Technical Bulletin

BT15L009GB-03

CLIVETPack²

Direct expansion high efficiency packaged rooftop air conditioner for high attendance areas

CSNX-XHE2 12.2-44.4 RANGE

AIR-AIR HEAT PUMP R-410A

Air flow-rate from 4000 to 20000 m3/h

- High seasonal efficiency
- Two single refrigeration circuits
- R-410A scroll compressors connected in tandem
- Up to 80% of fresh air
- Energy recovery of exhaust air

Specific applications require high fresh air flows

Correct air conditioning in crowded areas is fundamental. Optimal temperature and humidity, air purification and correct ventilation (independently from the external conditions), are essential for users and operators. This is what happens in multiplex cinemas, theatres, convention rooms, restaurants, performance venues in general.

or these applications laws and hygiene standards imposing high external air flow to guarantee correct ambient fresh air are valid. This generates greater purchase costs for the system and its management.

Even in many technical rooms the conditioning and the air renewal are fundamental for the correct operation of the contained apparatus.



CLIVETPack² CSNX-XHE2 delivers all the technological evolution by Clivet in the high attendance applications

With more than twenty years of technological evolution, Clivet rooftop units represent the state of the art in climate control for large commercial and industrial environments. The specialised ranges for applications with medium to high occupancy are widely used in buildings such as hypermarkets, shopping centres, multiplex cinemas and restaurants.

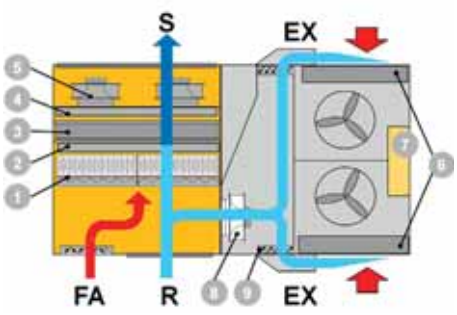
Their success is based on their high energy efficiency, their compact size and operation and maintenance simplicity as well as the great flexibility in selecting best suited the model for the specific installation.

Two main configurations stand out for the energy recovery management on the exhaust air, each one can be integrated by a broad range of accessories that customise the product based on the application.

CCK configuration: double fan section for recirculation, fresh air, exhaust, thermodynamic recovery

For applications with automatic air renewal and free-cooling function control. The unit is equipped with an exhaust section with thermodynamic energy recovery of the exhaust air.

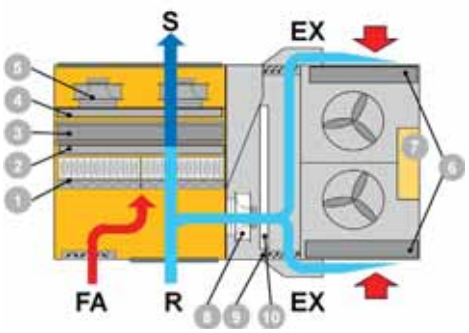
This air, which is still rich in energy, is mixed with the outdoor air, favouring the temperature conditions on the source side of the exchanger and improving the heating and cooling capacity.



CCKP configuration: double fan section with fresh air and THOR thermodynamic recovery

For applications with automatic air renewal and free-cooling function control. In addition to the parts contained in the CCK configuration, the unit is equipped with an exhaust section with innovative thermodynamic energy recovery of the exhaust air through a dedicated THOR (THermodynamic Overboost Recovery) exchanger.

The energy contained in the exhaust air is recovered and transferred to handling through the refrigeration circuit.



R. Return air
S. Supply air
FA. Fresh air
EX. Exhaust air

1. G4 efficiency filters + H10 equivalent electronic filters
2. Hot water exchanger or electric heaters
3. Handling exchanger
4. Hot gas reheating exchanger
5. Return + supply fan section
6. Source side exchanger
7. Electrical panel
8. Exhaust fan
9. Overpressure damper
10. Thermodynamic recovery exchanger, THOR

CLIVETPack series for medium attendance applications

SMARTPACK2
CKN-XHE2i 7.1 - 14.2 reversible heat pump
Nominal airflow: 3200 - 10500 m³/h
Cooling capacity: 20 - 46 kW
Configurations:
CAK single fan section for full recirculation
CBK single fan section for recirculation and fresh air
CCK double fan section for recirculation, fresh air, exhaust, thermodynamic recovery

CLIVETPack²
CSRT/N-XHE2 15.2 - 44.4 HSE reversible heat pump
Nominal airflow: 9000 - 25000 m³/h
Cooling capacity: 48 - 147 kW
Configurations:
CAK single fan section for full recirculation
CBK single fan section for recirculation and fresh air
CCK double fan section for recirculation, fresh air, exhaust, thermodynamic recovery
CCKP double fan section with fresh air and THOR thermodynamic recovery

Size
15.2 ÷30.4

CLIVETPack²
CSRT/N-XHE2 49.4 - 110.4 cooling only / reversible heat pump
Nominal airflow: 22000 - 60000 m³/h
Cooling capacity: 155 - 376 kW
Configurations:
CAK single fan section for full recirculation
CBK single fan section for recirculation and fresh air
CCK double fan section for recirculation, fresh air, exhaust, thermodynamic recovery
CCKP double fan section with fresh air and THOR thermodynamic recovery

CLIVETPack²
CRH-XHE2 14.2 - 110.4 reversible heat pump
Nominal airflow: 8500 - 60000 m³/h
Cooling capacity: 52 - 392 kW
Configurations:
CAK single fan section for full recirculation
CBK single fan section for recirculation and fresh air
CCK double fan section for recirculation, fresh air, exhaust, thermodynamic recovery
CCKP double fan section with fresh air and THOR thermodynamic recovery

Size
14.2 ÷25.4

Clivet series for high attendance applications

CLIVETPack²
CSNX-XHE2 12.2 - 44.4 reversible heat pump
Nominal airflow: 4000 - 20000 m³/h
Fresh airflow up to 80%
Cooling capacity: 47 - 174 kW
Configurations:
CCK double fan section for recirculation, fresh air, exhaust, thermodynamic recovery
CCKP double fan section with fresh air and THOR thermodynamic recovery

Size
12.4 ÷24.4

Clivet series for full fresh air application

ClivetPACK² FFA
CSRT/N-XHE2 FFA 12.2-24.4 cooling only / reversible heat pump
Nominal airflow: 3000 - 9000 m³/h
Cooling capacity: 33 - 90 kW
Configurations:
CBFFA Configuration for fresh air inlet
CCFFA Configuration for fresh air inlet with outlet

Complete and decentralised systems

The necessary heat or cooling energy is only produced where and when needed, for this they can be independently be installed next to the zone to be conditioned with a considerable system saving.

The packaged design of all of the plant engineering parts are contained inside the unit, already assembled and inspected.

The unit includes plug and play logic. Installation and later maintenance operations are easy and quick.

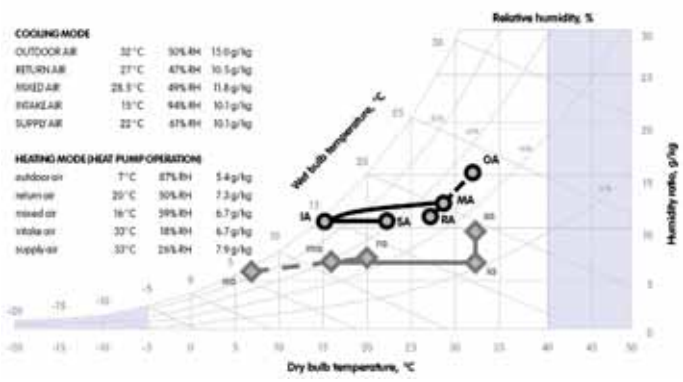
Comfort and air quality in only one product

Temperature and humidity control throughout the year

The unit acts on the overall heat load generated by the outdoor air and by the ambient loads.

The particular reversible heat pump technology is also suitable for applications in cold climates, and can be integrated where necessary of the other heating options like electrical heaters, hot water coil, condensed gas with burner heating module with modulating control.

The unit can also automatically control the relative humidity in the served ambient. In cooling mode the dehumidification function can be completed by a post-heating device with hot gas recovery and on the FREE-COOLING enthalpy control. In heating mode, the steam humidifier or the evaporating heater increases the humidity introduced into the air to maintain the desired value in the ambient.



Treatment example at full load for CLIVETPack model CSNX-XHE2 20.4 in standard airflow. Outdoor airflow equal to 30% of that treated. Heating carried out with a heat pump. Unit complete with 'post-heating with hot gas' and 'vapour humidifier of 15 kg/h' options.

Automatic management of the air renewal

The automatic logic of the air renewal:

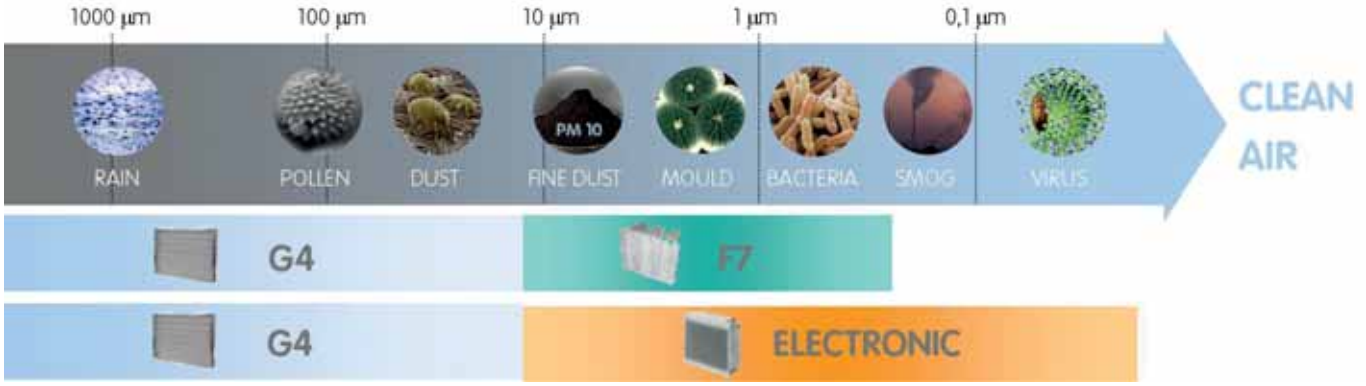
- carries out the transient steady state in all recirculation mode, to reduce its duration and quickly reach comfort conditions;
- once these conditions have been reached, it operates with fixed open damper, based on the users preferred settings;
- carry out the FREE-COOLING as soon as the external conditions allow it;
- in models fitted with air quality control, modulates the outdoor air renewal quantity, therefore guaranteeing the desired air quality with substantial energy and economic savings.

Air filtering

Air filtering is an essential function for ensure proper well-being and hygiene conditions are maintained in the areas served. This is why it is subject to special regulations based on specific applications. The units are fitted as standard with large G4 filters with low pressure drops on the treatment area.

Very high filtration efficiency

As a second stage of filtration, there are F7 high efficiency filters or innovate electronic filters available. The efficiency of the fitted electronic filters is equivalent to the H10 classification used in traditional filters, or rather the class identification such as "absolute filter". They are efficient even on fumes, fine dust, particles PM10, PM2.5, PM1, bacteria, germs and virus.



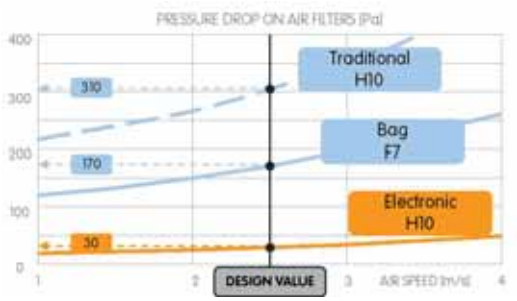
The electronic filters reduce the energy necessary for ventilation

The highest filtration efficiency is obtained with practically no pressure drops.

This depends on the metal pre-filter that is found upstream of the plate and withholds the coarse particles. Moreover, the metal pre-filter homogeneously distributes the air flow and contributes to the containment of the magnetic field generated during operation.

The energy for the ventilation is thus reduced by more than 10%.

The pressure drops remain unchanged with the progressive fouling.



Automatic control of the air quality

When the area is occupied in partial mode, a minor air change is necessary. The air quality probe (which is sensitive to the CO2 tracer) is positioned on the return of the served ambient and automatically determines the opening of the outdoor air damper to give the correct renewal and avoid waste.

Similarly, the probe is also sensitive to VOC (Volatile Organic Compounds) also acts in the presence of tobacco smoke, formaldehyde (for example from solvents, deodorants, glues, paint, detergents), cooked foods.

High energy efficiency within the annual cycle

Increases the building value

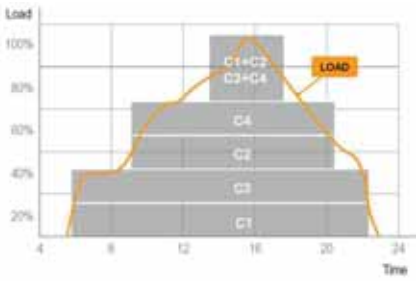
The high efficiency reduces the complex primary energy requirements and the CO2 emissions compared to traditional solutions. It follows the improvement of the energy class of the building and therefore its value on the property market.

It is often possible to access the foreseen benefits to promote the use of the unit at low consumption.

The small consumptions also reduce the environmental impact of the system, further improving the public image on this sensitive issue.

Part load efficiency determines the seasonal efficiency

The system is required to generate maximum capacity only for a short amount of time. Therefore, it is essential to have the maximum efficiency under part-load conditions. This is the only way to actually reduce overall yearly consumptions.



Modular Scroll technology boosts performance at part load

The unit uses high efficiency Scroll compressors. The advantages are:

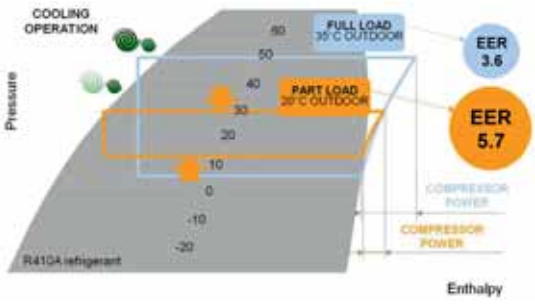
- compressors manufactured in large ranges, with strict quality controls and maximum reliability thanks to the high production volumes;
- the refrigerant circuit uses two compressors, almost always of different sizes in order to obtain more control steps. This way, only the necessary energy is supplied.

THE SEQUENTIAL DEACTIVATION OF THE COMPRESSORS INCREASES EFFICIENCY

Doubled efficiency

The heat exchange surface is sized for full capacity operation. Under part load condition, some compressors are automatically deactivated. Under this condition, in fact, the compressors in operation make use of a much larger surface.

This entails a reduced condensation temperature and an increased evaporation temperature. This way, the compressor capacity consumption is reduced with respect to the yield thereby increasing the overall efficiency of the unit.



Example referred to CSNX-XHE2 33.4 in the all recirculation operation, according to EN 14511

Versatility of reversed blades rotor

This particular type of rotor offers a wider field of operation compared with a traditional forward curved blade fan. When necessary, this can supply high static pressures simply by varying the number of revolutions. The accurate balancing and the self-lubricating bearings ensure its rotating stability over time.

Improves ventilation and reduces consumptions

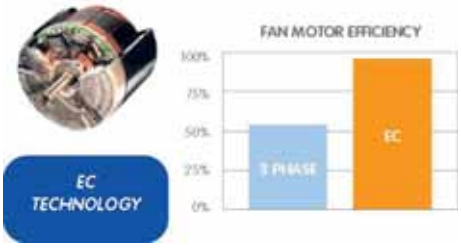
An important expense entry in the systems management costs is represented by the energy consumption for ventilation, then the research for the correct operating conditions on the systems that forces them to carry out long and costly operations.

The ventilation technology makes it possible to cut back on both of these operational costs: it runs on fans that are coupled directly to electronic control brushless motors, and the control logic offers additional savings.

The efficiency of the electronic controlled motor

The external rotor electric motor is driven by the continuous magnetic switching of the stator. The advantages are:

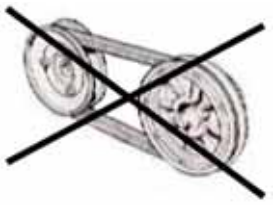
- the lack of brushes and the particular power supply increase efficiency by 70%;
- even the life cycle increases, thanks to the elimination of the brushes' natural abrasive erosion effects;
- the electronic control allows a progressive start-up also with a "soft start" solution, which drastically reduces the starting current of the fan and limits even more the system's electrical commitment.



Advantages of direct coupling (plug fan)

The motor's rotation is transmitted directly to the rotor, without the use of transmissions (belts and pulleys):

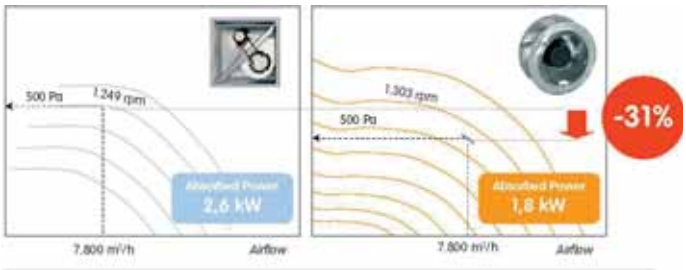
- the transmissions' inefficiencies are eliminated;
- the transmissions' wear and maintenance is eliminated.



Efficiency of the ventilation system increases by 30%

The comprehensive ventilation system, made up of rotor and motor, is therefore very versatile and efficient.

Consumption is 30% lower than a ventilation system of the same capacity used by traditional units available on the market.



Electrical power absorbed by electric motor, data constructor - Example, referred to flow of 7.800 m3/h with 500 Pa external static pressure.

Applications with textile channels

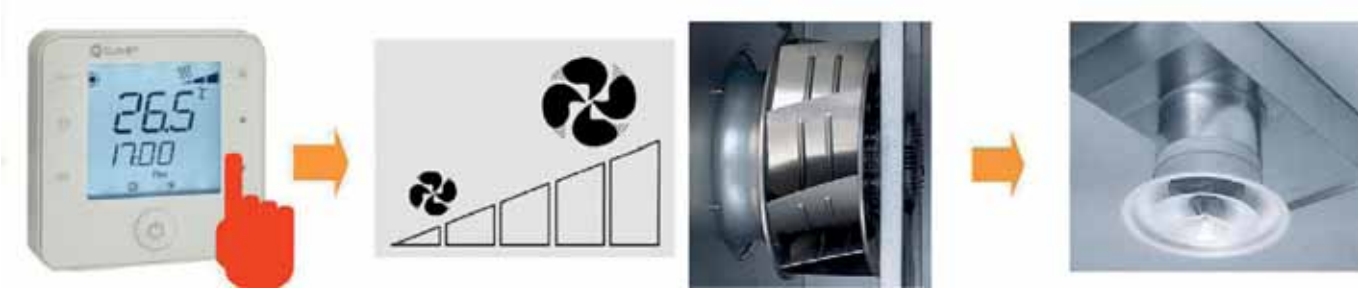
The fans with electronic control allow choosing the preferred ramp for fan start-up.

The units are therefore suitable for majority of the applications with textile channels for the air distribution.

This versatility remains valid in each management mode of the flow (standard, ECO, Variable flow).

The right air flow for every type of system

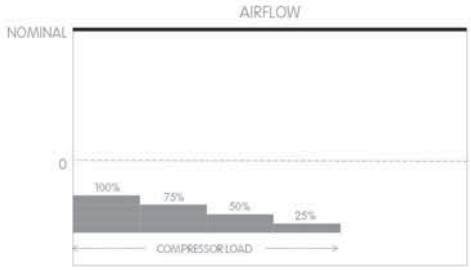
By controlling the fan speed, the airflow can be varied and the static pressure capacity can be adapted to the system pressure drop, making the unit start-up particularly simple. The adjustment or modification of the transmission is no longer required as the ventilation system will adapt itself to the system. The possibility to modify the fan start-up ramp makes this unit suitable for most applications with textile air distribution ducting.



Automatic management of the air flow

Standard mode

The air flow supply remains constant in all heat load conditions and operation modes.



ECO mode

The air flow supply remains constant at varied heat loads and is shutdown when the load is fulfilled (dead zone).

To further increase the energy savings in this condition, it is also possible to set less demanding operation setpoints for the unit in respect to the standard mode.

This function is indicated for the thermal maintenance of the served area in case it is temporarily not used, which can for example occur at night.

The ECO mode can be activated:

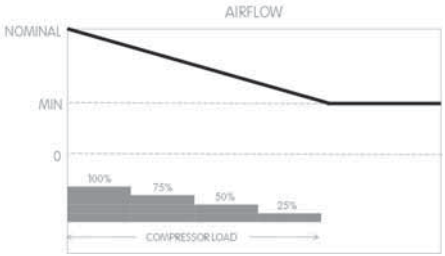
- manually;
- automatically by means of the Clivet supervision System.

Variable airflow

The air flow supply varies depending on the heat load, up to a minimum value compatible with the distribution system and the chosen air diffusion.

The ventilation remains active even when the load is fulfilled (dead zone).

This option allows a further energy savings

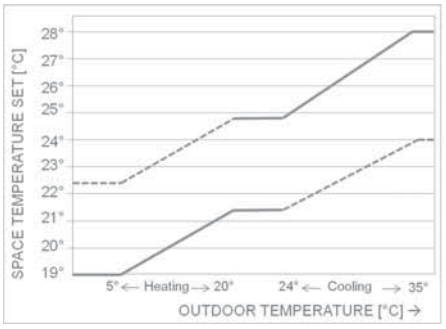


- The movement of the air is always active during the operation of the rooftop unit.
- It determines an annual energy consumption comparable or even greater than the compressors.
- The reduction of 20% of the flow generates a saving of 50% on energy absorbed by the ventilators.
- With a reduction of the flow equal to 40%, the saving for ventilation exceeds 70%.
- The variable airflow can therefore lead to a saving of 30% on an overall electrical consumption of the unit.

Set-point automatic compensation

With this function as standard, the temperature set-point can automatically vary in view of the outdoor temperature and of the User settings:

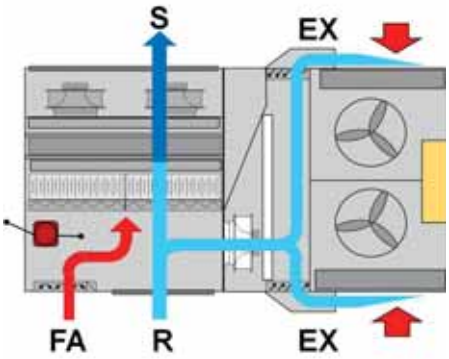
- further increases the energy saving;
- reduces the temperature difference between the outside and the served area, increasing the user comfort.



Ambient pressure control

The ambient pressure control device compares the return pressure with the external pressure and compensates any variations by acting on the outdoor air damper.

This way, the unit maintains the relevant ambient pressure desired by the user, who can choose between the overpressure, depression or equal-pressure.



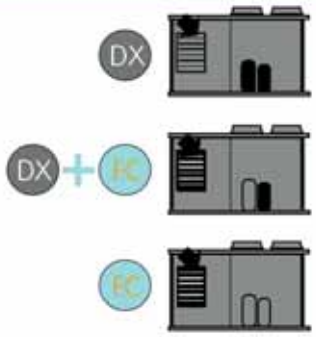
The room pressure control device is fitted as standard in the units with extraction and exhaust (Clivet reference code CCK and CCKP)

FREE-COOLING

As soon as the external conditions allow it, the unit is capable of automatically activating the FREE-COOLING mode, which, keeping the compressors off and drawing in suitably filtered outdoor air allows to cool the served room. This operating mode is especially useful in spring and autumn or in case of high ambient loads. It allows substantial reduction of the unit energy consumption and compressors.

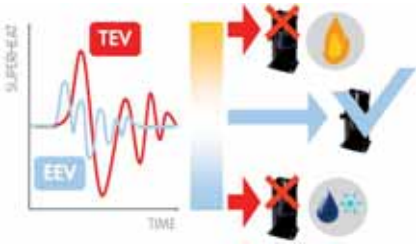
To obtain the maximum energy saving, the FREE-COOLING model is activated even when it is not sufficient to supply all the cqapacity requested. In this case the integration cooling capacity is supplied from cooling by means of compressors.

At reduced load, or even with rigid outdoor air temperatures, the cooling capacity in FREE-COOLING mode is controlled by means of a modulation of the outdoor air damper.



Stable and reliable operation

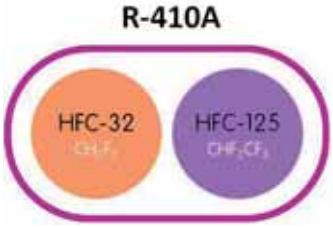
The electronic expansion valve (EEV) adapts rapidly and precisely to the actual load required for usage, allowing stable and reliable adjustment in comparison with mechanical thermostatic valves (TEV). This results also in a further increase in efficiency and longer compressor life. Through control of overheating, it also prevents hazardous phenomena for the compressors, such as overtemperature and return of fluids, thereby further increasing efficiency and durability.



High efficient refrigerant

R410A is the mix of two refrigerants used in equal parts: R32 that supplies the heating capacity and R125 that controls the flammability. It is a chlorine free refrigerant (HFC) with numerous advantages:

- ODP (Ozone Depletion Potential) = 0;
- high volumetric effect thanks to the high coefficient global thermal exchange and to the pressure variation (glide) which is almost nil during the evaporation phase;
- elevated density and efficiency, with greater compactness of the refrigeration circuit and therefore the responsible use of materials and small refrigerant quantity, for a reduced environmental impact.



Energy recovery on the exhaust air

The air renewal in buildings is indispensable for checking the air quality and comfort. The movement and the treatment of the outdoor air generate added costs in the realisation of the system and energy consumption in its service life. For this reason the energy recovery devices on ejected air are widely used. Local standards and provisions regulate the application.

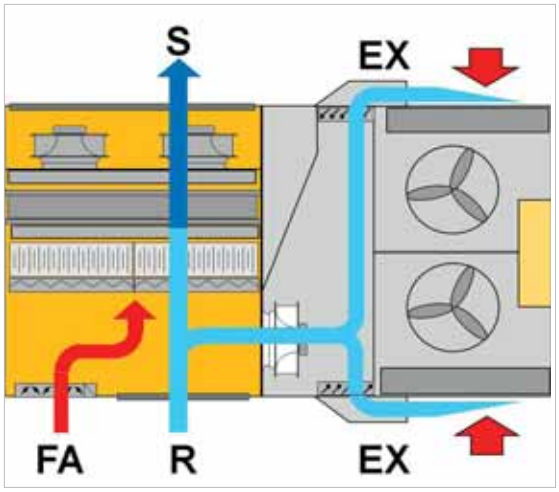
Rooftop in CCK and CCKP configuration are equipped with the energy recovery on the exhaust air

CCK - Thermodynamic energy recovery

Thermodynamic recovery is also included in the CCK configuration and uses the technology of refrigeration circuit with direct expansion.

The unit is equipped with an electronically controlled exhaust fan section that automatically controls the amount of air to reject.

The exhaust air flow is, in fact, directed onto the external finned coil exchanger which is accordingly thermally favoured in its operation cycle. The recovered energy is transferred by the handling exchanger and therefore transferred directly to the supply air.



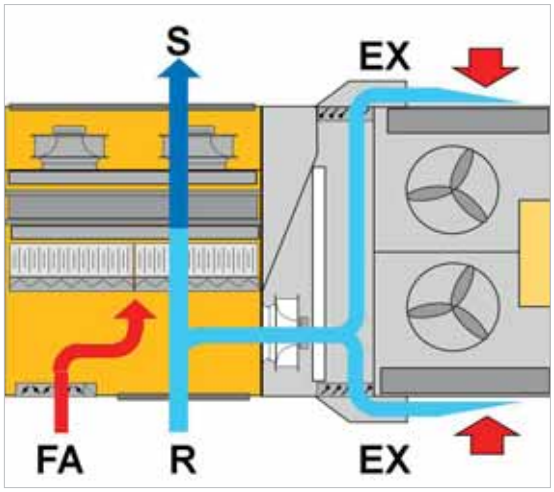
CCKP - THOR thermodynamic energy recovery (THermodynamic Overboost Recovery)

The innovative THOR recovery (THermodynamic Overboost Recovery) is always included in the CCKP configuration and uses direct expansion refrigeration circuit technology.

The unit is equipped with an electronically controlled exhaust fan section that automatically adjusts the amount of air to reject. The exhaust air flow is directed by the exchanger dedicated to recovery, which is an integral part of the refrigeration circuit. The amount of recovered energy is easily measurable like the static heat recovery.

Winter and summer energy recovery provides a dual positive effect: it increases the capacity and offers a significant energy savings.

The main benefits of the energy recovery:



- it increases the total unit efficiency;
- it eliminates the greater part of electrical power consumption for the ventilation of passive recovery devices, which also significantly reduce the effective amount of recovered energy;
- in terms of heat pump operation, it reduces the formation of ice on the exchanger and therefore the number of defrost cycles. Thereby increasing operation continuity and overall system efficiency;
- it is also effective for cooling operations, especially in continental and temperate climates where passive recovery device output is essentially negligible due to a low outdoor and indoor temperature difference and enthalpy;
- it keeps the unit compact and simplifies its positioning.

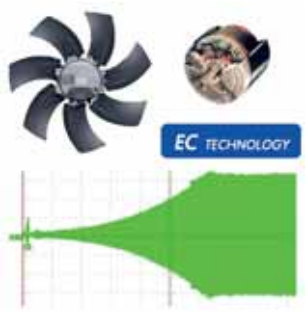
Energy considerations

The physical principle of thermodynamic energy recovery differs from the principle that manages passive recuperators. Therefore, efficiency indicators differ as well:

- the performance of passive recovery devices, which are air-air heat exchangers, are measured by the heat exchange efficiency. These values must be combined with the performance of the refrigeration circuit to obtain the overall performance of the unit;
- the performance of the heat pumps is measured with the coefficient of performance (COP). The contribution of the thermodynamic energy recovery is in this case already included in the overall performance of the unit that can thus be inserted in the calculations of the different procedures of energy certification, both compulsory and voluntary;
- THOR energy recovery is based on the heat pump technology, making it possible to determine the recovered heating capacity on the dedicated exchanger, and therefore an efficiency value. It can accordingly be included in the calculations required by the various compulsory and voluntary energy certification procedures.

Electronic control ECOBREEZE technology

With ECOBREEZE, the electric motor with an external rotor is driven by the continuous magnetic switching of the stator, deriving from the integrated electronic control.



The advantages are:

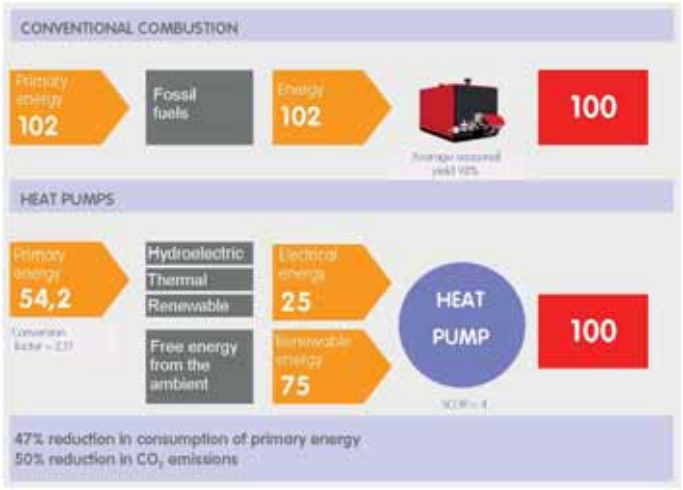
- 70% increase in efficiency thanks to the brushless technology and the special electricity supply;
- increase in the working life, thanks to the elimination of the brush wear;
- reduction in the electrical consumption by the system, thanks to a drastic reduction of the inrush current for the fans obtained using the integrated 'Soft starter' function.

Renewable energy heat pump technology

The electric Heat pump technology promotes and provides incentives by the European Union with specific standards, such as the EU Directive 2009/28/CE of April 23rd 2009 that recognises ambient heat as a renewable source.

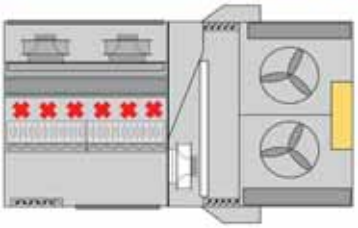
Compared to a combustion system, the electric heat Pump allows:

- energy saving and reduction of the CO2 emissions by an average of 50%;
- use of electric energy, increasingly produced through alternative and renewable sources;
- operation and reduced maintenance reliability;
- no fossil combustion and therefore absence of chimney, absence of periodical controls on the emissions in the ambient and no local production of fine dust;
- cost reduction of first investment with the reversible models that use a single system for both heating and cooling.

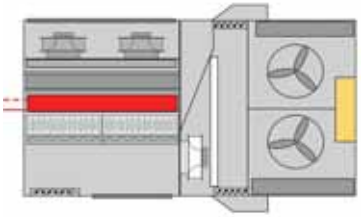


High efficiency heating solutions

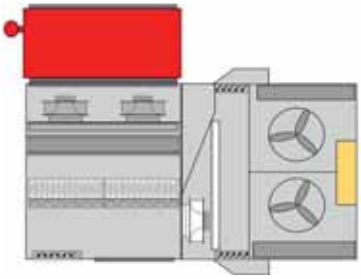
The reversible heat pump model is able to also operate with particularly rigid external temperatures. In many locations this condition is determined only for short periods during the effective use of the system. The use of the electric resistance (I) allows to maintain the advantages of the single block solution, in terms of design simplicity and system rational. The electric resistances can in fact intervene automatically like any thermal integration, or with the outdoor air pre-heating operation, before heating from the heat pump.



Alternately, the hot water coil (II) option extends the operating field of the unit to even colder climates. When necessary, it can also heat-up the external air before the treatment or integrate the capacity delivery from the heat pump. It can also fully substitute it in automatic mode, below an outside temperature value chosen by the user. For example, after having estimated the different supply costs of the energy sources in the individual application situations. In the event the heat pump is damaged, the hot water coil is automatically activated in emergency mode.



