Technical Bulletin

BT16I022GB-03

Remotex

Air-cooled liquid chiller in two sections

MSRT-XSC3 + CEV-XT 90.4-T240.4 RANGE

Nominal cooling capacity from 238 kW to 2053 kW

- Hydronic system in two sections which expands the possibilities for application of traditional packaged products
- Easy to use: the internal section inlcudes all the main hydraulic components
- Double refrigeration circuit: high seasonal energy efficiency and high level of reliability
- Long life: all sensitive components are protected against the atmospheric agents
- Certainty of the result: all configurations are standardized and specifically optimized
- Easy transport and positioning in the installation replacements
- Use versatility: it adapts to installations where space and noise are challengers

Clivet hydronic system

Designed to provide high energy efficiency and sustainability of the investment, the wide range of Clivet liquid chillers and heat pumps for high efficiency air conditioning of Residential and Commercial spaces and for Industrial applications it is available with air or water source.

HYDRONIC System - Air Source

Specialization

Every intended use has specific requirements which determine the overall efficiency. For this, the Clivet hydronic system always offers the best solution in every project.

- Modular range with over 8000 kW of overall capacity
- Capacity control with Screw and modular Scroll technology
- Multifunction versions
- Outdoor or indoor (ductable type) installation

Centrality of the Air Renewal

From the Air Renewal depends the comfort in the spaces. Since it often represents the main building energetic load, it also determines the running costs of the entire system.

ZEPHIR3
Packaged Primary Air supply system with thermodynamic energy recovery.

- Simplifies the system, reduces the heating and cooling generators
- Purifies the air with standard electronic filters
- Increases the energy efficiency and it also allows a savings of 40% on the running costs
- From –40°C to +50°C of outdoor air temperature

Terminal and AHU complete system

The hydronic terminal units are very diffused for their versatility and reliability. The Clivet range includes many versions that simplify the application in differents type of installation and building.

ELFOSpace
High energy efficiency hydronic terminal units

AQX
Air-conditioning unit

- Cased and uncased terminal units, from 1 to 90 kW
- Horizontal and vertical installation
- Energy-saving DC fans
- Modular air conditioning units up to 160.000 m³/h
- EUROVENT certification

Remotex: modular scroll technology for every application

Remotex is the new generation of Clivet liquid chillers and heat pump with modular scroll technology. Thanks to its high seasonal efficiency and range versatility, it represents the ideal solution for different types of installation.

MSRT-XSC3 + CEV-XT

Air cooled water chiller

- EXCELLENCE high efficiency version and PREMIUM compact version
- Operating with 52°C of outdoor air temperature
- Partial recovery of the condensing heat

MSRN-XSC3 + CEV-XN

Air coole heat pump

- EXCELLENCE high efficiency version

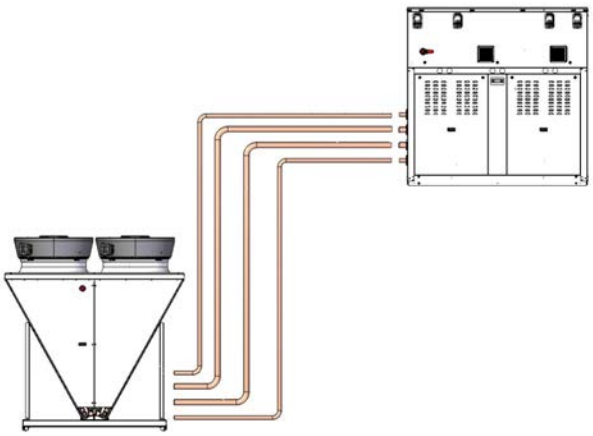
Soon to be available

What is REMOTEX?

Remotex is the innovative hydronic system in two sections which expands the application possibilities of the traditional packaged products.

It consists of one or more internal sections, each connected to its external section by the refrigerant lines.

- Each internal section is a real industrialized central cooling plant, able to provide liquid at a temperature controlled to use . It contains two refrigeration circuits with Multiscroll technology complete with electrical panel and with microprocessor control. It can also contain the Hydropack pumping units, with on-off or inverter technology, and many other integrated features, including the free partial condensing heat recovery.
- Each outdoor section contains the energy exchangers with outdoor air, complete with wired fans and power supply and control panel.



There are several configurations available for each indoor section with the outdoor section, all standardized and specially optimized.

This allows a great ease of transport and positioning in the new buildings and in the system replacements, always with the best choice according to the specific constraints of each project.

- Energy efficiency
- Noiselessness
- External climate
- Compactness
- Initial investment.

What the main advantages of the Remotex system are:

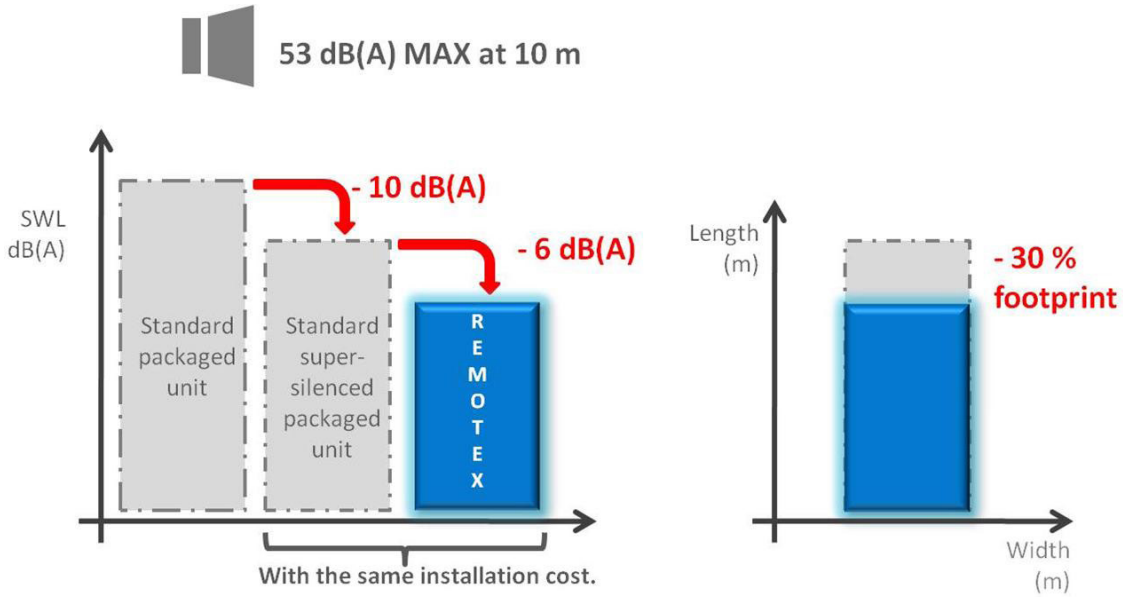
Choice

The two versions on offer mean that the customer can choose the best possible answer to his needs between initial investment costs and the entire duration of the unit life cycle:

- Our EXCELLENCE version stands out for its extraordinary energy efficiency, whether it is operating at a partial load or a full load.
- Our PREMIUM version is incredibly compact and highly efficient at a partial load.

Silent operation

The combination of the perfectly sound-proofed internal section with the various external sections (with high or medium air flow capacity) provides a solution for all requirements - even solving problems linked to tight restrictions on noise emissions.



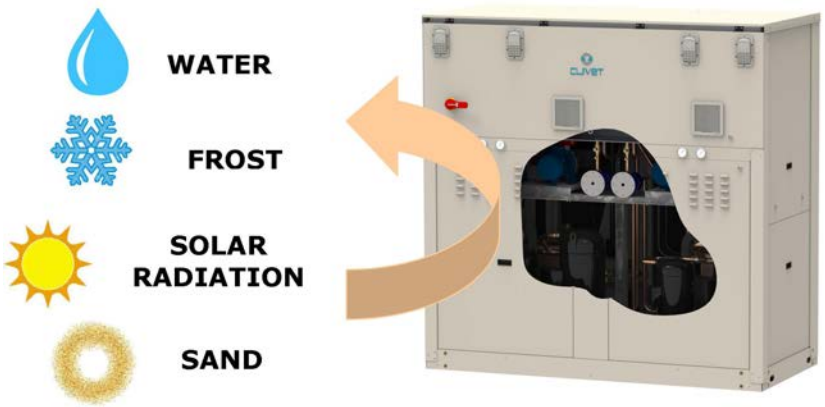
Dimensions and flexibility

Our Remotex system allows for great installation layout flexibility. The internal unit can be installed in any position with any direction in any technical facilities. All it needs is 2,5 m² surface area. The external unit only needs to be accommodated outdoors for the release of heat outside. This means it takes up less room than any packaged unit.

The design of the indoor unit, which includes the electrical panel and the components of the refrigeration circuit, is also suitable for an outdoor installation. This solution allows a further installation flexibility: it is possible to superimpose the outdoor unit to the indoor unit, by means of a special structure that the installer must provide. In this case, the obstruction in the plant is very low. This way, the storage footprint will be minimal indeed.

Protection

The parts which are more vulnerable to wear and tear are housed in a soundproof protective compartment, thus extending their service life. The benefits of this are magnified if the system is properly installed inside the building. This makes sense if you imagine how easily servicing can take place without having to worry about sheltering the parts, especially in places subject to extreme weather conditions. And it is not only the component parts of the cooling circuit that are protected. It is the entire hydraulic part with all its pumping units and pipework to be shielded from frost and adverse weather conditions.



Scalability

The layout of the central heating/cooling unit can be adapted to requirements. The heating and cooling capacity can be a combination of heat pumps or only cooling functions with silent external or compact units. This means highly scalable solutions in terms of operations, size and time.

Such a central unit can be easily built up over the years. It does have to be designed, purchased and installed in one fell swoop.

Easier installation

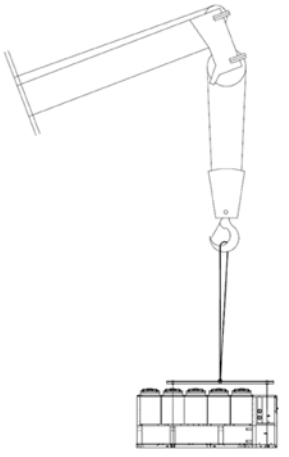
The two-section system gives a considerable edge during the installation stage, such as reduced handling weight and greater flexibility in positioning it.

A single 700 KW packaged unit can reach up to 6 metres of length, the weight can be close to 5 tons and the mass distribution is highly unbalanced. All of this requires the use of means of transportation of high-capacity, high-cost, which must be handled with extreme caution for obvious safety reasons.

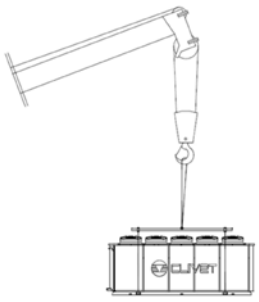
Remotex makes easier the handling operations because the weight of the single lifting does not exceed 2.4 tons for the indoor units and 1.9 tons for the outdoor units, and is distributed in a uniform way.

The advantage on the lifting costs compared to the traditional packaged solution can reach up the 50%.

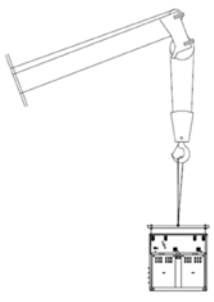
Not only, but the option of having a series of pre-installed accessories such as hydronic groups, valves and filters makes it much easier to install and start.



Lifting of the packaged unit: up to **5 ton**



Lifting of the REMOTEX external section: max **1,9 ton**



Lifting of the REMOTEX internal section: max **2,4 ton**

Performance

The split two-section systems usually have two standalone modules which sometimes even come from different manufacturers. The Remotex system has been specially designed to match the internal and external systems as closely as possible.

All the sections have been inspected and approved by Clivet's laboratories. Reliability and high performance levels from a top European company specialised in multiscroll systems.

Sustainability

The Remotex system combines the benefits of a hydronic system with the advantages of a split system.

The split or VRF systems entail using huge amounts of coolant which pass through areas occupied by people before reaching the room terminals. This often involves setting up inconvenient systems to detect any coolant leakage in all such areas and making regular checks.

This is bound to fall under the scrutiny of environmental laws and legislation aimed at protecting human health. Any system using less coolant which is easy to monitor and service as well as quicker to access and repair in the event of unforeseen breakdown can only afford relief in this sense.

Remotex

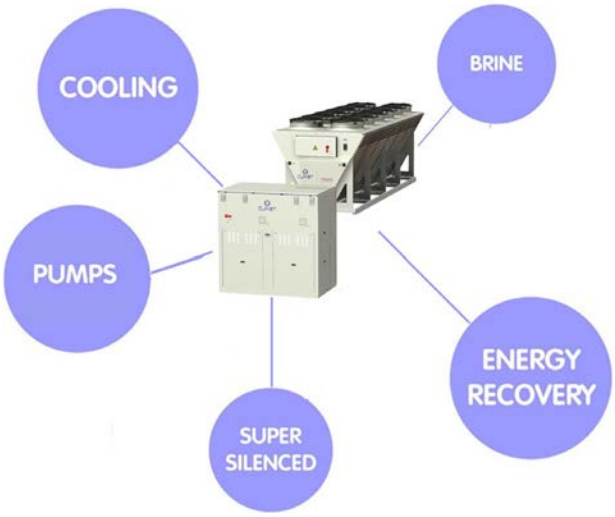
Provides all Clivet technological developments for their medium capacity hydronic systems

High efficiency Scroll compressors, high performance heat exchangers, fully automatic operation: these are only some of the technologies available with Remotex, in a range of models that are ideal for high capacity air conditioning systems in commercial, residential and industrial buildings.

The two available versions allow to choose the best combination between the initial investment and the costs throughout the entire life cycle of the system.

- the EXCELLENCE version stands out for its extremely high energy efficiency under both part and full load conditions.
- the distinctive feature of the PREMIUM version is its compactness and high part-load efficiency.

Remotex can also be supplied in many configurations equipped with the main components installed built-in.



Advantages

High efficiency all year round

Remotex reduces yearly energy consumption thanks to its high part-load efficiency i.e., by far the most frequent condition throughout the system's life-cycle. This way, even the value of the served building increases. The main components are manufactured on an industrial scale, with maximum manufacturing reliability and can be easily found as spare parts.

To further increase energy efficiency in a system with several Remotex units operating on the same equipment, there is the innovative ECOSHARE feature, which automatically distributes the load and activates the necessary pumps.

4.5
ESEER
Seasonal
Efficiency

System simplification

All of the features are provided by Clivet already assembled and tested built-in, differently then other manufacturers who make numerous additional components available to be installed on site.

Compact and versatile

Suitable for any type of terminals, from fan coils to radiant systems and chilled beams, Remotex is also available in Super-silenced configuration. Energy recovery for producing hot water free of charge.

Seasonal energy efficiency is further increased with the DST operating logic, which maintains a constant return temperature.

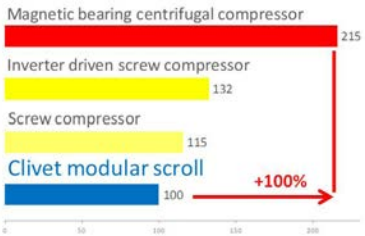
5.3
DST
Seasonal
Efficiency

Borderless multiscroll technology

With Remotex the Multiscroll technology reaches the best levels of performance and versatility ever, guaranteeing competitiveness in more and more demanding applications. The top class seasonal efficiency rewards Remotex in comparison to any other air cooled chiller technology. A comparison with three Remotex competitors such as:

- air cooled liquid chillers with magnetic bearing centrifugal compressors
- air cooled liquid chillers with modulating capacity screw compressors
- air cooled liquid chillers with inverter screw compressors;

shows that Remotex is the best solution, considering its seasonal efficiency similar to the inverter screw chillers and a capital cost lower than that of centrifugal compressor chillers, even considering the capital investment pay back, that for analized technologies are always above acceptable values normally considered for system investment equal to 3 years.



Average capital investment for 500 kW installation proportional with scroll technology

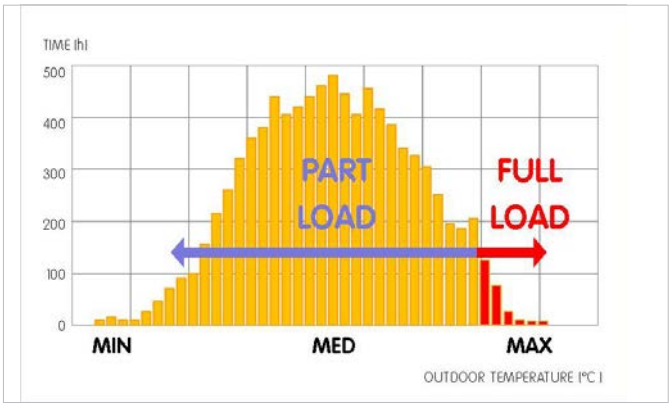
Comfort and energy saving in one solution

Maximum efficiency is necessary with a part load

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.



Part load efficiency determines the seasonal efficiency

Seasonal efficiency is conventionally represented by ESEER parameters according to Eurovent and IPLV parameters according to ARI. Both give great importance to part load operation, since it is the predominant condition.

CARICO IMPIANTO	PESO (ESEER) *	PESO (IPLV) *
100%	3%	1%
75%	33%	42%
50%	41%	45%
25%	23%	12%

* EUROVENT (ESEER) supply times reference and ARI (IPLV) reference for seasonal efficiency calculations.

MultiScroll technology enhances part-load efficiency

Remotex uses high efficiency Scroll compressors.

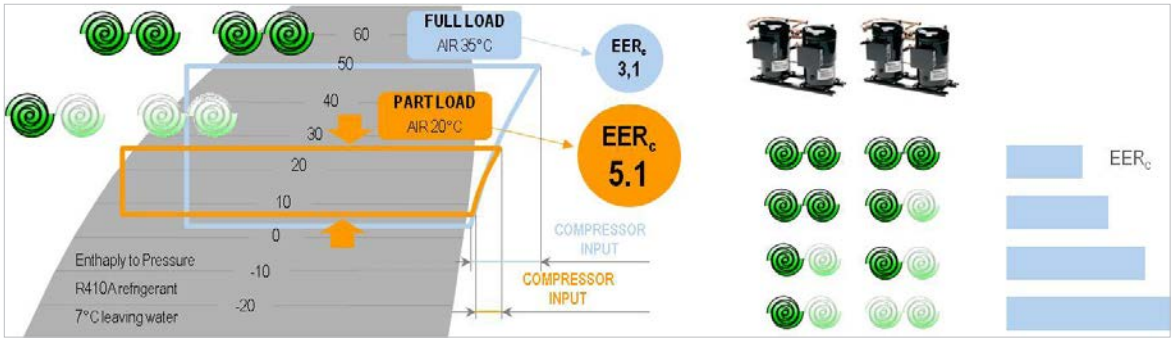
The advantages are:

- compressors manufactured in large ranges on an industrial scale with strict quality control inspections and maximum manufacturing reliability thanks to the high production volumes.
- every refrigeration circuit uses two Scroll compressors, depending on the different sizes of the unit. When two compressors are used, their sizes are different in order to obtain more control steps. This way, only the necessary energy is supplied.

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.



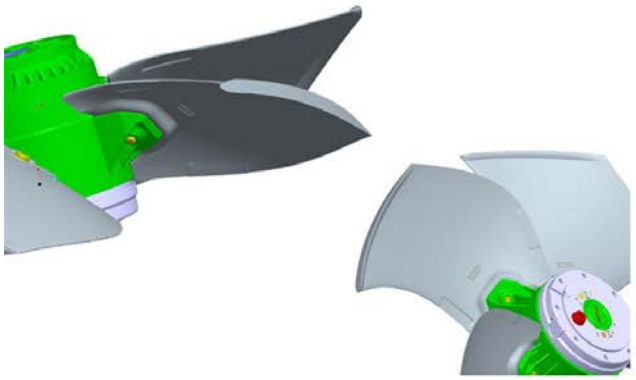
EERc =Energy efficiency referred to compressors

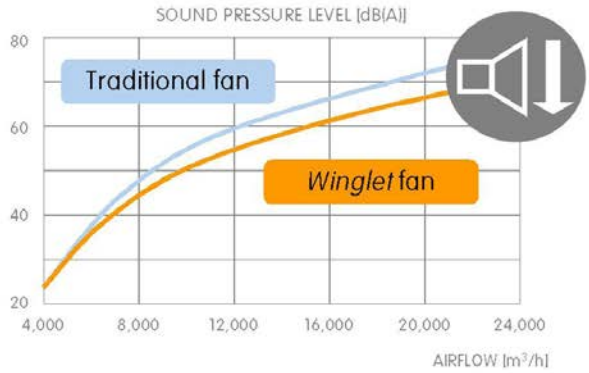
Efficient and silent ventilation technology

Advanced aerofoil fans

The external axial fans are equipped with the innovative Winglet airfoil-vane with integrated baffle, able to increase the aerodynamic efficiency.

It results in a consumption reduction of the 10% and a medium sound emission lower of 6 dB than the traditional fans.



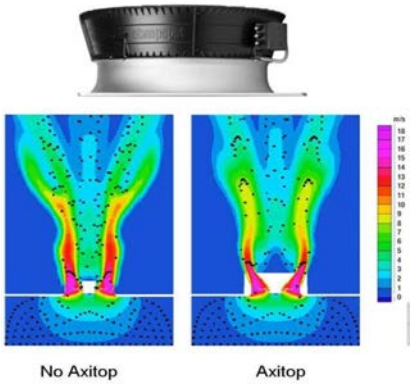


Diffusers for fans

Also the innovative air handling system on the external exchangers is the result of the Clivet design evolution.

The new AxiTop diffuser creates an ideal air distribution: it aerodynamically decelerates the flow and transforms a big part of its dynamic energy in static pressure, obtaining:

- –3 dB of sound reduction
- reduction of 3% of the absorbed energy



Energy efficiency improved by Axitop

Two versions available for the various investment dynamics

Business oriented

All Remotex models feature high part-load energy efficiency, which means high ESEER seasonal efficiency. The two versions available allow choosing the best combination between the initial investment and the costs throughout the entire life-cycle of the system.

Excellence version: maximum efficiency

Apart from the high seasonal efficiency, the standard EXCELLENCE version stands out for its extremely high energy efficiency ratio (EER) during full-load cooling, which exceeds the value 3.1.

This is all possible thanks to Scroll modular technology, high efficiency heat exchangers and to Axitop diffusers and to an electronic control device supplied as standard.

This allows for:

- energy efficiencies equal to or higher than most units on the market equipped with screw compressors, even when inverter driven
- efficient use even in a large number of industrial and process applications
- upgrade of the building's energy class and, therefore, increased value
- maximum savings on running and maintenance costs.

Premium version: compact and aggressive

The optional PREMIUM version also develops excellent part-load efficiency, but features a compact design for the heat exchangers and structure. Therefore this solution is intended for applications that favour the initial investment rather than overall cost reduction throughout the lifespan of the system.

100% silent operation

Both energy versions, Excellence and Premium, are available in Super-silenced acoustic configuration, which allows the sound level to be greatly minimised of 5 dB(A).

In this way you can ensure the maximum installation flexibility, an indispensable condition when there are limited spaces, or in the case of replacement when upgrading the existing installations where silent operation is required.

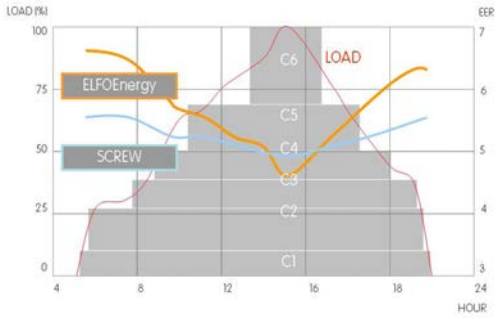
ELFOEnergy Magnum is therefore the best solution able to meet the most demanding application requirements in terms of efficiency, compactness and quietness.

Superior flexibility and reliability

Efficient precision

Sequential activation of Remotex compressors allow:

- adapting to the load required for use, thereby ensuring added comfort
- reducing the number of compressor start-ups, i.e., the main cause of wear
- increasing the unit's useful life
- reducing repair times and costs, thanks to the modular components, their reduced dimensions and reduced cost compared to semi-hermetic compressors.

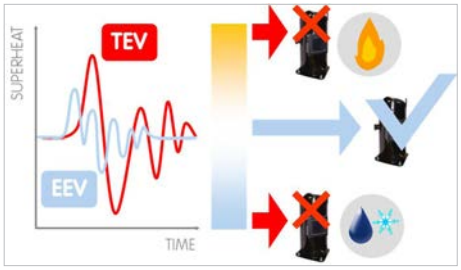


THE NUMBER OF START-UPS DECREASES THEREFORE THE LIFE CYCLE INCREASES

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.

The overheating control allows preventing phenomena that are hazardous to the compressors, such as overtemperature and return fluids, thereby increasing even more efficiency and durability.



Simplified maintenance

Besides being efficient, Remotex improves the system maintenance.

In fact, the malfunction of a compressor does not compromise overall operation.

Furthermore, Scroll compressors are very compact, easy to find and easy to handle in case of replacement.

Controlled power supply

Proper power supply ensures optimal unit operation and protects its many electrical components.

The phase monitor, standard supplied in the EXCELLENCE and PREMIUM versions:

- controls the presence and the exact sequence of the phases
- checks any voltage anomalies (-10%)
- automatically restarts the unit as soon as the proper power supply is restored.

The EXCELLENCE version is fitted with a multifunction monitor, where limit values and the service schedule of Clivet's Technical Support can be modified.

The automatic control device coordinates resources ensuring maximum 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 and automatic maximum power consumption limitation (demand limit).

Perfect for LEED certification

The whole EXCELLENCE range, both in SC and EN configuration, satisfies both requirements 2 (Minimum Energy Performance) and 3 (Fundamental Refrigerant Management) of Energy and Atmosphere section. They also meet Credit 4 parameters (Enhanced Refrigerant Management) allowing 1 point acquisition considering an equivalent distance between internal and external section of 7,5 m.

Clivet is committed in promoting the green building principles and has become a member of GBC Italia. This organization collaborates with USGBC, the U.S. nonprofit organization that promotes worldwide the LEED system of indipendent certification.

Modularity

In the event of particularly large buildings requiring high capacities, it is advisable to use several units.

The Remotex units are designed to be connected in parallel in modular logic, thereby granting the following advantages:

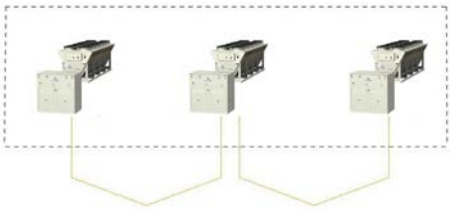
Increased flexibility, enhanced by the control that can adapt to the load

Increased reliability, since the malfunction of one unit does not compromise the capacity supply of the other units.

Increased efficiency, since energy is produced where and when required, according to the served area.

The microprocessor control combined with ECOSHARE allows controlling up to 7 units in local network (1 Master unit and 6 Slave).

MODULAR SYSTEM THAT ENHANCES Remotex TECHNOLOGY ADVANTAGES



Remote system management

Remotex is standard equipped with:

- potential-free contact for remote on/off control
- potential-free contacts for remote display of the compressor status
- setting from user interface: Off / local On / serial On
- potential-free contact to remote any possible alarm

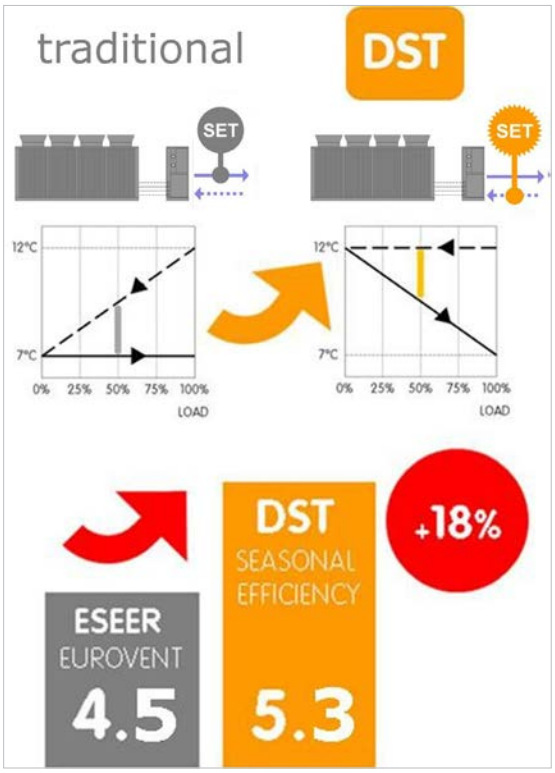
The various communication protocols allow the unit to exchange information with the main supervision systems by means of serial connections.

Energy measuring

Monitoring energy consumption and instant power employed is the starting point to improve the system's energy management and efficiency. With the optional energy meter, the user displays all the information related to the unit's electrical parameters on the interface built-in the unit or via the serial connection.

Moreover, the integration with the Demand Limit function supplied as standard allows to act on consumption levels by limiting them if they exceed the expected limit.

Seasonal energy efficiency is further increased with the DST operating logic



Remotex is equipped with standard DST thermoregulation (Dynamic Supply Temperature).

In a constant water-flow rate system, unlike the traditional control logic that aims at maintaining the water supply temperature constant, the DST logic aims at keeping constant the water return temperature, modifying the supply temperature dynamically according to the load. This way, evaporation temperature increases during part-load cooling, thereby increasing seasonal energy efficiency.

The DST control allows a considerable consumption and operation costs reduction, especially in civil applications, upon verification of the air treatment system's dehumidification capacity during cooling at part load.

The DST control allows considerable consumption and operation costs reduction, especially in civil applications, upon verification of the air treatment system's dehumidification capacity during part-load cooling. The DST control is particularly interesting when combined with active thermodynamic fresh air systems. The direct expansion circuit allows them to operate the outdoor air treatment independently from Remotex, which can vary the system water supply temperature, thereby optimising energy efficiency in the yearly cycle.

In a constant water-flow rate system it is however possible to activate at any time the traditional control logic with the control on the supply temperature.

In a variable water-flow rate system, in addition to the benefits of the control stability given by the supply temperature control and the energy saving in the part load operation, due to the pump flow rate reduction, it is possibile to obtain a control to maintain always constant the water supply temperature. This control is made available setting the unit with built-in pumps at variable flow-rate or, in case of external pumps at variable flow-rate, through their direct management by the unit.

