM  
PLENUM SUPPORT AREA

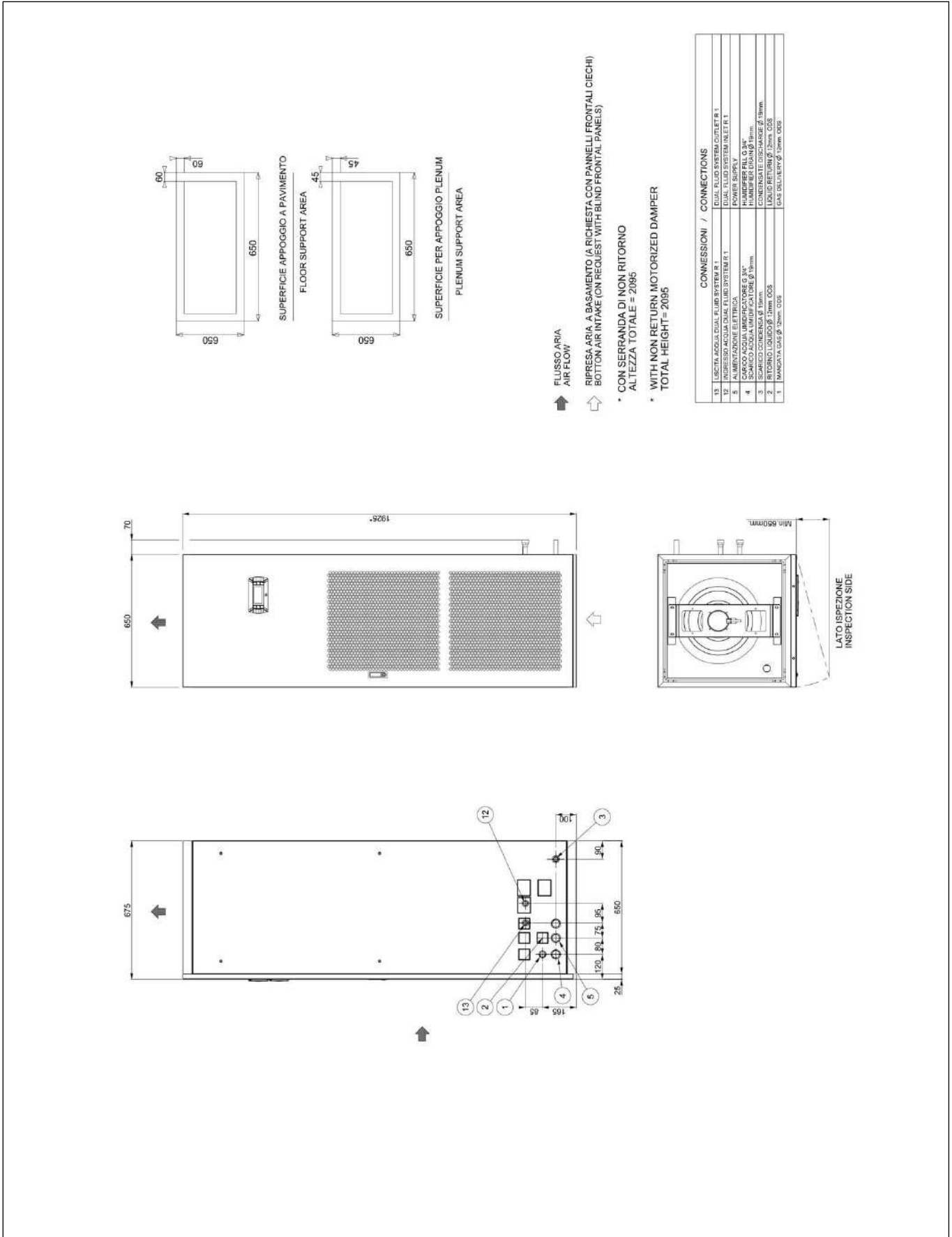
\* CON SERRANDA DI NON RITORNO  
ALTEZZA TOTALE = 2150  
\* WITH NON RETURN MOTORIZED DAMPER  
TOTAL HEIGHT= 2150

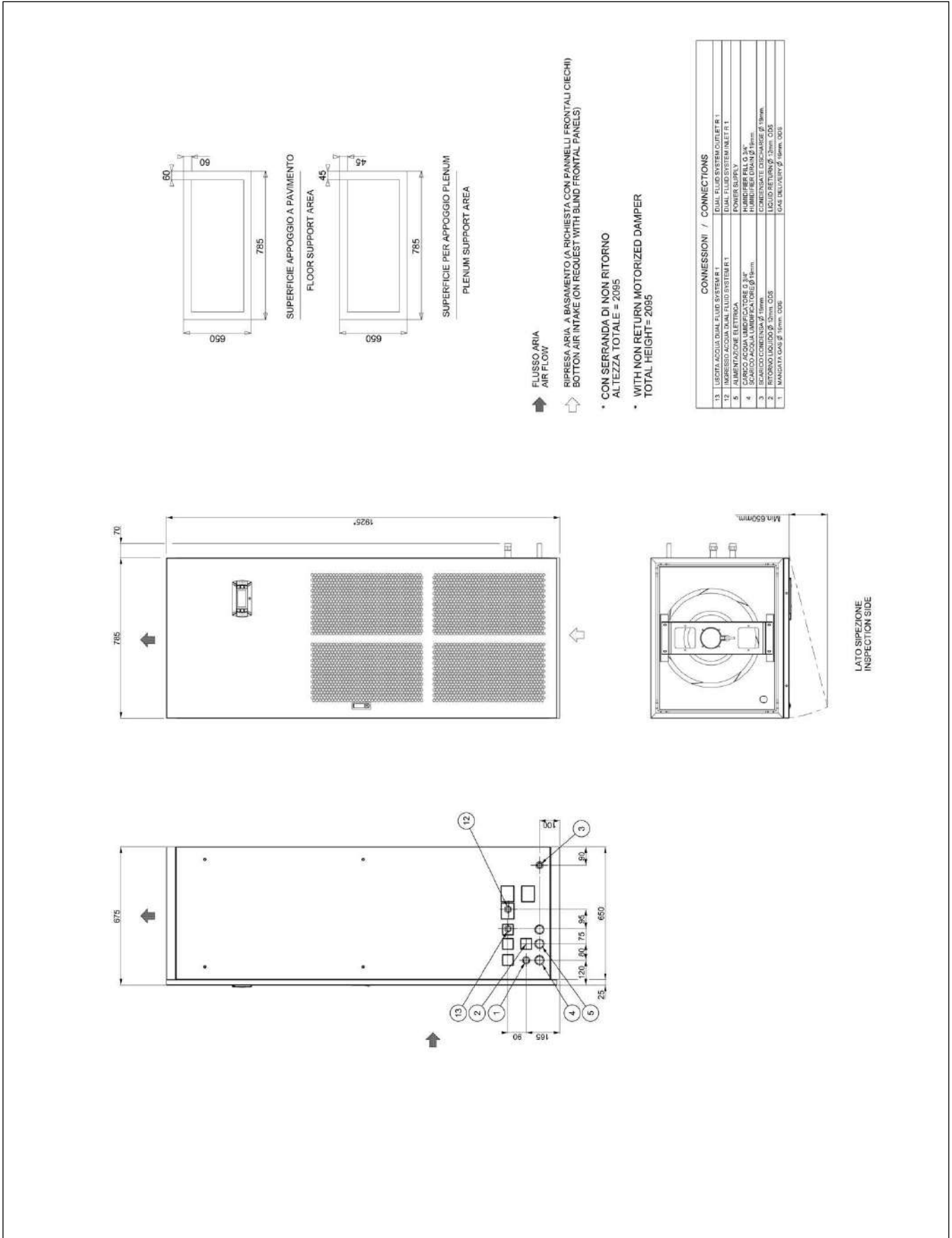
| CONNESSIONI / CONNECTIONS |   |
|---------------------------|---|
| 13                        | USCITA ACQUA DUAL FLUID SYSTEM R 2.1/2          |
| 12                        | INGRESSO ACQUA DUAL FLUID SYSTEM R 2.1/2        |
| 5                         | ALIMENTAZIONE ELETTRICA                         |
| 4                         | SARCO ACQUA LIQUIDA DUAL FLUID SYSTEM R 2.1/2   |
| 3                         | SCARICO ACQUA LIQUIDA DUAL FLUID SYSTEM R 2.1/2 |
| 2                         | RITORNO LIQUIDO N°208 25mm OD5                  |
| 1                         | MANDATA GAS N°208 25mm OD5                      |

