



*Air cooled liquid chiller with  
multiscroll technology for  
outdoor installation*

## SPINchiller<sup>4</sup>

WSAT-YSC4 80.3 - 240.6 RANGE



TECHNICAL BULLETIN



| SIZE - EXCELLENCE     | 80.3 | 100.4 | 115.4 | 130.4 | 155.5 | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |
|-----------------------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| COOLING CAPACITY [KW] | 222  | 267   | 314   | 364   | 423   | 472   | 520   | 573   | 624   | 675   |
| SIZE - PREMIUM        | 90.3 | 110.4 | 130.4 | 145.4 | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |       |
| COOLING CAPACITY [KW] | 232  | 291   | 333   | 384   | 443   | 483   | 537   | 590   | 644   |       |

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Clivet is taking part in the EUROVENT certification programme up to 1.500 kW.  
The products concerned appear in the certified products list of the EUROVENT  
[www.eurovent-certification.com](http://www.eurovent-certification.com) site.

# Features and benefits

## SPINchiller<sup>4</sup>: Modular scroll technology for every application

SPINchiller<sup>4</sup> is the new generation of Clivet liquid chillers and heat pump with modular scroll technology.

Thanks to its high seasonal efficiency and the adoption of the R-32 refrigerant with reduced environmental impact, it represents the ideal solution for different types of installation.

### WSAT-YSC4

Air cooled water chiller with multiscroll technology

- EXCELLENCE / PREMIUM version
- Seasonal efficiency (SEER) 4,9 / 4,6
- Operating with 50°C of outdoor air temperature
- Operating with -18°C of outdoor air temperature
- Full aluminium microchannel coils
- Partial recovery of the condensing heat
- Total recovery of the condensing heat
- Plate exchangers / shell and tube



### WSAN-YSC4

Air cooled heat pump with multiscroll technology

- EXCELLENCE / PREMIUM version
- Seasonal efficiency (SEER) 4,8 / 4,5
- Operating with 48°C of outdoor air temperature in cooling
- Operating with -15°C of outdoor air temperature in heating
- Copper/aluminum condensing coil
- Partial recovery of the condensing heat
- Plate exchangers / shell and tube



## 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 or TRIO 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.

## Internal exchanger (evaporator)

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.

## External exchanger (condenser)

Full aluminium microchannel coil with V structure open angle geometry. The entire exchanger (tubes, fins and manifolds) is made of aluminum and welded into a single body through a special brazing technology in a controlled-temperature chamber. The fins have a special corrugated surface to ensure maximum heat exchange efficiency. The special flat configuration of the pipes reduces the section that opposes to the air flow, limiting the pressure drops and maximizing the surface. The total refrigerant charge into the microchannel coil is reduced by 30% compared to an equivalent copper coil.

## 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. Supplied with variable speed control (ECOBREEZE).

## Refrigeration circuit

One or two independent refrigeration circuits made of copper, brazed and factory-assembled, complete with:

- anti-acid dehydrator filter with solid cartridge complete with quick-fit connector for refrigerant;
- high-pressure safety pressure switch;
- low pressure transducer;
- refrigerant temperature probe;
- electronic expansion valve;
- high pressure safety valve (safety valve with sealed tap open for inspection);
- double low pressure safety valves (safety valve with sealed tap open for inspection);
- liquid flow and humidity indicator;
- cut-off valve on compressor supply circuit;
- cut-off valve on liquid line.

Suction pipes thermally insulated with highly flexible EPDM rubber closed-cell elastomer insulation. Each cooling circuit is tested under pressure for leaks and is supplied complete with load of refrigerant gas.

## Electrical panel

Entirely manufactured and wired in conformity to the EN 60204 standard.

The power section includes:

- door locking main circuit breaker;
- insulation transformer for powering the auxiliary circuit;
- magneto-thermal cut-out switches to protect compressors;
- magneto-thermal cut-out switches to protect fans;
- electrical panel ventilation.

The control section includes:

- proportional-integral-derivative adjustment of water temperature;
- anti-freeze protection;
- management of unit start-up from local or remote device (serial);
- compressor overload protection and timer;
- potential-free contacts for compressor status;
- self-diagnosis system with instant error code visualisation;
- pre-alarm function for water anti-frost and refrigerant gas high pressure functions;
- visualisation of no. of hours of compressor operation;
- interface terminal with graphic display;
- multifunction phase monitor;
- remote ON/OFF control;
- second set-point enabling by potential-free contact;
- automatic rotation control of compressor start-up to balance wear (breakaway + hours of operation);
- relay for remote cumulative fault signal;
- set values, error codes and parameters can be displayed;
- set-point compensation with outdoor air temperature probe
- electrical socket (max 400W)

# Standard unit technical specifications

## Accessories

- Finned coil protection grilles and compressor compartment (available only with options: PPBM)
- Energy meter
- Demand limit with signal 4-20mA;
- Demand limit with signal 0-10V
- Set point compensation with 4-20 mA signal
- Set-point compensation with 0-10 V signal
- Serial communication module for Modbus supervisor
- Serial communication module for LonWorks supervisor
- Serial communication module for BACnet-IP supervisor
- Inverter driven variable flow-rate user side control depending on the temperature differential
- Refrigerant leak detector assembled on the casing (available only with SC and EN configuration)
- Remote control via microprocessor control (separately supplied accessories)
- Electrical panel antifreeze protection for min. outdoor temperature down to -25°C
- Spring antivibration mounts (separately supplied accessories)
- Anti-seismic spring antivibration mounts (separately supplied accessories)
- Couple of manually operated shut-off valves (separately supplied accessories)
- Steel mesh strainer on the water side (separately supplied accessories)
- Mains power supply (separately supplied accessories)
- High and low pressure gauges
- Microchannel coils protection panels
- Ecoshare function for the automatic management of a group of units
- Power factor correction capacitors
- Disposal for inrush current reduction
- Storage tank
- Cutoff valve on compressor supply and return

## 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.

# Standard unit technical specifications

## Unit equipment with outdoor air low temperatures

| MINIMUM OUTDOOR AIR TEMPERATURE |   | OPERATING UNIT                                                                                                                              | UNIT IN STAND-BY <sup>(5)</sup><br>(fed unit)                                                                                                                                                                                                                                                                                                             | UNIT IN STORAGE<br>(unit not fed) |
|---------------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| +11°C                           | 1 | ✓ STANDARD UNIT                                                                                                                             | ✓ STANDARD UNIT                                                                                                                                                                                                                                                                                                                                           |                                   |
| +2°C                            | 2 |                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                           |                                   |
| -5°C                            | 3 |                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                           |                                   |
| Between -10°C and -15°C         |   | ✓ STANDARD UNIT<br><br>✓ GLYCOL IN AN APPROPRIATE PERCENTAGE or WATER SIDE DIFFERENTIAL PRESSURE SWITCH WITH ANTI-FREEZE PROTECTION (PSWSA) | ✓ STANDARD UNIT<br><br>✓ GLYCOL IN AN APPROPRIATE PERCENTAGE or WATER SIDE DIFFERENTIAL PRESSURE SWITCH WITH ANTI-FREEZE PROTECTION (PSWSA)                                                                                                                                                                                                               | ✓ STANDARD UNIT <sup>(6)</sup>    |
| Between -15°C and -18°C         |   | ✓ STANDARD UNIT<br><br>✓ GLYCOL IN AN APPROPRIATE PERCENTAGE<br><br>✓ ELECTRICAL PANEL ANTIFREEZE PROTECTION (RE-25)                        | ✓ WATER EMPTY UNIT or GLYCOL IN AN APPROPRIATE PERCENTAGE<br><br>✓ ELECTRICAL PANEL ANTIFREEZE PROTECTION (RE-25)<br><br>✗ NOT SUITABLE: BUILT-IN PUMPS, TOTAL AND PARTIAL RECOVERY, STORAGE TANK, SHELL AND TUBE EXCHANGER                                                                                                                               | NOT POSSIBLE                      |
| Between -18°C and -25°C         |   | NOT POSSIBLE                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                           |                                   |
| Between -25°C and -39°C         |   | NOT POSSIBLE                                                                                                                                | ✓ WATER EMPTY UNIT or GLYCOL IN AN APPROPRIATE PERCENTAGE<br><br>✓ ELECTRICAL PANEL ANTIFREEZE PROTECTION (RE-39)<br><br>✓ ACOUSTIC CONFIGURATION SC or EN<br><br>✓ WATER SIDE DIFFERENTIAL PRESSURE SWITCH WITH ANTI-FREEZE PROTECTION (PSWSA)<br><br>✗ NOT SUITABLE: BUILT-IN PUMPS, TOTAL AND PARTIAL RECOVERY, STORAGE TANK, SHELL AND TUBE EXCHANGER | NOT POSSIBLE                      |

Data referred to the following conditions:  
- internal exchanger water = 12/7°C

1. Part load unit and air speed equal to 1 m/s.
2. Part load unit and air speed equal to 0.5 m/s.
3. Part load unit and outdoor air temperature at rest.
4. Unit at full load and outdoor air temperature at rest.

<sup>(5)</sup> The water pumping unit must be fed and connected to the unit according to the manual.

<sup>(6)</sup> Unit without water or containing water with an appropriate quantity of glycol.

At the unit start-up the water temperature or water with glycol must be inside the operating range indicated in the "Operating range" graph. To know the water freezing temperature on varying the glycol percentage refer to the specific 'Correction factors for glycol use' table.

⚠ Air conditions which are at rest are defined as the absence of air flowing towards the unit. Weak winds can induce air to flow through the exchanger and air-levels which can cause a reduction in the operating range. In the presence of predominant winds it is necessary to use suitable windbreak barriers.

# Configurazione unità

|                  |           |                    |                |           |            |              |              |          |          |          |
|------------------|-----------|--------------------|----------------|-----------|------------|--------------|--------------|----------|----------|----------|
| <u>WSAT-YSC4</u> | <u>90</u> | <u>.3/.4/.5/.6</u> | <u>EXC/PRM</u> | <u>SC</u> | <u>CCM</u> | <u>CREFB</u> | <u>EVPHE</u> | <u>=</u> | <u>=</u> | <u>=</u> |
| (1)              | (2)       | (3)                | (4)            | (5)       | (6)        | (7)          | (8)          | (9)      | (10)     | (11)     |

## (1) Range

WSAT = Air cooled liquid chiller

YSC4 = SPINchiller range with multiscroll compressors and R-32 refrigerant

## (2) Size

90 = Nominal compressor capacity (HP)

## (3) Compressori

.3 / .4 / .5 / .6 = Compressor quantity

## (4) Energy efficiency

EXC = EXCELLENCE Version (standard)

PRM = PREMIUM Version

## (5) Acoustic configuration

ST = Standard acoustic configuration

SC = Acoustic configuration with compressor soundproofing (standard)

EN = Super-silenced acoustic configuration

## (6) Condensing coil

CCM = Aluminum microchannel condensing coils (Standard)

CCME = E-coated microchannel coil

## (7) Fans

CREFB = Device for fan consumption reduction of the external section ECOBREEZE type (Standard)

## (8) Evaporator

EVPHE = Plate exchangers (Standard)

EVFTP = Shell and tube evaporator PED test

## (9) Condensation heat recovery

(-) not required (standard)

D = Partial energy recovery

R = Total energy recovery

## (10) Low evaporator water temperature configuration

(-) Not required (standard)

B - Low water temperature, down to -8°C (Brine)

## (11) Pumping unit

(-) Not required (standard)

1PM = Hydropack with N° 1 pump

1PMH = Hydropack with N° 1 high static pressure pump

1PMV = Hydropack with N° 1 inverter pump

1PMVH = Hydropack with N° 1 high static pressure inverter pump

2PM = Hydropack with N° 2 pumps

2PMH = Hydropack with N° 2 high static pressure pumps

2PMV = Hydropack with N° 2 inverter pumps

2PMVH = Hydropack with N° 2 high static pressure inverter pumps

## 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. Flow-rate modulation is managed by embedded logic thanks to built-in temperature probes.

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)

⚠ Device suitable for hydronic assemblies installed on board.

## IVFEDT

### External inverter driven variable flow-rate control depending on the temperature differential

This option allows water flow-rate modulation to the of pumping groups installed by the customer (external to the unit) during partial load conditions, maintaining stable the temperature difference between inlet and outlet to the heat exchanger. Flow-rate modulation is managed by embedded logic thanks to built-in temperature probes.

⚠ Device for hydronic assemblies not installed on board.

## ACC

### Storage tank

Steel storage tank complete with double layer covering with closed-cell insulation, stainless steel anti-freeze immersion resistance, bleed valve, draw off cock, cast-iron shut-off butterfly valve with quick connections and activation lever with a mechanical calibration lock at the evaporator output, quick connections with insulated casing.

Sizes 80.3 and 100.4 excellence and 90.3, 110.4 and 130.4 premium: the storage tank capacity is 420 liters.

Sizes 115.4, 130.4 excellence and 145.4, 170.5 and 185.5 premium: the storage tank capacity is 500 liters.

Sizes 155.5, 170.5 and 185.5 excellence and 210.6, 225.6 and 240.6 premium: the storage tank capacity is 780 liters.

Sizes 210.6, 225.6 and 240.6 excellence: the storage tank capacity is 1050 liters.

⚠ The device is installed and wired built-in the unit and is placed on the return from the system.

## CONTA2

### Energy meter

Allows to display and record the unit's main electrical parameters. The data can be displayed with the user interface on the unit 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.

## CMSC9

### Serial communication module for Modbus supervisor

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

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

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

## CMSC10

### Serial communication module for LonWorks supervisor

This enables 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.

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

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

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

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

## CMSC11

### Serial communication module for BACnet/IP supervisor

This enables 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.

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

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

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

# Built-in options

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>SCP4</b>  | <b>Set-point compensation with 0-10 V signal</b><br>This device enables the set-point to be varied which is pre-set using an external 0÷10 V signal.<br>The device is installed and wired built-in the unit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>SPC1</b>  | <b>Set-point compensation with 4-20 mA signal</b><br>This device enables the set-point to be varied which is pre-set using an external 4-20 mA signal.<br>The device is installed and wired built-in the unit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>ECS</b>   | <b>ECOSHARE function for the automatic management of a group of units</b><br>The device allows automatic management of units that operate on the same hydraulic circuit, by creating a local communication network. There are two control modes that can be set via a parameter during the activation stage. They both distribute the heat load on the available units by following the distribution logic to benefit from efficiency levels at part load.<br>Moreover:<br>Mode 1 - it keeps all the pumps active<br>Mode 2 - it activates only the pumps of the unit required to operate<br><br>The device allows for rotation based on the criterion of minimum wear and management of units in stand-by. There are various unit sizes. Every unit must be fitted with the ECOSHARE feature. The set of units is controlled by a Master unit.<br>The local network can be extended up to 7 units (1 Master and 6 Slave).<br><br> The unit supplied with this device can also be equipped at the same time with the RCMRX option and one of the CMSC9 / CMSC10 / CMSC11 options.<br> It is necessary to provide a non-return valve for each unit installed in hydraulic parallel and equipped with an hydronic assembly installed on board (Installation by the Customer).. |
| <b>PFCP</b>  | <b>Power-factor correction capacitors (cosfi &gt; 0.9)</b><br>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.<br>The device is installed and wired built-in the unit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>SFSTR</b> | <b>Disposal for inrush current reduction</b><br>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.<br>The noise is also reduced.<br>Device installed and wired built-in the unit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>RE-25</b> | <b>Electrical panel antifreeze protection for min. outdoor temperature down to -25°C</b><br>This option is necessary for very cold climates, where the external temperature can go down to -25°C. It includes self-regulating temperature maintaining resistances which are able to protect the electrical panel against condensation and frost guaranteeing that it functions correctly. The choice of device should be carried out on the basis of the minimum temperatures reached at the unit installation site.<br>The device is built-in the unit.<br><br> It is necessary to make precautions against build up of snow and ice in front of the exhaust and outdoor air inlet locations<br> 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.<br> This accessory does not lead to substantial variations in the electrical data for the unit which has been declared in the Electrical Data section.                                                                                                                                                                       |
| <b>RE-39</b> | <b>Electrical panel antifreeze protection for min. outdoor temperature down to -39°C</b><br>This option is necessary for very cold climates, where the external temperature can go down to -39°C. It includes self-regulating temperature maintaining resistances which are able to protect the electrical panel against condensation and frost guaranteeing that it functions correctly, and self-regulating resistances for the protection of the high-pressure safety switches.<br>The choice of device should be carried out on the basis of the minimum temperatures reached at the unit installation site.<br>The device is built-in the unit.<br><br> It is necessary to make precautions against build up of snow and ice in front of the exhaust and outdoor air inlet locations<br> 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.<br> This accessory does not lead to substantial variations in the electrical data for the unit which has been declared in the Electrical Data section.                                                                           |
| <b>MHP</b>   | <b>High and low pressure gauges</b><br>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.<br>The accessory is built-in the unit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PSWSA</b>   | <b>Water side differential pressure switch with antifreeze protection</b><br>It allows unit operation with -15°C of outdoor air temperature without using glycol.<br>It includes a heating cable able to protect the water side differential pressure switch.<br>Device installed and wired built-in the unit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>SDV</b>     | <b>Cutoff valve on compressor supply and return</b><br>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.<br>Device installed built-in the unit.                                                                                                                                                                                                                                                                                                                                     |
| <b>CCME</b>    | <b>E-coated microchannel coil</b><br>The full aluminium microchannel coil is completely treated by electrolysis so as to create a protective layer of epoxy polymer on the surface, with the following characteristics: <ul style="list-style-type: none"> <li>• over 3000 hours of protection against salt spray (ASTM G85 A3 - SWAAT);</li> <li>• over 2000 hours of protection against UV rays (ASTM G155-05a)</li> <li>• provide a very high resistance against corrosion.</li> </ul>                                                                                                                                                                                                                                                                                       |
| <b>RPRI</b>    | <b>Refrigerant leak detector assembled on the casing</b><br>Leak detector device built-in installed and placed inside the compressor box, it detects leaks of the internal refrigeration circuit.<br><br>⚠ Option available only for acoustic configuration with compressor soundproofing (SC) and super-silenced (EN).                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>PPBM</b>    | <b>Microchannel coils protection panels</b><br>Microchannel coils protection panels supplied on the manifold side.<br>They guarantee greater protection during transport and from accidental contact with things or people.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>PGCC</b>    | <b>Finned coil protection grilles and compressor compartment</b><br>This accessory is used to protect the external coil from the accidental contact with external things or people.<br>Ideal for installation in places where persons can pass from, such as car parks, terraces, etc.<br>The accessory is provided and installed built-in the unit. Grille slot 25mm.<br><br>⚠ This option is not suitable for application in sulphuric environments.<br>⚠ Option available only in combination with microchannel coils protection panels (PPBM)                                                                                                                                                                                                                               |
| <b>EVFTP</b>   | <b>Shell and tube evaporator PED test</b><br>Direct expansion exchanger with refrigerant side independent circuit for each compressor. The exchanger is composed of a cover made of carbon steel. The tubes, anchored to the tube plate by mechanical expansion, are made of copper, high efficiency, internally rifled to improve thermal exchange and specially designed for use with modern ecological refrigerants. It also includes a water side protection differential switch, an anti-freeze heating element to protect against icing, and covering in closed-cell thermo-insulating material that prevents the formation of condensation and heat exchange with the exterior. The water connections of the exchanger are quick-release with splined joint (Victaulic). |
| <b>DLM0-10</b> | <b>Demand limit with signal 0-10V</b><br>The device allows to limit the absorption unit through an external signal type 0-10V.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>DLM4-20</b> | <b>Demand limit with signal 4-20mA</b><br>The device allows to limit the absorption unit through an external signal type 4-20mA.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>PFGP</b>    | <b>Soundproofing paneling of the pumping unit</b><br>Configuration used to increase the hydronic assembly's silent operation.<br>It is made up of steel casings lined internally with high-density material with a soundproofing function. The casings are pre-painted with RAL 9001 color.<br><br>Option available for all pumping groups installed on the unit, in combination with the standard acoustic configuration (ST) and with compressor soundproofing (SC)                                                                                                                                                                                                                                                                                                           |



# Accessories separately supplied

## RCMRX

### Remote control via microprocessor 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 is a responsibility of the Customer..

## AMMX

### Spring antivibration mounts

The spring 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 is a responsibility of the Customer.

## AMMSX

### Anti-seismic spring antivibration mounts

The anti-seismic spring antivibration mounts must be fastened in special housings on the supporting metal struts. The containment structure is designed to ensure high resistance multidirectional forces acting on the surface of the unit in the presence of wind and / or telluric movements. The antivibration mounts have been tested according to ANSI/ASHRAE 171-2008 standard (Method of Testing Seismic Restraint devices for HVAC&R Equipment). The performance levels and the test methodology have been validated and certified by Lloyd's Register.

- ⚠ Installation is a responsibility of the Customer.

## IFWX

### Steel mesh strainer on the 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.

- ⚠ Pressure drop referred to a clean filter.
- ⚠ Installation is the responsibility of the Client, externally to the unit.
- ⚠ Check for the presence of the required hydraulic shut-off valves in the system, in order to undertake periodical maintenance.

## CSVX

### Couple of manually operated shut-off valves

The kit allows to isolated the input and output water circuit. It includes:

- no. 2 of cast-iron shut-off butterfly valves with fast fittings and activation lever with a mechanical setting lock
- no. 2 of victaulic connections

- ⚠ Installazione a cura del Cliente, esternamente all'unità.