Another available solution is the heating module with combustion burner (III). It is the solution frequently used in very cold climates. As the hot water coil performs the task of heat integration needed in the operation range of the heat pump, it can automatically become the only heat source with an outdoor temperature below the value chosen by the user and is automatically activated in emergency mode. Unlike systems powered by a thermal power station it does not require the distribution of hot water outside of the building: this simplifies the system, eliminates pumping consumption and avoids the use of devices and controls against the risk of freezing.



In very cold climates it is also necessary to foresee the 'Application for low outdoor temperature" option. The operation fields of the different heating options are shown separately.

Criteria to determine the size of the combustion heat generator

The heating capacity that needs to be installed is determined based on the conditions the unit will work under, such as the outdoor air temperature, internal loads and energy losses of the building.

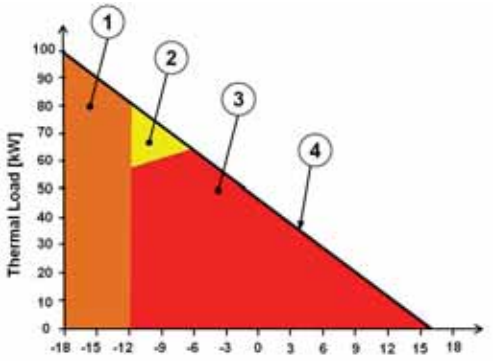
The size of the heat generator is based on one of the modes below:

- hybrid, as an integration for the heat pump to maintain the heating capacity supplied as the outdoor temperature drops;
- bivalent, to fully replace the heat pump when the outdoor temperature drops below the operating limits or the latter is not available.

In hybrid mode, the heating capacity required is met by the heat pump and the additional resource, whose capacity may be smaller than the capacity provided by the heat pump.

In bivalent mode, as well as serving as an additional resource, the thermal resource must fully replace the heat pump. Therefore, the chosen heating capacity must be higher or identical to the one provided by the heat pump.

The unit control manages the operation of the thermal resource by giving priority to the heat pump, which also carries out the exhaust air thermodynamic recovery whenever required (configuration with exhaust air energy recovery).



The load that needs to be met increases as the outdoor temperature drops.
Ex: CSNX-XHE2 20.4 CCK configuration.
Condensing gas module with modulating control 65kW (Hybrid function)
Condensing gas module with modulating control 100kW (bivalent function)

1. Bivalent function
2. Hybrid function
3. Heat pump
4. Thermal load line

Winter thermodynamic energy recovery for unit with hot water coil or gas module

The refrigerating circuit of this unit is of reversible type. Carries out the thermodynamic energy recovery, automatically activating only one compressor that, thanks to the high exchange surface available, operates with highly efficient energy. In respect to the passive recuperators:

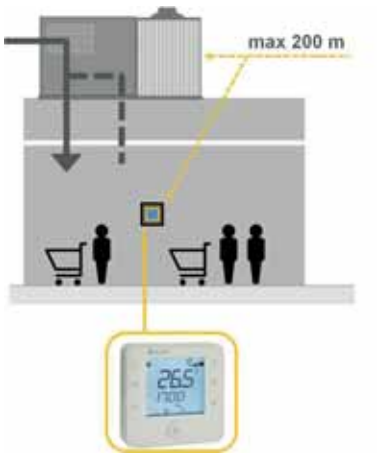
- delivers a notably superior thermal and stable capacity in time. This reduces the capacity requested from the hot water coil or gas module;
- eliminates most of the consumption for ventilation caused by the high pressure drops of the passive exchangers. Therefore, further increases the overall efficiency.

Operating completely automatic

The microprocessor control automatically manages operation according to the maximum efficiency criterion and includes many safety and alarm management functions.

It also includes advanced functions, such as daily and weekly programming.

Simple and intuitive user interface



An innovative graphic interface prepared for wall-installation (with 230V power supply and wiring at the customer's care) is supplied as standard, with the option to be removed from the support and connected on-board for maintenance operations.

Among the main functions it allows to:

- the temperature and humidity measurement is made by probes into the unit;
- daily/weekly start-up or power-off programming of the unit;
- operating mode (heat or cool) and/or set-point manual change ;
- alarm and unit stata display;
- operating paramenter management.

Remote system management

The unit can be remotely managed by:

- remote control user interface, supplied standard;
- Clivet Master System, device to manage a group made of max 8 units;
- potential-free contacts supplied as standard, to remotely control the main functions and to display alarms and operating stata;
- different communication protocols to exchange information with the main supervision systems by serial line.

Heat exchangers protected against the formation of ice

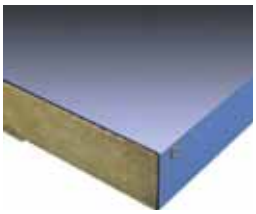
The particular technology of the heat pump developed by Clivet guarantees its continued and reliable operation.

The ICE PROTECTION SYSTEM device prevents icing on the base of the external exchanger during winter operation, thanks to a special subcooling circuit. This prevents damages caused by freezing.

Smart management of defrosts

The automatic defrost cycles on the remaining external exchanger surface are managed in predictive mode, reducing both the frequency and the duration. The built-in electronics analyses not only the external conditions, but also the evaporation pressure variation in the exchanger.

Composite panels with sandwich structure



The "sandwich" type panelling is lighter and sturdy. They reduce the thermal dispersions and therefore the energetic consumptions.

They are composed of a double steel wall that contains the insulating material, made of injected polyurethane. They are equipped with seal gasket for the whole length of the perimeter.

Easy access for maintenance

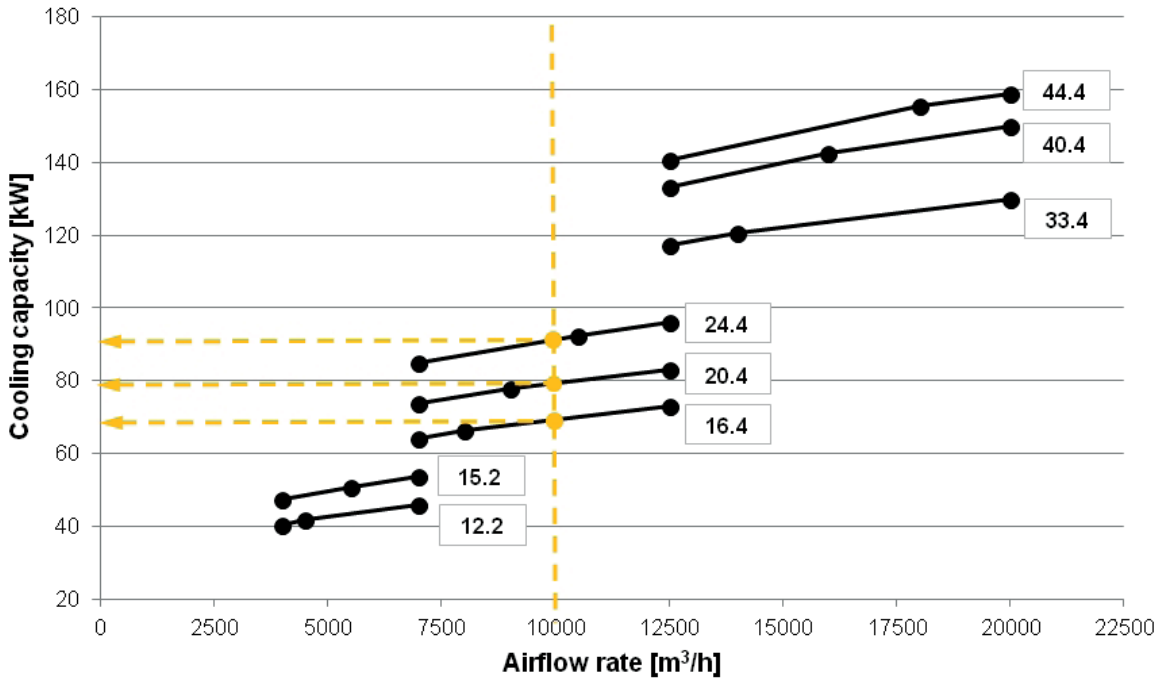
The internal components are positioned based on type, in an homogeneous area with easy and safe access, thanks to the hinges that support the larger sized doors to their adjustable hinges and to the device that blocks the access panel to the electrical control board in open position and helps protect the maintenance operator from the rain.

How choosing the unit

The selection of the most appropriate size for an installation can be performed starting from the supply airflow value, established this value it is possible to choose among different available thermo-refrigerant treatments.

It is well-known that buildings built with modern technologies, that improve efficiency, have different needs than the previous buildings. In this case, the designer has to design systems with different potentialities.

Example: with airflow at 10000 m3/h, 3 possible cooling capacities are highlighted to do a different treatment, allowing to the designer to have a wide choice.



With same airflow is available a different thermo-refrigerant treatment depending on the selected size.

Unit configuration

CSNX-XHE2 33.4 CCK (1) M0 (2) R3 (3) SERMD (4) CHW2 (5) PCOSM (6) CREFO (7)

1. Configuration
CCK - Return with fan and mixing chamber
CCKP - Return with fan and chamber with THOR thermodynamic recovery

2. Air supply
M0 - Horizontal air supply
M3 - Downward air supply
M5 - Upflow air supply

3. Air return
R0 - Horizontal air return
R3 - Downward air return

4. Outdoor air damper
- Standard
SERMD - Modulating motorized fresh air shutter

5. Auxiliary heating
- Standard
EH - Electric elements
CHW2 - 2row hot water coil
GC - Gas heating module

6. Airflow
- Standard
PCOSM - Supply constant airflow
PVAR - Variable airflow

7. External section fan
CREFO - Device for fan consumption reduction of the external section, on/off type
CREFB - Device for fan consumption reduction of the external section, ECOBREEZE type

Clivet rooftop are Eurovent certified products

Clivet is associated to the Eurovent Certification Programme, a recognized European authority that tests and certifies the performance of the air-conditioning systems.

An additional guarantee for the Customer, the Eurovent tests in fact confirm the product performance and allow for a thorough analysis of the management costs: "Total Life Cycle Cost".

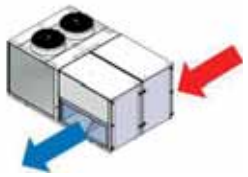
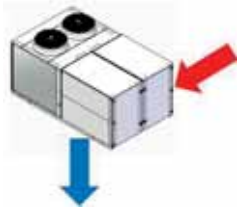
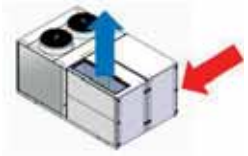
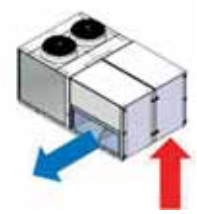
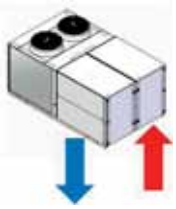
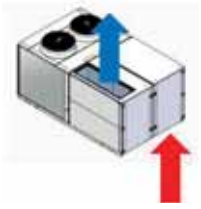
Eurovent tests are made in certified test Laboratories and follow the European Standards for each type of product. For the rooftop performance are applied the following regulations:

http://www.eurovent-certification.com/

EN 14511: "Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling".

EN 12102: "Air conditioners, liquid chilling packages, heat pumps and dehumidifiers with electrically driven compressors for space heating and cooling - Measurement of airbone noise - Determination of the sound power level".

Supply and return configurations

Functionalities			
Air supply and return	**M0 - R0**	**M3 - R0**	**M5 - R0**
	Standard unit	Option	Option
			
	M0 - R3	**M3 - R3**	**M5-R3**
	Option	Option	Option
			

Filtration	G4	G4+F7	G4+FES H10

Auxiliary heating	Heat pump and electric heaters option	Heat pump and hot water coil option	Heat pump and gas heating module option

Accessories separately supplied			
GC - Gas heating module	**CLMX** - Clivet Master System	**AMRX** - Rubber antivibration mounts	**RCX** - Roof curb

Standard unit technical features - Configuration with double fan section for recirculation, fresh air, exhaust, thermodynamic recovery (CCK)

Compressor

Hermetic orbiting scroll compressor complete with motor over-temperature and over-current devices and protection against excessive gas discharge temperature. Fitted on rubber antivibration mounts and complete with oil charge. The oil heater is automatically activated to prevent the oil from being diluted by the refrigerant when the compressor stops. The compressors are connected in TANDEM on a single refrigeration circuit and have a biphasic oil equalisation.

Structure

The support base is assembled with a painted galvanized steel frame. The internal structure is made of zinc - magnesium bent galvanized steel. The alloy Zn - Mg allows an excellent corrosion proofing thanks to the galvanic protection typical of the combination zinc - magnesium.

Panelling

Sandwich panels in the air treatment section with dual walls in steel sheet metal with polyurethane insulation (40 kg/m3), thickness of outer sheet metal 6/10 mm galvanized and painted using polyester powders colour RAL 9001, polyurethane thickness 30 mm with thermal conductivity coefficient 0.022W/mK, thickness of internal sheet metal 5/10 mm hot galvanized. The access door panels for the routine maintenance are provided with a PVC profile for thermal insulation and a EPDM rubber gasket that ensures the hermetic seal.

All panelling can easily be removed to allow complete accessibility to internal components.

Internal exchanger

Direct expansion finned coil exchanger made with copper pipes placed on staggered rows mechanically expanded to better adhere to the fin collar. The fins are made from aluminium with a corrugated surface and adequately distanced to ensure the maximum heat exchange efficiency.

External exchanger

Direct expansion finned coil exchanger made with copper pipes placed on staggered rows mechanically expanded to better adhere to the fin collar. The fins are made from aluminium with a corrugated surface and adequately distanced to ensure the maximum heat exchange efficiency.

A correct power supply to the expansion valve is ensured by the subcooling circuit; this circuit also prevents the formation of ice at the base of the heat exchanger during winter operation.

Fan

Internal section

Plug fans without scroll with reverse blades driven by electronically-controlled "brushless" dc motors with direct coupling. No transmission sizing is needed. The motor is in compliance with ErP 2015according to Regulation UE 640/2009. Class IE4.

Exhaust fan

Plug fans without scroll with reverse blades driven by electronically-controlled "brushless" DC motors with direct coupling. No drive sizing is required. The motor is in compliance with ErP 2015according to Regulation UE 640/2009. Class IE4.

External section

Helical fans with die-cast aluminium blades, directly coupled to a three-phase electric motor with external rotor, with built-in thermal overload protection, IP 54 index of protection. Housed inside an aerodinamically shaped nozzles to increase efficiency and minimise noise levels; fitted with safety grills. The motor is in compliance with ErP 2015according to Regulation UE 640/2009.

Thermodynamic recovery on the exhaust air

The energy content of the exhaust air is recovered by the external exchanger, through a dedicated fan section. The favourable air temperature on the source side increases unit capacity.

Refrigeration circuit

Refrigeration circuit with:

- refrigerant charge;
- liquid flow and moisture indicator;
- safety high pressure switch;
- filter dryer;
- electronic expansion valve;
- non-return valve;
- 4-way reverse cycle valve;
- liquid receiver;
- liquid separator;
- high pressure safety valve;
- low pressure safety valve.

Filtration

Outdoor air inlet side and environment return side

Pleated filter for greater filtering surface, made of a galvanized sheet frame with a galvanized and electric-welded protective mesh, and regenerable filtering media made from polyester fibre sized with synthetic resins. G4 efficiency according to CEN-EN 779 standard (Eurovent classification EU4/5 - separation average 90.1% ASHRAE 52-76 Atm). Self-extinguishing type (flame resistant class 1 - DIN 53438).

Drain pan

Internal section

Inox steel AISI 304 condensate collection tray with anti-condensate insulation, welded, fitted with sleeve for the drain pipe.

Electrical panel

The electrical panel is situated inside the units and is accessed through a hinged door that is opened by a special key. The capacity section includes:

- main door lock isolator switch;
- compressor circuit breaker;

- compressor power supply remote control switch;
- fan motor thermal protections of internal and external section;
- circuit breaker to protect auxiliary circuit.

The microprocessor control section includes:
- compressor overload protection and timer;
- potential-free contacts for remote ON-OFF, cumulative alarm, fire alarm inlet, fan status, compressor status, summer/winter mode.

Remote control with user interface:
- intuitive graphical interface retro lighted;
- daily/weekly start-up or power-off programming of the unit;
- manual selection of the Comfort or ECO (energy saving) or Ventilation-only mode;
- modification of the temperature and humidity set point;
- unit On/Off and overload reset;
- heating/cooling operating mode manual change;
- display of operating stata;
- display of alarms and failure code
- display and modification of the operating parameters.

Accessories

- Downward air supply
- Downward air return
- Upflow air supply
- Two-rows hot water coil
- Modulating 3-way valve
- Modulating 2-way valve
- Electric heaters
- Gas heating module
- Hot gas re-heating coil
- Immersed electrode humidifier
- Water to waste evaporating wet-deck humidifier
- Humidity and temperature control with built-in probes
- Humidity and temperature control with remote thermostat
- Air quality probe for CO2 rate check
- Air quality sensor for CO2 and VOC rate check
- Modulating motorized outdoor air damper
- Enthalpy FREE-COOLING
- High static pressure fans
- High efficiency F7 air filter
- Electronic filters
- Differential pressure switch for dirty air filters
- Serial communication module to Modbus supervisor
- Serial communication module to LonWorks supervisor
- Serial communication module for BACnet-IP supervisor
- Phase monitor
- Power factor correction capacitors (cosfi > 0.95)
- Progressive compressor start-up Soft starter
- Variable airflow
- Application in spaces with forced air exhaust at variable flow and exhaust section
- Device for consumption reduction of the external section ECOBREEZE fans
- High and low pressure gauges
- Smoke detector
- Demand Limit
- Application for low outdoor temperature
- Rubber antivibration mounts (accessory separately supplied)
- Rubber antivibration mounts for unit and gas module (accessory separately supplied)
- Clivet Master System (accessory separately supplied)
- Sandwich panels of the handling zone in M0 fire reaction class
- Set up for shipping via container
- Roof curb

All the handling coils can be covered with aluminium - Fin Guard - copper/copper.

Test

Unit manufactured to ISO 9001 standard and commissioned upon production completion.

Configuration with double fan section for recirculation, fresh air, exhaust, THOR thermodynamic recovery (CCKP)

Technical features like the CCK configuration with recirculation, renewal, exhaust air and thermodynamic recovery, modulating motorized outdoor air damper for renewal and e FREE-COOLING and moreover:

- **Exchanger for thermodynamic recovery - THOR**

  The energy content of the exhaust air is recovered by a dedicated exchanger, as integral part of the refrigeration circuit. It is a direct expansion finned coil exchanger made with copper pipes placed on staggered rows mechanically expanded to better adhere to the fin collar. The fins are made from aluminium with a corrugated surface and adequately distanced to ensure the maximum heat exchange efficiency.

STANDARD AIRFLOW

General technical data

Size				12.2	15.2	16.4	20.4	24.4	33.4	40.4	44.4
Cooling											
Cooling capacity	CCK	1	kW	41,8	51,9	66,3	77,9	95,4	120,3	142,5	155,7
Sensible capacity		1	kW	25,8	34,5	45,4	50,2	62,7	82,4	98,4	108,5
Compressor power input		1	kW	9,2	12,2	15,5	19,3	22,5	27,4	34,2	38,1
EER		1	kW	4,55	4,25	4,29	4,03	4,23	4,40	4,17	4,09
SEER		8		3,50	3,31	4,29	4,30	4,21	3,97	4,37	4,47
ηsc		8	%	137,0	129,4	168,7	168,9	165,2	155,8	172,0	175,7
Cooling capacity	CCKP	1	kW	47,3	59,5	75,4	87,6	106,7	134,4	158,3	173,9
Sensible capacity		1	kW	29,3	39,2	51,4	57,2	71,2	92,7	110,4	119,8
Compressor power input		1	kW	9,2	12,3	15,5	19,4	22,8	28,0	35,2	39,5
EER		1	kW	5,15	4,84	4,86	4,52	4,68	4,80	4,50	4,40
Heating											
Heating capacity	CCK	1	kW	42,1	52,2	68,1	77,5	95,9	117,3	146,6	164,7
Compressor power input		1	kW	8,5	11,1	13,5	14,9	17,0	20,6	25,3	30,0
COP		1	kW	4,98	4,70	5,05	5,21	5,66	5,69	5,79	5,50
SCOP		8		2,95	2,95	3,20	3,27	3,50	3,73	3,84	3,79
ηsh		8	%	115	115	125	128	137	146	151	149
Heating capacity	CCKP	1	kW	44,5	54,6	71,5	81,1	99,2	121,1	149,5	165,7
Compressor power input		1	kW	8,6	11,1	13,7	15,0	17,0	20,6	25,3	29,4
COP		1	kW	5,20	4,92	5,22	5,41	5,84	5,88	5,91	5,64
THOR recovery efficiency		2	%	83	81	84	83	81	85	82	81
Compressor											
Type of compressors		3		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
No. of compressors			Nr	2	2	4	4	4	4	4	4
Std Capacity control steps			Nr	2	3	4	4	4	4	4	4
Refrigerant charge (C1)		4	kg	14,0	13,0	17,5	14,0	19,0	25,5	31,0	31,0
Refrigerant charge (C2)		4	kg	14,0	14,5	17,5	14,0	19,0	31,0	31,0	31,0
Refrigeration circuits			Nr	2	2	2	2	2	2	2	2
Air Handling Section Fans (Supply)											
Type of supply fan		5		RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD
No. of supply fans			Nr	1	1	1	1	1	2	2	2
Fan diameter			mm	500	500	630	630	630	630	630	630
Supply airflow			l/s	1250	1806	2222	2500	3333	3889	4444	5000
Supply airflow			m^3/h	4500	6500	8000	9000	12000	14000	16000	18000
Installed unit power			kW	1,32	1,32	2,75	2,75	2,75	2,75	2,75	2,75
Max. static pressure supply fan		6	Pa	830	645	585	515	300	610	565	515
High static pressure air handling section fans (OPTIONAL)											
Type of supply fan				RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD
Number of supply fans			Nr	1	1	1	1	1	2	2	2
Fan diameter			mm	500	500	500	500	500	500	500	500
Supply airflow			l/s	1250	1806	2222	2500	3333	3889	4444	5000
Supply airflow			m^3/h	4500	5500	8000	9000	12000	14000	16000	18000
Installed unit power			kW	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Max. static pressure supply fan			Pa	1020	1020	1020	1020	660	1020	1020	1020
Fans (Exhaust)											
Type of fans		5		RAD	RAD	RAD	RAD	RAD	RAD	RAD	RAD
No. of fans				1	1	1	1	1	2	2	2
Fan diameter			mm	400	400	500	500	500	500	500	500
Installed unit power			kW	1,32	1,32	2,68	2,68	2,68	2,68	2,68	2,68
External Section Fans											
Type of fans		7		AX	AX	AX	AX	AX	AX	AX	AX
No. of fans			Nr	2	2	2	2	2	2	2	2
Fan diameter			mm	630	630	800	800	800	800	800	800
Standard airflow			l/s	6944	6944	11389	11389	11389	11389	11389	11389
Single power input			kW	1,05	1,05	1,5	1,5	1,5	1,5	1,5	1,5

Size				12.2	15.2	16.4	20.4	24.4	33.4	40.4	44.4
Connections											
Condensate drain			mm	20	20	20	20	20	20	20	20
Power supply											
Standard power supply			V	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Directive ErP (Energy Related Product)											
SEER - AVERAGE Climate	8			3,40	3,18	4,04	4,13	4,05	3,64	4,04	4,03
SCOP - AVERAGE Climate	8			2,95	2,95	2,97	3,13	3,31	3,48	3,62	3,53

The Product is compliant with the Erp (Energy Related Products) European Directive. It includes the Commission delegated Regulation (EU) No 2016/2281, also known as Ecodesign Lot21.
'Contains fluorinated greenhouse gases'(GWP 2087,5)
CCK = Return with fan and mixing chamber
CCKP = Return with fan and chamber with THOR thermodynamic recovery
Performances in cooling: Indoor air temp. 27°C/19°C W.B. Entering external exchanger air temperature 35°C D.B./24°C W.B. EER referred only to compressors
Performance in Heating: Indoor air temp. 20°C D.B./12°C W.B. entering air to the external exchanger 7°C/6°C W.B. COP referred only to compressors

1. Performance with 80% of outdoor air including the energy recovery on the exhaust air
2. Energy recovery efficiency determinated on the exhaust air. Indoor temperature 20°C D.B./12°C W.B., outdoor temperature 7°C D.B./6°C W.B.
3. SCROLL = Scroll compressor
4. Indicative values for standard units with possible +/-10% variation. The actual data are indicated on the label of the unit
5. RAD = Radial fan electronically controlled
6. Net outside static pressure to win the outlet and intake onboard pressure drops
7. AX = Axial fan
8. Data calculated in accordance with EN 14825: 2018

Sound levels

Size	Sound power level (dB)								Sound power level	Sound pressure level
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
12.2	76	79	76	77	77	76	74	73	83	65
15.2	76	79	78	80	80	78	75	79	85	66
16.4	92	82	80	81	79	77	74	75	84	67
20.4	92	83	81	82	80	78	75	73	85	68
24.4	92	84	82	84	82	79	76	76	87	69
33.4	92	89	90	86	84	82	74	71	89	70
40.4	93	90	91	86	84	82	75	72	90	71
44.4	94	91	92	88	85	82	77	73	91	72

The sound levels are referred to unit operating at full load in nominal conditions. The sound pressure level is referred at a distance of 1 m. from the ducted unit surface operating in free field conditions. External static pressure 50 Pa. (standard UNI EN ISO 9614-2)
Please note that when the unit is installed in conditions different from nominal test conditions (e.g. near walls or obstacles in general), the sound levels may undergo substantial variations.

Electrical data

Configuration: return with fan and mixing chamber

Size				12.2	15.2	16.4	20.4	24.4	33.4	40.4	44.4
F.L.A. - Full load current at max admissible conditions											
F.L.A. - Compressor 1			[A]	12,1	13,6	10,1	10,1	14,3	14,6	15,4	15,4
F.L.A. - Compressor 2			[A]	-	-	10,4	14,3	14,3	14,6	23	30,9
F.L.A. - Compressor 3			[A]	12,1	17,5	10,1	10,1	14,3	15,4	15,4	15,4
F.L.A. - Compressor 4			[A]	-	-	10,4	14,3	14,3	23	30,9	30,9
F.L.A. - Single External Fan			[A]	2,5	2,5	3,9	3,9	3,9	3,9	3,9	3,9
F.L.A. - Single supply fan			[A]	4	4	4,2	4,2	4,2	4,2	4,2	4,2
F.L.A. - Single exhaust fan			[A]	2,1	2,1	4	4	4	4	4	4
F.L.A. - Total	1		[A]	35,7	42,6	57,4	65,2	72,9	92,3	109,2	117,1
L.R.A. - Locked rotor amperes											
L.R.A. - Compressor 1			[A]	75	101	64	64	101	101	95	95
L.R.A. - Compressor 2			[A]	-	-	64	101	101	101	118	174
L.R.A. - Compressor 3			[A]	75	111	64	64	101	95	95	95
L.R.A. - Compressor 4			[A]	-	-	64	101	101	118	174	174

Data refer to standard units. Power supply: 400/3/50 Hz. Voltage variation: max. +/-10% Voltage unbalance between phases: max 2 %
Values not including accessories.

1. Values not including the accessories. To obtain the value of F.L.A. including accessories, add to the total F.L.A. value that of any accessories (see electrical data of accessories)
2. Values not including the accessories. To obtain the value of F.L.I. including accessories, add to the total F.L.I. value that of any accessories (see electrical data of accessories)

F.L.I. - Full load power input at max admissible conditions										
F.L.I. - Compressor 1		[kW]	7,3	8,3	6,1	6,1	8,3	8,6	9,1	9,1
F.L.I. - Compressor 2		[kW]	-	-	6,1	8,3	8,3	8,6	13,5	17,2
F.L.I. - Compressor 3		[kW]	7,3	10,2	6,1	6,1	8,3	9,1	9,1	9,1
F.L.I. - Compressor 4		[kW]	-	-	6,1	8,3	8,3	13,5	17,2	17,2
F.L.I. - Single External Fan		[kW]	1,3	1,3	1,9	1,9	1,9	1,9	1,9	1,9
F.L.I. - Single supply fan		[kW]	2,6	2,6	2,8	2,8	2,8	2,8	2,8	2,8
F.L.I. - Single exhaust fan		[kW]	1,3	1,3	2,6	2,6	2,6	2,6	2,6	2,6
F.L.I. - Totale	2	[kW]	21,2	25,2	33,9	38,2	42,6	54,5	63,7	67,4
M.I.C. Maximum inrush current										
M.I.C. - Valore		[A]	96,1	133,6	111	151,9	160,3	187,2	252,4	260,2

Data refer to standard units. Power supply: 400/3/50 Hz. Voltage variation: max. +/-10% Voltage unbalance between phases: max 2 %
Values not including accessories.
1. Values not including the accessories. To obtain the value of F.L.A. including accessories, add to the total F.L.A. value that of any accessories (see electrical data of accessories)
2. Values not including the accessories. To obtain the value of F.L.I. including accessories, add to the total F.L.I. value that of any accessories (see electrical data of accessories)

Electrical input of optional components

To obtain the electrical input of the unit including accessories, add the standard data in Electrical Data table to those for the selected accessories.

SIZES			12.2	15.2	16.4	20.4	24.4	33.4	40.4	44.4
F.L.A. Absorbed current										
F.L.A. EH10 - 6 kW electric elements		A	34,6	34,6	-	-	-	-	-	-
F.L.A. EH12 - 9 kW electric elements		A	13	13	-	-	-	-	-	-
F.L.A. EH15 - 13.5 kW electric elements		A	19,5	19,5	19,5	19,5	19,5	-	-	-
F.L.A. EH17 - 18 kW electric elements		A	-	-	26	26	26	26	26	26
F.L.A. EH22 - 27 kW electric elements		A	-	-	39	39	39	39	39	39
F.L.A. EH24 - 36 kW electric elements		A	-	-	-	-	-	52	52	52
F.L.A. HSE5 - 5 kg/h immersed electrodes steam humidifier		A	8,7	8,7	8,7	8,7	8,7	8,7	8,7	8,7
F.L.A. HSE8 - 8 kg/h immersed electrodes steam humidifier		A	8,7	8,7	8,7	8,7	8,7	8,7	8,7	8,7
F.L.A. HSE9 - 15 kg/h immersed electrodes steam humidifier		A	16,2	16,2	16,2	16,2	16,2	16,2	16,2	16,2
F.L.A. LTEMP1 - Application for low outdoor temperature		A	1	1	1	1	1	1	1	1
F.L.A. VENH - High static pressure fans	1	A	4,4	4,4	4,1	4,1	4,1	8,2	8,2	8,2
F.L.I. Power input										
F.L.I. EH10 - 6 kW electric elements		kW	6	6	-	-	-	-	-	-
F.L.I. EH12 - 9 kW electric elements		kW	9	9	-	-	-	-	-	-
F.L.I. EH15 - 13.5 kW electric elements		kW	13,5	13,5	13,5	13,5	13,5	-	-	-
F.L.I. EH17 - 18 kW electric elements		kW	-	-	18	18	18	18	18	18
F.L.I. EH22 - 27 kW electric elements		kW	-	-	27	27	27	27	27	27
F.L.I. EH24 - 36 kW electric elements		kW	-	-	-	-	-	36	36	36
F.L.I. HSE5 - 5 kg/h immersed electrodes steam humidifier		kW	6	6	6	6	6	6	6	6
F.L.I. HSE8 - 8 kg/h immersed electrodes steam humidifier		kW	6	6	6	6	6	6	6	6
F.L.I. HSE9 - 15 kg/h immersed electrodes steam humidifier		kW	11,3	11,3	11,3	11,3	11,3	11,3	11,3	11,3
F.L.I. LTEMP1 - Application for low outdoor temperature		kW	0,3	0,3	0,3	0,3	0,3	0,3	0,3	0,3
F.L.I. VENH - High static pressure fans	1	kW	2,9	2,9	2,7	2,7	2,7	5,4	5,4	5,4

1. The absorption value that needs to be added on takes into account the difference between the optional high head fans and the standard fans.

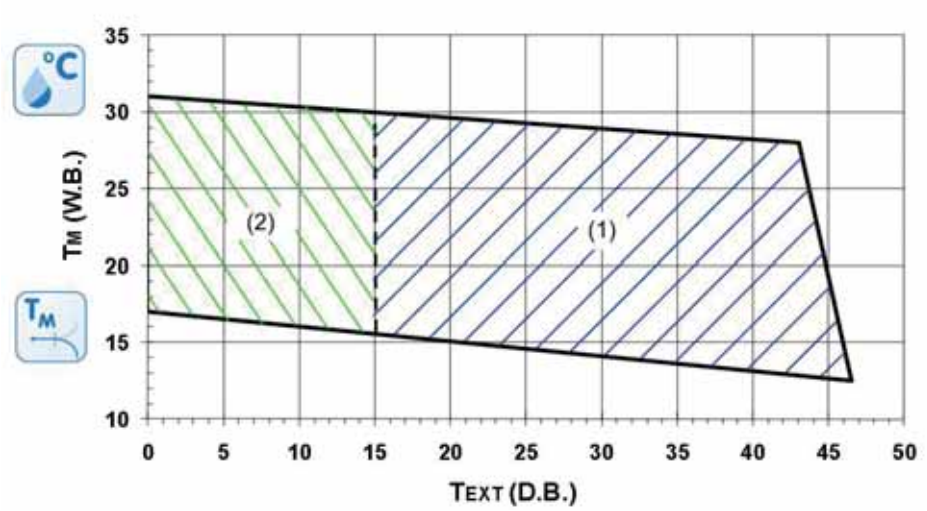
Pressure drops of optional components

The value of static pressure available on the supply and return duct is obtained by subtracting from the available net maximum pressure (see general table of technical data) the pressure drops of any accessories.