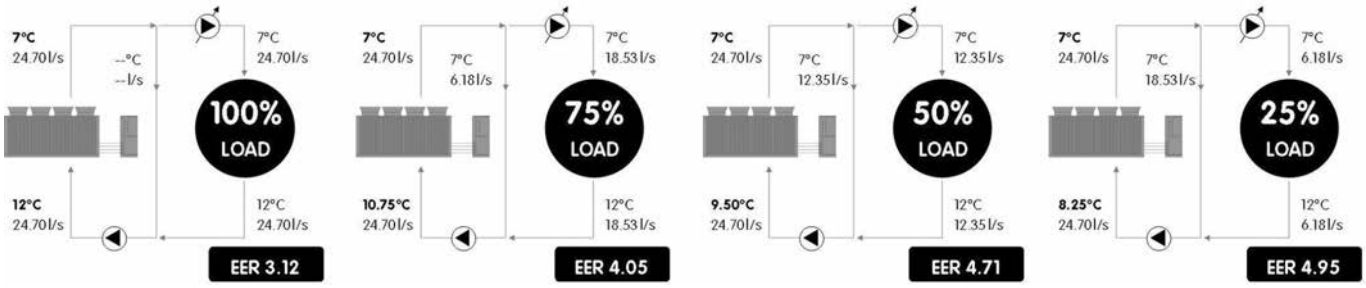
Example

The following diagram represents the various operating temperatures in the production of chilled water under various load conditions for a typical civil system consisting of:

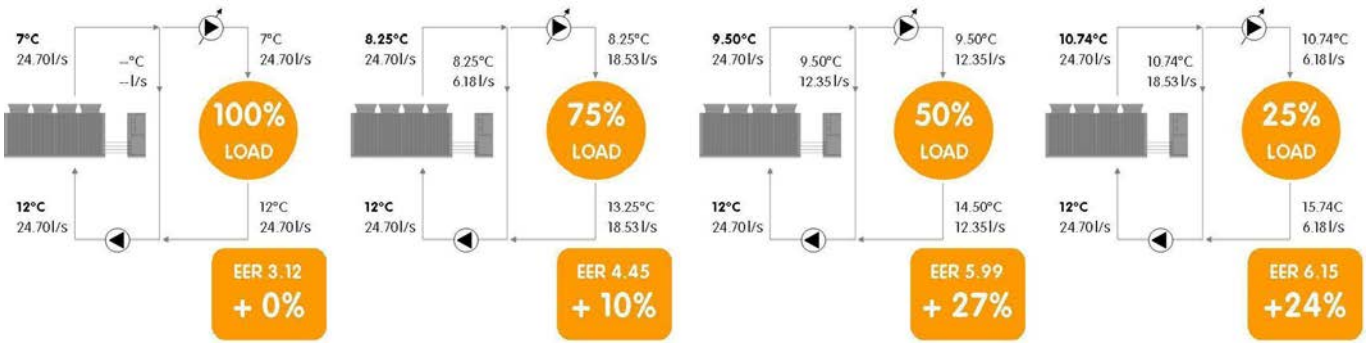
- primary circuit with constant water flow rate
- secondary circuit with variable water flow-rate according to the load (linear variability for simplicity).

The traditional control logic keeps the water supply temperature to room terminals and outdoor air treatment units constant, in order for the latter to carry out the dehumidification. The DST control logic, on the other hand, allows increasing the system water supply temperature during part-load operation, thereby increasing seasonal energy efficiency for Remotex. The DST application must be verified during the design stage according to specific system constraints.

Traditional control logic (system water flow rate temperature = constant)



DST control logic (system water return temperature = constant)



Remotex technology industrialised the system

Remotex can be supplied equipped with components that are often provided separately.

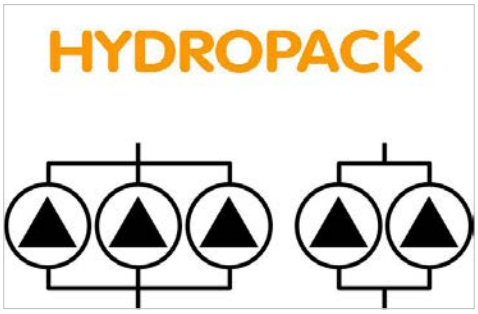
This allows reducing:

- design times: all accessories are made to ensure the best overall efficiency;
- installation costs: the accessories already mechanically connected, electrically wired and individually tested are ready to be put to operate immediately;
- overall dimensions: system components are integrated with the unit, thereby reducing the technical area and increasing the area available for other uses.

The built-in pumps are versatile, ready-for-use and reliable

The various solutions available are:

- HYDROPACK, the modular solution with two or three parallel pumps. Automatically reduces the water flow rate when in critical conditions, thereby preventing jams due to overloading, requiring the subsequent intervention of specialised technical personnel.
- it is very useful during start-ups, when restarting after operating breaks (e.g. at the weekend) or after a long period of inactivity.
- Inverter driven HYDROPACK allows water flow-rate-head calibration



Variable flow-rate advantages

Pumping energy for moving the water has an heavy impact on seasonal efficiency. The variable flow control is available for all units and drives to energy savings during partial load.

Pump energy consumption is proportional with cubic rotation speed. Evident the advantage when reducing flow-rate of 40% comparing to nominal conditions: energy saving is of 75% on pump energy consumption.

The control logic I based on keeping stable the water temperature entering and leaving difference, guaranteeing at the same time the best efficiency and a working envelope within an acceptable range for the heat exchanger (pressure losses).

The control logic applies to both flow-rate and compressor regulation thanks to steps. Proportional-Integral-Derivative guarantees a precise and stable operation.

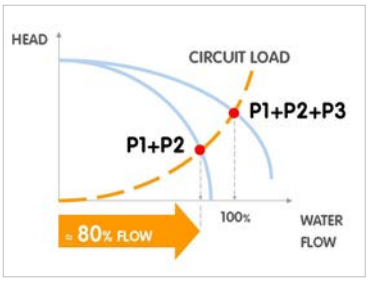
The possibility of independent pump management in case of failure is embedded in the unit keeping operative the system.

The exceptional HydroPack operation continuity

Due to its modularity, HYDROPACK maintains good water flow in the system even in the event of one of the pumps being temporarily unavailable.

In fact, with a deactivated pump, the residual flow is:

- about 80% of the rated flow (3 pump configuration)
- about 60% of the rated flow (2 pump configuration)



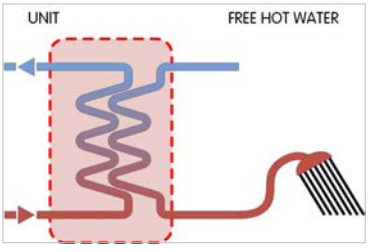
Produces hot water freely

Condensation heat recovery:

- partial: it recovers about the 20% of the available heat (desuperheater)

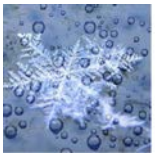
It allows the free DHW production for:

- hot water coil supply for reheat
- domestic hot water production (with intermediate exchanger)
- other processes or operations



Even for low water temperature

The unit is also perfectly adapted for use in process cooling where the low temperature version (Brine) together with the addition of glycol to the thermo-vector liquid produces chilled water down to –8 °C.



Further considerations on the installation

The vast operating field of Remotex allows it to adapt to most system applications. In some cases, special duty conditions may exceed the unit operating field. Simple devices on the system allow proper operation and meeting any requirement. Here are two examples.

Water flow rate values outside the limits

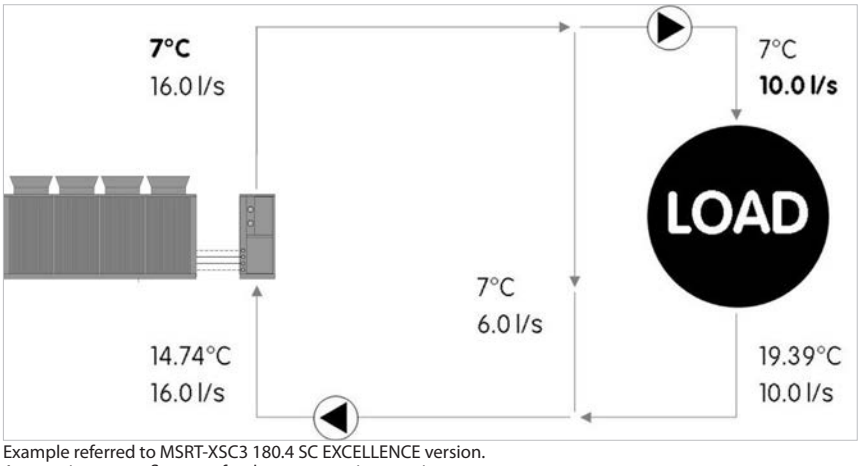
Remotex operates with constant water flow rate to the evaporator, between a minimum and maximum value indicated in the technical documents.

Flow rate values below the limit may cause unwanted formation of ice, incrustations, reduced control precision, and the unit to stop following the intervention of built-in safety devices.

Flow values above the limit may cause high pressure drops, high pumping costs, and reduced control precision, and erosion damages to the exchangers.

In this example, the required flow-rate is lower than the maximum value allowed to the evaporator, while the operating temperatures fall within the functional field of the unit.

A properly sized bypass piping resolves the problem.



Example referred to MSRT-XSC3 180.4 SC EXCELLENCE version.
Appropriate water flow rate for the correct unit operation.

Temperature values outside the limits

Remotex operates with the system supply temperatures indicated in the technical documentation.

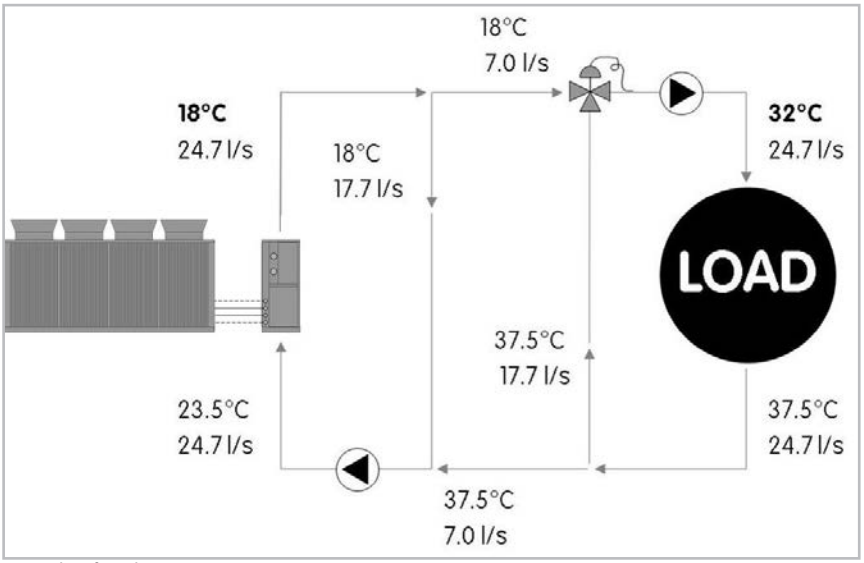
Temperature limits below the limit may cause unwanted formation of ice and the unit to stop following the intervention of built-in safety devices.

Temperature values under the limit may cause malfunctions and damages to the compressors, reduced control precision, and the unit to stop following the intervention of built-in safety devices.

In this example, the required temperature exceeds the maximum value allowed to the evaporator, while the water flow rate falls within the functional field of the unit.

A properly sized bypass piping and mixing system resolve the problem.

Should both the water flow rate and the operating temperature exceed the values intended for the chiller, all you have to do is combine the two cases described above.



Example referred to MSRT-XSC3 180.4 SC EXCELLENCE version.
Appropriate supply water temperature for the correct unit operation. Nominal water flow rate.

Evaporator thermal gradient

Remotex nominal capacities refer to an evaporator thermal gradient equal to 5 °C. A different thermal gradient may be used in full load operation, provided that both the operating flow and temperatures fall within the limits. As an indication, this corresponds to a minimum thermal gradient of approximately 3 °C and a maximum of 10 °C (the exact values must be determined based on the allowed flows and temperatures).

Standard unit technical specifications - Excellence and Premium Version

INTERNAL SECTION

Compressor

High efficiency hermetic orbiting scroll compressor complete with oil charge, motor over-temperature and over-current devices and protection against excessive gas discharge temperature with oil heater, which starts automatically, keeps the oil from being diluted by the refrigerant when the compressor stops. Compressors, fitted on rubber antivibration mounts to prevent transmission of noise and vibration, are connected in TANDEM on a single refrigerating circuit with biphasic oil equalisation, it allows to reach high efficiency at partial load. Uniform compression process with reduced number of moving parts which ensure very low levels of noise and vibration.

Structure

Structure and base made entirely of sturdy sheet steel, thickness of 30/10 or 40/10, with the surface treatment in Zinc–Magnesium painted , for the parts in view, with polyester powder RAL 9001 that guarantees excellent mechanical characteristics and high corrosion strength over time.

Panelling

External pre-painted zinc-magnesium paneling, thickness 15/10, with the surface treatment in Zinc–Magnesium painted with polyester powder RAL 9001 that ensures superior resistance to corrosion for outdoor installation and eliminates the need for periodical painting. The panels can be easily removed to fully access internal components and are lined with sound-proof material on the inside to contain the unit's sound levels.

Internal exchanger

Direct expansion heat exchanger, braze-welded AISI 316 stainless steel plates, in pack without seals using copper as the brazing material, with low refrigerant charge and large exchange surface, complete with:

- external thermal insulation no-condensation, thickness 9,5 mm, in extruded elastomer foam with closed cells.
- differential pressure switch, water side
- antifreeze heater to protect the water side exchanger, preventing the formation of frost if the water temperature falls below a set value.

Maximum operating pressure exchanger: 10 bar on the water side and 45 bar on the refrigerant side.

Refrigeration circuit

Two independent refrigeration circuits, copper made and factory-assembled, welded with continuity metallic solution, completed with:

- replaceable antiacid dehydrator filter with solid cartridge;
- liquid flow and moisture indicator;
- electronic expansion valve;
- high pressure safety pressure switch;
- high pressure safety valve;
- low pressure safety valve;
- cutoff valve on liquid line;
- cutoff valve on compressor supply.
- thermal insulated of suction line with insulation material in highly flexible closed-cell elastomer based on EPDM rubber.

Each refrigeration circuit is pressure tested to check leaks.

Electrical panel

Fully constructed and wired in accordance with EN 60204.

The capacity section includes:

- main door lock isolator switch;
- terminals main power (400V / 3Ph / 50Hz);
- isolating transformer for auxiliary circuit power supply (230V/24V);
- compressor circuit breaker;
- compressor control contactor.

The control section includes:

- interface terminal with graphic display;
- display of the set values, the error codes and the parameter index;
- ON/OFF and alarm reset buttons;
- proportional-integral-derivative water temperature control;
- daily, weekly programmer of temperature set-point and unit on/off;
- unit switching on management by local or remote (serial);
- antifreeze protection water side;
- compressor overload protection and timer;
- pre-alarm function for water antifreeze and high refrigerant gas pressure;
- self-diagnosis system with immediate display of the fault code;
- automatic rotation control for compressor starts;
- compressor operating hour display;
- remote ON/OFF control;
- relay for remote cumulative fault signal;
- input for demand limit (absorbed power limit according to an external 0÷10V signal);
- potential-free contacts for compressor status;
- digital input for double set-point enabling;
- electrical panel ventilation;
- multifunction phase monitor;
- Modbus connection with the external section.

All device functions can be repeated with a normal portable PC connected to the unit with an Ethernet cable and equipped with an internet navigation browser. All electrical cables are colored and numbered in accordance with the wiring diagram

EXTERNAL SECTION

External exchanger

Finned exchanger, made from copper pipes arranged in staggered rows and mechanically expanded for better adherence to the collar of the fins. The exchangers are planned, designed and produced directly by CLIVET. The fins are made of aluminium with a special corrugated surface, set a suitable distance apart to ensure maximum heat exchange efficiency. Each finned heat exchanger is directly cooled by the air flow of its specific fans.

Fan

Axial fans with high performance and low-noise, balanced statically and dynamically, with blades in aluminum sheet coated in PP and sickle profile terminating with "Winglets", Wall ring in sheet steel pre-galvanised, directly coupled to the three-phase electric motor with external rotor and IP54 protection and class F insulation. Fans are located in aerodynamically shaped structures, equipped with accident prevention steel guards.

Diffusers for external section fans - Axitop

Axitop diffusers installed on the outdoor section fans to recover dynamic energy, resulting in increased efficiency and minimal sound emission. It creates an ideal air distribution: it aerodynamically decelerates the flow and transforms a big part of its dynamic energy in static pressure.

Electrical panel

Fully constructed and wired in accordance with EN 60204.

The capacity section includes:
- main door lock isolator switch;
- fan overload circuit breakers;
- fan activation relay;
- fan wiring

The control section includes:
- fan protection;
- outdoor air temperature probe;
- Modbus connection with internal section.

INTERNAL AND EXTERNAL SECTION

Configurations

D - Partial energy recovery

B - Low water temperature

SC - Acoustic configuration with compressor soundproofing

EN - Super-silenced acoustic configuration

Accessories - Hydronic assembly

- HYDROPACK (n.b.: other types are available by head)
- Inverter driven HYDROPACK
- Steel mesh mechanical strainer (accessory separately provided). Note: To be located at the exchanger inlet. We disclaim any liability and make the guarantee void, if an appropriate mechanical filter is not provided inside the system.

Accessories

- High and low pressure gauges
- Cutoff valve on compressor supply and return
- Couple of manual shut-off valves (accessory provided separately)
- Electrical panel antifreeze protection
- Power factor correction capacitors (cosfi > 0.9)
- ECOSHARE function for the automatic management of a group of units
- Disposal for inrush current reduction (SOFT STARTER)
- Serial communication module for BACnet-IP supervisor
- Serial communication module for Modbus supervisor
- Serial communication module for LonWorks supervisor
- Device for consumption reduction of the external section ECOBREEZE fans
- Remote control via microprocessor remote control (accessory separately supplied)
- Mains power supply unit (accessory separately supplied)
- Energy meter
- Set-point compensation with 0-10 V signal
- Set-point compensation with outdoor air temperature probe
- Rubber antivibration mounts (supplied separately)
- Refrigerant leak detector with pump down function in the casing
- Variable flow-rate control

On special request are available:

- copper /copper condenser coil with brass shoulders
- finned coil protection grill
- copper / aluminium condenser coil with acrylic lining
- copper / aluminium condenser coil with Energy Guard DCC Aluminum

Test

Unit subjected to factory-tested in specific steps and test pressure of the piping of the refrigerant circuit (with nitrogen and hydrogen), before shipping them. After the approval, the moisture contents present in all circuits are analyzed, in order to ensure the respect of the limits set by the manufacturers of the different components.

Unit configuration

MSRT-XSC3 + CEV-XT	200	.	4	EXC	SC	CREFO	AXI	-	-	-
(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

(1) Range
MSRT = Air-cooled liquid chiller in two sections with scroll compressor
XSC3 = Remotex range

CEV-XT = Air cooled remote condenser

(2) Size
200 = Nominal compressor capacity (HP)

(3) Compressors
4 = Compressor quantity

(4) Energy efficiency
EXC = EXCELLENCE version: high energy efficiency
PRM = Compact PREMIUM version

(5) Acoustic configuration
SC = Acoustic configuration with compressor soudproofing
EN = Super-silenced acoustic configuration

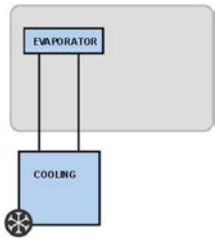
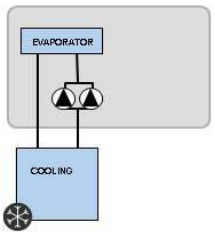
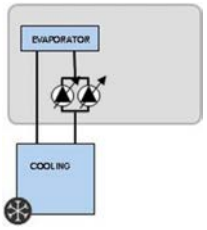
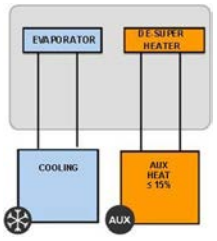
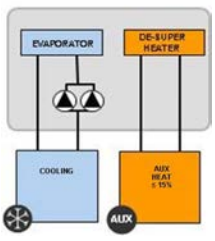
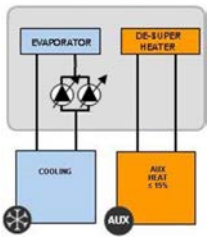
(6) Type of fans
CREFO - Device for fan consumption reduction of the external section, on/off type (standard)
CREFB - Device for fan consumption reduction of the external section, ECOBREEZE type

(7) Fan diffusers
AXI - Diffuser for high efficiency fan (standard)

(8) Condensation heat recovery
(-) recovery not required (standard)
D - Partial energy recovery (20% of available heat)

(9) Low evaporator water temperature configuration
(-) Low water temperature: not required (standard)
B - Low water temperature, down to –8°C (Brine)

(10) Pumping unit user side
(-) not required
2PM - Hydropack user side with no. 2 of pumps
3PM - Hydropack user side with no. 3 of pumps
2PMV- Hydropack user side with no. 2 of inverter pumps
3PMV - Hydropack user side with no. 3 of inverter pumps

Functionalities	Hydronic units		
2-PIPE SYSTEM Chilled water production for installation	**1.1** Standard unit 	**1.2** Standard unit with HYDROPACK 	**1.3** Standard unit with inverter driven HYDROPACK 
2-PIPE SYSTEM + PARTIAL RECOVERY Production of chilled water Free production of hot water from partial recovery	**2.1** Standard unit with partial recovery 	**2.2** Standard unit with partial recovery and HYDROPACK 	**2.3** Standard unit with partial recovery and inverter driven HYDROPACK 

Accessories separately supplied		
• **RCMRX** - Remote control via microprocessor remote control	• **PSX** - Mains power supply unit	• **AMRX** - Rubber antivibration mounts

STANDARD CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: compressor soundproofing (SC)

General technical data - PERFORMANCE

Internal section size - MSRT-XSC3			90.4	100.4	110.4	120.4	140.4	160.4	180.4	200.4	220.4	240.4
External section size - CEV-XT			**90.0**	**105.0**	**115.0**	**120.0**	**145.0**	**160.0**	**180.0**	**200.0**	**210.0**	**230.0**
Cooling												
Cooling capacity	1	[kW]	260	279	310	346	400	441	504	562	616	684
Compressor power input	1	[kW]	74,0	81,9	89,6	101	113	129	148	158	177	194
Total power input	2	[kW]	80,3	91,2	98,9	110	123	141	161	174	193	210
Partial recovery heating capacity	3	[kW]	66,7	72,1	79,9	89,4	103	114	130	144	159	176
EER	1	-	3,23	3,06	3,13	3,14	3,26	3,12	3,13	3,24	3,19	3,26
SEER	5		4,73	4,57	4,68	4,68	4,81	4,55	4,62	4,68	4,67	4,73
Water flow-rate (User Side)	1	[l/s]	12,8	13,9	15,2	16,9	19,4	22,0	24,6	27,4	29,8	32,4
Internal exchanger pressure drops	1	[kPa]	50,0	49,0	50,0	46,0	51,0	51,0	52,0	51,0	50,0	55,0
Cooling capacity (EN14511:2013)	4	[kW]	259	278	309	345	399	440	503	559	614	682
Total power input (EN14511:2013)	4	[kW]	81,7	89,6	97,5	109	123	141	161	171	190	207
EER (EN 14511:2013)	4	-	3,17	3,10	3,17	3,18	3,24	3,12	3,13	3,27	3,23	3,29

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)

1. Data referred to the following conditions: internal exchanger water = 12/7 °C. Entering external exchanger air temperature 35°C. Evaporator fouling factor = 0.44 x 10^(-4) m2 K/W
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers
3. Option. Recovery exchanger water=40/45°C
4. Data compliant to Standard EN 14511:2013 referred to the following conditions: - Internal exchanger water temperature = 12/7°C - Entering external exchanger air temperature = 35°C
5. Data calculated according to the EN 14825:2016 Regulation

Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

PREMIUM VERSION

Acoustic configuration: compressor soundproofing (SC)

General technical data - PERFORMANCE

Internal section size - MSRT-XSC3			90.4	100.4	110.4	120.4	140.4	160.4	180.4	200.4	220.4	240.4
External section size - CEV-XT			**60.0**	**70.0**	**75.0**	**85.0**	**105.0**	**115.0**	**130.0**	**145.0**	**150.0**	**160.0**
Cooling												
Cooling capacity	1	[kW]	238	259	283	332	367	415	470	508	579	627
Compressor power input	1	[kW]	83,2	92,0	101	109	127	143	164	174	192	216
Total power input	2	[kW]	89,3	98,1	107	115	137	152	173	183	205	228
Partial recovery heating capacity	3	[kW]	64,2	70,1	76,7	88,2	98,9	111	127	136	154	169
EER	1	-	2,66	2,64	2,65	2,87	2,69	2,73	2,72	2,78	2,82	2,74
SEER	5		4,12	4,11	4,10	4,23	4,10	4,12	4,12	4,14	4,22	4,12
Water flow-rate (User Side)	1	[l/s]	12,8	13,9	15,2	16,9	19,4	22,0	24,6	27,4	29,8	32,4
Internal exchanger pressure drops	1	[kPa]	50,0	49,0	50,0	46,0	51,0	51,0	52,0	51,0	50,0	55,0
Cooling capacity (EN14511:2013)	4	[kW]	237	258	278	323	358	414	467	517	581	621
Total power input (EN14511:2013)	4	[kW]	91,1	99,7	108	116	136	155	176	188	206	228
EER (EN 14511:2013)	4	-	2,60	2,59	2,57	2,78	2,63	2,67	2,66	2,75	2,83	2,72

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'Contains fluorinated greenhouse gases'(GWP 2087,5)

1. Data referred to the following conditions: internal exchanger water = 12/7 °C. Entering external exchanger air temperature 35°C. Evaporator fouling factor = 0.44 x 10^(-4) m2 K/W
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers
3. Option. Recovery exchanger water=40/45°C
4. Data compliant to Standard EN 14511:2013 referred to the following conditions: - Internal exchanger water temperature = 12/7°C - Entering external exchanger air temperature = 35°C
5. Data calculated according to the EN 14825:2016 Regulation

Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

STANDARD CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: super-silenced (EN)

General technical data - PERFORMANCE

Internal section size - MSRT-XSC3			90.4	100.4	110.4	120.4	140.4	160.4	180.4	200.4	220.4	240.4
External section size - CEV-XT			**115.0**	**120.0**	**130.0**	**150.0**	**160.0**	**190.0**	**200.0**	**230.0**	**240.0**	**280.0**
Cooling												
Cooling capacity	1	[kW]	261	282	307	353	399	436	506	550	614	683
Compressor power input	1	[kW]	73,2	80,6	91,4	98,6	113	130	148	163	179	193
Total power input	2	[kW]	79,9	87,3	98,1	108	122	141	159	174	192	207
Partial recovery heating capacity	3	[kW]	66,9	72,5	79,6	90,3	102	113	131	143	158	175
EER	1	-	3,27	3,23	3,13	3,28	3,28	3,10	3,18	3,16	3,19	3,31
SEER	5		4,75	4,80	4,72	4,82	4,81	4,59	4,81	4,79	4,71	4,82
Water flow-rate (User Side)	1	[l/s]	12,4	13,4	14,7	16,3	18,8	20,9	23,5	26,2	28,6	30,7
Internal exchanger pressure drops	1	[kPa]	47,0	46,0	47,0	43,0	48,0	46,0	47,0	47,0	46,0	49,0
Cooling capacity (EN14511:2013)	4	[kW]	261	281	306	352	398	435	504	549	612	681
Total power input (EN14511:2013)	4	[kW]	80,9	88,4	99,3	106	123	142	160	176	192	207
EER (EN 14511:2013)	4	-	3,22	3,18	3,08	3,32	3,24	3,06	3,15	3,12	3,19	3,29

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)

1. Data referred to the following conditions: internal exchanger water = 12/7 °C. Entering external exchanger air temperature 35°C. Evaporator fouling factor = 0.44 x 10^(-4) m2 K/W
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers
3. Option. Recovery exchanger water=40/45°C
4. Data compliant to Standard EN 14511:2013 referred to the following conditions: - Internal exchanger water temperature = 12/7°C - Entering external exchanger air temperature = 35°C
5. Data calculated according to the EN 14825:2016 Regulation

Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

PREMIUM VERSION

Acoustic configuration: super-silenced (EN)

General technical data - PERFORMANCE

Internal section size - MSRT-XSC3			90.4	100.4	110.4	120.4	140.4	160.4	180.4	200.4	220.4	240.4
External section size - CEV-XT			**85.0**	**95.0**	**105.0**	**115.0**	**120.0**	**130.0**	**150.0**	**160.0**	**190.0**	**200.0**
Cooling												
Cooling capacity	1	[kW]	240	258	283	325	373	404	472	507	567	617
Compressor power input	1	[kW]	79,7	91,0	100	111	125	144	160	173	195	216
Total power input	2	[kW]	86,3	95,5	105	116	129	148	169	182	207	227
Partial recovery heating capacity	3	[kW]	63,9	69,9	76,7	87,2	99,4	110	127	136	153	166
EER	1	-	2,78	2,70	2,71	2,80	2,88	2,73	2,79	2,78	2,75	2,72
SEER	5		4,29	4,13	4,14	4,28	4,22	4,14	4,28	4,34	4,26	4,26
Water flow-rate (User Side)	1	[l/s]	12,4	13,4	14,7	16,3	18,8	20,9	23,5	26,2	28,6	30,7
Internal exchanger pressure drops	1	[kPa]	47,0	46,0	47,0	43,0	48,0	46,0	47,0	47,0	46,0	49,0
Cooling capacity (EN14511:2013)	4	[kW]	240	258	283	318	365	396	473	520	571	611
Total power input (EN14511:2013)	4	[kW]	85,4	97,5	107	117	130	149	169	185	207	226
EER (EN 14511:2013)	4	-	2,80	2,64	2,65	2,72	2,80	2,66	2,80	2,82	2,76	2,71

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)

1. Data referred to the following conditions: internal exchanger water = 12/7 °C. Entering external exchanger air temperature 35°C. Evaporator fouling factor = 0.44 x 10^(-4) m2 K/W
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers
3. Option. Recovery exchanger water=40/45°C
4. Data compliant to Standard EN 14511:2013 referred to the following conditions: - Internal exchanger water temperature = 12/7°C - Entering external exchanger air temperature = 35°C
5. Data calculated according to the EN 14825:2016 Regulation

Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

DUAL CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: compressor soundproofing (SC)

General technical data - PERFORMANCE

Internal section size - MSRT-XSC3			D140.4	D160.4	D180.4	D200.4	D220.4	D240.4
External section size - CEV-XT			D145.0	D160.0	D180.0	D200.0	D210.0	D230.0
Cooling								
Cooling capacity	1	[kW]	800	883	1008	1123	1232	1368
Compressor power input	1	[kW]	226	257	296	315	354	388
Total power input	2	[kW]	245	283	322	347	386	420
Partial recovery heating capacity	3	[kW]	205	228	261	288	317	351
EER	1	-	3,26	3,12	3,13	3,23	3,19	3,25
SEER		5	4,81	4,55	4,62	4,68	4,67	4,73
Water flow-rate (User Side)	1	[l/s]	18,8	20,9	23,5	26,2	28,6	30,7
Internal exchanger pressure drops	1	[kPa]	48,0	46,0	47,0	47,0	46,0	49,0
Cooling capacity (EN14511:2013)	4	[kW]	798	880	1005	1118	1228	1364
Total power input (EN14511:2013)	4	[kW]	246	282	321	341	380	415
EER (EN 14511:2013)	4	-	3,24	3,12	3,13	3,27	3,23	3,29

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)

1. Data referred to the following conditions: internal exchanger water = 12/7 °C. Entering external exchanger air temperature 35°C. Evaporator fouling factor = 0.44 x 10^(-4) m2 K/W
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers
3. Option. Recovery exchanger water=40/45°C
4. Data compliant to Standard EN 14511:2013 referred to the following conditions: - Internal exchanger water temperature = 12/7°C - Entering external exchanger air temperature = 35°C
5. Data calculated according to the EN 14825:2016 Regulation

Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

PREMIUM VERSION

Acoustic configuration: compressor soundproofing (SC)

General technical data - PERFORMANCE

Internal section size - MSRT-XSC3			D140.4	D160.4	D180.4	D200.4	D220.4	D240.4
External section size - CEV-XT			D105.0	D115.0	D130.0	D145.0	D150.0	D160.0
Cooling								
Cooling capacity	1	[kW]	735	830	941	1016	1157	1254
Compressor power input	1	[kW]	255	285	327	347	384	432
Total power input	2	[kW]	273	304	346	366	410	457
Partial recovery heating capacity	3	[kW]	198	223	254	273	308	337
EER	1	-	2,68	2,72	2,71	2,77	2,82	2,74
SEER	5		4,10	4,12	4,12	4,14	4,22	4,12
Water flow-rate (User Side)	1	[l/s]	18,8	20,9	23,5	26,2	28,6	30,7
Internal exchanger pressure drops	1	[kPa]	48,0	46,0	47,0	47,0	46,0	49,0
Cooling capacity (EN14511:2013)	4	[kW]	717	828	933	1035	1163	1242
Total power input (EN14511:2013)	4	[kW]	272	310	351	376	411	457
EER (EN 14511:2013)	4	-	2,63	2,67	2,66	2,75	2,83	2,72