## PSX

### Mains power supply

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.
- ⚠ Installation is a responsibility of the Customer.

## Performance - Excellence

### Standard acoustic configuration (ST) / Compressor soundproofing (SC)

| SIZE                              |   |       | 80.3 | 100.4 | 115.4 | 130.4 | 155.5 | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |
|-----------------------------------|---|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Cooling capacity                  | 1 | [kW]  | 223  | 267   | 315   | 364   | 424   | 472   | 520   | 574   | 624   | 676   |
| Compressor power input            | 1 | [kW]  | 64,3 | 80,3  | 93,2  | 107   | 125   | 139   | 156   | 171   | 186   | 204   |
| Total power input                 | 2 | [kW]  | 68,9 | 84,8  | 98,9  | 114   | 133   | 148   | 165   | 182   | 198   | 215   |
| Partial recovery heating capacity | 3 | [kW]  | 74,6 | 90,3  | 106   | 123   | 143   | 159   | 176   | 194   | 211   | 229   |
| Total recovery heating capacity   | 3 | [kW]  | 280  | 338   | 398   | 460   | 536   | 597   | 659   | 726   | 791   | 857   |
| EER                               | 1 | -     | 3,23 | 3,15  | 3,18  | 3,20  | 3,18  | 3,19  | 3,15  | 3,16  | 3,16  | 3,14  |
| Water flow-rate (User Side)       | 1 | [l/s] | 10,6 | 12,8  | 15,0  | 17,4  | 20,2  | 22,6  | 24,8  | 27,4  | 29,8  | 32,3  |
| Internal exchanger pressure drops | 1 | [kPa] | 20   | 27    | 30    | 37    | 41    | 38    | 39    | 46    | 50    | 41    |
| Cooling capacity (EN14511:2018)   | 4 | [kW]  | 222  | 267   | 314   | 364   | 423   | 472   | 520   | 573   | 624   | 675   |
| Total power input (EN14511:2018)  | 4 | [kW]  | 69,4 | 85,5  | 100   | 115   | 135   | 149   | 167   | 184   | 200   | 218   |
| EER (EN14511:2018)                | 4 | -     | 3,20 | 3,12  | 3,15  | 3,17  | 3,15  | 3,16  | 3,11  | 3,12  | 3,12  | 3,10  |
| SEER                              | 6 | -     | 4,70 | 4,67  | 4,78  | 4,75  | 4,92  | 5,00  | 4,96  | 4,94  | 4,96  | 4,90  |
| SEPR                              | 7 | -     | 6,44 | 6,40  | 6,55  | 6,51  | 6,54  | 6,65  | 6,60  | 6,57  | 6,60  | 6,52  |
| Cooling capacity (AHRI 550/590)   | 5 | [kW]  | 221  | 265   | 312   | 361   | 420   | 468   | 514   | 568   | 622   | 671   |
| Total power input (AHRI 550/590)  | 5 | [kW]  | 68,7 | 84,5  | 98,5  | 113   | 133   | 147   | 165   | 181   | 197   | 215   |
| COP <sub>R</sub>                  | 5 | -     | 3,22 | 3,14  | 3,17  | 3,19  | 3,16  | 3,18  | 3,12  | 3,14  | 3,16  | 3,12  |
| IPLV                              | 5 | -     | 5,05 | 4,93  | 4,85  | 4,82  | 4,85  | 4,93  | 4,88  | 4,87  | 4,84  | 4,82  |

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 675)

1. Data referred to the following conditions: internal exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35°C. Evaporator fouling factor = 0.44 x 10<sup>-4</sup> m<sup>2</sup> 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. Recovery exchanger water = 40/45°C
4. Data compliant to Standard EN 14511:2018 referred to the following conditions: internal exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35°C
5. Data compliant to Standard AHRI 550/590 referred to the following conditions: internal exchanger water temperature = 6,7 °C. Water flow-rate 0,043 l/s per kW. Entering external exchanger air temperature = 35°C. Evaporator fouling factor = 0.18 x 10<sup>-4</sup> m<sup>2</sup> K/W
6. Data compliant to Standard EN 14825:2018
7. Data compliant according to EU regulation 2016/2281

### Super-silenced acoustic configuration (EN)

| SIZE                              |   |       | 80.3 | 100.4 | 115.4 | 130.4 | 155.5 | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |
|-----------------------------------|---|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Cooling capacity                  | 1 | [kW]  | 217  | 262   | 306   | 355   | 409   | 459   | 504   | 556   | 599   | 646   |
| Compressor power input            | 1 | [kW]  | 67,5 | 85,7  | 98,4  | 113   | 130   | 147   | 165   | 183   | 197   | 217   |
| Total power input                 | 2 | [kW]  | 70,1 | 88,2  | 102   | 116   | 134   | 152   | 171   | 189   | 203   | 224   |
| Partial recovery heating capacity | 3 | [kW]  | 74,0 | 90,4  | 105   | 122   | 140   | 158   | 174   | 192   | 207   | 224   |
| Total recovery heating capacity   | 3 | [kW]  | 276  | 336   | 392   | 453   | 522   | 588   | 649   | 717   | 772   | 836   |
| EER                               | 1 | -     | 3,10 | 2,97  | 3,01  | 3,04  | 3,04  | 3,02  | 2,96  | 2,95  | 2,95  | 2,89  |
| Water flow-rate (User Side)       | 1 | [l/s] | 10,4 | 12,5  | 14,6  | 16,9  | 19,5  | 21,9  | 24,1  | 26,6  | 28,6  | 30,8  |
| Internal exchanger pressure drops | 1 | [kPa] | 19   | 26    | 29    | 34    | 39    | 37    | 37    | 44    | 47    | 38    |
| Cooling capacity (EN14511:2018)   | 4 | [kW]  | 217  | 261   | 306   | 354   | 408   | 459   | 504   | 556   | 599   | 645   |
| Total power input (EN14511:2018)  | 4 | [kW]  | 70,5 | 88,9  | 102   | 118   | 136   | 153   | 172   | 191   | 205   | 225   |
| EER (EN14511:2018)                | 4 | -     | 3,07 | 2,94  | 2,98  | 3,01  | 3,01  | 2,99  | 2,93  | 2,91  | 2,92  | 2,86  |
| SEER                              | 6 | -     | 4,66 | 4,62  | 4,73  | 4,70  | 4,87  | 4,94  | 4,91  | 4,89  | 4,91  | 4,79  |
| SEPR                              | 7 | -     | 6,38 | 6,33  | 6,48  | 6,44  | 6,48  | 6,57  | 6,53  | 6,50  | 6,53  | 6,46  |
| Cooling capacity (AHRI 550/590)   | 5 | [kW]  | 215  | 259   | 303   | 351   | 405   | 455   | 499   | 551   | 597   | 643   |
| Total power input (AHRI 550/590)  | 5 | [kW]  | 69,8 | 87,8  | 101   | 116   | 134   | 151   | 170   | 188   | 203   | 223   |
| COP <sub>R</sub>                  | 5 | -     | 3,08 | 2,95  | 3,00  | 3,03  | 3,02  | 3,01  | 2,94  | 2,93  | 2,94  | 2,88  |
| IPLV                              | 5 | -     | 5,01 | 4,86  | 4,79  | 4,75  | 4,80  | 4,78  | 4,87  | 4,85  | 4,83  | 4,80  |

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 675)

1. Data referred to the following conditions: internal exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35°C. Evaporator fouling factor = 0.44 x 10<sup>-4</sup> m<sup>2</sup> 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. Recovery exchanger water = 40/45°C
4. Data compliant to Standard EN 14511:2018 referred to the following conditions: internal exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35°C
5. Data compliant to Standard AHRI 550/590 referred to the following conditions: internal exchanger water temperature = 6,7 °C. Water flow-rate 0,043 l/s per kW. Entering external exchanger air temperature = 35°C. Evaporator fouling factor = 0.18 x 10<sup>-4</sup> m<sup>2</sup> K/W
6. Data compliant to Standard EN 14825:2018
7. Data compliant according to EU regulation 2016/2281

# General technical data

## Performance - Premium

### Standard acoustic configuration (ST) / Compressor soundproofing (SC)

| SIZE                              |   |       | 90.3 | 110.4 | 130.4 | 145.4 | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |
|-----------------------------------|---|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Cooling capacity                  | 1 | [kW]  | 232  | 291   | 333   | 385   | 444   | 484   | 538   | 591   | 644   |
| Compressor power input            | 1 | [kW]  | 80,5 | 96,6  | 118   | 131   | 148   | 171   | 189   | 198   | 222   |
| Total power input                 | 2 | [kW]  | 83,9 | 101   | 123   | 137   | 155   | 177   | 197   | 207   | 231   |
| Partial recovery heating capacity | 3 | [kW]  | 81,1 | 101   | 117   | 134   | 154   | 170   | 189   | 205   | 225   |
| Total recovery heating capacity   | 3 | [kW]  | 303  | 377   | 438   | 502   | 576   | 636   | 707   | 768   | 842   |
| EER                               | 1 | -     | 2,76 | 2,88  | 2,72  | 2,80  | 2,87  | 2,73  | 2,73  | 2,85  | 2,79  |
| Water flow-rate (User Side)       | 1 | [l/s] | 11,1 | 13,9  | 15,9  | 18,4  | 21,2  | 23,1  | 25,7  | 28,2  | 30,8  |
| Internal exchanger pressure drops | 1 | [kPa] | 21   | 32    | 34    | 42    | 44    | 40    | 48    | 49    | 51    |
| Cooling capacity (EN14511:2018)   | 4 | [kW]  | 232  | 291   | 333   | 384   | 443   | 483   | 537   | 590   | 644   |
| Total power input (EN14511:2018)  | 4 | [kW]  | 84,5 | 102   | 124   | 139   | 156   | 179   | 199   | 209   | 233   |
| EER (EN14511:2018)                | 4 | -     | 2,74 | 2,85  | 2,70  | 2,77  | 2,84  | 2,70  | 2,70  | 2,82  | 2,76  |
| SEER                              | 6 | -     | 4,38 | 4,48  | 4,46  | 4,47  | 4,65  | 4,64  | 4,61  | 4,69  | 4,62  |
| SEPR                              | 7 | -     | 6,00 | 6,13  | 6,11  | 6,13  | 6,18  | 6,17  | 6,13  | 6,23  | 6,15  |
| Cooling capacity (AHRI 550/590)   | 5 | [kW]  | 230  | 288   | 330   | 381   | 440   | 479   | 532   | 585   | 637   |
| Total power input (AHRI 550/590)  | 5 | [kW]  | 83,6 | 101   | 122   | 137   | 154   | 177   | 196   | 206   | 230   |
| COP <sub>p</sub>                  | 5 | -     | 2,75 | 2,85  | 2,70  | 2,78  | 2,86  | 2,71  | 2,71  | 2,84  | 2,77  |
| IPLV                              | 5 | -     | 4,59 | 4,79  | 4,64  | 4,67  | 4,65  | 4,73  | 4,59  | 4,57  | 4,55  |

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 675)

1. Data referred to the following conditions: internal exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35°C. Evaporator fouling factor = 0.44 x 10<sup>-4</sup>(-4) m<sup>2</sup> 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. Recovery exchanger water = 40/45°C
4. Data compliant to Standard EN 14511:2018 referred to the following conditions: internal exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35°C
5. Data compliant to Standard AHRI 550/590 referred to the following conditions: internal exchanger water temperature = 6,7 °C. Water flow-rate 0,043 l/s per kW. Entering external exchanger air temperature = 35°C. Evaporator fouling factor = 0.18 x 10<sup>-4</sup>(-4) m<sup>2</sup> K/W
6. Data compliant to Standard EN 14825:2018
7. Data compliant according to EU regulation 2016/2281

### Super-silenced acoustic configuration (EN)

| SIZE                              |   |       | 90.3 | 110.4 | 130.4 | 145.4 | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |
|-----------------------------------|---|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Cooling capacity                  | 1 | [kW]  | 228  | 283   | 329   | 374   | 432   | 474   | 527   | 580   | 623   |
| Compressor power input            | 1 | [kW]  | 83,3 | 99,6  | 124   | 135   | 153   | 178   | 196   | 205   | 230   |
| Total power input                 | 2 | [kW]  | 85,8 | 103   | 127   | 139   | 158   | 183   | 202   | 211   | 236   |
| Partial recovery heating capacity | 3 | [kW]  | 80,8 | 99,5  | 118   | 132   | 152   | 170   | 188   | 204   | 222   |
| Total recovery heating capacity   | 3 | [kW]  | 301  | 371   | 439   | 493   | 567   | 631   | 701   | 761   | 827   |
| EER                               | 1 | -     | 2,65 | 2,75  | 2,59  | 2,69  | 2,74  | 2,59  | 2,62  | 2,75  | 2,64  |
| Water flow-rate (User Side)       | 1 | [l/s] | 10,9 | 13,5  | 15,7  | 17,8  | 20,6  | 22,6  | 25,2  | 27,7  | 29,7  |
| Internal exchanger pressure drops | 1 | [kPa] | 21   | 30    | 33    | 39    | 42    | 39    | 46    | 47    | 48    |
| Cooling capacity (EN14511:2018)   | 4 | [kW]  | 227  | 283   | 329   | 374   | 432   | 474   | 527   | 580   | 622   |
| Total power input (EN14511:2018)  | 4 | [kW]  | 86,3 | 104   | 128   | 140   | 159   | 184   | 203   | 213   | 239   |
| EER (EN14511:2018)                | 4 | -     | 2,63 | 2,73  | 2,57  | 2,67  | 2,71  | 2,57  | 2,59  | 2,72  | 2,61  |
| SEER                              | 6 | -     | 4,34 | 4,44  | 4,42  | 4,45  | 4,62  | 4,61  | 4,59  | 4,63  | 4,59  |
| SEPR                              | 7 | -     | 5,95 | 6,08  | 6,06  | 6,10  | 6,14  | 6,13  | 6,10  | 6,16  | 6,10  |
| Cooling capacity (AHRI 550/590)   | 5 | [kW]  | 226  | 281   | 326   | 370   | 429   | 470   | 522   | 574   | 616   |
| Total power input (AHRI 550/590)  | 5 | [kW]  | 85,4 | 103   | 126   | 138   | 157   | 182   | 201   | 210   | 235   |
| COP <sub>p</sub>                  | 5 | -     | 2,65 | 2,73  | 2,59  | 2,68  | 2,73  | 2,58  | 2,60  | 2,73  | 2,62  |
| IPLV                              | 5 | -     | 4,54 | 4,74  | 4,62  | 4,67  | 4,62  | 4,50  | 4,57  | 4,56  | 4,51  |

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 675)

1. Data referred to the following conditions: internal exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35°C. Evaporator fouling factor = 0.44 x 10<sup>-4</sup>(-4) m<sup>2</sup> 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. Recovery exchanger water = 40/45°C
4. Data compliant to Standard EN 14511:2018 referred to the following conditions: internal exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35°C
5. Data compliant to Standard AHRI 550/590 referred to the following conditions: internal exchanger water temperature = 6,7 °C. Water flow-rate 0,043 l/s per kW. Entering external exchanger air temperature = 35°C. Evaporator fouling factor = 0.18 x 10<sup>-4</sup>(-4) m<sup>2</sup> K/W
6. Data compliant to Standard EN 14825:2018
7. Data compliant according to EU regulation 2016/2281

## Construction

## Excellence

| SIZE                               |   |     | 80.3      | 100.4 | 115.4 | 130.4 | 155.5 | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |
|------------------------------------|---|-----|-----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Compressor                         |   |     |           |       |       |       |       |       |       |       |       |       |
| Type of compressors                | 1 |     | SCROLL    |       |       |       |       |       |       |       |       |       |
| Refrigerant                        |   |     | R-32      |       |       |       |       |       |       |       |       |       |
| No. of compressors                 |   | Nr  | 3         | 4     | 4     | 4     | 5     | 5     | 5     | 6     | 6     | 6     |
| Rated power (C1)                   |   | HP  | 40        | 50    | 50    | 50    | 50    | 65    | 80    | 105   | 105   | 120   |
| Rated power (C2)                   |   | HP  | 40        | 50    | 65    | 80    | 105   | 105   | 105   | 105   | 120   | 120   |
| Std Capacity control steps         |   |     | 4         | 4     | 6     | 4     | 6     | 7     | 6     | 8     | 8     | 6     |
| Oil charge (C1)                    |   | l   | 8         | 9     | 9     | 9     | 9     | 11    | 13    | 17    | 17    | 23    |
| Oil charge(C2)                     |   | l   | 6         | 9     | 11    | 13    | 17    | 17    | 17    | 17    | 23    | 23    |
| Refrigerant charge (C1)            |   | kg  | 14        | 13    | 14    | 15    | 16    | 26    | 27    | 29    | 31    | 30    |
| Refrigerant charge (C2)            |   | kg  | 14        | 12    | 18    | 22    | 29    | 26    | 29    | 32    | 36    | 35    |
| Refrigeration circuits             |   | Nr  | 2         | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     |
| Internal exchanger (evaporator)    |   |     |           |       |       |       |       |       |       |       |       |       |
| Type of internal exchanger         | 2 |     | PHE       |       |       |       |       |       |       |       |       |       |
| N. of internal exchanger           |   | Nr  | 1         | 1     | 1     | 1     | 1     | 1     | 1     | 1     | 1     | 1     |
| Water content                      |   | l   | 20        | 20    | 24    | 28    | 36    | 48    | 57    | 57    | 49    | 60    |
| Minimum system water content       |   | l   | 1350      | 2700  | 2700  | 2200  | 3200  | 2850  | 3150  | 3450  | 3750  | 4500  |
| External exchanger (condenser)     |   |     |           |       |       |       |       |       |       |       |       |       |
| Type of external exchanger         | 3 |     | CCM       |       |       |       |       |       |       |       |       |       |
| Number of coils                    |   | Nr  | 4         | 4     | 5     | 6     | 7     | 8     | 8     | 9     | 10    | 10    |
| External Section Fans              |   |     |           |       |       |       |       |       |       |       |       |       |
| Type of fans                       | 4 |     | AX        |       |       |       |       |       |       |       |       |       |
| Number of fans                     |   | Nr  | 4         | 4     | 5     | 6     | 7     | 8     | 8     | 9     | 10    | 10    |
| Type of motor                      | 5 |     | EC        |       |       |       |       |       |       |       |       |       |
| Standard airflow (ST/SC)           |   | l/s | 21778     | 21778 | 27222 | 32667 | 38111 | 43556 | 43556 | 49000 | 54444 | 54444 |
| Standard airflow (EN)              |   | l/s | 16111     | 16111 | 20139 | 24167 | 28194 | 32222 | 32222 | 36250 | 40278 | 40278 |
| Connections                        |   |     |           |       |       |       |       |       |       |       |       |       |
| Water fittings                     |   |     | 4"        | 4"    | 4"    | 4"    | 5"    | 5"    | 5"    | 5"    | 5"    | 5"    |
| Power supply                       |   |     |           |       |       |       |       |       |       |       |       |       |
| Standard power supply              |   |     | 400/3~/50 |       |       |       |       |       |       |       |       |       |
| Electrical data                    |   |     |           |       |       |       |       |       |       |       |       |       |
| F.L.A. - Total                     |   | A   | 158,2     | 191,0 | 220,8 | 250,6 | 298,3 | 328,1 | 356,0 | 403,7 | 433,5 | 461,4 |
| F.L.I. - Total                     |   | kW  | 96,3      | 115,4 | 135,1 | 154,7 | 183,6 | 203,2 | 221,6 | 250,5 | 270,1 | 288,5 |
| M.I.C. - Value                     | 6 | A   | 492,5     | 432,7 | 555,1 | 584,9 | 632,6 | 662,4 | 690,3 | 738,0 | 767,8 | 795,7 |
| M.I.C. - with soft start accessory | 6 | A   | 314,5     | 301,2 | 377,1 | 406,9 | 454,6 | 484,4 | 512,3 | 560,0 | 589,8 | 617,7 |

1. SCROLL = SCROLL compressor
2. PHE = Plate heat exchanger
3. CCM = Full aluminium microchannel coils
4. AX = Axial fan
5. EC = Asynchronous motor with permanent magnet commuted electronically.
6. 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.

Unbalance between phase max 2 %

Voltage variation: max +/- 10%

Electrical data refer to standard units; according to the installed accessories, the data can suffer some variations.