SIZES			12.2	15.2	16.4	20.4	24.4	33.4	40.4	44.4
CHW2 - Two-row hot water coil		Pa	24	37	25	29	40	13	18	23
CPHG - Hot gas re-heating coil		Pa	14	21	14	16	21	10	11	12
HWS - Steam humidifier		Pa	28	47	27	32	46	16	26	36
GC - Gas heating module		Pa	67	103	81	95	136	55	59	64
F7 - F7 high efficiency air filter	1	Pa	145	180	137	145	171	138	146	154
FES - High efficiency electronic filters		Pa	30	51	24	28	42	19	28	37

The values shown are to be considered approximate for units operating power in normal use with standard air flow rate.
1. Pressure drops with filters with average dirtiness

Operating range (Cooling)



The limits are meant as a guide. Please note that they have been calculated by considering:

- general and non specific sizes
- standard airflow
- Non-critical positioning and correct use of the unit
- operation at full load

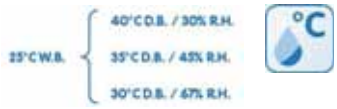
To verify the operating range of the operating units with percentages of fresh air, always calculate the Tm mixing temperature at the internal heat exchanger input.

Tm = internal exchanger entering air temperature
Temperature measured with wet bulb (W.B.=WET BULB)

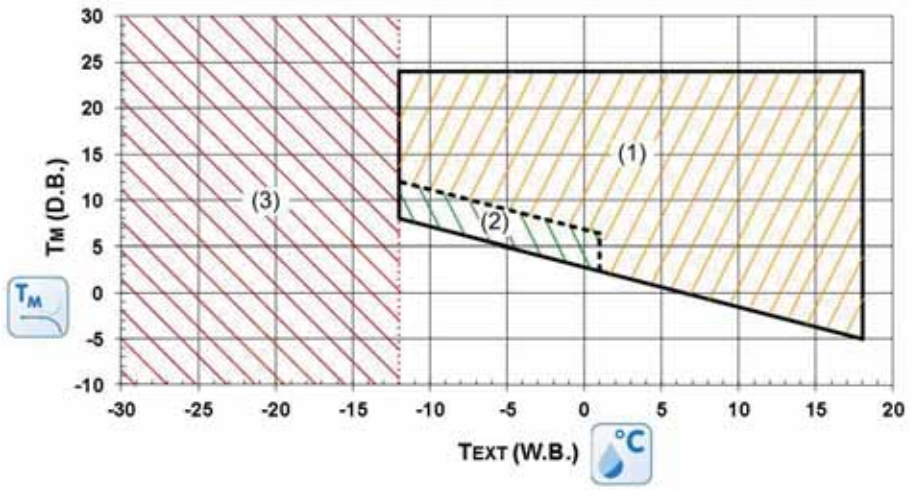
Text = inlet air temperature in the external exchanger
Dry bulb measured temperature (D.B.=DRY BULB)

1. Standard operating range
2. Operatiing range of the unit in FREE-COOLING mode or with automatic distribution of the outdoor ventilation (ECOBREEZE)

WET BULB TEMPERATURE - EXAMPLE



Operating range (Heating)



The limits are meant as a guide. Please note that they have been calculated by considering:

- general and non specific sizes
- standard airflow
- non-critical positioning and correct use of the unit
- operation at full load

To verify the operating range of the operating units with percentages of fresh air, always calculate the Tm mixing temperature at the internal heat exchanger input.

Tm = internal exchanger entering air temperatur
Dry bulb measured temperature (D.B.=DRY BULB)

Text = internal exchanger entering air temperature
Temperature measured with wet bulb (W.B.=WET BULB)

1. Operation at full load
2. Field in which the unit operation is allowed only for a limited period (max 1 hour)
3. Operating range of the unit equipped with "Application for low outdoor temperature" and "hot water coil or gas heating module" options. The heat pump circuit is not active.

In extended operating mode, in heat pump operation with an fresh air temperature of less than 6°C, the unit performs defrosts by reversing the cycle, so as to eliminate the ice that forms on the surfaces of the outside exchanger; in addition, in the event of negative temperatures, the water resulting from the defrosts must be drained so as to avoid the accumulation of ice near the base of the unit. Make sure that this does not constitute a danger for people or things.
With fresh air temperature within -10°C and -30 °C, the following options will be required: hot water coil or gas heating module and outdoor low temperature set-up.

Accessories

EH - Electric elements

This option is suggested for cold climates, allows the integration of heating capacity from the heat pump. The electrical heaters are placed before the treatment coil and perform the air preheating function, extending the operating range of the unit and helping quickly to reach the comfort in the room.

Ideal for climate areas in applications with low outside temperature where it is required to active the heaters only for short time in the year. In these cases the resulting system simplification (no water supply) compensates the energy costs.

The fins are made of aluminum, of suitable dimension to ensure high efficiency and maintain low power density on the surfaces to limit overheating. The low temperature of the heating elements increases the lifespan and limits the effect of air ionization.

Matching of the electric elements

Size	12.2	15.2	16.4	20.4	24.4	33.4	40.4	44.4
6 kW	√	√	-	-	-	-	-	-
9 kW	√	√	-	-	-	-	-	-
13.5 kW	√	√	√	√	√	-	-	-
18 kW	-	-	√	√	√	√	√	√
27 kW	-	-	√	√	√	√	√	√
36 kW	-	-	-	-	-	√	√	√

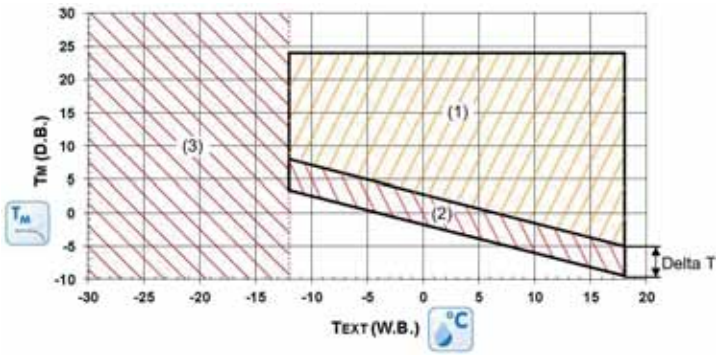
This option involves variation of the main electrical data of the unit.

'Electric elements', '2-row hot water coil' and 'Combustion heating module' cannot be assembled simultaneously.

Operation field extension with electric heaters

SIZES	Airflow [m3/h]		POWER ELECTRIC HEATERS / DELTA T [°C]				
		6kW	9kW	13.5kW	18kW	27kW	36kW
12.2	4500	4,0	5,9	8,9	-	-	-
15.2	6500	2,7	4,1	6,2	-	-	-
16.4	8000	-	-	5,0	6,7	10,0	-
20.4	9000	-	-	4,4	5,9	8,9	-
24.4	12000	-	-	3,3	4,4	6,7	-
33.4	14000	-	-	-	3,8	5,7	7,6
40.4	16000	-	-	-	3,3	5,0	6,7
44.4	18000	-	-	-	3,0	4,4	5,9

The minimum operating temperature of the heat pump with electric heater change and depends on the series and the power of the electric heater. The minimum temperature is easily to reckon subtrahend the DT value (table following below) to the entering internal exchanger air temperature TM(D.M.) for standard unit, at the desired conditions.



The limits are meant as a guide. Please note that they have been calculated by considering:

- general and non specific sizes
- standard airflow
- non-critical positioning and correct use of the unit
- operation at full load

To verify the operating range of the operating units with percentages of fresh air, always calculate the Tm mixing temperature at the internal heat exchanger input.

Tm = internal exchanger entering air temperatur
Dry bulb measured temperature (D.B.=DRY BULB)

Text = internal exchanger entering air temperature
Temperature measured with wet bulb (W.B.=WET BULB)

1. Operation at full load
2. Operating range of the unit equipped with electric elements
3. Operating range of the unit equipped with "Application for low outdoor temperature" and "hot water coil or gas heating module" options. The heat pump circuit is not active.

With fresh air temperature within -10°C and -30 °C, the following options will be required: hot water coil and outdoor low temperature set-up.

GC - Modulating condensation gas heating module

Option consisting of a combustion chamber and condensation burner with modulating control. It is available in various capacities and heats the environment served. The module can be chosen to integrate the heat pump or as an alternative to it. In this case, its heating capacity must be at least equal to the capacity envisioned in the project.

Thanks to the condensation technology with pre-mix and extremely efficient modulation (up to 105% depending on the lower heat value), consumption is very contained and considerably reduced during operation at partial load. The burner with low polluting emissions (NOx lower than 80mg/kWh) in accordance with Class 5 of European standard EN 676.

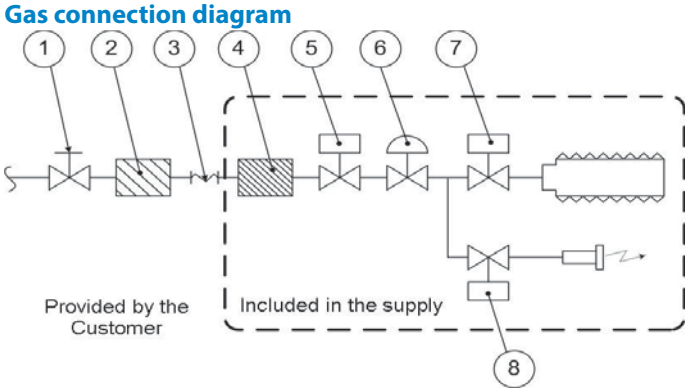
The option is supplied on a separate module, easy to connect to the unit during installation.

The gas module presence needs the horizontal supply.

The heating module includes:

- hot air generator with condensation and integrated modulating adjustment, powered with methane gas
- kit for transformation of power with liquefied petroleum gas (LPG)
- kit of steel chimney for exhaust fumes
- all the control and safety devices

Gas connection diagram



1. GAS COCK
2. GAS FILTER (LARGE SECTION)
3. ANTI-VIBRATION JOINT
4. GAS FILTER (SMALL SECTION)
5. SAFET GAS SOLENOID VLAVE
6. PRESSURE STABILISER
7. MAIN GAS BURNER SOLENOID VALVE
8. PILOT BURNER GAS SOLENOID VALVE

Gas use features

		35kW		44kW		65kW		82kW		100kW		130kW	
NOx class	Val	5											
		min	max	min	max	min	max	min	max	min	max	min	max
Rated thermal input	kW	7.6	34.8	8.5	42.0	12.4	65.0	16.4	82.0	21.0	100.0	12.4	130.0
Efficiency Hi (P.C.I.)	%	106.97	96.30	105.88	96.19	108.06	96.82	108.35	97.60	108.57	97.15	108.06	96.82
Efficiency Hs (P.C.S.)	%	96.37	86.76	95.39	86.66	97.36	87.22	97.62	87.93	97.81	87.52	97.36	87.22
Max condensation produced	l/h	0.9		1.1		2.1		3.3		2.7		4.2	
Carbon monoxide CO (0% di O_2)	ppm	<5		<5		<5		<5		<5		<5	
Nitrogen oxides - NOx (0% di O_2)		41 mg / k Wh 23 ppm		35 mg / k Wh 20 ppm		40 mg / k Wh 23 ppm		34 mg / k Wh 19 ppm		45 mg / k Wh 26 ppm		40 mg / k Wh 23 ppm	
Available flue pressure	Pa	90		90		120		120		120		120	
Gas connection diameter	GAS	UNI ISO 7/1-3/4"		UNI ISO 7/1-3/4"		UNI ISO 7/1-3/4"		UNI ISO 7/1-1"		UNI ISO 7/1-1"		UNI ISO 7/1-1"	
Exhaust pipe diameter	mm	80		80		80		80		80		2 X 80	

Matching of the condensing gas heating module

	Capacity	12.2	15.2	16.4	20.4	24.4	33.4	40.4	44.4
GC01X	35 kW	√	√	√	√	√	-	-	-
GC08X	44 kW	√	√	√	√	√	-	-	-
GC09X	65 kW	-	-	√	√	√	√	√	√
GC10X	82 kW	-	-	√	√	√	√	√	√
GC11X	100 kW	-	-	-	-	-	√	√	√
GC12X	130 kW	-	-	-	-	-	√	√	√

This option reduces the available static pressure (supply air side).

The component requires gas supply (gas connections to be made by the Customer). The location of the unit and the fume drain mode must comply with laws and standards in force in the Country of use.

The assembly of the chimney kit must be performed on site by the Customer. According to specific requirements of installation, the chimney length can be increased by means of appropriate joints and fittings (not supplied by Clivet). For further details, refer to the Installation, use and maintenance manual.

'Electric elements', '2-row hot water coil' and 'Combustion heating module' cannot be assembled simultaneously.

CHW2 - Two-row hot water coil

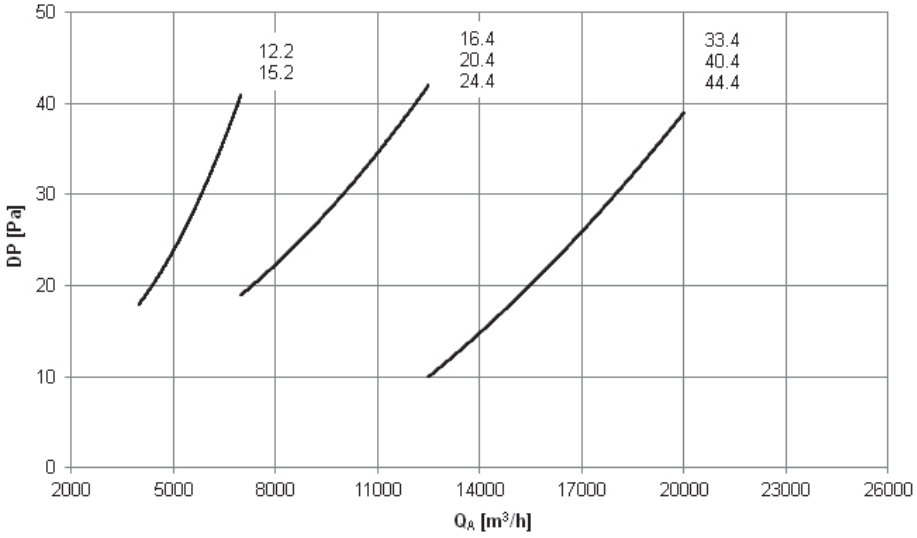
Option indicated for very cold climates, as it allows to heat up the area served. The exchanger comes with a thermostat for the antifreeze function, which is always active even when the unit is in stand-by, as long as it is operated electrically. If required, force the opening of the valve to the maximum value allowed to allow the air to pass through the exchanger and prevent frost from forming.

The hot water coil allows the integration of the heat pump capacity, as being placed before the treating coil, it pre-heats the air, extending the operation limits of the unit. If the water coil operates as integration to the heat pump, the control logic reduces the potential at a pre-determined limit value, which prevents to make the compressors work at too high condensation temperatures. On the other hand, if the water coil is used as main resource (i.e. availability of the compressors) the potential supplied will be the highest.

In the event laws or local standards encourage the use of the district heating, and so the use of hot water coil heating with the obligation to recover the energy contained inside the exhaust air flow, a turning point can be set, that is an outside air temperature, below which the unit uses the water coil as main resource and operates also as thermodynamic recuperator at very high efficiency, using the nominal capacity of the heat pump circuit only partially.

With the option is available a potential-free contact for the water circulator start-up (provided by the Installer).

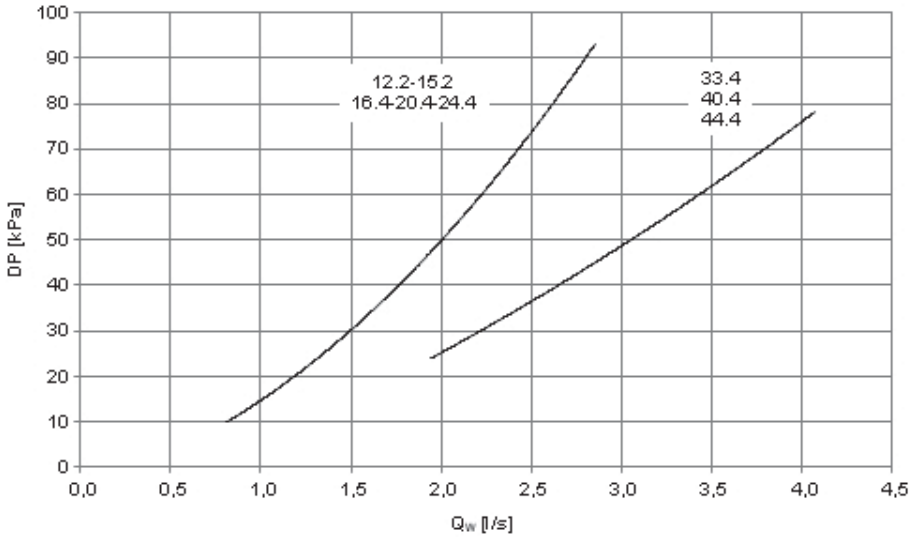
Hot water coil pressure drops: AIR side



The air side pressure drops are relative to the medium air temperature of 20°C and are to be added to the pressure drops due to ducts, terminal devices and any other component that causes a drop in working discharge head.

QA [m3/h] = Airflow
DP[Pa] = Pressure drops

Hot water coil pressure drops: WATER side



Pressure drops on the water side are calculated considering an average water temperature of 65°C

Qw [l/s] = Water flow-rate
DP = Pressure drop [kPa]

Qw [l/s] =P / (4.186 x DT)

P = Water coil heating capacity in KW
DT = Temperature difference between inlet / outlet water

This option reduces the available static pressure (supply air side).

The component requires connection to the hot water plumbing system (to be provided for by the client).

'2 range hot water coil', 'Electric elements' and gas module cannot be assembled simultaneously.

Performances of hot water coil (two-row)

			Ti/To (°C)											
			80 / 65	70 / 55	70 / 60	60 / 40	80 / 65	70 / 55	70 / 60	60 / 40	80 / 65	70 / 55	70 / 60	60 / 40
			kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt
12.2 15.2	Qo (m3 / h)		4000				5500				7000			
	Qo (l / s)		1111				1528				1944			
	TM (°C)	-10	68,0	59,1	61,9	47,3	84,3	73,3	77,0	58,3	98,7	85,7	90,2	68,0
		-5	63,1	54,4	57,1	42,6	78,3	67,4	71,0	52,6	91,7	78,9	83,2	61,4
		0	58,3	49,7	52,5	38,1	72,4	61,6	65,2	47,0	84,8	72,1	76,4	54,8
		5	53,6	45,1	47,9	33,6	66,6	56,0	59,5	41,5	78,1	65,5	69,8	48,4
		10	49,1	40,6	43,3	29,2	61,0	50,4	53,9	36,0	71,4	59,0	63,2	42,0
		15	44,6	36,3	38,9	24,9	55,4	45,0	48,4	30,7	64,9	52,6	56,8	35,7
16.4 20.4 24.4	Qo (m3 / h)		7000				9750				12500			
	Qo (l / s)		1944				2708				3472			
	TM (°C)	-10	119,2	104,2	108,7	84,3	148,9	130,0	135,9	104,9	174,8	152,5	159,6	122,7
		-5	111,1	96,3	100,7	76,5	139,0	120,1	126,0	95,2	163,2	141,0	148,0	111,3
		0	103,3	88,5	92,8	68,9	129,0	110,4	116,2	85,5	151,5	129,6	136,6	100,1
		5	95,5	80,7	85,1	61,2	119,3	100,8	106,5	76,0	140,2	118,3	125,3	88,8
		10	87,7	73,1	77,4	53,6	109,7	91,3	97,0	66,6	128,9	107,2	114,0	77,7
		15	80,1	65,6	69,8	46,1	100,2	81,9	87,5	57,1	117,8	96,1	102,9	66,7
33.4 40.4 44.4	Qo (m3 / h)		12500				16000				20000			
	Qo (l / s)		3472				4444				5556			
	TM (°C)	-10	221,6	193,8	201,8	157,5	262,5	229,4	239,2	185,8	304,3	265,9	277,5	214,9
		-5	206,7	179,1	187,0	143,0	244,9	211,9	221,7	168,8	284,0	245,8	257,3	194,9
		0	192,0	164,6	172,4	128,7	227,5	194,8	204,4	151,7	264,0	225,8	237,4	175,4
		5	177,4	150,3	158,0	114,5	210,3	177,9	187,4	135,0	244,1	206,2	217,7	155,9
		10	163,1	136,0	143,8	100,4	193,3	161,1	170,6	118,4	224,3	186,8	198,2	136,6
		15	149,0	122,1	129,7	86,4	176,6	144,6	154,0	101,8	205,0	167,6	178,9	117,5

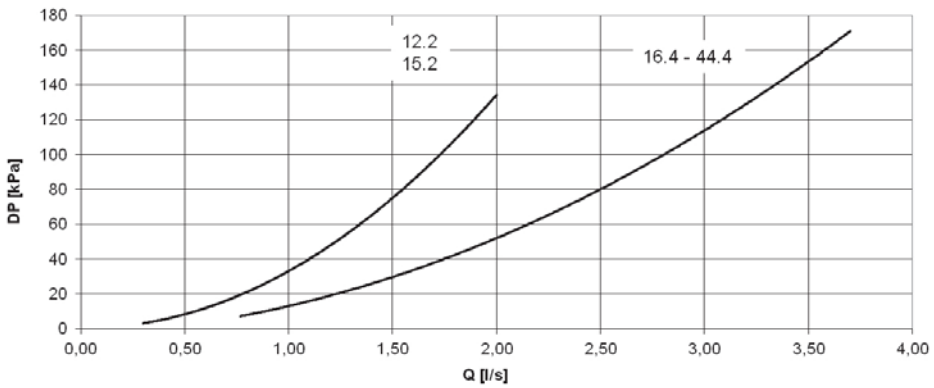
TM = Air inlet temperature of water coil (°C)
Ti/To = Water temperature inlet/outlet (°C)
Qo = Airflow (l/s and m3/h)
kWt = Provided heating capacity (kW)
Thermal yields referred to the max. water coil capacity. The thermo regulator coke the 3-way modulating valve limiting the inlet air temperature at desired values.

2WVM - Modulating 2-way valve

3WVM - Modulating 3-way valve

To be combined with hot water coil (optional). It is managed by the built-in microprocessor via a 0-10V signal and allows the fully automatic control of the water coil. The valve with modulating actuator is provided already assembled and wired built-in the unit.

Valve pressure drops



Q [l/s] = water flow-rate

DP [kPa] = pressure drops

This accessory has to be coupled to the "CHW2 - Two-row hot water coil" option.

LTEMP1 - Application for low outdoor temperature

Option indicated for very cold climates, where the outside temperature can be between -10 and – 30°C.

A. The option includes self-regulating heaters with thermostats that can protect the electrical panel from freezing to make sure it operates correctly.

B. The special version of the outdoor air damper for the application for low outdoor temperature is made of anti-seize devices that facilitate the correct control of the fresh air in every climatic situation, thanks to the teflon supporting bushings, aluminium flaps, PVC end gaskets and steel leverages to compensate expansions.

C. The motorised actuator is suitable for operating with low outdoor temperatures.

D. Electrical connection cables suitable for outdoor low temperatures.

This operation involves variation of the main electrical data of the unit.

This accessory operates even when the unit is switched off provided that the power supply is maintained active and the unit continues to be connected.

It is necessary to make precautions against build up of snow and ice in front of the exhaust and outdoor air inlet locations.

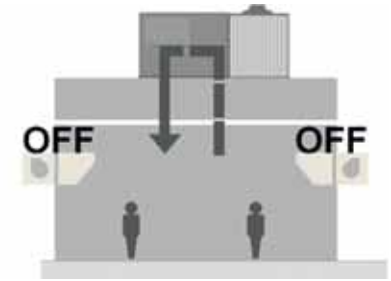
EXFLOWC - Application in spaces with forced air exhaust at variable flow and exhaust section

Option indicated for conditioning buildings with hoods or active air exhaust systems, for example the cinema projection rooms, catering kitchens, labs with suction hoods, where the fresh airflow is variable in function of the number of active extractors.

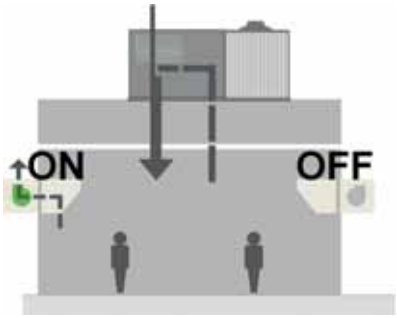
The option involves an electronic device installed built-in the unit that receives the activation status of the extractors on appropriate potential-free contacts or one 0-10V signal and modulates the fresh air quantity.

The unit is equipped with an exhaust fan section to allow the air renewal also with suction hoods off. The exhaust section is equipped with a plug-fan electronically controlled and managed by the unit logic according to the active suction hoods and the fresh air damper opening. To dimension the unit consider as max. exhaust airflow of the hoods the 80% of the nominal airflow. The air quality probe for controlling the rate of CO2 / CO2 and VOC, and the Set-up for spaces with forced exhaust at variable flow' can be simultaneously selected.

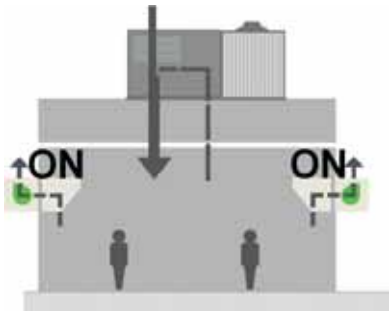
Where necessary, the unit will be integrated with further pre-heating options of which 'Electrical heating resistance', '2 range hot water coil' or 'Gas heating module' to guarantee the operation of the unit with 80% of the fresh air in every operating situation, even in low fresh air temperature.



Exhaust and all extractors off



Exhaust and some extractors on



Exhaust and all extractors on

The electronic device is installed and wired built-in the unit.

The option allows to manage up to 4 ON-OFF contacts from the exhaust devices or one 0-10V signal (by Customer).

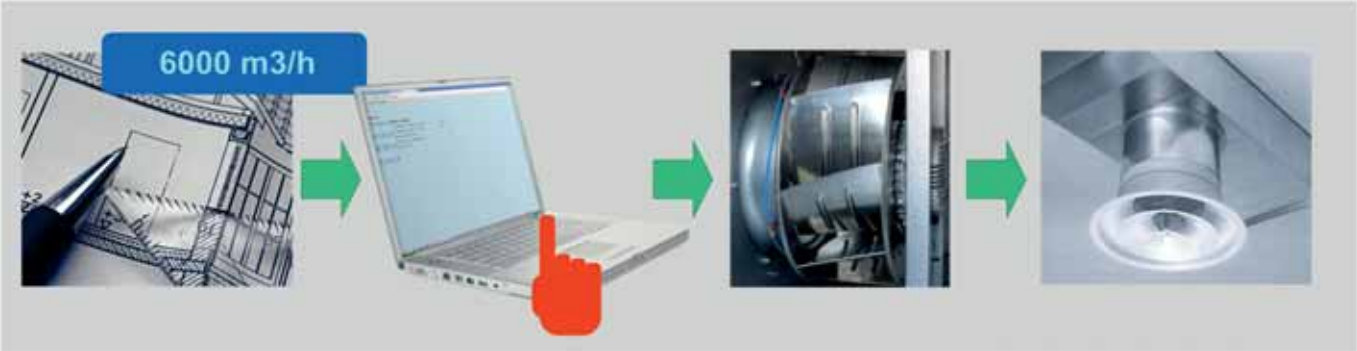
The connection cables for the 0-10V signal or the ON-OFF status do not require shielding.

'Variable airflow' and 'Set-up for spaces with forced exhaust at variable flow and exhaust section' cannot be simultaneously selected.

With minimum fresh air temperatures between 0°C and –8°C foresees the option 'Electrical heating resistance' or '2 range hot water coil' whereas for minimum temperatures between –8°C e –30°C foresees the '2 range hot water coil' or 'Gas heating module' option.

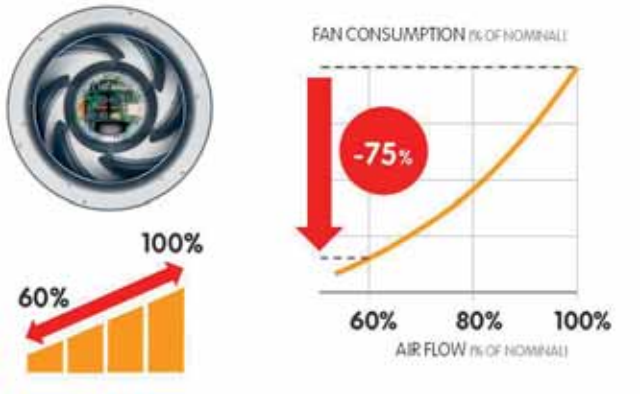
PCOSM - Constant supply airflow (standard)

The original technology used eliminates the need for on-site calibration of traditional fans, as well as the time that would be required and the associated costs. The required flow rate is set on the display and maintained automatically by the unit, which controls the speed of the ventilating sections. During the installation and start-up phase, the unit controls to the effective pressure drop in the air distribution and diffusion system. Furthermore, during its entire operating life, the progressive fouling of the air filters is automatically compensated for thanks to this system.



PVAR - Variable airflow

Option that enables the automatic variation of the treated air flow, according to the effective load. This allows great energy saving, thanks to the reduction of ventilation electrical consumptions. The minimum flow value equal to 60% of the nominal one occurs during the partial load and satisfied set-point operation. As a result, the supply temperature remains unchanged either during full load operation or partial load operation. The device also includes the functions of configuration of the nominal flow directly on the unit display and its automatic control to compensate the dirtying of the air filters.



This option already includes the device for controlling the airflow, called 'PCOSM - Supply constant airflow', which must not be selected.

When sizing the distribution and diffusion of the air, keep into consideration that the airflow varies from the nominal value (at full load, in FREE-COOLING mode and during the defrosting phases) to the minimum value, equal to 60% of the nominal flow (at partial load).

CREFB - Device for fan consumption reduction of the external section, ECOBREEZE type

Option indicated to reduce the ventilation electric energy consumption considerably and limit sound emissions inside the external section of the unit. ECOBREEZE logic allows the external axial fans to operate at a variable rotation speed, according to the operation conditions of the cooling circuit. Reducing the speed when the heat load is reduced, benefits the sound emissions, especially during the night, when sensitivity to noise is enhanced.

During summer operation, fans can further increase their speed, to respond to situations in which operation limits are temporarily exceeded. ECOBREEZE option uses special fans powered by brushless electrical motors, with complete electronic control, and distinguished by a very high efficiency.

To ensure the continuous cooling operation even at temperatures lower than 15°C, the option is necessary to maintain a proper condensation on the external exchanger.

CPHG - Hot gas re-heating coil

This option is recommended during the summer when the intakr air dehumidification is required.

The air flow to enter the room may contain a higher level of humidity than desired. The dehumidification process is used to reduce it. The air flow is first cooled in the handling coil with separation of condensation. It is then freely re-heated to maintain the desired condition of comfort in the served room.

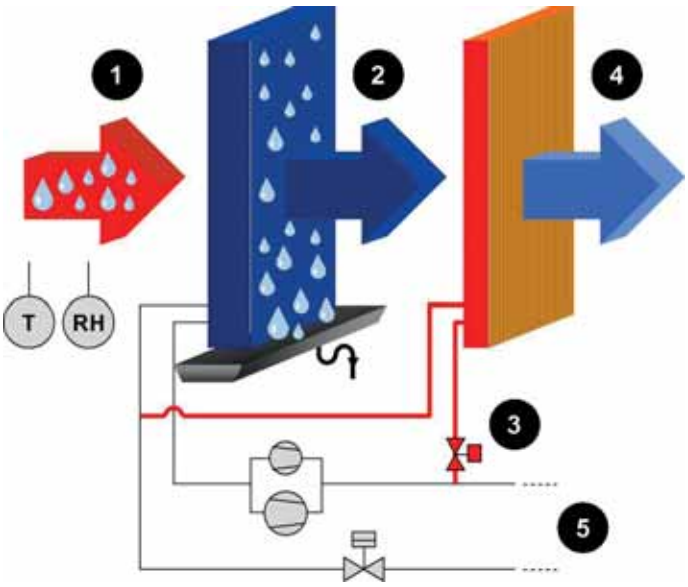
The re-heat coil is located behind the handling coil and is activated by diverting a flow of hot refrigerant gas downstream from the compressors through the action of a dedicated solenoid valve.

The process starts operating based on the humidity set-point established by the user.

With respect to traditional devices, such as electrical electric elements or hot water coils, use of the re-heat coil does not consume any extra energy. It also lowers refrigerant condensation temperature, which provides two positive effects: power absorbed by the compressors is considerably reduced, and at the same time, cooling capacity is increased, resulting in greater efficiency (EER).

Ambient humidity is measured by means of a return humidity probe, which is provided already assembled and wired built-in the unit.

This option reduces the available static pressure (supply air side).