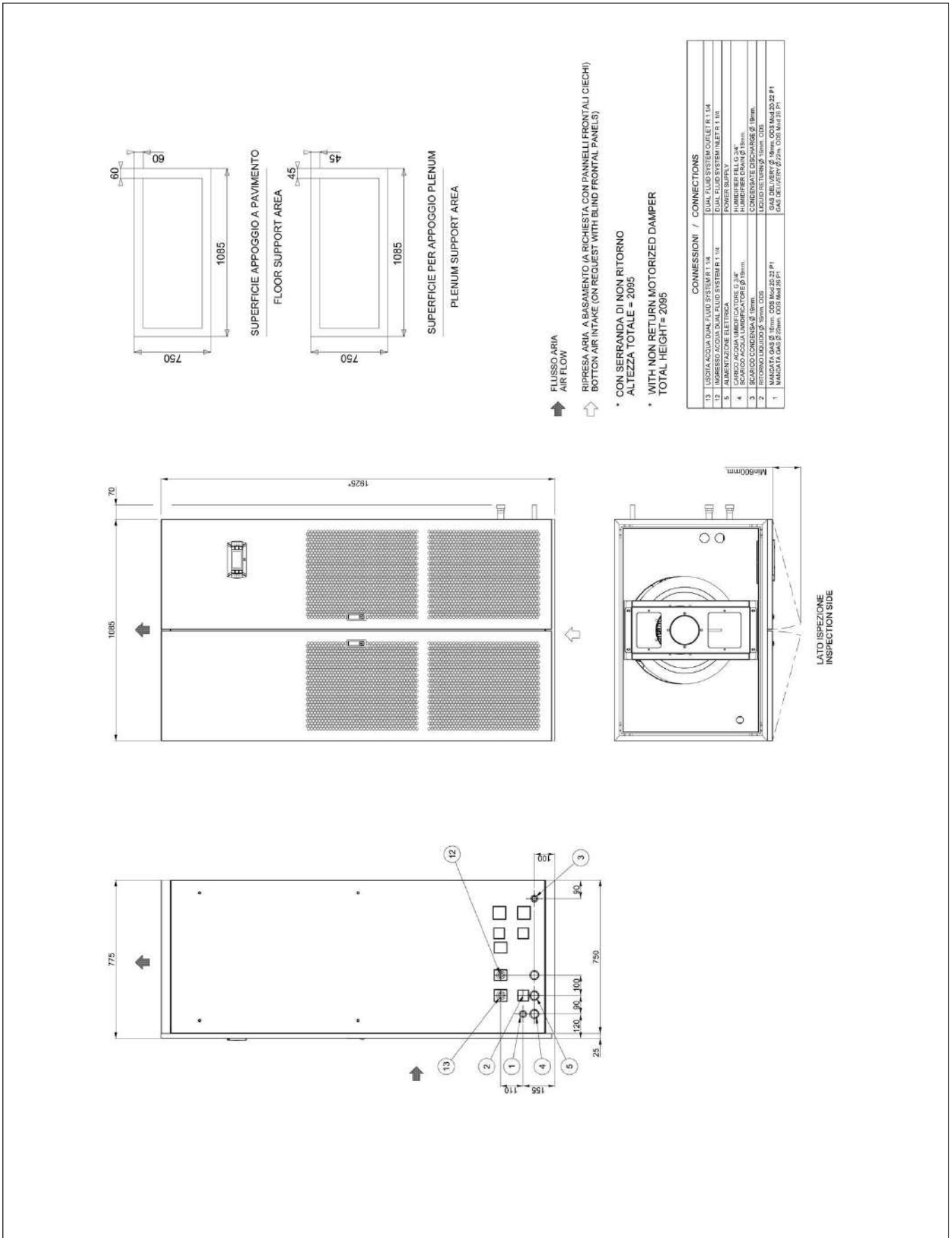


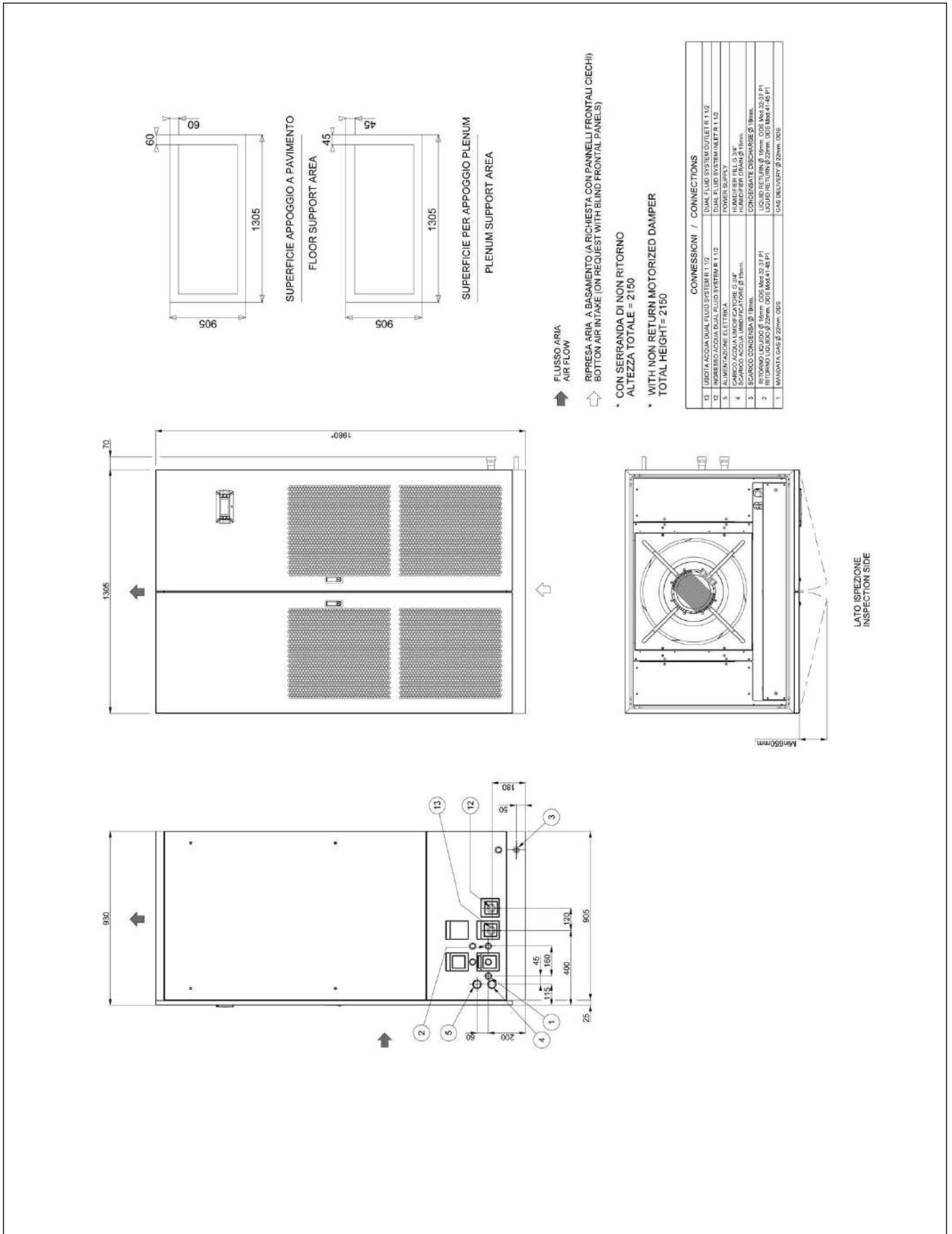


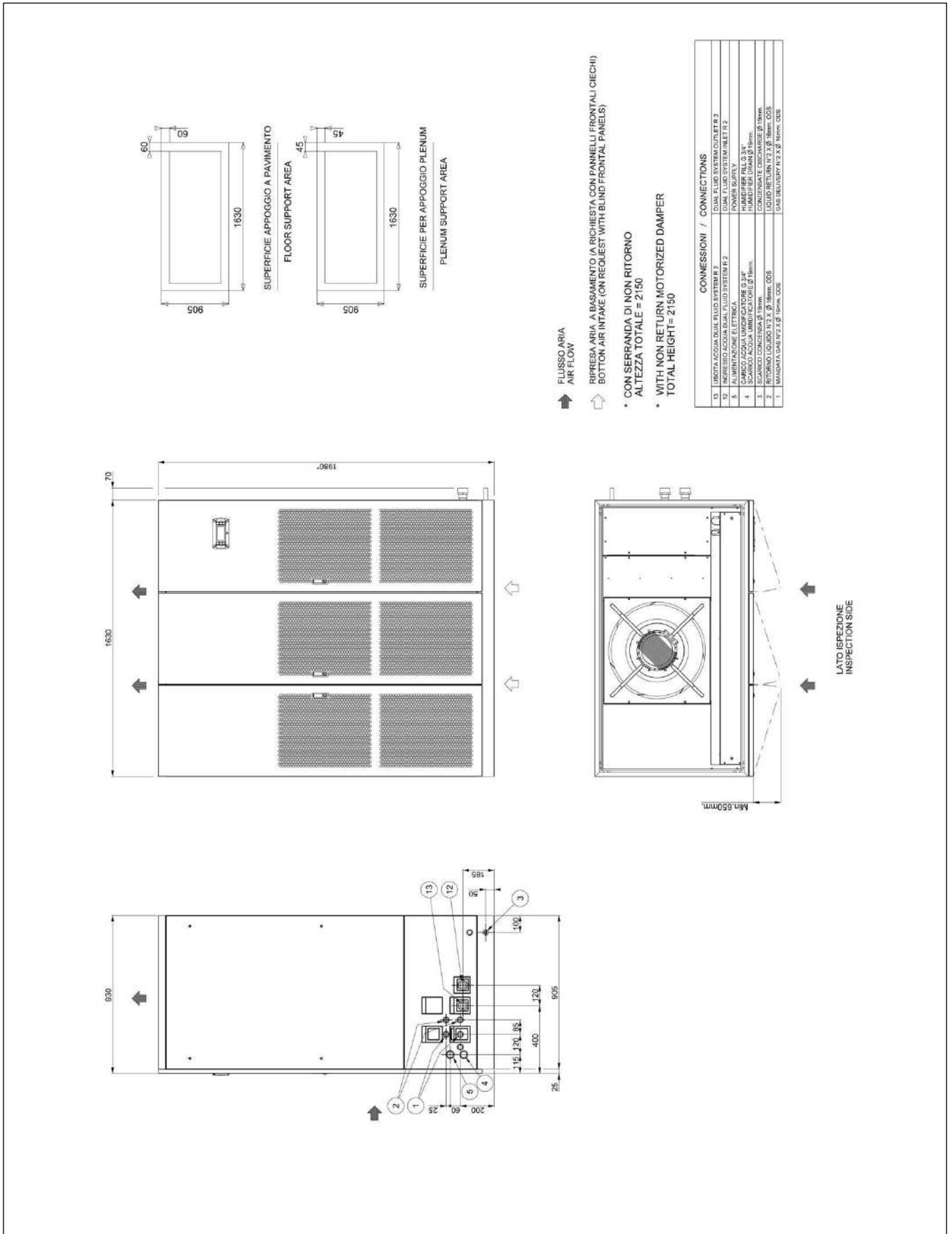


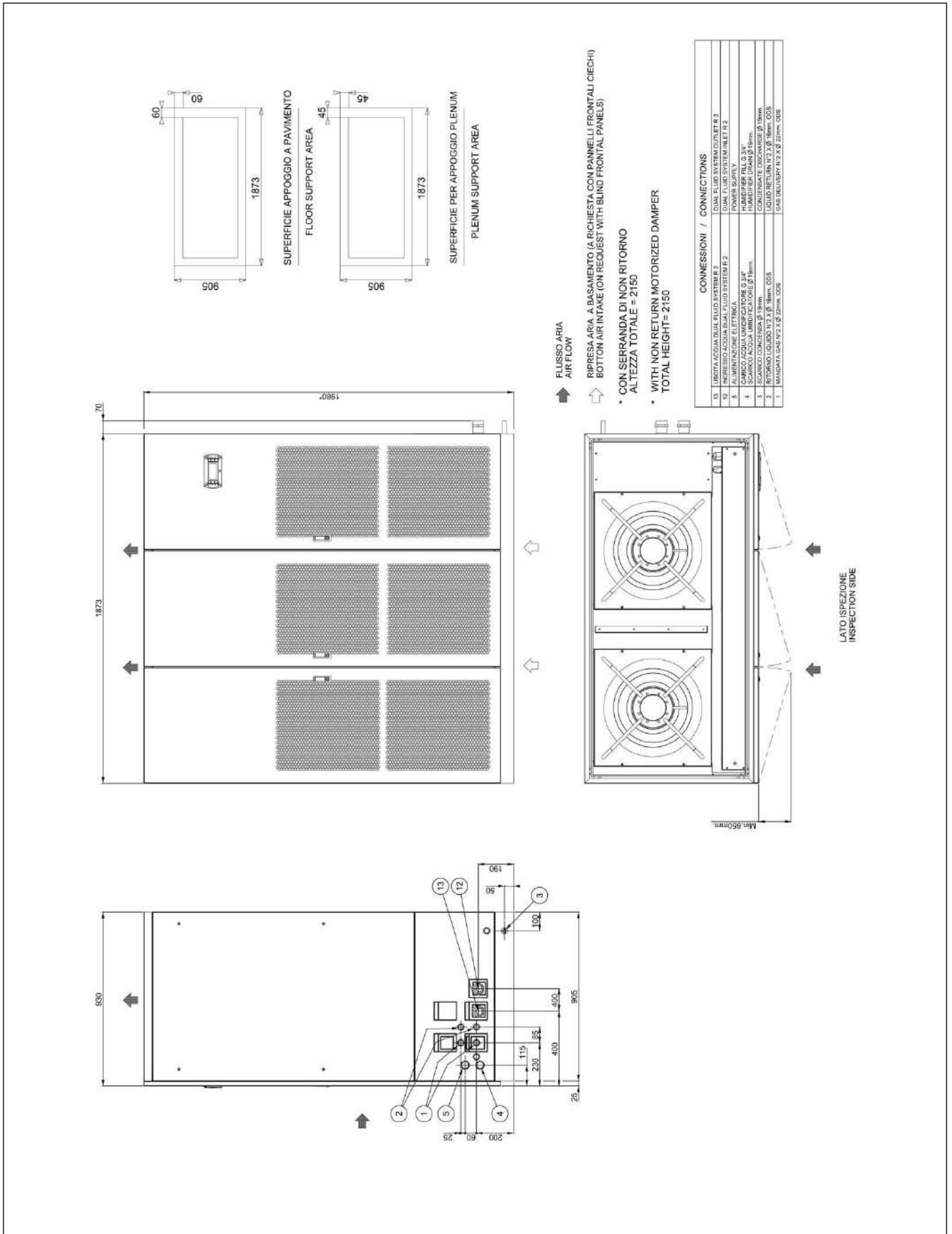


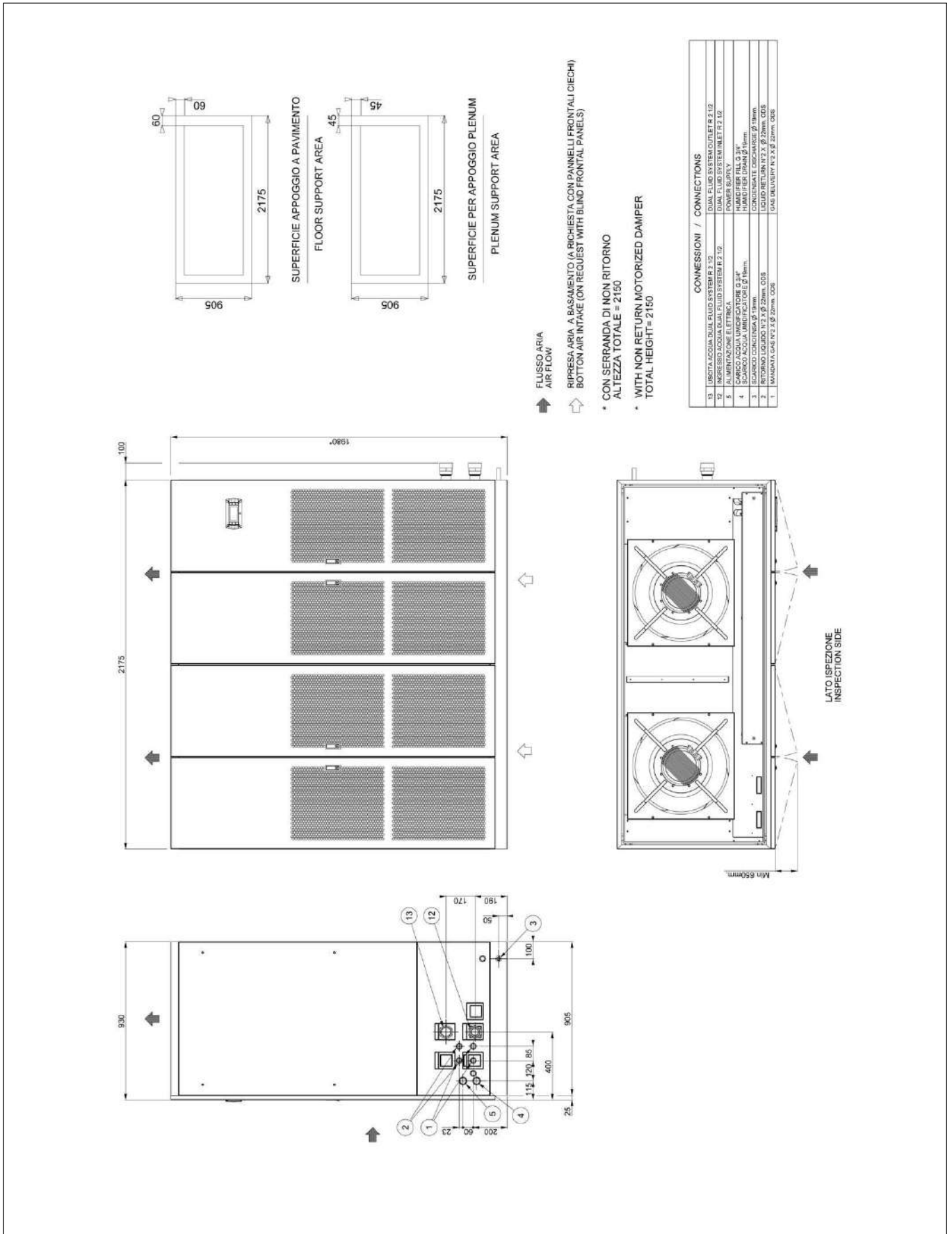


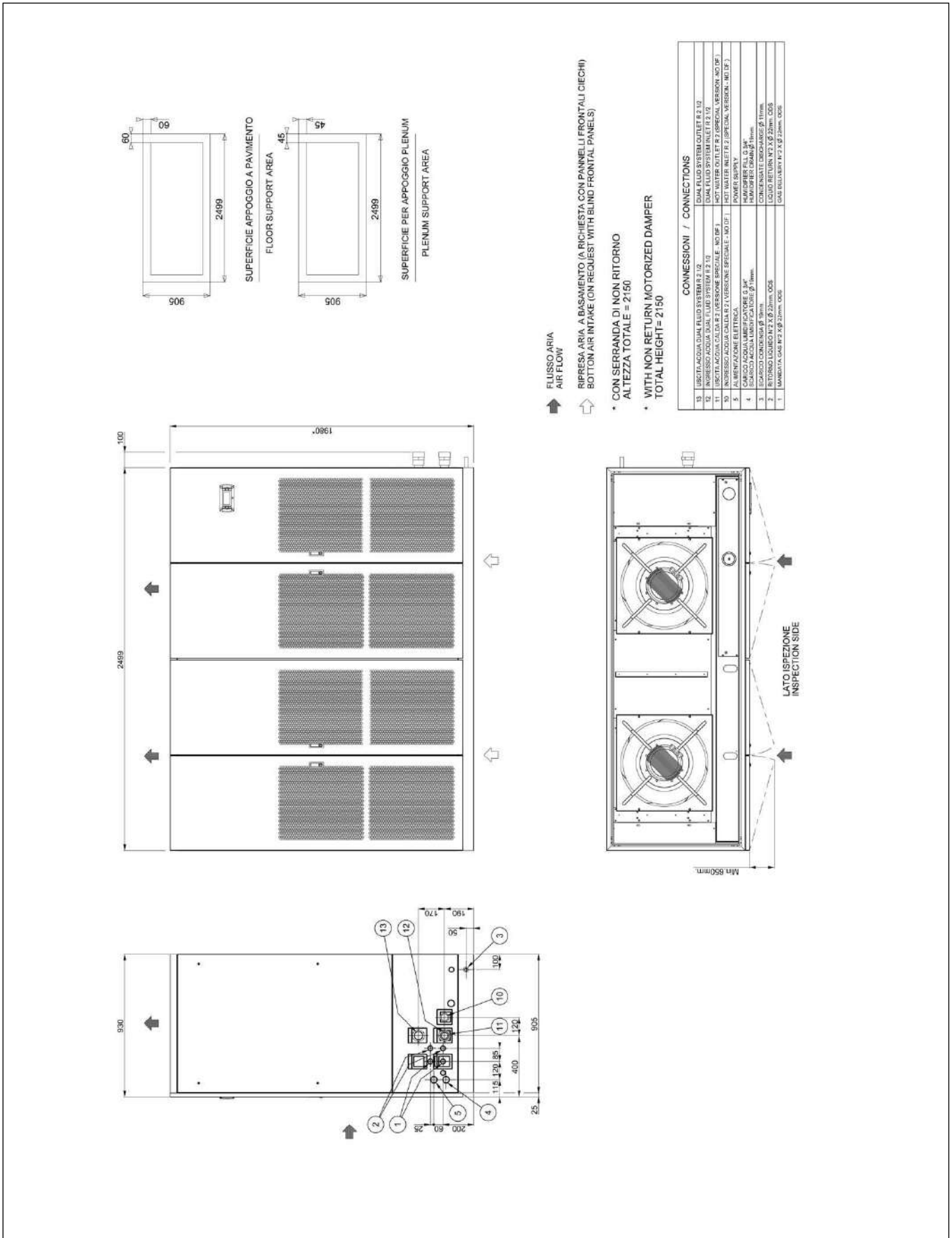








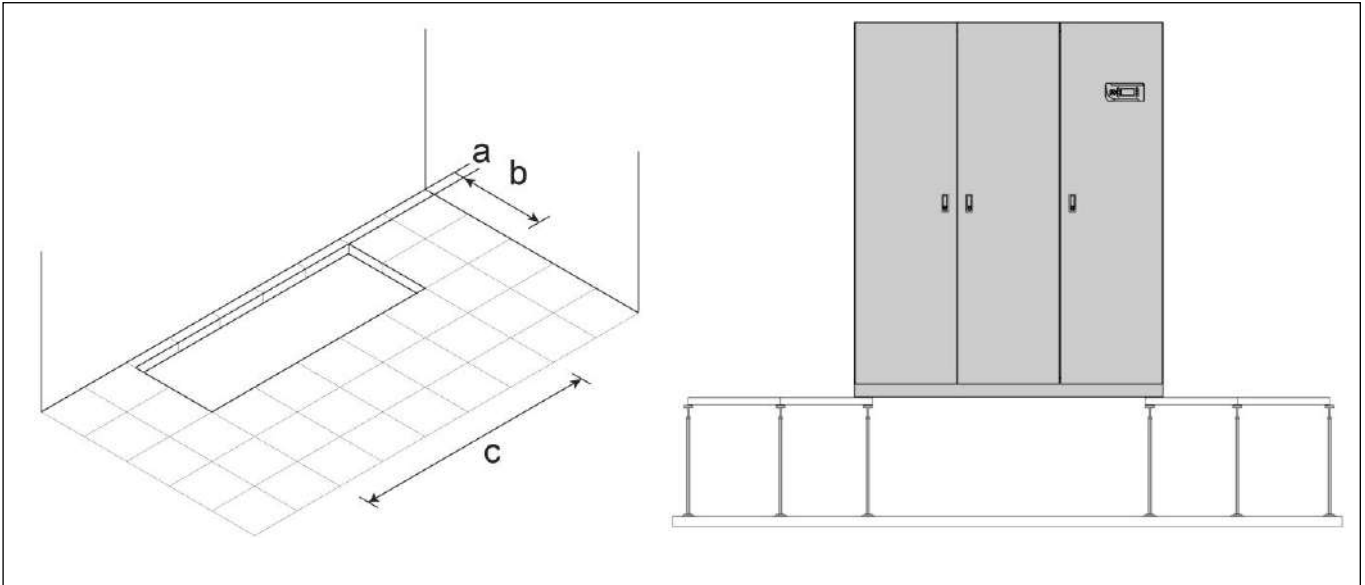






## HOLE IN THE RAISED FLOOR FOR DOWNFLOW VERSION

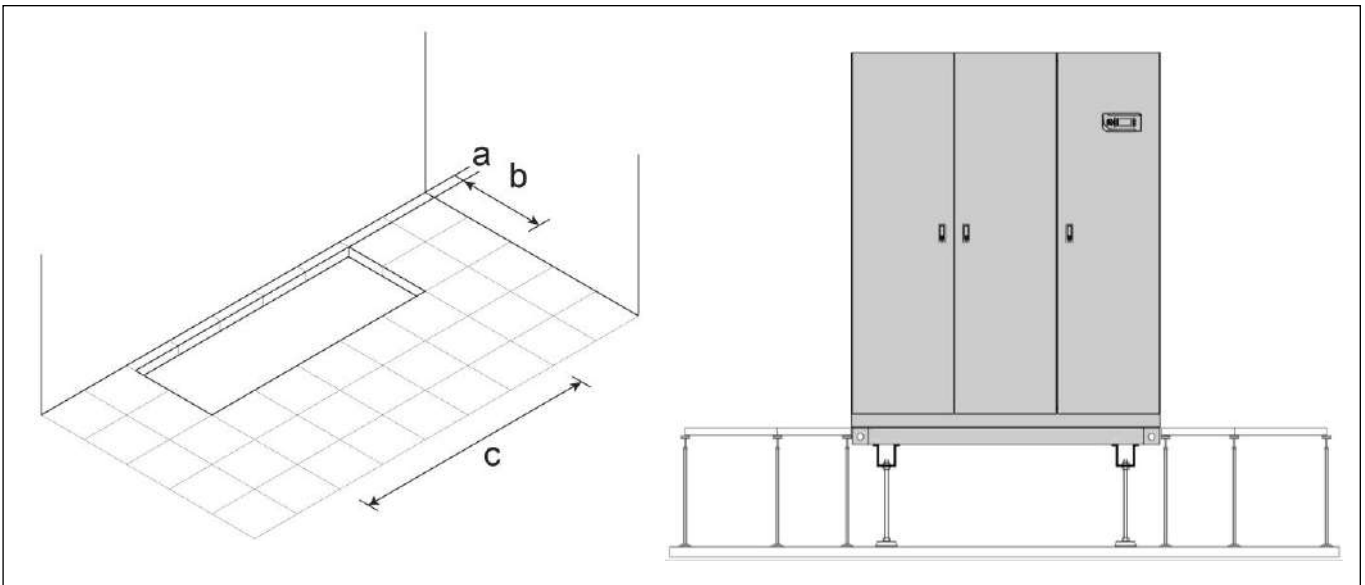
### HOLE IN THE RAISED FLOOR WITHOUT FLOOR STAND



Foresee a hole in the floor with the following dimensions:

| SIZE |    | E0  | E1  | E2  | E3  | E4   | E5   | E6   | E7   | E8   | E9   |
|------|----|-----|-----|-----|-----|------|------|------|------|------|------|
| a    | mm | 90  | 95  | 95  | 95  | 110  | 110  | 110  | 110  | 110  | 110  |
| b    | mm | 340 | 560 | 560 | 660 | 785  | 785  | 785  | 785  | 785  | 785  |