# General technical data

## Construction

### Premium

| SIZE                               |     | 90.3      | 110.4  | 130.4 | 145.4 | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |  |
|------------------------------------|-----|-----------|--------|-------|-------|-------|-------|-------|-------|-------|--|
| Compressor                         |     |           |        |       |       |       |       |       |       |       |  |
| Type of compressors                | 1   |           | SCROLL |       |       |       |       |       |       |       |  |
| Refrigerant                        |     |           | R-32   |       |       |       |       |       |       |       |  |
| No. of compressors                 | Nr  | 3         | 4      | 4     | 4     | 5     | 5     | 6     | 6     | 6     |  |
| Rated power (C1)                   | HP  | 25        | 50     | 65    | 65    | 50    | 65    | 105   | 105   | 120   |  |
| Rated power (C2)                   | HP  | 65        | 60     | 65    | 80    | 120   | 120   | 105   | 120   | 120   |  |
| Std Capacity control steps         |     | 4         | 6      | 6     | 6     | 5     | 7     | 8     | 8     | 6     |  |
| Oil charge (C1)                    | l   | 4         | 9      | 11    | 11    | 9     | 11    | 17    | 17    | 23    |  |
| Oil charge(C2)                     | l   | 11        | 11     | 11    | 13    | 23    | 23    | 17    | 23    | 23    |  |
| Refrigerant charge (C1)            | kg  | 10        | 12     | 14    | 17    | 15    | 17    | 31    | 28    | 33    |  |
| Refrigerant charge (C2)            | kg  | 15        | 13     | 14    | 18    | 25    | 26    | 31    | 28    | 29    |  |
| Refrigeration circuits             | Nr  | 2         | 2      | 2     | 2     | 2     | 2     | 2     | 2     | 2     |  |
| Internal exchanger (evaporator)    |     |           |        |       |       |       |       |       |       |       |  |
| Type of internal exchanger         | 2   |           | PHE    |       |       |       |       |       |       |       |  |
| N. of internal exchanger           | Nr  | 1         | 1      | 1     | 1     | 1     | 1     | 1     | 1     | 1     |  |
| Water content                      | l   | 20        | 20     | 24    | 28    | 36    | 48    | 48    | 57    | 60    |  |
| Minimum system water content       | l   | 2350      | 2050   | 2550  | 2350  | 2800  | 2950  | 3250  | 3550  | 5450  |  |
| External exchanger (condenser)     |     |           |        |       |       |       |       |       |       |       |  |
| Type of external exchanger         | 3   |           | CCM    |       |       |       |       |       |       |       |  |
| Number of coils                    | Nr  | 3         | 4      | 4     | 5     | 6     | 6     | 7     | 8     | 8     |  |
| External Section Fans              |     |           |        |       |       |       |       |       |       |       |  |
| Type of fans                       | 4   |           | AX     |       |       |       |       |       |       |       |  |
| Number of fans                     | Nr  | 3         | 4      | 4     | 5     | 6     | 6     | 7     | 8     | 8     |  |
| Type of motor                      | 5   |           | EC     |       |       |       |       |       |       |       |  |
| Standard airflow (ST/SC)           | l/s | 16333     | 21778  | 21778 | 27222 | 32667 | 32667 | 38111 | 43556 | 43556 |  |
| Standard airflow (EN)              | l/s | 13750     | 18333  | 18333 | 22917 | 27500 | 27500 | 32083 | 36667 | 36667 |  |
| Connections                        |     |           |        |       |       |       |       |       |       |       |  |
| Water fittings                     |     | 4"        | 4"     | 4     | 4"    | 5"    | 5"    | 5"    | 5"    | 5"    |  |
| Power supply                       |     |           |        |       |       |       |       |       |       |       |  |
| Standard power supply              |     | 400/3~/50 |        |       |       |       |       |       |       |       |  |
| Electrical data                    |     |           |        |       |       |       |       |       |       |       |  |
| F.L.A. - Total                     | A   | 171,1     | 209,7  | 246,7 | 276,5 | 324,2 | 352,1 | 399,9 | 429,7 | 457,5 |  |
| F.L.I. - Total                     | kW  | 105,0     | 128,2  | 152,2 | 171,9 | 200,7 | 219,1 | 248,0 | 267,6 | 286,0 |  |
| M.I.C. - Value                     | 6 A | 505,4     | 544,0  | 581,0 | 610,8 | 658,6 | 686,4 | 734,2 | 764,0 | 791,8 |  |
| M.I.C. - with soft start accessory | 6 A | 327,4     | 366,0  | 403,0 | 432,8 | 480,6 | 508,4 | 556,2 | 586,0 | 613,8 |  |

1. SCROLL = SCROLL compressor
2. PHE = Plate heat exchanger
3. CCM = Full aluminium microchannel coils
4. AX = Axial fan
5. EC = Asynchronous motor with permanent magnet commuted electronically.
6. 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.

Unbalance between phase max 2 %

Voltage variation: max +/- 10%

Electrical data refer to standard units; according to the installed accessories, the data can suffer some variations.

## Sound levels - Excellence

### Standard acoustic configuration (ST)

| SIZE         | Sound power level (dB) - Octave band (Hz) |     |     |     |      |      |      |      | Sound power level | Sound pressure level |
|--------------|-------------------------------------------|-----|-----|-----|------|------|------|------|-------------------|----------------------|
|              | 63                                        | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | dB(A)             | dB(A)                |
| <b>80.3</b>  | 73                                        | 74  | 80  | 85  | 86   | 85   | 77   | 67   | 71                | 90                   |
| <b>100.4</b> | 75                                        | 76  | 83  | 86  | 86   | 86   | 79   | 70   | 72                | 91                   |
| <b>115.4</b> | 75                                        | 76  | 83  | 87  | 87   | 87   | 79   | 70   | 72                | 92                   |
| <b>130.4</b> | 76                                        | 77  | 84  | 88  | 89   | 88   | 80   | 70   | 73                | 93                   |
| <b>155.5</b> | 74                                        | 75  | 80  | 88  | 90   | 90   | 82   | 70   | 74                | 94                   |
| <b>170.5</b> | 75                                        | 75  | 80  | 88  | 91   | 90   | 82   | 70   | 74                | 95                   |
| <b>185.5</b> | 75                                        | 75  | 81  | 89  | 91   | 91   | 82   | 70   | 75                | 95                   |
| <b>210.6</b> | 76                                        | 76  | 82  | 90  | 92   | 92   | 83   | 71   | 75                | 96                   |
| <b>225.6</b> | 76                                        | 76  | 81  | 90  | 92   | 91   | 83   | 71   | 75                | 96                   |
| <b>240.6</b> | 76                                        | 77  | 82  | 90  | 93   | 92   | 84   | 71   | 76                | 97                   |

Sound levels refer to full load units, in test nominal conditions. The sound pressure level refers to 1 m. from the standard unit outer surface operating in open field. Measures 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).

Data referred to the following conditions:

- internal exchanger water temperature = 12/7 °C
- ambient temperature = 35 °C

### Acoustic configuration with compressor soundproofing (SC)

| SIZE         | Sound power level (dB) - Octave band (Hz) |     |     |     |      |      |      |      | Sound power level | Sound pressure level |
|--------------|-------------------------------------------|-----|-----|-----|------|------|------|------|-------------------|----------------------|
|              | 63                                        | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | dB(A)             | dB(A)                |
| <b>80.3</b>  | 71                                        | 72  | 77  | 83  | 83   | 82   | 74   | 64   | 68                | 87                   |
| <b>100.4</b> | 72                                        | 74  | 79  | 84  | 84   | 83   | 76   | 67   | 69                | 88                   |
| <b>115.4</b> | 73                                        | 74  | 79  | 85  | 85   | 84   | 76   | 67   | 69                | 89                   |
| <b>130.4</b> | 74                                        | 75  | 80  | 85  | 86   | 85   | 77   | 67   | 70                | 90                   |
| <b>155.5</b> | 72                                        | 73  | 77  | 85  | 87   | 85   | 78   | 66   | 70                | 90                   |
| <b>170.5</b> | 73                                        | 73  | 77  | 86  | 88   | 85   | 79   | 67   | 71                | 91                   |
| <b>185.5</b> | 73                                        | 73  | 78  | 86  | 88   | 86   | 79   | 67   | 71                | 91                   |
| <b>210.6</b> | 73                                        | 74  | 79  | 87  | 89   | 86   | 79   | 68   | 71                | 92                   |
| <b>225.6</b> | 74                                        | 74  | 79  | 87  | 89   | 87   | 80   | 67   | 71                | 92                   |
| <b>240.6</b> | 74                                        | 75  | 79  | 88  | 90   | 88   | 80   | 68   | 72                | 93                   |

Sound levels refer to full load units, in test nominal conditions. The sound pressure level refers to 1 m. from the standard unit outer surface operating in open field. Measures 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).

Data referred to the following conditions:

- internal exchanger water temperature = 12/7 °C
- ambient temperature = 35 °C

# General technical data

## Super-silenced acoustic configuration (EN)

| SIZE         | Sound power level (dB) - Octave band (Hz) |     |     |     |      |      |      |      | Sound power level | Sound pressure level |
|--------------|-------------------------------------------|-----|-----|-----|------|------|------|------|-------------------|----------------------|
|              | 63                                        | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | dB(A)             | dB(A)                |
| <b>80.3</b>  | 58                                        | 71  | 75  | 79  | 79   | 80   | 71   | 64   | 65                | 84                   |
| <b>100.4</b> | 59                                        | 72  | 77  | 80  | 78   | 80   | 72   | 66   | 65                | 84                   |
| <b>115.4</b> | 60                                        | 73  | 78  | 81  | 81   | 82   | 73   | 66   | 66                | 86                   |
| <b>130.4</b> | 59                                        | 72  | 77  | 81  | 81   | 82   | 73   | 65   | 66                | 86                   |
| <b>155.5</b> | 59                                        | 71  | 76  | 80  | 82   | 81   | 73   | 65   | 66                | 86                   |
| <b>170.5</b> | 60                                        | 71  | 77  | 81  | 83   | 82   | 74   | 66   | 67                | 87                   |
| <b>185.5</b> | 60                                        | 72  | 77  | 82  | 84   | 83   | 75   | 66   | 68                | 88                   |
| <b>210.6</b> | 61                                        | 72  | 78  | 82  | 84   | 83   | 75   | 66   | 67                | 88                   |
| <b>225.6</b> | 61                                        | 72  | 77  | 82  | 84   | 84   | 75   | 66   | 67                | 88                   |
| <b>240.6</b> | 61                                        | 72  | 78  | 83  | 85   | 84   | 76   | 66   | 68                | 89                   |

Sound levels refer to full load units, in test nominal conditions. The sound pressure level refers to 1 m. from the standard unit outer surface operating in open field. Measures 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).

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

## Sound levels - Premium

### Standard acoustic configuration (ST)

| SIZE         | Sound power level (dB) - Octave band (Hz) |     |     |     |      |      |      |      | Sound power level | Sound pressure level |
|--------------|-------------------------------------------|-----|-----|-----|------|------|------|------|-------------------|----------------------|
|              | 63                                        | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | dB(A)             | dB(A)                |
| <b>90.3</b>  | 73                                        | 74  | 81  | 84  | 86   | 85   | 78   | 68   | 71                | 90                   |
| <b>110.4</b> | 74                                        | 76  | 83  | 86  | 87   | 86   | 79   | 69   | 72                | 91                   |
| <b>130.4</b> | 74                                        | 75  | 83  | 86  | 87   | 87   | 79   | 69   | 73                | 92                   |
| <b>145.5</b> | 75                                        | 76  | 83  | 87  | 89   | 88   | 80   | 70   | 73                | 93                   |
| <b>170.5</b> | 73                                        | 74  | 80  | 87  | 90   | 90   | 81   | 70   | 74                | 94                   |
| <b>185.5</b> | 73                                        | 74  | 80  | 87  | 90   | 90   | 81   | 69   | 74                | 94                   |
| <b>210.6</b> | 74                                        | 75  | 81  | 88  | 91   | 91   | 82   | 71   | 75                | 95                   |
| <b>225.6</b> | 75                                        | 76  | 82  | 89  | 92   | 92   | 83   | 71   | 76                | 96                   |
| <b>240.6</b> | 75                                        | 75  | 81  | 89  | 92   | 91   | 83   | 71   | 76                | 96                   |

Sound levels refer to full load units, in test nominal conditions. The sound pressure level refers to 1 m. from the standard unit outer surface operating in open field. Measures 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).

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

### Acoustic configuration with compressor soundproofing (SC)

| SIZE         | Sound power level (dB) - Octave band (Hz) |     |     |     |      |      |      |      | Sound power level | Sound pressure level |
|--------------|-------------------------------------------|-----|-----|-----|------|------|------|------|-------------------|----------------------|
|              | 63                                        | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | dB(A)             | dB(A)                |
| <b>90.3</b>  | 71                                        | 72  | 77  | 83  | 83   | 82   | 74   | 65   | 68                | 87                   |
| <b>110.4</b> | 72                                        | 74  | 79  | 84  | 84   | 83   | 76   | 66   | 69                | 88                   |
| <b>130.4</b> | 72                                        | 73  | 79  | 84  | 85   | 84   | 76   | 66   | 70                | 89                   |
| <b>145.5</b> | 72                                        | 73  | 79  | 84  | 85   | 84   | 76   | 66   | 69                | 89                   |
| <b>170.5</b> | 71                                        | 72  | 77  | 85  | 87   | 85   | 77   | 66   | 70                | 90                   |
| <b>185.5</b> | 71                                        | 72  | 77  | 85  | 87   | 85   | 78   | 66   | 70                | 90                   |
| <b>210.6</b> | 72                                        | 73  | 78  | 86  | 88   | 86   | 78   | 67   | 71                | 91                   |
| <b>225.6</b> | 73                                        | 74  | 79  | 87  | 89   | 87   | 79   | 68   | 72                | 92                   |
| <b>240.6</b> | 73                                        | 74  | 79  | 86  | 89   | 87   | 79   | 67   | 72                | 92                   |

Sound levels refer to full load units, in test nominal conditions. The sound pressure level refers to 1 m. from the standard unit outer surface operating in open field. Measures 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).

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

# General technical data

## Super-silenced acoustic configuration (EN)

| SIZE         | Sound power level (dB) - Octave band (Hz) |     |     |     |      |      |      |      | Sound power level | Sound pressure level |
|--------------|-------------------------------------------|-----|-----|-----|------|------|------|------|-------------------|----------------------|
|              | 63                                        | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | dB(A)             | dB(A)                |
| <b>90.3</b>  | 60                                        | 73  | 76  | 80  | 79   | 80   | 71   | 63   | 65                | 84                   |
| <b>110.4</b> | 63                                        | 76  | 79  | 82  | 81   | 82   | 73   | 65   | 67                | 86                   |
| <b>130.4</b> | 62                                        | 74  | 78  | 82  | 81   | 82   | 73   | 65   | 67                | 86                   |
| <b>145.5</b> | 63                                        | 75  | 79  | 83  | 83   | 83   | 73   | 65   | 67                | 87                   |
| <b>170.5</b> | 62                                        | 74  | 77  | 82  | 83   | 82   | 74   | 65   | 67                | 87                   |
| <b>185.5</b> | 63                                        | 75  | 78  | 83  | 84   | 83   | 75   | 65   | 68                | 88                   |
| <b>210.6</b> | 64                                        | 76  | 79  | 84  | 85   | 84   | 76   | 67   | 69                | 89                   |
| <b>225.6</b> | 64                                        | 76  | 79  | 84  | 85   | 84   | 76   | 66   | 69                | 89                   |
| <b>240.6</b> | 63                                        | 76  | 78  | 84  | 85   | 84   | 76   | 66   | 69                | 89                   |

Sound levels refer to full load units, in test nominal conditions. The sound pressure level refers to 1 m. from the standard unit outer surface operating in open field. Measures 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).

Data referred to the following conditions:

- internal exchanger water temperature = 12/7 °C
- ambient temperature = 35 °C

## Correction factors for ethylene glycol use

| % ETHYLENE GLYCOL BY WEIGHT             |    | 5%    | 10%   | 15%   | 20%   | 25%   | 30%   | 35%   | 40%   | 45%   | 50%   |
|-----------------------------------------|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Freezing temperature                    | °C | -2    | -3,9  | -6,5  | -8,9  | -11,8 | -15,6 | -19,0 | -23,4 | -27,8 | -32,7 |
| Safety temperature                      | °C | 3     | 1     | -1    | -4    | -6    | -10   | -14   | -19   | -23,8 | -29,4 |
| Cooling Capacity Factor                 | Nr | 0,997 | 0,994 | 0,990 | 0,986 | 0,981 | 0,976 | 0,970 | 0,964 | 0,957 | 0,950 |
| Compressor power input Factor           | Nr | 0,999 | 0,999 | 0,998 | 0,997 | 0,996 | 0,996 | 0,995 | 0,994 | 0,993 | 0,993 |
| Internal exchanger pressure drop factor | Nr | 1,016 | 1,035 | 1,056 | 1,080 | 1,106 | 1,135 | 1,166 | 1,200 | 1,236 | 1,275 |

## Correction factors for propylene glycol use

| % PROPYLENE GLYCOL BY WEIGHT            |    | 5%    | 10%   | 15%   | 20%   | 25%   | 30%   | 35%   | 40%   | 45%   | 50%   |
|-----------------------------------------|----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Freezing temperature                    | °C | -2    | -3,9  | -6,5  | -8,9  | -11,8 | -15,6 | -19,0 | -23,4 | -27,8 | -32,7 |
| Safety temperature                      | °C | 3     | 1     | -1    | -4    | -6    | -10   | -14   | -19   | -23,8 | -29,4 |
| Cooling Capacity Factor                 | Nr | 0,995 | 0,990 | 0,983 | 0,976 | 0,968 | 0,960 | 0,950 | 0,939 | 0,928 | 0,916 |
| Compressor power input Factor           | Nr | 0,999 | 0,997 | 0,995 | 0,993 | 0,991 | 0,988 | 0,986 | 0,983 | 0,980 | 0,977 |
| Internal exchanger pressure drop factor | Nr | 1,027 | 1,058 | 1,093 | 1,133 | 1,176 | 1,224 | 1,276 | 1,332 | 1,393 | 1,457 |

## Fouling Correction Factors

### INTERNAL EXCHANGER (EVAPORATOR)

| M2 °C/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

## Exchanger operating range

### INTERNAL EXCHANGER (EVAPORATOR)

|                              |          | DPR  | DPW  |
|------------------------------|----------|------|------|
| Scambiatore a piastre        | PED (CE) | 4700 | 1000 |
| Scambiatore a fascio tubiero | PED (CE) | 3000 | 1000 |

DPr = Maximum operating pressure on refrigerant side in kPa

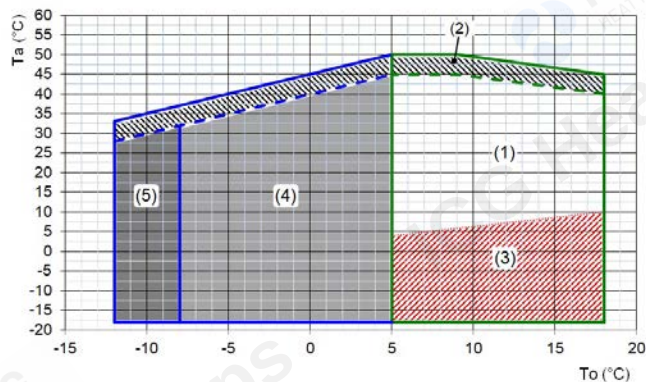
DPW = Maximum operating pressure on water side in kPa

## Overload and control device calibrations

|                                       |     | OPEN | CLOSE | VALUE |
|---------------------------------------|-----|------|-------|-------|
| High pressure switch                  | kPa | 4230 |       | -     |
| Antifreeze protection                 | °C  | 4    | 5,5   | -     |
| High pressure safety valve            | kPa | -    | -     | 4700  |
| Low pressure safety valve             | kPa | -    | -     | 3000  |
| Max no. of compressor starts per hour | n°  | -    | -     | 10    |
| Discharge safety thermostat           | °C  | -    | -     | 150   |

# General technical data

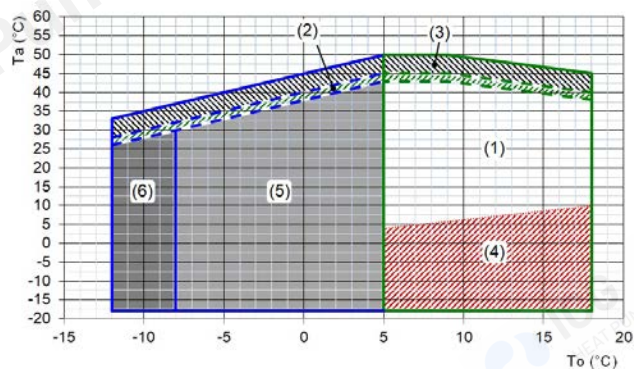
## Operating range - Excellence ST/SC



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
4. Unit operating range in 'B - Low water temperature' configuration
5. Extended of operating range (extremely low water temperature option available on request)

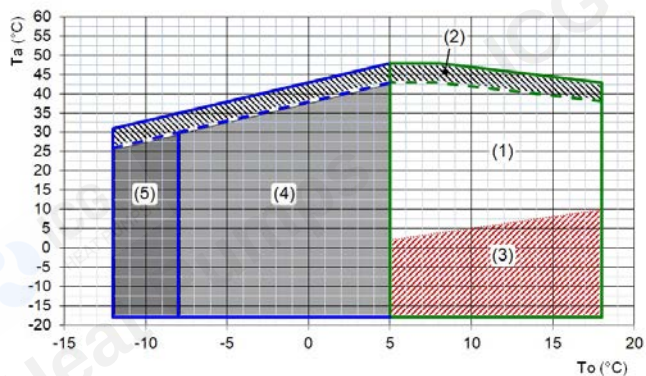
## Operating range - Excellence EN



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. Extended operating range with air flow-rate automatic increasing. Inside this field the sound levels are the same of the 'compressor soundproofing (SC)' acoustic configuration
3. Unit operating range with compressor capacity automatic partialization
4. Standard unit operating range with air flow-rate automatic modulation
5. Unit operating range in 'B - Low water temperature' configuration
6. Extended of operating range (extremely low water temperature option available on request)