1. Outdoor air and humidity / temperature probe
2. Chilled and dehumidified air in the internal exchanger (evaporator)
3. Automatic hot gas pump valve
4. Air treated by the post-heating exchanger
5. External exchanger (condenser)

Indicative scheme - not in scale

Performances of hot gas re-heating coil

			OUTDOOR AIR TEMPERATURE (°C)														
			25	27	30	32	35	25	27	30	32	35	25	27	30	32	35
			kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt
12.2	Qo (m3 / h)		4000					4500					7000				
	Qo (l / s)		1111					1250					1944				
	Ta (°C)	10	9,8	10,5	11,6	12,8	13,9	10,5	11,3	12,5	13,7	15,0	13,7	14,7	16,3	17,9	19,5
		12	9,0	9,8	10,9	12,0	13,2	9,7	10,5	11,7	12,9	14,2	12,6	13,7	15,2	16,8	18,4
		14	8,3	9,0	10,1	11,3	12,4	8,9	9,7	10,9	12,1	13,3	11,6	12,6	14,2	15,8	17,4
		16	7,6	8,3	9,4	10,5	11,6	8,1	8,9	10,1	11,3	12,5	10,6	11,6	13,1	14,7	16,3
		18	6,8	7,6	8,7	9,8	10,9	7,3	8,1	9,3	10,5	11,7	9,5	10,6	12,1	13,7	15,3
		20	6,1	6,8	7,9	9,0	10,1	6,6	7,4	8,5	9,7	10,9	8,5	9,5	11,1	12,6	14,2
15.2	Qo (m3 / h)		4000					6500					7000				
	Qo (l / s)		1111					1806					1944				
	Ta (°C)	10	9,8	10,5	11,6	12,8	13,9	13,1	14,1	15,6	17,1	18,7	13,7	14,7	16,3	17,9	19,5
		12	9,0	9,8	10,9	12,0	13,2	12,1	13,1	14,6	16,1	17,7	12,6	13,7	15,2	16,8	18,4
		14	8,3	9,0	10,1	11,3	12,4	11,1	12,1	13,6	15,1	16,6	11,6	12,6	14,2	15,8	17,4
		16	7,6	8,3	9,4	10,5	11,6	10,1	11,1	12,6	14,1	15,6	10,6	11,6	13,1	14,7	16,3
		18	6,8	7,6	8,7	9,8	10,9	9,1	10,1	11,6	13,1	14,6	9,5	10,6	12,1	13,7	15,3
		20	6,1	6,8	7,9	9,0	10,1	8,2	9,1	10,6	12,1	13,6	8,5	9,5	11,1	12,6	14,2
16.4	Qo (m3 / h)		7000					8000					12500				
	Qo (l / s)		1944					2222					3472				
	Ta (°C)	10	16,8	18,1	20,0	21,9	23,9	18,2	19,6	21,6	23,8	25,9	23,6	25,4	28,1	30,8	33,6
		12	15,6	16,8	18,7	20,6	22,6	16,9	18,2	20,3	22,4	24,5	21,9	23,7	26,3	29,1	31,8
		14	14,3	15,6	17,4	19,3	21,3	15,5	16,9	18,9	21,0	23,1	20,1	21,9	24,6	27,3	30,1
		16	13,1	14,3	16,2	18,1	20,0	14,2	15,5	17,6	19,6	21,7	18,4	20,2	22,8	25,5	28,3
		18	11,9	13,1	14,9	16,8	18,8	12,9	14,2	16,2	18,3	20,4	16,7	18,4	21,1	23,8	26,5
		20	10,6	11,9	13,7	15,6	17,5	11,5	12,9	14,9	16,9	19,0	15,0	16,7	19,3	22,0	24,7

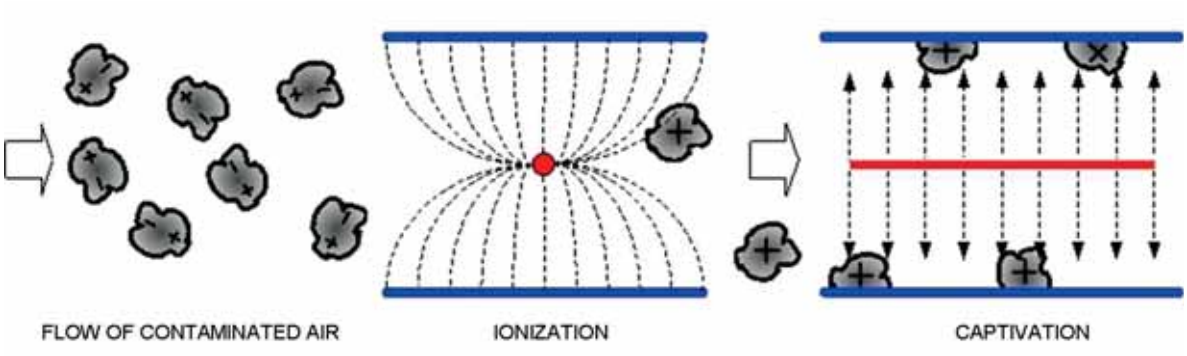
Ta = Leaving air temperature from the handling coil and entering the post-heating coil
Qo = Airflow (l/s)
kWt = Heating capacity (kW)
The reheating coil is powered by the cold gas bled from the condensing coil.
As the condensation hot gas temperature is linked to the outdoor air temperature, the indicative potentials of the post-heating coil are expressed according to the outdoor air temperature.

			OUTDOOR AIR TEMPERATURE (°C)														
			25	27	30	32	35	25	27	30	32	35	25	27	30	32	35
			kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt	kWt
20.4	**Qo (m3 / h)**		7000					9000					12500				
	Qo (l / s)		1944					2500					3472				
	Ta (°C)	10	16,8	18,1	20,0	21,9	23,9	19,5	21,0	23,2	25,5	27,8	23,6	25,4	28,1	30,8	33,6
		12	15,6	16,8	18,7	20,6	22,6	18,1	19,6	21,8	24,0	26,3	21,9	23,7	26,3	29,1	31,8
		14	14,3	15,6	17,4	19,3	21,3	16,7	18,1	20,3	22,5	24,8	20,1	21,9	24,6	27,3	30,1
		16	13,1	14,3	16,2	18,1	20,0	15,2	16,7	18,9	21,1	23,3	18,4	20,2	22,8	25,5	28,3
		18	11,9	13,1	14,9	16,8	18,8	13,8	15,2	17,4	19,6	21,9	16,7	18,4	21,1	23,8	26,5
		20	10,6	11,9	13,7	15,6	17,5	12,4	13,8	16,0	18,2	20,4	15,0	16,7	19,3	22,0	24,7
24.4	**Qo (m3 / h)**		7000					12000					12500				
	Qo (l / s)		1944					3333					3472				
	Ta (°C)	10	16,8	18,1	20,0	21,9	23,9	23,1	24,9	27,5	30,1	32,9	23,6	25,4	28,1	30,8	33,6
		12	15,6	16,8	18,7	20,6	22,6	21,4	23,1	25,7	28,4	31,1	21,9	23,7	26,3	29,1	31,8
		14	14,3	15,6	17,4	19,3	21,3	19,7	21,4	24,0	26,7	29,4	20,1	21,9	24,6	27,3	30,1
		16	13,1	14,3	16,2	18,1	20,0	18,0	19,7	22,3	24,9	27,6	18,4	20,2	22,8	25,5	28,3
		18	11,9	13,1	14,9	16,8	18,8	16,3	18,0	20,6	23,2	25,9	16,7	18,4	21,1	23,8	26,5
		20	10,6	11,9	13,7	15,6	17,5	14,6	16,3	18,9	21,5	24,2	15,0	16,7	19,3	22,0	24,7
33.4	**Qo (m3 / h)**		12500					14000					20000				
	Qo (l / s)		3472					3889					5556				
	Ta (°C)	10	29,1	31,3	34,7	38,2	41,6	31,2	33,6	37,2	40,9	44,7	38,6	41,7	46,2	50,8	55,5
		12	26,8	29,1	32,4	35,8	39,3	28,7	31,2	34,8	38,4	42,2	35,6	38,6	43,1	47,7	52,3
		14	24,5	26,8	30,1	33,5	37,0	26,3	28,7	32,3	36,0	39,7	32,6	35,5	40,0	44,6	49,2
		16	22,3	24,5	27,9	31,2	34,7	23,9	26,3	29,9	33,5	37,2	29,6	32,5	37,0	41,5	46,1
		18	20,1	22,3	25,6	28,9	32,4	21,5	23,9	27,5	31,0	34,7	26,6	29,5	34,0	38,5	43,0
		20	17,9	20,1	23,4	26,7	30,1	19,2	21,5	25,0	28,6	32,3	23,6	26,6	31,0	35,4	40,0
40.4	**Qo (m3 / h)**		12500					16000					20000				
	Qo (l / s)		3472					4444					5556				
	Ta (°C)	10	29,1	31,3	34,7	38,2	41,6	33,8	36,5	44,4	40,4	48,5	38,6	41,7	46,2	50,8	55,5
		12	26,8	29,1	32,4	35,8	39,3	31,2	33,8	41,7	37,7	45,8	35,6	38,6	43,1	47,7	52,3
		14	24,5	26,8	30,1	33,5	37,0	28,5	31,1	39,0	35,0	43,0	32,6	35,5	40,0	44,6	49,2
		16	22,3	24,5	27,9	31,2	34,7	25,9	28,5	36,3	32,4	40,3	29,6	32,5	37,0	41,5	46,1
		18	20,1	22,3	25,6	28,9	32,4	23,3	25,9	33,7	29,8	37,7	26,6	29,5	34,0	38,5	43,0
		20	17,9	20,1	23,4	26,7	30,1	20,7	23,3	31,0	27,2	35,0	23,6	26,6	31,0	35,4	40,0
44.4	**Qo (m3 / h)**		12500					18000					20000				
	Qo (l / s)		3472					5000					5556				
	Ta (°C)	10	29,1	31,3	34,7	38,2	41,6	36,3	39,2	43,4	47,7	52,1	38,6	41,7	46,2	50,8	55,5
		12	26,8	29,1	32,4	35,8	39,3	33,4	36,3	40,5	44,8	49,1	35,6	38,6	43,1	47,7	52,3
		14	24,5	26,8	30,1	33,5	37,0	30,6	33,4	37,6	41,9	46,2	32,6	35,5	40,0	44,6	49,2
		16	22,3	24,5	27,9	31,2	34,7	27,8	30,6	34,8	39,0	43,3	29,6	32,5	37,0	41,5	46,1
		18	20,1	22,3	25,6	28,9	32,4	25,0	27,8	31,9	36,1	40,4	26,6	29,5	34,0	38,5	43,0
		20	17,9	20,1	23,4	26,7	30,1	22,2	25,0	29,1	33,3	37,6	23,6	26,6	31,0	35,4	40,0

Ta = Leaving air temperature from the handling coil and entering the post-heating coil
Qo = Airflow (l/s)
kWt = Heating capacity (kW)
The reheating coil is powered by the cold gas bled from the condensing coil.
As the condensation hot gas temperature is linked to the outdoor air temperature, the indicative potentials of the post-heating coil are expressed according to the outdoor air temperature.

FES - Electronic filters

Class H10 high-efficiency filters are additional filtering components with an active electrostatic system. Solid or liquid particles contained in the air flow are trapped by an electrical field. The air flow through the filter is affected in two main phases: release of an electrical charge to the particles (ionization), and capture of the particles by electrostatic deposit (captivation). Periodically the filters must be cleaned to remove the captured particles (washing). The filters are able of trapping fine dusts, some types of viruses and micro-organisms (anti-bacterial action) with very modest pressure drops. The range of use normally includes fine powders that measure less than 1 µm. Typical pollutants are cigarette smoke (0.5÷0.3 µm), oily vapours (1÷0.2 µm), PM10 (particles < 10 µm), PM2.5 (particles < 2.5µm), PM1 (particles < 1µm), etc. The clogging of the electric filter is signalled by a sensor that allows to schedule the periodic maintenance, which can be easily performed by washing in water with a special non-aggressive detergent for aluminium. The greater initial cost, as compared to a traditional pocket filter, is recovered quickly since the electrostatic filters last for the entire life of the unit, whereas pocket filters require periodic replacement.



This option reduces the available static pressure (supply air side).

The electronic filters are not suited to filter water steams also in low concentration, oily vapours, large amounts of dust, shavings, powdered iron filings and residues generally, gas. The electronic filters have to absolutely avoid all the following substances: powdered metals also fine, smoke produced by combustion of organic materials and not, flour dusts, dusts and vapours of explosive environments.

F7 - F7 high efficiency air filter

The class F7 are filtering components that are in addition to the standard G4 filters, for more effective filtering. They are widely used in air conditioning systems and industrial applications that require suitable performance concerning fine dusts and particles with dimensions greater than 1 µm. Class F7 filters are made of fibreglass paper, pleated with constant calibrated spacing, mounted on a metallic frame; the ample filtering surface reduces air side pressure drops. Class F7 filters must be replaced after reaching their limits of dirtiness with scheduled periodic maintenance. An optional accessory, dirty filter differential switch, can be fitted to signal when admissible limit of fouling has been reached so as not to excessively reduce the airflow with respect to the nominal value.

This option reduces the available static pressure (supply air side).

PSAF - Clogged filter differential pressure switch air side

It makes it possible to detect and signal (with a suitable alarm) when the dirtiness of the air filter reaches its maximum level. This provides the unit operator with information on when filter maintenance is required. The detection signal is installed in the unit. It is already connected to the electrical panel and pre-calibrated in the factory. Calibration can be modified by an authorized personnel.

CCCA - Copper / aluminium coil with acrylic lining

Coils with copper pipes and aluminium fins with acrylic lacquering. Can be used in settings with moderately aggressive low saline concentrations and other chemical agents. Attention!

- Cooling capacity variation -2.7%.
- Variation in compressor power input +4.2%.
- Operating range reduction -2.1°C.

Option available on request.

CCCA1 - Copper/aluminum coil with Fin Guard (Silver) treatment

A treatment which offers an optimal thermal exchange and guarantees and protects the finned coil exchangers from corrosion over time. Can be used in settings with very aggressive saline concentrations and other chemical agents in the air thus maintaining the performance of the coils over time.

Option available on request.

CCCC - Copper / copper coil

Coils with copper pipes, copper fins and brass structure. Can be used in settings with moderately aggressive saline concentrations and other chemical agents. The options are available for:

- external coil;
- internal coil;
- hot water coil;
- re-heating coil.

This option is not suitable for application in sulphuric environments.

Option available on request.

HSE - Immersed electrodes steam humidifier

This device is suitable for winter operation when humidity is required for the ambient without cooling the air flow.

The automatic modulating control allows you to adjust the steam production and its relative management costs to the actual requirements.

Available in different capacities, the device is suitable for using soften water having medium conductivity and is equipped with: water load solenoid valve, disposable cylinder, water drainage solenoid valve, distribution nozzle, control electronic board to verify the water level, conductivity, anti-foam device, water drainage manual forcing. To ensure maximum hygiene, the cylinder can automatically empty after a determined period of stand-by.

The accessory is installed inside the unit and is connected to the electrical panel of the unit.

Ambient humidity is measured by means of a return humidity probe, which is provided already assembled and wired built-in the unit.

With the option is available a potential-free contact for the water emptying during the period in which the unit is not used (connection provided by the Customer).

Matching of immersed electrode and steam humidification module

Size	12.2	15.2	16.4	20.4	24.4	33.4	40.4	44.4
3 kg/h	√	√	-	-	-	-	-	-
5 kg/h	√	√	√	√	√	-	-	-
8 kg/h	√	√	√	√	√	√	√	√
15 kg/h	-	-	√	√	√	√	√	√

This option involves variation of the main electrical data of the unit.

This accessory requires connection to a water supply network and discharge water circuit with adeguate frost protection. Installation provided by the Customer.

HWS - Water to waste evaporating wet-deck humidifier

This option is recommended when quick, efficient humidification of the served room during winter operation is required. Humidification of the air mixture occurs by passing the air flow through a honeycomb package that is kept humid at all times by a series of nozzles that inject water in small drops. The reserve of water for treatment is taken directly from the water mains. During operation, the pure water vapour is mixed with the air currents. The remaining part, enriched with mineral salts, is collected in the tub and eliminated. The constant exchange of water ensures cleaning of the evaporation septum and provides maximum limitation of the formation and proliferation of Legionnaire's Disease. With this option, energy consumption for water evaporation is limited. Whenever the packaged humidifier is active, in addition to humidifying, adiabatic cooling of the air takes place, which is constantly compensated for by the thermal control device. Direct connection to the plumbing system eliminates the need for special water treatment and easy control of the humidification process by means of the measuring and adjusting device of the water flow rate provided standard.

The accessory is installed inside the unit and is connected to the electrical panel of the unit.

Ambient humidity is measured by means of a return humidity probe, which is provided already assembled and wired built-in the unit.

Calculation of evaporating water flow from the humidifier

Size		12.2	15.2	16.4	20.4	24.4	33.4	40.4	44.4
TA (°C) D.B.	TA (°C) W.B.	kg/h	kg/h	kg/h	kg/h	kg/h	kg/h	kg/h	kg/h
30	15,1	13	19	23	26	35	40	46	52
35	17,6	16	23	29	32	43	50	58	65
40	19,8	20	28	35	39	53	61	70	79

Ta D.B.= dry bulb temperature of inlet air to the wet deck.
Ta W.B.= wet bulb temperature of inlet air to the wet deck.
Approximate values of the maximum rate of steam released by the steam humidifier to the air to obtain controlled thermal and humidity conditions in supply. The data refer to a unit with standard airflow in supply.

Calculating water flow to the humidifier

Size		12.2	15.2	16.4	20.4	24.4	33.4	40.4	44.4
TA (°C) D.B.	TA (°C) W.B.	l/min	l/min	l/min	l/min	l/min	l/min	l/min	l/min
30	15,1	0,5	0,8	1	1	1	2	2	2
35	17,6	0,7	1,0	1	1	2	2	2	3
40	19,8	0,8	1,2	1	2	2	3	3	3

Ta D.B.= dry bulb temperature of inlet air to the wet deck.
Ta W.B.= wet bulb temperature of inlet air to the wet deck.
Approximate values of the maximum rate of steam released by the steam humidifier to the air to obtain controlled thermal and humidity conditions in supply. The data refer to a unit with standard airflow in supply.

The table shows the indicative water flow rates for the calibration of the flow rate meter supplied with the wet pack.
The values have been obtained considering an average efficiency of the wet pack equal to 50%

This option reduces the available static pressure (supply air side).

This accessory requires connection to a water supply network and discharge water circuit. To customer care.

Not available if re-heating is present..

- during use there will be a part of water that will be dispersed and not totally supplied to the air flow, this to ensure the humidification of the entire surface and to carry out a continuous washing of the septum.
- do not use particularly hard water. The presence of limestone (CaCO3) may lead to progressive obstruction to water distribution
- the humidification effect can be reduced over time depending on the quality of the water used and the progressive deterioration of the component materials.

CSOND - Humidity and temperature control with built-in probes

This option makes it possible to measure the temperature and humidity of the ambient directly on the airflow entering the unit. The automatic thermal regulation is done using the on-board probes, whereas the probes on the remote control are inhibited.

CTERM - Humidity and temperature control with remote thermostat

This option makes it possible to directly measure the temperature and humidity of the ambient. The automatic thermal regulation is done on the humidity and temperature probes in the thermostat installed in ambient.

PAQC - Air quality probe for the CO2 rate check

This option is recommended for areas with highly variable crowding. The probe measure the amount of CO2 in the environment and initiates a 0/10V proportional signal. Based on the received signal, the controller regulates amount of outdoor air necessary for IAQ ventilation and thus minimises energy used for treatment.

The probe is installed and wired built-in the unit and is located in the return air duct of the unit.

PAQCV - Air quality probe for the CO2 and VOC rate check

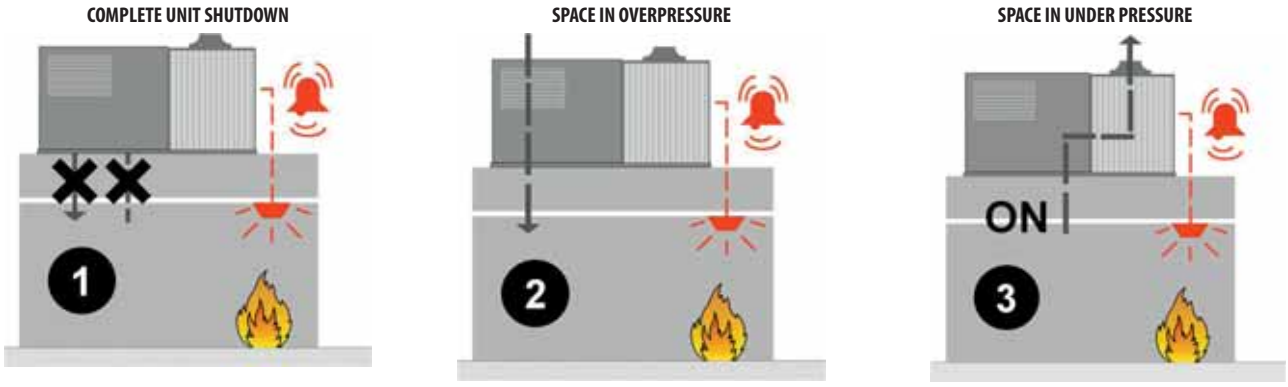
The option is recommended in areas with tobacco smoke, formaldehyde (from solvents, deodorants, glues, paints, detergents, food preparation, etc. The probe measures the rate of CO2 and VOC (volatile organic compounds) in the environment and initiates a 0/10V proportional signal. Based on the received signal, the controller regulates amount of outdoor air necessary for IAQ ventilation and thus minimises energy used for treatment.

The probe is installed and wired built-in the unit and is located in the return air duct of the unit.

DESM - Smoke detector

This option allows detection of smoke in the room by analyzing the return air. The Tyndal-effect increased sensitivity smoke detector is perfect for ventilation ducts since it is able to detect rarefied smoke in high-speed air flows. Smoke detection occurs using a photo-optical system with a labyrinth chamber. The alarm signal is processed by a built-in micro-processor which verifies the condition and sends a message to the unit controller such as smoke alarm, failure, or service required. The device is installed inside the return duct and it is made up of a sensor, installed inside the return piping, and of a controller that is located on the outside duct.

Control logics in the event of alarm signal

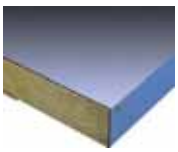


The unit is able to manage the signal coming from a fire detection system or fire control unit installed built-in, activating one of the logics illustrated, which can be set by parameters. In presence of alarm signal, the compressors are always switched off; moreover, the remote ON-OFF is disabled together with the switch on/off control from keypad. The unit is manually reset. Rooftop units cannot be used as fume extractor.

Any fire detection devices built-in the unit must be considered as an auxiliary safety system, and, accordingly, must not be a replacement for any fire detection devices in the room.

PCM0 - Sandwich panels of the handling zone in M0 fire reaction class

Option indicated when, by law, the air treatment area must have metallic internal walls made with fire-proof insulating material. Sandwich panels with dual walls made of steel sheet metal with fire-proof insulation made of Rockwool ((90 kg/m3) comply with the French standards, which require "M0" reaction to fire class.



MHP - High and low pressure gauges

Allows the pressure measurement of the refrigerant to the compressor intake and supply, making the inspection of these parameters easier for the technicians involved in the management of the unit.

The two liquid pressure gauges and corresponding pressure sockets are installed built-in the unit in an easily accessible location.

PTCO - Set up for shipping via container

Option that allows shipping via container.

It includes the sheet steel slide application for an easy unit scrolling, packaging with protective angle brackets and nylons, anchoring systems. If necessary the lateral lifting brackets and the main isolator switch handle can be removed to avoid damages during transport (components removed and put inside the unit).

For particular requirements, please contact Clivet Shipping Department.

VENH - High static pressure fans

A higher capacity fan section is available for applications requiring high supply and return head. The option is comprised of radial fans coupled directly to electronically controlled motors (brushless). When you select a unit on the www.clivet.com website, if you enter the air flow, the available supply and return pressure and the accessories that determine the head loss on the air side, you will be automatically shown a selection of high head fans, when required.

FCE - Enthalpy FREE-COOLING

This option is used to reduce energy consumption and compressor wear by using the outdoor air as an energy source to lower the thermal loads and ambient humidity. The temperature control compares the temperature and the humidity between the outdoor environment and the served environment and decides the amount of fresh air needed to guarantee the correct temperature and humidity set-points in the environment, keeping the compressors shut off.

The air humidity, both outside and inside the environment, is measured by means of humidity probes on the outdoor and return air intake, which are provided already installed and wired on the unit.

DML - Demand Limit

The partial or total activation of the compressors - and the heating electric resistance where present - can be disabled to limit the overall electric capacity absorbed. The external signal is of analogical type 4-20 mA. The greater the signal, the lower the capacity that the unit is enabled to deliver, activating the compressors and the electric elements.

The Demand Limit function does not act on the control or on the ventilation, which are therefore always guaranteed, nor on the remaining resources such as hot water coil or the gas heating module. The Demand Limit function on the reversible heat pump models can affect any automatic defrosting cycles. In these conditions, the user can therefore decide to limit its activation.

The represented number of compressors constitutes an indicative example

CMSC9 - Serial communication module for Modbus supervisor

This enables the serial connection of the supervision system, using Modbus as the communication protocol. It enables access to the complete list of operational variables, commands and alarms. Using this accessory every unit can dialogue with the main supervision systems.

The device is installed and wired built-in the unit.

The total length of each serial line do not exceed 1000 meters and the line must be connected in bus typology (in/out).

CMSC10 - Serial communication module for LonWorks supervisor

It allows the serial connection to supervision systems, using LonWorks as the communication protocol. It allows access to a list of operating variables, control and alarms compliant with the Echelon standard.

The device is installed and wired built-in the unit.

The configuration and management activities for the LonWorks networks are the responsibility of the client.

LonWorks technology uses the LonTalk® protocol for communicating between the network nodes. Contact the service supplier for further information.

The total length of each serial line do not exceed 1000 meters and the line must be connected in bus typology (in/out).

CMSC11 - Serial communication module for BACnet-IP supervisor

Allows the serial connection to supervision systems by using BACnet-IP as a communication protocol. It allows the access to the entire list of operating variables, controls and alarms. With this accessory every unit can communicate with the main supervision systems.

The device is installed and wired built-in the unit.

The configuration and management activities for the BACnet networks are the responsibility of the client.

The total length of each serial line do not exceed 1000 meters and the line must be connected in bus typology (in/out).

PFCC - Power factor correction capacitors (cosfi > 0.95)

The component is necessary to lower the phase difference between current and voltage in the electromagnetic components of the unit, such as asynchronous motors. By re-phasing it is possible to reduce the intensity of the line current by reducing a part of the power of the mains (reactive power). This leads to an economic benefit which the energy provider grants to the final user. The component makes it possible to bring the cosfi power factor to values which on average are greater than 0.95.

The device is installed and wired built-in the unit.

PM - Phase monitor

The phase monitor allows verifying the proper phase connection and their unbalance in the units, which are powered by a three-phase system.

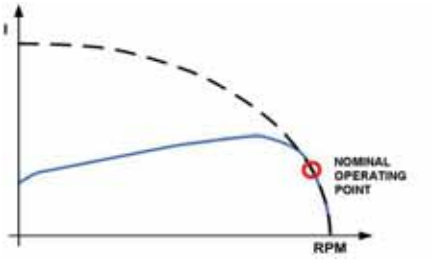
The monitor communicates with the control circuit and orders the switch-off of the unit, should one of the following cases occur: improper phase connection, the limit value referring to the unbalance between the phases is exceeded, over/undervoltage for a certain amount of time. Once the line conditions are restored, the unit is reactivated manually.

The device is installed and wired built-in the unit.

SFSTC - Progressive compressor start-up Soft starter

This option is also known as "Soft starter". An electronic device which automatically starts up the compressors gradually, reducing the starting current for the unit by around 40% in comparison with the nominal value. This results in the electrical capacity system and the related protection devices being sized with lower parameters, thus having a lower initial investment cost.

The device is installed and wired built-in the unit.



(---) POWER INPUT WITHOUT SFSTC OPTION
(___) POWER INPUT WITH SFSTC OPTION

Accessories separately supplied

AMRX - Rubber antivibration mounts

AMRMX - Rubber antivibration mounts for unit and gas module

The rubber antivibration mounts must be fixed to designated housings on the support stringers and are used to dampen vibrations produced by the unit, thereby reducing the noise transmitted to the support structures. They are flexible bodies able to dampen axial and tangential stresses and maintain the mechanical properties almost constant over time thanks to high resistance materials of which they are made. Alternatively, rubberized neoprene anti-vibration strips may be used on the unit longitudinal support members (not supplied by Clivet).

Installation provided by the Customer.

CLMX - Clivet Master System

CLIVET MASTER SYSTEM is the ideal system for the remote and centralised control of the CLIVETPack and SMARTPack climate control units. It can manage up to eight units connected with a serial connection.

It includes a box for wall installation, as well as the electronic power supply and serial communication devices, a controller with a touch-screen display and a USB port at the front used to export the alarm log.

The device allows to easily and intuitively access all the information on the status of the system and the climate control units. It also provides:

- auto-detection of units connected;
- setting all unit parameters;
- setting of the zone set-point;
- unit stata display;
- control and management of the alarms and creation of an alarm log;
- hourly operation scheduling (ON / OFF / ECO);
- rotation of the units even for individual areas;
- temperature, humidity and air quality trends;
- automatic language management (English, Italian, French, Spanish and German).

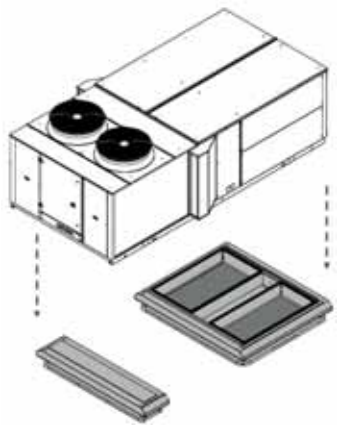
The component must be combined with the RS485 serial port option with Modbus protocol built-in of each rooftop.

Operating temperature from 0°C to 50°C with relative humidity lower than 90% without condensate.

Installation provided by the Customer.

RCX - Roof curb

Option that allows to connect the unit to the building roof, ideal with downflow supply and return.



It is made up of two part, a solid steel frame for the air duct connection and a adjustment support in height. Both parts are made of galvanized steel with a steel rain cover profile painted in the same unit colour. it has an adequate support and a duct connection semplification. It is supplied not assembled and it has to be assembled directly in the construction site, to facilitate the transport and installation.

It is complete with adjusting screws to adapt to any slopes or difference in height of the cover.

Once the frame is assembled, it will be necessary to insulate and seal the roof curb to the roof to guarantee the resistance to atmospheric agents, later it will be necessary only to place the unit.

Option not available with gas module.

Installation provided by the Custormer.

Performance

On the web site www.clivet.com are available the performances of the CCK configuration.

Size 12.2 CCKP configuration

Cooling performance with 80% of outdoor and exhaust air

Airflow	Ta °C DB/WB	Outdoor air temperature °C D.B/W.B.																							
		25 / 18				30 / 22				32 / 23.5				35 / 24				38 / 24.5				40 / 25			
		kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER
4000 m³/h	22 / 16	42,1	24,5	7,1	5,9	45,2	25,3	8,0	5,7	44,5	24,8	8,5	5,2	45,3	27,5	9,1	5,0	43,4	28,8	9,9	4,4	42,6	29,8	10,4	4,1
	24 / 17	41,9	24,5	7,2	5,8	44,9	25,2	8,1	5,5	44,4	24,9	8,6	5,2	45,6	27,7	9,1	5,0	43,3	28,9	10,0	4,3	42,6	30,0	10,4	4,1
	26 / 18	41,7	24,4	7,2	5,8	44,7	25,2	8,1	5,5	44,4	24,9	8,6	5,2	45,8	27,9	9,2	5,0	43,2	28,9	10,0	4,3	42,6	30,1	10,4	4,1
	27 / 19	41,7	24,2	7,2	5,8	44,6	25,0	8,1	5,5	44,4	24,8	8,6	5,2	45,9	27,8	9,2	5,0	43,3	28,8	10,0	4,3	42,7	30,1	10,4	4,1
	28 / 20	41,7	24,1	7,2	5,8	44,6	24,9	8,2	5,4	44,5	24,7	8,6	5,2	45,8	27,6	9,2	5,0	43,3	28,7	10,0	4,3	42,8	30,0	10,4	4,1
	30 / 22	41,7	23,7	7,2	5,8	44,5	24,5	8,2	5,4	44,6	24,5	8,6	5,2	45,7	27,3	9,2	5,0	43,4	28,4	10,0	4,3	43,0	29,8	10,4	4,1
4500 m³/h	22 / 16	43,2	25,7	7,1	6,1	46,2	26,5	8,1	5,7	45,6	26,0	8,6	5,3	46,6	29,0	9,2	5,1	44,6	30,6	9,9	4,5	43,7	31,7	10,4	4,2
	24 / 17	43,0	25,7	7,2	6,0	46,0	26,5	8,1	5,7	45,5	26,1	8,6	5,3	46,9	29,2	9,2	5,1	44,5	30,7	10,0	4,5	43,8	31,9	10,4	4,2
	26 / 18	42,8	25,6	7,2	5,9	45,7	26,4	8,2	5,6	45,5	26,2	8,6	5,3	47,2	29,4	9,2	5,1	44,4	30,7	10,0	4,4	43,9	32,0	10,4	4,2
	27 / 19	42,7	25,4	7,2	5,9	45,7	26,3	8,2	5,6	45,5	26,1	8,6	5,3	47,2	29,3	9,2	5,1	44,4	30,6	10,0	4,4	44,0	31,9	10,4	4,2
	28 / 20	42,7	25,2	7,2	5,9	45,6	26,1	8,2	5,6	45,6	25,9	8,7	5,2	47,2	29,2	9,2	5,1	44,5	30,5	10,0	4,5	44,1	31,8	10,4	4,2
	30 / 22	42,7	24,8	7,3	5,8	45,5	25,7	8,2	5,5	45,7	25,7	8,7	5,3	47,0	28,8	9,2	5,1	44,6	30,2	10,0	4,5	44,4	31,6	10,4	4,3
7000 m³/h	22 / 16	46,9	30,6	7,3	6,4	50,2	31,5	8,2	6,1	49,5	30,8	8,7	5,7	50,8	35,0	9,3	5,5	49,2	37,1	10,1	4,9	48,4	38,6	10,6	4,6
	24 / 17	46,6	30,6	7,3	6,4	50,0	31,5	8,2	6,1	49,5	31,0	8,7	5,7	51,2	35,4	9,3	5,5	49,0	37,3	10,1	4,9	48,5	38,8	10,6	4,6
	26 / 18	46,4	30,6	7,3	6,4	49,7	31,5	8,3	6,0	49,4	31,1	8,8	5,6	51,5	35,7	9,3	5,5	48,9	37,4	10,1	4,8	48,5	39,0	10,6	4,6
	27 / 19	46,3	30,3	7,3	6,3	49,6	31,3	8,3	6,0	49,5	31,0	8,8	5,6	51,5	35,6	9,3	5,5	49,0	37,2	10,1	4,9	48,6	39,0	10,6	4,6
	28 / 20	46,3	30,1	7,4	6,3	49,6	31,1	8,3	6,0	49,5	30,9	8,8	5,6	51,4	35,4	9,3	5,5	49,0	37,1	10,2	4,8	48,7	38,9	10,6	4,6
	30 / 22	46,2	29,6	7,4	6,2	49,4	30,6	8,3	6,0	49,6	30,5	8,8	5,6	51,2	34,9	9,4	5,4	49,1	36,7	10,2	4,8	48,9	38,6	10,6	4,6

Heating performance with 80% of outdoor and exhaust air

Airflow	Ta (°C) DB	Outdoor air temperature °C D.B/W.B.																	
		-5 / -6			0 / -1			2 / 1			7 / 6			12 / 11			15 / 13		
		kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP
4000 m³/h	10	35,6	5,7	6,25	38,2	6,7	5,70	39,9	7,3	5,47	43,5	8,7	5,00	46,2	10,1	4,57	51,4	11,0	4,67
	15	35,7	5,9	6,05	38,5	6,9	5,58	40,3	7,5	5,37	43,8	8,9	4,92	47,4	10,4	4,56	52,6	11,2	4,70
	18	35,7	6,0	5,95	38,7	7,0	5,53	40,5	7,6	5,33	43,9	9,0	4,88	48,2	10,6	4,55	52,8	11,4	4,63
	20	35,7	6,0	5,95	38,8	7,1	5,46	40,7	7,7	5,29	44,0	9,1	4,84	48,6	10,7	4,54	52,8	11,5	4,59
	22	35,7	6,1	5,85	38,9	7,1	5,48	40,8	7,8	5,23	44,1	9,2	4,79	49,1	10,8	4,55	52,8	11,6	4,55
	25	35,8	6,2	5,77	39,1	7,3	5,36	41,0	7,9	5,19	44,3	9,3	4,76	49,8	11,0	4,53	52,9	11,8	4,48
4500 m³/h	10	35,7	5,4	6,61	38,4	6,3	6,10	40,1	6,8	5,90	44,0	8,2	5,37	47,0	9,4	5,00	52,6	10,2	5,16
	15	35,7	5,5	6,49	38,7	6,5	5,95	40,5	7,0	5,79	44,3	8,4	5,27	48,3	9,7	4,98	54,0	10,4	5,19
	18	35,8	5,6	6,39	38,8	6,6	5,88	40,7	7,2	5,65	44,4	8,5	5,22	49,0	9,9	4,95	54,0	10,6	5,09
	20	35,8	5,7	6,28	39,0	6,6	5,91	40,9	7,2	5,68	44,5	8,6	5,17	49,5	10,0	4,95	53,9	10,7	5,04
	22	35,8	5,8	6,17	39,1	6,7	5,84	41,0	7,3	5,62	44,6	8,6	5,19	50,0	10,1	4,95	53,8	10,8	4,98
	25	35,8	5,9	6,07	39,2	6,8	5,76	41,2	7,4	5,57	44,9	8,8	5,10	50,7	10,3	4,92	53,7	10,9	4,93
7000 m³/h	10	36,3	4,5	8,07	39,0	5,2	7,50	40,8	5,7	7,16	45,0	6,7	6,72	48,8	7,7	6,34	55,1	8,2	6,72
	15	36,3	4,7	7,72	39,2	5,4	7,26	41,2	5,9	6,98	45,3	6,8	6,66	50,2	7,9	6,35	56,5	8,4	6,73
	18	36,3	4,7	7,72	39,4	5,5	7,16	41,4	6,0	6,90	45,5	6,9	6,59	51,0	8,0	6,38	56,6	8,5	6,66
	20	36,3	4,8	7,56	39,5	5,6	7,05	41,6	6,0	6,93	45,6	7,0	6,51	51,6	8,1	6,37	56,5	8,6	6,57
	22	36,3	4,9	7,41	39,6	5,6	7,07	41,7	6,1	6,84	45,7	7,1	6,44	52,1	8,2	6,35	56,5	8,7	6,49
	25	36,3	4,9	7,41	39,8	5,7	6,98	41,9	6,2	6,76	46,0	7,2	6,39	52,9	8,4	6,30	56,5	8,8	6,42

Ta = Indoor air temperature D.B/W.B
DB = Dry bulb
WB = Wet bulb
kWf = Cooling capacity in kW
kWs = Sensible cooling capacity (kW)
kWe = Compressor power input in kW
kWt = Heating capacity (kW)
EER referred only to compressors
COP referred only to compressors
The fan motor heating is not considered

Integrated heating capacities

Air temperature external exchanger inlet °C (D.B. / W.B.)	-5 / -5.4	0 / -0.6	5 / 3.9	Others
Heating capacity multiplication coefficient	0,89	0,88	0,94	1

The integrated heating capacity represents the real heating capacity considering the defrost cycles too.
To obtain the integrated heating capacity multiply the heating performance value in kWt (shown in the heating performance tables) by the coefficients indicated in the table.
DB = dry bulb
WB = wet bulb
In case of below zero external air temperature with a long period of heat pump operating mode it is necessary to help the evacuation of the water produced during the defrost cycle; this to avoid the formation of ice in the unit basement. Pay attention that the evacuation will not create inconveniences to things or persons.