| c    | mm | 585 | 560 | 695 | 995 | 1185 | 1510 | 1755 | 2055 | 2380 | 2780 |

### HOLE IN THE RAISED FLOOR WITH FLOOR STAND (OPTION)

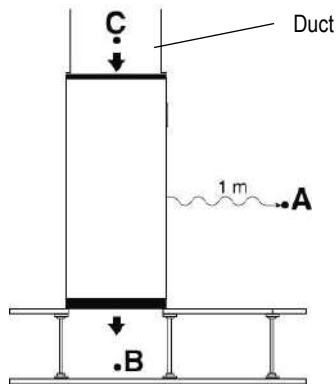


Foresee a hole in the floor with the following dimensions:

| SIZE |    | E0  | E1  | E2  | E3   | E4   | E5   | E6   | E7   | E8   | E9   |
|------|----|-----|-----|-----|------|------|------|------|------|------|------|
| a    | mm | 50  | 50  | 50  | 50   | 50   | 50   | 50   | 50   | 50   | 50   |
| b    | mm | 440 | 670 | 670 | 770  | 925  | 925  | 925  | 925  | 925  | 925  |
| c    | mm | 675 | 670 | 805 | 1105 | 1325 | 1650 | 1895 | 2195 | 2520 | 2920 |

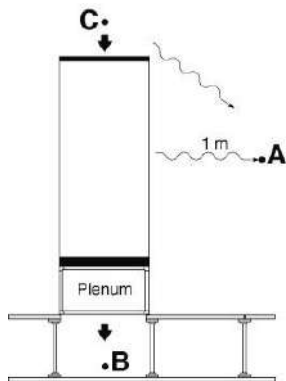
**EXAMPLE FOR MACHINES NOISE EMISSION CALCULATION**

**UNDER MACHINE WITH DUCT ON AIR INTAKE**



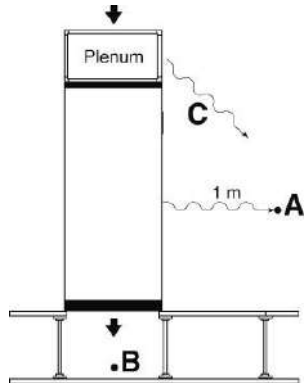