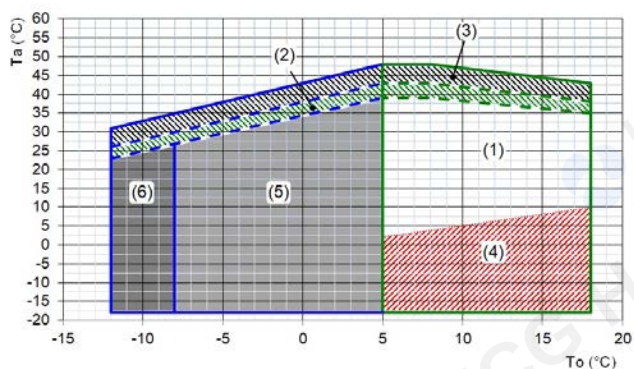
## Operating range - Premium ST/SC



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
4. Unit operating range in 'B - Low water temperature' configuration
5. Extended of operating range (extremely low water temperature option available on request)

## Operating range - Premium 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. Extended operating range with air flow-rate automatic increasing. Inside this field the sound levels are the same of the 'compressor soundproofing (SC)' acoustic configuration
3. Unit operating range with compressor capacity automatic partialization
4. Standard unit operating range with air flow-rate automatic modulation
5. Unit operating range in 'B - Low water temperature' configuration
6. Extended of operating range (extremely low water temperature option available on request)

## Excellence

## Cooling - ST/SC

Entering external exchanger air temperature (°C)

| SIZE  | To (°C) | 25  |      | 30  |      | 35  |      | 40  |      | 45  |      | 50  |      |
|-------|---------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|
|       |         | kWf | kWe  | kWf | kWe  | kWf | kWe  | kWf | kWe  | kWf | kWe  | kWf | kWe  |
| 80.3  | 5       | 226 | 51,6 | 217 | 57,0 | 207 | 62,9 | 196 | 69,5 | 185 | 77,0 | 172 | 85,5 |
|       | 6       | 233 | 52,1 | 224 | 57,5 | 214 | 63,5 | 203 | 70,2 | 191 | 77,8 | 178 | 86,3 |
|       | 7       | 242 | 52,8 | 233 | 58,3 | 223 | 64,3 | 210 | 71,0 | 198 | 78,6 | 184 | 87,1 |
|       | 10      | 255 | 53,7 | 244 | 59,2 | 233 | 65,3 | 220 | 72,1 | 207 | 79,7 | -   | -    |
|       | 15      | 291 | 56,2 | 279 | 62,1 | 267 | 68,6 | 253 | 75,7 | 238 | 83,5 | -   | -    |
|       | 18      | 316 | 58,0 | 303 | 64,1 | 289 | 70,7 | 274 | 78,0 | 259 | 86,1 | -   | -    |
| 100.4 | 5       | 270 | 64,5 | 259 | 71,0 | 248 | 78,2 | 234 | 86,2 | 221 | 94,9 | 116 | 45,5 |
|       | 6       | 279 | 65,2 | 268 | 71,8 | 256 | 79,1 | 242 | 87,1 | 228 | 96,0 | 122 | 45,9 |
|       | 7       | 289 | 66,2 | 278 | 72,9 | 267 | 80,3 | 251 | 88,4 | 236 | 97,4 | 125 | 46,2 |
|       | 10      | 305 | 67,6 | 292 | 74,4 | 279 | 81,9 | 263 | 90,1 | 247 | 99,1 | -   | -    |
|       | 15      | 345 | 71,3 | 331 | 78,5 | 316 | 86,4 | 299 | 95,1 | 281 | 105  | -   | -    |
|       | 18      | 372 | 73,9 | 357 | 81,4 | 341 | 89,5 | 322 | 98,4 | 303 | 108  | -   | -    |
| 115.4 | 5       | 317 | 74,8 | 305 | 82,4 | 292 | 90,9 | 276 | 100  | 260 | 111  | 196 | 92,8 |
|       | 6       | 328 | 75,6 | 315 | 83,3 | 301 | 91,9 | 285 | 101  | 268 | 112  | 204 | 93,6 |
|       | 7       | 340 | 76,7 | 327 | 84,5 | 315 | 93,2 | 296 | 103  | 278 | 114  | 211 | 94,5 |
|       | 10      | 359 | 78,3 | 345 | 86,2 | 329 | 95,0 | 310 | 105  | 291 | 116  | -   | -    |
|       | 15      | 406 | 82,4 | 391 | 90,8 | 374 | 100  | 353 | 110  | 332 | 122  | -   | -    |
|       | 18      | 439 | 85,4 | 422 | 94,0 | 403 | 104  | 381 | 114  | 359 | 126  | -   | -    |
| 130.4 | 5       | 368 | 85,8 | 353 | 94,6 | 337 | 104  | 320 | 115  | 300 | 128  | 233 | 111  |
|       | 6       | 381 | 86,7 | 365 | 95,6 | 349 | 106  | 330 | 117  | 311 | 129  | 242 | 112  |
|       | 7       | 394 | 87,8 | 378 | 96,8 | 364 | 107  | 342 | 118  | 322 | 131  | 251 | 113  |
|       | 10      | 418 | 89,7 | 400 | 98,8 | 381 | 109  | 360 | 120  | 338 | 133  | -   | -    |
|       | 15      | 472 | 94,3 | 453 | 104  | 432 | 115  | 410 | 126  | 386 | 140  | -   | -    |
|       | 18      | 510 | 97,6 | 489 | 108  | 468 | 118  | 444 | 131  | 417 | 144  | -   | -    |
| 155.5 | 5       | 431 | 100  | 414 | 111  | 395 | 122  | 374 | 135  | 352 | 150  | 282 | 136  |
|       | 6       | 445 | 102  | 427 | 112  | 408 | 124  | 387 | 137  | 364 | 151  | 291 | 137  |
|       | 7       | 460 | 103  | 441 | 113  | 424 | 125  | 400 | 138  | 377 | 153  | 302 | 138  |
|       | 10      | 495 | 106  | 474 | 116  | 452 | 128  | 427 | 142  | 401 | 156  | -   | -    |
|       | 15      | 558 | 111  | 535 | 122  | 511 | 135  | 485 | 149  | 456 | 164  | -   | -    |
|       | 18      | 604 | 115  | 580 | 127  | 553 | 139  | 525 | 154  | 494 | 169  | -   | -    |
| 170.5 | 5       | 480 | 111  | 461 | 123  | 439 | 135  | 415 | 150  | 390 | 167  | 323 | 151  |
|       | 6       | 496 | 112  | 475 | 124  | 453 | 137  | 429 | 152  | 403 | 168  | 336 | 153  |
|       | 7       | 514 | 114  | 494 | 126  | 472 | 139  | 446 | 154  | 419 | 171  | 349 | 154  |
|       | 10      | 548 | 117  | 524 | 129  | 499 | 142  | 472 | 157  | 442 | 174  | -   | -    |
|       | 15      | 626 | 123  | 600 | 136  | 572 | 150  | 541 | 165  | 509 | 183  | -   | -    |
|       | 18      | 677 | 128  | 650 | 141  | 619 | 155  | 586 | 171  | 549 | 192  | -   | -    |
| 185.5 | 5       | 525 | 125  | 504 | 138  | 480 | 152  | 453 | 169  | 424 | 187  | 354 | 174  |
|       | 6       | 542 | 126  | 520 | 139  | 495 | 154  | 468 | 170  | 439 | 189  | 367 | 176  |
|       | 7       | 564 | 128  | 541 | 141  | 520 | 156  | 487 | 173  | 456 | 192  | 381 | 178  |
|       | 10      | 597 | 131  | 571 | 145  | 543 | 159  | 513 | 176  | 481 | 195  | -   | -    |
|       | 15      | 683 | 139  | 655 | 153  | 624 | 169  | 590 | 186  | 553 | 206  | -   | -    |
|       | 18      | 739 | 145  | 708 | 159  | 675 | 175  | 638 | 193  | 594 | 216  | -   | -    |
| 210.6 | 5       | 584 | 137  | 560 | 151  | 534 | 167  | 504 | 185  | 472 | 206  | 399 | 195  |
|       | 6       | 603 | 139  | 578 | 153  | 550 | 169  | 520 | 187  | 487 | 208  | 414 | 197  |
|       | 7       | 625 | 141  | 600 | 155  | 574 | 171  | 541 | 190  | 507 | 210  | 430 | 199  |
|       | 10      | 665 | 144  | 636 | 159  | 605 | 175  | 570 | 193  | 535 | 214  | -   | -    |
|       | 15      | 759 | 153  | 727 | 168  | 693 | 185  | 655 | 205  | 615 | 226  | -   | -    |
|       | 18      | 820 | 159  | 787 | 175  | 749 | 192  | 709 | 212  | 661 | 236  | -   | -    |

# Performances

## Excellence

### Cooling - ST/SC

| 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 |
| 225.6 | 5       | 651                                              | 151 | 625 | 166 | 596 | 184 | 564 | 203 | 527 | 226 | 448 | 217 |
|       | 6       | 669                                              | 152 | 640 | 168 | 610 | 185 | 576 | 205 | 539 | 228 | 458 | 218 |
|       | 7       | 680                                              | 153 | 651 | 169 | 624 | 186 | 586 | 206 | 548 | 229 | 465 | 219 |
|       | 10      | 701                                              | 155 | 670 | 171 | 638 | 188 | 602 | 208 | 563 | 231 | -   | -   |
|       | 15      | 799                                              | 163 | 764 | 180 | 728 | 199 | 687 | 220 | 642 | 243 | -   | -   |
|       | 18      | 867                                              | 170 | 830 | 188 | 791 | 207 | 746 | 229 | 697 | 254 | -   | -   |
| 240.6 | 5       | 697                                              | 165 | 671 | 182 | 639 | 201 | 600 | 223 | 559 | 248 | 455 | 215 |
|       | 6       | 718                                              | 167 | 686 | 184 | 655 | 203 | 613 | 225 | 572 | 250 | 466 | 216 |
|       | 7       | 732                                              | 168 | 698 | 185 | 676 | 204 | 624 | 226 | 582 | 251 | 474 | 217 |
|       | 10      | 752                                              | 170 | 717 | 187 | 690 | 206 | 641 | 228 | 598 | 254 | -   | -   |
|       | 15      | 855                                              | 179 | 816 | 197 | 779 | 218 | 730 | 241 | 678 | 263 | -   | -   |
|       | 18      | 923                                              | 187 | 886 | 206 | 843 | 227 | 792 | 251 | 723 | 269 | -   | -   |

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

To (°C) = Internal exchanger outlet water temperature (evaporator)

Performances in function of the inlet/outlet water temperature differential = 5°C

## Excellence

### Cooling - EN

Entering external exchanger air temperature (°C)

| SIZE  | To (°C) | 25  |      | 30  |      | 35  |      | 40  |      | 45  |      | 50  |      |
|-------|---------|-----|------|-----|------|-----|------|-----|------|-----|------|-----|------|
|       |         | kWf | kWe  | kWf | kWe  | kWf | kWe  | kWf | kWe  | kWf | kWe  | kWf | kWe  |
| 80.3  | 5       | 222 | 54,1 | 212 | 59,7 | 202 | 65,9 | 191 | 72,8 | 185 | 77,0 | 172 | 85,5 |
|       | 6       | 228 | 54,7 | 219 | 60,3 | 209 | 66,6 | 197 | 73,6 | 191 | 77,8 | 178 | 86,3 |
|       | 7       | 237 | 55,5 | 227 | 61,2 | 217 | 67,5 | 205 | 74,6 | 198 | 78,6 | 184 | 87,1 |
|       | 10      | 249 | 56,6 | 238 | 62,3 | 226 | 68,7 | 214 | 75,7 | 207 | 79,7 | -   | -    |
|       | 15      | 284 | 59,7 | 272 | 65,8 | 259 | 72,5 | 245 | 80,0 | 238 | 83,5 | -   | -    |
|       | 18      | 307 | 61,8 | 294 | 68,2 | 280 | 75,1 | 265 | 82,8 | 259 | 86,1 | -   | -    |
| 100.4 | 5       | 266 | 68,7 | 255 | 75,6 | 243 | 83,2 | 229 | 91,6 | 223 | 95,7 | 118 | 45,9 |
|       | 6       | 274 | 69,6 | 263 | 76,6 | 251 | 84,3 | 237 | 92,7 | 230 | 96,8 | 123 | 46,3 |
|       | 7       | 284 | 70,8 | 273 | 77,9 | 262 | 85,7 | 245 | 94,2 | 239 | 98,2 | 126 | 46,6 |
|       | 10      | 299 | 72,5 | 286 | 79,6 | 272 | 87,5 | 256 | 96,1 | 249 | 100  | -   | -    |
|       | 15      | 337 | 77,0 | 323 | 84,6 | 308 | 93,0 | 290 | 102  | 284 | 105  | -   | -    |
|       | 18      | 363 | 80,2 | 347 | 88,1 | 331 | 96,7 | 312 | 106  | 306 | 109  | -   | -    |
| 115.4 | 5       | 310 | 78,8 | 298 | 86,8 | 284 | 95,7 | 268 | 106  | 260 | 111  | 196 | 92,8 |
|       | 6       | 320 | 79,8 | 307 | 87,9 | 293 | 96,9 | 277 | 107  | 268 | 112  | 204 | 93,6 |
|       | 7       | 332 | 81,0 | 319 | 89,2 | 306 | 98,4 | 287 | 109  | 278 | 114  | 211 | 94,5 |
|       | 10      | 350 | 82,9 | 335 | 91,2 | 319 | 100  | 300 | 111  | 291 | 116  | -   | -    |
|       | 15      | 395 | 87,9 | 379 | 96,7 | 361 | 106  | 341 | 117  | 332 | 122  | -   | -    |
|       | 18      | 425 | 91,5 | 408 | 101  | 389 | 111  | 367 | 122  | 359 | 126  | -   | -    |
| 130.4 | 5       | 360 | 90,2 | 345 | 99,4 | 329 | 110  | 311 | 121  | 300 | 128  | 233 | 111  |
|       | 6       | 372 | 91,3 | 357 | 101  | 339 | 111  | 321 | 123  | 311 | 129  | 242 | 112  |
|       | 7       | 385 | 92,6 | 369 | 102  | 355 | 113  | 332 | 124  | 322 | 131  | 251 | 113  |
|       | 10      | 407 | 94,8 | 389 | 104  | 370 | 115  | 349 | 127  | 338 | 133  | -   | -    |
|       | 15      | 459 | 100  | 440 | 110  | 419 | 122  | 396 | 134  | 386 | 140  | -   | -    |
|       | 18      | 495 | 104  | 474 | 115  | 452 | 126  | 428 | 139  | 417 | 144  | -   | -    |
| 155.5 | 5       | 417 | 104  | 400 | 115  | 381 | 127  | 360 | 140  | 349 | 148  | 279 | 134  |
|       | 6       | 431 | 105  | 413 | 116  | 393 | 128  | 372 | 142  | 360 | 149  | 289 | 135  |
|       | 7       | 445 | 107  | 426 | 118  | 409 | 130  | 385 | 144  | 373 | 151  | 299 | 136  |
|       | 10      | 477 | 110  | 456 | 121  | 434 | 133  | 409 | 147  | 397 | 154  | -   | -    |
|       | 15      | 537 | 116  | 515 | 128  | 490 | 141  | 464 | 156  | 452 | 162  | -   | -    |
|       | 18      | 580 | 121  | 556 | 133  | 529 | 147  | 500 | 161  | 489 | 167  | -   | -    |
| 170.5 | 5       | 469 | 117  | 450 | 129  | 427 | 143  | 403 | 158  | 390 | 167  | 323 | 151  |
|       | 6       | 484 | 119  | 463 | 131  | 441 | 144  | 416 | 160  | 403 | 168  | 336 | 153  |
|       | 7       | 503 | 120  | 482 | 133  | 459 | 147  | 432 | 163  | 419 | 171  | 349 | 154  |
|       | 10      | 533 | 124  | 510 | 136  | 484 | 150  | 456 | 166  | 442 | 174  | -   | -    |
|       | 15      | 608 | 132  | 582 | 145  | 553 | 160  | 521 | 176  | 509 | 183  | -   | -    |
|       | 18      | 656 | 137  | 628 | 151  | 597 | 166  | 563 | 183  | 496 | 152  | -   | -    |
| 185.5 | 5       | 513 | 132  | 490 | 145  | 466 | 161  | 438 | 178  | 424 | 187  | 354 | 174  |
|       | 6       | 529 | 133  | 506 | 147  | 480 | 163  | 452 | 180  | 439 | 189  | 367 | 176  |
|       | 7       | 550 | 136  | 526 | 150  | 504 | 165  | 470 | 183  | 456 | 192  | 381 | 178  |
|       | 10      | 580 | 139  | 554 | 153  | 526 | 169  | 495 | 187  | 481 | 195  | -   | -    |
|       | 15      | 663 | 149  | 634 | 164  | 601 | 181  | 567 | 199  | 553 | 206  | -   | -    |
|       | 18      | 715 | 155  | 683 | 171  | 649 | 188  | 638 | 193  | 544 | 176  | -   | -    |
| 210.6 | 5       | 570 | 146  | 546 | 161  | 518 | 178  | 488 | 197  | 472 | 207  | 399 | 197  |
|       | 6       | 588 | 148  | 562 | 163  | 534 | 180  | 502 | 200  | 487 | 209  | 414 | 199  |
|       | 7       | 610 | 150  | 584 | 166  | 556 | 183  | 523 | 203  | 507 | 212  | 430 | 201  |
|       | 10      | 647 | 154  | 617 | 170  | 585 | 187  | 550 | 207  | 535 | 216  | -   | -    |
|       | 15      | 736 | 165  | 703 | 181  | 668 | 200  | 629 | 220  | 615 | 228  | -   | -    |
|       | 18      | 793 | 172  | 759 | 189  | 721 | 208  | 655 | 224  | 611 | 199  | -   | -    |

# Performances

## Excellence

### Cooling - EN

| 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 |
| 225.6 | 5       | 629                                              | 159 | 603 | 175 | 573 | 194 | 540 | 215 | 522 | 226 | 444 | 217 |
|       | 6       | 646                                              | 161 | 617 | 177 | 586 | 196 | 552 | 217 | 534 | 228 | 454 | 218 |
|       | 7       | 657                                              | 162 | 627 | 178 | 599 | 197 | 561 | 218 | 542 | 229 | 461 | 219 |
|       | 10      | 676                                              | 164 | 645 | 181 | 612 | 199 | 576 | 220 | 558 | 231 | -   | -   |
|       | 15      | 770                                              | 173 | 735 | 191 | 698 | 210 | 656 | 233 | 636 | 243 | -   | -   |
|       | 18      | 836                                              | 180 | 799 | 199 | 758 | 219 | 713 | 242 | 691 | 254 | -   | -   |
| 240.6 | 5       | 672                                              | 175 | 646 | 193 | 617 | 214 | 578 | 237 | 556 | 248 | 449 | 215 |
|       | 6       | 689                                              | 177 | 661 | 195 | 630 | 216 | 590 | 239 | 569 | 250 | 460 | 216 |
|       | 7       | 704                                              | 178 | 673 | 197 | 646 | 217 | 599 | 241 | 579 | 251 | 469 | 217 |
|       | 10      | 723                                              | 181 | 691 | 199 | 656 | 220 | 615 | 244 | 595 | 254 | -   | -   |
|       | 15      | 819                                              | 191 | 785 | 210 | 748 | 232 | 701 | 257 | 675 | 263 | -   | -   |
|       | 18      | 887                                              | 199 | 852 | 219 | 813 | 242 | 761 | 268 | 720 | 269 | -   | -   |

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

To (°C) = Internal exchanger outlet water temperature (evaporator)

Performances in function of the inlet/outlet water temperature differential = 5°C