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)

1. Data referred to the following conditions: internal exchanger water = 12/7 °C. Entering external exchanger air temperature 35°C. Evaporator fouling factor = 0.44 x 10^(-4) m2 K/W
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers
3. Option. Recovery exchanger water=40/45°C
4. Data compliant to Standard EN 14511:2013 referred to the following conditions: - Internal exchanger water temperature = 12/7°C - Entering external exchanger air temperature = 35°C
5. Data calculated according to the EN 14825:2016 Regulation

Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

DUAL CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: super-silenced (EN)

General technical data - PERFORMANCE

Internal section size - MSRT-XSC3			D140.4	D160.4	D180.4	D200.4	D220.4	D240.4
External section size - CEV-XT			**D160.0**	**D190.0**	**D200.0**	**D230.0**	**D240.0**	**D280.0**
Cooling								
Cooling capacity	1	[kW]	799	872	1011	1101	1227	1365
Compressor power input	1	[kW]	225	259	295	326	357	386
Total power input	2	[kW]	243	282	318	348	384	413
Partial recovery heating capacity	3	[kW]	205	226	261	285	317	350
EER	1	-	3,28	3,09	3,18	3,15	3,19	3,29
SEER	5		4,81	4,59	4,81	4,79	4,71	4,82
Water flow-rate (User Side)	1	[l/s]	18,8	20,9	23,5	26,2	28,6	30,7
Internal exchanger pressure drops	1	[kPa]	48,0	46,0	47,0	47,0	46,0	49,0
Cooling capacity (EN14511:2013)	4	[kW]	797	869	1009	1098	1224	1361
Total power input (EN14511:2013)	4	[kW]	246	284	320	351	383	413
EER (EN 14511:2013)	4	-	3,24	3,06	3,15	3,12	3,19	3,29

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)

1. Data referred to the following conditions: internal exchanger water = 12/7 °C. Entering external exchanger air temperature 35°C. Evaporator fouling factor = 0.44 x 10^(-4) m2 K/W
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers
3. Option. Recovery exchanger water=40/45°C
4. Data compliant to Standard EN 14511:2013 referred to the following conditions: - Internal exchanger water temperature = 12/7°C - Entering external exchanger air temperature = 35°C
5. Data calculated according to the EN 14825:2016 Regulation

Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

PREMIUM VERSION

Acoustic configuration: super-silenced (EN)

General technical data - PERFORMANCE

Internal section size - MSRT-XSC3			D140.4	D160.4	D180.4	D200.4	D220.4	D240.4
External section size - CEV-XT			**D120.0**	**D130.0**	**D150.0**	**D160.0**	**D190.0**	**D200.0**
Cooling								
Cooling capacity	1	[kW]	745	808	945	1013	1135	1233
Compressor power input	1	[kW]	249	287	320	346	391	431
Total power input	2	[kW]	258	296	338	364	413	454
Partial recovery heating capacity	3	[kW]	199	219	253	272	305	333
EER	1	-	2,83	2,68	2,79	2,77	2,74	2,71
SEER	5		4,22	4,14	4,28	4,34	4,26	4,26
Water flow-rate (User Side)	1	[l/s]	18,8	20,9	23,5	26,2	28,6	30,7
Internal exchanger pressure drops	1	[kPa]	48,0	46,0	47,0	47,0	46,0	49,0
Cooling capacity (EN14511:2013)	4	[kW]	730	791	945	1041	1143	1222
Total power input (EN14511:2013)	4	[kW]	261	298	338	369	413	452
EER (EN 14511:2013)	4	-	2,80	2,66	2,80	2,82	2,76	2,71

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)

1. Data referred to the following conditions: internal exchanger water = 12/7 °C. Entering external exchanger air temperature 35°C. Evaporator fouling factor = 0.44 x 10^(-4) m2 K/W
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers
3. Option. Recovery exchanger water=40/45°C
4. Data compliant to Standard EN 14511:2013 referred to the following conditions: - Internal exchanger water temperature = 12/7°C - Entering external exchanger air temperature = 35°C
5. Data calculated according to the EN 14825:2016 Regulation

Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

TRIPLE CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: compressor soundproofing (SC)

General technical data - PERFORMANCE

Internal section size - MSRT-XSC3			T180.4	T200.4	T220.4	T240.4
External section size - CEV-XT			**T180.0**	**T200.0**	**T210.0**	**T230.0**
Cooling						
Cooling capacity	1	[kW]	1511	1685	1847	2053
Compressor power input	1	[kW]	444	473	531	581
Total power input	2	[kW]	482	521	579	630
Partial recovery heating capacity	3	[kW]	391	431	476	527
EER	1	-	3,13	3,23	3,19	3,25
SEER	5		4,62	4,68	4,67	4,73
Water flow-rate (User Side)	1	[l/s]	24,6	27,4	29,8	32,4
Internal exchanger pressure drops	1	[kPa]	52,0	51,0	50,0	55,0
Cooling capacity (EN14511:2013)	4	[kW]	1508	1676	1842	2046
Total power input (EN14511:2013)	4	[kW]	482	512	570	622
EER (EN 14511:2013)	4	-	3,13	3,27	3,23	3,29

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)

1. Data referred to the following conditions: internal exchanger water = 12/7 °C. Entering external exchanger air temperature 35°C. Evaporator fouling factor = 0.44 x 10^(-4) m2 K/W
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers
3. Option. Recovery exchanger water=40/45°C
4. Data compliant to Standard EN 14511:2013 referred to the following conditions: - Internal exchanger water temperature = 12/7°C - Entering external exchanger air temperature = 35°C
5. Data calculated according to the EN 14825:2016 Regulation

Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

PREMIUM VERSION

Acoustic configuration: compressor soundproofing (SC)

General technical data - PERFORMANCE

Internal section size - MSRT-XSC3			T180.4	T200.4	T220.4	T240.4
External section size - CEV-XT			**T130.0**	**T145.0**	**T150.0**	**T160.0**
Cooling						
Cooling capacity	1	[kW]	1411	1524	1736	1880
Compressor power input	1	[kW]	491	521	577	647
Total power input	2	[kW]	519	549	614	685
Partial recovery heating capacity	3	[kW]	380	409	462	506
EER	1	-	2,71	2,77	2,82	2,74
SEER	5		4,12	4,14	4,22	4,12
Water flow-rate (User Side)	1	[l/s]	24,6	27,4	29,8	32,4
Internal exchanger pressure drops	1	[kPa]	52,0	51,0	50,0	55,0
Cooling capacity (EN14511:2013)	4	[kW]	1400	1552	1744	1862
Total power input (EN14511:2013)	4	[kW]	527	565	617	685
EER (EN 14511:2013)	4	-	2,66	2,75	2,83	2,72

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)

1. Data referred to the following conditions: internal exchanger water = 12/7 °C. Entering external exchanger air temperature 35°C. Evaporator fouling factor = 0.44 x 10^(-4) m2 K/W
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers
3. Option. Recovery exchanger water=40/45°C
4. Data compliant to Standard EN 14511:2013 referred to the following conditions: - Internal exchanger water temperature = 12/7°C - Entering external exchanger air temperature = 35°C
5. Data calculated according to the EN 14825:2016 Regulation

Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

TRIPLE CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: super-silenced (EN)

General technical data - PERFORMANCE

Internal section size - MSRT-XSC3			T180.4	T200.4	T220.4	T240.4
External section size - CEV-XT			**T200.0**	**T230.0**	**T240.0**	**T280.0**
Cooling						
Cooling capacity	1	[kW]	1517	1651	1841	2048
Compressor power input	1	[kW]	443	488	536	579
Total power input	2	[kW]	476	522	576	620
Partial recovery heating capacity	3	[kW]	392	428	475	525
EER	1	-	3,18	3,15	3,19	3,29
SEER	5		4,81	4,79	4,71	4,82
Water flow-rate (User Side)	1	[l/s]	24,6	27,4	29,8	32,4
Internal exchanger pressure drops	1	[kPa]	52,0	51,0	50,0	55,0
Cooling capacity (EN14511:2013)	4	[kW]	1513	1647	1837	2042
Total power input (EN14511:2013)	4	[kW]	480	527	575	620
EER (EN 14511:2013)	4	-	3,29	3,12	3,19	3,29

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)

1. Data referred to the following conditions: internal exchanger water = 12/7 °C. Entering external exchanger air temperature 35°C. Evaporator fouling factor = 0.44 x 10^(-4) m2 K/W
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers
3. Option. Recovery exchanger water=40/45°C
4. Data compliant to Standard EN 14511:2013 referred to the following conditions: - Internal exchanger water temperature = 12/7°C - Entering external exchanger air temperature = 35°C
5. Data calculated according to the EN 14825:2016 Regulation

Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

PREMIUM VERSION

Acoustic configuration: super-silenced (EN)

General technical data - PERFORMANCE

Internal section size - MSRT-XSC3			T180.4	T200.4	T220.4	T240.4
External section size - CEV-XT			**T150.0**	**T160.0**	**T190.0**	**T200.0**
Cooling						
Cooling capacity	1	[kW]	1417	1520	1702	1850
Compressor power input	1	[kW]	481	520	586	647
Total power input	2	[kW]	507	546	620	680
Partial recovery heating capacity	3	[kW]	380	408	458	499
EER	1	-	2,79	2,77	2,74	2,71
SEER	5		4,28	4,34	4,26	4,26
Water flow-rate (User Side)	1	[l/s]	24,6	27,4	29,8	32,4
Internal exchanger pressure drops	1	[kPa]	52,0	51,0	50,0	55,0
Cooling capacity (EN14511:2013)	4	[kW]	1418	1561	1714	1833
Total power input (EN14511:2013)	4	[kW]	507	554	620	677
EER (EN 14511:2013)	4	-	2,80	2,82	2,76	2,71

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)

1. Data referred to the following conditions: internal exchanger water = 12/7 °C. Entering external exchanger air temperature 35°C. Evaporator fouling factor = 0.44 x 10^(-4) m2 K/W
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers
3. Option. Recovery exchanger water=40/45°C
4. Data compliant to Standard EN 14511:2013 referred to the following conditions: - Internal exchanger water temperature = 12/7°C - Entering external exchanger air temperature = 35°C
5. Data calculated according to the EN 14825:2016 Regulation

Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

STANDARD CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: compressor soundproofing (SC)

General technical data - INTERNAL UNIT CONSTRUCTION

Internal section size - MSRT-XSC3			90.4	100.4	110.4	120.4	140.4	160.4	180.4	200.4	220.4	240.4
Compressor												
Type of compressors		-	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Refrigerant		-	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A	R-410A
No. of compressors		Nr	4	4	4	4	4	4	4	4	4	4
Rated power (C1)		[HP]	45	50	55	60	70	80	90	100	100	120
Rated power (C2)		[HP]	45	50	55	60	70	80	90	100	120	120
Std Capacity control steps		-	6	6	6	4	6	4	6	6	6	4
Oil charge (C1)		[l]	10	11	13	13	13	13	13	13	13	13
Oil charge (C2)		[l]	10	11	13	13	13	13	13	13	13	13
Refrigeration circuits		-	2	2	2	2	2	2	2	2	2	2
Internal exchanger												
Type of internal exchanger	2	-	PHE	PHE	PHE	PHE	PHE	PHE	PHE	PHE	PHE	PHE
Water content		[l]	20	22	24	29	32	37	42	49	58	62
System water content	3	l	937	1196	1502	1819	1840	2367	1801	2359	2436	3483
Connections												
Water fittings		-	4"	4"	4"	4"	4"	4"	4"	5"	5"	5"
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	400/3~/50	400/3~/50
Refrigerant connections												
Gas line	7	mm	28	35	35	35	42	42	42	42	42/54	54
Liquid line	7	mm	35	35	35	35	35	42	42	42	42/54	54
Electrical data												
F.L.I. - Total		kW	106,5	117,4	127,0	144,6	165,8	187,0	212,6	233,8	257,2	280,6
F.L.A. - Total		A	180,6	191,9	208,7	237,5	266,5	295,5	346,9	375,9	416,1	456,3
M.I.C. - Value	6	A	431,0	442,3	459,1	487,9	586,4	615,4	616,6	645,6	685,8	726,0
M.I.C. - with soft start accessory	6	A	293,2	304,5	321,3	350,1	414,4	443,4	544,6	573,6	613,8	654,0

The combinations between internal and external unit are uniquely identified by following the table columns.

Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

1. PHE = plate exchanger
2. Recommended system water content that does not consider the internal exchanger water content (evaporator). With outdoor air low temperature applications or low medium requested loads, the minimum installation water volume is obtained doubling the indicated value.
3. M.I.C.=Maximum unit starting current. The M.I.C. value is obtained adding the max. compressor starting current of the highest size to the power input at max. admissible conditions (F.L.A.) of the remaining electric components. Electrical data refer to standard units; according to the installed accessories, the data can suffer some variations. Unbalance between phase max 2 %. Voltage variation: max +/- 10%.
4. Where not specified, the diameters of the supply and liquid lines are equal in both refrigeration circuits. In size 220.4 the circuit 1 diameter both of the supply and the liquid line is 42 mm, the circuit 2 diameter is 54 mm.

STANDARD CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: compressor soundproofing (SC)

General technical data - EXTERNAL UNIT CONSTRUCTION

External section size - CEV-XT			90.0	105.0	115.0	120.0	145.0	160.0	180.0	200.0	210.0	230.0
Fans												
Type of fans	1	-	AX	AX	AX	AX	AX	AX	AX	AX	AX	AX
Number of fans		Nr	4	6	6	6	6	8	8	10	10	10
Type of motor	2	-	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
Standard airflow		[l/s]	23553	36583	36143	35507	34218	47084	46331	58684	57754	56458
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	400/3~/50	400/3~/50
Refrigerant connections												
Supply line	4	mm	28	35	35	35	35	42	42	42	42/54	54
Liquid line	4	mm	35	35	35	35	42	42	42	42	42/54	54
Electrical data												
F.L.I. - Total		kW	7,7	11,6	11,6	11,6	11,6	15,5	15,5	19,4	19,4	19,4
F.L.A. - Total		A	15,6	23,4	23,4	23,4	23,4	31,2	31,2	39,0	39,0	39,0
M.I.C. - Value	3	A	33,8	41,6	41,6	41,6	41.,6	67,6	67,6	75,4	75,4	75,4

1. AX = axial fan
2. AC = asynchronous three-phase external rotor motor.
3. M.I.C.=Maximum unit starting current. The M.I.C. value is obtained adding the max. compressor starting current of the highest size to the power input at max. admissible conditions (F.L.A.) of the remaining electric components. Electrical data refer to standard units; according to the installed accessories, the data can suffer some variations. Unbalance between phase max 2 %. Voltage variation: max +/- 10%.
4. Where not specified, the diameters of the supply and liquid lines are equal in both refrigeration circuits. In size 220.4 the circuit 1 diameter both of the supply and the liquid line is 42 mm, the circuit 2 diameter is 54 mm.

PREMIUM VERSION

Acoustic configuration: compressor soundproofing (SC)

General technical data - EXTERNAL UNIT CONSTRUCTION

External section size - CEV-XT			60.0	70.0	75.0	85.0	105.0	115.0	130.0	145.0	150.0	160.0
Fans												
Type of fans	1	-	AX	AX	AX	AX	AX	AX	AX	AX	AX	AX
Number of fans		Nr	4	4	4	4	6	6	6	6	8	8
Type of motor	2	-	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
Standard airflow		[l/s]	24876	24603	24319	23563	36583	36143	34976	34218	46598	47084
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	400/3~/50	400/3~/50
Refrigerant connections												
Supply line	4	mm	28	35	35	35	35	42	42	42	42/54	54
Liquid line	4	mm	35	35	35	35	42	42	42	42	42/54	54
Electrical data												
F.L.I. - Total		kW	7,7	7,7	7,7	7,7	11,6	11,6	11,6	11,6	15,5	15,5
F.L.A. - Total		A	15,6	15,6	15,6	15,6	23,4	23,4	23,4	23,4	31,2	31,2
M.I.C. - Value	3	A	33,8	33,8	33,8	33,8	41,6	41,6	41,6	41,6	67,6	67,6

1. AX = axial fan
2. AC = asynchronous three-phase external rotor motor.
3. M.I.C.=Maximum unit starting current. The M.I.C. value is obtained adding the max. compressor starting current of the highest size to the power input at max. admissible conditions (F.L.A.) of the remaining electric components. Electrical data refer to standard units; according to the installed accessories, the data can suffer some variations. Unbalance between phase max 2 %. Voltage variation: max +/- 10%.
4. Where not specified, the diameters of the supply and liquid lines are equal in both refrigeration circuits. In size 220.4 the circuit 1 diameter both of the supply and the liquid line is 42 mm, the circuit 2 diameter is 54 mm.

STANDARD CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: super-silenced (EN)

General technical data - EXTERNAL UNIT CONSTRUCTION

External section size - CEV-XT			115.0	120.0	130.0	150.0	160.0	190.0	200.0	230.0	240.0	280.0
Fans												
Type of fans	4	-	AX	AX	AX	AX	AX	AX	AX	AX	AX	AX
Number of fans		Nr	6	6	6	8	8	10	10	10	12	12
Type of motor	5	-	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
Standard airflow		[l/s]	28959	28247	27792	38367	37417	47772	46598	44348	55756	53050
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	400/3~/50	400/3~/50
Refrigerant connections												
Supply line	7	mm	28	35	35	35	35	42	42	42	42/54	54
Liquid line	7	mm	35	35	35	35	42	42	42	42	42/54	54
Electrical data												
F.L.I. - Total		kW	7,2	7,2	7,2	9,6	9,6	12,1	12,1	12,1	14,5	14,5
F.L.A. - Total		A	13,3	13,3	13,3	17,8	17,8	22,	22,	22,	26,7	26,7
M.I.C. - Value	6	A	17,5	17,5	17,5	26,1	26,1	30,5	30,5	30,5	35,0	35,0

1. AX = axial fan
2. AC = asynchronous three-phase external rotor motor.
3. M.I.C.=Maximum unit starting current. The M.I.C. value is obtained adding the max. compressor starting current of the highest size to the power input at max. admissible conditions (F.L.A.) of the remaining electric components. Electrical data refer to standard units; according to the installed accessories, the data can suffer some variations. Unbalance between phase max 2 %. Voltage variation: max +/- 10%.
4. Where not specified, the diameters of the supply and liquid lines are equal in both refrigeration circuits. In size 220.4 the circuit 1 diameter both of the supply and the liquid line is 42 mm, the circuit 2 diameter is 54 mm.

PREMIUM VERSION

Acoustic configuration: super-silenced (EN)

General technical data - EXTERNAL UNIT CONSTRUCTION

External section size - CEV-XT			85.0	95.0	105.0	115.0	120.0	130.0	150.0	160.0	190.0	200.0
Fans												
Type of fans	1	-	AX	AX	AX	AX	AX	AX	AX	AX	AX	AX
Number of fans		Nr	4	6	6	6	6	6	8	8	10	10
Type of motor	2	-	AC	AC	AC	AC	AC	AC	AC	AC	AC	AC
Standard airflow		[l/s]	18680	29838	29353	28959	28247	27656	38367	37417	47773	46598
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	400/3~/50	400/3~/50
Refrigerant connections												
Supply line	4	mm	28	35	35	35	35	42	42	42	42/54	54
Liquid line	4	mm	35	35	35	35	42	42	42	42	42/54	54
Electrical data												
F.L.I. - Total		kW	4,8	7,2	7,2	7,2	7,2	7,2	9,6	9,6	12,1	12,1
F.L.A. - Total		A	8,9	13,3	13,3	13,3	13,3	13,3	17,8	17,8	22,3	22,3
M.I.C. - Value	3	A	13,0	17,5	17,5	17,5	17,5	17,5	26,1	26,1	30,5	30,5

1. AX = axial fan
2. AC = asynchronous three-phase external rotor motor.
3. M.I.C.=Maximum unit starting current. The M.I.C. value is obtained adding the max. compressor starting current of the highest size to the power input at max. admissible conditions (F.L.A.) of the remaining electric components. Electrical data refer to standard units; according to the installed accessories, the data can suffer some variations. Unbalance between phase max 2 %. Voltage variation: max +/- 10%.
4. Where not specified, the diameters of the supply and liquid lines are equal in both refrigeration circuits. In size 220.4 the circuit 1 diameter both of the supply and the liquid line is 42 mm, the circuit 2 diameter is 54 mm.

Sound levels

EXTERNAL SECTION: CEV-XT

EXCELLENCE VERSION

Compressor soundproofing (SC)

Size	Sound power level (dB)								Sound power level	Pressure level at 10m
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
90.0	92	80	81	79	76	74	73	69	82	50
105.0	94	82	83	81	77	76	74	70	84	52
115.0	94	82	83	81	77	76	74	70	84	52
120.0	94	82	83	81	77	76	74	70	84	52
145.0	94	82	83	81	77	76	74	70	84	52
160.0	95	83	84	82	79	77	76	72	85	53
180.0	95	83	84	82	79	77	76	72	85	53
200.0	96	84	85	83	80	78	77	73	86	53
210.0	96	84	85	83	80	78	77	73	86	53
230.0	96	84	85	83	80	78	77	73	86	53

Super-silenced (EN)

Size	Sound power level (dB)								Sound power level	Pressure level at 10m
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
115.0	86	77	78	75	72	71	69	65	79	46
120.0	86	77	78	75	72	71	69	65	79	46
130.0	86	77	78	75	72	71	69	65	79	46
150.0	87	78	79	76	74	72	71	66	80	48
160.0	87	78	79	76	74	72	71	66	80	48
190.0	88	79	80	77	74	73	72	67	81	48
200.0	88	79	80	77	74	73	72	67	81	48
230.0	88	79	80	77	74	73	72	67	81	48
240.0	89	80	81	78	75	74	72	68	82	49
280.0	89	80	81	78	75	74	72	68	82	49

PREMIUM VERSION

Compressor soundproofing (SC)

Size	Sound power level (dB)								Sound power level	Pressure level at 10m
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
60.0	92	80	81	79	76	74	73	69	82	50
70.0	92	80	81	79	76	74	73	69	82	50
75.0	92	80	81	79	76	74	73	69	82	50
85.0	92	80	81	79	76	74	73	69	82	50
105.0	94	82	83	81	77	76	74	70	84	52
115.0	94	82	83	81	77	76	74	70	84	52
130.0	94	82	83	81	77	76	74	70	84	52
145.0	94	82	83	81	77	76	74	70	84	52
150.0	95	83	84	82	79	77	76	72	85	53
160.0	95	83	84	82	79	77	76	72	85	53

Super-silenced (EN)

Size	Sound power level (dB)								Sound power level	Pressure level at 10m
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
85.0	84	75	76	73	70	69	68	63	77	45
95.0	86	77	78	75	72	71	69	65	79	46
105.0	86	77	78	75	72	71	69	65	79	46
115.0	86	77	78	75	72	71	69	65	79	46
120.0	86	77	78	75	72	71	69	65	79	46
135.0	86	77	78	75	72	71	69	65	79	46
150.0	87	78	79	76	74	72	71	66	80	48
160.0	87	78	79	76	74	72	71	66	80	48
190.0	88	79	80	77	74	73	72	67	81	48
200.0	88	79	80	77	74	73	72	67	81	48

The sound levels refer to the external section with Axitop in test nominal conditions. The sound pressure level refers to 10 m from the standard unit outer surface operating in open field and at full load.
Measures are according to UNI EN ISO 9614-2 regulations, with respect to the EUROVENT 8/1 certification, which provides for a tolerance of 3 dB(A) on the sound power level, which is the only acoustic data to be considered binding.

Data referred to the following conditions.
- internal exchanger water = 12/7 °C
- Ambient temperature = 35 °C

In the case of multiple installations, the calculation of the total sound level will follow what is indicated in the acoustical Regulations.

Sound levels

INTERNAL SECTION: MSRT-XSC3

Size	Sound power level (dB)								Sound power level	Pressure level at 1m
	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
90.4	50	55	69	73	77	77	71	64	82	64
100.4	50	59	72	74	77	78	71	63	82	64
110.4	50	56	72	74	78	79	73	66	83	65
120.4	50	56	72	75	79	79	73	65	84	66
140.4	50	55	73	76	82	81	74	65	86	68
160.4	50	55	74	76	82	82	75	66	86	68
180.4	50	65	88	75	79	80	77	69	86	69
200.4	50	65	88	76	82	82	77	69	87	69
220.4	50	67	89	76	80	82	78	70	87	69
240.4	50	68	91	76	79	81	79	71	87	69

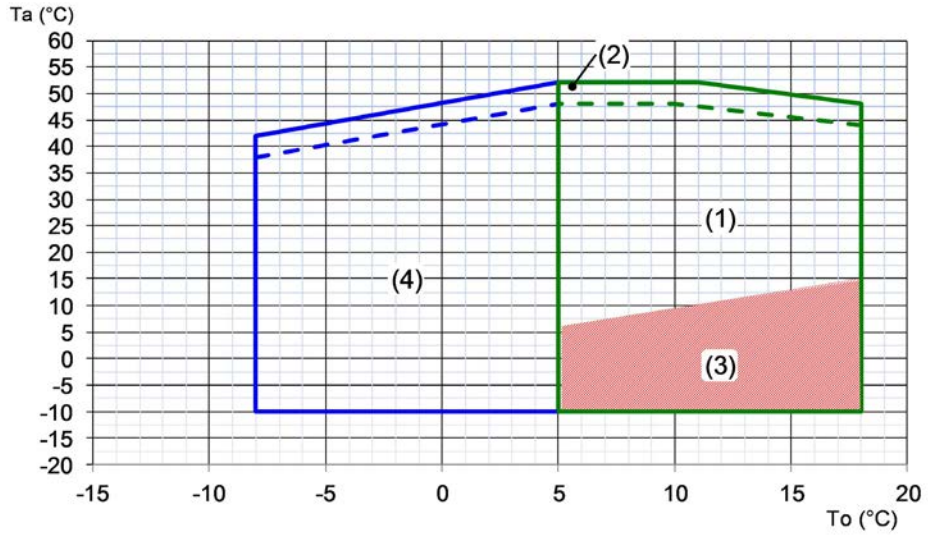
The sound levels refer to the external section with Axitop in test nominal conditions. The sound pressure level refers to 1 m from the standard unit outer surface operating in open field and at full load.
Measures are according to UNI EN ISO 9614-2 regulations, with respect to the EUROVENT 8/1 certification, which provides for a tolerance of 3 dB(A) on the sound power level, which is the only acoustic data to be considered binding.

Data referred to the following conditions.
- internal exchanger water = 12/7 °C
- Ambient temperature = 35 °C

Operating range - Cooling

EXCELLENCE VERSION

Acoustic configuration: compressor soundproofing (SC) / super-silenced (EN)

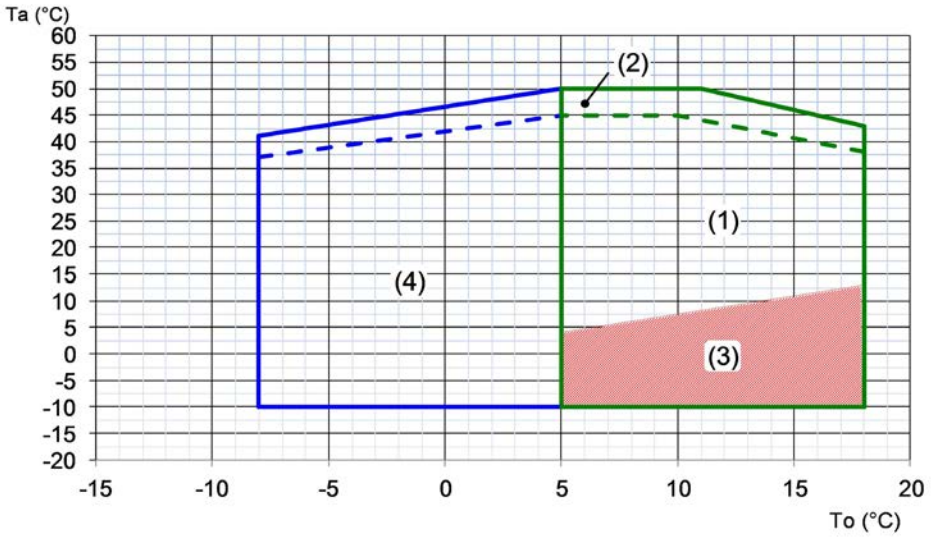


Ta (°C) = external exchanger inlet air temperature (D.B.)
To (°C) = internal exchanger outlet water temperature

1. Standard unit operating range at full load
2. Unit operating range with automatic staging of the compressor capacity
3. Standard unit operating range with air flow automatic modulation. Only with CREFB option.
4. Unit operating range in 'B - Low water temperature' configuration (40% ethylene glycol). Only with CREFB option.

PREMIUM VERSION

Acoustic configuration: compressor soundproofing (SC) / super-silenced (EN)



Ta (°C) = external exchanger inlet air temperature (D.B.)
To (°C) = internal exchanger outlet water temperature

1. Standard unit operating range at full load
2. Unit operating range with automatic staging of the compressor capacity
3. Standard unit operating range with air flow automatic modulation. Only with CREFB option.
4. Unit operating range in 'B - Low water temperature' configuration (40% ethylene glycol). Only with CREFB option.

Admissible water flow-rates

Minimum (Qmin) and maximum (Qmax) admissible water flow for the unit to operate correctly.

EXCELLENCE SC / EN		90.4	100.4	110.4	120.4	140.4	160.4	180.4	200.4	220.4	240.4
Qmin	[l/s]	6,7	7,4	8,0	9,3	10,1	11,5	12,8	14,3	15,8	16,4
Qmax	[l/s]	18,3	20,0	21,8	25,1	27,5	31,2	34,5	38,6	42,4	44,0

PREMIUM SC / EN		90.4	100.4	110.4	120.4	140.4	160.4	180.4	200.4	220.4	240.4
Qmin	[l/s]	6,7	7,4	8,0	9,3	10,1	11,5	12,8	14,3	15,8	16,4
Qmax	[l/s]	18,3	20,0	21,8	25,1	27,5	31,2	34,5	38,6	42,4	44,0

Correction factors for glycol use

% ethylene glycol by weight		5%	10%	15%	20%	25%	30%	35%	40%
Freezing temperature	°C	-2,0	-3,9	-6,5	-8,9	-11,8	-15,6	-19,0	-23,4
Safety temperature	°C	3,0	1,0	-1,0	-4,0	-6,0	-10,0	-14,0	-19,0
Cooling Capacity Factor	Nr	0,997	0,994	0,99	0,986	0,981	0,976	0,970	0,964
Compressor power input Factor	Nr	1,000	1,001	1,001	1,001	1,001	1,002	1,002	1,002
Internal exchanger glycol solution flow factor	Nr	1,003	1,010	1,020	1,033	1,05	1,072	1,095	1,124
Pressure drop Factor	Nr	0,989	0,983	0,979	0,980	0,984	0,993	1,004	1,020

The correction factors shown refer to water and glycol ethylene mixes used to prevent the formation of frost on the exchangers in the water circuit.