Size 15.2 CCKP configuration

Cooling performance with 80% of outdoor and exhaust air

Airflow	Ta °C DB/WB	Outdoor air temperature °C D.B/W.B.																							
		25 / 18				30 / 22				32 / 23.5				35 / 24				38 / 24.5				40 / 25			
		kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER
4000 m³/h	22 / 16	49,8	28,4	9,3	5,4	52,9	29,3	10,5	5,0	52,0	28,7	11,2	4,6	53,0	31,6	11,9	4,5	50,7	32,9	13,0	3,9	49,5	34,0	13,6	3,6
	24 / 17	49,6	28,3	9,3	5,3	52,6	29,2	10,6	5,0	51,9	28,8	11,2	4,6	53,3	31,8	11,9	4,5	50,5	33,0	13,0	3,9	49,5	34,1	13,7	3,6
	26 / 18	49,4	28,2	9,4	5,3	52,3	29,2	10,6	4,9	51,9	28,8	11,2	4,6	53,6	32,0	11,9	4,5	50,4	33,0	13,1	3,8	49,5	34,3	13,7	3,6
	27 / 19	49,3	28,0	9,4	5,2	52,2	29,0	10,7	4,9	51,9	28,7	11,3	4,6	53,7	31,9	11,9	4,5	50,4	32,9	13,1	3,8	49,6	34,2	13,7	3,6
	28 / 20	49,3	27,8	9,4	5,2	52,2	28,8	10,7	4,9	51,9	28,6	11,3	4,6	53,6	31,7	12,0	4,5	50,4	32,8	13,1	3,8	49,7	34,1	13,7	3,6
	30 / 22	49,2	27,4	9,5	5,2	52,0	28,4	10,7	4,9	52,0	28,3	11,3	4,6	53,4	31,3	12,0	4,5	50,5	32,5	13,1	3,9	49,9	33,9	13,7	3,6
6500 m³/h	22 / 16	55,0	34,5	9,5	5,8	58,4	35,4	10,8	5,4	57,4	34,5	11,5	5,0	58,8	38,6	12,3	4,8	56,9	40,8	13,4	4,2	56,0	42,5	14,0	4,0
	24 / 17	54,8	34,5	9,6	5,7	58,1	35,4	10,9	5,3	57,3	34,7	11,5	5,0	59,1	39,0	12,3	4,8	56,7	41,0	13,4	4,2	56,0	42,7	14,0	4,0
	26 / 18	54,6	34,4	9,6	5,7	57,7	35,3	10,9	5,3	57,3	34,8	11,5	5,0	59,5	39,3	12,3	4,8	56,5	41,1	13,4	4,2	56,0	43,0	14,1	4,0
	27 / 19	54,5	34,2	9,6	5,7	57,6	35,1	10,9	5,3	57,3	34,7	11,6	4,9	59,5	39,2	12,3	4,8	56,6	40,9	13,5	4,2	56,1	42,8	14,1	4,0
	28 / 20	54,4	33,9	9,7	5,6	57,5	34,9	11,0	5,2	57,3	34,5	11,6	4,9	59,4	39,0	12,4	4,8	56,6	40,8	13,5	4,2	56,2	42,7	14,1	4,0
	30 / 22	54,3	33,4	9,7	5,6	57,3	34,4	11,0	5,2	57,3	34,1	11,6	4,9	59,1	38,4	12,4	4,8	56,6	40,4	13,5	4,2	56,5	42,4	14,1	4,0
7000 m³/h	22 / 16	55,8	35,5	9,6	5,8	59,2	36,4	10,8	5,5	58,1	35,5	11,5	5,1	59,8	39,7	12,3	4,9	57,8	42,2	13,4	4,3	56,8	44,0	14,0	4,1
	24 / 17	55,5	35,5	9,6	5,8	58,8	36,4	10,9	5,4	58,1	35,6	11,5	5,1	60,1	40,1	12,3	4,9	57,6	42,3	13,4	4,3	56,9	44,2	14,1	4,0
	26 / 18	55,3	35,4	9,6	5,8	58,5	36,4	10,9	5,4	58,0	35,8	11,6	5,0	60,5	40,5	12,4	4,9	57,4	42,5	13,5	4,3	56,9	44,5	14,1	4,0
	27 / 19	55,2	35,2	9,7	5,7	58,4	36,1	10,9	5,4	58,0	35,6	11,6	5,0	60,5	40,3	12,4	4,9	57,4	42,3	13,5	4,3	57,0	44,4	14,1	4,0
	28 / 20	55,2	34,9	9,7	5,7	58,3	35,9	11,0	5,3	58,0	35,4	11,6	5,0	60,4	40,1	12,4	4,9	57,4	42,1	13,5	4,3	57,1	44,3	14,1	4,0
	30 / 22	55,0	34,3	9,7	5,7	58,1	35,4	11,0	5,3	58,1	35,1	11,7	5,0	60,1	39,5	12,5	4,8	57,5	41,7	13,6	4,2	57,3	44,0	14,1	4,1

Heating performance with 80% of outdoor and exhaust air

Airflow	Ta (°C) DB	Outdoor air temperature °C D.B/W.B.																	
		-5 / -6			0 / -1			2 / 1			7 / 6			12 / 11			15 / 13		
		kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP
4000 m³/h	10	43,4	8,6	5,05	46,3	10,6	4,37	47,9	11,5	4,17	51,4	13,9	3,70	54,7	17,0	3,22	60,8	18,9	3,22
	15	43,5	8,8	4,94	46,6	10,8	4,31	48,3	11,7	4,13	51,7	14,1	3,67	56,2	17,5	3,21	62,2	19,3	3,22
	18	43,5	8,9	4,89	46,7	11,0	4,25	48,5	11,9	4,08	51,8	14,3	3,62	57,1	17,8	3,21	62,4	19,6	3,18
	20	43,6	9,0	4,84	46,9	11,1	4,23	48,6	12,0	4,05	51,9	14,4	3,60	57,7	18,0	3,21	62,3	19,8	3,15
	22	43,6	9,0	4,84	47,0	11,2	4,20	48,8	12,1	4,03	52,0	14,5	3,59	58,3	18,1	3,22	62,3	20,0	3,12
	25	43,6	9,2	4,74	47,1	11,3	4,17	49,0	12,2	4,02	52,3	14,7	3,56	59,2	18,4	3,22	62,3	20,2	3,08
6500 m³/h	10	43,9	7,0	6,27	47,2	8,2	5,76	49,3	8,9	5,54	53,9	10,6	5,08	57,5	12,3	4,67	64,2	13,3	4,83
	15	44,0	7,2	6,11	47,6	8,4	5,67	49,8	9,2	5,41	54,3	10,9	4,98	59,1	12,7	4,65	65,7	13,6	4,83
	18	44,0	7,3	6,03	47,9	8,6	5,57	50,1	9,3	5,39	54,5	11,0	4,95	60,0	12,9	4,65	65,9	13,8	4,78
	20	44,0	7,4	5,95	48,0	8,7	5,52	50,3	9,4	5,35	54,6	11,1	4,92	60,6	13,0	4,66	65,9	13,9	4,74
	22	44,1	7,5	5,88	48,2	8,8	5,48	50,5	9,5	5,32	54,7	11,2	4,88	61,2	13,2	4,64	65,9	14,0	4,71
	25	44,1	7,6	5,80	48,4	8,9	5,44	50,8	9,7	5,24	55,0	11,4	4,82	62,1	13,4	4,63	66,0	14,2	4,65
7000 m³/h	10	44,1	6,7	6,58	47,3	7,9	5,99	49,4	8,6	5,74	54,2	10,2	5,31	58,0	11,9	4,87	65,0	12,9	5,04
	15	44,1	7,0	6,30	47,7	8,1	5,89	49,9	8,8	5,67	54,6	10,5	5,20	59,6	12,2	4,89	66,6	13,1	5,08
	18	44,2	7,1	6,23	47,9	8,3	5,77	50,2	9,0	5,58	54,8	10,6	5,17	60,5	12,4	4,88	66,7	13,3	5,02
	20	44,2	7,2	6,14	48,0	8,4	5,71	50,4	9,1	5,54	55,0	10,7	5,14	61,1	12,6	4,85	66,7	13,4	4,98
	22	44,2	7,2	6,14	48,2	8,5	5,67	50,6	9,2	5,50	55,1	10,8	5,10	61,7	12,7	4,86	66,6	13,5	4,93
	25	44,3	7,4	5,99	48,4	8,6	5,63	50,9	9,3	5,47	55,4	11,0	5,04	62,6	12,9	4,85	66,5	13,7	4,85

Ta = Indoor air temperature D.B/W.B
DB = Dry bulb
WB = Wet bulb
kWf = Cooling capacity in kW
kWs = Sensible cooling capacity (kW)
kWe = Compressor power input in kW
kWt = Heating capacity (kW)
EER referred only to compressors
COP referred only to compressors
The fan motor heating is not considered

Integrated heating capacities

Air temperature external exchanger inlet °C (D.B. / W.B.)	-5 / -5.4	0 / -0.6	5 / 3.9	Others
Heating capacity multiplication coefficient	0,89	0,88	0,94	1

The integrated heating capacity represents the real heating capacity considering the defrost cycles too.
To obtain the integrated heating capacity multiply the heating performance value in kWt (shown in the heating performance tables) by the coefficients indicated in the table.
DB = dry bulb
WB = wet bulb
In case of below zero external air temperature with a long period of heat pump operating mode it is necessary to help the evacuation of the water produced during the defrost cycle; this to avoid the formation of ice in the unit basement. Pay attention that the evacuation will not create inconveniences to things or persons.

Size 16.4 CCKP configuration

Cooling performance with 80% of outdoor and exhaust air

Airflow	Ta °C DB/WB	Outdoor air temperature °C D.B/W.B.																							
		25 / 18				30 / 22				32 / 23.5				35 / 24				38 / 24.5				40 / 25			
		kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER
7000 m³/h	22 / 16	66,1	44,2	12,1	5,5	71,4	44,7	13,6	5,3	70,6	43,4	14,4	4,9	71,9	48,6	15,4	4,7	70,0	50,5	16,7	4,2	69,7	51,8	17,5	4,0
	24 / 17	65,7	44,1	12,1	5,4	71,0	44,7	13,7	5,2	70,4	43,6	14,5	4,9	72,2	49,1	15,4	4,7	69,9	50,6	16,7	4,2	69,8	52,0	17,5	4,0
	26 / 18	65,4	44,0	12,2	5,4	70,5	44,7	13,7	5,1	70,3	43,8	14,5	4,8	72,5	49,6	15,4	4,7	69,8	50,7	16,7	4,2	69,9	52,3	17,5	4,0
	27 / 19	65,4	43,7	12,2	5,4	70,4	44,4	13,7	5,1	70,3	43,6	14,5	4,8	72,6	49,4	15,4	4,7	69,9	50,5	16,8	4,2	70,1	52,1	17,5	4,0
	28 / 20	65,3	43,4	12,2	5,4	70,3	44,0	13,8	5,1	70,4	43,4	14,5	4,9	72,5	49,0	15,4	4,7	70,0	50,2	16,8	4,2	70,3	51,9	17,5	4,0
	30 / 22	65,2	42,7	12,3	5,3	70,2	43,4	13,8	5,1	70,5	43,0	14,6	4,8	72,4	48,3	15,5	4,7	70,2	49,6	16,8	4,2	70,7	51,5	17,5	4,0
8000 m³/h	22 / 16	67,8	46,4	12,1	5,6	73,0	47,0	13,7	5,3	72,5	45,3	14,5	5,0	74,6	50,5	15,4	4,8	72,1	53,1	16,7	4,3	71,4	53,9	17,5	4,1
	24 / 17	67,4	46,4	12,2	5,5	72,6	47,0	13,7	5,3	72,4	45,5	14,5	5,0	74,9	51,0	15,5	4,8	72,0	53,1	16,8	4,3	71,5	54,0	17,5	4,1
	26 / 18	67,1	46,3	12,2	5,5	72,2	46,9	13,8	5,2	72,3	45,7	14,6	5,0	75,3	51,6	15,5	4,9	71,8	53,1	16,8	4,3	71,6	54,1	17,6	4,1
	27 / 19	67,1	46,0	12,2	5,5	72,1	46,6	13,8	5,2	72,3	45,5	14,6	5,0	75,4	51,4	15,5	4,9	71,9	52,8	16,8	4,3	71,8	53,9	17,6	4,1
	28 / 20	67,0	45,6	12,2	5,5	72,0	46,3	13,8	5,2	72,4	45,3	14,6	5,0	75,2	51,0	15,5	4,9	72,0	52,5	16,9	4,3	72,0	53,6	17,6	4,1
	30 / 22	66,9	44,8	12,3	5,4	71,8	45,5	13,9	5,2	72,5	44,8	14,7	4,9	75,0	50,3	15,6	4,8	72,2	51,8	16,9	4,3	72,4	53,0	17,6	4,1
12500 m³/h	22 / 16	73,9	53,2	12,3	6,0	80,0	53,0	13,9	5,8	78,9	51,5	14,7	5,4	81,5	59,0	15,7	5,2	79,3	63,1	17,0	4,7	78,2	65,5	17,7	4,4
	24 / 17	73,5	53,3	12,3	6,0	79,5	53,2	14,0	5,7	78,8	51,9	14,7	5,4	82,0	59,7	15,7	5,2	79,1	63,3	17,0	4,7	78,2	66,0	17,7	4,4
	26 / 18	73,2	53,4	12,4	5,9	79,1	53,3	14,0	5,7	78,7	52,3	14,8	5,3	82,5	60,4	15,7	5,3	78,9	63,6	17,1	4,6	78,2	66,4	17,8	4,4
	27 / 19	73,1	52,9	12,4	5,9	78,9	52,9	14,0	5,6	78,7	52,1	14,8	5,3	82,6	60,1	15,7	5,3	78,9	63,3	17,1	4,6	78,3	66,3	17,8	4,4
	28 / 20	73,0	52,5	12,4	5,9	78,8	52,5	14,1	5,6	78,7	51,8	14,8	5,3	82,4	59,7	15,8	5,2	78,8	63,1	17,1	4,6	78,4	66,2	17,8	4,4
	30 / 22	72,8	51,5	12,5	5,8	78,4	51,7	14,1	5,6	78,7	51,2	14,9	5,3	82,0	58,8	15,8	5,2	78,9	62,5	17,1	4,6	78,6	65,8	17,8	4,4

Heating performance with 80% of outdoor and exhaust air

Airflow	Ta (°C) DB	Outdoor air temperature °C D.B/W.B.																	
		-5 / -6			0 / -1			2 / 1			7 / 6			12 / 11			15 / 13		
		kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP
7000 m³/h	10	57,1	9,4	6,07	61,3	10,9	5,62	64,0	11,8	5,42	69,7	13,8	5,05	74,2	15,7	4,73	83,0	16,9	4,91
	15	57,3	9,7	5,91	61,8	11,2	5,52	64,7	12,1	5,35	70,2	14,2	4,94	76,3	16,2	4,71	85,0	17,2	4,94
	18	57,3	9,9	5,79	62,1	11,4	5,45	65,1	12,3	5,29	70,5	14,3	4,93	77,6	16,5	4,70	85,2	17,5	4,87
	20	57,4	10,0	5,74	62,3	11,5	5,42	65,3	12,5	5,22	70,6	14,5	4,87	78,4	16,7	4,69	85,1	17,6	4,84
	22	57,4	10,1	5,68	62,5	11,7	5,34	65,6	12,6	5,21	70,8	14,6	4,85	79,2	16,9	4,69	85,1	17,8	4,78
	25	57,5	10,3	5,58	62,8	11,9	5,28	65,9	12,8	5,15	71,2	14,8	4,81	80,4	17,2	4,67	85,1	18,0	4,73
8000 m³/h	10	57,4	8,8	6,52	61,7	10,3	5,99	64,4	11,1	5,80	70,5	13,0	5,42	75,2	14,8	5,08	84,8	15,9	5,33
	15	57,5	9,1	6,32	62,2	10,6	5,87	65,1	11,5	5,66	71,0	13,4	5,30	77,4	15,2	5,09	87,0	16,2	5,37
	18	57,6	9,3	6,19	62,5	10,8	5,79	65,5	11,6	5,65	71,3	13,5	5,28	78,6	15,5	5,07	87,0	16,4	5,30
	20	57,6	9,4	6,13	62,7	10,9	5,75	65,7	11,8	5,57	71,5	13,7	5,22	79,5	15,7	5,06	86,9	16,5	5,27
	22	57,6	9,5	6,06	62,9	11,0	5,72	66,0	11,9	5,55	71,7	13,8	5,20	80,3	15,9	5,05	86,8	16,7	5,20
	25	57,7	9,7	5,95	63,2	11,2	5,64	66,4	12,1	5,49	72,1	14,0	5,15	81,5	16,1	5,06	86,6	16,9	5,12
12500 m³/h	10	57,9	7,3	7,93	62,1	8,6	7,22	64,9	9,3	6,98	71,2	10,9	6,53	76,9	12,4	6,20	87,7	13,4	6,54
	15	57,9	7,6	7,62	62,6	8,9	7,03	65,5	9,6	6,82	71,7	11,2	6,40	79,3	12,8	6,20	90,1	13,7	6,58
	18	58,0	7,8	7,44	62,9	9,1	6,91	65,9	9,8	6,72	72,0	11,4	6,32	80,6	13,1	6,15	90,3	13,8	6,54
	20	58,0	7,9	7,34	63,1	9,2	6,86	66,2	9,9	6,69	72,2	11,5	6,28	81,5	13,2	6,17	90,3	13,9	6,50
	22	58,0	8,0	7,25	63,3	9,3	6,81	66,5	10,1	6,58	72,4	11,6	6,24	82,4	13,4	6,15	90,3	14,1	6,40
		58,1	8,1	7,17	63,6	9,5	6,69	66,9	10,2	6,56	72,9	11,8	6,18	83,8	13,6	6,16	90,3	14,2	6,36

Ta = Indoor air temperature D.B/W.B
DB = Dry bulb
WB = Wet bulb
kWf = Cooling capacity in kW
kWs = Sensible cooling capacity (kW)
kWe = Compressor power input in kW
kWt = Heating capacity (kW)
EER referred only to compressors
COP referred only to compressors
The fan motor heating is not considered

Integrated heating capacities

Air temperature external exchanger inlet °C (D.B. / W.B.)	-5 / -5.4	0 / -0.6	5 / 3.9	Others
Heating capacity multiplication coefficient	0,89	0,88	0,94	1

The integrated heating capacity represents the real heating capacity considering the defrost cycles too.
To obtain the integrated heating capacity multiply the heating performance value in kWt (shown in the heating performance tables) by the coefficients indicated in the table.
DB = dry bulb
WB = wet bulb
In case of below zero external air temperature with a long period of heat pump operating mode it is necessary to help the evacuation of the water produced during the defrost cycle; this to avoid the formation of ice in the unit basement. Pay attention that the evacuation will not create inconveniences to things or persons.

Size 20.4 CCKP configuration

Cooling performance with 80% of outdoor and exhaust air

Airflow	Ta °C DB/WB	Outdoor air temperature °C D.B/W.B.																							
		25 / 18				30 / 22				32 / 23.5				35 / 24				38 / 24.5				40 / 25			
		kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER
7000 m³/h	22 / 16	78,3	44,8	14,7	5,3	82,9	46,2	16,7	5,0	81,3	45,4	17,8	4,6	82,4	50,3	19,0	4,3	78,9	52,9	20,7	3,8	77,3	54,9	21,6	3,6
	24 / 17	77,9	44,7	14,7	5,3	82,4	46,2	16,8	4,9	81,2	45,5	17,8	4,6	82,8	50,7	19,0	4,4	78,6	53,0	20,7	3,8	77,3	55,1	21,7	3,6
	26 / 18	77,6	44,6	14,8	5,2	82,0	46,1	16,9	4,9	81,0	45,6	17,9	4,5	83,3	51,1	19,1	4,4	78,4	53,1	20,8	3,8	77,4	55,4	21,7	3,6
	27 / 19	77,5	44,3	14,8	5,2	81,9	45,8	16,9	4,8	81,1	45,5	17,9	4,5	83,3	51,0	19,1	4,4	78,5	52,9	20,8	3,8	77,5	55,2	21,7	3,6
	28 / 20	77,4	43,9	14,9	5,2	81,7	45,5	16,9	4,8	81,1	45,3	18,0	4,5	83,2	50,7	19,2	4,3	78,5	52,7	20,9	3,8	77,7	55,1	21,7	3,6
	30 / 22	77,3	43,3	15,0	5,2	81,5	44,9	17,0	4,8	81,2	44,9	18,0	4,5	82,8	50,0	19,3	4,3	78,6	52,2	20,9	3,8	78,0	54,8	21,8	3,6
9000 m³/h	22 / 16	82,2	49,7	14,9	5,5	86,8	51,3	17,0	5,1	85,2	50,2	18,0	4,7	86,6	56,3	19,3	4,5	83,7	59,2	21,0	4,0	82,6	61,5	22,0	3,8
	24 / 17	81,8	49,7	15,0	5,5	86,3	51,3	17,0	5,1	85,0	50,4	18,1	4,7	87,1	56,8	19,3	4,5	83,5	59,4	21,1	4,0	82,6	61,8	22,1	3,7
	26 / 18	81,4	49,6	15,0	5,4	85,8	51,2	17,1	5,0	84,9	50,6	18,2	4,7	87,5	57,4	19,3	4,5	83,3	59,6	21,2	3,9	82,7	62,2	22,1	3,7
	27 / 19	81,3	49,2	15,1	5,4	85,7	50,9	17,2	5,0	84,9	50,4	18,2	4,7	87,6	57,1	19,4	4,5	83,4	59,3	21,2	3,9	82,9	62,0	22,1	3,8
	28 / 20	81,3	48,9	15,1	5,4	85,5	50,6	17,2	5,0	84,9	50,2	18,2	4,7	87,4	56,8	19,4	4,5	83,5	59,1	21,2	3,9	83,1	61,8	22,2	3,7
	30 / 22	81,1	48,1	15,2	5,3	85,2	49,9	17,3	4,9	85,0	49,7	18,3	4,6	87,1	56,0	19,6	4,4	83,6	58,4	21,3	3,9	83,5	61,4	22,2	3,8
12500 m³/h	22 / 16	86,8	56,7	15,2	5,7	91,4	58,3	17,3	5,3	89,7	56,6	18,4	4,9	90,0	64,5	19,7	4,6	88,7	68,7	21,5	4,1	88,2	71,5	22,5	3,9
	24 / 17	86,4	56,7	15,2	5,7	91,0	58,4	17,3	5,3	89,5	57,0	18,4	4,9	90,3	65,2	19,8	4,6	88,5	68,9	21,5	4,1	88,2	72,0	22,5	3,9
	26 / 18	86,0	56,7	15,3	5,6	90,5	58,5	17,4	5,2	89,3	57,3	18,5	4,8	90,5	66,0	19,8	4,6	88,3	69,2	21,6	4,1	88,2	72,5	22,5	3,9
	27 / 19	85,9	56,3	15,4	5,6	90,3	58,1	17,5	5,2	89,3	57,1	18,6	4,8	90,6	65,8	19,8	4,6	88,4	68,9	21,6	4,1	88,4	72,3	22,6	3,9
	28 / 20	85,8	55,8	15,4	5,6	90,2	57,7	17,5	5,2	89,3	56,8	18,6	4,8	90,5	65,3	19,9	4,5	88,5	68,6	21,6	4,1	88,5	72,2	22,6	3,9
	30 / 22	85,5	54,9	15,5	5,5	89,8	56,8	17,6	5,1	89,2	56,2	18,7	4,8	90,3	64,4	20,0	4,5	88,6	68,0	21,7	4,1	88,9	71,8	22,6	3,9

Heating performance with 80% of outdoor and exhaust air

Airflow	Ta (°C) DB	Outdoor air temperature °C D.B/W.B.																	
		-5 / -6			0 / -1			2 / 1			7 / 6			12 / 11			15 / 13		
		kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP
7000 m³/h	10	65,4	10,6	6,17	69,9	12,5	5,59	72,8	13,7	5,31	78,8	16,4	4,80	83,6	19,2	4,35	94,3	21,1	4,47
	15	65,5	10,9	6,01	70,5	12,9	5,47	73,5	14,1	5,21	79,3	16,9	4,69	86,0	19,8	4,34	96,7	21,7	4,46
	18	65,5	11,1	5,90	70,8	13,2	5,36	73,9	14,4	5,13	79,6	17,1	4,65	87,4	20,2	4,33	97,0	22,1	4,39
	20	65,6	11,2	5,86	71,1	13,3	5,35	74,2	14,6	5,08	79,8	17,3	4,61	88,3	20,5	4,31	97,0	22,3	4,35
	22	65,6	11,4	5,75	71,3	13,5	5,28	74,5	14,7	5,07	80,0	17,4	4,60	89,2	20,7	4,31	97,1	22,6	4,30
	25	65,7	11,6	5,66	71,6	13,7	5,23	74,9	15,0	4,99	80,4	17,7	4,54	90,6	21,1	4,29	97,2	23,0	4,23
9000 m³/h	10	65,7	9,2	7,14	70,4	10,9	6,46	73,4	11,9	6,17	80,0	14,2	5,63	85,6	16,4	5,22	96,0	17,9	5,36
	15	65,8	9,5	6,93	71,0	11,2	6,34	74,1	12,2	6,07	80,5	14,6	5,51	88,1	17,0	5,18	98,5	18,3	5,38
	18	65,8	9,7	6,78	71,4	11,5	6,21	74,6	12,5	5,97	80,9	14,8	5,47	89,6	17,3	5,18	98,7	18,6	5,31
	20	65,8	9,9	6,65	71,6	11,6	6,17	74,9	12,6	5,94	81,1	15,0	5,41	90,6	17,5	5,18	98,7	18,8	5,25
	22	65,9	10,0	6,59	71,8	11,8	6,08	75,2	12,8	5,88	81,3	15,1	5,38	91,6	17,8	5,15	98,7	18,9	5,22
	25	66,0	10,2	6,47	72,2	12,0	6,02	75,6	13,0	5,82	81,8	15,4	5,31	93,0	18,1	5,14	98,6	19,2	5,14
12500 m³/h	10	66,5	7,9	8,42	70,8	9,4	7,53	74,1	10,2	7,26	81,1	12,1	6,70	86,8	14,0	6,20	99,4	15,2	6,54
	15	66,5	8,3	8,01	71,5	9,7	7,37	74,9	10,5	7,13	81,7	12,4	6,59	89,6	14,4	6,22	102,4	15,6	6,56
	18	66,5	8,4	7,92	71,9	9,9	7,26	75,4	10,7	7,05	82,1	12,6	6,52	91,2	14,7	6,20	102,7	15,8	6,50
	20	66,5	8,6	7,73	72,1	10,0	7,21	75,7	10,9	6,94	82,3	12,8	6,43	92,3	14,9	6,19	102,6	15,9	6,45
	22	66,5	8,7	7,64	72,4	10,2	7,10	76,0	11,0	6,91	82,6	12,9	6,40	93,3	15,1	6,18	102,6	16,1	6,37
	25	66,5	8,8	7,56	72,8	10,4	7,00	76,5	11,2	6,83	83,1	13,1	6,34	94,9	15,4	6,16	102,6	16,3	6,29

Ta = Indoor air temperature D.B/W.B
DB = Dry bulb
WB = Wet bulb
kWf = Cooling capacity in kW
kWs = Sensible cooling capacity (kW)
kWe = Compressor power input in kW
kWt = Heating capacity (kW)
EER referred only to compressors
COP referred only to compressors
The fan motor heating is not considered

Integrated heating capacities

Air temperature external exchanger inlet °C (D.B. / W.B.)	-5 / -5.4	0 / -0.6	5 / 3.9	Others
Heating capacity multiplication coefficient	0,89	0,88	0,94	1

The integrated heating capacity represents the real heating capacity considering the defrost cycles too.
To obtain the integrated heating capacity multiply the heating performance value in kWt (shown in the heating performance tables) by the coefficients indicated in the table.
DB = dry bulb
WB = wet bulb
In case of below zero external air temperature with a long period of heat pump operating mode it is necessary to help the evacuation of the water produced during the defrost cycle; this to avoid the formation of ice in the unit basement. Pay attention that the evacuation will not create inconveniences to things or persons.