## Premium Cooling - ST/SC

|       |         | Entering external exchanger air temperature (°C) |      |     |      |     |      |     |      |     |      |     |      |
|-------|---------|--------------------------------------------------|------|-----|------|-----|------|-----|------|-----|------|-----|------|
| SIZE  | To (°C) | 25                                               |      | 30  |      | 35  |      | 40  |      | 45  |      | 48  |      |
|       |         | kWf                                              | kWe  | kWf | kWe  | kWf | kWe  | kWf | kWe  | kWf | kWe  | kWf | kWe  |
| 90.3  | 5       | 238                                              | 64,3 | 228 | 70,9 | 217 | 78,3 | 204 | 86,6 | 196 | 92,1 | 144 | 67,1 |
|       | 6       | 246                                              | 65,2 | 235 | 71,9 | 223 | 79,3 | 210 | 87,7 | 202 | 93,3 | 150 | 67,9 |
|       | 7       | 254                                              | 66,2 | 243 | 72,9 | 232 | 80,5 | 217 | 89,0 | 208 | 94,6 | 154 | 68,5 |
|       | 10      | 269                                              | 68,1 | 256 | 74,9 | 243 | 82,5 | 228 | 91,1 | 219 | 96,7 | -   | -    |
|       | 15      | 302                                              | 72,3 | 288 | 79,6 | 274 | 87,6 | 258 | 96,6 | 199 | 66,3 | -   | -    |
|       | 18      | 325                                              | 75,5 | 310 | 83,0 | 295 | 91,3 | 263 | 97,5 | 216 | 68,5 | -   | -    |
| 110.4 | 5       | 297                                              | 77,3 | 284 | 85,2 | 271 | 94,0 | 255 | 104  | 246 | 110  | 198 | 94,3 |
|       | 6       | 306                                              | 78,2 | 293 | 86,2 | 279 | 95,1 | 263 | 105  | 253 | 112  | 205 | 95,3 |
|       | 7       | 317                                              | 79,4 | 304 | 87,5 | 291 | 96,6 | 273 | 107  | 263 | 113  | 212 | 96,4 |
|       | 10      | 335                                              | 81,5 | 320 | 89,7 | 304 | 98,7 | 286 | 109  | 275 | 115  | -   | -    |
|       | 15      | 377                                              | 86,2 | 361 | 94,8 | 343 | 104  | 324 | 115  | 271 | 93,3 | -   | -    |
|       | 18      | 406                                              | 89,7 | 389 | 98,7 | 370 | 109  | 349 | 119  | 293 | 96,4 | -   | -    |
| 130.4 | 5       | 343                                              | 94,0 | 327 | 104  | 311 | 115  | 291 | 127  | 279 | 135  | 182 | 81,1 |
|       | 6       | 353                                              | 95,3 | 337 | 105  | 320 | 116  | 300 | 128  | 288 | 137  | 190 | 81,9 |
|       | 7       | 366                                              | 97,0 | 349 | 107  | 333 | 118  | 311 | 131  | 298 | 139  | 195 | 82,5 |
|       | 10      | 385                                              | 100  | 367 | 110  | 347 | 121  | 325 | 133  | 311 | 142  | -   | -    |
|       | 15      | 432                                              | 106  | 412 | 117  | 391 | 129  | 367 | 142  | 254 | 79,2 | -   | -    |
|       |         | 465                                              | 111  | 443 | 122  | 421 | 134  | 367 | 142  | 275 | 81,8 | -   | -    |
| 145.4 | 5       | 394                                              | 105  | 377 | 116  | 358 | 128  | 336 | 142  | 322 | 151  | 260 | 133  |
|       | 6       | 406                                              | 106  | 388 | 117  | 369 | 129  | 347 | 143  | 333 | 153  | 269 | 134  |
|       | 7       | 421                                              | 108  | 402 | 119  | 385 | 131  | 360 | 146  | 345 | 155  | 203 | 81,2 |
|       | 10      | 444                                              | 111  | 424 | 122  | 402 | 134  | 377 | 149  | 361 | 158  | -   | -    |
|       | 15      | 499                                              | 118  | 477 | 130  | 454 | 143  | 427 | 158  | 360 | 130  | -   | -    |
|       | 18      | 538                                              | 123  | 514 | 135  | 489 | 149  | 446 | 161  | 389 | 135  | -   | -    |
| 170.5 | 5       | 456                                              | 118  | 436 | 130  | 415 | 144  | 390 | 160  | 374 | 170  | 287 | 132  |
|       | 6       | 470                                              | 120  | 450 | 132  | 428 | 146  | 403 | 162  | 386 | 172  | 297 | 134  |
|       | 7       | 486                                              | 121  | 464 | 134  | 444 | 148  | 415 | 164  | 399 | 175  | 309 | 135  |
|       | 10      | 522                                              | 126  | 498 | 138  | 472 | 152  | 443 | 169  | 425 | 179  | -   | -    |
|       | 15      | 585                                              | 133  | 559 | 146  | 531 | 161  | 500 | 178  | 399 | 131  | -   | -    |
|       | 18      | 630                                              | 139  | 603 | 152  | 573 | 168  | 539 | 185  | 432 | 135  | -   | -    |
| 185.5 | 5       | 497                                              | 136  | 474 | 150  | 451 | 166  | 422 | 184  | 404 | 196  | 273 | 124  |
|       | 6       | 513                                              | 138  | 490 | 152  | 465 | 168  | 436 | 186  | 417 | 199  | 284 | 126  |
|       | 7       | 530                                              | 140  | 506 | 154  | 484 | 171  | 452 | 189  | 433 | 202  | 294 | 127  |
|       | 10      | 565                                              | 144  | 538 | 159  | 510 | 175  | 478 | 194  | 457 | 206  | -   | -    |
|       | 15      | 639                                              | 155  | 609 | 170  | 578 | 187  | 543 | 207  | 386 | 122  | -   | -    |
|       | 18      | 687                                              | 162  | 656 | 178  | 623 | 195  | 569 | 212  | 418 | 126  | -   | -    |
| 210.6 | 5       | 551                                              | 150  | 526 | 166  | 500 | 183  | 469 | 204  | 449 | 217  | 382 | 203  |
|       | 6       | 568                                              | 152  | 543 | 168  | 515 | 186  | 483 | 206  | 463 | 219  | 395 | 205  |
|       | 7       | 588                                              | 155  | 562 | 171  | 538 | 189  | 503 | 209  | 482 | 223  | 386 | 184  |
|       | 10      | 626                                              | 160  | 597 | 176  | 565 | 194  | 529 | 214  | 468 | 191  | -   | -    |
|       | 15      | 708                                              | 171  | 676 | 188  | 641 | 207  | 558 | 190  | 536 | 202  | -   | -    |
|       | 18      | 762                                              | 179  | 727 | 196  | 691 | 216  | 602 | 198  | 578 | 210  | -   | -    |

# Performances

## Premium Cooling - ST/SC

| SIZE  | To (°C) | Entering external exchanger air temperature (°C) |     |     |     |     |     |     |     |     |     |     |     |
|-------|---------|--------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|       |         | 25                                               |     | 30  |     | 35  |     | 40  |     | 45  |     | 48  |     |
|       |         | kWf                                              | kWe | kWf | kWe | kWf | kWe | kWf | kWe | kWf | kWe | kWf | kWe |
| 225.6 | 5       | 603                                              | 158 | 577 | 174 | 549 | 192 | 505 | 221 | 494 | 228 | 396 | 196 |
|       | 6       | 622                                              | 160 | 595 | 176 | 565 | 195 | 521 | 223 | 510 | 230 | 411 | 198 |
|       | 7       | 645                                              | 162 | 617 | 179 | 591 | 198 | 541 | 227 | 530 | 234 | 426 | 201 |
|       | 10      | 686                                              | 167 | 654 | 184 | 620 | 203 | 569 | 232 | 558 | 239 | -   | -   |
|       | 15      | 778                                              | 178 | 744 | 196 | 707 | 216 | 649 | 248 | 556 | 194 | -   | -   |
|       | 18      | 839                                              | 186 | 802 | 205 | 763 | 225 | 717 | 248 | 601 | 201 | -   | -   |
| 240.6 | 5       | 648                                              | 176 | 619 | 194 | 594 | 215 | 550 | 239 | 527 | 255 | 364 | 167 |
|       | 6       | 670                                              | 178 | 641 | 197 | 614 | 218 | 569 | 242 | 545 | 258 | 380 | 168 |
|       | 7       | 698                                              | 181 | 666 | 200 | 644 | 222 | 593 | 246 | 568 | 262 | 393 | 170 |
|       | 10      | 741                                              | 187 | 705 | 206 | 673 | 227 | 624 | 252 | 598 | 268 | -   | -   |
|       | 15      | 837                                              | 200 | 800 | 220 | 766 | 243 | 712 | 268 | 514 | 164 | -   | -   |
|       | 18      | 898                                              | 209 | 858 | 230 | 823 | 253 | 764 | 279 | 555 | 169 | -   | -   |

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

To (°C) = Internal exchanger outlet water temperature (evaporator)

Performances in function of the inlet/outlet water temperature differential = 5°C

## Premium Cooling - EN

|       |         | Entering external exchanger air temperature (°C) |      |     |      |     |      |     |      |     |      |     |      |
|-------|---------|--------------------------------------------------|------|-----|------|-----|------|-----|------|-----|------|-----|------|
| SIZE  | To (°C) | 25                                               |      | 30  |      | 35  |      | 40  |      | 45  |      | 48  |      |
|       |         | kWf                                              | kWe  | kWf | kWe  | kWf | kWe  | kWf | kWe  | kWf | kWe  | kWf | kWe  |
| 90.3  | 5       | 235                                              | 66,4 | 224 | 73,2 | 213 | 80,9 | 199 | 89,5 | 196 | 92,1 | 144 | 67,1 |
|       | 6       | 242                                              | 67,4 | 231 | 74,3 | 219 | 82,0 | 206 | 90,7 | 202 | 93,3 | 150 | 67,9 |
|       | 7       | 250                                              | 68,5 | 238 | 75,4 | 228 | 83,3 | 212 | 92,1 | 208 | 94,6 | 154 | 68,5 |
|       | 10      | 264                                              | 70,5 | 251 | 77,6 | 238 | 85,5 | 223 | 94,1 | 219 | 96,7 | -   | -    |
|       | 15      | 296                                              | 75,2 | 282 | 82,7 | 268 | 91,0 | 203 | 64,5 | 199 | 66,3 | -   | -    |
|       | 18      | 318                                              | 78,7 | 303 | 86,4 | 288 | 95,0 | 220 | 66,6 | 216 | 68,5 | -   | -    |
| 110.4 | 5       | 290                                              | 79,6 | 277 | 87,7 | 264 | 96,8 | 248 | 107  | 243 | 110  | 196 | 94,3 |
|       | 6       | 299                                              | 80,6 | 286 | 88,8 | 272 | 98,0 | 256 | 108  | 251 | 112  | 203 | 95,3 |
|       | 7       | 310                                              | 81,9 | 296 | 90,3 | 283 | 100  | 265 | 110  | 260 | 113  | 210 | 96,4 |
|       | 10      | 327                                              | 84,1 | 312 | 92,6 | 296 | 102  | 278 | 112  | 272 | 115  | -   | -    |
|       | 15      | 367                                              | 89,3 | 351 | 98,3 | 333 | 108  | 274 | 90,6 | 269 | 93,3 | -   | -    |
|       | 18      | 395                                              | 93,2 | 377 | 102  | 359 | 113  | 296 | 93,6 | 290 | 96,4 | -   | -    |
| 130.4 | 5       | 340                                              | 98,2 | 324 | 108  | 307 | 120  | 287 | 133  | 282 | 136  | 184 | 81,9 |
|       | 6       | 351                                              | 100  | 334 | 110  | 316 | 121  | 296 | 134  | 290 | 138  | 191 | 82,7 |
|       | 7       | 363                                              | 102  | 346 | 112  | 329 | 124  | 306 | 137  | 301 | 140  | 197 | 83,3 |
|       | 10      | 382                                              | 104  | 363 | 115  | 342 | 127  | 320 | 140  | 314 | 143  | -   | -    |
|       | 15      | 428                                              | 112  | 407 | 123  | 385 | 135  | 261 | 78,0 | 257 | 80,0 | -   | -    |
|       | 18      | 459                                              | 117  | 437 | 129  | 413 | 142  | 283 | 80,5 | 278 | 82,6 | -   | -    |
| 145.4 | 5       | 385                                              | 107  | 367 | 118  | 348 | 131  | 326 | 145  | 319 | 150  | 257 | 131  |
|       | 6       | 397                                              | 109  | 378 | 120  | 359 | 132  | 337 | 147  | 330 | 151  | 266 | 133  |
|       | 7       | 410                                              | 110  | 392 | 122  | 374 | 135  | 349 | 149  | 342 | 154  | 201 | 80,4 |
|       | 10      | 433                                              | 113  | 412 | 125  | 390 | 138  | 365 | 152  | 357 | 156  | -   | -    |
|       | 15      | 486                                              | 121  | 464 | 133  | 440 | 147  | 364 | 126  | 357 | 129  | -   | -    |
|       | 18      | 523                                              | 127  | 498 | 139  | 473 | 153  | 394 | 130  | 386 | 134  | -   | -    |
| 170.5 | 5       | 445                                              | 122  | 425 | 134  | 404 | 149  | 379 | 165  | 371 | 170  | 284 | 132  |
|       | 6       | 459                                              | 123  | 439 | 136  | 417 | 151  | 391 | 167  | 383 | 172  | 294 | 134  |
|       | 7       | 474                                              | 125  | 453 | 138  | 432 | 153  | 404 | 169  | 396 | 175  | 306 | 135  |
|       | 10      | 509                                              | 130  | 485 | 143  | 459 | 158  | 430 | 174  | 421 | 179  | -   | -    |
|       | 15      | 570                                              | 138  | 544 | 152  | 516 | 167  | 404 | 127  | 396 | 131  | -   | -    |
|       | 18      | 613                                              | 144  | 585 | 158  | 556 | 174  | 437 | 131  | 428 | 135  | -   | -    |
| 185.5 | 5       | 489                                              | 141  | 466 | 156  | 442 | 172  | 413 | 191  | 404 | 197  | 273 | 125  |
|       | 6       | 504                                              | 143  | 481 | 158  | 455 | 175  | 426 | 194  | 417 | 200  | 284 | 126  |
|       | 7       | 521                                              | 146  | 497 | 161  | 474 | 178  | 441 | 197  | 433 | 203  | 294 | 128  |
|       | 10      | 555                                              | 151  | 528 | 166  | 499 | 183  | 466 | 202  | 457 | 207  | -   | -    |
|       | 15      | 626                                              | 162  | 596 | 178  | 564 | 196  | 393 | 119  | 386 | 123  | -   | -    |
|       | 18      | 673                                              | 170  | 640 | 186  | 606 | 205  | 426 | 123  | 418 | 127  | -   | -    |
| 210.6 | 5       | 543                                              | 155  | 517 | 171  | 490 | 190  | 459 | 211  | 449 | 217  | 382 | 203  |
|       | 6       | 559                                              | 158  | 533 | 174  | 505 | 192  | 473 | 213  | 463 | 219  | 395 | 205  |
|       | 7       | 578                                              | 160  | 552 | 177  | 527 | 196  | 491 | 217  | 482 | 223  | 386 | 184  |
|       | 10      | 615                                              | 166  | 585 | 182  | 552 | 201  | 477 | 186  | 468 | 191  | -   | -    |
|       | 15      | 694                                              | 178  | 661 | 196  | 626 | 215  | 546 | 197  | 536 | 202  | -   | -    |
|       | 18      | 746                                              | 186  | 711 | 205  | 652 | 220  | 590 | 204  | 578 | 210  | -   | -    |

# Performances

## Premium Cooling - EN

| SIZE  | To (°C) | Entering external exchanger air temperature (°C) |     |     |     |     |     |     |     |     |     |     |     |
|-------|---------|--------------------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|       |         | 25                                               |     | 30  |     | 35  |     | 40  |     | 45  |     | 48  |     |
|       |         | kWf                                              | kWe | kWf | kWe | kWf | kWe | kWf | kWe | kWf | kWe | kWf | kWe |
| 225.6 | 5       | 595                                              | 163 | 568 | 179 | 539 | 199 | 505 | 221 | 494 | 228 | 396 | 196 |
|       | 6       | 613                                              | 165 | 586 | 182 | 555 | 201 | 521 | 223 | 510 | 230 | 411 | 198 |
|       | 7       | 636                                              | 168 | 608 | 185 | 580 | 205 | 541 | 227 | 530 | 234 | 426 | 201 |
|       | 10      | 674                                              | 173 | 642 | 190 | 608 | 210 | 570 | 232 | 558 | 239 | -   | -   |
|       | 15      | 764                                              | 185 | 730 | 204 | 692 | 224 | 568 | 188 | 556 | 194 | -   | -   |
|       | 18      | 823                                              | 194 | 785 | 213 | 745 | 234 | 614 | 195 | 601 | 201 | -   | -   |
| 240.6 | 5       | 633                                              | 182 | 605 | 201 | 575 | 223 | 535 | 248 | 523 | 255 | 360 | 167 |
|       | 6       | 655                                              | 184 | 626 | 204 | 594 | 225 | 553 | 251 | 540 | 258 | 375 | 168 |
|       | 7       | 678                                              | 188 | 649 | 207 | 623 | 230 | 575 | 255 | 561 | 262 | 388 | 170 |
|       | 10      | 719                                              | 194 | 685 | 213 | 649 | 236 | 605 | 260 | 591 | 268 | -   | -   |
|       | 15      | 814                                              | 208 | 778 | 229 | 739 | 253 | 521 | 159 | 509 | 164 | -   | -   |
|       | 18      | 873                                              | 218 | 834 | 240 | 792 | 264 | 563 | 164 | 551 | 169 | -   | -   |

kWf = Cooling capacity in kW

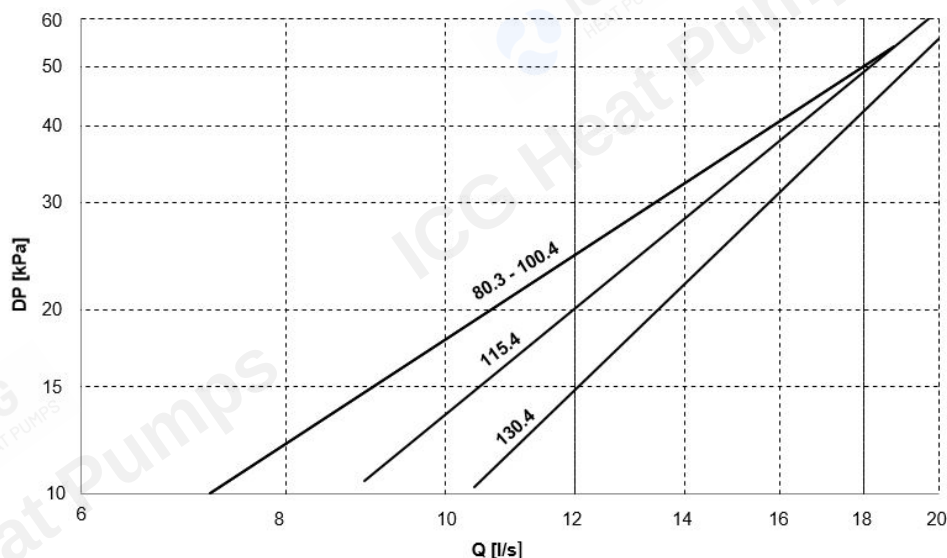
kWe = Compressor power input in kW

To (°C) = Internal exchanger outlet water temperature (evaporator)

Performances in function of the inlet/outlet water temperature differential = 5°C

## Excellence

### Plate exchangers pressure drop (EVPHE) - Size 80.3 ÷ 130.4



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

$$Q [l/s] = kWf / (4,186 \times DT)$$

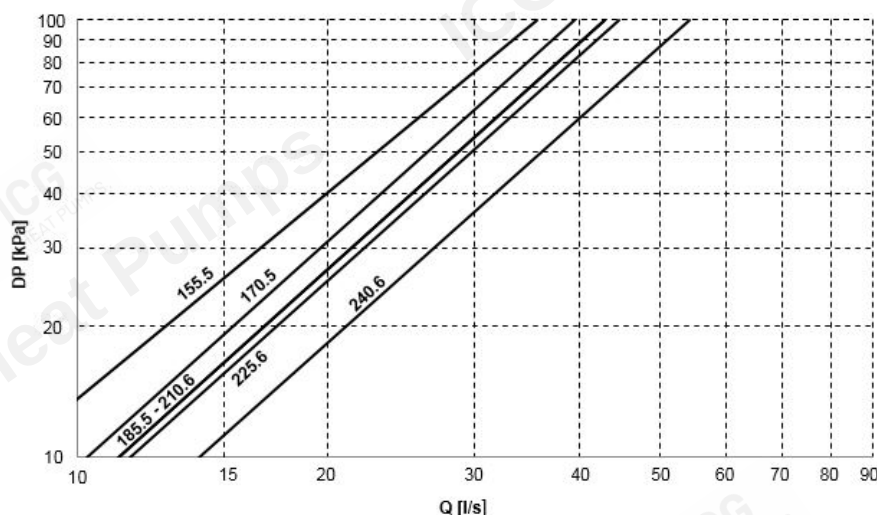
kWf = Cooling capacity in kW  
DT = Temperature difference between inlet / outlet water

#### Admissible water flow-rates

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

| SIZE |       | 80.3 | 100.4 | 115.4 | 130.4 |
|------|-------|------|-------|-------|-------|
| Qmin | [l/s] | 7,2  | 7,2   | 8,9   | 10,4  |
| Qmax | [l/s] | 18,8 | 18,8  | 20,0  | 20,0  |

### Plate exchangers pressure drop (EVPHE) - Size 155.5 ÷ 240.6



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

$$Q [l/s] = kWf / (4,186 \times DT)$$

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

#### Admissible water flow-rates

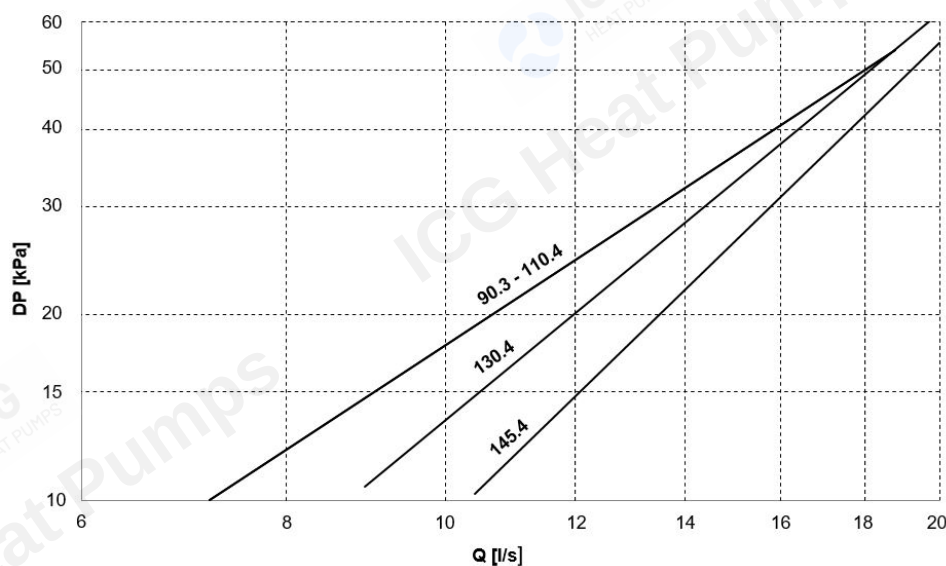
Minimum (Qmin) and maximum (Qmax) admissible water flow for the unit to operate correctly

| SIZE |       | 155.5 | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |
|------|-------|-------|-------|-------|-------|-------|-------|
| Qmin | [l/s] | 8,2   | 10,3  | 11,2  | 11,2  | 11,6  | 14,0  |
| Qmax | [l/s] | 35,5  | 39,5  | 42,8  | 42,8  | 44,6  | 54,2  |