Fouling Correction Factors

	Internal exchanger	
m2 K / W	F1	FK1
0.44 x 10 (-4)	1,0	1,0
0.88 x 10 (-4)	0,97	0,99
1.76 x 10 (-4)	0,94	0,98

F1 = Cooling capacity correction factors

FK1 = Compressor power input correction factor

Overload and control device calibrations

			open	closed	value
High pressure safety pressure switch		[kPa]	4050	3300	-
Antifreeze protection		[°C]	3	5.5	-
High pressure safety valve		[kPa]	-	-	4500
Low pressure safety valve		[kPa]	-	-	2950
Max no. of compressor starts per hour		[n°]	-	-	10
High compressor discharge temperature safety thermostat		[°C]	-	-	140

Exchanger operating range

	DPr		DPw
PED (CE) - Internal echanger	4500	4500	1000
PED (CE) - External exchanger	4500	4500	1000

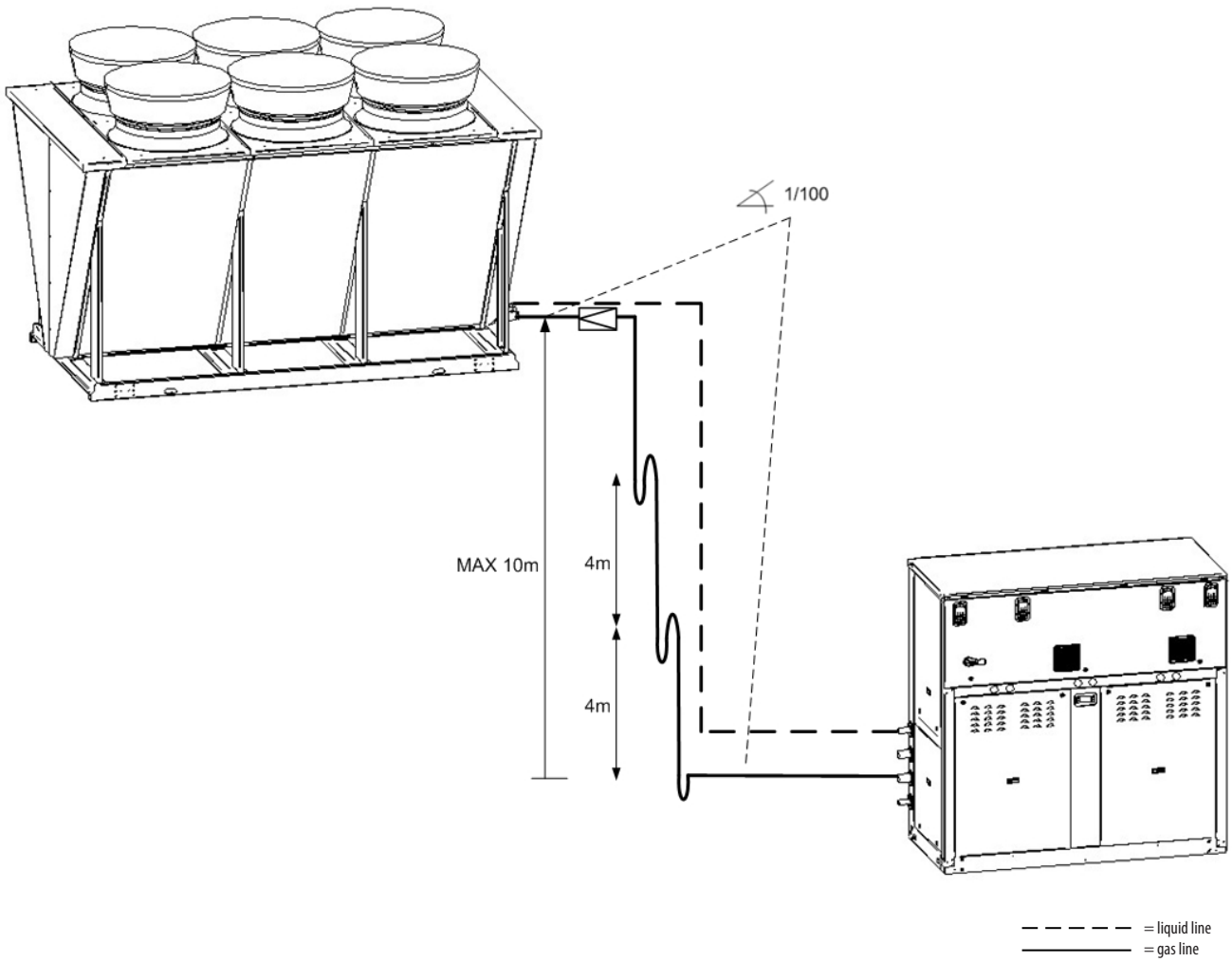
DPr = Maximum operating pressure on refrigerant side in kPa

DPw = Maximum operating pressure on water side in kPa

Refrigerant connections

Maximum piping length and lift

	Maximum equivalent piping length (m)	Maximum difference in heigh (m)
Water chiller is below remote condenser	20	10
Water chiller is above remote condenser	20	5



In the exemplifying connection diagram are represented only one supply piping (gas line) and one liquid piping. The number of lines must be doubled because the unit is equipped with a double refrigeration circuit.

Provide gradients in the horizontal sections (1/100). When the external unit is positioned higher than the internal unit provide siphons every 4 m in the vertical stretches.

It is recommended to add a supply non-return valve as in the figure, to avoid the liquid return to the compressor.

When the condenser is installed above the compressor the supply line must have a trap at the compressor level which drops to the floor. This will reduce the risk of condensed liquid refrigerant returning up the compressor line during shutdowns. In the vertical supply sections it is recommended to insert an oil collecting siphon to allow the oil to be drawn in the line, in addition to the pit at the base.

In the horizontal sections are recommended to create a slope towards the gas flow to facilitate the oil flow.

The equivalent length is the sum of the pipe effective length plus a length which is equal to the pressure drops distributed and concentrated.
To determine the equivalent length refer to tables and data declared by the pipe supplier.

Table of located leaks

Piping diamter	Standard 90° bend	Wide radius 90° bend	90° elbow m/f	45° bend	45° elbow m/f	180° bend	Fitting direction inversion	Direct flow		
								No reduction	Reduction 1/4	Reduction 1/2
										
mm	Equivalent length									
28	0,8	0,5	1,2	0,4	0,6	1,2	1,5	0,5	0,7	0,8
35	1,0	0,7	1,7	0,5	0,9	1,7	2,1	0,7	0,9	1,0
42	1,2	0,8	1,9	0,6	1,0	1,9	2,4	0,8	1,1	1,2
54	1,5	1,0	2,5	0,8	1,4	2,5	3,0	1,0	1,4	1,5

Performance correction factors for combination with remote condenser

	Total equivalent length (m)			
	7,5	10	15	20
Cooling Capacity corrective coeffcient	1,00	0,99	0,98	0,98
Compressor power input corrective coefficient	1,00	1,01	1,02	1,03

Refrigerant charge for combination with remote condenser

Size			90.4	100.4	110.4	120.4	140.4	160.4	180.4	200.4	220.4	240.4
EXCELLENCE SC	C1	[kg]	28	28	33	34	38	46	51	55	56	69
	C2	[kg]	28	27	33	34	37	45	50	54	62	68
PREMIUM SC	C1	[kg]	22	22	26	27	29	39	39	44	49	56
	C2	[kg]	22	22	26	26	29	38	39	43	55	55
EXCELLENCE EN	C1	[kg]	33	33	33	41	42	53	59	61	63	78
	C2	[kg]	32	33	33	41	41	52	58	60	69	77
PREMIUM EN	C1	[kg]	26	28	28	34	35	39	46	48	56	64
	C2	[kg]	25	27	28	34	34	38	46	47	62	62

The unit is shipped with nitrogen charge, the refrigerant charge indicated refers to an equivalent distance of 7,5m and has to be made during installation at the start-up and is provided by the Customer. Indicative values to be evaluate during the installation.

Refrigerant charge for different equivalent lengths

	Size	Refrigeration circuit		Total equivalent length (m)		
				10	15	20
Additional refrigerant charge	90.4-140.4	C1	kg	+2,0	+5,5	+9,5
		C2	kg	+2,0	+5,5	+9,5
	160.4-200.4	C1	kg	+3,0	+8,0	+13,5
		C2	kg	+3,0	+8,0	+13,5
	220.4	C1	kg	+3,0	+8,0	+13,5
		C2	kg	+4,5	+14,0	+23,5
	240.4	C1	kg	+4,5	+14,0	+23,5
		C2	kg	+4,5	+14,0	+23,5

Indicative values to be evaluate during the installation.

Notes - Warnings

The liquid and supply lines should be insulated to prevent heat exchanges that can compromise the correct refrigerating operation. The supply line must be properly insulated in case of possible contact with persons in order to avoid accidental burns.

The lack of insulation from vibrations could generate pipe breaks and refrigerant leaks.

The unit is shipped with nitrogen charge, the refrigerant charge has to be made during installation, at the start-up and is provided by the Customer.

The dimensioning of the connection refrigerant lines is very important for the proper operating and reliability of the system.

The connection must be made by a qualified refrigerator technician, respecting the local operations and good rules in force.

STANDARD CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: compressor soundproofing (SC)

Cooling performance (continued)

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		48		52	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
90.4	5	273,4	60,9	257,3	66,4	243,6	72,9	226,2	79,5	201,7	92,1	62,5	28,6
	6	281,2	61,5	266,6	67,4	251,0	73,3	232,4	80,1	209,7	92,9	65,0	28,8
	7	288,4	62,1	274,8	67,7	259,7	74,0	242,1	81,1	216,5	93,6	67,1	29,0
	10	319,7	64,6	302,9	70,6	284,2	76,6	263,7	83,3	173,7	60,7	76,1	29,8
	15	362,9	68,3	344,0	74,1	320,8	80,6	300,1	87,7	198,1	64,1	-	-
	18	392,8	71,4	371,4	77,3	347,4	83,4	324,0	90,4	213,9	66,0	-	-
100.4	5	294,4	67,2	279,3	73,5	261,5	80,5	241,5	88,6	218,5	103,8	89,6	38,4
	6	303,6	67,6	288,0	73,9	269,8	80,8	250,4	89,3	225,9	104,6	92,6	38,7
	7	314,0	68,6	298,6	74,8	278,7	81,9	258,9	90,2	235,4	105,4	96,5	39,0
	10	345,7	70,9	327,0	77,4	305,3	84,7	282,0	92,8	174,1	60,7	108,5	39,7
	15	392,5	74,8	370,4	81,5	346,2	88,7	323,5	97,4	200,6	63,3	-	-
	18	429,6	78,3	404,3	85,1	374,5	91,8	349,7	100,4	216,8	65,2	-	-
110.4	5	325,7	73,3	310,5	80,1	291,0	87,8	271,4	96,4	241,3	111,7	142,4	61,4
	6	337,9	74,4	320,8	81,5	301,1	88,7	278,7	97,2	250,4	113,0	147,7	62,2
	7	347,3	75,1	330,2	82,0	309,8	89,6	290,2	98,3	261,9	114,3	154,5	62,9
	10	384,9	78,1	364,1	85,2	341,4	92,6	314,7	101,3	178,2	59,5	170,5	64,7
	15	437,6	82,5	414,1	89,6	386,4	97,3	358,5	105,9	204,3	60,3	-	-
	18	475,9	85,8	448,0	93,1	419,0	100,6	389,4	109,2	222,0	62,3	-	-
120.4	5	365,5	82,9	347,4	90,5	325,7	99,0	301,8	108,5	273,1	127,0	147,5	59,7
	6	375,3	83,7	357,1	91,4	334,8	99,8	312,1	109,7	280,0	127,7	151,2	60,0
	7	389,4	84,8	369,5	92,5	346,1	101,0	324,8	111,0	295,1	129,6	159,4	60,9
	10	427,4	87,9	404,8	95,8	378,4	104,5	351,0	113,9	181,6	58,8	172,2	64,4
	15	489,3	93,2	461,6	101,3	430,9	110,0	401,1	119,6	208,6	62,2	-	-
	18	530,2	97,3	500,2	105,7	465,6	114,0	435,9	123,8	226,7	64,4	-	-
140.4	5	420,4	92,8	400,4	101,3	376,3	110,7	349,3	120,8	312,1	139,5	184,2	76,8
	6	431,6	93,8	411,7	102,3	386,8	111,6	361,4	122,2	322,9	141,1	190,5	77,6
	7	447,5	95,2	425,9	103,7	400,0	112,8	373,3	123,5	338,7	142,6	199,8	78,4
	10	491,3	99,0	466,4	107,6	437,4	116,9	406,0	127,0	229,5	74,2	218,5	80,7
	15	562,4	105,4	528,4	113,7	494,6	123,1	460,1	133,2	262,3	75,9	-	-
	18	610,2	110,2	572,1	118,4	534,8	127,5	499,5	137,8	284,7	78,6	-	-
160.4	5	466,6	106,0	444,6	115,2	417,3	125,4	386,2	136,7	347,1	158,0	184,0	75,8
	6	479,4	107,3	456,1	116,6	427,4	126,8	396,6	137,9	360,7	160,0	191,2	76,8
	7	496,4	108,8	472,2	118,2	441,4	128,6	409,6	139,6	372,8	161,6	197,6	77,6
	10	543,5	113,4	516,1	122,7	483,0	133,0	447,3	144,2	229,8	74,5	219,1	80,7
	15	615,2	120,7	584,2	129,8	545,6	140,1	507,3	151,5	263,8	78,8	-	-
	18	672,7	126,8	633,1	136,4	588,1	145,6	550,3	157,0	286,2	81,7	-	-
180.4	5	530,9	120,5	505,0	131,9	472,7	144,7	437,5	160,1	391,3	187,8	148,7	62,0
	6	549,7	121,9	522,5	133,4	488,4	146,4	449,5	161,0	406,6	189,1	154,5	62,4
	7	563,4	123,0	536,3	134,6	503,8	148,1	464,2	162,5	419,4	191,2	159,4	63,1
	10	623,0	127,5	588,9	139,5	548,0	152,8	506,1	167,3	327,7	117,5	176,2	64,9
	15	703,7	134,2	664,3	146,4	618,0	159,6	572,1	174,7	400,4	117,0	-	-
	18	762,0	139,3	716,6	151,4	666,3	164,6	621,6	179,3	435,1	120,1	-	-

kWf = Cooling capacity in kW. The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers
kWe = Compressor power input in kW
To (°C) = Leaving internal exchanger water temperature (°C) - Performances in function of the inlet/outlet water temperature differential = 5°C
Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

STANDARD CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: compressor soundproofing (SC)

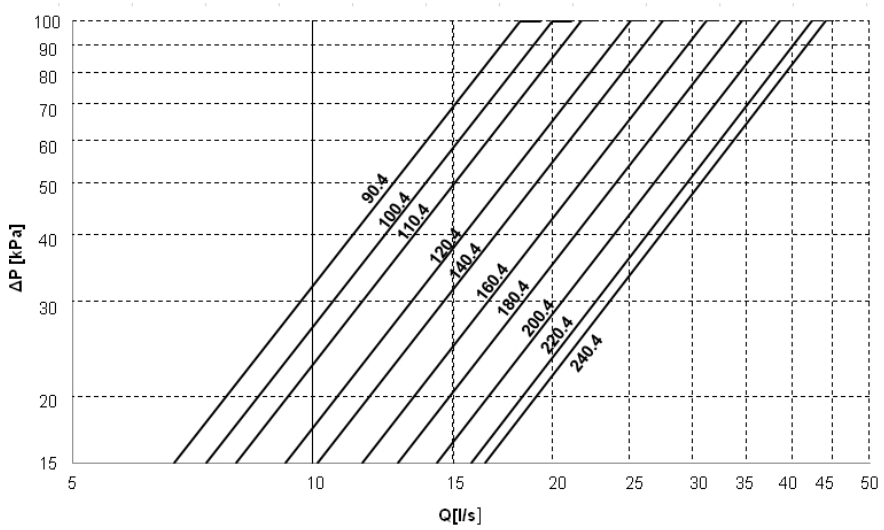
Cooling performance

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		48		52	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
200.4	5	593,6	128,8	562,0	141,1	528,9	154,8	492,4	170,2	435,0	198,4	268,2	123,9
	6	611,5	130,4	582,9	142,7	547,2	156,3	505,4	171,5	448,1	200,0	277,8	124,0
	7	626,6	131,7	598,3	144,0	561,5	157,5	525,6	173,5	470,8	202,3	288,6	124,3
	10	693,1	137,0	658,6	149,4	617,1	162,8	571,3	177,7	337,1	114,0	318,9	125,5
	15	786,4	144,4	745,7	157,2	697,0	170,8	645,9	185,7	387,5	115,1	-	-
	18	854,2	150,1	807,5	162,7	752,9	176,4	699,9	191,3	422,5	118,7	-	-
220.4	5	651,0	144,3	619,6	158,2	579,3	173,4	540,8	191,3	478,0	223,2	272,5	120,5
	6	671,4	146,0	639,7	159,9	598,1	175,2	555,1	192,6	494,3	225,0	281,8	121,5
	7	691,7	147,7	657,4	161,5	615,8	176,9	567,8	193,8	504,7	226,2	287,7	122,2
	10	730,9	150,8	692,1	164,6	645,6	179,7	594,9	196,5	322,8	112,8	304,5	124,0
	15	801,4	156,3	758,6	170,4	710,0	186,2	662,0	203,6	377,3	109,9	-	-
	18	862,0	161,6	819,4	176,1	764,0	191,6	708,2	208,4	403,7	112,5	-	-
240.4	5	725,7	158,4	692,4	173,4	652,4	190,7	600,7	209,8	530,0	245,2	280,9	120,1
	6	751,5	160,4	715,8	175,7	669,4	192,3	616,4	211,3	545,3	247,0	289,0	121,0
	7	771,5	162,0	732,2	177,0	684,2	193,8	628,2	212,3	553,3	247,8	293,2	121,4
	10	810,1	165,1	767,7	180,1	713,7	196,7	658,8	215,2	384,3	110,8	309,1	123,9
	15	890,0	171,3	843,4	187,1	797,3	205,1	736,4	223,5	427,1	114,0	-	-
	18	959,9	177,8	915,2	193,5	852,4	210,6	787,2	229,5	456,6	117,1	-	-

kWf = Cooling capacity in kW. The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers
kWe = Compressor power input in kW
To (°C) = Leaving internal exchanger water temperature (°C) - Performances in function of the inlet/outlet water temperature differential = 5°C
Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

Internal exchanger pressure drop

Acoustic configuration: compressor soundproofing (SC)



The pressure drops are calculated considering a water temperature of 7°C

Q = water flow-rate [l/s]
DP = water side pressure drops [kPa]

The water flow-rate must be calculated with the following formula

Q [l/s] = kWf / (4,186 x DT)

kWf = Cooling capacity in kW.
DT = Temperature difference between inlet / outlet water

To the internal exchanger pressure drops must be added the pressure drops of the steel mesh mechanical strainer that must be placed on the water input line. It is a device compulsory for the correct unit operation, and it is available as Clivet option (see the HYDRONIC ASSEMBLY ACCESSORIES). If the mechanical filter is selected and installed by the Customer, it is forbidden the use of filters with the mesh pitch higher than 1,6 mm, because they can cause a bad unit operation and also its serious damaging.

STANDARD CONFIGURATION

PREMIUM VERSION

Acoustic configuration: compressor soundproofing (SC)

Cooling performance (continued)

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		45		50	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
90.4	5	256,3	68,3	240,2	74,4	222,3	81,4	207,1	89,0	151,2	60,5	75,6	29,1
	6	262,4	69,3	246,6	75,3	228,6	81,9	213,5	89,7	155,9	61,0	77,9	29,3
	7	268,9	70,3	253,0	76,1	237,8	83,2	222,1	91,0	162,1	61,9	81,1	29,7
	10	295,4	73,1	276,1	79,7	256,9	86,3	242,3	93,8	176,9	63,8	88,5	30,6
	15	333,3	78,2	310,6	84,4	289,2	91,3	280,8	99,4	205,0	67,6	-	-
	18	356,0	81,8	334,4	88,1	314,8	94,8	317,5	105,1	-	-	-	-
100.4	5	278,5	75,1	261,2	81,9	242,3	89,5	225,9	98,3	146,9	58,0	91,1	36,9
	6	285,9	76,0	268,4	82,8	248,5	90,4	232,7	99,2	151,3	58,5	93,9	37,2
	7	293,7	77,0	276,5	84,1	258,6	92,0	242,6	100,5	157,7	59,3	100,1	37,7
	10	322,0	80,4	301,4	87,7	280,5	95,2	265,4	103,6	173,3	61,5	108,8	39,1
	15	364,3	86,4	340,0	93,3	317,9	101,0	308,9	110,9	200,8	65,4	-	-
	18	391,8	90,6	366,3	97,6	345,1	105,4	348,3	116,2	-	-	-	-
110.4	5	304,1	82,8	285,3	90,2	265,4	98,1	247,7	107,2	151,1	56,8	112,7	46,0
	6	314,6	84,1	294,6	91,5	273,8	99,4	255,1	108,1	155,6	57,3	117,4	46,8
	7	323,9	85,3	304,3	92,8	282,7	100,7	265,7	109,7	162,0	58,1	122,3	47,5
	10	352,0	88,8	328,2	96,3	306,3	104,3	289,7	113,3	177,2	60,3	134,4	49,1
	15	393,8	94,7	370,5	102,4	347,8	110,6	338,4	121,0	206,4	64,1	-	-
	18	425,2	99,4	398,5	106,9	376,4	114,9	366,2	125,7	-	-	-	-
120.4	5	352,4	89,9	330,4	97,7	309,9	106,6	287,1	116,3	271,0	127,3	143,6	59,8
	6	362,2	90,9	341,8	98,9	318,7	107,8	296,2	117,9	279,2	128,8	148,0	60,5
	7	375,4	91,9	351,1	99,9	331,7	109,4	308,2	119,3	169,5	56,1	156,3	61,2
	10	408,8	96,1	382,7	104,5	358,3	113,3	335,1	122,7	185,0	57,6	172,4	63,6
	15	460,2	102,4	433,5	111,1	405,0	120,0	383,7	129,9	211,0	61,1	-	-
	18	497,3	107,8	467,8	115,9	438,5	124,7	419,0	136,0	-	-	-	-
140.4	5	395,2	104,7	370,8	114,0	344,4	123,9	321,1	135,2	308,9	147,8	148,3	59,1
	6	405,7	106,1	380,3	115,3	353,2	125,2	329,0	136,2	319,7	149,5	153,4	59,8
	7	418,5	107,7	393,2	117,0	367,3	127,3	344,0	138,3	206,4	73,3	161,0	60,8
	10	458,5	112,8	427,6	122,0	397,2	132,0	374,4	142,9	226,2	75,6	173,7	63,4
	15	514,9	120,9	481,1	129,8	448,2	139,7	432,9	151,7	259,7	80,4	-	-
	18	555,8	126,9	517,7	135,8	486,2	145,6	488,1	160,3	-	-	-	-
160.4	5	443,0	117,4	416,1	127,4	387,0	137,9	361,5	149,8	344,8	162,5	168,9	73,1
	6	458,8	119,6	431,6	129,0	400,4	139,7	372,5	150,9	357,8	164,6	175,3	74,1
	7	469,9	121,0	444,9	131,2	414,8	142,6	385,6	152,8	212,1	70,3	184,4	75,1
	10	515,1	127,3	481,9	137,8	448,3	148,2	421,9	159,4	233,0	73,7	220,0	80,5
	15	580,5	138,2	538,7	147,0	505,5	157,2	481,7	168,4	264,9	77,5	-	-
	18	626,5	144,9	586,7	154,1	550,6	163,9	539,8	177,8	-	-	-	-
180.4	5	505,2	133,4	473,8	145,9	440,0	159,4	406,9	174,6	386,9	192,4	147,0	57,7
	6	517,6	135,1	489,1	147,7	453,6	161,3	422,7	176,7	402,8	195,9	153,1	58,8
	7	534,4	137,0	501,1	149,3	470,3	163,6	434,9	178,2	295,7	115,9	157,5	59,3
	10	582,3	143,1	547,5	155,5	508,3	169,0	476,3	183,7	325,3	118,6	178,3	61,5
	15	653,2	151,8	609,1	164,0	570,7	178,1	546,1	194,6	371,4	126,5	-	-
	18	703,9	159,1	657,2	171,3	618,4	184,3	602,6	202,4	-	-	-	-

kWf = Cooling capacity in kW. The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers
kWe = Compressor power input in kW
To (°C) = Leaving internal exchanger water temperature (°C) - Performances in function of the inlet/outlet water temperature differential = 5°C
Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

STANDARD CONFIGURATION

PREMIUM VERSION

Acoustic configuration: compressor soundproofing (SC)

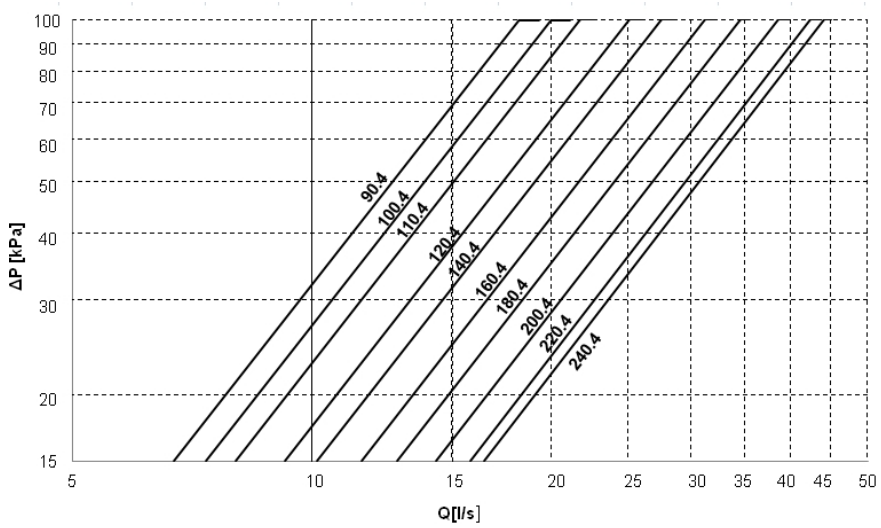
Cooling performance

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		45		50	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
200.4	5	547,8	142,6	515,0	156,0	481,0	169,5	445,5	184,8	419,8	203,0	264,5	119,8
	6	562,6	144,3	529,1	157,3	494,8	172,0	459,3	187,7	431,8	205,5	272,0	121,3
	7	575,9	146,8	546,2	159,4	507,9	173,5	471,1	188,8	306,2	111,4	282,2	122,4
	10	622,9	152,6	588,9	166,0	546,4	178,9	509,8	193,9	329,0	114,0	308,8	126,5
	15	711,4	163,0	662,5	176,3	618,1	189,7	581,1	205,2	377,7	121,1	-	-
	18	755,7	170,6	707,0	182,2	666,8	196,4	630,1	212,0	-	-	-	-
220.4	5	627,2	158,3	592,0	172,7	550,4	188,5	508,6	206,3	474,9	227,1	270,7	120,4
	6	645,4	160,7	606,4	174,6	564,1	190,3	524,7	208,5	489,9	229,5	279,2	121,6
	7	662,2	162,5	621,7	176,4	578,5	192,2	535,5	209,7	316,0	109,1	285,0	122,4
	10	694,7	166,2	651,7	180,1	603,3	195,7	558,1	212,9	330,2	110,6	305,8	123,1
	15	760,1	173,8	713,2	188,4	665,7	204,4	625,7	222,3	369,2	115,6	-	-
	18	814,0	181,0	764,8	195,6	712,7	210,9	671,1	228,8	-	-	-	-
240.4	5	687,8	178,9	646,7	194,3	598,5	212,0	554,7	232,1	518,6	256,6	285,2	120,6
	6	705,3	180,8	662,1	196,4	616,2	214,3	569,1	234,0	532,1	258,7	292,6	121,6
	7	723,9	183,2	677,0	198,5	626,8	215,8	578,4	235,2	323,9	108,2	297,4	122,2
	10	755,5	186,7	705,7	202,6	651,5	219,7	603,3	238,4	336,5	110,3	309,3	123,6
	15	830,3	196,7	776,1	212,6	726,2	230,8	679,1	250,1	380,3	115,1	-	-
	18	883,8	204,2	825,8	220,0	774,2	238,0	733,2	258,3	-	-	-	-

kWf = Cooling capacity in kW. The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers
kWe = Compressor power input in kW
To (°C) = Leaving internal exchanger water temperature (°C) - Performances in function of the inlet/outlet water temperature differential = 5°C
Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

Internal exchanger pressure drop

Acoustic configuration: compressor soundproofing (SC)



The pressure drops are calculated considering a water temperature of 7°C

Q = water flow-rate [l/s]
DP = water side pressure drops [kPa]

The water flow-rate must be calculated with the following formula

Q [l/s] = kWf / (4,186 x DT)

kWf = Cooling capacity in kW.
DT = Temperature difference between inlet / outlet water

To the internal exchanger pressure drops must be added the pressure drops of the steel mesh mechanical strainer that must be placed on the water input line. It is a device compulsory for the correct unit operation, and it is available as Clivet option (see the HYDRONIC ASSEMBLY ACCESSORIES). If the mechanical filter is selected and installed by the Customer, it is forbidden the use of filters with the mesh pitch higher than 1,6 mm, because they can cause a bad unit operation and also its serious damaging.