- Lp **A** = Front side Under catalogue value
- Lp **B** = Air delivery Under catalogue value
- Lp **C** = Air intake Under catalogue value
- The points **B** and **C** do not influence the point **A**

**UNDER MACHINE WITH PLENUM ON AIR DELIVERY**



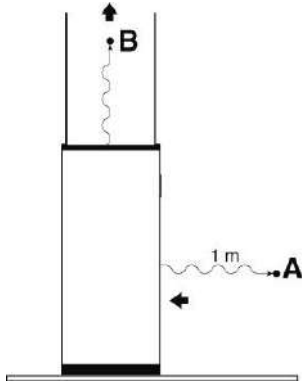
- Lp **A** = Front side Under catalogue value
- Lp **B** = Air delivery Under catalogue value – plenum noise reduction
- Lp **C** = Air intake Under catalogue value
- Lp **A+C** =  $10 \log_{10} \left( 10^{\frac{LpA}{10}} + 10^{\frac{LpC}{10}} \right)$
- The point **B** do not influence the point **A**

**UNDER MACHINE WITH PLENUM ON AIR INTAKE**



- Lp **A** = Front side Under catalogue value
- Lp **B** = Air delivery Under catalogue value
- Lp **C** = Air intake Under catalogue value – plenum noise reduction