# Performances

## Premium

### Plate exchangers pressure drop (EVPHE) - Size 90.3 ÷ 145.4



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

$$Q [l/s] = kWf / (4,186 \times DT)$$

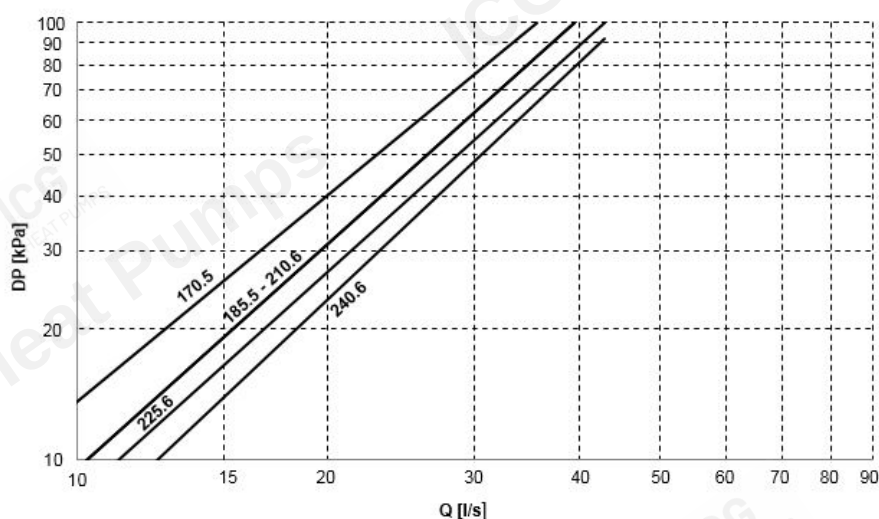
kWf = Cooling capacity in kW  
DT = Temperature difference between inlet / outlet water

#### Admissible water flow-rates

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

| SIZE |       | 90.3 | 110.4 | 130.4 | 145.4 |
|------|-------|------|-------|-------|-------|
| Qmin | [l/s] | 7,2  | 7,2   | 8,9   | 10,4  |
| Qmax | [l/s] | 18,8 | 18,8  | 20,0  | 20,0  |

### Plate exchangers pressure drop (EVPHE) - Size 170.5 ÷ 240.6



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

$$Q [l/s] = kWf / (4,186 \times DT)$$

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

#### Admissible water flow-rates

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

| SIZE |       | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |
|------|-------|-------|-------|-------|-------|-------|
| Qmin | [l/s] | 8,2   | 10,3  | 10,3  | 11,2  | 12,5  |
| Qmax | [l/s] | 35,5  | 39,5  | 39,5  | 42,8  | 42,8  |

## Excellence

## Cooling at part load - ST/SC

| SIZE  | Load    | Entering external exchanger air temperature (°C) |         |      |      |         |      |      |         |      |      |         |      |
|-------|---------|--------------------------------------------------|---------|------|------|---------|------|------|---------|------|------|---------|------|
|       |         | 35°C                                             |         |      | 30°C |         |      | 25°C |         |      | 20°C |         |      |
|       |         | kWf                                              | kWe_tot | EER  | kWf  | kWe_tot | EER  | kWf  | kWe_tot | EER  | kWf  | kWe_tot | EER  |
| 80.3  | 100     | 223                                              | 68,9    | 3,23 | 233  | 62,9    | 3,70 | 242  | 57,4    | 4,22 | 253  | 52,3    | 4,84 |
|       | 75      | 167                                              | 49,9    | 3,34 | 174  | 45,5    | 3,83 | 182  | 41,5    | 4,38 | 190  | 37,7    | 5,04 |
|       | 50      | 111                                              | 31,9    | 3,49 | 116  | 29,1    | 4,00 | 121  | 26,5    | 4,57 | 127  | 24,1    | 5,25 |
|       | 25      | 55,6                                             | 15,1    | 3,69 | 58,1 | 13,7    | 4,25 | 60,5 | 12,3    | 4,91 | 63,3 | 11,0    | 5,76 |
|       | Minimum | 45,4                                             | 12,0    | 3,79 | 47,3 | 10,8    | 4,38 | 49,3 | 9,70    | 5,08 | 51,6 | 8,60    | 6,02 |
| 100.4 | 100     | 267                                              | 84,8    | 3,15 | 278  | 77,4    | 3,59 | 289  | 70,7    | 4,09 | 305  | 64,6    | 4,73 |
|       | 75      | 200                                              | 60,2    | 3,33 | 209  | 55,0    | 3,79 | 217  | 50,3    | 4,31 | 229  | 46,1    | 4,97 |
|       | 50      | 134                                              | 35,2    | 3,80 | 139  | 32,2    | 4,31 | 145  | 29,5    | 4,89 | 153  | 27,1    | 5,63 |
|       | 25      | 72,2                                             | 19,0    | 3,80 | 74,9 | 17,4    | 4,31 | 77,7 | 15,9    | 4,89 | 81,8 | 14,5    | 5,63 |
|       | Minimum | 72,2                                             | 19,0    | 3,80 | 74,9 | 17,4    | 4,31 | 77,7 | 15,9    | 4,89 | 81,8 | 14,5    | 5,63 |
| 115.4 | 100     | 315                                              | 98,9    | 3,18 | 327  | 90,2    | 3,63 | 340  | 82,4    | 4,13 | 359  | 75,2    | 4,76 |
|       | 75      | 236                                              | 71,3    | 3,31 | 245  | 65,1    | 3,77 | 255  | 59,5    | 4,28 | 269  | 54,3    | 4,95 |
|       | 50      | 157                                              | 41,2    | 3,82 | 164  | 37,7    | 4,34 | 170  | 34,5    | 4,92 | 179  | 31,6    | 5,67 |
|       | 25      | 78,7                                             | 19,8    | 3,98 | 81,6 | 18,0    | 4,52 | 84,5 | 16,5    | 5,13 | 88,9 | 15,0    | 5,92 |
|       | Minimum | 73,8                                             | 18,5    | 4,00 | 76,5 | 16,8    | 4,54 | 79,2 | 15,4    | 5,16 | 83,3 | 14,0    | 5,95 |
| 130.4 | 100     | 364                                              | 114     | 3,20 | 378  | 104     | 3,64 | 394  | 94,8    | 4,15 | 414  | 86,6    | 4,79 |
|       | 75      | 273                                              | 82,0    | 3,33 | 284  | 74,9    | 3,79 | 295  | 68,4    | 4,32 | 311  | 62,3    | 4,99 |
|       | 50      | 182                                              | 50,7    | 3,60 | 189  | 46,3    | 4,09 | 197  | 42,2    | 4,66 | 207  | 38,4    | 5,39 |
|       | 25      | 91,1                                             | 25,1    | 3,62 | 94,6 | 22,9    | 4,13 | 98,5 | 20,9    | 4,72 | 104  | 19,0    | 5,45 |
|       | Minimum | 72,0                                             | 19,8    | 3,64 | 74,8 | 18,0    | 4,15 | 77,9 | 16,4    | 4,74 | 82,0 | 15,0    | 5,48 |
| 155.5 | 100     | 424                                              | 133     | 3,18 | 441  | 121     | 3,63 | 460  | 111     | 4,15 | 483  | 101     | 4,77 |
|       | 75      | 318                                              | 92,1    | 3,45 | 331  | 84,5    | 3,92 | 345  | 77,6    | 4,45 | 362  | 71,1    | 5,10 |
|       | 50      | 212                                              | 54,9    | 3,86 | 221  | 50,3    | 4,38 | 230  | 46,0    | 5,00 | 242  | 42,0    | 5,76 |
|       | 25      | 106                                              | 25,8    | 4,11 | 110  | 23,5    | 4,67 | 114  | 21,5    | 5,32 | 120  | 19,6    | 6,12 |
|       | Minimum | 76,4                                             | 17,7    | 4,32 | 79,2 | 16,1    | 4,92 | 82,2 | 14,6    | 5,61 | 85,8 | 13,3    | 6,44 |
| 170.5 | 100     | 472                                              | 148     | 3,19 | 494  | 135     | 3,66 | 514  | 123     | 4,18 | 537  | 112     | 4,78 |
|       | 75      | 354                                              | 104     | 3,42 | 370  | 94,6    | 3,92 | 386  | 86,4    | 4,46 | 403  | 78,8    | 5,12 |
|       | 50      | 236                                              | 60,6    | 3,90 | 247  | 55,4    | 4,46 | 257  | 50,5    | 5,09 | 269  | 45,8    | 5,87 |
|       | 25      | 118                                              | 29,2    | 4,04 | 123  | 26,6    | 4,63 | 128  | 24,3    | 5,29 | 134  | 22,0    | 6,07 |
|       | Minimum | 75,3                                             | 17,8    | 4,22 | 78,5 | 16,2    | 4,84 | 81,5 | 14,7    | 5,53 | 84,9 | 13,4    | 6,33 |
| 185.5 | 100     | 520                                              | 165     | 3,15 | 541  | 151     | 3,59 | 564  | 137     | 4,10 | 594  | 125     | 4,73 |
|       | 75      | 390                                              | 120     | 3,26 | 406  | 109     | 3,71 | 423  | 100     | 4,24 | 445  | 90,9    | 4,90 |
|       | 50      | 260                                              | 67,6    | 3,85 | 270  | 62,0    | 4,36 | 282  | 56,7    | 4,98 | 297  | 51,5    | 5,76 |
|       | 25      | 130                                              | 32,5    | 4,00 | 135  | 29,8    | 4,54 | 141  | 27,1    | 5,18 | 148  | 24,7    | 5,99 |
|       | Minimum | 76,1                                             | 18,0    | 4,23 | 78,8 | 16,4    | 4,81 | 81,9 | 14,9    | 5,49 | 85,8 | 13,6    | 6,33 |
| 210.6 | 100     | 574                                              | 182     | 3,16 | 600  | 165     | 3,63 | 625  | 151     | 4,15 | 653  | 138     | 4,75 |
|       | 75      | 430                                              | 124     | 3,48 | 450  | 113     | 3,98 | 469  | 103     | 4,53 | 490  | 94,5    | 5,19 |
|       | 50      | 287                                              | 75,3    | 3,81 | 300  | 68,9    | 4,36 | 313  | 62,9    | 4,97 | 327  | 57,1    | 5,72 |
|       | 25      | 143                                              | 35,9    | 4,00 | 150  | 32,8    | 4,57 | 156  | 29,9    | 5,21 | 163  | 27,2    | 5,98 |
|       | Minimum | 75,7                                             | 17,3    | 4,38 | 78,8 | 15,7    | 5,01 | 81,7 | 14,3    | 5,71 | 85,0 | 13,0    | 6,53 |
| 225.6 | 100     | 624                                              | 198     | 3,16 | 651  | 180     | 3,61 | 680  | 165     | 4,13 | 716  | 150     | 4,76 |
|       | 75      | 468                                              | 137     | 3,42 | 488  | 126     | 3,88 | 510  | 115     | 4,42 | 537  | 106     | 5,09 |
|       | 50      | 312                                              | 85,0    | 3,67 | 326  | 78,1    | 4,17 | 340  | 71,5    | 4,76 | 358  | 65,2    | 5,49 |
|       | 25      | 156                                              | 40,8    | 3,82 | 162  | 37,4    | 4,35 | 169  | 34,2    | 4,96 | 178  | 31,1    | 5,72 |
|       | Minimum | 75,0                                             | 17,8    | 4,21 | 77,8 | 16,2    | 4,79 | 80,8 | 14,7    | 5,48 | 84,5 | 13,4    | 6,30 |
| 240.6 | 100     | 676                                              | 215     | 3,14 | 698  | 196     | 3,56 | 732  | 179     | 4,09 | 779  | 164     | 4,76 |
|       | 75      | 507                                              | 144     | 3,51 | 523  | 132     | 3,96 | 549  | 121     | 4,52 | 584  | 111     | 5,27 |
|       | 50      | 338                                              | 86,3    | 3,91 | 349  | 79,3    | 4,40 | 366  | 72,7    | 5,03 | 390  | 66,3    | 5,87 |
|       | 25      | 169                                              | 41,1    | 4,11 | 174  | 37,6    | 4,62 | 181  | 34,3    | 5,29 | 193  | 31,1    | 6,19 |
|       | Minimum | 127                                              | 29,9    | 4,25 | 130  | 27,2    | 4,78 | 136  | 24,8    | 5,47 | 144  | 22,4    | 6,43 |

Load = % of cooling capacity compared to the value at full load

kWf = cooling capacity in kW

kWe\_tot = unit total power input in kW

Internal exchanger water temperature = leaving 7°C / entering 12°C / variable flow-rate with external exchanger air temperature

# Performances

## Excellence

### Cooling at part load- EN

|       |         | Entering external exchanger air temperature (°C) |         |      |      |         |      |      |         |      |      |         |      |
|-------|---------|--------------------------------------------------|---------|------|------|---------|------|------|---------|------|------|---------|------|
| SIZE  | Load    | 35°C                                             |         |      | 30°C |         |      | 25°C |         |      | 20°C |         |      |
|       |         | kWf                                              | kWe_tot | EER  | kWf  | kWe_tot | EER  | kWf  | kWe_tot | EER  | kWf  | kWe_tot | EER  |
| 80.3  | 100     | 217                                              | 70,1    | 3,10 | 227  | 63,8    | 3,57 | 237  | 58,1    | 4,09 | 248  | 52,8    | 4,70 |
|       | 75      | 163                                              | 50,2    | 3,24 | 171  | 45,6    | 3,74 | 178  | 41,5    | 4,29 | 186  | 37,7    | 4,94 |
|       | 50      | 108                                              | 31,5    | 3,45 | 114  | 28,7    | 3,96 | 119  | 26,2    | 4,53 | 124  | 23,9    | 5,21 |
|       | 25      | 54,2                                             | 14,7    | 3,69 | 56,7 | 13,3    | 4,25 | 59,1 | 12,0    | 4,91 | 61,8 | 10,7    | 5,76 |
|       | Minimum | 45,4                                             | 12,0    | 3,79 | 47,3 | 10,8    | 4,38 | 49,3 | 9,70    | 5,08 | 51,6 | 8,60    | 6,02 |
| 100.4 | 100     | 262                                              | 88,2    | 2,97 | 273  | 80,4    | 3,40 | 284  | 73,3    | 3,88 | 301  | 66,8    | 4,50 |
|       | 75      | 196                                              | 60,8    | 3,23 | 205  | 55,7    | 3,68 | 213  | 50,9    | 4,19 | 226  | 46,6    | 4,84 |
|       | 50      | 131                                              | 34,5    | 3,79 | 136  | 31,6    | 4,31 | 142  | 29,0    | 4,91 | 150  | 26,6    | 5,66 |
|       | 25      | 72,5                                             | 19,1    | 3,79 | 75,2 | 17,4    | 4,31 | 78,0 | 15,9    | 4,90 | 82,2 | 14,5    | 5,66 |
|       | Minimum | 72,5                                             | 19,1    | 3,79 | 75,2 | 17,4    | 4,31 | 78,0 | 15,9    | 4,90 | 82,2 | 14,5    | 5,66 |
| 115.4 | 100     | 306                                              | 102     | 3,01 | 319  | 92,4    | 3,45 | 332  | 84,2    | 3,94 | 351  | 76,8    | 4,57 |
|       | 75      | 229                                              | 71,9    | 3,19 | 239  | 65,6    | 3,64 | 249  | 59,9    | 4,16 | 263  | 54,6    | 4,82 |
|       | 50      | 153                                              | 39,9    | 3,83 | 159  | 36,6    | 4,35 | 166  | 33,5    | 4,95 | 175  | 30,7    | 5,70 |
|       | 25      | 76,5                                             | 19,2    | 3,99 | 79,3 | 17,5    | 4,53 | 82,1 | 16,0    | 5,15 | 86,4 | 14,6    | 5,93 |
|       | Minimum | 73,8                                             | 18,5    | 4,00 | 76,5 | 16,8    | 4,54 | 79,2 | 15,4    | 5,16 | 83,3 | 14,0    | 5,95 |
| 130.4 | 100     | 355                                              | 116     | 3,04 | 369  | 106     | 3,48 | 385  | 96,5    | 3,99 | 406  | 87,9    | 4,61 |
|       | 75      | 266                                              | 82,4    | 3,23 | 277  | 75,1    | 3,68 | 289  | 68,5    | 4,21 | 304  | 62,4    | 4,87 |
|       | 50      | 177                                              | 50,5    | 3,51 | 184  | 46,1    | 4,01 | 193  | 42,0    | 4,58 | 203  | 38,2    | 5,31 |
|       | 25      | 88,6                                             | 24,6    | 3,60 | 92,1 | 22,4    | 4,10 | 96,0 | 20,5    | 4,69 | 101  | 18,6    | 5,43 |
|       | Minimum | 72,0                                             | 19,8    | 3,64 | 74,8 | 18,0    | 4,15 | 77,9 | 16,4    | 4,74 | 82,0 | 15,0    | 5,48 |
| 155.5 | 100     | 409                                              | 134     | 3,04 | 426  | 122     | 3,49 | 445  | 111     | 4,00 | 468  | 101     | 4,62 |
|       | 75      | 306                                              | 89,6    | 3,42 | 320  | 82,1    | 3,89 | 334  | 75,3    | 4,44 | 351  | 68,9    | 5,10 |
|       | 50      | 204                                              | 52,5    | 3,89 | 213  | 48,2    | 4,42 | 223  | 44,1    | 5,04 | 234  | 40,3    | 5,82 |
|       | 25      | 102                                              | 24,6    | 4,15 | 106  | 22,5    | 4,72 | 110  | 20,5    | 5,37 | 116  | 18,7    | 6,18 |
|       | Minimum | 75,7                                             | 17,4    | 4,35 | 78,4 | 15,8    | 4,95 | 81,4 | 14,4    | 5,64 | 85,0 | 13,1    | 6,47 |
| 170.5 | 100     | 459                                              | 152     | 3,02 | 482  | 138     | 3,49 | 503  | 126     | 4,01 | 526  | 114     | 4,60 |
|       | 75      | 345                                              | 103     | 3,34 | 361  | 94,2    | 3,83 | 377  | 86,1    | 4,38 | 394  | 78,4    | 5,03 |
|       | 50      | 230                                              | 58,7    | 3,92 | 241  | 53,8    | 4,48 | 251  | 49,2    | 5,11 | 263  | 44,7    | 5,88 |
|       | 25      | 115                                              | 28,3    | 4,06 | 120  | 25,8    | 4,65 | 125  | 23,6    | 5,30 | 131  | 21,4    | 6,09 |
|       | Minimum | 75,3                                             | 17,8    | 4,22 | 78,5 | 16,2    | 4,84 | 81,5 | 14,7    | 5,53 | 84,9 | 13,4    | 6,33 |
| 185.5 | 100     | 504                                              | 171     | 2,96 | 526  | 155     | 3,40 | 550  | 141     | 3,90 | 580  | 128     | 4,52 |
|       | 75      | 378                                              | 121     | 3,13 | 395  | 110     | 3,58 | 412  | 101     | 4,10 | 435  | 91,7    | 4,75 |
|       | 50      | 252                                              | 65,1    | 3,88 | 263  | 59,9    | 4,39 | 275  | 55,0    | 5,00 | 290  | 50,1    | 5,80 |
|       | 25      | 126                                              | 31,4    | 4,02 | 131  | 28,7    | 4,56 | 137  | 26,3    | 5,20 | 144  | 23,9    | 6,01 |
|       | Minimum | 76,1                                             | 18,0    | 4,23 | 78,8 | 16,4    | 4,81 | 81,9 | 14,9    | 5,49 | 85,8 | 13,6    | 6,33 |
| 210.6 | 100     | 556                                              | 189     | 2,95 | 584  | 171     | 3,41 | 610  | 156     | 3,91 | 639  | 142     | 4,49 |
|       | 75      | 417                                              | 123     | 3,39 | 438  | 113     | 3,89 | 458  | 103     | 4,44 | 479  | 94,1    | 5,09 |
|       | 50      | 278                                              | 73,3    | 3,80 | 292  | 67,4    | 4,34 | 305  | 61,7    | 4,95 | 319  | 56,1    | 5,69 |
|       | 25      | 139                                              | 34,9    | 3,98 | 146  | 32,0    | 4,55 | 152  | 29,2    | 5,19 | 158  | 26,6    | 5,96 |
|       | Minimum | 75,7                                             | 17,4    | 4,34 | 78,8 | 15,9    | 4,97 | 81,7 | 14,4    | 5,66 | 85,0 | 13,1    | 6,47 |
| 225.6 | 100     | 599                                              | 203     | 2,95 | 627  | 185     | 3,39 | 657  | 168     | 3,90 | 693  | 153     | 4,51 |
|       | 75      | 450                                              | 135     | 3,32 | 470  | 124     | 3,79 | 492  | 114     | 4,33 | 519  | 104     | 4,99 |
|       | 50      | 300                                              | 82,3    | 3,64 | 314  | 75,8    | 4,14 | 328  | 69,6    | 4,72 | 346  | 63,6    | 5,45 |
|       | 25      | 150                                              | 39,4    | 3,80 | 156  | 36,2    | 4,32 | 163  | 33,1    | 4,93 | 172  | 30,2    | 5,68 |
|       | Minimum | 74,3                                             | 17,8    | 4,17 | 77,0 | 16,2    | 4,75 | 80,0 | 14,7    | 5,42 | 83,7 | 13,4    | 6,24 |
| 240.6 | 100     | 646                                              | 224     | 2,89 | 673  | 203     | 3,32 | 704  | 185     | 3,81 | 751  | 168     | 4,46 |
|       | 75      | 484                                              | 143     | 3,39 | 505  | 131     | 3,85 | 528  | 120     | 4,39 | 563  | 110     | 5,12 |
|       | 50      | 323                                              | 82,8    | 3,90 | 336  | 76,5    | 4,40 | 352  | 70,3    | 5,00 | 376  | 64,3    | 5,85 |
|       | 25      | 161                                              | 39,4    | 4,09 | 167  | 36,1    | 4,62 | 174  | 33,0    | 5,26 | 185  | 29,9    | 6,17 |
|       | Minimum | 126                                              | 29,9    | 4,21 | 130  | 27,2    | 4,76 | 134  | 24,8    | 5,42 | 142  | 22,4    | 6,37 |