STANDARD CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: super-silenced (EN)

Cooling performance (continued)

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		48		52	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
90.4	5	274,5	59,6	259,2	65,4	246,5	71,6	228,3	78,5	202,3	91,5	70,8	29,3
	6	283,2	60,2	268,9	66,2	253,5	72,1	234,5	79,1	208,7	92,2	73,0	29,5
	7	293,0	61,1	276,7	66,6	261,2	73,2	244,2	80,1	216,9	93,0	75,9	29,7
	10	322,0	63,2	305,8	69,1	286,7	75,4	265,5	82,3	174,5	59,9	84,0	30,3
	15	365,8	66,6	346,9	72,6	324,5	79,0	301,5	85,8	199,0	62,7	-	-
	18	398,0	69,0	377,2	75,0	350,7	81,8	326,9	88,8	215,7	64,8	-	-
100.4	5	296,8	66,0	282,1	72,3	264,7	79,2	245,7	86,9	220,1	101,5	90,2	37,5
	6	305,4	66,7	290,1	72,9	272,2	79,9	252,4	87,6	227,3	102,3	93,2	37,8
	7	316,3	67,5	298,4	73,4	281,8	80,6	262,9	88,6	236,6	103,1	97,0	38,2
	10	347,4	70,0	329,4	76,3	308,6	83,3	287,0	90,7	176,3	59,9	108,4	39,8
	15	394,6	73,7	372,7	80,4	349,6	87,3	325,4	95,2	198,5	62,8	-	-
	18	431,7	77,0	404,4	83,2	377,5	90,5	353,4	98,5	215,6	65,0	-	-
110.4	5	323,2	74,8	304,4	81,6	287,1	89,3	265,8	97,8	239,4	113,8	110,1	46,6
	6	332,4	75,5	315,2	82,5	294,8	90,1	272,9	98,5	249,1	114,9	114,6	47,1
	7	341,4	76,2	323,6	83,2	306,6	91,4	283,7	99,8	261,1	116,3	120,1	47,7
	10	377,1	79,1	356,7	86,2	332,6	94,1	308,3	102,6	176,8	60,4	134,1	49,7
	15	427,2	83,4	402,7	90,6	375,5	98,4	350,6	107,2	199,9	63,2	-	-
	18	462,3	86,6	434,7	93,9	406,1	101,7	381,6	110,7	217,5	65,3	-	-
120.4	5	370,8	80,5	353,0	88,2	332,1	96,6	308,0	106,0	273,2	124,4	147,6	60,9
	6	380,9	81,2	363,2	89,0	341,2	97,4	316,5	106,9	280,8	125,3	151,6	61,4
	7	395,4	82,2	376,1	89,9	352,7	98,6	327,3	108,0	290,4	126,6	156,8	62,0
	10	434,3	85,2	412,6	93,0	387,1	101,4	359,1	110,9	182,4	58,2	172,6	63,8
	15	493,9	89,8	468,1	97,7	438,2	106,4	407,6	115,9	212,0	60,2	-	-
	18	537,5	93,3	507,7	101,3	474,5	110,2	441,5	119,9	229,6	62,4	-	-
140.4	5	419,9	92,7	399,9	101,3	375,9	110,6	348,8	120,8	311,0	140,4	146,2	60,4
	6	431,1	93,7	411,1	102,2	386,2	111,5	361,1	122,1	320,7	141,6	150,7	60,9
	7	447,0	95,0	425,4	103,5	399,4	112,7	370,5	123,1	337,9	143,4	158,8	61,7
	10	490,6	98,8	466,0	107,3	436,9	116,7	405,1	127,0	228,8	74,5	173,5	63,6
	15	561,7	105,0	527,5	113,4	497,0	123,3	459,3	133,1	261,8	75,9	-	-
	18	612,6	109,6	575,4	118,3	535,9	127,5	498,2	137,7	284,0	78,5	-	-
160.4	5	462,6	106,8	439,5	116,3	411,4	126,8	380,4	138,2	345,6	160,6	183,2	77,1
	6	475,0	108,2	450,6	117,8	421,5	128,1	393,8	139,6	360,0	162,4	190,8	78,0
	7	491,6	109,6	466,3	119,3	435,8	129,6	405,7	141,6	370,8	164,8	196,5	79,1
	10	537,7	114,1	508,6	123,9	475,5	134,3	441,1	145,7	229,6	74,5	219,0	81,0
	15	612,5	121,8	576,3	131,8	538,7	142,0	503,2	153,4	261,6	79,8	-	-
	18	662,2	127,2	623,1	137,0	580,7	147,4	546,6	159,0	284,2	82,7	-	-
180.4	5	532,6	120,0	506,4	131,5	473,0	144,7	439,7	159,4	392,0	187,0	117,6	74,8
	6	551,2	121,5	523,9	133,1	490,8	145,8	452,0	160,3	407,2	188,4	122,2	75,4
	7	565,4	122,5	536,7	134,6	505,5	147,6	466,2	162,0	420,3	189,8	126,1	75,9
	10	624,4	127,2	590,7	139,1	550,1	152,3	509,6	166,3	328,8	117,0	188,4	57,2
	15	706,7	133,7	666,8	146,0	621,6	159,0	575,7	173,7	403,0	112,9	-	-
	18	765,7	138,9	720,2	151,0	669,6	164,2	625,1	178,5	437,5	116,0	-	-

kWf = Cooling capacity in kW. The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers
kWe = Compressor power input in kW
To (°C) = Leaving internal exchanger water temperature (°C) - Performances in function of the inlet/outlet water temperature differential = 5°C
Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

STANDARD CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: super-silenced (EN)

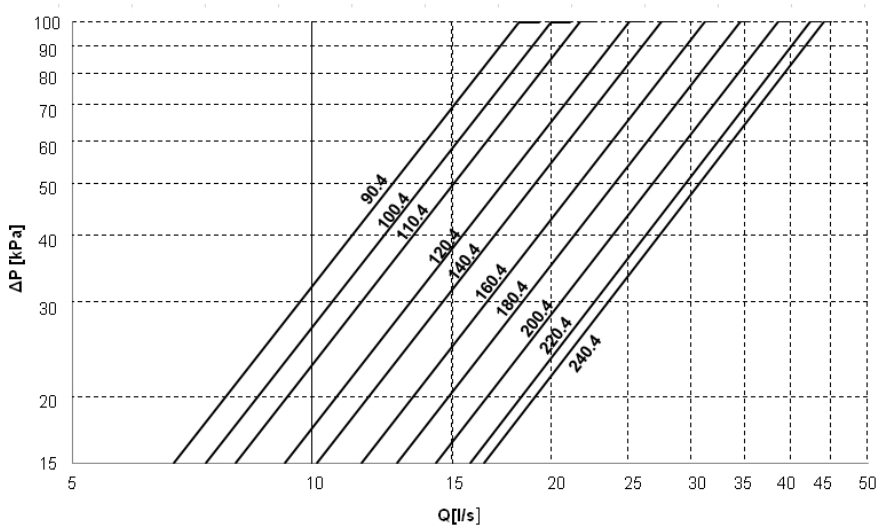
Cooling performance

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		48		52	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
200.4	5	585,7	133,1	555,1	146,1	524,4	159,7	482,3	175,3	429,1	204,4	188,8	75,6
	6	605,2	135,2	571,6	147,0	537,3	161,3	495,0	176,6	442,3	206,0	194,6	76,2
	7	622,5	136,2	590,7	148,7	550,4	162,8	510,8	178,5	459,2	207,8	202,0	76,9
	10	674,1	141,4	638,9	153,8	594,3	168,1	549,7	183,1	331,2	115,4	221,6	79,2
	15	766,8	150,3	725,9	162,7	675,1	176,7	628,1	191,5	376,9	120,6	-	-
	18	823,8	155,5	775,8	168,4	722,2	182,1	672,1	197,6	403,3	124,5	-	-
220.4	5	648,6	145,9	617,4	159,7	580,1	175,2	537,9	192,8	475,5	225,7	271,0	121,9
	6	668,8	147,7	637,1	161,6	594,9	176,8	552,3	194,1	490,0	227,6	279,3	122,9
	7	688,7	149,5	654,5	163,3	613,7	178,6	566,2	195,8	501,1	228,9	285,6	123,6
	10	727,6	152,8	688,9	166,5	641,8	181,7	592,1	198,6	323,3	112,8	302,7	124,7
	15	793,3	158,2	757,0	173,0	710,9	189,1	658,5	206,1	362,2	117,5	-	-
	18	853,4	163,9	814,8	178,8	758,7	194,1	707,9	211,5	389,4	120,5	-	-
240.4	5	724,5	157,3	689,9	172,9	646,5	189,6	600,8	208,6	529,4	245,2	280,6	120,2
	6	744,5	158,9	709,8	173,9	664,2	190,9	617,4	209,9	542,2	246,0	287,4	120,6
	7	770,3	161,3	733,1	176,4	682,5	193,0	629,9	211,5	554,5	246,9	293,9	121,0
	10	806,7	164,3	764,4	179,3	715,5	196,0	657,6	214,0	333,3	110,4	308,0	122,1
	15	886,0	170,6	844,4	186,4	788,8	202,7	731,0	221,5	372,8	113,0	-	-
	18	949,3	176,2	900,7	191,9	847,4	209,1	786,9	228,1	401,3	116,3	-	-

kWf = Cooling capacity in kW. The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers
kWe = Compressor power input in kW
To (°C) = Leaving internal exchanger water temperature (°C) - Performances in function of the inlet/outlet water temperature differential = 5°C
Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

Internal exchanger pressure drop

Acoustic configuration: super-silenced (EN)



The pressure drops are calculated considering a water temperature of 7°C

Q = water flow-rate [l/s]
DP = water side pressure drops [kPa]

The water flow-rate must be calculated with the following formula

Q [l/s] = kWf / (4,186 x DT)

kWf = Cooling capacity in kW.
DT = Temperature difference between inlet / outlet water

To the internal exchanger pressure drops must be added the pressure drops of the steel mesh mechanical strainer that must be placed on the water input line. It is a device compulsory for the correct unit operation, and it is available as Clivet option (see the HYDRONIC ASSEMBLY ACCESSORIES). If the mechanical filter is selected and installed by the Customer, it is forbidden the use of filters with the mesh pitch higher than 1,6 mm, because they can cause a bad unit operation and also its serious damaging.

STANDARD CONFIGURATION

PREMIUM VERSION

Acoustic configuration: super-silenced (EN)

Cooling performance (continued)

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		45		50	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
90.4	5	257,6	66,1	243,4	72,1	227,3	78,9	210,5	86,1	199,5	94,4	69,8	27,4
	6	266,8	67,1	251,4	73,1	233,8	79,7	217,7	87,0	205,8	95,3	72,0	27,6
	7	273,2	67,8	257,9	73,9	239,9	80,5	226,2	88,2	158,4	59,1	76,0	28,1
	10	299,8	70,9	281,4	76,9	262,8	83,6	244,6	90,6	172,1	60,9	85,8	29,1
	15	336,3	75,2	316,9	81,7	296,1	88,3	282,2	96,0	197,5	64,3	-	-
	18	363,9	78,9	340,5	85,0	319,7	91,9	310,5	100,2	-	-	-	-
100.4	5	278,2	74,1	261,3	80,9	242,1	88,8	225,9	97,6	223,0	108,4	84,7	41,2
	6	285,6	74,9	267,9	81,9	248,6	89,5	232,4	98,5	229,4	109,4	87,2	41,6
	7	294,9	76,0	274,9	82,8	258,3	91,0	242,4	99,8	160,0	59,9	90,9	42,1
	10	323,0	79,5	301,1	86,4	279,7	94,2	265,0	102,9	173,5	61,2	109,9	39,0
	15	362,4	84,6	338,3	91,6	316,6	99,8	310,1	110,5	204,7	66,3	-	-
	18	389,2	88,4	364,1	95,7	345,2	104,1	351,6	116,1	-	-	-	-
110.4	5	305,6	82,1	286,4	89,5	265,8	97,8	247,6	107,0	240,0	117,7	115,2	47,1
	6	315,7	83,4	295,8	90,8	274,5	98,9	256,9	108,1	249,3	118,9	119,6	47,6
	7	325,7	84,4	303,2	91,9	283,2	100,2	265,9	109,4	162,2	58,0	127,4	48,8
	10	353,9	87,8	330,1	95,4	306,9	103,7	290,1	112,7	177,3	60,2	134,3	49,2
	15	396,9	93,3	370,8	100,7	349,3	109,5	338,3	120,2	206,4	63,7	-	-
	18	429,1	97,7	400,9	105,5	377,8	113,6	383,2	125,9	-	-	-	-
120.4	5	348,6	90,9	328,1	99,2	304,2	108,6	282,2	118,9	269,2	130,5	140,0	60,0
	6	358,0	92,0	336,7	100,3	312,0	109,7	290,1	119,9	279,9	132,1	145,6	60,7
	7	369,9	93,3	347,0	101,7	324,5	111,3	303,3	121,7	166,8	57,2	152,4	61,8
	10	406,1	97,5	378,1	106,1	351,2	115,2	330,2	125,1	182,5	58,4	171,7	64,3
	15	456,9	103,9	425,7	112,4	396,4	121,7	380,7	132,6	209,4	62,3	-	-
	18	491,1	108,8	457,0	117,2	430,5	126,6	422,7	139,4	-	-	-	-
140.4	5	398,2	102,7	372,7	111,3	349,5	121,5	323,9	131,9	308,1	144,0	147,9	59,0
	6	408,6	104,0	384,9	112,9	358,4	122,7	334,5	133,6	317,9	145,5	152,6	59,7
	7	421,7	105,6	397,5	114,6	372,5	124,7	347,6	135,5	212,1	71,8	161,4	60,9
	10	458,8	110,2	432,8	119,7	402,3	129,1	378,0	139,6	229,4	74,3	174,8	62,5
	15	517,8	118,2	484,8	127,1	453,9	136,9	434,1	148,3	264,8	78,6	-	-
	18	556,5	123,8	521,3	132,7	490,6	142,5	480,1	155,3	-	-	-	-
160.4	5	435,4	118,6	406,9	129,2	379,7	139,4	356,1	151,5	348,4	165,5	177,7	77,8
	6	446,4	120,1	417,3	130,6	389,3	140,9	366,2	153,3	361,5	167,3	184,4	78,6
	7	460,4	122,3	433,3	132,9	404,2	143,5	381,9	155,2	210,0	72,9	197,9	81,3
	10	501,2	128,1	467,5	137,9	436,5	149,1	416,3	161,5	229,3	74,7	219,1	82,6
	15	557,0	137,6	523,9	147,5	492,7	157,8	497,6	174,7	273,7	82,1	-	-
	18	599,1	143,3	562,3	153,4	538,4	165,1	546,0	176,1	-	-	-	-
180.4	5	511,5	131,2	481,0	143,5	447,3	156,8	414,3	172,1	389,4	190,2	151,9	57,1
	6	524,2	132,9	493,2	144,7	461,0	158,8	424,9	173,6	401,7	191,9	156,7	57,6
	7	540,3	134,9	509,2	146,6	472,4	160,2	441,9	175,6	304,9	114,1	167,1	58,6
	10	590,8	140,6	553,7	152,7	515,5	166,6	478,4	180,6	328,9	117,0	179,6	60,9
	15	661,9	149,5	618,8	161,5	576,7	174,9	549,2	191,1	379,0	124,2	-	-
	18	715,3	156,4	668,3	168,4	622,0	181,1	600,4	199,2	-	-	-	-

kWf = Cooling capacity in kW. The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers
kWe = Compressor power input in kW
To (°C) = Leaving internal exchanger water temperature (°C) - Performances in function of the inlet/outlet water temperature differential = 5°C
Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

STANDARD CONFIGURATION

PREMIUM VERSION

Acoustic configuration: super-silenced (EN)

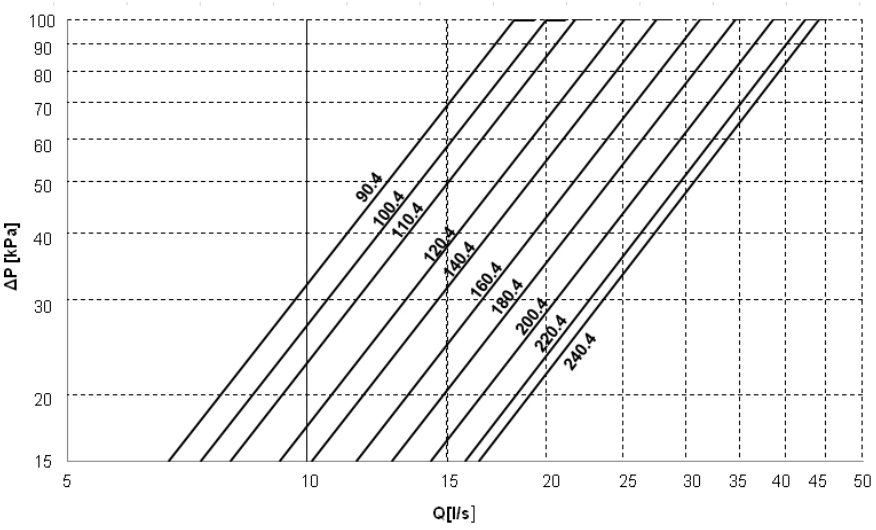
Cooling performance

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		45		50	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
200.4	5	545,2	142,6	515,6	155,1	480,7	170,5	443,6	185,1	419,4	203,0	281,0	107,6
	6	563,5	144,3	528,8	156,8	494,9	171,4	457,0	187,6	431,6	205,5	289,2	108,9
	7	575,1	146,0	545,0	158,9	506,6	173,2	471,9	189,9	287,8	125,3	300,0	109,9
	10	621,4	151,9	584,9	165,1	549,6	179,0	507,3	194,2	308,3	127,4	328,7	114,0
	15	707,7	162,3	660,3	175,5	620,4	189,2	583,7	206,0	356,1	135,9	-	-
	18	756,7	168,4	706,9	182,3	661,4	196,4	627,4	212,6	-	-	-	-
220.4	5	615,9	159,8	579,8	174,9	539,7	191,4	500,9	210,0	477,0	232,1	305,3	125,4
	6	634,5	161,6	596,2	176,9	552,8	193,3	512,7	211,7	488,2	234,0	312,4	126,4
	7	650,8	163,6	611,7	178,8	567,3	195,4	524,5	213,1	314,7	110,8	319,6	127,2
	10	684,6	167,6	637,8	182,1	590,3	198,4	548,6	216,3	326,2	111,7	303,8	125,1
	15	743,3	174,6	698,2	190,1	654,4	207,4	617,9	226,6	370,7	117,8	-	-
	18	800,7	181,9	747,6	197,0	697,7	213,4	665,0	233,5	-	-	-	-
240.4	5	678,9	176,7	636,2	193,2	587,2	211,6	545,4	232,7	515,3	256,4	273,1	118,0
	6	698,8	179,1	651,0	195,2	601,4	213,4	559,5	234,6	531,5	259,4	281,7	119,3
	7	715,0	181,2	669,2	197,8	616,6	215,6	569,6	235,7	319,0	108,4	288,7	120,1
	10	743,5	184,5	694,7	201,4	640,6	219,2	593,5	239,0	333,2	110,4	307,7	122,6
	15	813,1	192,8	760,9	210,4	711,5	229,1	669,2	250,7	374,7	115,3	-	-
	18	873,5	201,3	809,8	216,9	757,8	235,6	721,9	259,2	-	-	-	-

kWf = Cooling capacity in kW. The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers
kWe = Compressor power input in kW
To (°C) = Leaving internal exchanger water temperature (°C) - Performances in function of the inlet/outlet water temperature differential = 5°C
Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

Internal exchanger pressure drop

Acoustic configuration: super-silenced (EN)



The pressure drops are calculated considering a water temperature of 7°C

Q = water flow-rate [l/s]
DP = water side pressure drops [kPa]

The water flow-rate must be calculated with the following formula

Q [l/s] = kWf / (4,186 x DT)

kWf = Cooling capacity in kW.
DT = Temperature difference between inlet / outlet water

To the internal exchanger pressure drops must be added the pressure drops of the steel mesh mechanical strainer that must be placed on the water input line. It is a device compulsory for the correct unit operation, and it is available as Clivet option (see the HYDRONIC ASSEMBLY ACCESSORIES). If the mechanical filter is selected and installed by the Customer, it is forbidden the use of filters with the mesh pitch higher than 1,6 mm, because they can cause a bad unit operation and also its serious damaging.

DUAL CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: compressor soundproofing (SC)

Cooling performance

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		48		52	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
D140.4	5	840,7	185,7	800,9	202,7	752,6	221,3	698,7	241,6	624,3	279,1	368,3	153,5
	6	863,2	187,6	823,4	204,6	773,7	223,1	722,8	244,4	645,9	282,3	381,1	155,2
	7	895,0	190,5	851,8	207,4	800,0	225,6	746,7	247,0	677,4	285,2	399,7	156,9
	10	982,5	197,9	932,8	215,2	874,7	233,8	812,1	253,9	459,0	148,5	437,0	161,4
	15	1124,8	210,7	1056,7	227,4	989,2	246,2	920,2	266,4	524,5	151,8	-	-
	18	1220,3	220,3	1144,1	236,7	1069,7	255,1	999,0	275,7	569,4	157,1	-	-
D160.4	5	933,2	212,0	889,2	230,4	834,5	250,9	772,3	273,4	694,3	316,0	368,0	151,7
	6	958,7	214,7	912,2	233,3	854,9	253,6	793,3	275,8	721,4	320,0	382,3	153,6
	7	992,9	217,6	944,5	236,4	882,7	257,2	819,2	279,2	745,5	323,3	395,1	155,2
	10	1087,1	226,8	1032,3	245,4	966,1	265,9	894,7	288,5	459,6	149,1	438,2	161,4
	15	1230,3	241,5	1168,3	259,5	1091,1	280,3	1014,7	302,9	527,6	157,5	-	-
	18	1345,5	253,5	1266,2	272,8	1176,2	291,2	1100,6	314,1	572,3	163,3	-	-
D180.4	5	1061,9	241,0	1010,1	263,8	945,3	289,5	874,9	320,2	782,6	375,5	297,4	123,9
	6	1099,4	243,8	1044,9	266,9	976,8	292,9	899,0	322,1	813,2	378,2	309,0	124,8
	7	1126,8	246,0	1072,6	269,1	1007,6	296,1	928,4	325,1	838,8	382,4	318,7	126,2
	10	1245,9	254,9	1177,7	278,9	1096,1	305,5	1012,3	334,6	655,4	234,9	352,4	129,9
	15	1407,4	268,4	1328,7	292,7	1235,9	319,3	1144,1	349,3	800,9	234,0	-	-
	18	1524,0	278,6	1433,1	302,8	1332,6	329,2	1243,2	358,6	870,2	240,3	-	-
D200.4	5	1187,2	257,7	1123,9	282,2	1057,9	309,5	984,9	340,3	870,0	396,8	536,4	247,9
	6	1222,9	260,8	1165,8	285,4	1094,4	312,5	1010,7	343,0	896,3	399,9	555,7	248,0
	7	1253,3	263,5	1196,6	288,0	1123,0	314,9	1051,3	346,9	941,7	404,7	577,2	248,7
	10	1386,3	274,1	1317,3	298,8	1234,2	325,6	1142,7	355,5	674,2	228,1	637,8	251,1
	15	1572,7	288,9	1491,3	314,4	1394,1	341,6	1291,7	371,3	775,0	230,2	-	-
	18	1708,3	300,2	1615,0	325,3	1505,9	352,8	1399,8	382,6	845,1	237,4	-	-
D220.4	5	1302,1	288,6	1239,1	316,4	1158,6	346,7	1081,7	382,6	956,1	446,4	545,0	241,0
	6	1342,8	292,0	1279,3	319,8	1196,2	350,4	1110,2	385,3	988,7	450,0	563,6	243,0
	7	1383,4	295,4	1314,9	322,9	1231,7	353,7	1135,6	387,5	1009,3	452,5	575,3	244,3
	10	1461,8	301,7	1384,2	329,1	1291,3	359,4	1189,7	393,1	645,7	225,6	609,0	248,1
	15	1602,9	312,6	1517,3	340,9	1420,0	372,4	1324,0	407,1	754,7	219,9	-	-
	18	1724,0	323,1	1638,8	352,1	1527,9	383,2	1416,5	416,8	807,4	225,1	-	-
D240.4	5	1451,3	316,7	1384,7	346,8	1304,8	381,5	1201,3	419,5	1060,0	490,4	561,8	240,3
	6	1503,0	320,8	1431,6	351,4	1338,8	384,6	1232,8	422,5	1090,7	493,9	578,1	242,0
	7	1542,9	324,1	1464,3	354,0	1368,5	387,6	1256,3	424,7	1106,6	495,7	586,5	242,9
	10	1620,1	330,1	1535,4	360,2	1427,4	393,4	1317,6	430,5	768,6	221,6	618,2	247,9
	15	1779,9	342,7	1686,9	374,2	1594,6	410,1	1472,7	447,0	854,2	228,0	-	-
	18	1919,8	355,6	1830,4	387,0	1704,8	421,2	1574,4	459,1	913,2	234,1	-	-

kWf = Cooling capacity in kW. The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers
kWe = Compressor power input in kW
To (°C) = Leaving internal exchanger water temperature (°C) - Performances in function of the inlet/outlet water temperature differential = 5°C
Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

DUAL CONFIGURATION

PREMIUM VERSION

Acoustic configuration: compressor soundproofing (SC)

Cooling performance

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		45		50	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
D140.4	5	790,3	209,4	741,6	228,0	688,8	247,9	642,2	270,3	617,7	295,6	296,5	118,3
	6	811,5	212,2	760,7	230,7	706,5	250,4	658,0	272,4	639,4	299,1	306,9	119,6
	7	836,9	215,4	786,4	234,0	734,7	254,7	688,0	276,7	412,8	146,6	322,1	121,6
	10	917,0	225,7	855,1	244,0	794,3	264,0	748,7	285,8	452,4	151,3	347,5	126,9
	15	1029,9	241,8	962,2	259,7	896,4	279,4	865,8	303,4	519,5	160,8	-	-
	18	1111,6	253,9	1035,4	271,5	972,5	291,3	976,3	320,6	-	-	-	-
D160.4	5	886,0	234,9	832,3	254,8	774,1	275,8	723,1	299,6	689,5	325,0	337,9	146,3
	6	917,5	239,2	863,3	258,0	800,8	279,4	744,9	301,7	715,5	329,1	350,6	148,1
	7	939,9	241,9	889,8	262,5	829,6	285,1	771,3	305,6	424,2	140,6	368,8	150,3
	10	1030,3	254,7	963,8	275,5	896,7	296,4	843,7	318,8	466,1	147,5	440,0	161,0
	15	1161,1	276,5	1077,4	294,0	1011,0	314,5	963,4	336,7	529,9	154,9	-	-
	18	1252,9	289,8	1173,5	308,2	1101,2	327,9	1079,6	355,6	-	-	-	-
D180.4	5	1010,3	266,9	947,5	291,8	880,0	318,7	813,7	349,3	773,7	384,9	294,0	115,5
	6	1035,3	270,2	978,2	295,5	907,2	322,6	845,4	353,5	805,6	391,7	306,1	117,5
	7	1068,8	273,9	1002,2	298,6	940,6	327,2	869,7	356,5	591,4	231,7	314,9	118,5
	10	1164,5	286,2	1095,0	311,0	1016,7	338,0	952,6	367,4	650,6	237,1	356,6	123,0
	15	1306,4	303,5	1218,2	327,9	1141,4	356,1	1092,3	389,2	742,7	253,0	-	-
	18	1407,9	318,1	1314,3	342,6	1236,9	368,6	1205,1	404,9	-	-	-	-
D200.4	5	1095,6	285,1	1030,1	312,1	962,0	339,0	891,1	369,7	839,5	406,0	528,9	239,6
	6	1125,1	288,6	1058,2	314,5	989,7	344,0	918,6	375,3	863,6	411,0	544,1	242,5
	7	1151,9	293,6	1092,4	318,9	1015,8	346,9	942,1	377,6	612,4	222,8	564,4	244,7
	10	1245,8	305,3	1177,8	332,0	1092,8	357,8	1019,6	387,8	658,0	228,1	617,6	252,9
	15	1422,7	326,0	1325,0	352,7	1236,2	379,3	1162,2	410,4	755,4	242,1	-	-
	18	1511,3	341,1	1414,0	364,4	1333,5	392,7	1260,2	423,9	-	-	-	-
D220.4	5	1254,5	316,6	1184,0	345,3	1100,8	377,1	1017,2	412,7	949,7	454,2	541,4	240,7
	6	1290,7	321,4	1212,8	349,2	1128,2	380,6	1049,3	416,9	979,8	458,9	558,5	243,2
	7	1324,4	324,9	1243,4	352,9	1157,1	384,4	1071,0	419,5	631,9	218,1	570,0	244,7
	10	1389,4	332,5	1303,4	360,2	1206,6	391,5	1116,3	425,8	660,3	221,2	611,6	246,2
	15	1520,1	347,7	1426,5	376,8	1331,3	408,7	1251,4	444,6	738,3	231,2	-	-
	18	1628,0	362,0	1529,5	391,1	1425,4	421,9	1342,3	457,6	-	-	-	-
D240.4	5	1375,6	357,8	1293,3	388,7	1197,0	424,0	1109,3	464,3	1037,2	513,2	570,5	241,2
	6	1410,7	361,6	1324,2	392,8	1232,3	428,6	1138,1	468,1	1064,2	517,4	585,3	243,2
	7	1447,7	366,4	1353,9	397,1	1253,5	431,7	1156,7	470,3	647,8	216,3	594,9	244,3
	10	1511,0	373,4	1411,3	405,2	1303,1	439,5	1206,5	476,8	673,0	220,6	618,6	247,2
	15	1660,6	393,4	1552,1	425,1	1452,3	461,7	1358,3	500,3	760,6	230,1	-	-
	18	1767,7	408,4	1651,6	440,1	1548,3	476,0	1466,4	516,5	-	-	-	-

kWf = Cooling capacity in kW. The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers
kWe = Compressor power input in kW
To (°C) = Leaving internal exchanger water temperature (°C) - Performances in function of the inlet/outlet water temperature differential = 5°C
Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

DUAL CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: super-silenced (EN)

Cooling performance

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		48		52	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
D140.4	5	839,9	185,4	799,8	202,5	751,8	221,1	697,5	241,6	622,0	280,8	292,3	120,7
	6	862,3	187,3	822,2	204,4	772,4	223,1	722,1	244,2	641,5	283,1	301,5	121,8
	7	894,1	190,1	850,9	207,0	798,8	225,4	741,0	246,2	675,8	286,8	317,6	123,3
	10	981,1	197,5	932,0	214,7	873,8	233,4	810,2	253,9	457,6	149,1	347,1	127,3
	15	1123,4	209,9	1055,0	226,7	994,0	246,6	918,5	266,2	523,6	151,7	-	-
	18	1225,3	219,1	1150,7	236,7	1071,7	254,9	996,4	275,5	567,9	157,0	-	-
D160.4	5	925,2	213,6	878,9	232,7	822,8	253,6	760,8	276,3	691,2	321,1	366,3	154,1
	6	950,0	216,3	901,3	235,6	843,0	256,3	787,6	279,1	720,0	324,8	381,6	155,9
	7	983,2	219,3	932,6	238,7	871,7	259,2	811,4	283,2	741,7	329,6	393,1	158,2
	10	1075,4	228,2	1017,3	247,7	951,1	268,6	882,2	291,5	459,2	149,1	438,0	162,0
	15	1225,0	243,6	1152,6	263,6	1077,3	284,1	1006,3	306,8	523,3	159,5	-	-
	18	1324,5	254,5	1246,2	274,1	1161,5	294,8	1093,2	318,0	568,5	165,4	-	-
D180.4	5	1065,1	240,0	1012,8	263,1	945,9	289,5	879,4	318,9	784,0	374,1	235,2	149,6
	6	1102,4	243,1	1047,8	266,2	981,6	291,5	904,0	320,6	814,4	376,8	244,3	150,7
	7	1130,8	245,0	1073,3	269,1	1010,9	295,3	932,4	324,0	840,7	379,5	252,2	151,8
	10	1248,9	254,4	1181,3	278,2	1100,2	304,7	1019,2	332,6	657,6	233,9	376,8	114,3
	15	1413,5	267,3	1333,7	292,0	1243,1	318,1	1151,5	347,4	806,0	225,8	-	-
	18	1531,3	277,8	1440,3	302,0	1339,2	328,4	1250,1	357,0	875,1	232,0	-	-
D200.4	5	1171,3	266,2	1110,2	292,1	1048,7	319,4	964,6	350,7	858,2	408,9	377,6	151,3
	6	1210,4	270,5	1143,2	294,0	1074,5	322,6	990,0	353,3	884,7	412,0	389,3	152,5
	7	1245,1	272,4	1181,3	297,5	1100,8	325,7	1021,6	356,9	918,4	415,6	404,1	153,8
	10	1348,2	282,7	1277,8	307,6	1188,6	336,2	1099,4	366,3	662,3	230,9	443,1	158,4
	15	1533,6	300,7	1451,7	325,3	1350,1	353,4	1256,2	382,9	753,7	241,2	-	-
	18	1647,5	311,0	1551,7	336,8	1444,4	364,2	1344,2	395,3	806,5	249,0	-	-
D220.4	5	1297,1	291,8	1234,9	319,4	1160,2	350,4	1075,8	385,5	950,9	451,4	542,0	243,8
	6	1337,7	295,4	1274,2	323,1	1189,8	353,6	1104,6	388,3	980,0	455,2	558,6	245,8
	7	1377,5	298,9	1308,9	326,6	1227,3	357,3	1132,5	391,7	1002,1	457,8	571,2	247,2
	10	1455,2	305,6	1377,8	332,9	1283,6	363,3	1184,2	397,2	646,7	225,6	605,5	249,5
	15	1586,7	316,3	1513,9	346,0	1421,7	378,1	1316,9	412,1	724,3	234,9	-	-
	18	1706,8	327,8	1629,6	357,7	1517,4	388,1	1415,8	423,0	778,7	241,1	-	-
D240.4	5	1449,0	314,7	1379,8	345,7	1292,9	379,1	1201,6	417,3	1058,8	490,4	561,2	240,3
	6	1489,0	317,9	1419,7	347,7	1328,4	381,8	1234,8	419,8	1084,4	492,1	574,7	241,1
	7	1540,7	322,6	1466,2	352,7	1364,9	386,0	1259,7	423,1	1109,1	493,7	587,8	241,9
	10	1613,5	328,6	1528,8	358,7	1431,0	392,0	1315,1	428,1	666,7	220,8	616,0	244,2
	15	1772,1	341,2	1688,7	372,9	1577,5	405,4	1462,1	443,0	745,7	225,9	-	-
	18	1898,7	352,4	1801,4	383,7	1694,8	418,3	1573,9	456,1	802,7	232,6	-	-

kWf = Cooling capacity in kW. The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers
kWe = Compressor power input in kW
To (°C) = Leaving internal exchanger water temperature (°C) - Performances in function of the inlet/outlet water temperature differential = 5°C
Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