- Lp **A+C** =  $10 \log_{10} \left( 10^{\frac{LpA}{10}} + 10^{\frac{LpC}{10}} \right)$
- The point **B** do not influence the point **A**

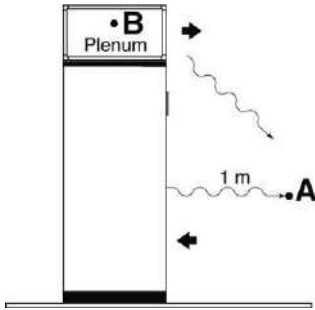
**OVER MACHINE WITH DUCT**



- Lp **A** = Air intake Over catalogue value
- Lp **B** = Air delivery Over catalogue value
- The point **B** do not influence the point **A**

**EXAMPLE FOR MACHINES NOISE EMISSION CALCULATION**

**OVER MACHINE WITH PLENUM ON AIR DELIVERY**

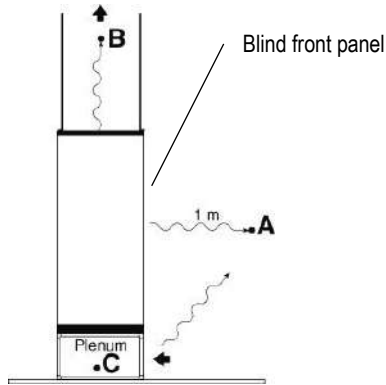


Lp A = Air intake Over catalogue value

Lp B = Air delivery Over catalogue value – plenum noise reduction

$$Lp A+B = 10 \log_{10} \left( 10^{\frac{LpA}{10}} + 10^{\frac{LpC}{10}} \right)$$

**OVER MACHINE WITH DUCT AND PLENUM ON AIR DELIVERY**



Lp A = Front side Over catalogue value

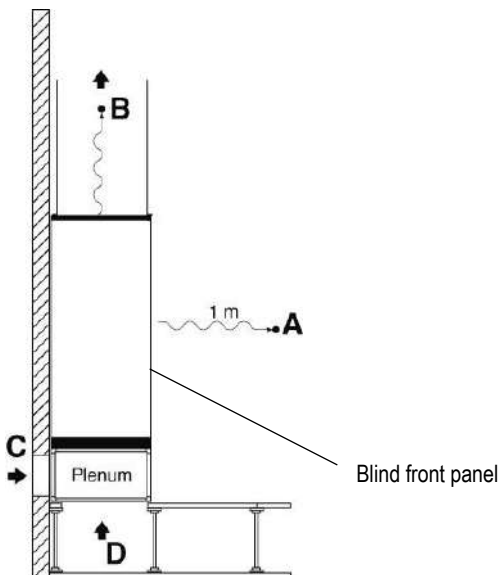
Lp B = Air delivery Over catalogue value