Size 24.4 CCKP configuration

Cooling performance with 80% of outdoor and exhaust air

Airflow	Ta °C DB/WB	Outdoor air temperature °C D.B/W.B.																							
		25 / 18				30 / 22				32 / 23.5				35 / 24				38 / 24.5				40 / 25			
		kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER
7000 m³/h	22 / 16	89,9	49,4	17,0	5,3	95,3	51,1	19,3	4,9	93,4	50,2	20,5	4,6	94,9	55,3	21,9	4,3	91,1	58,0	23,8	3,8	89,3	60,0	24,9	3,6
	24 / 17	89,5	49,3	17,1	5,2	94,7	51,0	19,4	4,9	93,2	50,3	20,6	4,5	95,4	55,7	22,0	4,3	90,9	58,1	23,9	3,8	89,4	60,2	24,9	3,6
	26 / 18	89,1	49,1	17,2	5,2	94,2	50,9	19,5	4,8	93,1	50,4	20,6	4,5	95,9	56,1	22,0	4,4	90,7	58,1	23,9	3,8	89,4	60,4	25,0	3,6
	27 / 19	89,0	48,8	17,2	5,2	94,0	50,6	19,5	4,8	93,1	50,2	20,7	4,5	96,0	55,9	22,1	4,3	90,7	57,9	24,0	3,8	89,6	60,3	25,0	3,6
	28 / 20	88,9	48,5	17,3	5,1	93,9	50,3	19,6	4,8	93,1	50,0	20,7	4,5	95,8	55,6	22,1	4,3	90,8	57,7	24,0	3,8	89,7	60,1	25,0	3,6
	30 / 22	88,7	47,8	17,4	5,1	93,6	49,6	19,7	4,8	93,2	49,6	20,8	4,5	95,5	54,9	22,2	4,3	90,8	57,2	24,1	3,8	90,1	59,8	25,1	3,6
12000 m³/h	22 / 16	99,5	61,9	17,5	5,7	104,5	63,7	20,0	5,2	102,6	62,2	21,2	4,8	105,4	70,0	22,7	4,6	102,3	74,4	24,7	4,1	101,1	77,4	25,9	3,9
	24 / 17	99,0	61,8	17,6	5,6	104,0	63,7	20,1	5,2	102,6	62,5	21,3	4,8	106,1	70,8	22,7	4,7	102,1	74,6	24,7	4,1	101,2	77,9	25,9	3,9
	26 / 18	98,6	61,8	17,7	5,6	103,5	63,7	20,2	5,1	102,5	62,7	21,3	4,8	106,7	71,4	22,8	4,7	101,9	74,9	24,8	4,1	101,3	78,4	26,0	3,9
	27 / 19	98,4	61,3	17,8	5,5	103,3	63,3	20,2	5,1	102,5	62,5	21,4	4,8	106,7	71,2	22,8	4,7	101,9	74,5	24,9	4,1	101,5	78,2	26,0	3,9
	28 / 20	98,3	60,8	17,8	5,5	103,1	62,8	20,3	5,1	102,6	62,2	21,4	4,8	106,5	70,7	22,9	4,7	102,0	74,2	24,9	4,1	101,7	77,9	26,0	3,9
	30 / 22	98,0	59,8	17,9	5,5	102,6	61,9	20,4	5,0	102,6	61,5	21,5	4,8	106,1	69,7	23,0	4,6	102,1	73,5	25,0	4,1	102,2	77,4	26,1	3,9
12500 m³/h	22 / 16	100,1	62,9	17,6	5,7	105,3	64,7	20,0	5,3	103,7	62,9	21,2	4,9	106,2	71,3	22,7	4,7	102,7	76,1	24,7	4,2	101,4	79,2	25,9	3,9
	24 / 17	99,6	62,8	17,7	5,6	104,8	64,7	20,1	5,2	103,5	63,3	21,3	4,9	106,8	72,1	22,7	4,7	102,5	76,3	24,8	4,1	101,5	79,6	25,9	3,9
	26 / 18	99,1	62,8	17,8	5,6	104,3	64,7	20,2	5,2	103,4	63,6	21,4	4,8	107,4	72,8	22,8	4,7	102,3	76,5	24,8	4,1	101,5	80,1	26,0	3,9
	27 / 19	99,0	62,3	17,9	5,5	104,1	64,2	20,2	5,2	103,4	63,3	21,4	4,8	107,5	72,5	22,8	4,7	102,4	76,2	24,9	4,1	101,7	79,9	26,0	3,9
	28 / 20	98,8	61,8	17,9	5,5	103,9	63,8	20,3	5,1	103,5	63,0	21,5	4,8	107,3	72,1	22,9	4,7	102,4	75,8	24,9	4,1	101,9	79,7	26,1	3,9
	30 / 22	98,5	60,8	18,0	5,5	103,5	62,8	20,4	5,1	103,5	62,4	21,6	4,8	106,8	71,0	23,0	4,6	102,5	75,0	25,0	4,1	102,4	79,2	26,1	3,9

Heating performance with 80% of outdoor and exhaust air

Airflow	Ta (°C) DB	Outdoor air temperature °C D.B/W.B.																		
		-5 / -6			0 / -1			2 / 1			7 / 6			12 / 11			15 / 13		
		kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP
7000 m³/h	10	78,1	13,8	5,66	83,7	16,6	5,04	87,0	18,1	4,81	93,9	22,0	4,27	99,8	26,3	3,79	116,2	30,0	3,87
	15	78,3	14,2	5,51	84,4	17,1	4,94	87,8	18,7	4,70	94,4	22,5	4,20	103,1	27,3	3,78	120,3	30,9	3,89
	18	78,4	14,5	5,41	84,7	17,4	4,87	88,3	19,0	4,65	94,7	22,8	4,15	105,1	27,9	3,77	120,4	31,4	3,83
	20	78,4	14,6	5,37	85,0	17,6	4,83	88,6	19,2	4,61	94,9	23,0	4,13	106,4	28,3	3,76	120,1	31,7	3,79
	22	78,5	14,8	5,30	85,2	17,8	4,79	88,9	19,4	4,58	95,1	23,3	4,08	107,6	28,7	3,75	119,9	32,1	3,74
	25	78,5	15,1	5,20	85,6	18,1	4,73	89,4	19,7	4,54	95,6	23,7	4,03	109,5	29,3	3,74	119,5	32,5	3,68
12000 m³/h	10	80,0	10,4	7,69	85,5	12,4	6,90	89,2	13,5	6,61	97,9	16,1	6,08	105,4	18,7	5,64	119,5	20,4	5,86
	15	80,0	10,8	7,41	86,2	12,8	6,73	90,1	13,9	6,48	98,5	16,5	5,97	108,5	19,3	5,62	122,6	20,8	5,89
	18	80,0	11,0	7,27	86,6	13,0	6,66	90,7	14,2	6,39	99,0	16,8	5,89	110,3	19,7	5,60	122,8	21,1	5,82
	20	80,0	11,1	7,21	86,8	13,2	6,58	91,0	14,3	6,36	99,2	17,0	5,84	111,5	19,9	5,60	122,8	21,3	5,77
	22	80,0	11,3	7,08	87,1	13,3	6,55	91,4	14,5	6,30	99,5	17,1	5,82	112,7	20,1	5,61	122,7	21,5	5,71
	25	80,1	11,5	6,97	87,5	13,6	6,43	91,9	14,7	6,25	100,1	17,4	5,75	114,4	20,5	5,58	122,6	21,8	5,62
12500 m³/h	10	80,2	10,2	7,86	85,5	12,2	7,01	89,2	13,3	6,71	98,1	15,8	6,21	106,0	18,4	5,76	119,6	20,0	5,98
	15	80,2	10,6	7,57	86,2	12,6	6,84	90,2	13,7	6,58	98,8	16,2	6,10	109,0	19,0	5,74	122,7	20,5	5,99
	18	80,2	10,8	7,43	86,6	12,8	6,77	90,7	13,9	6,53	99,3	16,5	6,02	110,8	19,4	5,71	123,0	20,7	5,94
	20	80,2	10,9	7,36	86,9	13,0	6,68	91,1	14,1	6,46	99,5	16,6	5,99	111,9	19,6	5,71	123,0	20,9	5,89
	22	80,2	11,1	7,23	87,1	13,1	6,65	91,4	14,2	6,44	99,8	16,8	5,94	113,1	19,9	5,68	122,9	21,1	5,82
	25	80,3	11,3	7,11	87,5	13,4	6,53	92,0	14,5	6,34	100,4	17,1	5,87	114,8	20,2	5,68	122,9	21,4	5,74

Ta = Indoor air temperature D.B/W.B
DB = Dry bulb
WB = Wet bulb
kWf = Cooling capacity in kW
kWs = Sensible cooling capacity (kW)
kWe = Compressor power input in kW
kWt = Heating capacity (kW)
EER referred only to compressors
COP referred only to compressors
The fan motor heating is not considered

Integrated heating capacities

Air temperature external exchanger inlet °C (D.B. / W.B.)	-5 / -5.4	0 / -0.6	5 / 3.9	Others
Heating capacity multiplication coefficient	0,89	0,88	0,94	1

The integrated heating capacity represents the real heating capacity considering the defrost cycles too.
To obtain the integrated heating capacity multiply the heating performance value in kWt (shown in the heating performance tables) by the coefficients indicated in the table.
DB = dry bulb
WB = wet bulb
In case of below zero external air temperature with a long period of heat pump operating mode it is necessary to help the evacuation of the water produced during the defrost cycle; this to avoid the formation of ice in the unit basement. Pay attention that the evacuation will not create inconveniences to things or persons.

Size 33.4 CCKP configuration

Cooling performance with 80% of outdoor and exhaust air

Airflow	Ta °C DB/WB	Outdoor air temperature °C D.B/W.B.																							
		25 / 18				30 / 22				32 / 23.5				35 / 24				38 / 24.5				40 / 25			
		kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER
12500 m³/h	22 / 16	120,6	80,5	21,5	5,6	129,5	81,3	24,3	5,3	127,7	78,9	25,8	4,9	129,5	87,9	27,5	4,7	124,6	91,7	30,1	4,1	122,8	94,6	31,6	3,9
	24 / 17	119,9	80,4	21,6	5,6	128,7	81,3	24,4	5,3	127,5	79,3	25,9	4,9	130,1	88,7	27,5	4,7	124,3	92,0	30,1	4,1	122,8	95,2	31,6	3,9
	26 / 18	119,3	80,3	21,7	5,5	128,0	81,2	24,5	5,2	127,2	79,6	26,0	4,9	130,8	89,5	27,6	4,7	123,9	92,3	30,2	4,1	122,8	95,8	31,6	3,9
	27 / 19	119,2	79,7	21,8	5,5	127,8	80,7	24,6	5,2	127,3	79,2	26,0	4,9	130,9	89,1	27,7	4,7	124,0	91,9	30,2	4,1	123,1	95,6	31,6	3,9
	28 / 20	119,2	79,1	21,8	5,5	127,6	80,1	24,7	5,2	127,4	78,9	26,1	4,9	130,7	88,5	27,7	4,7	124,1	91,5	30,3	4,1	123,4	95,4	31,7	3,9
	30 / 22	119,1	77,9	22,0	5,4	127,4	78,9	24,8	5,1	127,6	78,1	26,2	4,9	130,3	87,3	27,9	4,7	124,4	90,7	30,4	4,1	124,0	94,8	31,7	3,9
14000 m³/h	22 / 16	123,8	83,6	21,7	5,7	132,2	84,9	24,5	5,4	130,2	82,5	26,0	5,0	132,7	91,6	27,8	4,8	127,7	96,3	30,2	4,2	125,5	99,6	31,7	4,0
	24 / 17	123,1	83,6	21,8	5,6	131,4	85,0	24,6	5,3	130,0	82,9	26,1	5,0	133,5	92,3	27,8	4,8	127,3	96,7	30,3	4,2	125,5	100,2	31,8	3,9
	26 / 18	122,4	83,5	21,9	5,6	130,6	85,0	24,7	5,3	129,8	83,2	26,1	5,0	134,3	93,0	27,9	4,8	126,9	97,0	30,4	4,2	125,6	100,9	31,8	3,9
	27 / 19	122,3	82,9	22,0	5,6	130,4	84,4	24,8	5,3	129,9	82,8	26,2	5,0	134,4	92,7	27,9	4,8	127,0	96,7	30,4	4,2	125,9	100,7	31,9	3,9
	28 / 20	122,2	82,3	22,0	5,6	130,3	83,8	24,8	5,3	130,0	82,4	26,3	4,9	134,1	92,1	28,0	4,8	127,1	96,3	30,5	4,2	126,2	100,5	31,9	4,0
	30 / 22	122,1	80,9	22,1	5,5	130,0	82,5	25,0	5,2	130,2	81,5	26,4	4,9	133,6	90,9	28,2	4,7	127,3	95,4	30,6	4,2	126,9	99,9	32	4,0
20000 m³/h	22 / 16	132,6	94,6	22,1	6,0	142,0	95,2	25,0	5,7	139,7	92,3	26,5	5,3	142,1	105,4	28,3	5,0	136,5	113,1	30,9	4,4	135,4	116,0	32,5	4,2
	24 / 17	132,0	94,6	22,2	5,9	141,1	95,4	25,1	5,6	139,4	93,0	26,6	5,2	142,8	106,8	28,4	5,0	136,3	113,3	31,0	4,4	135,7	116,5	32,5	4,2
	26 / 18	131,4	94,6	22,4	5,9	140,3	95,7	25,2	5,6	139,2	93,7	26,7	5,2	143,4	108,1	28,4	5,0	136,1	113,5	31,1	4,4	135,9	117,0	32,6	4,2
	27 / 19	131,3	93,8	22,4	5,9	140,1	95,0	25,3	5,5	139,2	93,3	26,8	5,2	143,5	107,7	28,5	5,0	136,2	113,1	31,1	4,4	136,2	116,8	32,6	4,2
	28 / 20	131,2	93,0	22,5	5,8	139,8	94,3	25,4	5,5	139,3	92,8	26,8	5,2	143,2	107,0	28,5	5,0	136,2	112,6	31,2	4,4	136,5	116,5	32,7	4,2
	30 / 22	131,1	91,2	22,6	5,8	139,4	92,9	25,5	5,5	139,4	91,8	26,9	5,2	142,6	105,5	28,7	5,0	136,5	111,6	31,3	4,4	137,2	115,8	32,8	4,2

Heating performance with 80% of outdoor and exhaust air

Airflow	Ta (°C) DB	Outdoor air temperature °C D.B/W.B.																		
		-5 / -6			0 / -1			2 / 1			7 / 6			12 / 11			15 / 13		
		kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP
12500 m³/h	10	97,4	14,4	6,76	103,4	16,3	6,34	108,2	17,5	6,18	119,0	20,4	5,83	128,3	23,4	5,48	143,8	25,1	5,73
	15	97,5	14,8	6,59	104,3	16,7	6,25	109,3	18,0	6,07	119,8	20,9	5,73	131,9	24,1	5,47	147,5	25,7	5,74
	18	97,5	15,0	6,50	104,8	17,0	6,16	110,0	18,3	6,01	120,3	21,2	5,67	134,1	24,5	5,47	147,8	26,0	5,68
	20	97,6	15,2	6,42	105,1	17,2	6,11	110,4	18,5	5,97	120,6	21,4	5,64	135,5	24,8	5,46	147,7	26,2	5,64
	22	97,6	15,4	6,34	105,4	17,4	6,06	110,8	18,6	5,96	120,9	21,5	5,62	136,9	25,1	5,45	147,6	26,4	5,59
	25	97,7	15,6	6,26	105,9	17,6	6,02	111,4	18,9	5,89	121,6	21,9	5,55	138,9	25,5	5,45	147,4	26,7	5,52
14000 m³/h	10	97,7	13,9	7,03	103,8	15,8	6,57	108,6	17,0	6,39	119,5	19,7	6,07	129,0	22,5	5,73	145,4	24,2	6,01
	15	97,7	14,3	6,83	104,7	16,2	6,46	109,8	17,4	6,31	120,3	20,2	5,96	132,8	23,2	5,72	149,3	24,7	6,04
	18	97,7	14,6	6,69	105,2	16,5	6,38	110,4	17,7	6,24	120,8	20,5	5,89	135,0	23,6	5,72	149,5	25,0	5,98
	20	97,7	14,7	6,65	105,5	16,7	6,32	110,9	17,9	6,20	121,1	20,6	5,88	136,5	23,9	5,71	149,3	25,2	5,92
	22	97,8	14,9	6,56	105,9	16,8	6,30	111,3	18,1	6,15	121,4	20,8	5,84	137,9	24,2	5,70	149,1	25,4	5,87
	25	97,8	15,1	6,48	106,3	17,1	6,22	112,0	18,3	6,12	122,2	21,1	5,79	140,1	24,5	5,72	148,8	25,7	5,79
20000 m³/h	10	99,0	12,4	7,98	104,9	14,1	7,44	109,8	15,1	7,27	120,9	17,4	6,95	131,4	19,7	6,67	148,9	21,1	7,06
	15	99,0	12,8	7,73	105,7	14,5	7,29	110,8	15,5	7,15	121,7	17,9	6,80	135,4	20,3	6,67	153,0	21,6	7,08
	18	99,0	13,0	7,62	106,2	14,8	7,18	111,5	15,8	7,06	122,1	18,1	6,75	137,7	20,7	6,65	153,3	21,9	7,00
	20	99,0	13,2	7,50	106,5	14,9	7,15	111,9	16,0	6,99	122,4	18,3	6,69	139,3	20,9	6,67	153,3	22,0	6,97
	22	99,0	13,3	7,44	106,8	15,1	7,07	112,3	16,1	6,98	122,7	18,4	6,67	140,8	21,2	6,64	153,2	22,2	6,90
		99,0	13,5	7,33	107,2	15,3	7,01	112,9	16,4	6,88	123,5	18,7	6,60	143,1	21,5	6,66	153,1	22,5	6,80

Ta = Indoor air temperature D.B/W.B
DB = Dry bulb
WB = Wet bulb
kWf = Cooling capacity in kW
kWs = Sensible cooling capacity (kW)
kWe = Compressor power input in kW
kWt = Heating capacity (kW)
EER referred only to compressors
COP referred only to compressors
The fan motor heating is not considered

Integrated heating capacities

Air temperature external exchanger inlet °C (D.B. / W.B.)	-5 / -5.4	0 / -0.6	5 / 3.9	Others
Heating capacity multiplication coefficient	0,89	0,88	0,94	1

The integrated heating capacity represents the real heating capacity considering the defrost cycles too.
To obtain the integrated heating capacity multiply the heating performance value in kWt (shown in the heating performance tables) by the coefficients indicated in the table.
DB = dry bulb
WB = wet bulb
In case of below zero external air temperature with a long period of heat pump operating mode it is necessary to help the evacuation of the water produced during the defrost cycle; this to avoid the formation of ice in the unit basement. Pay attention that the evacuation will not create inconveniences to things or persons.

Size 40.4 CCKP configuration

Cooling performance with 80% of outdoor and exhaust air

Airflow	Ta °C DB/WB	Outdoor air temperature °C D.B/W.B.																							
		25 / 18				30 / 22				32 / 23.5				35 / 24				38 / 24.5				40 / 25			
		kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER
12500 m³/h	22 / 16	139,5	91,6	26,8	5,2	149,1	92,5	30,3	4,9	146,8	89,5	32,2	4,6	148,2	99,3	34,3	4,3	143,3	102,8	37,8	3,8	141,5	105,5	39,9	3,5
	24 / 17	138,8	91,5	27,0	5,1	148,0	92,5	30,4	4,9	146,3	89,9	32,3	4,5	148,7	100,3	34,4	4,3	142,9	103,1	37,9	3,8	141,4	106,2	39,9	3,5
	26 / 18	138,0	91,3	27,1	5,1	147,1	92,4	30,6	4,8	145,9	90,2	32,4	4,5	149,2	101,3	34,5	4,3	142,5	103,3	38,0	3,8	141,4	106,8	40,0	3,5
	27 / 19	137,9	90,6	27,2	5,1	146,8	91,8	30,7	4,8	146,0	89,9	32,5	4,5	149,3	100,9	34,5	4,3	142,7	102,9	38,1	3,7	141,7	106,5	40,0	3,5
	28 / 20	137,7	90,0	27,2	5,1	146,6	91,2	30,7	4,8	146,0	89,5	32,5	4,5	149,1	100,2	34,6	4,3	142,8	102,4	38,1	3,7	142,0	106,2	40,1	3,5
	30 / 22	137,5	88,6	27,4	5,0	146,1	89,9	30,9	4,7	146,1	88,6	32,7	4,5	148,8	98,7	34,8	4,3	143,1	101,3	38,3	3,7	142,7	105,6	40,2	3,5
16000 m³/h	22 / 16	147,1	100,1	27,3	5,4	157,2	100,2	30,8	5,1	154,5	97,1	32,7	4,7	156,8	108,7	34,9	4,5	151,4	114,3	38,4	3,9	149,5	118,4	40,4	3,7
	24 / 17	146,3	100,0	27,4	5,3	156,3	100,3	30,9	5,1	154,2	97,6	32,8	4,7	157,5	109,8	35,0	4,5	151,1	114,7	38,5	3,9	149,6	119,3	40,5	3,7
	26 / 18	145,6	99,9	27,6	5,3	155,4	100,3	31,1	5,0	154,0	98,0	32,9	4,7	158,2	110,9	35,1	4,5	150,8	115,0	38,6	3,9	149,7	120,1	40,6	3,7
	27 / 19	145,5	99,1	27,6	5,3	155,1	99,6	31,2	5,0	154,0	97,6	33,0	4,7	158,3	110,4	35,2	4,5	150,9	114,5	38,7	3,9	150,0	119,8	40,6	3,7
	28 / 20	145,3	98,3	27,7	5,2	154,9	98,9	31,3	4,9	154,1	97,1	33,1	4,7	158,0	109,7	35,3	4,5	151,0	114,0	38,8	3,9	150,4	119,5	40,7	3,7
	30 / 22	145,1	96,6	27,9	5,2	154,5	97,3	31,4	4,9	154,2	96,1	33,2	4,6	157,5	108,0	35,5	4,4	151,4	112,8	39,0	3,9	-	-	-	-
20000 m³/h	22 / 16	154,0	107,6	27,7	5,6	164,3	107,5	31,2	5,3	161,0	104,2	33,2	4,8	164,9	117,1	35,6	4,6	159,5	125,1	39,0	4,1	157,7	129,6	41,0	3,8
	24 / 17	153,1	107,7	27,8	5,5	163,0	108,0	31,4	5,2	160,7	105,0	33,3	4,8	165,7	118,4	35,7	4,6	159,1	125,6	39,1	4,1	157,8	130,5	41,1	3,8
	26 / 18	152,4	107,6	28,0	5,4	161,9	108,3	31,5	5,1	160,3	105,7	33,4	4,8	166,6	119,7	35,8	4,7	158,7	126,0	39,2	4,0	158,0	131,3	41,2	3,8
	27 / 19	152,2	106,8	28,0	5,4	161,5	107,6	31,6	5,1	160,3	105,2	33,5	4,8	166,7	119,2	35,8	4,7	158,8	125,5	39,3	4,0	158,3	131,0	41,3	3,8
	28 / 20	152,1	105,8	28,1	5,4	161,2	106,8	31,7	5,1	160,4	104,7	33,6	4,8	166,3	118,4	35,9	4,6	158,9	125,0	39,4	4,0	158,6	130,7	41,3	3,8
	30 / 22	151,8	103,9	28,3	5,4	160,6	105,2	31,8	5,1	160,4	103,6	33,7	4,8	165,6	116,7	36,2	4,6	159,2	123,8	39,6	4,0	-	-	-	-

Heating performance with 80% of outdoor and exhaust air

Airflow	Ta (°C) DB	Outdoor air temperature °C D.B/W.B.																		
		-5 / -6			0 / -1			2 / 1			7 / 6			12 / 11			15 / 13		
		kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP
12500 m³/h	10	119,7	18,9	6,33	127,9	21,3	6,00	133,4	22,9	5,83	145,6	26,9	5,41	155,6	30,9	5,04	174,0	33,1	5,26
	15	119,8	19,4	6,18	128,8	21,9	5,88	134,6	23,6	5,70	146,4	27,5	5,32	160,0	31,8	5,03	178,5	33,8	5,28
	18	119,8	19,7	6,08	129,4	22,2	5,83	135,4	23,9	5,67	146,9	27,8	5,28	162,5	32,4	5,02	178,7	34,3	5,21
	20	119,9	19,9	6,03	129,8	22,5	5,77	135,9	24,2	5,62	147,2	28,1	5,24	164,2	32,7	5,02	178,6	34,6	5,16
	22	119,9	20,1	5,97	130,1	22,7	5,73	136,4	24,4	5,59	147,6	28,3	5,22	165,9	33,1	5,01	178,4	34,9	5,11
	25	120,0	20,4	5,88	130,7	23,0	5,68	137,1	24,7	5,55	148,4	28,7	5,17	168,4	33,6	5,01	178,1	35,4	5,03
16000 m³/h	10	121,1	17,4	6,96	129,1	19,5	6,62	134,8	20,9	6,45	147,7	24,2	6,10	158,9	27,5	5,78	179,0	29,5	6,07
	15	121,1	17,9	6,77	130,0	20,0	6,50	136,1	21,5	6,33	148,7	24,7	6,02	163,5	28,3	5,78	183,7	30,1	6,10
	18	121,1	18,1	6,69	130,6	20,4	6,40	136,9	21,8	6,28	149,2	25,1	5,94	166,2	28,8	5,77	183,9	30,5	6,03
	20	121,1	18,3	6,62	131,0	20,6	6,36	137,4	22,0	6,25	149,5	25,3	5,91	167,9	29,1	5,77	183,8	30,7	5,99
	22	121,1	18,5	6,55	131,3	20,8	6,31	137,9	22,2	6,21	149,9	25,5	5,88	169,7	29,5	5,75	183,6	31,0	5,92
	25	121,2	18,8	6,45	131,9	21,1	6,25	138,6	22,6	6,13	150,7	25,9	5,82	172,2	29,9	5,76	183,4	31,4	5,84
20000 m³/h	10	122,2	16,2	7,54	130,2	18,2	7,15	136,0	19,5	6,97	149,2	22,4	6,66	161,4	25,4	6,35	181,9	27,2	6,69
	15	122,2	16,7	7,32	131,1	18,7	7,01	137,2	20,0	6,86	150,1	22,9	6,55	166,0	26,1	6,36	186,5	27,7	6,73
	18	122,2	17,0	7,19	131,6	19,0	6,93	137,9	20,3	6,79	150,6	23,2	6,49	168,7	26,6	6,34	186,9	28,1	6,65
	20	122,2	17,1	7,15	132,0	19,2	6,88	138,4	20,5	6,75	150,9	23,4	6,45	170,5	26,9	6,34	186,9	28,3	6,60
	22	122,2	17,3	7,06	132,3	19,4	6,82	138,8	20,7	6,71	151,3	23,6	6,41	172,3	27,2	6,33	186,9	28,5	6,56
	25	122,2	17,6	6,94	132,8	19,7	6,74	139,5	21,0	6,64	152,2	34,6	4,40	174,9	27,6	6,34	186,8	28,9	6,46

Ta = Indoor air temperature D.B/W.B
DB = Dry bulb
WB = Wet bulb
kWf = Cooling capacity in kW
kWs = Sensible cooling capacity (kW)
kWe = Compressor power input in kW
kWt = Heating capacity (kW)
EER referred only to compressors
COP referred only to compressors
The fan motor heating is not considered

Integrated heating capacities

Air temperature external exchanger inlet °C (D.B. / W.B.)	-5 / -5.4	0 / -0.6	5 / 3.9	Others
Heating capacity multiplication coefficient	0,89	0,88	0,94	1

The integrated heating capacity represents the real heating capacity considering the defrost cycles too.
To obtain the integrated heating capacity multiply the heating performance value in kWt (shown in the heating performance tables) by the coefficients indicated in the table.
DB = dry bulb
WB = wet bulb
In case of below zero external air temperature with a long period of heat pump operating mode it is necessary to help the evacuation of the water produced during the defrost cycle; this to avoid the formation of ice in the unit basement. Pay attention that the evacuation will not create inconveniences to things or persons.

Size 44.4 CCKP configuration

Cooling performance with 80% of outdoor and exhaust air

Airflow	Ta °C DB/WB	Outdoor air temperature °C D.B/W.B.																							
		25 / 18				30 / 22				32 / 23.5				35 / 24				38 / 24.5				40 / 25			
		kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER	kWf	kWs	kWe	EER
12500 m³/h	22 / 16	146,0	99,5	29,6	4,9	158,9	97,8	33,5	4,7	155,8	94,7	35,5	4,4	156,6	105,5	37,8	4,1	151,2	109,4	41,5	3,6	149,0	112,5	43,9	3,4
	24 / 17	145,3	99,2	29,7	4,9	157,7	97,8	33,6	4,7	155,2	95,2	35,7	4,3	157,2	106,6	37,9	4,1	150,8	109,7	41,6	3,6	149,0	113,1	44,0	3,4
	26 / 18	144,7	98,9	29,9	4,8	156,6	97,8	33,8	4,6	154,7	95,7	35,8	4,3	157,8	107,6	37,9	4,2	150,4	110,0	41,8	3,6	148,9	113,8	44,1	3,4
	27 / 19	144,6	98,1	30,0	4,8	156,2	97,2	33,9	4,6	154,6	95,3	35,8	4,3	157,9	107,2	38,0	4,2	150,5	109,5	41,9	3,6	149,2	113,5	44,2	3,4
	28 / 20	144,5	97,4	30,1	4,8	155,9	96,5	34,0	4,6	154,6	94,9	35,9	4,3	157,6	106,5	38,1	4,1	150,7	109,0	42,0	3,6	149,5	113,2	44,3	3,4
	30 / 22	144,3	95,8	30,2	4,8	155,4	95,2	34,2	4,5	154,6	94,1	36,1	4,3	157,2	104,9	38,3	4,1	150,9	107,8	42,1	3,6	150,1	112,5	44,4	3,4
18000 m³/h	22 / 16	159,6	111,1	30,6	5,2	170,2	110,4	34,5	4,9	167,5	106,3	36,6	4,6	171,9	117,9	39,2	4,4	166,0	126,1	43,0	3,9	163,1	131,5	45,1	3,6
	24 / 17	158,9	110,9	30,7	5,2	169,2	110,6	34,6	4,9	167,3	106,9	36,7	4,6	172,9	119,1	39,3	4,4	165,4	126,7	43,1	3,8	163,1	132,4	45,1	3,6
	26 / 18	158,2	110,7	30,9	5,1	168,2	110,6	34,8	4,8	167,0	107,4	36,9	4,5	173,8	120,3	39,4	4,4	164,9	127,3	43,2	3,8	163,0	133,2	45,2	3,6
	27 / 19	158,1	109,8	31,0	5,1	167,9	109,9	34,9	4,8	167,1	106,9	37,0	4,5	173,9	119,8	39,5	4,4	164,9	126,8	43,3	3,8	163,3	132,9	45,3	3,6
	28 / 20	158,0	108,8	31,1	5,1	167,7	109,0	35,0	4,8	167,2	106,3	37,0	4,5	173,5	119,0	39,7	4,4	165,0	126,2	43,4	3,8	163,6	132,6	45,3	3,6
	30 / 22	157,8	106,7	31,2	5,1	167,2	107,2	35,2	4,8	167,3	105,1	37,2	4,5	172,8	117,3	39,9	4,3	165,2	125,0	43,6	3,8	-	-	-	-
20000 m³/h	22 / 16	163,5	114,9	30,6	5,3	174,9	113,2	34,7	5,0	170,9	109,7	36,9	4,6	174,2	124,1	39,4	4,4	169,4	132,3	43,3	3,9	169,0	136,6	45,7	3,7
	24 / 17	162,6	114,9	30,8	5,3	173,6	113,5	34,9	5,0	170,5	110,5	37,0	4,6	175,1	125,5	39,4	4,4	169,1	132,7	43,4	3,9	169,3	137,4	45,7	3,7
	26 / 18	161,7	114,9	31,0	5,2	172,4	113,8	35,0	4,9	170,2	111,2	37,2	4,6	176,0	126,9	39,5	4,5	168,8	133,1	43,6	3,9	169,5	138,1	45,8	3,7
	27 / 19	161,5	113,9	31,1	5,2	172,0	113,0	35,2	4,9	170,2	110,7	37,3	4,6	176,1	126,4	39,6	4,4	169,0	132,5	43,7	3,9	169,9	137,8	45,9	3,7
	28 / 20	161,4	112,9	31,2	5,2	171,7	112,2	35,3	4,9	170,2	110,1	37,3	4,6	175,7	125,5	39,8	4,4	169,2	131,9	43,8	3,9	170,3	137,5	46,0	3,7
	30 / 22	161,1	110,7	31,3	5,1	171,0	110,4	35,5	4,8	170,2	108,8	37,5	4,5	174,9	123,7	40,0	4,4	169,5	130,6	44,0	3,9	-	-	-	-

Heating performance with 80% of outdoor and exhaust air

Airflow	Ta (°C) DB	Outdoor air temperature °C D.B/W.B.																		
		-5 / -6			0 / -1			2 / 1			7 / 6			12 / 11			15 / 13		
		kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP
12500 m³/h	10	132,8	23,2	5,72	141,6	26,2	5,40	147,1	28,2	5,22	159,0	33,0	4,82	167,4	37,6	4,45	186,8	40,5	4,61
	15	132,9	23,8	5,58	142,5	26,9	5,30	148,4	29,0	5,12	159,8	33,7	4,74	171,9	38,7	4,44	191,3	41,2	4,64
	18	133,0	24,1	5,52	143,1	27,3	5,24	149,1	29,4	5,07	160,2	34,1	4,70	174,5	39,3	4,44	192,0	41,7	4,60
	20	133,0	24,3	5,47	143,4	27,5	5,21	149,6	29,7	5,04	160,5	34,4	4,67	176,2	39,7	4,44	192,2	42,0	4,58
	22	133,1	24,6	5,41	143,8	27,8	5,17	150,1	29,9	5,02	160,8	34,6	4,65	178,0	40,1	4,44	192,4	42,3	4,55
	25	133,1	24,9	5,35	144,3	28,2	5,12	150,8	30,3	4,98	161,6	35,1	4,60	180,5	40,7	4,43	192,7	42,8	4,50
18000 m³/h	10	135,2	20,5	6,60	144,2	22,8	6,32	150,4	24,4	6,16	163,9	28,2	5,81	175,1	32,0	5,47	197,5	34,3	5,76
	15	135,2	21,0	6,44	145,3	23,4	6,21	151,8	25,0	6,07	164,8	28,8	5,72	180,1	32,9	5,47	202,7	34,9	5,81
	18	135,2	21,3	6,35	145,9	23,7	6,16	152,6	25,4	6,01	165,4	29,2	5,66	183,0	33,5	5,46	202,8	35,3	5,75
	20	135,2	21,5	6,29	146,3	24,0	6,10	153,1	25,6	5,98	165,7	29,4	5,64	184,9	33,8	5,47	202,5	35,6	5,69
	22	135,3	21,7	6,24	146,7	24,2	6,06	153,6	25,8	5,95	166,1	29,6	5,61	186,8	34,2	5,46	202,3	35,8	5,65
	25	135,3	22,0	6,15	147,3	24,5	6,01	154,4	26,2	5,89	166,9	30,1	5,54	189,6	34,7	5,46	201,9	36,2	5,58
20000 m³/h	10	135,8	19,8	6,86	144,9	22,1	6,56	151,1	23,6	6,40	165,2	27,2	6,07	177,2	30,7	5,77	199,0	32,9	6,05
	15	135,9	20,3	6,69	145,9	22,6	6,46	152,5	24,2	6,30	166,2	27,8	5,98	182,2	31,5	5,78	203,8	33,5	6,08
	18	135,9	20,6	6,60	146,5	23,0	6,37	153,4	24,5	6,26	166,8	28,1	5,94	185,1	32,0	5,78	204,1	33,9	6,02
	20	135,9	20,8	6,53	146,9	23,2	6,33	153,9	24,7	6,23	167,2	28,3	5,91	187,0	32,3	5,79	203,9	34,2	5,96
	22	135,9	21,0	6,47	147,3	23,4	6,29	154,5	25,0	6,18	167,5	28,6	5,86	188,9	32,7	5,78	203,7	34,4	5,92
	25	136,0	21,3	6,38	147,9	23,7	6,24	155,3	25,3	6,14	168,5	29,0	5,81	191,7	33,2	5,77	203,5	34,8	5,85

Ta = Indoor air temperature D.B/W.B
DB = Dry bulb
WB = Wet bulb
kWf = Cooling capacity in kW
kWs = Sensible cooling capacity (kW)
kWe = Compressor power input in kW
kWt = Heating capacity (kW)
EER referred only to compressors
COP referred only to compressors
The fan motor heating is not considered

Integrated heating capacities

Air temperature external exchanger inlet °C (D.B. / W.B.)	-5 / -5.4	0 / -0.6	5 / 3.9	Others
Heating capacity multiplication coefficient	0,89	0,88	0,94	1

The integrated heating capacity represents the real heating capacity considering the defrost cycles too.
To obtain the integrated heating capacity multiply the heating performance value in kWt (shown in the heating performance tables) by the coefficients indicated in the table.
DB = dry bulb
WB = wet bulb
In case of below zero external air temperature with a long period of heat pump operating mode it is necessary to help the evacuation of the water produced during the defrost cycle; this to avoid the formation of ice in the unit basement. Pay attention that the evacuation will not create inconveniences to things or persons.