DUAL CONFIGURATION

PREMIUM VERSION

Acoustic configuration: super-silenced (EN)

Cooling performance

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		45		50	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
D140.4	5	796,3	205,4	745,4	222,6	699,1	243,0	647,7	263,8	616,1	287,9	295,8	118,1
	6	817,1	208,0	769,9	225,8	716,8	245,4	669,0	267,2	635,8	291,1	305,2	119,3
	7	843,5	211,1	795,0	229,2	745,1	249,4	695,3	271,0	424,1	143,6	322,7	121,7
	10	917,6	220,4	865,5	239,4	804,7	258,3	756,1	279,2	458,8	148,7	349,7	125,0
	15	1035,6	236,4	969,5	254,2	907,8	273,9	868,3	296,6	529,7	157,2	-	-
	18	1113,1	247,6	1042,7	265,4	981,1	285,0	960,1	310,7	-	-	-	-
D160.4	5	870,8	237,3	813,9	258,3	759,5	278,9	712,2	303,0	696,8	330,9	355,4	155,5
	6	892,8	240,2	834,7	261,3	778,7	281,8	732,4	306,5	723,0	334,5	368,7	157,2
	7	920,9	244,5	866,6	265,8	808,3	287,0	763,8	310,4	420,1	145,9	395,8	162,5
	10	1002,4	256,1	935,0	275,9	873,0	298,3	832,5	322,9	458,6	149,5	438,2	165,2
	15	1114,1	275,2	1047,8	295,1	985,4	315,6	995,3	349,3	547,4	164,2	-	-
	18	1198,2	286,6	1124,6	306,7	1076,8	330,3	1092,0	352,3	-	-	-	-
D180.4	5	1022,9	262,4	962,0	286,9	894,6	313,6	828,5	344,2	778,9	380,5	303,8	114,1
	6	1048,4	265,7	986,3	289,4	922,1	317,5	849,8	347,2	803,4	383,8	313,3	115,1
	7	1080,5	269,9	1018,3	293,2	944,7	320,4	883,9	351,2	609,9	228,3	334,3	117,1
	10	1181,6	281,1	1107,3	305,5	1031,0	333,1	956,7	361,2	657,8	233,9	359,2	121,8
	15	1323,8	299,0	1237,6	323,0	1153,3	349,8	1098,5	382,2	758,0	248,4	-	-
	18	1430,7	312,8	1336,7	336,9	1243,9	362,2	1200,9	398,4	-	-	-	-
D200.4	5	1090,3	285,1	1031,2	310,3	961,5	340,9	887,2	370,2	838,8	406,0	562,0	215,2
	6	1126,9	288,7	1057,6	313,5	989,9	342,7	914,0	375,3	863,2	411,0	578,3	217,8
	7	1150,1	292,0	1090,1	317,9	1013,2	346,3	943,7	379,8	575,7	250,7	600,0	219,8
	10	1242,8	303,7	1169,8	330,1	1099,3	357,9	1014,6	388,3	616,6	254,7	657,4	228,1
	15	1415,4	324,5	1320,7	350,9	1240,8	378,4	1167,5	411,9	712,2	271,9	-	-
	18	1513,3	336,8	1413,9	364,5	1322,8	392,7	1254,8	425,2	-	-	-	-
D220.4	5	1231,8	319,5	1159,7	349,8	1079,5	382,7	1001,9	420,0	953,9	464,3	610,5	250,7
	6	1269,1	323,3	1192,3	353,8	1105,6	386,5	1025,5	423,3	976,4	468,0	624,9	252,7
	7	1301,6	327,1	1223,5	357,6	1134,5	390,7	1049,0	426,2	629,4	221,6	639,2	254,4
	10	1369,3	335,1	1275,6	364,2	1180,5	396,8	1097,1	432,6	652,4	223,4	607,7	250,3
	15	1486,7	349,3	1396,4	380,2	1308,7	414,8	1235,7	453,2	741,4	235,7	-	-
	18	1601,4	363,8	1495,3	393,9	1395,4	426,8	1330,1	466,9	-	-	-	-
D240.4	5	1357,8	353,5	1272,4	386,4	1174,4	423,2	1090,9	465,4	1030,7	512,9	546,3	235,9
	6	1397,6	358,1	1301,9	390,5	1202,8	426,8	1119,1	469,1	1063,0	518,8	563,4	238,6
	7	1430,1	362,5	1338,3	395,6	1233,3	431,2	1139,2	471,3	637,9	216,8	577,3	240,2
	10	1487,0	369,0	1389,4	402,7	1281,2	438,3	1187,0	478,0	666,5	220,8	615,4	245,2
	15	1626,2	385,7	1521,8	420,8	1422,9	458,1	1338,4	501,3	749,5	230,6	-	-
	18	1747,0	402,6	1619,6	433,9	1515,6	471,2	1443,7	518,4	-	-	-	-

kWf = Cooling capacity in kW. The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers
kWe = Compressor power input in kW
To (°C) = Leaving internal exchanger water temperature (°C) - Performances in function of the inlet/outlet water temperature differential = 5°C
Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

TRIPLE CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: compressor soundproofing (SC)

Cooling performance

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		48		52	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
T180.4	5	1592,8	361,5	1515,1	395,7	1418,0	434,2	1312,4	480,3	1173,9	563,3	446,1	185,9
	6	1649,1	365,7	1567,4	400,3	1465,2	439,3	1348,5	483,1	1219,7	567,4	463,5	187,2
	7	1690,2	369,0	1608,8	403,7	1511,5	444,2	1392,6	487,6	1258,2	573,6	478,1	189,3
	10	1868,9	382,4	1766,6	418,4	1644,1	458,3	1518,4	501,9	983,1	352,4	528,7	194,8
	15	2111,1	402,7	1993,0	439,1	1853,9	478,9	1716,2	524,0	1201,3	351,1	-	-
	18	2286,0	417,9	2149,7	454,2	1998,9	493,8	1864,8	537,9	1305,4	360,4	-	-
T200.4	5	1780,8	386,5	1685,9	423,3	1586,8	464,3	1477,3	510,5	1305,1	595,1	804,6	371,8
	6	1834,4	391,1	1748,7	428,1	1641,6	468,8	1516,1	514,5	1344,4	599,9	833,5	371,9
	7	1879,9	395,2	1794,9	432,0	1684,4	472,4	1576,9	520,4	1412,5	607,0	865,8	373,0
	10	2079,4	411,1	1975,9	448,2	1851,3	488,5	1714,0	533,2	1011,3	342,1	956,6	376,6
	15	2359,1	433,3	2237,0	471,6	2091,1	512,5	1937,6	557,0	1162,6	345,3	-	-
	18	2562,5	450,3	2422,5	488,0	2258,8	529,2	2099,7	573,8	1267,6	356,0	-	-
T220.4	5	1953,1	432,9	1858,7	474,7	1738,0	520,1	1622,5	573,9	1434,1	669,6	817,4	361,6
	6	2014,1	438,0	1919,0	479,6	1794,3	525,5	1665,3	577,9	1483,0	675,0	845,3	364,5
	7	2075,1	443,1	1972,3	484,4	1847,5	530,6	1703,3	581,3	1514,0	678,7	863,0	366,5
	10	2192,7	452,5	2076,4	493,7	1936,9	539,1	1784,6	589,6	968,5	338,5	913,6	372,1
	15	2404,3	468,8	2275,9	511,3	2130,0	558,5	1986,0	610,7	1132,0	329,8	-	-
	18	2586,0	484,7	2458,2	528,2	2291,9	574,8	2124,7	625,2	1211,1	337,6	-	-
T240.4	5	2177,0	475,1	2077,1	520,2	1957,1	572,2	1802,0	629,3	1590,0	735,6	842,7	360,4
	6	2254,5	481,2	2147,3	527,0	2008,2	577,0	1849,3	633,8	1636,0	740,9	867,1	363,0
	7	2314,4	486,1	2196,5	531,0	2052,7	581,4	1884,5	637,0	1659,8	743,5	879,7	364,3
	10	2430,2	495,2	2303,1	540,3	2141,0	590,1	1976,5	645,7	1153,0	332,4	927,2	371,8
	15	2669,9	514,0	2530,3	561,4	2392,0	615,2	2209,1	670,5	1281,3	342,0	-	-
	18	2879,7	533,5	2745,7	580,5	2557,1	631,8	2361,7	688,6	1369,8	351,2	-	-

kWf = Cooling capacity in kW. The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers
kWe = Compressor power input in kW
To (°C) = Leaving internal exchanger water temperature (°C) - Performances in function of the inlet/outlet water temperature differential = 5°C
Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

TRIPLE CONFIGURATION

PREMIUM VERSION

Acoustic configuration: compressor soundproofing (SC)

Cooling performance

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		45		50	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
T180.4	5	1515,5	400,3	1421,3	437,7	1320,0	478,1	1220,6	523,9	1160,6	577,3	441,0	173,2
	6	1552,9	405,2	1467,3	443,2	1360,9	483,8	1268,1	530,2	1208,4	587,6	459,2	176,3
	7	1603,1	410,9	1503,3	447,9	1410,9	490,8	1304,6	534,7	887,1	347,6	472,4	177,8
	10	1746,8	429,3	1642,5	466,6	1525,0	507,1	1428,9	551,2	975,9	355,7	534,9	184,5
	15	1959,7	455,3	1827,3	491,9	1712,1	534,2	1638,4	583,7	1114,1	379,4	-	-
	18	2111,8	477,2	1971,5	513,9	1855,3	552,9	1807,7	607,3	-	-	-	-
T200.4	5	1643,4	427,7	1545,1	468,1	1443,1	508,5	1336,6	554,5	1259,3	609,1	793,4	359,3
	6	1687,7	432,8	1587,2	471,8	1484,5	516,1	1377,8	563,0	1295,4	616,5	816,1	363,8
	7	1727,8	440,4	1638,6	478,3	1523,7	520,4	1413,2	566,4	918,5	334,2	846,6	367,1
	10	1868,7	457,9	1766,7	498,0	1639,1	536,7	1529,3	581,7	986,9	342,1	926,3	379,4
	15	2134,1	489,1	1987,4	529,0	1854,3	569,0	1743,2	615,5	1133,1	363,2	-	-
	18	2267,0	511,7	2121,0	546,5	2000,3	589,1	1890,3	635,9	-	-	-	-
T220.4	5	1881,7	474,9	1776,0	518,0	1651,2	565,6	1525,8	619,0	1424,6	681,4	812,0	361,1
	6	1936,1	482,1	1819,2	523,9	1692,3	570,9	1574,0	625,4	1469,7	688,4	837,7	364,8
	7	1986,6	487,4	1865,0	529,3	1735,6	576,6	1606,5	629,2	947,9	327,2	855,0	367,1
	10	2084,2	498,7	1955,1	540,3	1810,0	587,2	1674,4	638,7	990,5	331,8	917,4	369,4
	15	2280,2	521,5	2139,7	565,3	1997,0	613,1	1877,1	666,8	1107,5	346,8	-	-
	18	2442,0	542,9	2294,3	586,7	2138,1	632,8	2013,4	686,4	-	-	-	-
T240.4	5	2063,3	536,8	1940,0	583,0	1795,6	636,1	1664,0	696,4	1555,9	769,8	855,7	361,8
	6	2116,0	542,5	1986,2	589,2	1848,5	642,9	1707,2	702,1	1596,3	776,0	877,9	364,7
	7	2171,6	549,6	2030,9	595,6	1880,3	647,5	1735,1	705,5	971,7	324,5	892,3	366,5
	10	2266,5	560,2	2117,0	607,8	1954,6	659,2	1809,8	715,2	1009,5	330,9	927,8	370,9
	15	2490,9	590,0	2328,2	637,7	2178,5	692,5	2037,4	750,4	1140,9	345,2	-	-
	18	2651,5	612,6	2477,5	660,1	2322,5	714,0	2199,5	774,8	-	-	-	-

kWf = Cooling capacity in kW. The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers
kWe = Compressor power input in kW
To (°C) = Leaving internal exchanger water temperature (°C) - Performances in function of the inlet/outlet water temperature differential = 5°C
Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

TRIPLE CONFIGURATION

EXCELLENCE VERSION

Acoustic configuration: super-silenced (EN)

Cooling performance

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		48		52	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
T180.4	5	1597,7	360,1	1519,1	394,6	1418,9	434,2	1319,0	478,3	1175,9	561,1	352,8	224,5
	6	1653,6	364,6	1571,7	399,2	1472,4	437,3	1356,0	480,9	1221,6	565,2	366,5	226,1
	7	1696,1	367,5	1610,0	403,7	1516,4	442,9	1398,5	486,0	1261,0	569,3	378,3	227,7
	10	1873,3	381,5	1772,0	417,3	1650,3	457,0	1528,8	498,9	986,3	350,9	565,2	171,5
	15	2120,2	401,0	2000,5	438,0	1864,7	477,1	1727,2	521,1	1209,0	338,7	-	-
	18	2297,0	416,7	2160,5	453,0	2008,8	492,5	1875,2	535,4	1312,6	348,0	-	-
T200.4	5	1757,0	399,3	1665,2	438,2	1573,1	479,1	1446,8	526,0	1287,3	613,3	566,4	226,9
	6	1815,7	405,7	1714,9	441,0	1611,8	483,8	1485,1	529,9	1327,0	618,0	583,9	228,7
	7	1867,6	408,7	1772,0	446,2	1651,2	488,5	1532,4	535,4	1377,6	623,4	606,1	230,6
	10	2022,3	424,1	1916,8	461,4	1782,9	504,2	1649,2	549,4	993,5	346,3	664,7	237,6
	15	2300,4	451,0	2177,6	488,0	2025,2	530,1	1884,3	574,4	1130,6	361,8	-	-
	18	2471,3	466,5	2327,5	505,2	2166,6	546,3	2016,4	592,9	1209,8	373,5	-	-
T220.4	5	1945,7	437,8	1852,3	479,1	1740,3	525,7	1613,7	578,3	1426,4	677,2	813,0	365,7
	6	2006,5	443,1	1911,3	484,7	1784,7	530,4	1656,9	582,4	1470,0	682,7	837,9	368,7
	7	2066,2	448,4	1963,4	489,8	1841,0	535,9	1698,7	587,5	1503,2	686,6	856,8	370,8
	10	2182,8	458,4	2066,8	499,4	1925,4	545,0	1776,3	595,8	970,0	338,5	908,2	374,2
	15	2380,0	474,5	2270,9	518,9	2132,6	567,2	1975,4	618,2	1086,5	352,4	-	-
	18	2560,2	491,6	2444,3	536,5	2276,1	582,2	2123,8	634,5	1168,1	361,6	-	-
T240.4	5	2173,5	472,0	2069,7	518,6	1939,4	568,7	1802,4	625,9	1588,2	735,6	841,7	360,5
	6	2233,5	476,8	2129,5	521,6	1992,6	572,6	1852,1	629,7	1626,6	738,1	862,1	361,7
	7	2311,0	483,9	2199,4	529,1	2047,4	579,0	1889,6	634,6	1663,6	740,6	881,7	362,9
	10	2420,2	493,0	2293,3	538,0	2146,5	587,9	1972,7	642,1	1000,0	331,2	924,0	366,3
	15	2658,1	511,8	2533,1	559,3	2366,3	608,1	2193,1	664,5	1118,5	338,9	-	-
	18	2848,0	528,6	2702,1	575,6	2542,3	627,4	2360,8	684,2	1204,0	348,9	-	-

kWf = Cooling capacity in kW. The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers
kWe = Compressor power input in kW
To (°C) = Leaving internal exchanger water temperature (°C) - Performances in function of the inlet/outlet water temperature differential = 5°C
Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

TRIPLE CONFIGURATION

PREMIUM VERSION

Acoustic configuration: super-silenced (EN)

Cooling performance

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		45		50	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
T180.4	5	1534,4	393,5	1442,9	430,4	1341,8	470,4	1242,8	516,3	1168,3	570,7	455,6	171,2
	6	1572,7	398,6	1479,5	434,1	1383,1	476,3	1274,7	520,8	1205,0	575,7	470,0	172,7
	7	1620,8	404,8	1527,5	439,7	1417,1	480,5	1325,8	526,8	914,8	342,4	501,4	175,7
	10	1772,4	421,7	1661,0	458,2	1546,5	499,7	1435,1	541,8	986,6	350,9	538,8	182,7
	15	1985,7	448,5	1856,4	484,5	1730,0	524,7	1647,7	573,3	1136,9	372,6	-	-
	18	2146,0	469,2	2005,0	505,3	1865,9	543,3	1801,3	597,6	-	-	-	-
T200.4	5	1635,5	427,7	1546,7	465,4	1442,2	511,4	1330,7	555,3	1258,3	609,1	843,0	322,8
	6	1690,4	433,0	1586,4	470,3	1484,8	514,1	1371,0	562,9	1294,7	616,5	867,5	326,8
	7	1725,2	438,0	1635,1	476,8	1519,9	519,5	1415,6	569,7	863,5	376,0	900,0	329,8
	10	1864,2	455,6	1754,8	495,2	1648,9	536,9	1521,9	582,5	924,9	382,1	986,0	342,1
	15	2123,1	486,8	1981,0	526,4	1861,2	567,6	1751,2	617,9	1068,2	407,8	-	-
	18	2270,0	505,2	2120,8	546,8	1984,2	589,1	1882,3	637,9	-	-	-	-
T220.4	5	1847,7	479,3	1739,5	524,6	1619,2	574,1	1502,8	630,0	1430,9	696,4	915,8	376,1
	6	1903,6	484,9	1788,5	530,6	1658,4	579,8	1538,2	635,0	1464,6	702,0	937,3	379,1
	7	1952,5	490,7	1835,2	536,4	1701,8	586,1	1573,5	639,3	944,1	332,4	958,8	381,6
	10	2053,9	502,7	1913,5	546,3	1770,8	595,2	1645,7	648,9	978,6	335,1	911,5	375,4
	15	2230,0	523,9	2094,7	570,3	1963,1	622,2	1853,6	679,8	1112,1	353,5	-	-
	18	2402,1	545,7	2242,9	590,9	2093,2	640,1	1995,1	700,4	-	-	-	-
T240.4	5	2036,7	530,2	1908,7	579,5	1761,7	634,8	1636,3	698,0	1546,0	769,3	819,4	353,9
	6	2096,4	537,2	1952,9	585,7	1804,2	640,3	1678,6	703,7	1594,5	778,1	845,1	357,9
	7	2145,1	543,7	2007,5	593,5	1849,9	646,8	1708,8	707,0	956,9	325,2	866,0	360,3
	10	2230,5	553,6	2084,1	604,1	1921,7	657,5	1780,5	717,0	999,7	331,2	923,1	367,8
	15	2439,3	578,5	2282,7	631,1	2134,4	687,2	2007,5	752,0	1124,2	345,9	-	-
	18	2620,5	603,9	2429,4	650,8	2273,3	706,8	2165,6	777,7	-	-	-	-

kWf = Cooling capacity in kW. The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers
kWe = Compressor power input in kW
To (°C) = Leaving internal exchanger water temperature (°C) - Performances in function of the inlet/outlet water temperature differential = 5°C
Data calculated considering an equivalent distance between the internal and the external section of 7,5 m.

Configurations

Consult the "Option compatibility" section.

B - Low water temperature (Brine)

Configuration also known as "Brine". Enables an "unfreezable" solution to be cooled (for example, water and ethylene glycol in suitable quantities) up to a temperature of between +4°C and –8°C. It includes:

- suitable exchangers with extra-thick closed-cell insulation
- electronic expansion valve, functional calibration and safety devices suitable for particular uses.

During the selection phase it is necessary to indicate the required operating type, the unit will be optimised on the basis of this: - Unit with single operating set-point (only at low temperature) - Unit with double operating set-point

The unit in this configuration has a different operation range, indicated in the operating range section.

In low temperature operation, some staging steps could not be available.

The glycol concentration must be chosen based on the minimum temperature the water can reach. The presence of glycol influences pressure drops on the water side and the unit's output as indicated in the table reporting the "correction factors for use with glycol".

D - Partial energy recovery

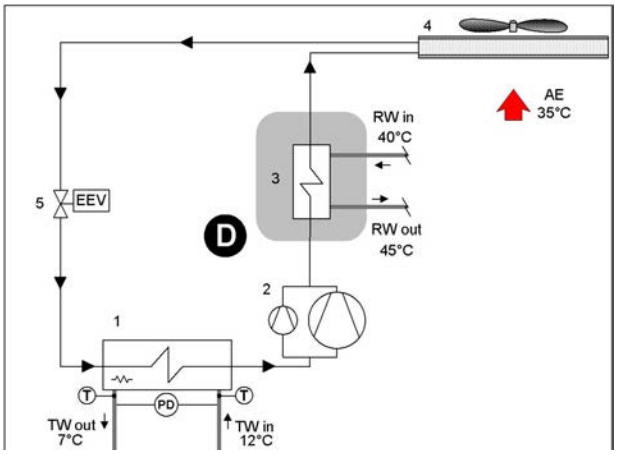
A configuration which enables the production of hot water free-of-charge while operating in the cooling mode, thanks to the partial recovery of condensation heat that would otherwise be disposed of into the external heat source.

This option is also known as "desuperheater". It is made up of a Inox 316 stainless steel brazed plate heat exchangers, suitable for recovering a part of the capacity dispersed by the unit (the dispersed heating capacity is equal to the sum of the cooling capacity and the electrical input capacity of the compressors).

The partial recovery device is considered to be operating when it is powered by the water flow which is to be heated. This condition improves the unit performance, since it reduces the condensation temperature: in nominal conditions the cooling capacity increases indicatively by 3.2% and the power input of the compressors is reduced by 3.6%.

When the temperature of the water to be heated is particularly low, it is opportune to insert a flow regulation valve in the hydraulic circuit, to maintain the recovery output temperature at higher than 35°C and thus avoid refrigerant condensation in the partial energy recovery device.

The power delivered by the partial recovery is 20% of the thermal power dissipation (cooling + electrical power absorbed by the compressors)



D - Partial recovery device

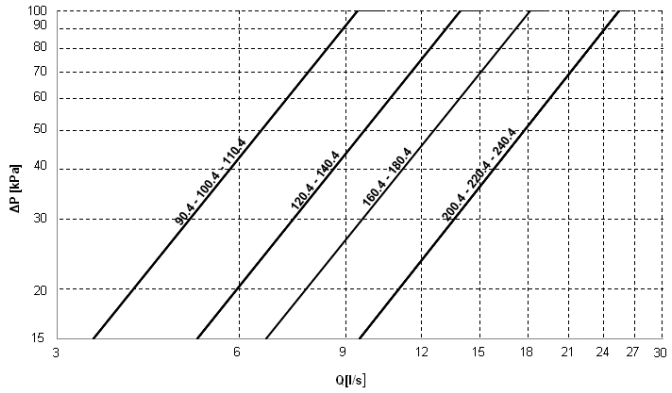
1 - Internal exchanger
2 - Compressors
3 - Recovery exchanger
4 - External exchanger
5 - Expansion electronic valve

TW in chilled water inlet
TW out chilled water outlet

RW in - Recovery water input
RW out - Recovery water output

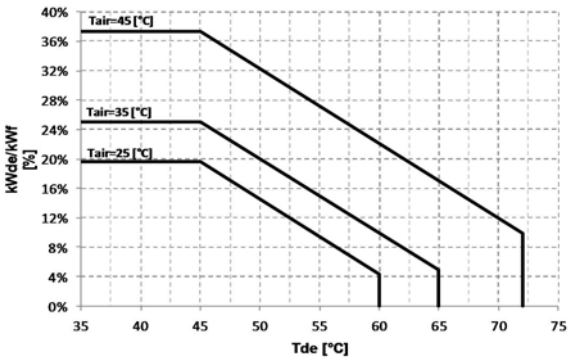
T - Temperature probe
PD - Differential pressure switch
AE Outdoor air

Pressure drops of partial energy recovery exchanger



Q = water flow-rate[l/s]
DP = water side pressure drops (kPa)

Partial recovery heating capacity



kWde/kWf = Heat recovered/Cooling capacity [%]
Tde = Heat recovering device outlet water temperature [°C]

HydroPack

2PM/3PM - Hydronic assembly user side with 2/3 ON/OFF pumps

Option supplied on the unit. Pumping unit consisting of two or three parallel electric pumps with a self-adaptive modular activation logic.

It enables the automatic reduction of the liquid flow rate in critical conditions, avoiding blocks due to overloading and consequential intervention work by specialised technical personnel.

Centrifugal electric pump with impeller made with AISI 304 steel and AISI 304 stainless steel body or grey cast iron (depending on models).

Mechanical seal using ceramic, carbon and EPDM elastomer components.

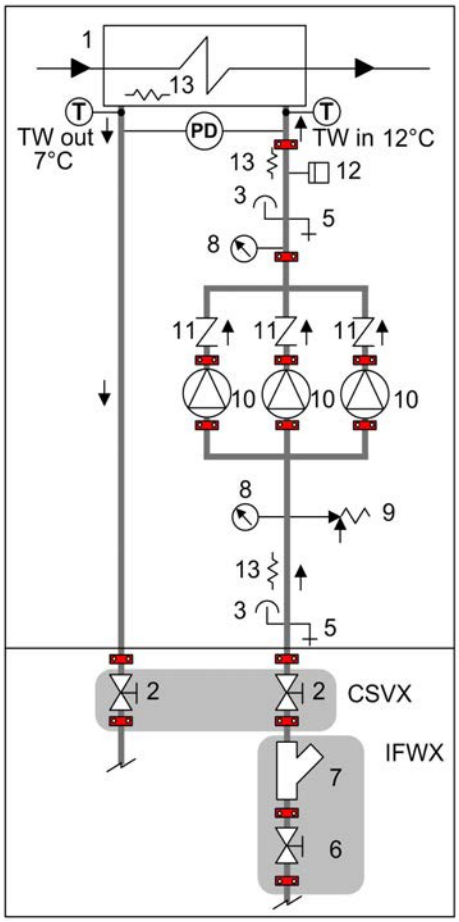
Three-phase electric motor with IP44-protection. Complete with thermoformed insulated casing, quick connections with insulated casing,non return valve, safety valve, pressure gauges, system load safety pressure switch, stainless steel antifreeze immersion heaters located at the return and supply point.

The various models which are available can be differentiated by the system available pressure.

The 2PM / 3PM option is supplied with a kit made up of 2 quick blind connections, for the removal of one pump in case of maintenance.

Provided with hydraulic interceptions to the outside of the unit (option 'CSVX - A pair of manually operated shut-off valves') to facilitate any major maintenance operations

HYDROPACK



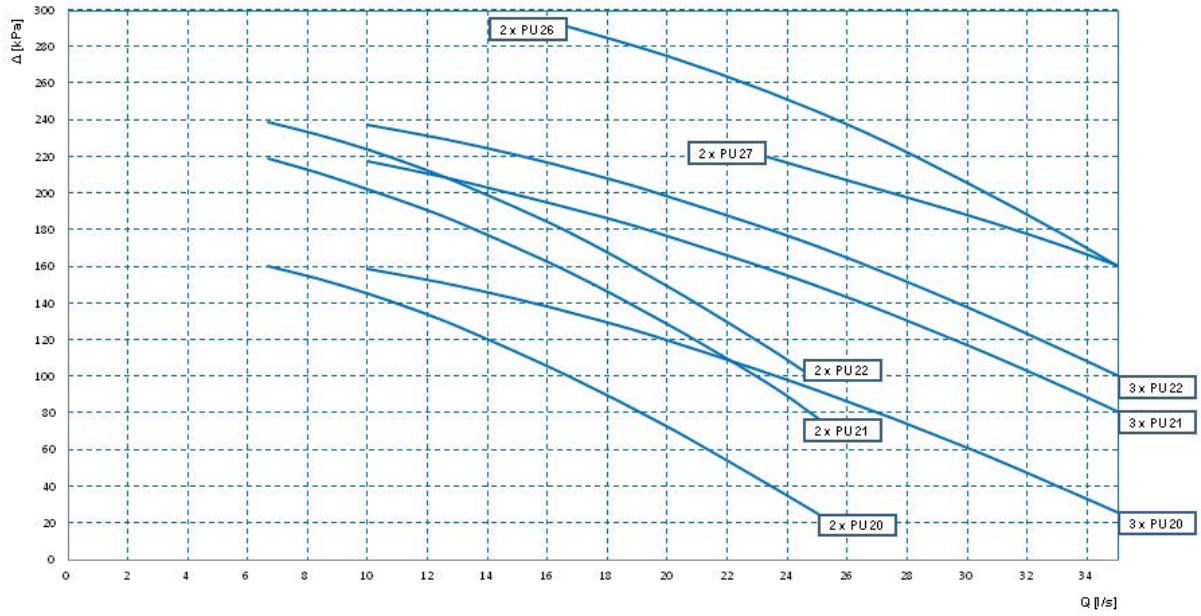
Illustrative diagram referred to unit size 240.4 with Hydropack with no. 3 of pumps

1 - Internal exchanger
2 - Cutoff valve
3 - Purge valve
5 - Draw off cock
6 - Cutoff valve with quick joints
7 - Steel mesh strainer water side
8 - Manometer
9 - Safety valve (6 Bar)
10 - Packaged electric pump with high efficiency impeller
11 - Non return valve
12 - System safety pressure switch (prevents the pumps from operating if no water is present)
13 - Antifreeze heater
T - Temperature probe
PD - Differential pressure switch
TW in chilled water inlet
TW out chilled water outlet
IFWX = Steel mesh strainer water side
CSVX - Couple of manual shut-off valves

The grey area indicates further optional components.

2PM/3PM option performances (HydroPack)

Head



Q[l/s]= water flow rate
Δ [kPa] = pump head
PU2* = 2-pole pump

Caution: to obtain the available pressure values, you need to subtract the following from the head values represented in these diagrams:

- User side exchanger pressure drops
- IFVX accessory –Steel mesh filter on the water side (where applicable)

Hydropack electrical data

PUMP	Rated power [kW]	Nominal power [A]
2×PU20	2×1.8	2×3.4
2×PU21	2×2.9	2×4.8
2×PU22	2×3.3	2×5.6
2×PU26	2×5.5	2×10.4

PUMP	Rated power [kW]	Nominal power [A]
2×PU27	2×5.5	2×10.4
3×PU20	3×1.8	3×3.4
3×PU21	3×2.9	3×4.8
3×PU22	3×3.3	3×5.6

2PMV/3PMV - Hydronic assembly user side with 2/3 inverter pumps

Option supplied on the unit. Pumping unit consisting of parallel electric pumps and controlled by inverter to adapt to the different application conditions.

It enables the automatic reduction of the liquid flow rate in critical conditions, avoiding blocks due to overloading and consequential intervention work by specialised technical personnel.

Through the inverter calibration, standard supplied, it is possible to adapt the pump flow-rate/head to the installation feature.

Centrifugal electric pump with impeller made with AISI 304 steel and AISI 304 stainless steel body or grey cast iron (depending on models).