Load = % of cooling capacity compared to the value at full load

kWf = cooling capacity in kW

kWe\_tot = unit total power input in kW

Internal exchanger water temperature = leaving 7°C / entering 12°C / variable flow-rate with external exchanger air temperature

## Premium

### Cooling at part load - ST/SC

| SIZE  | Load    | Entering external exchanger air temperature (°C) |         |      |      |         |      |      |         |      |      |         |      |
|-------|---------|--------------------------------------------------|---------|------|------|---------|------|------|---------|------|------|---------|------|
|       |         | 35°C                                             |         |      | 30°C |         |      | 25°C |         |      | 20°C |         |      |
|       |         | kWf                                              | kWe_tot | EER  | kWf  | kWe_tot | EER  | kWf  | kWe_tot | EER  | kWf  | kWe_tot | EER  |
| 90.3  | 100     | 232                                              | 83,9    | 2,76 | 243  | 76,4    | 3,18 | 254  | 69,6    | 3,65 | 267  | 63,5    | 4,21 |
|       | 75      | 174                                              | 54,2    | 3,21 | 182  | 49,7    | 3,66 | 190  | 45,6    | 4,18 | 200  | 41,7    | 4,81 |
|       | 50      | 116                                              | 33,4    | 3,48 | 121  | 30,6    | 3,96 | 127  | 28,1    | 4,52 | 134  | 25,7    | 5,20 |
|       | 30      | 71,3                                             | 19,3    | 3,70 | 74,1 | 17,6    | 4,21 | 77,2 | 16,1    | 4,80 | 80,9 | 14,7    | 5,52 |
|       | Minimum | 71,3                                             | 19,3    | 3,70 | 74,1 | 17,6    | 4,21 | 77,2 | 16,1    | 4,80 | 80,9 | 14,7    | 5,52 |
| 110.4 | 100     | 291                                              | 101     | 2,88 | 304  | 92,2    | 3,29 | 317  | 84,1    | 3,77 | 333  | 76,7    | 4,35 |
|       | 75      | 218                                              | 69,3    | 3,15 | 228  | 63,4    | 3,59 | 238  | 58,0    | 4,10 | 250  | 53,0    | 4,72 |
|       | 50      | 146                                              | 39,9    | 3,65 | 152  | 36,6    | 4,15 | 159  | 33,5    | 4,73 | 167  | 30,7    | 5,43 |
|       | 25      | 72,8                                             | 19,4    | 3,76 | 75,6 | 17,6    | 4,29 | 78,7 | 16,1    | 4,89 | 82,6 | 14,7    | 5,63 |
|       | Minimum | 58,6                                             | 15,4    | 3,82 | 60,8 | 14,0    | 4,35 | 63,2 | 12,7    | 4,98 | 66,2 | 11,5    | 5,74 |
| 130.4 | 100     | 333                                              | 123     | 2,72 | 349  | 111     | 3,14 | 366  | 101     | 3,60 | 386  | 92,6    | 4,17 |
|       | 75      | 250                                              | 85,3    | 2,93 | 262  | 77,9    | 3,36 | 274  | 71,1    | 3,86 | 289  | 65,0    | 4,45 |
|       | 50      | 167                                              | 45,0    | 3,71 | 175  | 41,9    | 4,17 | 183  | 38,6    | 4,74 | 193  | 35,5    | 5,43 |
|       | 25      | 83,3                                             | 22,0    | 3,79 | 86,7 | 20,2    | 4,30 | 90,4 | 18,5    | 4,89 | 94,9 | 16,9    | 5,61 |
|       | Minimum | 72,6                                             | 19,0    | 3,82 | 75,4 | 17,4    | 4,34 | 78,4 | 15,9    | 4,94 | 82,2 | 14,5    | 5,67 |
| 145.4 | 100     | 385                                              | 137     | 2,80 | 402  | 125     | 3,23 | 421  | 114     | 3,70 | 443  | 104     | 4,27 |
|       | 75      | 289                                              | 87,6    | 3,29 | 302  | 80,2    | 3,77 | 316  | 73,3    | 4,30 | 332  | 67,0    | 4,96 |
|       | 50      | 192                                              | 51,5    | 3,73 | 201  | 47,3    | 4,25 | 210  | 43,3    | 4,86 | 222  | 39,6    | 5,59 |
|       | 25      | 96,2                                             | 25,5    | 3,78 | 100  | 23,3    | 4,30 | 104  | 21,3    | 4,90 | 110  | 19,5    | 5,63 |
|       | Minimum | 74,6                                             | 19,6    | 3,81 | 77,5 | 17,9    | 4,33 | 80,6 | 16,4    | 4,93 | 84,5 | 15,0    | 5,65 |
| 170.5 | 100     | 444                                              | 155     | 2,87 | 464  | 141     | 3,30 | 486  | 128     | 3,79 | 511  | 117     | 4,38 |
|       | 75      | 333                                              | 103     | 3,23 | 348  | 94,4    | 3,69 | 364  | 86,5    | 4,21 | 384  | 79,2    | 4,84 |
|       | 50      | 222                                              | 60,4    | 3,68 | 232  | 55,6    | 4,18 | 243  | 51,0    | 4,76 | 256  | 46,6    | 5,49 |
|       | 25      | 111                                              | 29,6    | 3,74 | 116  | 27,2    | 4,26 | 121  | 24,9    | 4,85 | 127  | 22,8    | 5,58 |
|       | Minimum | 73,4                                             | 19,2    | 3,82 | 76,3 | 17,6    | 4,34 | 79,4 | 16,1    | 4,94 | 83,3 | 14,7    | 5,67 |
| 185.5 | 100     | 484                                              | 177     | 2,73 | 506  | 161     | 3,14 | 530  | 147     | 3,61 | 559  | 134     | 4,17 |
|       | 75      | 363                                              | 107     | 3,38 | 380  | 99,0    | 3,84 | 397  | 91,0    | 4,36 | 419  | 83,6    | 5,01 |
|       | 50      | 242                                              | 62,3    | 3,89 | 253  | 57,3    | 4,42 | 265  | 52,6    | 5,04 | 279  | 47,9    | 5,83 |
|       | 25      | 121                                              | 30,0    | 4,03 | 126  | 27,5    | 4,59 | 131  | 25,1    | 5,23 | 138  | 22,9    | 6,04 |
|       | Minimum | 75,6                                             | 17,9    | 4,22 | 78,4 | 16,3    | 4,81 | 81,5 | 14,8    | 5,50 | 85,3 | 13,5    | 6,33 |
| 210.6 | 100     | 538                                              | 197     | 2,73 | 562  | 179     | 3,14 | 588  | 163     | 3,61 | 619  | 148     | 4,17 |
|       | 75      | 403                                              | 126     | 3,19 | 422  | 116     | 3,64 | 441  | 106     | 4,14 | 464  | 97,4    | 4,76 |
|       | 50      | 269                                              | 73,1    | 3,68 | 281  | 67,3    | 4,17 | 294  | 61,9    | 4,75 | 309  | 56,5    | 5,47 |
|       | 25      | 134                                              | 35,1    | 3,83 | 140  | 32,2    | 4,35 | 146  | 29,5    | 4,96 | 154  | 26,9    | 5,71 |
|       | Minimum | 72,7                                             | 17,6    | 4,12 | 75,4 | 16,0    | 4,70 | 78,3 | 14,6    | 5,37 | 81,9 | 13,3    | 6,18 |
| 225.6 | 100     | 591                                              | 207     | 2,85 | 617  | 188     | 3,28 | 645  | 171     | 3,76 | 679  | 156     | 4,34 |
|       | 75      | 443                                              | 135     | 3,28 | 463  | 124     | 3,74 | 484  | 114     | 4,26 | 509  | 104     | 4,90 |
|       | 50      | 296                                              | 84,9    | 3,48 | 309  | 78,0    | 3,96 | 322  | 71,6    | 4,50 | 339  | 65,6    | 5,17 |
|       | 25      | 148                                              | 40,3    | 3,67 | 154  | 36,9    | 4,17 | 161  | 33,8    | 4,75 | 169  | 30,9    | 5,46 |
|       | Minimum | 72,8                                             | 17,7    | 4,12 | 75,5 | 16,1    | 4,70 | 78,4 | 14,6    | 5,37 | 82,1 | 13,3    | 6,18 |
| 240.6 | 100     | 644                                              | 231     | 2,79 | 666  | 210     | 3,18 | 698  | 191     | 3,66 | 742  | 174     | 4,27 |
|       | 75      | 483                                              | 150     | 3,23 | 499  | 137     | 3,64 | 523  | 126     | 4,15 | 557  | 115     | 4,82 |
|       | 50      | 322                                              | 88,7    | 3,63 | 333  | 81,6    | 4,08 | 349  | 74,8    | 4,66 | 371  | 68,3    | 5,44 |
|       | 25      | 161                                              | 42,7    | 3,78 | 166  | 39,0    | 4,25 | 173  | 35,6    | 4,86 | 184  | 32,4    | 5,68 |
|       | Minimum | 122                                              | 31,5    | 3,87 | 125  | 28,7    | 4,36 | 130  | 26,1    | 5,00 | 138  | 23,6    | 5,86 |

Load = % of cooling capacity compared to the value at full load

kWf = cooling capacity in kW

kWe\_tot = unit total power input in kW

Internal exchanger water temperature = leaving 7°C / entering 12°C / variable flow-rate with external exchanger air temperature

# Performances

## Premium

### Cooling at part load - EN

| SIZE  | Load    | Entering external exchanger air temperature (°C) |         |      |      |         |      |      |         |      |      |         |      |
|-------|---------|--------------------------------------------------|---------|------|------|---------|------|------|---------|------|------|---------|------|
|       |         | 35°C                                             |         |      | 30°C |         |      | 25°C |         |      | 20°C |         |      |
|       |         | kWf                                              | kWe_tot | EER  | kWf  | kWe_tot | EER  | kWf  | kWe_tot | EER  | kWf  | kWe_tot | EER  |
| 90.3  | 100     | 228                                              | 85,8    | 2,65 | 238  | 77,9    | 3,06 | 250  | 71,0    | 3,52 | 263  | 64,7    | 4,07 |
|       | 75      | 171                                              | 54,1    | 3,15 | 179  | 49,6    | 3,60 | 187  | 45,5    | 4,12 | 198  | 41,6    | 4,75 |
|       | 50      | 114                                              | 32,9    | 3,46 | 119  | 30,3    | 3,94 | 125  | 27,8    | 4,50 | 132  | 25,5    | 5,17 |
|       | 30      | 71,3                                             | 19,3    | 3,70 | 74,1 | 17,6    | 4,21 | 77,2 | 16,1    | 4,80 | 80,9 | 14,7    | 5,52 |
|       | Minimum | 71,3                                             | 19,3    | 3,70 | 74,1 | 17,6    | 4,21 | 77,2 | 16,1    | 4,80 | 80,9 | 14,7    | 5,52 |
| 110.4 | 100     | 283                                              | 103     | 2,75 | 296  | 93,7    | 3,16 | 310  | 85,3    | 3,63 | 326  | 77,8    | 4,19 |
|       | 75      | 213                                              | 69,5    | 3,06 | 222  | 63,5    | 3,50 | 232  | 58,1    | 4,00 | 245  | 53,0    | 4,61 |
|       | 50      | 142                                              | 39,1    | 3,62 | 148  | 36,0    | 4,12 | 155  | 33,0    | 4,69 | 163  | 30,3    | 5,39 |
|       | 25      | 70,9                                             | 19,0    | 3,73 | 73,7 | 17,3    | 4,25 | 76,7 | 15,8    | 4,85 | 80,5 | 14,4    | 5,59 |
|       | Minimum | 58,0                                             | 15,4    | 3,78 | 60,2 | 14,0    | 4,31 | 62,6 | 12,7    | 4,93 | 65,6 | 11,5    | 5,68 |
| 130.4 | 100     | 329                                              | 127     | 2,59 | 346  | 115     | 3,00 | 363  | 105     | 3,46 | 383  | 95,6    | 4,01 |
|       | 75      | 247                                              | 87,3    | 2,83 | 260  | 79,6    | 3,26 | 272  | 72,7    | 3,74 | 287  | 66,4    | 4,33 |
|       | 50      | 165                                              | 44,4    | 3,71 | 173  | 41,1    | 4,21 | 181  | 37,9    | 4,79 | 192  | 34,9    | 5,49 |
|       | 25      | 82,3                                             | 21,7    | 3,79 | 85,7 | 19,9    | 4,31 | 89,3 | 18,2    | 4,91 | 93,8 | 16,7    | 5,63 |
|       | Minimum | 73,3                                             | 19,2    | 3,82 | 76,1 | 17,5    | 4,34 | 79,2 | 16,0    | 4,94 | 83,0 | 14,7    | 5,67 |
| 145.4 | 100     | 374                                              | 139     | 2,69 | 392  | 126     | 3,11 | 410  | 115     | 3,58 | 433  | 105     | 4,14 |
|       | 75      | 280                                              | 86,2    | 3,25 | 294  | 79,0    | 3,72 | 308  | 72,3    | 4,26 | 325  | 66,2    | 4,91 |
|       | 50      | 187                                              | 50,1    | 3,73 | 196  | 46,1    | 4,25 | 205  | 42,3    | 4,85 | 216  | 38,7    | 5,59 |
|       | 25      | 93,5                                             | 24,7    | 3,78 | 97,4 | 22,6    | 4,30 | 102  | 20,7    | 4,90 | 107  | 18,9    | 5,63 |
|       | Minimum | 73,9                                             | 19,4    | 3,81 | 76,8 | 17,7    | 4,33 | 79,9 | 16,2    | 4,93 | 83,7 | 14,8    | 5,65 |
| 170.5 | 100     | 432                                              | 158     | 2,74 | 453  | 143     | 3,16 | 474  | 130     | 3,64 | 500  | 119     | 4,22 |
|       | 75      | 324                                              | 101     | 3,20 | 340  | 93,0    | 3,65 | 356  | 85,5    | 4,16 | 375  | 78,4    | 4,79 |
|       | 50      | 216                                              | 59,3    | 3,65 | 226  | 54,7    | 4,14 | 237  | 50,3    | 4,72 | 250  | 46,0    | 5,44 |
|       | 25      | 108                                              | 29,1    | 3,71 | 113  | 26,7    | 4,22 | 118  | 24,5    | 4,81 | 124  | 22,4    | 5,53 |
|       | Minimum | 72,8                                             | 19,2    | 3,78 | 75,6 | 17,6    | 4,30 | 78,7 | 16,1    | 4,90 | 82,6 | 14,7    | 5,62 |
| 185.5 | 100     | 474                                              | 183     | 2,59 | 497  | 166     | 3,00 | 521  | 151     | 3,46 | 550  | 137     | 4,01 |
|       | 75      | 355                                              | 116     | 3,08 | 373  | 106     | 3,51 | 391  | 97,4    | 4,01 | 413  | 89,3    | 4,62 |
|       | 50      | 237                                              | 66,9    | 3,54 | 249  | 61,7    | 4,03 | 261  | 56,7    | 4,59 | 275  | 51,9    | 5,30 |
|       | 25      | 118                                              | 32,7    | 3,63 | 123  | 30,0    | 4,10 | 129  | 27,5    | 4,68 | 136  | 25,1    | 5,40 |
|       | Minimum | 73,1                                             | 19,6    | 3,74 | 75,1 | 17,9    | 4,20 | 78,3 | 16,3    | 4,80 | 82,3 | 14,9    | 5,54 |
| 210.6 | 100     | 527                                              | 202     | 2,62 | 552  | 183     | 3,02 | 578  | 166     | 3,48 | 610  | 151     | 4,03 |
|       | 75      | 395                                              | 126     | 3,14 | 414  | 116     | 3,59 | 434  | 106     | 4,09 | 457  | 97,0    | 4,71 |
|       | 50      | 264                                              | 71,4    | 3,69 | 276  | 65,9    | 4,19 | 289  | 60,7    | 4,77 | 305  | 55,5    | 5,50 |
|       | 25      | 132                                              | 34,3    | 3,84 | 138  | 31,5    | 4,37 | 144  | 28,8    | 4,98 | 151  | 26,3    | 5,74 |
|       | Minimum | 72,7                                             | 17,6    | 4,12 | 75,4 | 16,0    | 4,70 | 78,3 | 14,6    | 5,37 | 81,9 | 13,3    | 6,18 |
| 225.6 | 100     | 580                                              | 211     | 2,75 | 608  | 192     | 3,17 | 636  | 174     | 3,65 | 670  | 159     | 4,22 |
|       | 75      | 435                                              | 134     | 3,24 | 456  | 123     | 3,70 | 477  | 113     | 4,22 | 502  | 103     | 4,86 |
|       | 50      | 290                                              | 83,8    | 3,46 | 304  | 77,2    | 3,94 | 318  | 70,9    | 4,49 | 335  | 64,9    | 5,16 |
|       | 25      | 145                                              | 39,6    | 3,66 | 151  | 36,4    | 4,16 | 158  | 33,3    | 4,74 | 166  | 30,5    | 5,45 |
|       | Minimum | 72,8                                             | 17,7    | 4,12 | 75,5 | 16,1    | 4,70 | 78,4 | 14,6    | 5,37 | 82,1 | 13,3    | 6,18 |
| 240.6 | 100     | 623                                              | 236     | 2,64 | 649  | 214     | 3,03 | 678  | 195     | 3,48 | 722  | 177     | 4,07 |
|       | 75      | 467                                              | 149     | 3,14 | 487  | 137     | 3,56 | 508  | 126     | 4,05 | 542  | 113     | 4,80 |
|       | 50      | 312                                              | 87,1    | 3,58 | 325  | 80,3    | 4,04 | 339  | 73,7    | 4,60 | 361  | 67,0    | 5,39 |
|       | 25      | 156                                              | 41,8    | 3,73 | 161  | 38,2    | 4,22 | 168  | 34,9    | 4,80 | 178  | 31,7    | 5,63 |
|       | Minimum | 120                                              | 31,5    | 3,82 | 124  | 28,7    | 4,33 | 129  | 26,1    | 4,94 | 137  | 23,6    | 5,78 |

Load = % of cooling capacity compared to the value at full load

kWf = cooling capacity in kW

kWe\_tot = unit total power input in kW

Internal exchanger water temperature = leaving 7°C / entering 12°C / variable flow-rate with external exchanger air temperature

## ST -Standard acoustic configuration

The units is supplied with SCROLL compressors without soundproofing casing.

⚠ With the standard acoustic configuration if the hydronic units installed on the unit are selected, they are supplied without casing.

To find out the standard unit sound level, refer to the 'Sound levels' tables.



## SC - Acoustic configuration with compressor soundproofing (standard)

Configuration used to increase the unit's silent operation by acting on the source of the noise. It consists of suitable steel casings lined with high-density material designed to provide sound insulation. The casings are secured to an aluminium frame and painted on the outside with polyester powder (RAL 9001).

⚠ With the acoustic configuration with compressor soundproofing if the hydronic units installed on the unit are selected, they are supplied without casing.

To assess the quality of the soundproofing benefit, refer to the 'Sound levels' tables.



## EN - Super-silenced acoustic configuration

Configuration that further increases the unit's silent operation by acting on the source of the noise. It consists of suitable steel casings lined with high-density material designed to provide sound insulation. The casings are secured to an aluminium frame and painted on the outside with polyester powder (RAL 9001). The unit also reduces the air flow.