Lp C = Lp A + 6dB(A) – plenum noise reduction

$$Lp A+C = 10 \log_{10} \left( 10^{\frac{LpA}{10}} + 10^{\frac{LpC}{10}} \right)$$

The point B do not influence the point A+C

**OVER MACHINE WITH DUCT AND PLENUM ON AIR DELIVERY**



Lp A = Front side Over catalogue value

Lp B = Air delivery Over catalogue value

Lp C = Lp D = Lp A + 6 dB(A) – plenum noise reduction

The points B, C and D do not influence the point A

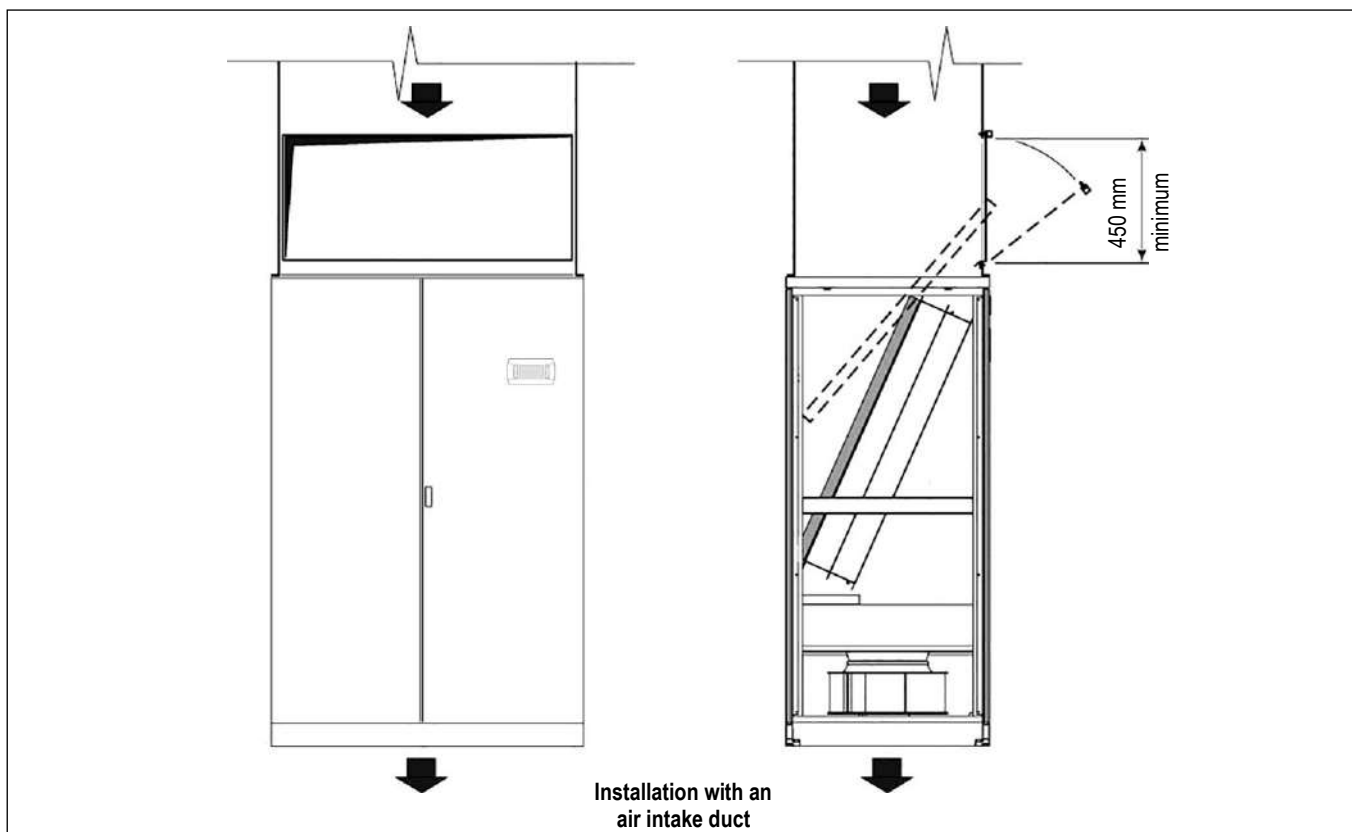
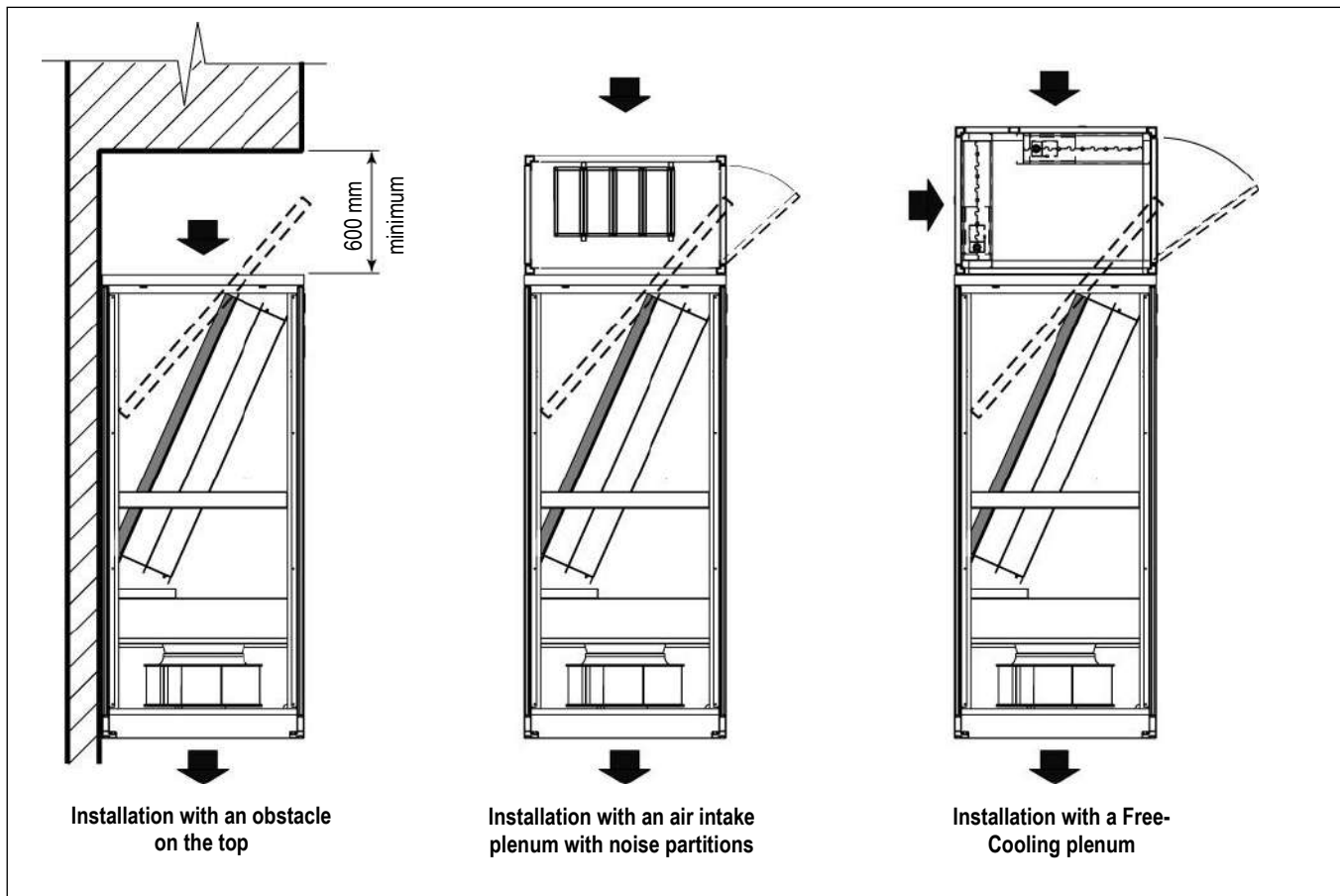
**IMPORTANT**

The declared noise levels are intended in free field conditions.

The noise pressure level of an installed unit is affected by the room acoustic characteristics.

Please consider an average noise increase of +4/+6 dB(A).

**AIR FILTERS REPLACEMENT  
FOR UNDER VERSION MACHINES SIZE E4 – E5 – E6 – E7 – E8 – E9**

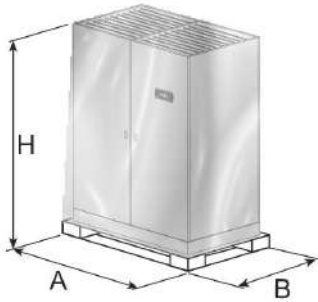


**SHIPMENT: PACKING DIMENSIONS**

Values referred to basic machine. The presence of some accessories increases the weight of machine.