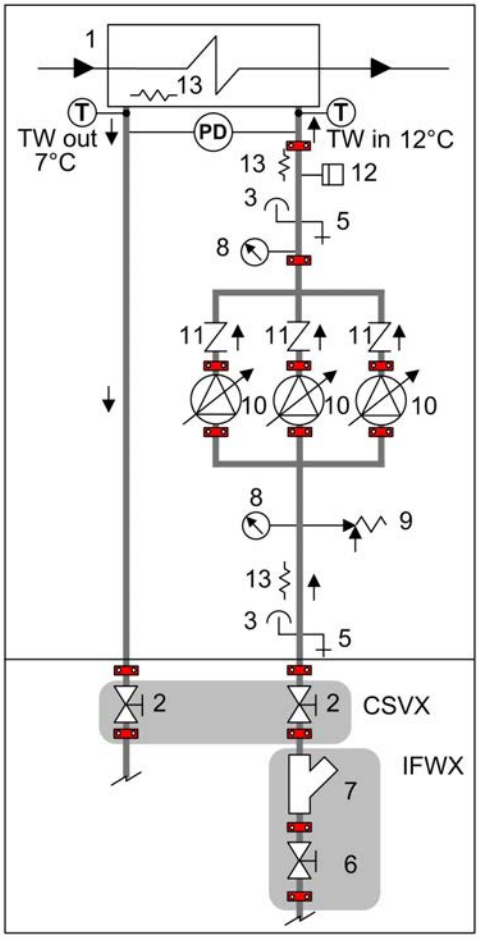
Mechanical seal using ceramic, carbon and EPDM elastomer components.

Three-phase electric motor with IP44-protection. Complete with thermoformed insulated casing, quick connections with insulated casing,non return valve, safety valve, pressure gauges, system load safety pressure switch, stainless steel antifreeze immersion heaters located at the return and supply point.

In combination with the "IVFDT" - Variable flow-rate control option, it allows the water flow rate variation to the installation in part load operation to obtain the maximum unit efficiency and lower pumping unit consumption.

The 2PMV / 3PMV option is supplied with a kit made up of 2 quick blind connections, for the removal of one pump in case of maintenance.

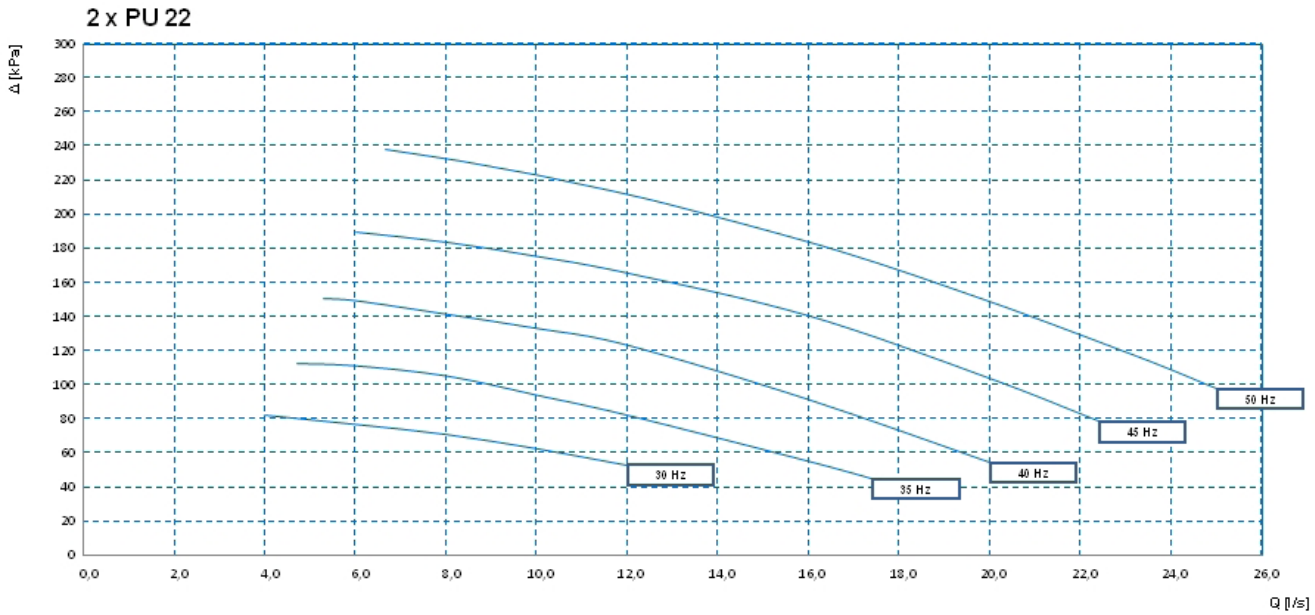
Provided with hydraulic interceptions to the outside of the unit (option 'CSVX - A pair of manually operated shut-off valves') to facilitate any major maintenance operations



1 - Internal exchanger
2 - Cutoff valve
3 - Purge valve
5 - Draw off cock
6 - Cutoff valve with quick joints
7 - Steel mesh strainer water side
8 - Manometer
9 - Safety valve (6 Bar)
10 - Packaged electric pump with high efficiency impeller activated by inverter
11 - Non return valve
12 - System safety pressure switch (prevents the pumps from operating if no water is present)
13 - Antifreeze heater
T - Temperature probe
PD - Differential pressure switch
TW in chilled water inlet
TW out chilled water outlet
IFWX = Steel mesh strainer water side
CSVX - Couple of manual shut-off valves
The grey area indicates further optional components.

2PMV option performances

Head

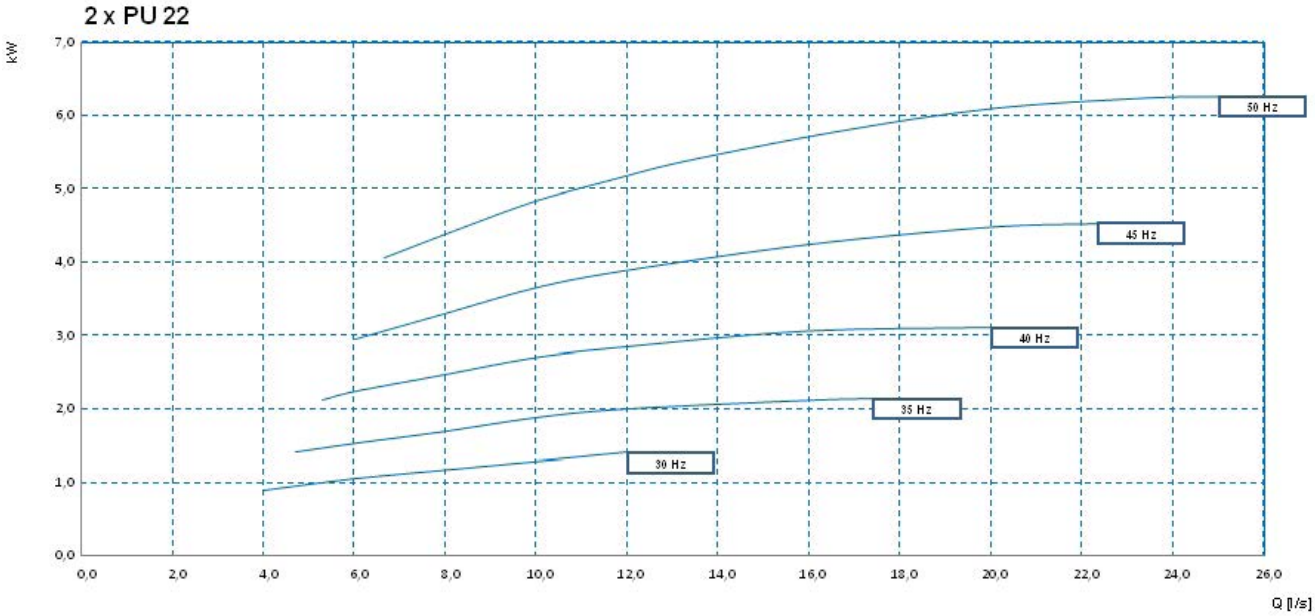


Q[l/s]= water flow rate
Δ [kPa] = pump head

Caution: to obtain the available pressure values, you need to subtract the following from the head values represented in these diagrams:

- internal exchanger pressure drops
- IFVX accessory –Steel mesh filter on the water side (where applicable)

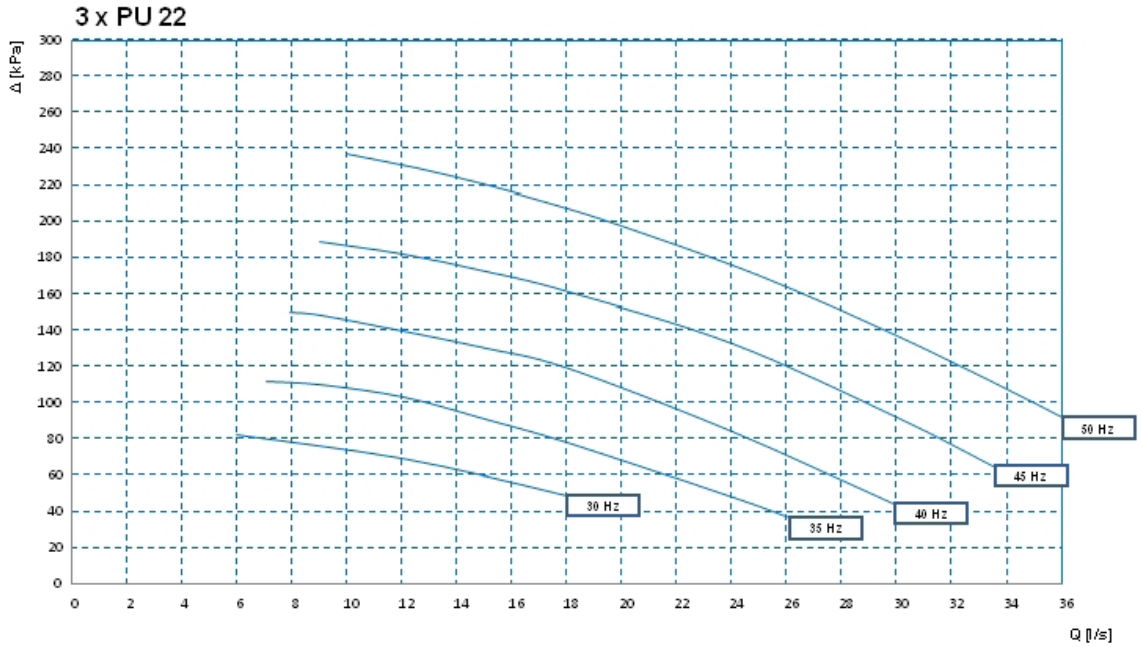
Power input



Q[l/s]= water flow rate
kW = power input

3PMV option performances

Head

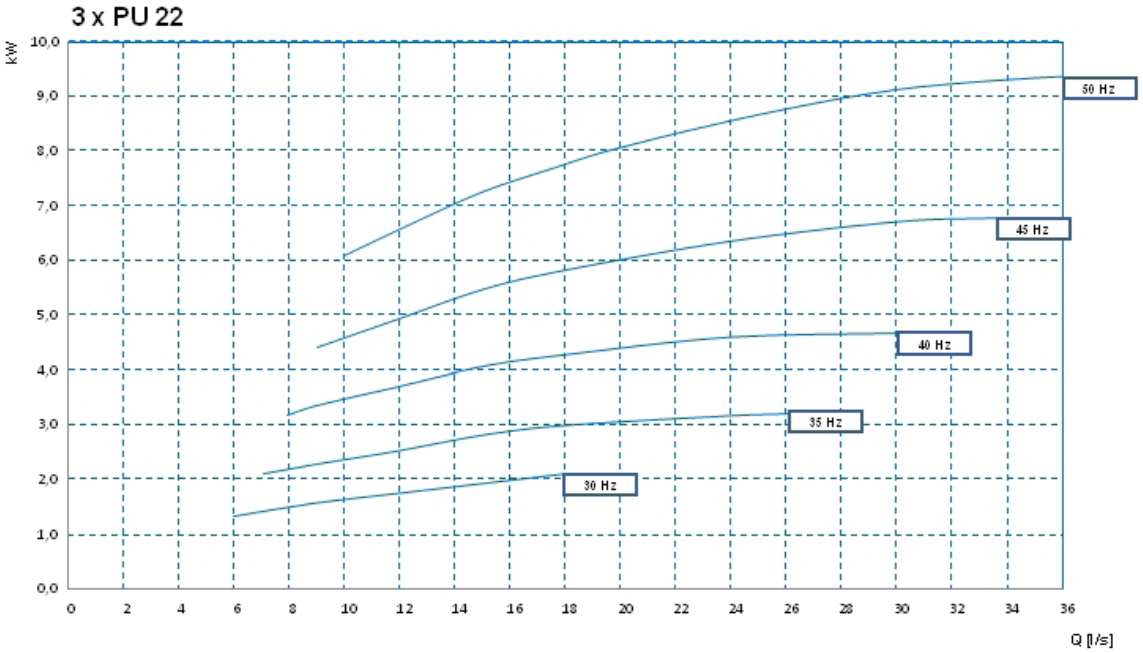


Q[l/s]= water flow rate
Δ [kPa] = pump head

Caution: to obtain the available pressure values, you need to subtract the following from the head values represented in these diagrams:

- internal exchanger pressure drops
- IFVX accessory –Steel mesh filter on the water side (where applicable)

Power input



Q[l/s]= water flow rate
kW = power input

Accessories

INTERNAL SECTION

MHP - High and low pressure gauges

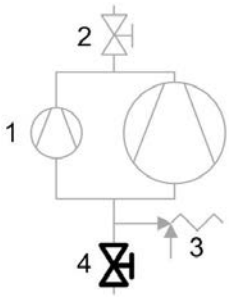
It includes two liquid pressure gauges for the analog measurement of refrigerant pressures on suction and discharge lines of the compressors with pressure sockets installed in the unit in an easily accessible location.

SDV - Cutoff valve on compressor supply and return

An option which integrates the supply cutoff valve, which is supplied as standard. The presence of the cock at the intake as well enables the compressors to be isolated and substituted without discharging the refrigerant from within the refrigeration circuit. This means that the extraordinary maintenance activities are facilitated.

Device installed built-in the unit.

1. Compressors
2. Cutoff valve
3. Safety valve
4. SDV option



PFCP - Power-factor correction capacitors (cosfi > 0.9)

The component is necessary to lower the phase difference between current and voltage in the electromagnetic components of the unit (e.g. asynchronous motors). The component allows to put the cosfi power factor to values on average higher than 0.9, reducing the network reactive power. This often leads to an economic benefit which the energy provider grants to the final user.

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

ECS - ECOSHARE function for the automatic management of a group of units

Device allows automatic management of units that operate on the same hydraulic circuit, by creating a local communication network. There are three control modes that can be set via a parameter during the units stat-up. Two control modes distribute the heat load on the available units by following the distribution logic to benefit of efficiency levels at part load and one shift the supply water set-point temperature on the group of units.

Moreover:

Mode 0 - shift the water set-point temperature and keeps all the pumps active;

Mode 1 - distribute the heat load and keeps all the pumps active;

Mode 2 - distribute the heat load and activates only the pumps of the unit required to operate.

The device allows for rotation based on the criterion of minimum wear and management of units in stand-by. In case of failure of one unit the load is distributed in the other units.

The units can be of various sizes but of the same type: all reversible heat pumps, or all air-cooled liquid chiller.The set of units is controlled by a Master unit. The local network can be extended up to 7 units (1 Master and 6 Slave).

The unit supplied with this device can also be equipped at the same time with the RCMRX option and one of the CMSC8 / CMSC9 / CMSC10 options.

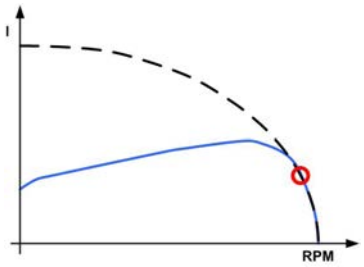
SFSTR – Disposal for inrush current reduction (SOFT STARTER)

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 reduction of the starting torque of the ON/OFF compressor, it is more protected from mechanical stresses leading to an increased life of the component. The noise is also reduced.

Device installed and wired built-in the unit.

In sizes 180.4, 200.4, 220.4 and 240.4 the larger size compressor is standard equipped with device for progressive start-up, defined part-winding. For these units the soft-starter bene fits are guaranteed on lower size compressors, maintaining unchanged the M.I.C. (max. inrush current) of the standard unit.

The compressors with 60 HP of nominal capacity need the standard device for the progressive start-up defined part-winding.



–– Absorbed current without SFSTR option
– Absorbed current with SFSTR option

CMSC11 - Serial communication module for BACnet supervisor

Module allows the serial connection of the supervision system, using BACnet/IP 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.

Device 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)

CMSC9 - Serial communication module for Modbus supervisor

Module allows 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.

Device 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

Module allows the serial connection of the supervision system which uses the LonWorks communication protocol. It enables access to a list of operating variables, commands and alarms which comply with the Echelon® standard.

Device 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)

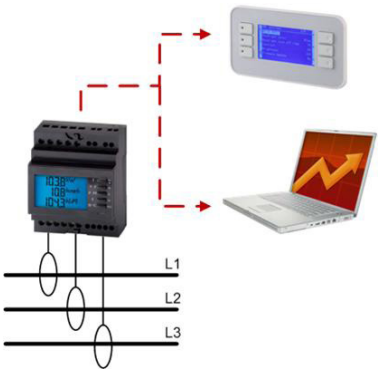
CONTA2 - Energy meter

Allows to display and record the unit's main electrical parameters. The data can be displayed on the device display or via the supervisor through the specific protocol variables..

It is possible to control:
- voltage (V),
- absorbed current (A),
- frequency (Hz),
- cosfi,
- power input (KW),
- absorbed energy (KWh),
- harmonic components (%).

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

On the device is present a serial port with Modbus protocol for the connection to the supervision system.



SCP4 - Set-point compensation with 0-10 V signal

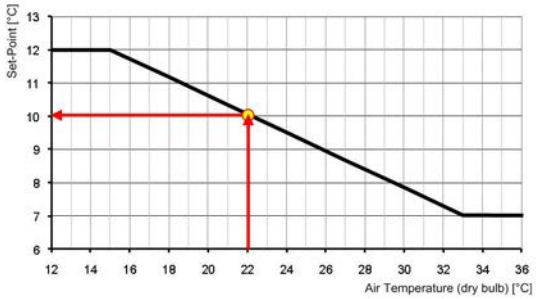
Device allows the changing of the preset set point by means to an external 0÷10 V signal. The interruption of the signal the set-point is at the nominal set value. The limit values can be changed within wide values.

Device installed and wired built-in the unit.

SPC2 - Set-point compensation with outdoor air temperature probe

Device allows the automatic regulation of the preset set-point depending of the outside temperature air measured by the unit probe. This device allows to get the sliding supply water temperature, which varies depending on external conditions, enabling energy savings throughout the entire system.

Device installed and wired built-in the unit.



IVFDT - Inverter driven variable flow-rate user side control depending on the temperature differential

This option allows water flow-rate modulation to the unit during partial load conditions, maintaining stable the temperature difference between inlet and outlet to the heat exchanger.

The option is available only when the unit thermoregulation is set on the return temperature.

Designed for systems with primary circuit variable flow-rate systems decoupled from secondary circuit. With no building load the unit switches off the compressors while concerning pumps is possible to select:

- Active pumps with minimum flow-rate, monitoring secondary circuit temperature variations
- Pump switching off, periodically activating them (settable time) leading secondary circuit temperatures on primary circuit
- Pump switching off and waiting for the user signal for activation (free potential)

Flow-rate modulation is managed by embedded logic thanks to built-in flow-rate control device and temperature probes. This device is installed and wired.

This option is available only with inverter driven HYDROPACK selected (2PMV / 3PMV)

RPRPDI - Refrigerant leak detector with pump down function in the casing

Leak detector device built-in installed and placed inside the compressor box, It detects leaks of the internal refrigeration circuit and automatically enables the "pump-down" function, storing the refrigerant inside the finned coil exchanger. During pump-down, cooling capacity is not produced by the unit. At the end of the operation the unit is switched off and a dedicated alarm signal is available directly inside the electrical panel.

The device respects BREEAM regulations.

Accessories

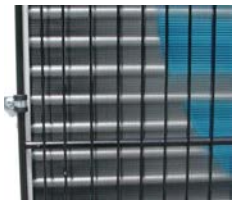
EXTERNAL SECTION

PGFC- Finned coil protection grilles

Grilles made in drawn of electro-welded steel and coated to protect the external coil from accidental contact with people and things. Ideal for installation in places where persons can pass from, such as car parks, terraces, etc.

Accessories supplied and installed on the unit.

Option available only on special request



CCCA - Copper / aluminium condensing coil with acrylic lining

Condensing coils with copper pipes and aluminum fins with acrylic lacquering. Can be used in settings with moderately aggressive low saline concentrations and other chemical agents. The acrylic coating is used as the most economical and effective method particularly in protecting aluminum surfaces exposed to the corrosive influence of the humid and salty air in regions with marine climates.

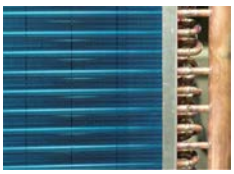
Attention!

- Cooling capacity variation -2.7%

- Variation in compressor power input +4.2%

- Operating range reduction -2.1°C

Option available only on special request



CCCA1 - Copper / aluminium condensing coils with Aluminium Energy Guard DCC treatment

Condensing coils with copper pipes and aluminum fins with Aluminium Energy Guard DCC treatment. Complete treatment which offers an optimal thermal exchange and guarantees and protects the finned coil exchangers from corrosion over time and UV rays. 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 and with negligible pressure drop.

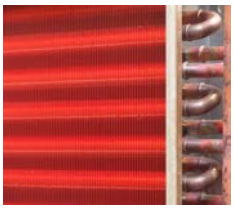
Option available only on special request

CCCC - Copper / copper condensing coil

Condensing coils with copper pipes, copper fins and brass structure. Can be used in settings with moderately aggressive saline concentrations and other chemical agents.

This option is not suitable for application in sulphuric environments

Option available only on special request



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

An option which regards the external helical fan. It provides for an IP54 brushless electronically commutated electrical motor and incorporated thermal protection. Supplied with variable speed control.

The option is compulsory for industrial applications where the outdoor air temperature is lower than 10°C.

RE-20 / RE-25 / RE-30 / RE-35 / RE-39 - Electrical panel anti-freeze protection

It includes self-regulating electric heaters with thermost which are able to protect the electrical panel against condensation and frost guaranteeing its correctly functions down to -39°C. This accessory operates even when the unit is switched off provided that the power supply is maintained active and the unit continues to be electrically connected.

Device installed and wired built-in 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.

This accessory does not lead to substantial variations in the electrical data for the unit which has been declared in the Electrical Data section.

Accessories separately supplied

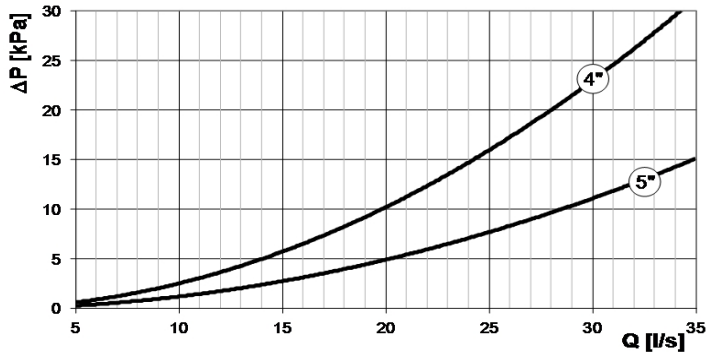
INTERNAL SECTION

IFWX - Steel mesh strainer water side

The device stops the exchanger from being clogged by any impurities which are in the hydraulic circuit. The mechanical steel mesh strainer must be placed on the water input line. It can be easily dismantled for periodical maintenance and cleaning. It also includes:

- cast-iron shut-off butterfly valve with quick connections and activation lever with a mechanical calibration lock;
- quick connections with insulated casing.

STEEL MESH FILTER PRESSURE DROP



Q = water flow rate (l/s) DP = water side pressure drop (kPa)

STEEL MESH FILTER FEATURES

EXCELLENCE		
Diameter	4"	5"
Degree of filtration	1,6 mm	

PREMIUM		
Diameter	4"	5"
Degree of filtration	1,6 mm	

Pressure drop referred to a clean filter

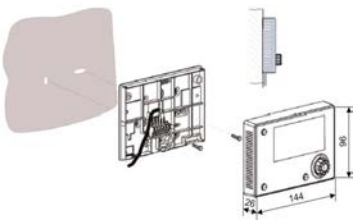
Installation provided by the the Costumer, externally to the unit

Check for the presence of the required hydraulic shut-off valves in the system, in order to undertake periodical maintenance

RCMRX - Remote control via microprocessor remote control

This option allows to have full control over all the unit functions from a remote position.

It can be easily installed on the wall and has the same aspect and functions of the user interface on the unit.



All device functions can be repeated with a normal portable PC connected to the unit with an Ethernet cable and equipped with an internet navigation browser.

The device must be installed on the wall with suitable plugs and connected to the unit (installation and wiring to be conducted by the Customer). Maximum remote control distance 350 m without auxiliary power supply. For distances greater than 350 m and in any case less than 700 m it is necessary to install the 'PSX - Mains power unit' accessory.

Data and power supply serial connection cable n.1 twisted and shielded pair. Diameter of the individual conductor 0.8 mm.

Installation provided by the the Costumer

PSX - Mains power supply unit

The device allows the unit and the remote control to communicate with the user interface even when the serial line is longer than 350m.

It must be connected to the serial line at a distance of 350m from the unit and allows to extend the length to 700m maximum in total. The device requires an external power supply at 230V AC.

Power supply at 230V AC provided by Customer

AMRX - Rubber antivibration mounts

The rubber antivibration mounts are attached in special housing on the support frame and serve to smooth the vibrations produced by the unit thus reducing the noise transmitted to the support structure.

Installation provided by the the Costumer

CSVX - Couple of manual shut-off valves

Kit composed of no. 2 cast-iron shut-off butterfly valves, it includes: fast fittings and activation lever with a mechanical calibration lock and no. 2 of Victaulic type quick connection with insulated casing to isolate the hydraulic circuit at the inlet and outlet.

Installation provided by the the Costumer, externally to the unit

Option compatiblity - EXCELLENCE PREMIUM version

Acoustic configuration: compressor soundproofing (SC) / super-silenced (EN)

REFERENCE	DESCRIPTION	90.4	100.4	110.4	120.4	140.4	160.4	180.4	200.4	220.4	240.4
CONFIGURATIONS AND MAIN ACCESSORIES											
B	Water low temperature	0	0	0	0	0	0	0	0	0	0
D	Partial energy recovery	0	0	0	0	0	0	0	0	0	0
B + D	Water low temperature + Partial energy recovery	0	0	0	0	0	0	0	0	0	0
2PM - HYDROPACK USER SIDE WITH 2 PUMPS											
(PU20)	Pump 20	0	0	0	0	0	X	X	X	X	X
(PU21) / (PU22)	Pump 21 / Pump 22	0	0	0	0	0	0	0	X	X	X
(PU26)	Pump 26	X	X	X	X	X	0	0	0	0	0
3PM - HYDROPACK USER SIDE WITH 3 PUMPS											
(PU20)	Pump 20	X	X	X	X	X	X	0	0	0	X
(PU21)	Pump 21	X	X	X	0	0	0	0	0	0	0
(PU22)	Pump 22	0	0	0	0	0	0	0	0	0	0
2PMV - HYDROPACK USER SIDE WITH NO.2 OF INVERTER PUMPS											
(PU22)	Pump 22	0	0	0	0	X	X	X	X	X	X
3PMV - HYDROPACK USER SIDE WITH NO.3 OF INVERTER PUMPS											
(PU22)	Pump 22	0	0	0	0	0	0	0	0	0	0
IVFDT - INVERTER DRIVEN VARIABLE FLOW-RATE USER SIDE CONTROL DEPENDING ON THE TEMPERATURE DIFFERENTIAL											
(2PM) / (3PM)	Hydropack user side with no. 2 of pumps / Hydropack user side with no. 3 of pumps	X	X	X	X	X	X	X	X	X	X
(2PMV) / (3PMV)	Hydropack user side with no.2 of inverter pumps / Hydropack user side with no.3 of inverter pumps	0*	0*	0*	0*	0*	0*	0*	0*	0*	0*
OTHER ACCESSORIES											
CREFB	Device for fan consumption reduction of the external section, ECOBREEZE type	0	0	0	0	0	0	0	0	0	0
CREFO	Device for fan consumption reduction of the external section, on/off type	•	•	•	•	•	•	•	•	•	•

• Standard

0 Option

X Not available

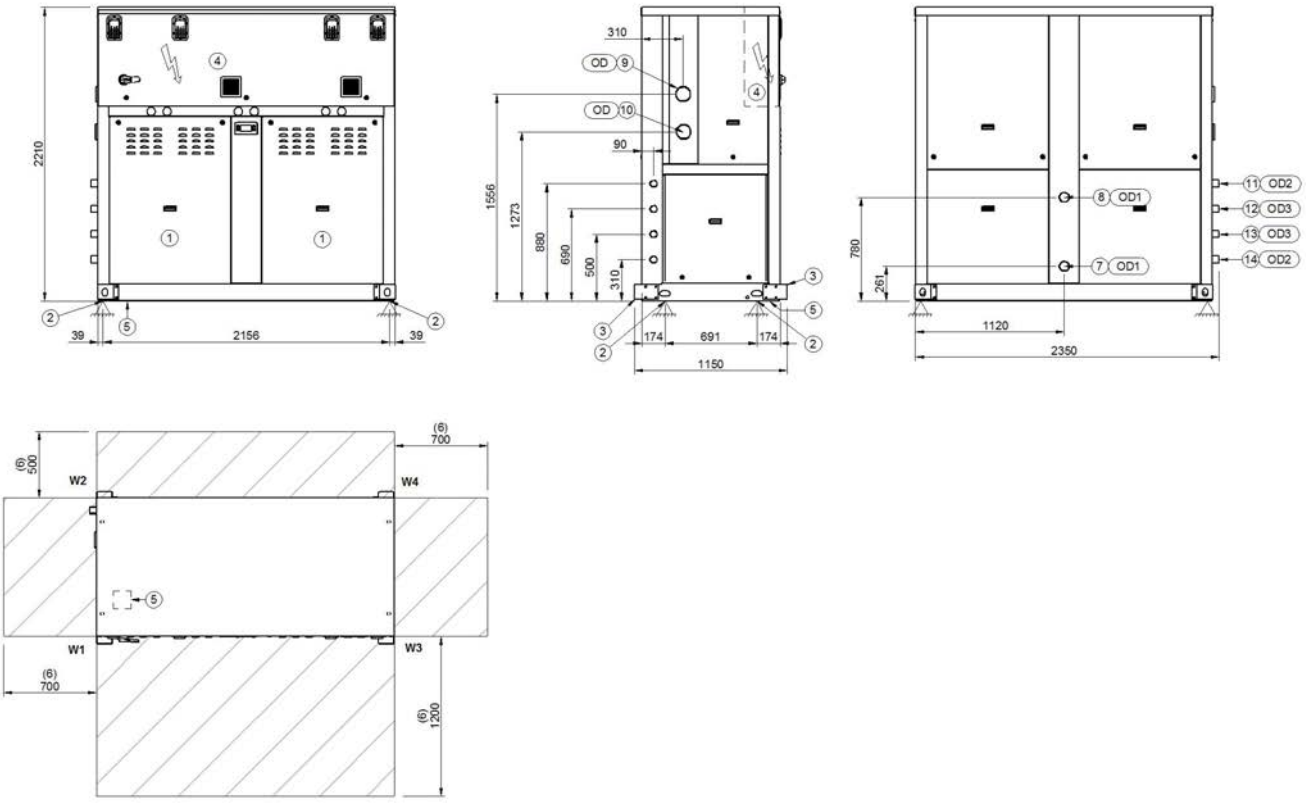
0* Necessary matching: variable flow-rate control and built-in inverter pumps

Dimensional drawings

INTERNAL SECTIONS: MSRT-XSC3

Size 90.4 - 240.4

DAA4W90.4__240.4_EXC_0
Date: 08/09/2016



1. Compressors
2. Antivibration fixing holes ø 15mm
3. Lifting brackets (removable)
4. General electrical panel
5. Power input
6. Suggested clearance
7. Recovery side exchanger water inlet (optional)
8. Recovery side exchanger water outlet (optional)
9. Water inlet user side of no pumps unit / Water outlet user side of unit with pumps (optional)
10. Water outlet user side of no pumps unit / Water inlet user side of unit with pumps (optional)
11. Circuit 1 liquid line
12. Circuit 1 gas line
13. Circuit 2 gas line
14. Circuit 2 liquid line

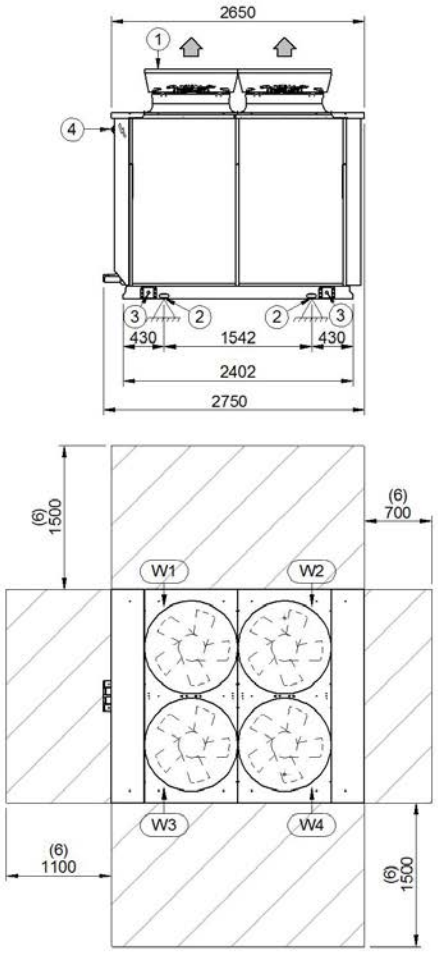
Size		90.4	100.4	110.4	120.4	140.4	160.4	180.4	200.4	220.4	240.4
OD (internal exchanger)	mm	114,3	114,3	114,3	114,3	114,3	114,3	114,3	139,7	139,7	139,7
OD1 (partial recovery)	mm	60,3	60,3	60,3	60,3	76,1	76,1	76,1	76,1	76,1	76,1
OD2 (liquid line)	mm	35	35	35	35	35	42	42	42	42/54	54
OD3 (gas line)	mm	28	35	35	35	42	42	42	42	42/54	54
W1 Supporting point	kg	399	453	471	486	498	509	565	578	611	653
W2 Supporting point	kg	303	336	348	359	369	379	414	426	448	481
W3 Supporting point	kg	421	470	486	502	517	530	603	620	666	698
W4 Supporting point	kg	324	352	363	375	389	400	452	468	503	525
Operating weight	kg	1447	1611	1668	1722	1773	1818	2034	2092	2228	2357
Shipping weight	kg	1385	1545	1595	1645	1685	1725	1925	1975	2095	2210

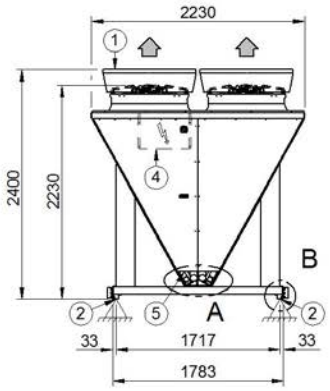
The presence of optional accessories may result in a substantial variation of the weights shown in the table.