Handling electric fan performance - Standard airflow

Available static pressure (Pa) (supply+return)			90	100	120	150	180	210	240	270	300	330	360	390	420	450	510
12.2	Airflow	m^3/h	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
	Airflow	l/s	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
	Sound pressure	dB(A)	73,1	73,3	73,6	74,0	74,5	74,9	75,5	76,2	76,7	77,3	77,8	78,5	79,1	79,8	81,0
	Total input	kW	0,45	0,511	0,545	0,607	0,667	0,734	0,79	0,85	0,913	0,98	1,05	1,12	1,18	1,25	1,4
15.2	Airflow	m^3/h	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500
	Airflow	l/s	1806	1806	1806	1806	1806	1806	1806	1806	1806	1806	1806	1806	1806	1806	1806
	Sound pressure	dB(A)	80,9	80,9	80,9	81,0	81,0	81,1	81,1	81,2	81,4	81,6	81,8	82,1	82,3	82,5	82,9
	Total input	kW	0,905	0,93	0,98	1,06	1,13	1,21	1,3	1,38	1,46	1,54	1,62	1,71	1,8	1,89	2,08
16.4	Airflow	m^3/h	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000
	Airflow	l/s	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222
	Sound pressure	dB(A)	73,4	73,5	73,8	74,4	74,9	75,5	76,4	77,1	77,9	78,6	79,3	80,1	80,8	81,5	82,9
	Total input	kW	0,69	0,73	0,78	0,88	0,977	1,08	1,18	1,29	1,4	1,51	1,63	1,75	1,87	1,98	2,24
20.4	Airflow	m^3/h	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000
	Airflow	l/s	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
	Sound pressure	dB(A)	76,0	76,0	76,1	76,6	77,0	77,4	77,8	78,5	79,1	79,7	80,3	80,9	81,5	82,0	83,2
	Total input	kW	0,93	0,96	1,03	1,12	1,23	1,35	1,46	1,58	1,69	1,81	1,94	2,07	2,20	2,33	2,61
24.4	Airflow	m^3/h	12000	12000	12000	12000	12000	12000	12000	12000	12000	-	-	-	-	-	-
	Airflow	l/s	3333	3333	3333	3333	3333	3333	3333	3333	3333	-	-	-	-	-	-
	Sound pressure	dB(A)	82,6	82,5	82,4	82,3	82,2	82,2	82,4	82,6	82,8	-	-	-	-	-	-
	Total input	kW	1,68	1,72	1,81	1,92	2,06	2,21	2,34	2,47	2,61	-	-	-	-	-	-
33.4	Airflow	m^3/h	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000
	Airflow	l/s	3889	3889	3889	3889	3889	3889	3889	3889	3889	3889	3889	3889	3889	3889	3889
	Sound pressure	dB(A)	74,3	74,5	75,0	75,9	76,9	78,0	78,9	79,9	80,8	81,7	82,7	83,5	84,4	85,2	86,7
	Total input	kW	1,20	1,24	1,36	1,55	1,71	1,91	2,12	2,32	2,52	2,72	2,94	3,16	3,40	3,64	4,12
40.4	Airflow	m^3/h	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000
	Airflow	l/s	4444	4444	4444	4444	4444	4444	4444	4444	4444	4444	4444	4444	4444	4444	4444
	Sound pressure	dB(A)	76,6	76,8	77,1	77,6	78,2	79,0	79,7	80,6	81,3	82,0	82,8	83,5	84,2	84,9	86,3
	Total input	kW	1,48	1,54	1,67	1,86	2,06	2,26	2,46	2,70	2,92	3,16	3,38	3,62	3,86	4,10	4,62
44.4	Airflow	m^3/h	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000
	Airflow	l/s	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
	Sound pressure	dB(A)	79,0	79,0	79,1	79,6	80,0	80,4	80,8	81,5	82,1	82,7	83,3	83,9	84,5	85,1	86,2
	Total input	kW	1,86	1,91	2,06	2,24	2,46	2,68	2,92	3,16	3,38	3,62	3,88	4,14	4,40	4,68	5,22

The performance takes into account the pressure drops in the unit (pressure drops in handling coil, standard filters, etc.).
To determine the performance required of the fans, you must add to the usable static pressure desired the pressure drops of any accessories.

Handling electric fan performance - Minimum airflow

Available static pressure (Pa) (supply+return)			90	100	120	150	180	210	240	270	300	330	360	390	420	450	510
12.2	Airflow	m^3/h	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
	Airflow	l/s	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111
	Sound pressure	dB(A)	70,8	71,0	71,3	71,9	72,5	73,3	74,0	74,7	75,5	76,3	77,1	77,9	78,7	79,4	80,8
	Total input	kW	0,38	0,40	0,43	0,49	0,54	0,60	0,65	0,71	0,77	0,83	0,89	0,95	1,02	1,08	1,22
15.2	Airflow	m^3/h	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
	Airflow	l/s	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111
	Sound pressure	dB(A)	70,8	71,0	71,3	71,9	72,5	73,3	74,0	74,7	75,5	76,3	77,1	77,9	78,7	79,4	80,8
	Total input	kW	0,38	0,40	0,43	0,49	0,54	0,60	0,65	0,71	0,77	0,83	0,89	0,95	1,02	1,08	1,22
16.4	Airflow	m^3/h	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
	Airflow	l/s	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944
	Sound pressure	dB(A)	71,0	71,3	71,7	72,4	73,5	74,5	75,5	76,4	77,4	78,3	79,2	80,1	81,0	81,8	83,4
	Total input	kW	0,56	0,59	0,64	0,73	0,82	0,92	1,01	1,11	1,22	1,32	1,42	1,53	1,65	1,76	2,01
20.4	Airflow	m^3/h	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
	Airflow	l/s	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944
	Sound pressure	dB(A)	71,3	71,5	72,0	72,9	74,0	74,9	75,9	76,9	77,8	78,7	79,7	80,5	81,3	82,2	83,7
	Total input	kW	0,59	0,62	0,68	0,77	0,86	0,95	1,05	1,16	1,26	1,36	1,47	1,58	1,70	1,82	2,06
24.4	Airflow	m^3/h	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
	Airflow	l/s	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944
	Sound pressure	dB(A)	71,3	71,5	72,0	72,9	74,0	74,9	75,9	76,9	77,8	78,7	79,7	80,5	81,3	82,2	83,7
	Total input	kW	0,59	0,62	0,68	0,77	0,86	0,95	1,05	1,16	1,26	1,36	1,47	1,58	1,70	1,82	2,06
33.4	Airflow	m^3/h	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500
	Airflow	l/s	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472
	Sound pressure	dB(A)	72,5	72,7	73,6	74,9	76,1	77,3	78,5	79,7	80,9	81,9	82,9	83,8	84,8	85,6	87,2
	Total input	kW	0,99	1,04	1,16	1,32	1,49	1,68	1,86	2,06	2,26	2,46	2,66	2,88	3,10	3,30	3,76
40.4	Airflow	m^3/h	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500
	Airflow	l/s	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472
	Sound pressure	dB(A)	72,5	72,7	73,6	74,9	76,1	77,3	78,5	79,7	80,9	81,9	82,9	83,8	84,8	85,6	87,2
	Total input	kW	0,99	1,04	1,16	1,32	1,49	1,68	1,86	2,06	2,26	2,46	2,66	2,88	3,10	3,30	3,76
44.4	Airflow	m^3/h	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500
	Airflow	l/s	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472
	Sound pressure	dB(A)	72,5	72,7	73,6	74,9	76,1	77,3	78,5	79,7	80,9	81,9	82,9	83,8	84,8	85,6	87,2
	Total input	kW	0,99	1,04	1,16	1,32	1,49	1,68	1,86	2,06	2,26	2,46	2,66	2,88	3,10	3,30	3,76

The performance takes into account the pressure drops in the unit (pressure drops in handling coil, standard filters, etc.).
To determine the performance required of the fans, you must add to the usable static pressure desired the pressure drops of any accessories.

Handling electric fan performance - High airflow

Available static pressure (Pa) (supply+return)			90	100	120	150	180	210	240	270	300	330	360	390	420	450
12.2	Airflow	m^3/h	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
	Airflow	l/s	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944
	Sound pressure	dB(A)	82,6	82,5	82,5	82,5	82,6	82,6	82,7	82,7	82,7	82,9	83,0	83,2	83,4	83,6
	Total input	kW	1,07	1,09	1,14	1,23	1,31	1,39	1,48	1,56	1,66	1,74	1,83	1,92	2,01	2,10
15.2	Airflow	m^3/h	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
	Airflow	l/s	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944
	Sound pressure	dB(A)	82,6	82,5	82,5	82,5	82,6	82,6	82,7	82,7	82,7	82,9	83,0	83,2	83,4	83,6
	Total input	kW	1,07	1,09	1,14	1,23	1,31	1,39	1,48	1,56	1,66	1,74	1,83	1,92	2,01	2,10
16.4	Airflow	m^3/h	12500	12500	12500	12500	12500	12500	12500	12500	-	-	-	-	-	-
	Airflow	l/s	3472	3472	3472	3472	3472	3472	3472	3472	-	-	-	-	-	-
	Sound pressure	dB(A)	83,7	83,7	83,6	83,5	83,3	83,2	83,2	83,1	-	-	-	-	-	-
	Total input	kW	1,74	1,78	1,86	1,98	2,11	2,25	2,39	2,54	-	-	-	-	-	-
20.4	Airflow	m^3/h	12500	12500	12500	12500	12500	12500	12500	-	-	-	-	-	-	-
	Airflow	l/s	3472	3472	3472	3472	3472	3472	3472	-	-	-	-	-	-	-
	Sound pressure	dB(A)	83,6	83,6	83,5	83,4	83,3	83,2	83,1	-	-	-	-	-	-	-
	Total input	kW	1,83	1,88	1,96	2,09	2,23	2,37	2,51	-	-	-	-	-	-	-
24.4	Airflow	m^3/h	12500	12500	12500	12500	12500	12500	12500	-	-	-	-	-	-	-
	Airflow	l/s	3472	3472	3472	3472	3472	3472	3472	-	-	-	-	-	-	-
	Sound pressure	dB(A)	83,6	83,6	83,5	83,4	83,3	83,2	83,1	-	-	-	-	-	-	-
	Total input	kW	1,83	1,88	1,96	2,09	2,23	2,37	2,51	-	-	-	-	-	-	-
33.4	Airflow	m^3/h	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	-
	Airflow	l/s	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	-
	Sound pressure	dB(A)	81,3	81,2	81,4	81,7	82,1	82,4	82,8	81,9	82,4	84,1	84,6	85,1	85,6	-
	Total input	kW	2,52	2,58	2,74	2,96	3,20	3,42	3,70	3,94	4,20	4,46	4,74	5,00	5,28	-
40.4	Airflow	m^3/h	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	-
	Airflow	l/s	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	-
	Sound pressure	dB(A)	81,3	81,2	81,4	81,7	82,1	82,4	82,8	81,9	82,4	84,1	84,6	85,1	85,6	-
	Total input	kW	2,52	2,58	2,74	2,96	3,20	3,42	3,70	3,94	4,20	4,46	4,74	5,00	5,28	-
44.4	Airflow	m^3/h	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	-
	Airflow	l/s	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	-
	Sound pressure	dB(A)	81,3	81,2	81,4	81,7	82,1	82,4	82,8	81,9	82,4	84,1	84,6	85,1	85,6	-
	Total input	kW	2,52	2,58	2,74	2,96	3,20	3,42	3,70	3,94	4,20	4,46	4,74	5,00	5,28	-

The performance takes into account the pressure drops in the unit (pressure drops in handling coil, standard filters, etc.).
To determine the performance required of the fans, you must add to the usable static pressure desired the pressure drops of any accessories.

High static pressure electric fan performance - Standard airflow

Available static pressure (Pa) (supply+return)			420	480	540	600	660	720	780	840	900	960	1020
12.2	Airflow	m^3/h	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500	4500
	Airflow	l/s	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250	1250
	Sound pressure	dB(A)	84,6	85,3	86,7	88,1	89,3	90,5	91,5	92,5	93,5	94,3	95,2
	Total input	kW	1,22	1,30	1,45	1,61	1,76	1,93	2,09	2,26	2,44	2,61	2,80
15.2	Airflow	m^3/h	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500	6500
	Airflow	l/s	1806	1806	1806	1806	1806	1806	1806	1806	1806	1806	1806
	Sound pressure	dB(A)	87,0	87,6	88,3	88,9	89,6	90,2	91,0	91,8	92,5	93,2	93,8
	Total input	kW	1,81	1,99	2,18	2,36	2,57	2,76	2,96	3,18	3,38	3,59	3,80
16.4	Airflow	m^3/h	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000	8000
	Airflow	l/s	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222	2222
	Sound pressure	dB(A)	89,2	89,5	89,9	90,2	90,6	90,9	91,3	91,7	92,1	92,5	92,9
	Total input	kW	1,94	2,12	2,32	2,53	2,73	2,95	3,15	3,37	3,60	3,80	4,04
20.4	Airflow	m^3/h	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000	9000
	Airflow	l/s	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500	2500
	Sound pressure	dB(A)	91,6	91,7	91,9	92,1	92.4.	92,7	92,9	93,2	93,5	93,8	94,1
	Total input	kW	2,37	2,56	2,77	2,98	3,21	3,44	3,67	3,92	4,17	4,40	4,64
24.4	Airflow	m^3/h	12000	12000	12000	12000	12000	-	-	-	-	-	-
	Airflow	l/s	3333	3333	3333	3333	3333	-	-	-	-	-	-
	Sound pressure	dB(A)	98,3	98,1	98,1	98,0	97,9	-	-	-	-	-	-
	Total input	kW	3,94	4,19	4,42	4,68	4,94	-	-	-	-	-	-
33.4	Airflow	m^3/h	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000	14000
	Airflow	l/s	3889	3889	3889	3889	3889	3889	3889	3889	3889	3889	3889
	Sound pressure	dB(A)	90,2	90,7	91,1	91,6	92,1	92,7	93,2	93,8	94,3	95,0	95,6
	Total input	kW	3,36	3,74	4,10	4,46	4,84	5,24	5,62	6,06	6,48	6,92	7,32
40.4	Airflow	m^3/h	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000	16000
	Airflow	l/s	4444	4444	4444	4444	4444	4444	4444	4444	4444	4444	4444
	Sound pressure	dB(A)	92,3	92,6	93,0	93,3	93,7	94,0	94,4	94,8	95,2	95,7	96,1
	Total input	kW	3,96	4,36	4,74	5,16	5,58	6,00	6,40	6,86	7,30	7,78	8,26
44.4	Airflow	m^3/h	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000	18000
	Airflow	l/s	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000	5000
	Sound pressure	dB(A)	94,6	94,7	94,9	95,1	95,4	95,7	95,9	96,2	96,5	96,8	97,1
	Total input	kW	4,74	5,12	5,54	5,96	6,42	6,88	7,34	7,84	8,34	8,80	9,28

The performance takes into account the pressure drops in the unit (pressure drops in handling coil, standard filters, etc.).
To determine the performance required of the fans, you must add to the usable static pressure desired the pressure drops of any accessories.
Performances with "VENH - High static pressure fans" option.

High static pressure electric fan performance - Minimum airflow

Available static pressure (Pa) (supply+return)			420	480	540	600	660	720	780	840	900	960	1020
12.2	Airflow	m^3/h	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
	Airflow	l/s	1111,1	1111,1	1111,1	1111,1	1111,1	1111,1	1111,1	1111,1	1111,1	1111,1	1111,1
	Sound pressure	dB(A)	84,8	86,5	87,9	89,3	90,5	91,6	92,7	93,7	94,6	95,5	96,3
	Total input	kW	1,11	1,26	1,39	1,54	1,70	1,85	2,02	2,18	2,35	2,53	2,70
15.2	Airflow	m^3/h	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000	4000
	Airflow	l/s	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111	1111
	Sound pressure	dB(A)	84,8	86,5	87,9	89,3	90,5	91,6	92,7	93,7	94,6	95,5	96,3
	Total input	kW	1,11	1,26	1,39	1,54	1,70	1,85	2,02	2,18	2,35	2,53	2,70
16.4	Airflow	m^3/h	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
	Airflow	l/s	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944
	Sound pressure	dB(A)	87,1	87,5	88,0	88,5	89,0	89,6	90,1	90,7	91,2	91,8	92,5
	Total input	kW	1,63	1,82	2,00	2,19	2,37	2,57	2,77	2,97	3,20	3,40	3,62
20.4	Airflow	m^3/h	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
	Airflow	l/s	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944
	Sound pressure	dB(A)	87,2	87,6	88,1	88,6	89,1	89,7	90,2	90,8	91,3	92,0	92,6
	Total input	kW	1,68	1,86	2,05	2,22	2,42	2,62	2,81	3,03	3,24	3,47	3,66
24.4	Airflow	m^3/h	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
	Airflow	l/s	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944
	Sound pressure	dB(A)	87,2	87,6	88,1	88,6	89,1	89,7	90,2	90,8	91,3	92,0	92,6
	Total input	kW	1,68	1,86	2,05	2,22	2,42	2,62	2,81	3,03	3,24	3,47	3,66
33.4	Airflow	m^3/h	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500
	Airflow	l/s	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472
	Sound pressure	dB(A)	88,6	89,2	89,9	90,6	91,3	91,9	92,8	93,5	94,3	95,2	95,8
	Total input	kW	2,94	3,28	3,64	3,98	4,36	4,72	5,10	5,48	5,88	6,32	6,70
40.4	Airflow	m^3/h	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500
	Airflow	l/s	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472
	Sound pressure	dB(A)	88,6	89,2	89,9	90,6	91,3	91,9	92,8	93,5	94,3	95,2	95,8
	Total input	kW	2,94	3,28	3,64	3,98	4,36	4,72	5,10	5,48	5,88	6,32	6,70
44.4	Airflow	m^3/h	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500	12500
	Airflow	l/s	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472	3472
	Sound pressure	dB(A)	88,6	89,2	89,9	90,6	91,3	91,9	92,8	93,5	94,3	95,2	95,8
	Total input	kW	2,94	3,28	3,64	3,98	4,36	4,72	5,10	5,48	5,88	6,32	6,70

The performance takes into account the pressure drops in the unit (pressure drops in handling coil, standard filters, etc.).
To determine the performance required of the fans, you must add to the usable static pressure desired the pressure drops of any accessories.
Performances with "VENH - High static pressure fans" option.

High static pressure electric fan performance - High airflow

Available static pressure (Pa) (supply+return)			420	480	540	600	660	720	780	840	900	960	1020
12.2	Airflow	m^3/h	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
	Airflow	l/s	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944
	Sound pressure	dB(A)	88,0	88,5	89,0	89,6	90,1	90,7	91,3	91,8	92,5	93,2	93,7
	Total input	kW	2,01	2,19	2,38	2,58	2,77	2,99	3,21	3,40	3,62	3,86	4,06
15.2	Airflow	m^3/h	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000	7000
	Airflow	l/s	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944	1944
	Sound pressure	dB(A)	88,0	88,5	89,0	89,6	90,1	90,7	91,3	91,8	92,5	93,2	93,7
	Total input	kW	2,01	2,19	2,38	2,58	2,77	2,99	3,21	3,40	3,62	3,86	4,06
16.4	Airflow	m^3/h	12500	12500	12500	12500	-	-	-	-	-	-	-
	Airflow	l/s	3472	3472	3472	3472	-	-	-	-	-	-	-
	Sound pressure	dB(A)	99,3	99,2	99,1	99,0	-	-	-	-	-	-	-
	Total input	kW	4,16	4,42	4,65	4,92	-	-	-	-	-	-	-
20.4	Airflow	m^3/h	12500	12500	12500	12500	-	-	-	-	-	-	-
	Airflow	l/s	3472	3472	3472	3472	-	-	-	-	-	-	-
	Sound pressure	dB(A)	99,3	99,1	99,0	98,9	-	-	-	-	-	-	-
	Total input	kW	4,27	4,51	4,77	5,02	-	-	-	-	-	-	-
24.4	Airflow	m^3/h	12500	12500	12500	12500	-	-	-	-	-	-	-
	Airflow	l/s	3472	3472	3472	3472	-	-	-	-	-	-	-
	Sound pressure	dB(A)	99,3	99,1	99,0	98,9	-	-	-	-	-	-	-
	Total input	kW	4,27	4,51	4,77	5,02	-	-	-	-	-	-	-
33.4	Airflow	m^3/h	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	-
	Airflow	l/s	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	-
	Sound pressure	dB(A)	96,9	96,8	96,9	97,0	97,2	97,4	97,6	97,9	98,1	98,3	-
	Total input	kW	5,82	6,28	6,72	7,20	7,64	8,14	8,64	9,16	9,70	10,20	-
40.4	Airflow	m^3/h	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	-
	Airflow	l/s	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	-
	Sound pressure	dB(A)	96,9	96,8	96,9	97,0	97,2	97,4	97,6	97,9	98,1	98,3	-
	Total input	kW	5,82	6,28	6,72	7,20	7,64	8,14	8,64	9,16	9,70	10,20	-
44.4	Airflow	m^3/h	20000	20000	20000	20000	20000	20000	20000	20000	20000	20000	-
	Airflow	l/s	5556	5556	5556	5556	5556	5556	5556	5556	5556	5556	-
	Sound pressure	dB(A)	96,9	96,8	96,9	97,0	97,2	97,4	97,6	97,9	98,1	98,3	-
	Total input	kW	5,82	6,28	6,72	7,20	7,64	8,14	8,64	9,16	9,70	10,20	-

The performance takes into account the pressure drops in the unit (pressure drops in handling coil, standard filters, etc.).
To determine the performance required of the fans, you must add to the usable static pressure desired the pressure drops of any accessories.
rformances with "VENH - High static pressure fans" option.

Exhaust electric fan performance

AVAILABLE STATIC PRESSURE (RETURN) (Pa)			150					
% OF EXHAUST AIR			30%	40%	50%	60%	70%	80%
12.2	Airflow	m3/h	1350	1800	2250	2700	3150	3600
	Airflow	l/s	375	500	625	750	875	1000
	Fan RPM	rpm	952	1004	1073	1159	1255	1363
	Total input	kW	0,18	0,21	0,25	0,30	0,35	0,41
15.2	Airflow	m3/h	1950	2600	3250	3900	4550	5200
	Airflow	l/s	542	722	903	1083	1264	1444
	Fan RPM	rpm	1026	1138	1279	1438	1604	1780
	Total input	kW	0,23	0,29	0,36	0,45	0,57	0,72
16.4	Airflow	m3/h	2400	3200	4000	4800	5600	6400
	Airflow	l/s	667	889	1111	1333	1556	1778
	Fan RPM	rpm	739	788	857	942	1033	1128
	Total input	kW	0,25	0,31	0,38	0,46	0,57	0,71
20.4	Airflow	m3/h	2700	3600	4500	5400	6300	7200
	Airflow	l/s	750	1000	1250	1500	1750	2000
	Fan RPM	rpm	754	820	909	1010	1114	1225
	Total input	kW	0,27	0,34	0,43	0,53	0,69	0,89
24.4	Airflow	m3/h	3600	4800	6000	7200	8400	9600
	Airflow	l/s	1000	1333	1667	2000	2333	2667
	Fan RPM	rpm	820	942	1079	1225	1377	1534
	Total input	kW	0,34	0,46	0,63	0,89	1,19	1,57
33.4	Airflow	m3/h	4200	5600	7000	8400	9800	11200
	Airflow	l/s	1167	1556	1944	2333	2722	3111
	Fan RPM	rpm	726	459	812	877	954	1033
	Total input	kW	0,46	0,55	0,67	0,79	0,94	1,13
40.4	Airflow	m3/h	4800	6400	8000	9600	11200	12800
	Airflow	l/s	1333	1778	2222	2667	3111	3556
	Fan RPM	rpm	739	788	857	942	1033	1128
	Total input	kW	0,50	0,62	0,76	0,92	1,13	1,42
44.4	Airflow	m3/h	5400	7200	9000	10800	12600	14400
	Airflow	l/s	1500	2000	2500	3000	3500	4000
	Fan RPM	rpm	754	820	909	1010	1114	1225
	Total input	kW	0,54	0,68	0,85	1,07	1,38	1,78

The percentage of exhaust air refers to the unit rated flow.
Exhaust electric fans collect from the environment only the quantity of air that will be exhausted.
The data refer to the return static pressure of 150 Pa, which usually occurs in the systems.

Option compatibility

REF.	DESCRIPTION	CCK	CCKP
	Versions		
REC	Active energy recovery of the exhaust air (CCK version)	√	-
THR	THOR thermodynamic energy recovery of the exhaust air (CCKP version)	-	√
FC	Thermal FREE-COOLING	√	√
FCE	Enthalpy FREE-COOLING	0	0
	Configurations		
CREF0	Device for fan consumption reduction of the external section, on/off type	√	√
CREFB	Device for fan consumption reduction of the external section, ECOBREEZE type	0	0
CHW2	Two-rows hot water coil	0	0
3WVM	Modulating 3-way valve	0	0
2WVM	Modulating 2-way valve	0	0
EH	Electric heaters.	0	0
GC	Modulating condensation gas heating module	0	0
AMRX	Rubber antivibration mounts	◊	◊
AMRMX	Rubber antivibration mounts for unit and gas module	◊	◊
RCX	Roof curb	◊	◊
PCM0	Sandwich panels of the handling zone in M0 fire reaction class	0	0
	Refrigeration circuit		
EVE	Electronic expansion valve	√	√
MHP	High and low pressure gauges	0	0
CPHG	hot gas re-heating coil	0	0
	Aeraulic circuit		
M0	Horizontal air supply	√	√
M3	Downward air supply	0	0
M5	Upflow air supply	0	0
R0	Horizontal air return	√	√
R3	Downward air return	0	0
PC0SM	Constant supply airflow	√	√
PVAR	Variable airflow	0	0
FPG4	Pleated air filter class G4 (EN779 norm)	√	√
F7	High efficiency F7 air filter	0	0
FES	Electronic filters	0	0
PSAF	Clogged filter differential pressure switch air side	0	0
HSE	Immersed electrodes steam humidifier	0	0
HWS	Steam humidifier with disposable water	0	0
LTEMP1	Application for low outdoor temperature	0	0
VENH	High static pressure fans	0	0
PAQC	Air quality probe for CO2 rate check	0	0
PAQCV	Air quality sensor for CO2 and VOC rate check	0	0
SERMD	Modulating motorized outdoor air damper	√	√
EXFLOWC	Application in spaces with forced air exhaust at variable flow and exhaust section	0	0

√ Standard component

0 Optional component

◊ Separately supplied accessory (optional)

REF.	DESCRIPTION	CCK	CCKP
	Electric circuit		
THTUNE	Wall mounted electronic room control	√	√
CMSC9	Serial communication module to Modbus supervisor	0	0
CMSC10	Serial communication module to LonWorks supervisor	0	0
CMSC11	Serial communication module for BACnet-IP supervisor	0	0
CTERM	Humidity and temperature control with remote thermostat	0	0
CSOND	Humidity and temperature control with built-in probes	0	0
CTEM	Ambient temperature control with built-in probes	√	√
DML	Demand Limit	0	0
CLMX	Clivet Master System	◊	◊
DESM	Smoke detector	0	0
PM	Phase monitor	0	0
PFCC	Power factor correction capacitors (cosfi > 0.95)	0	0
SFSTC	Progressive compressor start-up device	0	0
	Various		
PTC0	Set up for shipping via container	0	0

√ Standard component

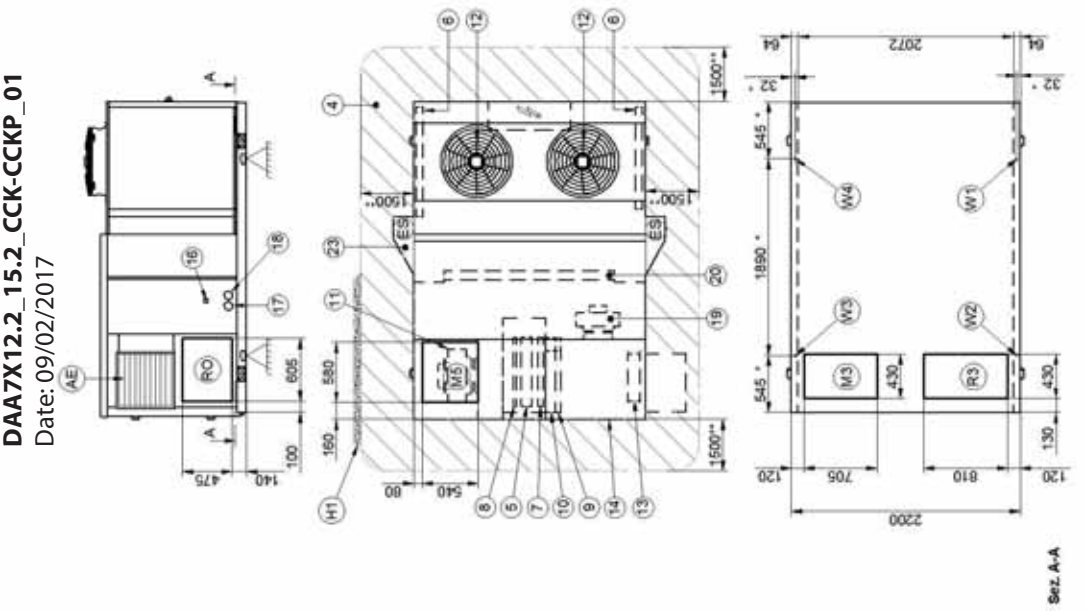
0 Optional component

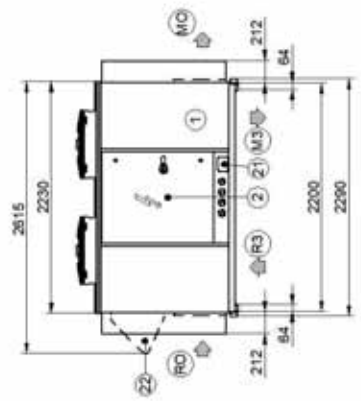
◊ Separately supplied accessory (optional)

Dimensional drawings

Size 12.2 - 15.2 - CCK and CCKP configuration

DAA7X12.2_15.2_CCK-CCKP_01
Date: 09/02/2017



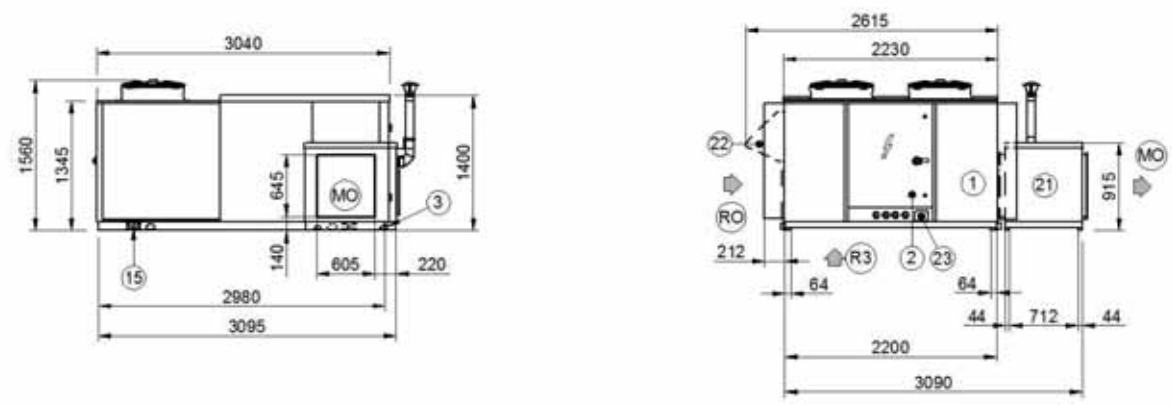


1. Compressor compartment
2. Electrical panel
3. Condensate drain
4. Functional clearances
5. Internal exchanger
6. External exchanger
7. H2O heating coil / Electric heaters (Optional)
8. Re-heating coil (Optional)
9. G4 air filters (Standard)
10. F7 bag filters / H10 electronic air filters (Optional)
11. Electric fan (Supply - return)
12. External electric fan
13. Outdoor air damper
14. Access for inspection of coils, filters, heating elements
15. Lifting brackets (removable)
16. Humidifier connections
17. H2O heating coil input Ø 3/4" (Optional)
18. H2O heating coil output Ø 3/4" (Optional)
19. Exhaust electric fan
20. Exhaust air recovery coil (CCKP version)
21. Power input
22. Outdoor air return cap (optional for M3 and/or R3) (accessory separately supplied)
23. Air exhaust caps (accessory separately supplied)

(ES) Air exhaust
(RO) Horizontal air return
(R3) Downward air return (optional)
(MO) Horizontal air supply
(M3) Downward air supply (Optional)
(M5) Upflow air supply (Optional)
(ML) Sideward air supply (Optional)
(AE) Outdoor air return
(H1) Wall with same height as unit on a maximum of three sides
(**) Suggested clearance
(*) Vibration mounts position

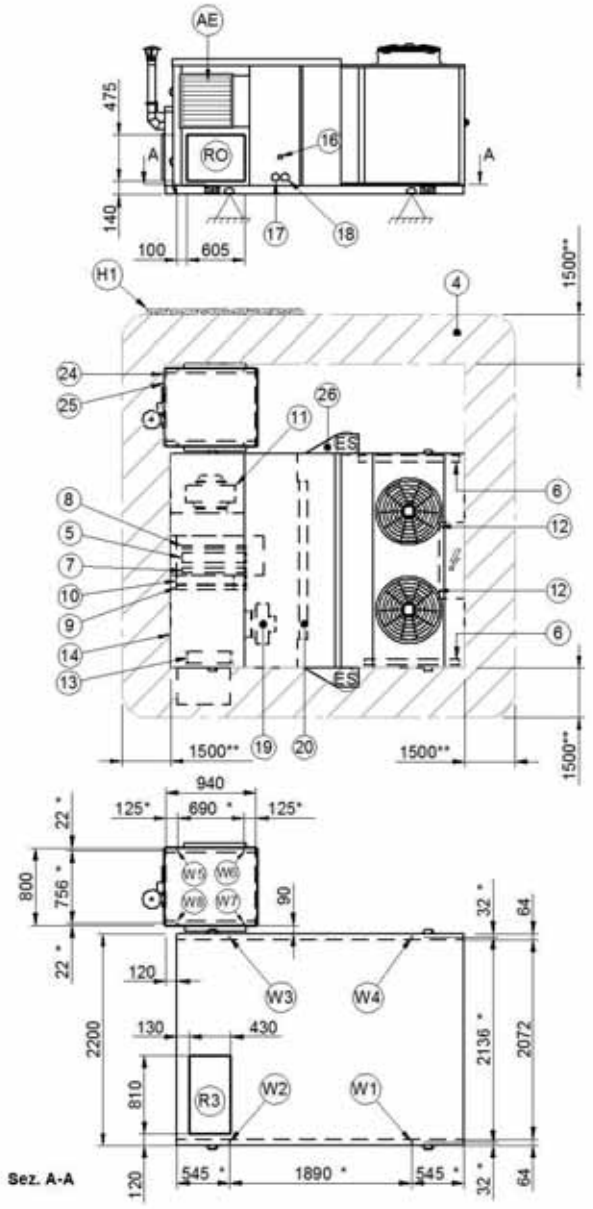
Size		12.2	15.2	12.2	15.2
Configuration		**CCK**	**CCK**	**CCKP**	**CCKP**
W1 Supporting point	kg	386	396	399	409
W2 Supporting point	kg	290	292	300	302
W3 Supporting point	kg	319	321	330	332
W4 Supporting point	kg	406	416	419	429
Operating weight	kg	1401	1425	1448	1472
Shipping weight	kg	1401	1425	1448	1472

The presence of optional accessories may result in a substantial variation of the weights shown in the table.