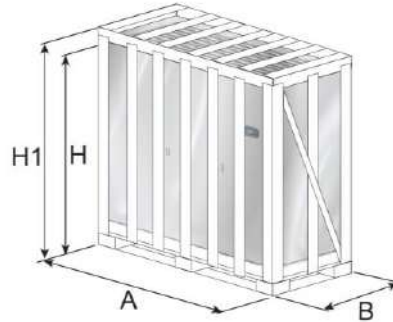
The machines are shipped on pallet and covered with shrink wrap.  
On request packing on pallet covered with shrink wrap and wooden cage.

**STANDARD PACKING DIMENSIONS**



| Size | A (mm) | B (mm) | H (mm) |
|------|--------|--------|--------|
| E0   | 700    | 500    | 1800   |
| E1   | 750    | 750    | 2080   |
| E2   | 900    | 750    | 2080   |
| E3   | 1200   | 910    | 2080   |
| E4   | 1400   | 1050   | 2130   |
| E5   | 1750   | 1050   | 2130   |
| E6   | 2000   | 1050   | 2130   |
| E7   | 2280   | 1050   | 2130   |
| E8   | 2650   | 1050   | 2130   |
| E9   | 3000   | 1050   | 2130   |

**OPTIONAL 9973: WOODEN CAGE PACKING DIMENSIONS**



| Size | A (mm) | B (mm) | H (mm) | H1 (*) (mm) |
|------|--------|--------|--------|-------------|
| E0   | 740    | 540    | 1850   | --          |
| E1   | 790    | 790    | 2150   | 2350        |
| E2   | 940    | 790    | 2150   | 2350        |
| E3   | 1240   | 950    | 2150   | 2350        |
| E4   | 1440   | 1090   | 2200   | 2350        |
| E5   | 1790   | 1090   | 2200   | 2350        |
| E6   | 2040   | 1090   | 2200   | 2350        |
| E7   | 2320   | 1090   | 2200   | 2350        |
| E8   | 2690   | 1090   | 2200   | 2350        |
| E9   | 3040   | 1090   | 2200   | 2350        |

H1 (\*) = Packing height with optional A531 on/off damper

**SHIPMENT: SHIPPING WEIGHT**

**STANDARD PACKING**

| Model           | 007 P1 S | 009 P1 S | 011 P1 S | 014 P1 S | 016 P1 S | 020 P1 S | 022 P1 S | 026 P1 S | 032 P1 S | 037 P1 S | 041 P1 S | 045 P1 S |
|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Size            | E0       | E0       | E1       | E2       | E2       | E3       | E3       | E3       | E4       | E4       | E4       | E4       |
| Weight UNDER kg | 170      | 170      | 252      | 285,2    | 290,2    | 341      | 346      | 346      | 449,5    | 454,5    | 466,5    | 474,5    |
| Weight OVER kg  | 170      | 170      | 242      | 275,2    | 280,2    | 321      | 326      | 326      | 439,5    | 444,5    | 456,5    | 464,5    |

| Model           | 039 P2 D | 048 P2 D | 055 P2 D | 062 P2 D | 075 P2 D | 082 P2 D | 092 P2 D | 102 P2 D | 117 P4 D | 146 P4 D |
|-----------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Size            | E5       | E5       | E6       | E6       | E7       | E7       | E8       | E8       | E9       | E9       |
| Weight UNDER kg | 566      | 576      | 660,5    | 680,5    | 791      | 796      | 899,5    | 899,5    | 1081,5   | 1141,5   |
| Weight OVER kg  | 556      | 566      | 650,5    | 670,5    | 734      | 741      | 839,5    | 839,5    | --       | --       |

## b-AV DX

### OPTIONAL 9973: WOODEN CAGE PACKING

| Model            |    | 007 P1 | 009 P1 | 011 P1 | 014 P1 | 016 P1 | 020 P1 | 022 P1 | 026 P1 | 032 P1 | 037 P1 | 041 P1 | 045 P1 |
|------------------|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  |    | S      | S      | S      | S      | S      | S      | S      | S      | S      | S      | S      | S      |
| Size             |    | E0     | E0     | E1     | E2     | E2     | E3     | E3     | E3     | E4     | E4     | E4     | E4     |
| Weight UNDER     | kg | 193    | 193    | 279    | 313,2  | 318,2  | 373    | 378    | 378    | 485,5  | 490,5  | 502,5  | 510,5  |
| Weight UNDER (1) | kg | --     | --     | 301    | 338,2  | 343,2  | 406    | 411    | 411    | 529,5  | 534,5  | 546,5  | 554,5  |
| Weight OVER      | kg | 193    | 193    | 269    | 303,2  | 308,2  | 353    | 358    | 358    | 475,5  | 480,5  | 492,5  | 500,5  |
| Weight OVER (1)  | kg | --     | --     | 291    | 328,2  | 333,2  | 386    | 391    | 391    | 519,5  | 524,5  | 536,5  | 544,5  |

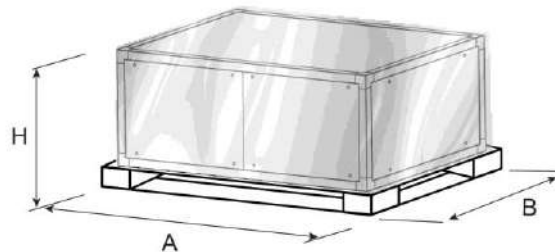
| Model            |    | 039 P2 | 048 P2 | 055 P2 | 062 P2 | 075 P2 | 082 P2 | 092 P2 | 102 P2 | 117 P4 | 146 P4 |
|------------------|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|                  |    | D      | D      | D      | D      | D      | D      | D      | D      | D      | D      |
| Size             |    | E5     | E5     | E6     | E6     | E7     | E7     | E8     | E8     | E9     | E9     |
| Weight UNDER     | kg | 602    | 612    | 704,5  | 724,5  | 843    | 848    | 949,5  | 949,5  | 1139,5 | 1199,5 |
| Weight UNDER (1) | kg | 657    | 667    | 767,5  | 787,5  | 915    | 920    | 1032,5 | 1032,5 | 1237,5 | 1297,5 |
| Weight OVER      | kg | 592    | 602    | 694,5  | 714,5  | 786    | 793    | 889,5  | 889,5  | --     | --     |
| Weight OVER (1)  | kg | 647    | 657    | 757,5  | 777,5  | 858    | 865    | 972,5  | 972,5  | --     | --     |

(1) Machine with optional A531 on/off damper

### SHIPMENT: OPTIONALS PACKING DIMENSIONS AND SHIPPING WEIGHT

- P011 - EMPTY PLENUM
- P012 - EMPTY PLENUM CL.A1
- P031 - EMPTY INTAKE PLENUM
- P032 - EMPTY INTAKE PLENUM CL.A1
- P013 - PLENUM + 3 GRILLES
- P014 - PLENUM + 3 GRILLES CL.A1
- P015 - SILENCED PLENUM
- P016 - SILENCED PLENUM + 1 GRILLE
- P017 - PLENUM + FILTER EPM2.5 50%
- P018 - PLENUM + FILTER EPM1 50%
- P019 - PLENUM + FILTER EPM1 85%

The plenums are shipped on pallet and covered with shrink wrap.