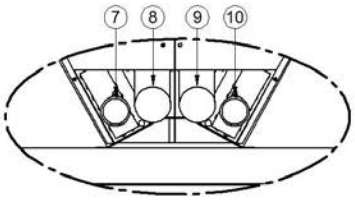
EXTERNAL SECTION: CEV-XT

Size 60.0 - 90.0

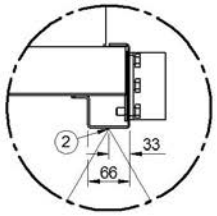
DAA5W60.0_90.0_0
Date: 13/09/2016







DETTAGLIO A



DETTAGLIO B

1. Axitop (removable)
2. Antivibration fixing holes ø 18mm
3. Lifting brackets (removable)
4. General electrical panel
5. Power input
6. Suggested clearance
7. Circuit 1 liquid line
8. Circuit 1 gas line
9. Circuit 2 gas line
10. Circuit 2 liquid line

For the measurement of the refrigeration connection diameter refer to the "General technical data - Construction" table.

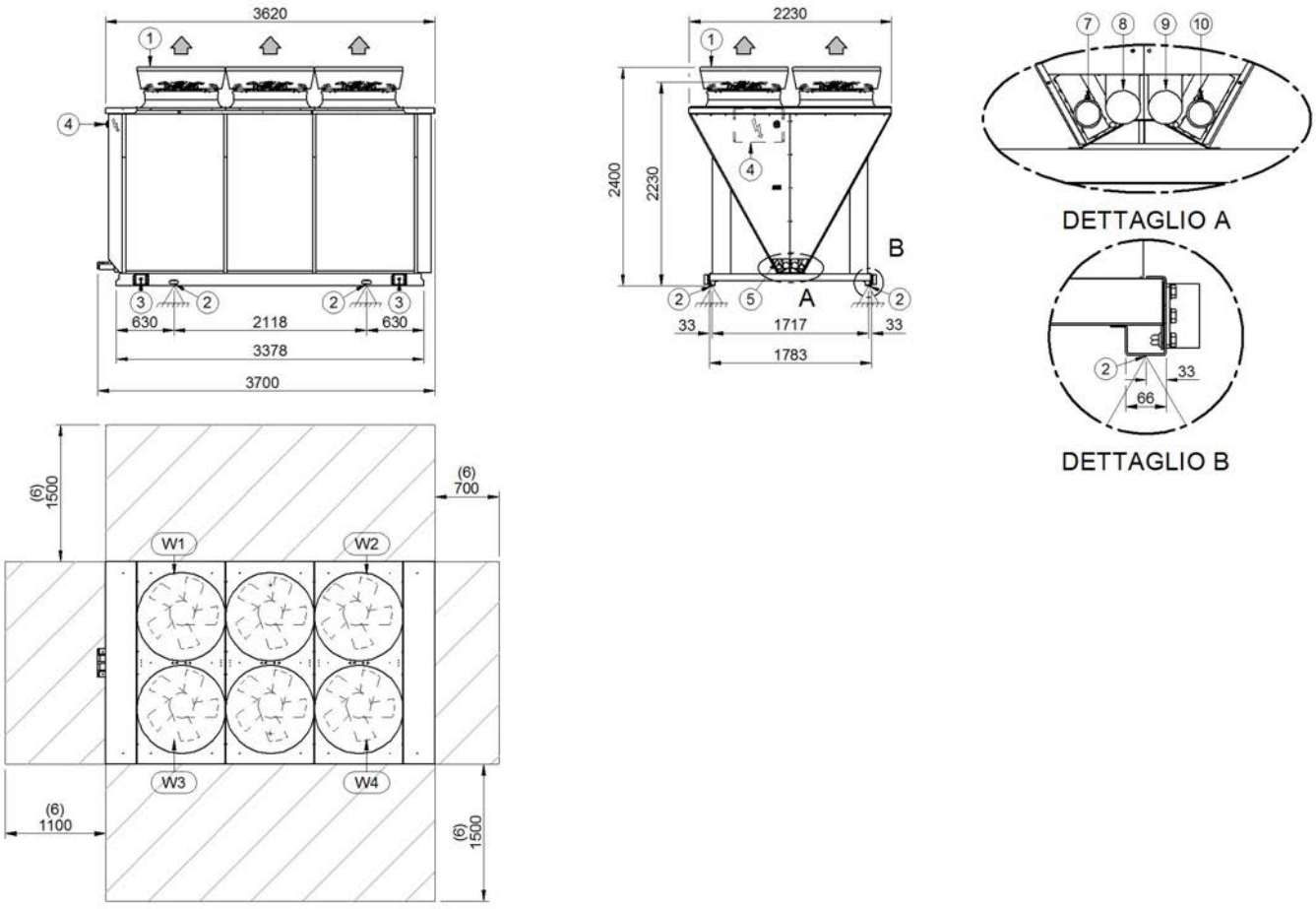
Size		60.0	70.0	75.0	85.0	90.0
Length	mm	2750	2750	2750	2750	2750
Depth	mm	2230	2230	2230	2230	2230
Height	mm	2400	2400	2400	2400	2400
W1 Supporting point	kg	143	145	157	163	173
W2 Supporting point	kg	139	141	153	159	169
W3 Supporting point	kg	143	145	157	163	173
W4 Supporting point	kg	139	141	153	159	169
Operating weight	kg	564	572	620	644	684
Shipping weight	kg	534	542	590	614	654

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

EXTERNAL SECTION: CEV-XT

Size 95.0 - 145.0

DAA5W95.0_145.0_0
Date: 12/09/2016



1. Axitop (removable)
2. Antivibration fixing holes ø 18mm
3. Lifting brackets (removable)
4. General electrical panel
5. Power input
6. Suggested clearance
7. Circuit 1 liquid line
8. Circuit 1 gas line
9. Circuit 2 gas line
10. Circuit 2 liquid line

For the measurement of the refrigeration connection diameter refer to the "General technical data - Construction" table.

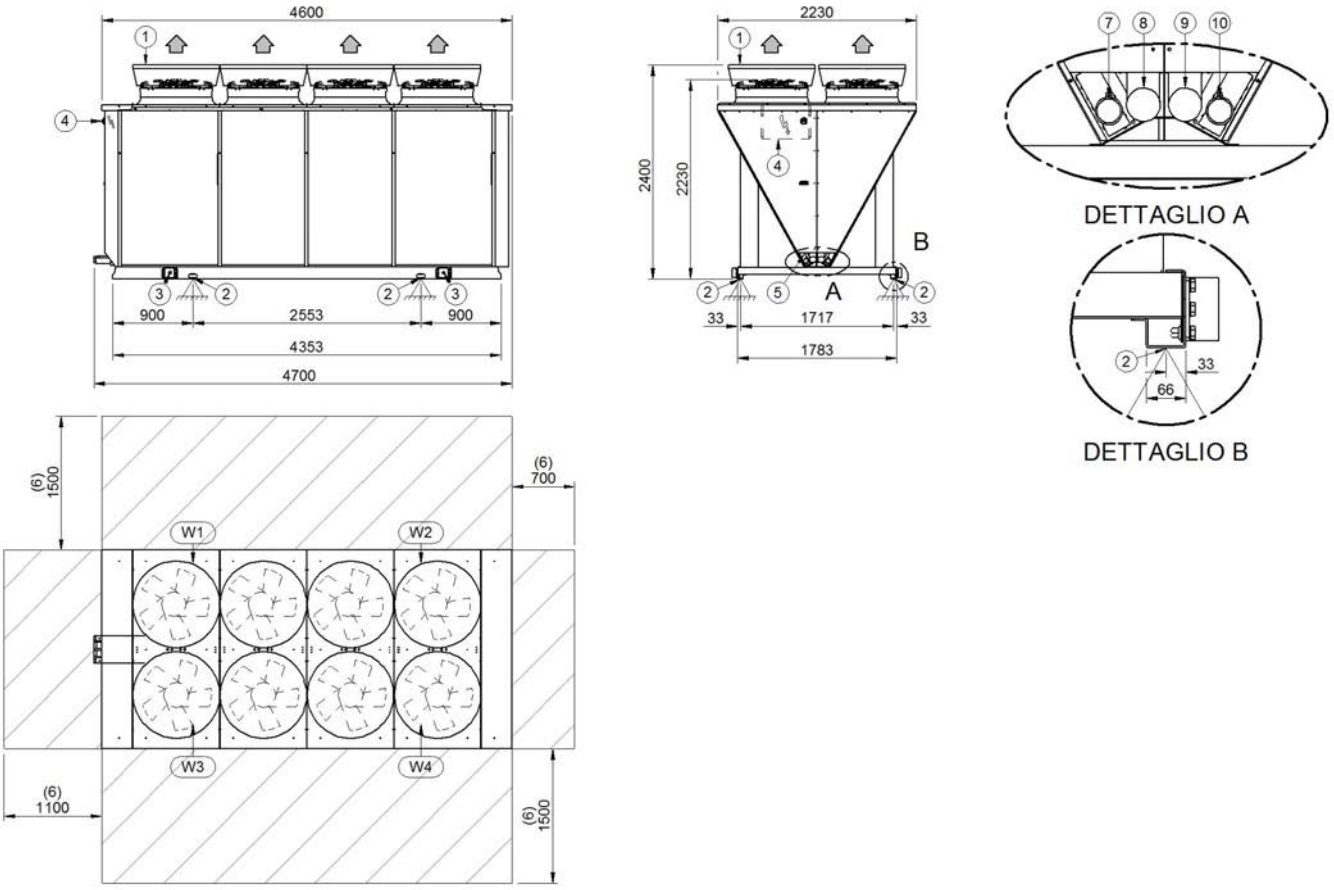
Size		95.0	105.0	115.0	120.0	130.0	145.0
Length	mm	3700	3700	3700	3700	3700	3700
Depth	mm	2230	2230	2230	2230	2230	2230
Height	mm	2400	2400	2400	2400	2400	2400
W1 Supporting point	kg	209	212	229	234	237	257
W2 Supporting point	kg	203	206	223	227	232	252
W3 Supporting point	kg	209	212	229	234	237	257
W4 Supporting point	kg	203	206	223	227	232	252
Operating weight	kg	824	836	904	922	938	1018
Shipping weight	kg	794	806	874	892	908	988

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

EXTERNAL SECTION: CEV-XT

Size 150.0 - 180.0

DAA5W150.0_180.0
Date: 12/09/2016



1. Axitop (removable)
2. Antivibration fixing holes ø 18mm
3. Lifting brackets (removable)
4. General electrical panel
5. Power input
6. Suggested clearance
7. Circuit 1 liquid line
8. Circuit 1 gas line
9. Circuit 2 gas line
10. Circuit 2 liquid line

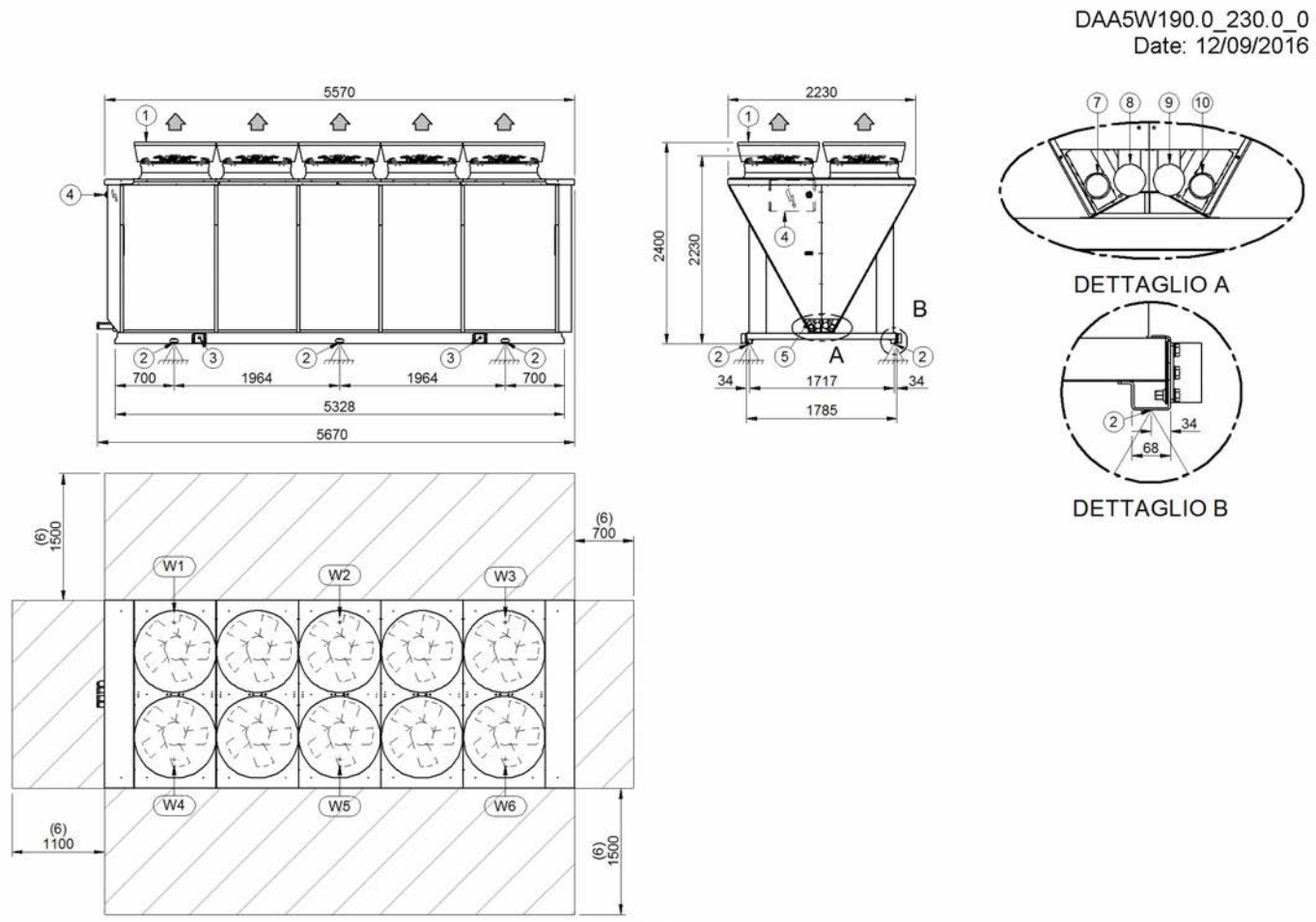
For the measurement of the refrigeration connection diameter refer to the "General technical data - Construction" table.

Size		150.0	160.0	180.0
Length	mm	4700	4700	4700
Depth	mm	2230	2230	2230
Height	mm	2400	2400	2400
W1 Supporting point	kg	313	304	343
W2 Supporting point	kg	306	295	335
W3 Supporting point	kg	313	304	343
W4 Supporting point	kg	306	295	335
Operating weight	kg	1238	1198	1356
Shipping weight	kg	1208	1168	1326

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

EXTERNAL SECTION: CEV-XT

Size 190.0 - 230.0



1. Axitop (removable)
2. Antivibration fixing holes ø 18mm
3. Lifting brackets (removable)
4. General electrical panel
5. Power input
6. Suggested clearance
7. Circuit 1 liquid line
8. Circuit 1 gas line
9. Circuit 2 gas line
10. Circuit 2 liquid line

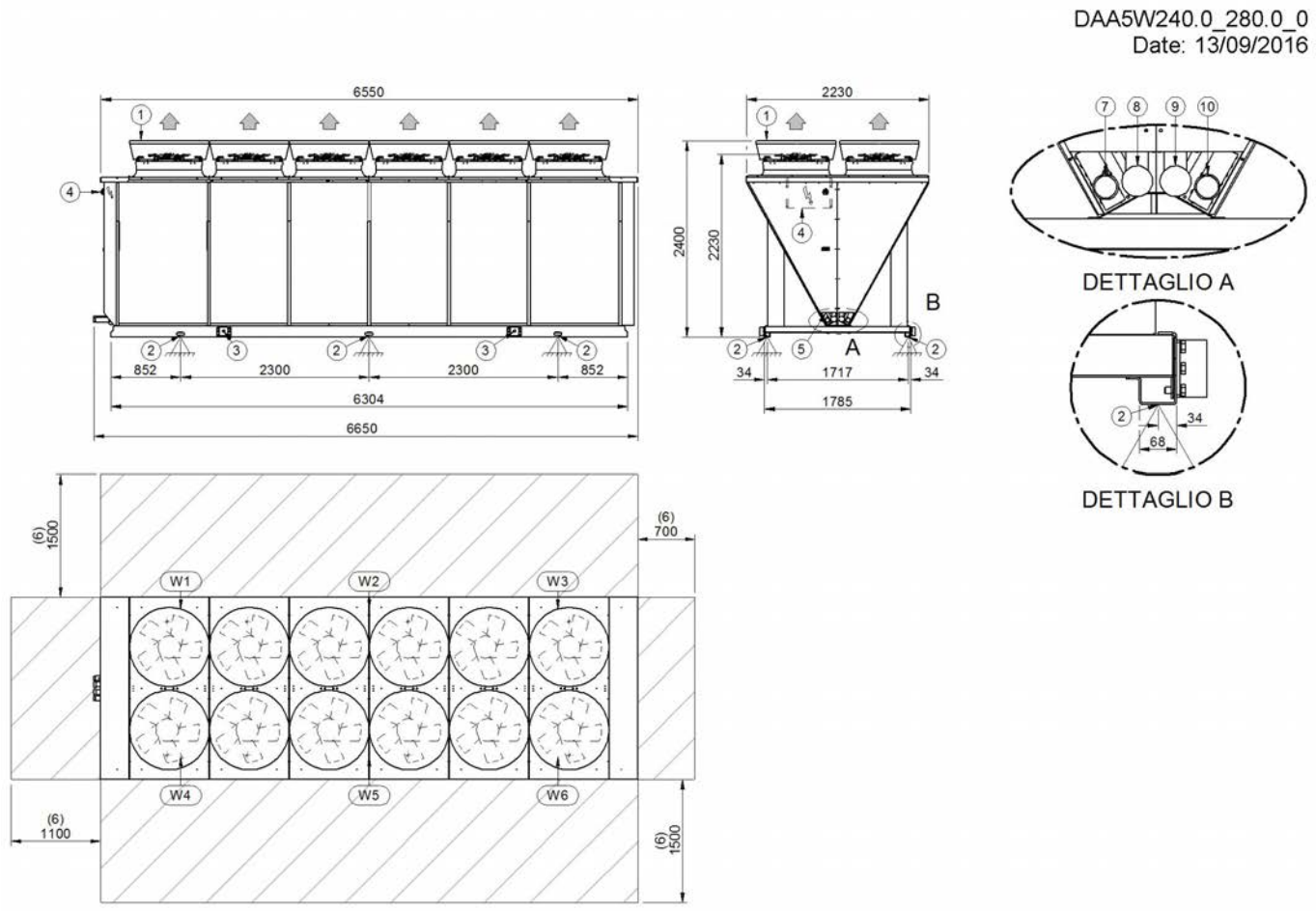
For the measurement of the refrigeration connection diameter refer to the "General technical data - Construction" table.

Size		190.0	200.0	210.0	230.0
Length	mm	5670	5670	5670	5670
Depth	mm	2230	2230	2230	2230
Height	mm	2400	2400	2400	2400
W1 Supporting point	kg	277	279	285	306
W2 Supporting point	kg	272	278	281	304
W3 Supporting point	kg	268	275	279	300
W4 Supporting point	kg	277	279	285	306
W5 Supporting point	kg	272	278	281	304
W6 Supporting point	kg	268	275	279	300
Operating weight	kg	1634	1664	1690	1820
Shipping weight	kg	1604	1634	1660	1790

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

EXTERNAL SECTION: CEV-XT

Size 240.0 - 280.0



1. Axitop (removable)
2. Antivibration fixing holes ø 18mm
3. Lifting brackets (removable)
4. General electrical panel
5. Power input
6. Suggested clearance
7. Circuit 1 liquid line
8. Circuit 1 gas line
9. Circuit 2 gas line
10. Circuit 2 liquid line

For the measurement of the refrigeration connection diameter refer to the "General technical data - Construction" table.

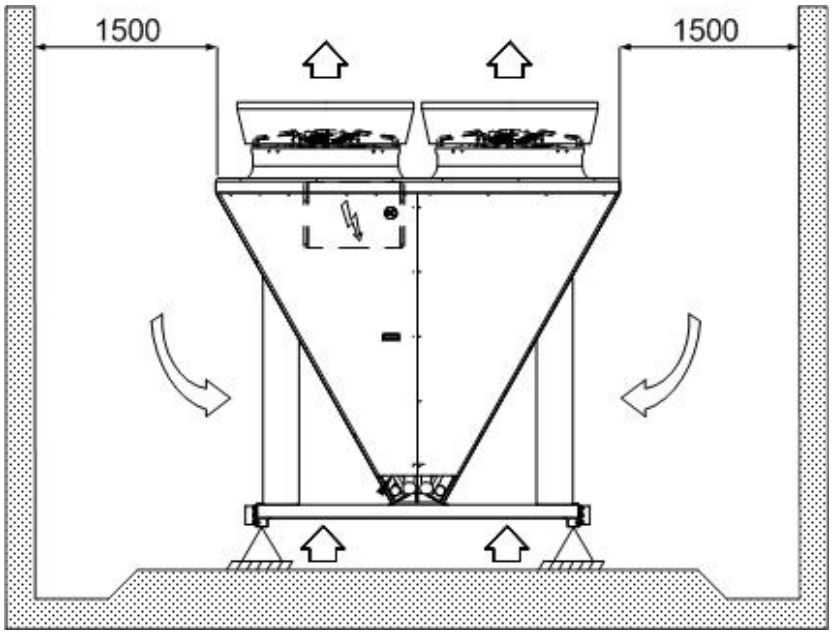
Size		240.0	280.0
Length	mm	6650	6650
Depth	mm	2230	2230
Height	mm	2400	2400
W1 Supporting point	kg	297	328
W2 Supporting point	kg	293	324
W3 Supporting point	kg	289	320
W4 Supporting point	kg	297	328
W5 Supporting point	kg	293	324
W6 Supporting point	kg	289	320
Operating weight	kg	1758	1944
Shipping weight	kg	1728	1914

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

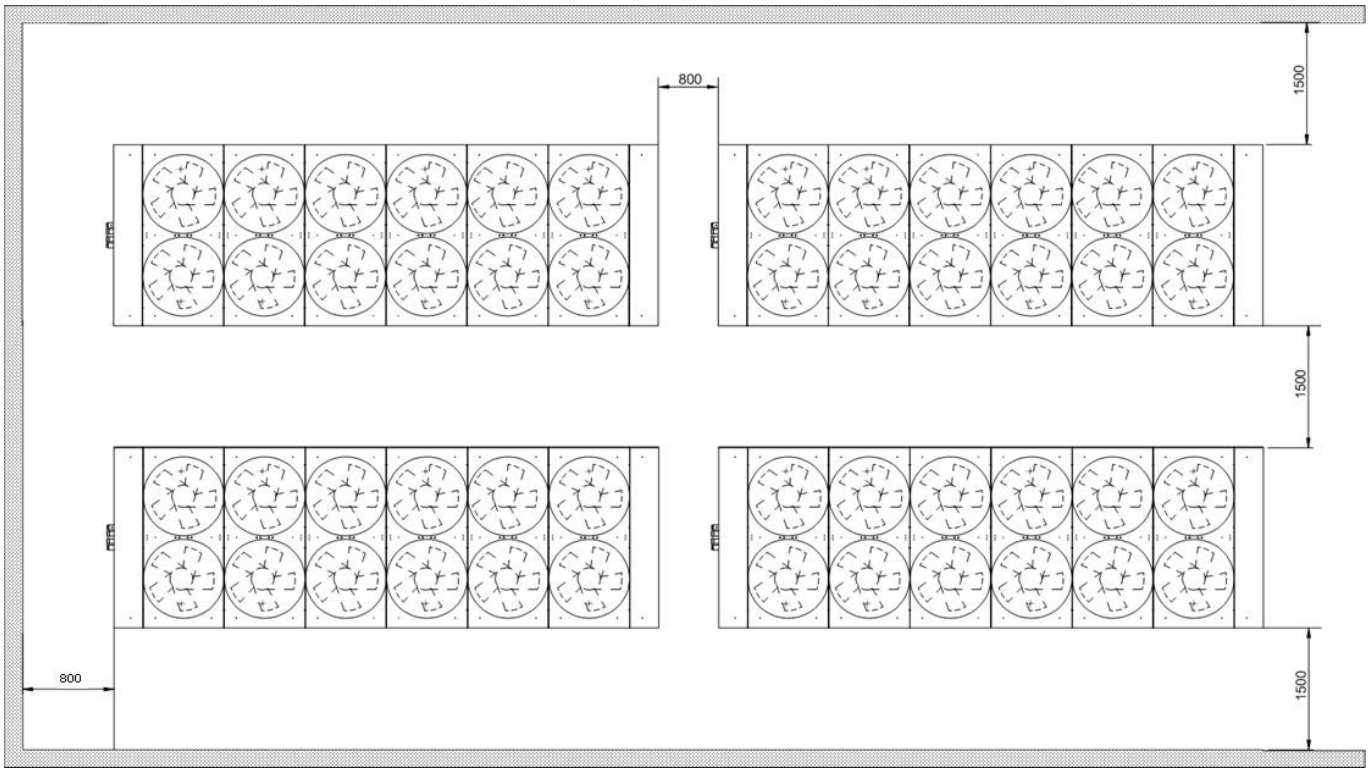
Position

The following aspects should be considered before installation:

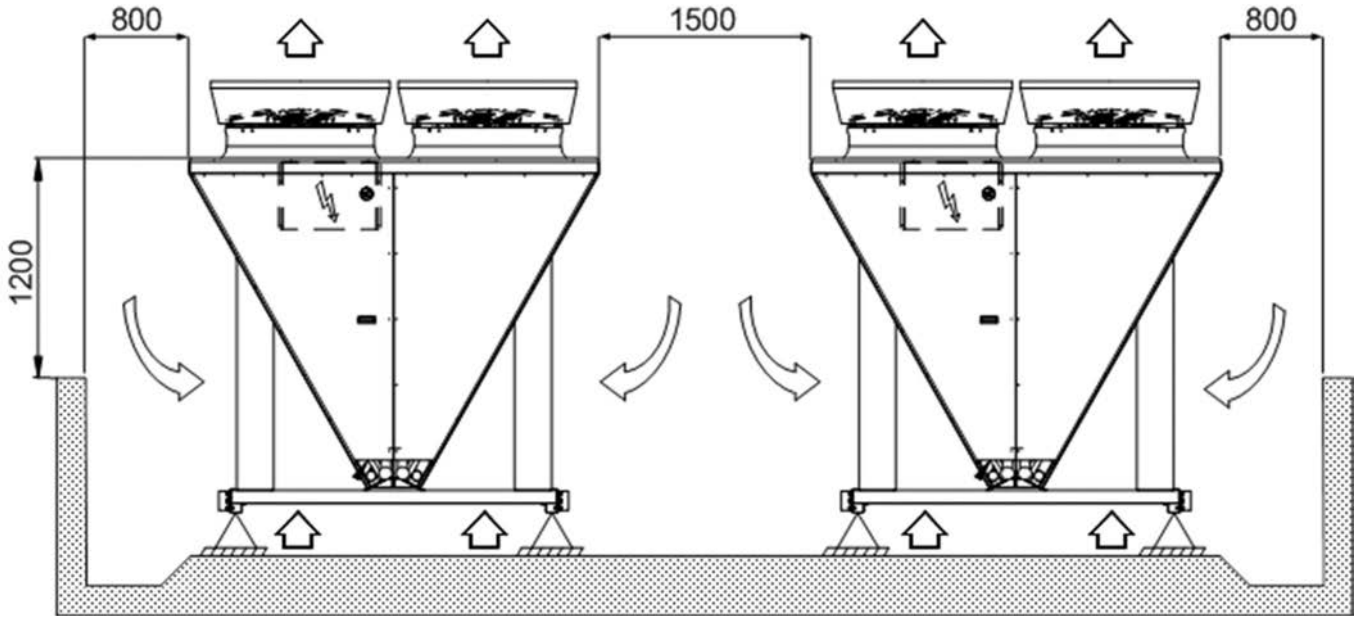
- check that the structure supports the rest of the unit;
- avoid installation in closed spaces;
- when there are walls in the proximity, follow the recommended minimum distances.



Particular attention should be paid in the choice of the recommended minimum distances, particularly in cases of systems with two or more units (Dual or Triple).



In the event that the surrounding walls are not full height, it is possible to reduce the clearance as indicated.



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