1. Compressor compartment
2. Electrical panel
3. Condensate drain
4. Functional clearances
5. Internal exchanger
6. External exchanger
7. H2O heating coil / Electric heaters (Optional)
8. Re-heating coil (Optional)
9. G4 air filters (Standard)
10. F7 bag filters / H10 electronic air filters (Optional)
11. Electric fan (Supply - return)
12. External electric fan
13. Outdoor air damper
14. Access for inspection of coils, filters, heating elements
15. Lifting brackets (removable)
16. Humidifier connections
17. H2O heating coil input Ø 1" (Optional)
18. H2O heating coil output Ø 1" (Optional)
19. Exhaust electric fan
20. Exhaust air recovery coil (CCKP version)
21. Gas module (accessory separately supplied)
22. Outdoor air return cap (optional forr R3) (accessory separately supplied)
23. Power input
24. Gas connection
25. Condensate drain (only for condensation gas heating module)
26. Air exhaust caps (accessory separately supplied)

(ES) Air exhaust
(RO) Horizontal air return
(R3) Downward air return (optional)
(MO) Horizontal air supply
(AE) Outdoor air return
(H1) Wall with same height as unit on a maximum of three sides
(**) Suggested clearance
(*) Vibration mounts position



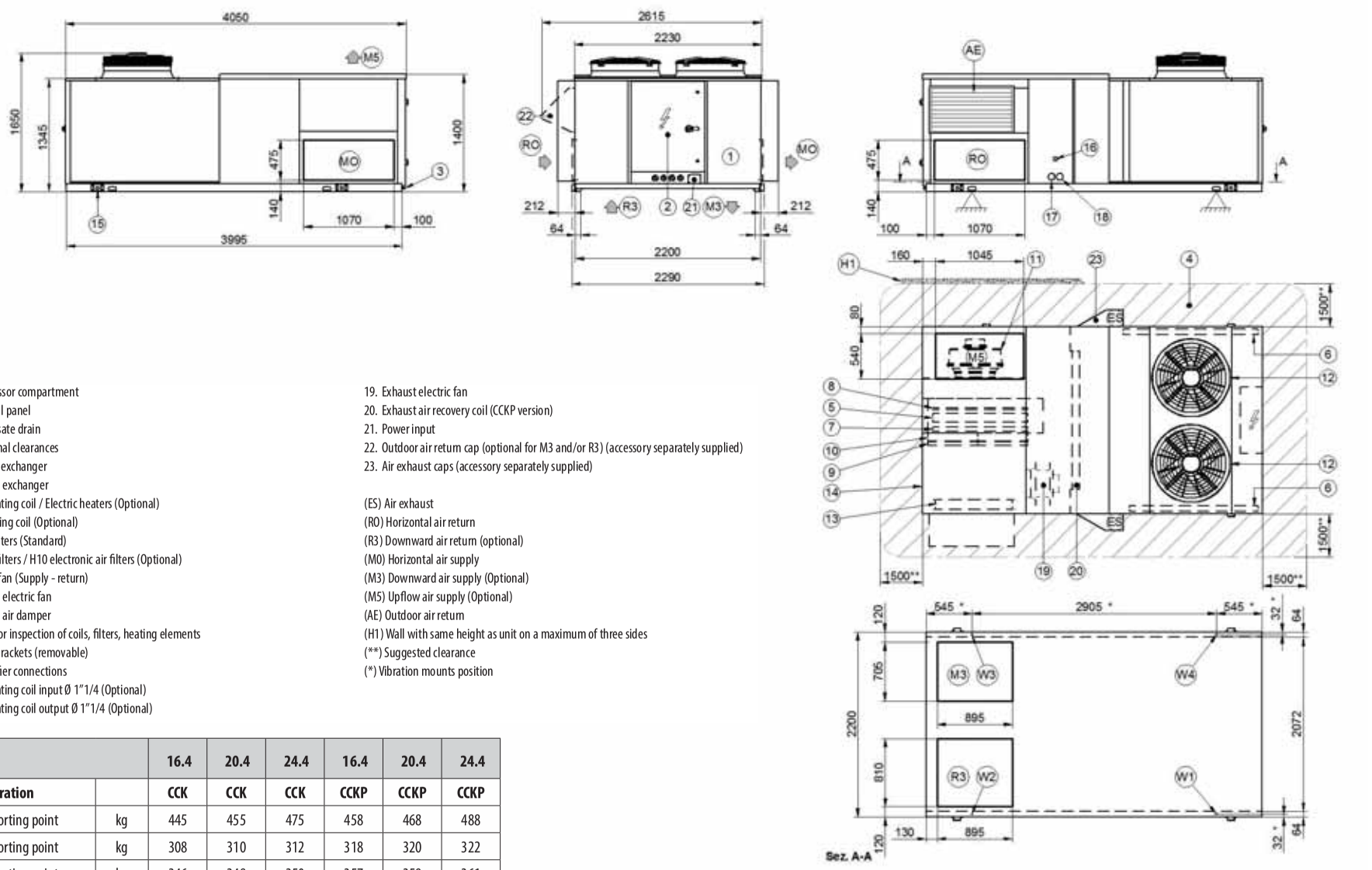
Size		12.2	15.2	12.2	15.2
Configuration		**CCK**	**CCK**	**CCKP**	**CCKP**
W1 Supporting point	kg	386	396	399	409
W2 Supporting point	kg	290	292	300	302
W3 Supporting point	kg	319	321	330	332
W4 Supporting point	kg	406	416	419	429
Operating weight	kg	1401	1425	1448	1472
Shipping weight	kg	1401	1425	1448	1472

GAS MODULE WEIGHT DISTRIBUTION

Size		12.2-15.2
Configuration		**CCK/CCKP**
W5 Supporting point	kg	46
W6 Supporting point	kg	34
W7 Supporting point	kg	34
W8 PSupporting point	kg	46
Operating weight	kg	160
Shipping weight	kg	160

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

DAA7X16.4_20.2_24.4_CCK-CCKP_01
Date: 09/02/2017



1. Compressor compartment
2. Electrical panel
3. Condensate drain
4. Functional clearances
5. Internal exchanger
6. External exchanger
7. H2O heating coil / Electric heaters (Optional)
8. Re-heating coil (Optional)
9. G4 air filters (Standard)
10. F7 bag filters / H10 electronic air filters (Optional)
11. Electric fan (Supply - return)
12. External electric fan
13. Outdoor air damper
14. Access for inspection of coils, filters, heating elements
15. Lifting brackets (removable)
16. Humidifier connections
17. H2O heating coil input Ø 1"1/4 (Optional)
18. H2O heating coil output Ø 1"1/4 (Optional)
19. Exhaust electric fan
20. Exhaust air recovery coil (CCKP version)
21. Power input
22. Outdoor air return cap (optional for M3 and/or R3) (accessory separately supplied)
23. Air exhaust caps (accessory separately supplied)

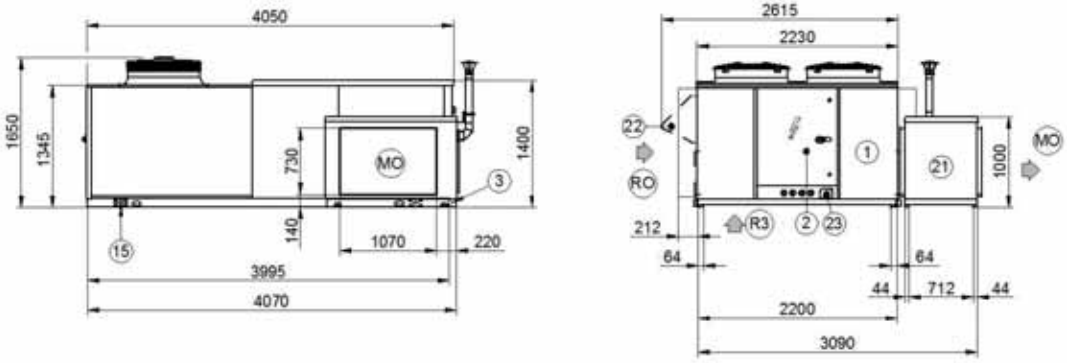
(ES) Air exhaust
(RO) Horizontal air return
(R3) Downward air return (optional)
(M0) Horizontal air supply
(M3) Downward air supply (Optional)
(M5) Upflow air supply (Optional)
(AE) Outdoor air return
(H1) Wall with same height as unit on a maximum of three sides
(**) Suggested clearance
(*) Vibration mounts position

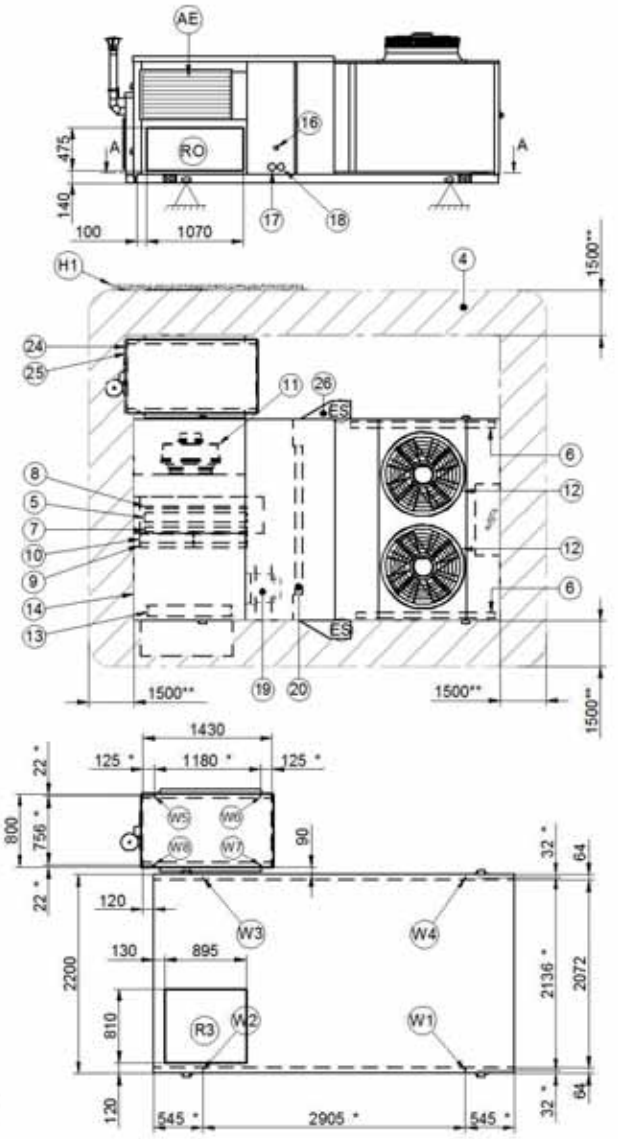
Size		16.4	20.4	24.4	16.4	20.4	24.4
Configuration		**CCK**	**CCK**	**CCK**	**CCKP**	**CCKP**	**CCKP**
W1 Supporting point	kg	445	455	475	458	468	488
W2 Supporting point	kg	308	310	312	318	320	322
W3 Supporting point	kg	346	348	350	357	359	361
W4 Supporting point	kg	461	482	492	474	495	505
Operating weight	kg	1560	1595	1629	1607	1642	1676
Shipping weight	kg	1560	1595	1629	1607	1642	1676

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Size 16.4 - 20.4 - 24.4 Combustion module - CCK and CCKP configuration

DAA7X16.4_20.4_24.4_CCK-CCKP_GC01X-GC08X_01
Date: 09/02/2017





Sez. A-A

1. Compressor compartment
2. Electrical panel
3. Condensate drain
4. Functional clearances
5. Internal exchanger
6. External exchanger
7. H2O heating coil / Electric heaters (Optional)
8. Re-heating coil (Optional)
9. G4 air filters (Standard)
10. F7 bag filters / H10 electronic air filters (Optional)
11. Electric fan (Supply - return)
12. External electric fan
13. Outdoor air damper
14. Access for inspection of coils, filters, heating elements
15. Lifting brackets (removable)
16. Humidifier connections
17. H2O heating coil input Ø 1"1/4 (Optional)
18. H2O heating coil output Ø 1"1/4 (Optional)
19. Exhaust electric fan
20. Exhaust air recovery coil (CCKP version)
21. Gas module (accessory separately supplied)
22. Outdoor air return cap (optional for R3) (accessory separately supplied)
23. Power input
24. Gas connection
25. Condensate drain (only for condensation gas heating module)
26. Air exhaust caps (accessory separately supplied)

(ES) Air exhaust
(RO) Horizontal air return
(R3) Downward air return (optional)
(MO) Horizontal air supply
(AE) Outdoor air return
(H1) Wall with same height as unit on a maximum of three sides
(**) Suggested clearance
(*) Vibration mounts position

Size		16.4	20.4	24.4	16.4	20.4	24.4
Configuration		**CCK**	**CCK**	**CCK**	**CCKP**	**CCKP**	**CCKP**
W1 Supporting point	kg	445	455	475	458	468	488
W2 Supporting point	kg	308	310	312	318	320	322
W3 Supporting point	kg	346	348	350	357	359	361
W4 Supporting point	kg	461	482	492	474	495	505
Operating weight	kg	1560	1595	1629	1607	1642	1676
Shipping weight	kg	1560	1595	1629	1607	1642	1676

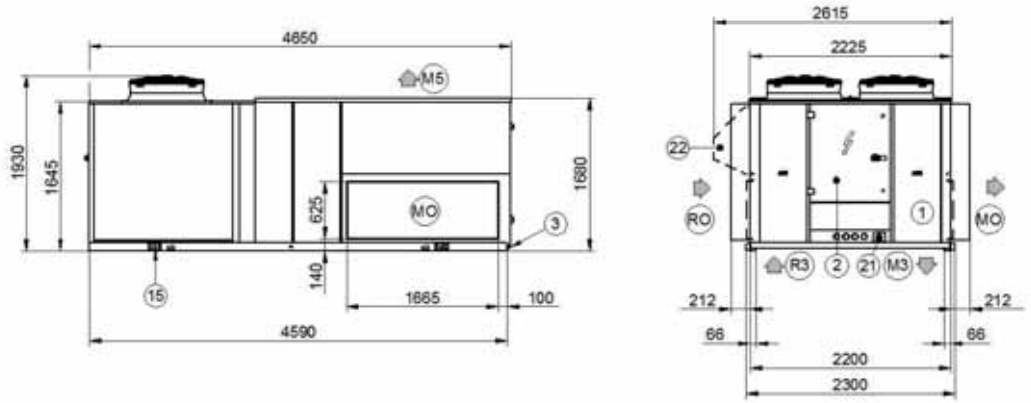
GAS MODULE WEIGHT DISTRIBUTION

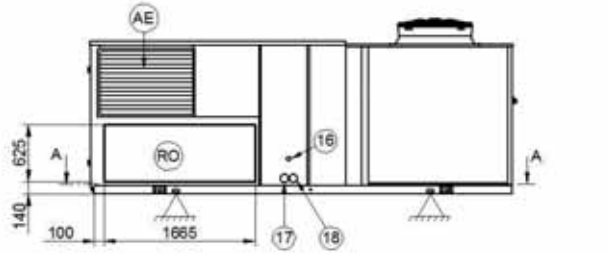
Size		16.4-20.4-24.4
Configuration		**CCK-CCKP**
W5 Supporting point	kg	60
W6 Supporting point	kg	50
W7 Supporting point	kg	50
W8 PSupporting point	kg	60
Operating weight	kg	220
Shipping weight	kg	220

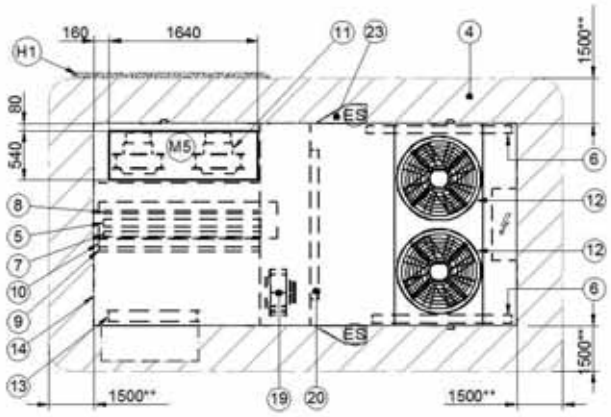
The presence of optional accessories may result in a substantial variation of the weights shown in the table.

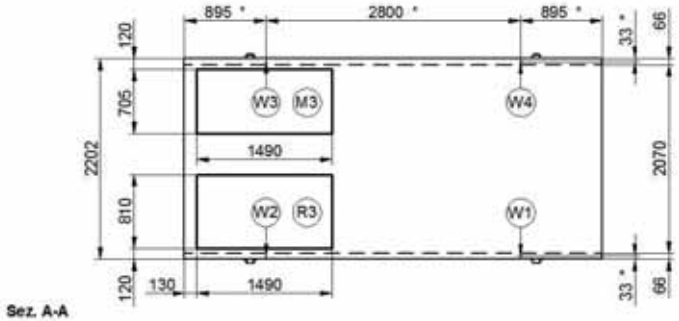
Size 33.4-40.4-44.4 - CCK and CCKP configuration

DAA7X33.4_40.4_44.4_CCK-CCKP_00
Date: 16/12/2015









Sez. A-A

1. Compressor compartment
2. Electrical panel
3. Condensate drain
4. Functional clearances
5. Internal exchanger
6. External exchanger
7. H2O heating coil / Electric heaters (Optional)
8. Re-heating coil (Optional)
9. G4 air filters (Standard)
10. F7 bag filters / H10 electronic air filters (Optional)
11. Electric fan (Supply - return)
12. External electric fan
13. Outdoor air damper
14. Access for inspection of coils, filters, heating elements
15. Lifting brackets (removable)
16. Humidifier connections
17. H2O heating coil input Ø 1"1/4 (Optional)
18. H2O heating coil output Ø 1"1/4 (Optional)
19. Exhaust electric fan
20. Exhaust air recovery coil (CCKP version)
21. Power input
22. Outdoor air return cap (optional for M3 and/or R3) (accessory separately supplied)
23. Air exhaust caps (accessory separately supplied)

(ES) Air exhaust
(RO) Horizontal air return
(R3) Downward air return (optional)
(MO) Horizontal air supply
(M3) Downward air supply (Optional)
(M5) Upflow air supply (Optional)
(AE) Outdoor air return
(H1) Wall with same height as unit on a maximum of three sides
(**) Suggested clearance
(*) Vibration mounts position

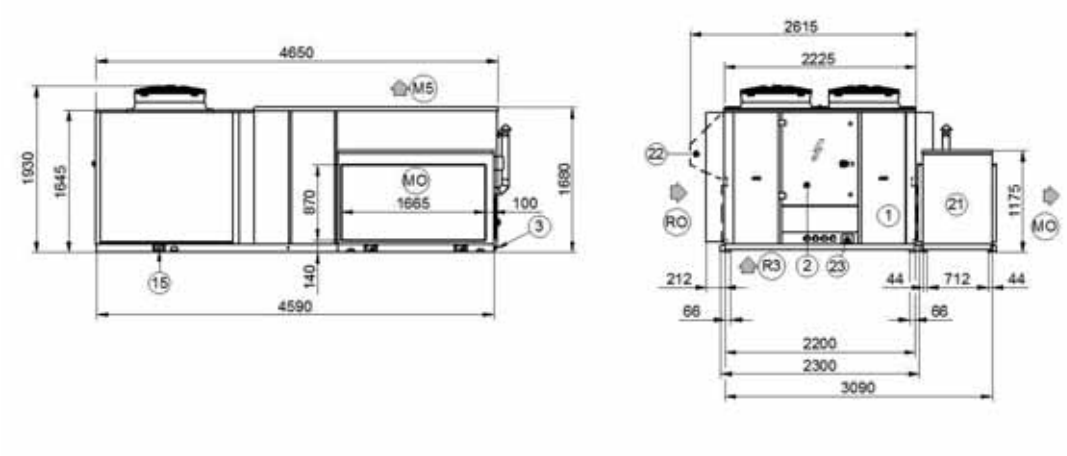
Size		33.4	40.4	44.4	33.4	40.4	44.4
Configuration		**CCK**	**CCK**	**CCK**	**CCKP**	**CCKP**	**CCKP**
W1 Supporting point	kg	485	492	494	501	508	509
W2 Supporting point	kg	373	381	382	386	394	395
W3 Supporting point	kg	427	436	437	441	450	451
W4 Supporting point	kg	503	511	512	519	527	528
Operating weight	kg	1788	1820	1825	1847	1879	1883
Shipping weight	kg	1788	1820	1825	1847	1879	1883

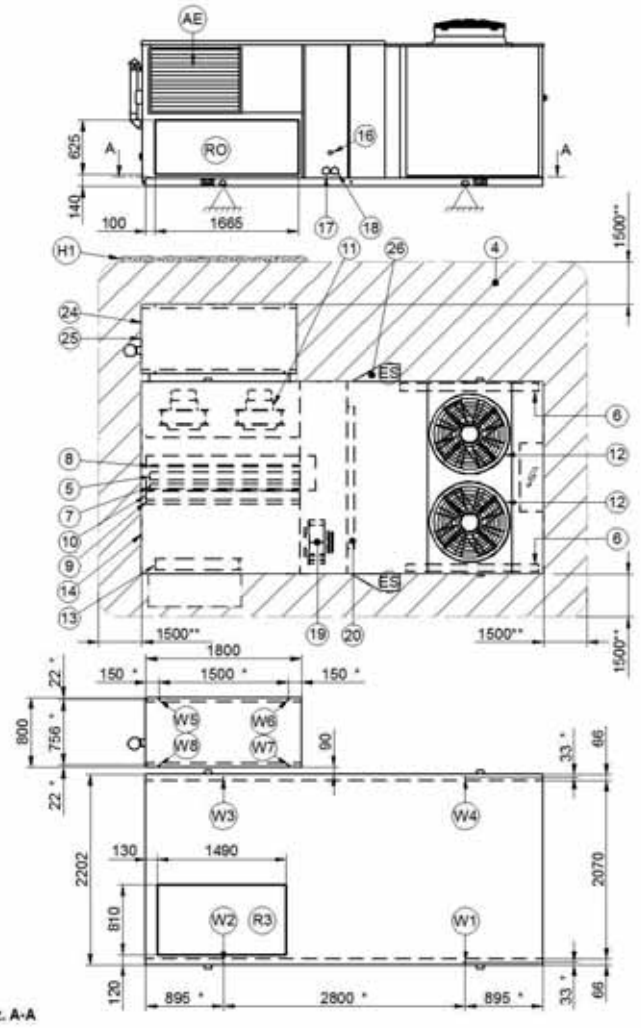
The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Size 33.4-40.4-44.4 Combustion module - CCK and CCKP configuration

Single chamber

DAA7X33.4_40.4_44.4_CCK-CCKP_GC09X-GC11X_00
Date: 018/12/2015





Sez. A-A

1. Compressor compartment
2. Electrical panel
3. Condensate drain
4. Functional clearances
5. Internal exchanger
6. External exchanger
7. H2O heating coil / Electric heaters (Optional)
8. Re-heating coil (Optional)
9. G4 air filters (Standard)
10. F7 bag filters / H10 electronic air filters (Optional)
11. Electric fan (Supply - return)
12. External electric fan
13. Outdoor air damper
14. Access for inspection of coils, filters, heating elements
15. Lifting brackets (removable)
16. Humidifier connections
17. H2O heating coil input Ø 1"1/4 (Optional)
18. H2O heating coil output Ø 1"1/4 (Optional)
19. Exhaust electric fan
20. Exhaust air recovery coil (CCKP version)
21. Gas module (accessory separately supplied)
22. Outdoor air return cap (optional for R3) (accessory separately supplied)
23. Power input
24. Gas connection
25. Condensate drain (only for condensation gas heating module)
26. Air exhaust caps (accessory separately supplied)

(ES) Air exhaust
(RO) Horizontal air return
(R3) Downward air return (optional)
(M0) Horizontal air supply
(AE) Outdoor air return
(H1) Wall with same height as unit on a maximum of three sides
(**) Suggested clearance
(*) Vibration mounts position

Size		33.4	40.4	44.4	33.4	40.4	44.4
Configuration		**CCK**	**CCK**	**CCK**	**CCKP**	**CCKP**	**CCKP**
W1 Supporting point	kg	485	492	494	501	508	509
W2 Supporting point	kg	373	381	382	386	394	395
W3 Supporting point	kg	427	436	437	441	450	451
W4 Supporting point	kg	503	511	512	519	527	528
Operating weight	kg	1788	1820	1825	1847	1879	1883
Shipping weight	kg	1788	1820	1825	1847	1879	1883

GAS MODULE WEIGHT DISTRIBUTION

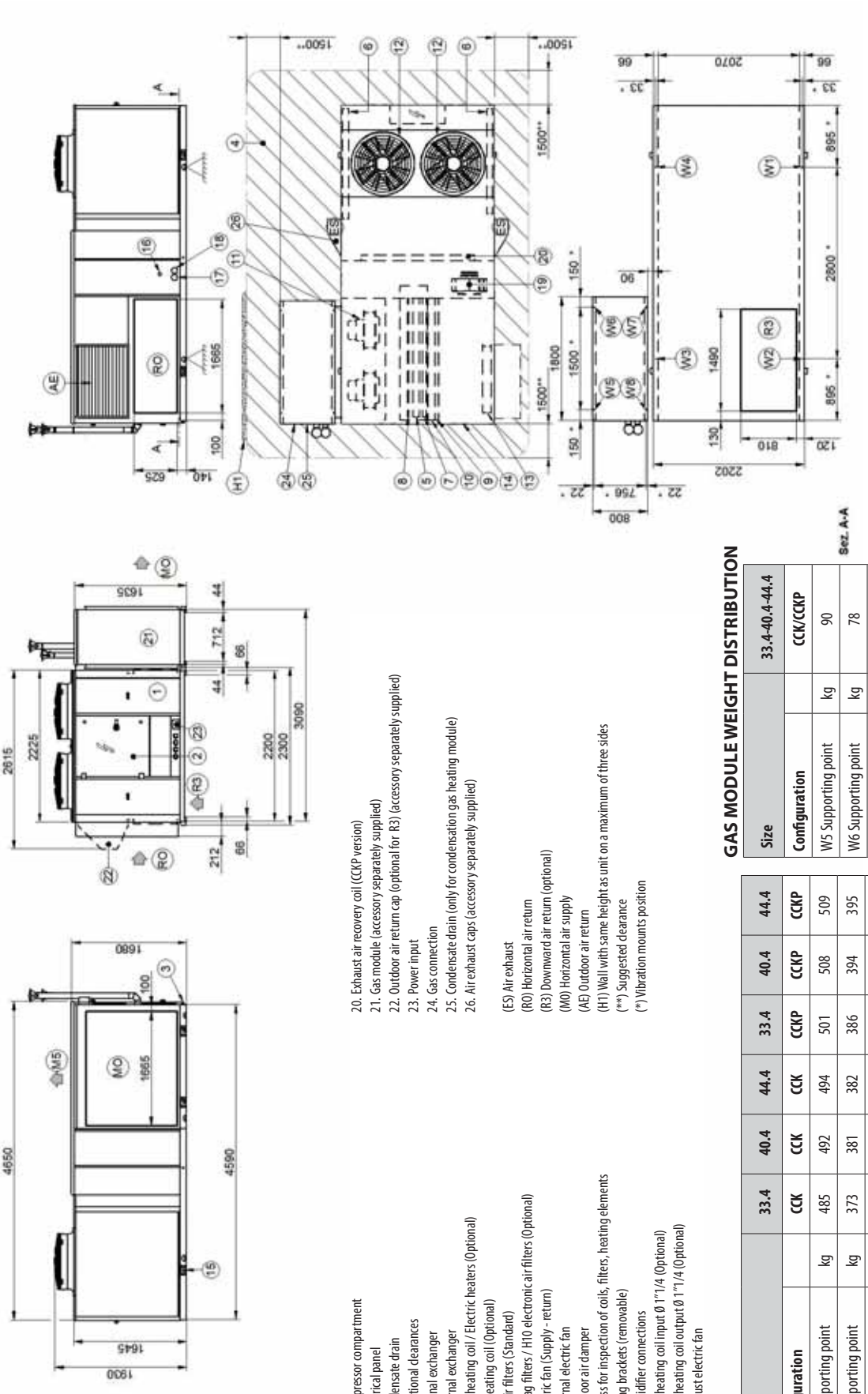
Size		33.4-40.4-44.4
Configuration		**CCK/CCKP**
W5 Supporting point	kg	70
W6 Supporting point	kg	58
W7 Supporting point	kg	58
W8 PSupporting point	kg	70
Operating weight	kg	256
Shipping weight	kg	256

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Size 33.4-40.4-44.4 Combustion module - CAK and CBK configuration

Double chamber

DAA7X33.4_40.4_44.4_CCK-CCKP_GC12X_00
Date: 18/12/2015



1. Compressor compartment
2. Electrical panel
3. Condensate drain
4. Functional clearances
5. Internal exchanger
6. External exchanger
7. H2O heating coil / Electric heaters (Optional)
8. Re-heating coil (Optional)
9. G4 air filters (Standard)
10. F7 bag filters / H10 electronic air filters (Optional)
11. Electric fan (Supply - return)
12. External electric fan
13. Outdoor air damper
14. Access for inspection of coils, filters, heating elements
15. Lifting brackets (removable)
16. Humidifier connections
17. H2O heating coil input Ø 1"1/4 (Optional)
18. H2O heating coil output Ø 1"1/4 (Optional)
19. Exhaust electric fan
20. Exhaust air recovery coil (CCKP version)
21. Gas module (accessory separately supplied)
22. Outdoor air return cap (optional for R3) (accessory separately supplied)
23. Power input
24. Gas connection
25. Condensate drain (only for condensation gas heating module)
26. Air exhaust caps (accessory separately supplied)

(ES) Air exhaust
(RO) Horizontal air return
(R3) Downward air return (optional)
(MO) Horizontal air supply
(AE) Outdoor air return
(H1) Wall with same height as unit on a maximum of three sides
(**) Suggested clearance
(*) Vibration mounts position

Size		33.4	40.4	44.4	33.4	40.4	44.4
Configuration		**CCK**	**CCK**	**CCK**	**CCKP**	**CCKP**	**CCKP**
W1 Supporting point	kg	485	492	494	501	508	509
W2 Supporting point	kg	373	381	382	386	394	395
W3 Supporting point	kg	427	436	437	441	450	451
W4 Supporting point	kg	503	511	512	519	527	528
Operating weight	kg	1788	1820	1825	1847	1879	1883
Shipping weight	kg	1788	1820	1825	1847	1879	1883

GAS MODULE WEIGHT DISTRIBUTION

Size		33.4-40.4-44.4
Configuration		**CCK/CCKP**
W5 Supporting point	kg	90
W6 Supporting point	kg	78
W7 Supporting point	kg	78
W8 Supporting point	kg	90
Operating weight	kg	336
Shipping weight	kg	336

The presence of optional accessories may result in a substantial variation of the weights shown in the table.

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