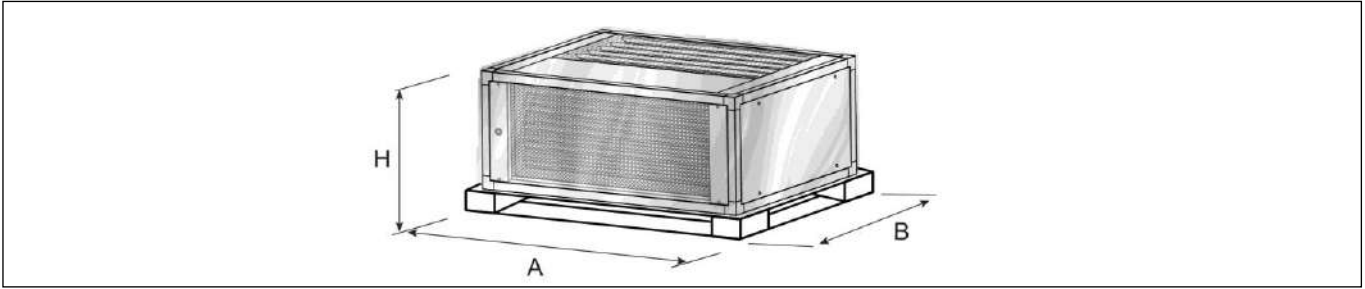


| Size   |    | E0  | E1  | E2  | E3   | E4   | E5   | E6   | E7   | E8   | E9   |
|--|----|-----|-----|-----|------|------|------|------|------|------|------|
| <b>DIMENSIONS</b>                              |    |     |     |     |      |      |      |      |      |      |      |
| A  | mm | 700 | 750 | 900 | 1200 | 1400 | 1750 | 2000 | 2280 | 2650 | 3000 |
| B  | mm | 500 | 750 | 750 | 910  | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 |
| H  | mm | 630 | 630 | 630 | 630  | 630  | 630  | 630  | 630  | 630  | 630  |
| <b>SHIPPING WEIGHT</b>                         |    |     |     |     |      |      |      |      |      |      |      |
| P011 - Empty plenum "O" / "U"                  | kg | --  | 31  | 34  | 41   | 53   | 69   | 78   | 88   | 105  | 122  |
| P012 - Empty plenum CL.A1 "O" / "U"            | kg | --  | 36  | 39  | 47   | 62   | 79   | 89   | 100  | 119  | 137  |
| P031 - Empty intake plenum "O" / "U"           | kg | --  | 31  | 34  | 41   | 53   | 69   | 78   | 88   | 105  | 122  |
| P032 - Empty intake plenum CL. A1 "O" / "U"    | kg | --  | 36  | 39  | 47   | 62   | 79   | 89   | 100  | 119  | 137  |
| P013 - Plenum + 3 grilles "O" / "U"            | kg | 23  | 32  | 35  | 47   | 68   | 79   | 96   | 106  | 135  | 152  |
| P014 - Plenum + 3 grilles CL. A1 "O" / "U"     | kg | 26  | 36  | 40  | 54   | 77   | 90   | 107  | 122  | 151  | 170  |
| P015 - Silenced plenum "O" / "U"               | kg | --  | 36  | 39  | 47   | 68   | 81   | 98   | 113  | 130  | 152  |
| P016 - Silenced plenum + 1 grille "O" / "U"    | kg | --  | 41  | 44  | 54   | 88   | 101  | 111  | 126  | 155  | 182  |
| P017 - P018 - P019 - Plenum + filter "O" / "U" | kg | --  | 37  | 39  | 47   | 68   | 84   | 98   | 118  | 135  | 152  |

"O" Over / "U" Under

**P034: INTAKE FREE-COOLING PLENUM**

The plenums are shipped on pallet and covered with shrink wrap.

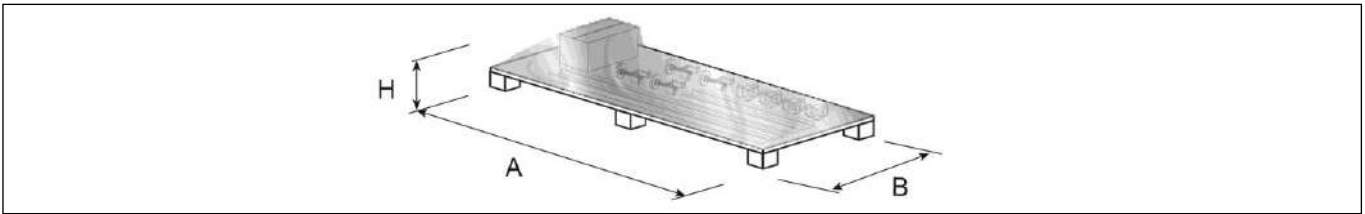


| Size                                  |    | E0 | E1  | E2  | E3   | E4   | E5   | E6   | E7   | E8   | E9   |
|---------------------------------------|----|----|-----|-----|------|------|------|------|------|------|------|
| <b>DIMENSIONS</b>                     |    |    |     |     |      |      |      |      |      |      |      |
| A                                     | mm | -- | 750 | 900 | 1200 | 1400 | 1750 | 2000 | 2280 | 2650 | 3000 |
| B                                     | mm | -- | 750 | 750 | 910  | 1050 | 1050 | 1050 | 1050 | 1050 | 1050 |
| H                                     | mm | -- | 630 | 630 | 630  | 750  | 750  | 750  | 750  | 750  | 750  |
| <b>SHIPPING WEIGHT</b>                |    |    |     |     |      |      |      |      |      |      |      |
| P034 - Intake free-cooling plenum "U" | kg | -- | 35  | 39  | 52   | 76   | 90   | 111  | 128  | 155  | 182  |
| P034 - Intake free-cooling plenum "O" | kg | -- | 35  | 39  | 52   | 76   | 90   | 111  | 128  | 155  | 182  |

"O" Over / "U" Under

**P041 / P042 / P043: SUPPORT FRAME**

The support frames are shipped on pallet and covered with shrink wrap.



| Size                   |    | E0   | E1   | E2   | E3   | E4   | E5   | E6   | E7   | E8   | E9   |
|------------------------|----|------|------|------|------|------|------|------|------|------|------|
| <b>DIMENSIONS</b>      |    |      |      |      |      |      |      |      |      |      |      |
| A                      | mm | 1200 | 1200 | 1200 | 1200 | 1400 | 1750 | 2000 | 2280 | 2650 | 3000 |
| B                      | mm | 900  | 900  | 900  | 900  | 900  | 900  | 900  | 900  | 900  | 900  |
| H                      | mm | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  | 500  |
| <b>SHIPPING WEIGHT</b> |    |      |      |      |      |      |      |      |      |      |      |
|                        | kg | 25   | 26   | 27   | 29   | 37   | 40   | 44   | 47   | 49   | 53   |

**P183 / P184: KIT NETWORK ANALYZER / KIT NETWORK ANALYZER+OPTIONAL**  
**P113 / P114: DUAL POWER SUPPLY KIT / DUAL POWER SUPPLY KIT+OPTIONAL**

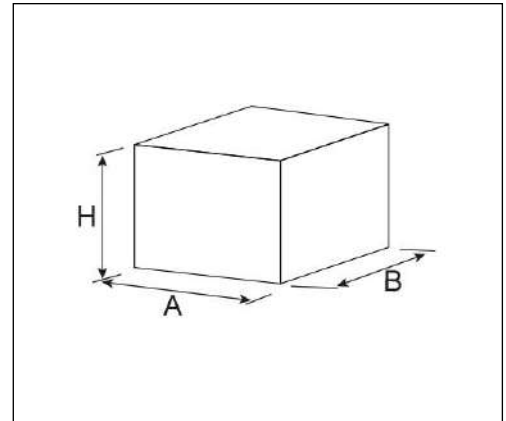
The optional are shipped in a cardboard box.

**P183 / P184 - KIT NETWORK ANALYZER / KIT NETWORK ANALYZER+OPTIONAL**

| Size                   |    | E0 | E1  | E2  | E3  | E4 | E5 | E6 | E7 | E8 | E9 |
|------------------------|----|----|-----|-----|-----|----|----|----|----|----|----|
| <b>DIMENSIONS</b>      |    |    |     |     |     |    |    |    |    |    |    |
| A                      | mm | -- | 400 | 400 | 400 | -- | -- | -- | -- | -- | -- |
| B                      | mm | -- | 400 | 400 | 400 | -- | -- | -- | -- | -- | -- |
| H                      | mm | -- | 210 | 210 | 210 | -- | -- | -- | -- | -- | -- |
| <b>SHIPPING WEIGHT</b> |    |    |     |     |     |    |    |    |    |    |    |
|                        | kg | -- | 12  | 12  | 12  | -- | -- | -- | -- | -- | -- |

**P113 / P114 - DUAL POWER SUPPLY KIT / DUAL POWER SUPPLY KIT+OPTIONAL**

| Size                   |    | E0  | E1  | E2  | E3  | E4  | E5 | E6 | E7 | E8 | E9 |
|------------------------|----|-----|-----|-----|-----|-----|----|----|----|----|----|
| <b>DIMENSIONS</b>      |    |     |     |     |     |     |    |    |    |    |    |
| A                      | mm | 410 | 410 | 410 | 410 | 410 | -- | -- | -- | -- | -- |
| B                      | mm | 410 | 410 | 410 | 410 | 410 | -- | -- | -- | -- | -- |
| H                      | mm | 210 | 210 | 210 | 210 | 210 | -- | -- | -- | -- | -- |
| <b>SHIPPING WEIGHT</b> |    |     |     |     |     |     |    |    |    |    |    |
|                        | kg | 5   | 5   | 5   | 5   | 5   | -- | -- | -- | -- | -- |





for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.



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