⚠ With the super-silenced acoustic configuration, if the hydronic units installed on the unit are selected, they are supplied with casing.

To assess the benefit of the super silenced configuration, refer to the "Sound levels" tables.



## PPBM - Microchannel coils protection panels

Microchannel coils protection panels supplied on the manifold side.

They guarantee greater protection during transport and from accidental contact with things or people.



Standard unit

Unit with PPBM option

# Configurations

## PFGP - Soundproofing paneling of the pumping unit

Configuration used to increase the hydronic assembly's silent operation.

It is made up of steel casings lined internally with high-density material with a soundproofing function. The casings are pre-painted with RAL 9001 color.

Option available for all pumping groups installed on the unit, in combination with the standard acoustic configuration (ST) and with compressor soundproofing (SC)

## 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.

⚠ 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".

⚠ The "Extremely low water temperature" option for the chilled water production down to -12°C is available on request.

## CCME - E-coated microchannel coil

The full aluminium microchannel coil is completely treated by electrolysis so as to create a protective layer of epoxy polymer on the surface, with the following characteristics:

- over 3000 hours of protection against salt spray (ASTM G85 A3 - SWAAT);
- over 2000 hours of protection against UV rays (ASTM G155-05a)
- provide a very high resistance against corrosion

## Categories of atmospheric corrosion

Atmospheric corrosion is divided into six categories of corrosivity level, as shown in table.

| Corrosivity | ISO 9223 Category | Corrosion rate for aluminium g/m <sup>2</sup> |
|-------------|-------------------|-----------------------------------------------|
| Very low    | C1                | negligible                                    |
| Low         | C2                | $r_{corr} \leq 0.6$                           |
| Medium      | C3                | $0.6 < r_{corr} \leq 2$                       |
| High        | C4                | $2 < r_{corr} \leq 5$                         |
| Very high   | C5                | $5 < r_{corr} \leq 10$                        |
| Extreme     | CX                | $r_{corr} > 10$                               |

| Atmospheric Corrosivity category (ISO 9223) | C1, C2              | C3 (inland) | C3 (coastal) | C4                                        | C5                                          | CX                                |
|---------------------------------------------|---------------------|-------------|--------------|-------------------------------------------|---------------------------------------------|-----------------------------------|
| Corrosivity                                 | Very low, low       | Medium      | Medium       | High                                      | Very high                                   | Extreme                           |
| Typical environments -examples              | Indoor, Rural areas | Urban areas | Urban areas  | Polluted Urban, industrial, coastal areas | Very high pollution & salt deposition areas | Extreme industrial, coastal areas |
| CCM - coils (standard)                      | OK                  | OK          | NR           | NR                                        | NR                                          | NR                                |
| <b>CCME - E-coated microchannel coil</b>    | <b>OK</b>           | <b>OK</b>   | <b>OK</b>    | <b>OK</b>                                 | <b>AP</b>                                   | <b>AP</b>                         |

OK: Recommended;

AP: Acceptable, life may be shorter;

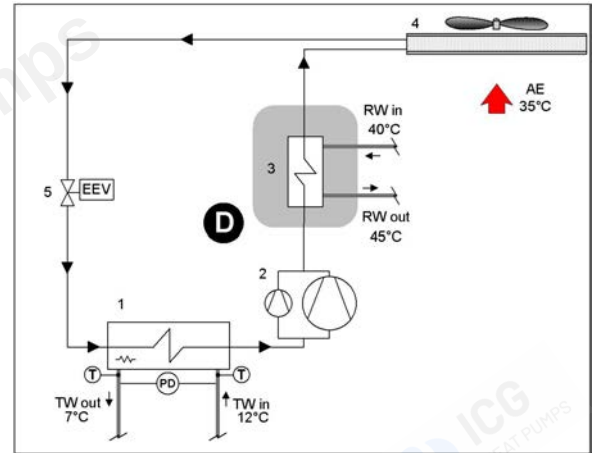
NR: Not recommended

## 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.

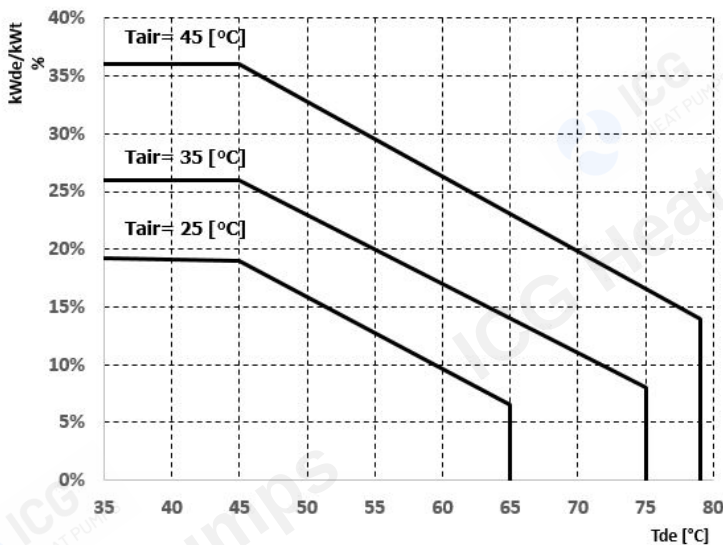


**D - Partial recovery device**

- 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

## Partial recovery heating capacity



$kWde/kWf$  = Heat recovered / Condenser heating capacity (cooling capacity + compressor power input) [%]

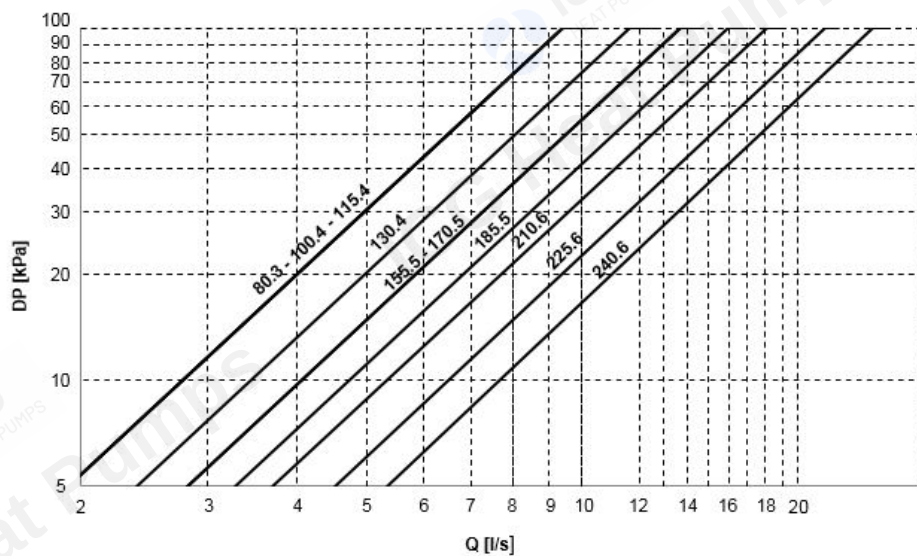
Tde = Heat recovering device outlet water temperature [°C]

⚠ Values with a tolerance of  $\pm 2\%$

# Configurations

## Pressure drops of partial energy recovery exchanger

### Excellence



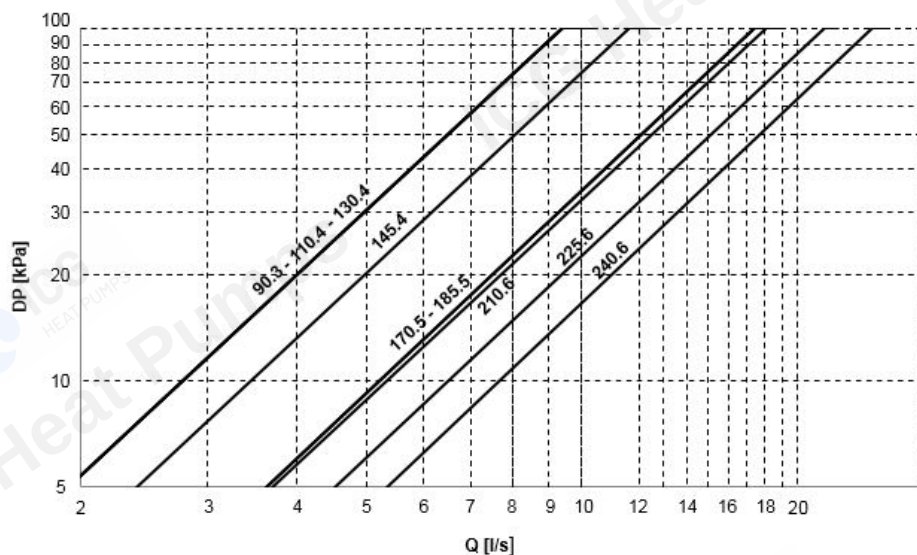
Q = Water flow-rate[l/s]  
DP = Water side pressure drops (kPa)

### Admissible water flow-rates

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

| SIZE |       | 80.3 | 100.4 | 115.4 | 130.4 | 155.5 | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |
|------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Qmin | [l/s] | 1,9  | 1,9   | 1,9   | 2,4   | 2,8   | 2,8   | 3,3   | 3,7   | 4,5   | 5,3   |
| Qmax | [l/s] | 9,4  | 9,4   | 9,4   | 11,6  | 13,8  | 13,8  | 16,0  | 18,1  | 21,8  | 25,4  |

### Premium



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

### Admissible water flow-rates

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

| SIZE |       | 90.3 | 110.4 | 130.4 | 145.4 | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |
|------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Qmin | [l/s] | 1,9  | 1,9   | 1,9   | 2,4   | 3,6   | 3,6   | 3,7   | 4,5   | 5,3   |
| Qmax | [l/s] | 9,4  | 9,4   | 9,4   | 11,6  | 17,4  | 17,4  | 18,1  | 21,8  | 25,4  |

## R - Total energy recovery

A configuration which enables the production of hot water free-of-charge while operating in the cooling mode, thanks to the total recovery of condensation heat that would otherwise be disposed of into the external heat source. This solution increases the overall efficiency of the system in all cases where a high-level of hot water production is required. It is made up of a brazed plate heat exchanger made of 316 stainless steel, suitable for recovering all the unit heat capacity (equal to the sum of the cooling capacity and the electrical input capacity of the compressors), from the on-off type solenoid valve, from the supply and return temperature sensors in the hot water circuit and the related two-step integrated control logic.

Hot water availability is always subordinate to the production of chilled water.

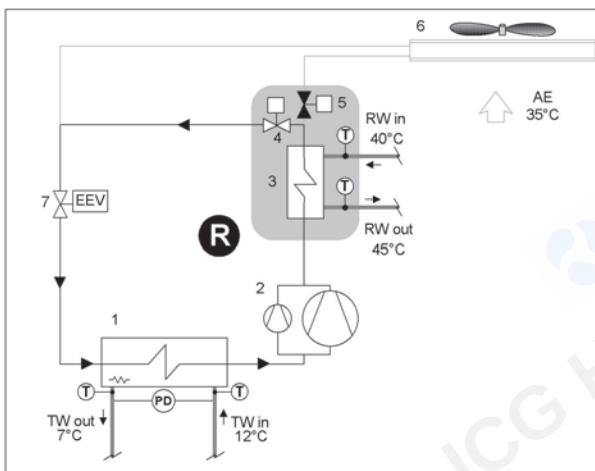
See the following example:

- cooling capacity request = 100% / Heating capacity request = 0% > Production only of cooling capacity;
- cooling capacity request = 100% / Heating capacity request = 100% > Production of cooling and heating capacity by recovery;
- cooling capacity request = 50% / Heating capacity request = 100% > Production of cooling and heating capacity by recovery, equal to the 50% of the requested heating capacity.

- ⚠ To prevent constant switching in the unit's refrigeration circuit, it is necessary to install a storage tank with an adequate capacity in the system's hot water circuit.
- ⚠ In the absence of hot water circulation in the recovery exchanger, the maximum inlet air temperature is reduced by approximately 2°C compared with the unit without "Total Energy Recovery" mode.

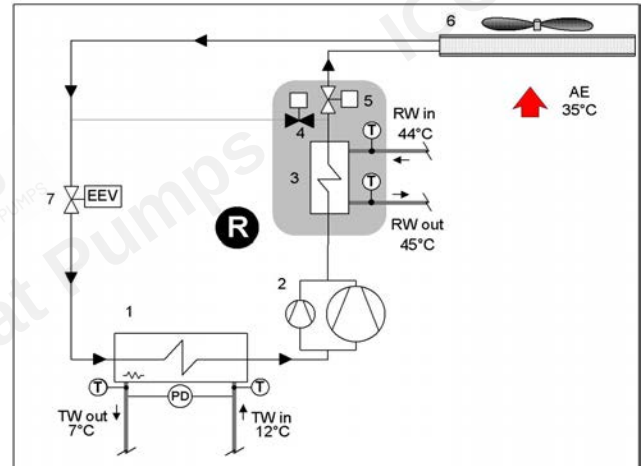
### TOTAL OPERATING ENERGY RECOVERY

When hot water is requested, the condensing coil is deactivated. Condensation takes place wholly within the recovery circuit.



### TOTAL NON-OPERATING ENERGY RECOVERY

When the recovery set-point has been satisfied, the condensing coil is reactivated. In this condition, the total recovery circuit operates as a Partial recovery circuit (Desuperheater).

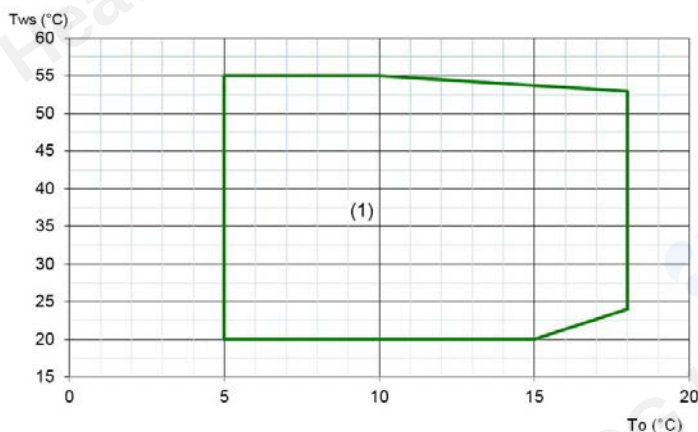


- R - Total recovery device
- 1 - Internal exchanger
- 2 - Compressors
- 3 - Recovery exchanger
- 4 - Total recovery enabling valve

- 5 - External exchanger enabling valve
- 6 - External exchanger
- 7 - Expansion electronic valve
- T - Temperature probe
- PD - Differential pressure switch

- TW in - Chilled water inlet
- TW out - Chilled water outlet
- RW in - Recovery water input
- RW out - Recovery water output
- AE Outdoor air

## Total energy recovery operating range



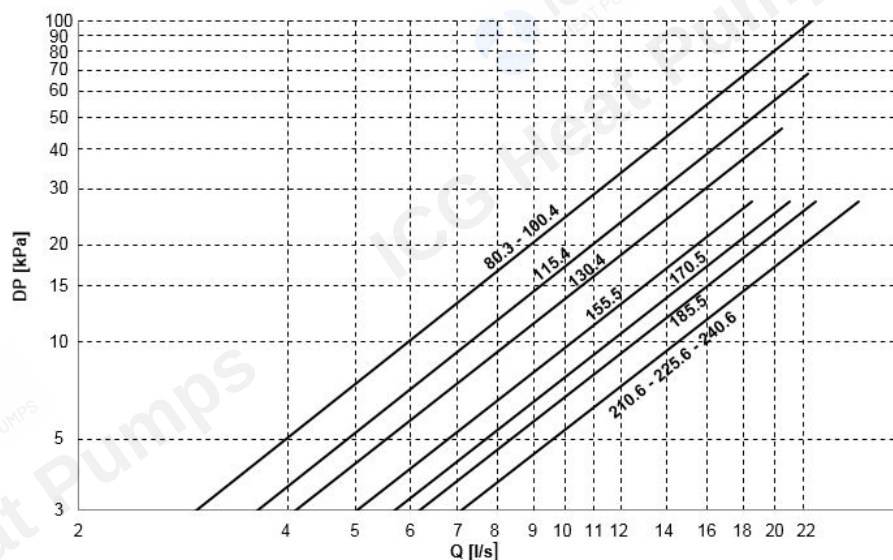
- 1. Standard unit operating range at full load

To = Leaving internal exchanger water temperature (evaporator)  
Tws = Leaving recovery exchanger water temperature

# Configurations

## Pressure drops of the total energy recovery exchanger

### Excellence

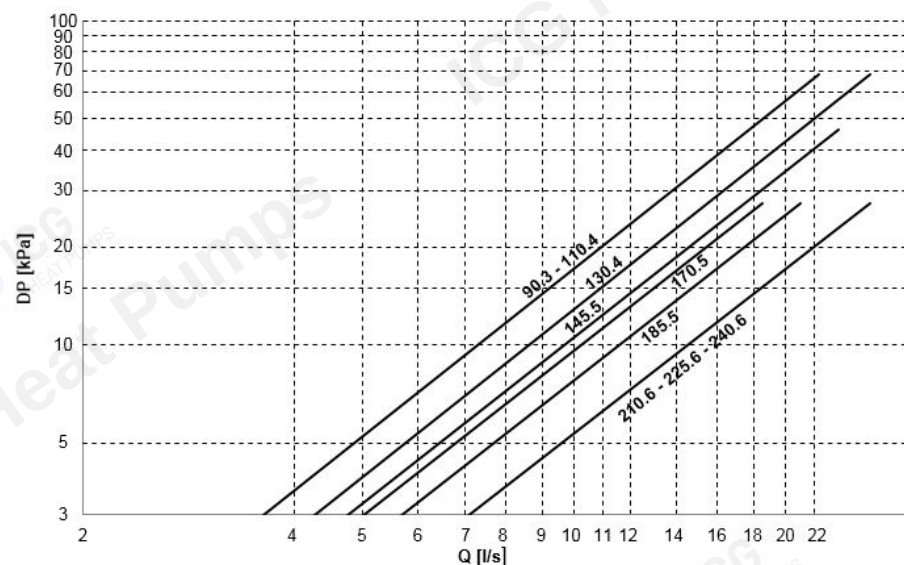


#### Admissible water flow-rates

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

| SIZE |       | 80.3 | 100.4 | 115.4 | 130.4 | 155.5 | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |
|------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Qmin | [l/s] | 2,7  | 2,7   | 3,3   | 3,7   | 4,5   | 5,1   | 5,6   | 6,4   | 6,4   | 6,4   |
| Qmax | [l/s] | 26,4 | 26,4  | 22,3  | 20,4  | 18,5  | 21,0  | 22,9  | 26,4  | 26,4  | 26,4  |

### Premium



#### Admissible water flow-rates

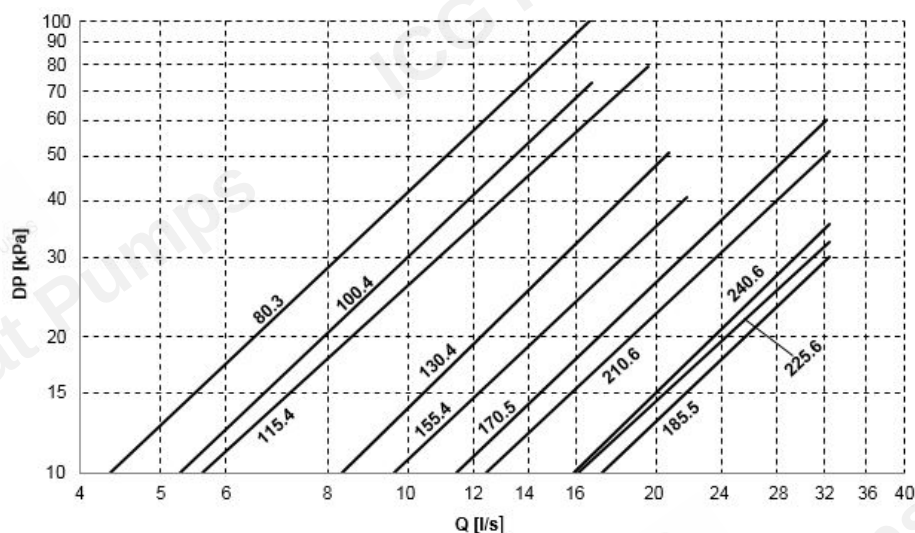
Minimum (Qmin) and maximum (Qmax) admissible water flow for the unit to operate correctly

| SIZE |       | 90.3 | 110.4 | 130.4 | 145.4 | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |
|------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Qmin | [l/s] | 3,3  | 3,3   | 3,9   | 4,3   | 4,5   | 5,1   | 6,4   | 6,4   | 6,4   |
| Qmax | [l/s] | 22,3 | 22,3  | 26,4  | 23,7  | 18,5  | 21,0  | 26,4  | 26,4  | 26,4  |

## EVFTP - Shell and tube exchanger PED test

Direct expansion exchanger with two independent circuit refrigerant side. The exchanger is composed of a cover made of carbon steel. The tubes, anchored to the tube plate by mechanical expansion, are made of copper, high efficiency, internally rifled to improve thermal exchange and specially designed for use with modern ecological refrigerants. It also includes a water side protection differential switch, an anti-freeze heating element to protect against icing, and covering in closed-cell thermo-insulating material that prevents the formation of condensation and heat exchange with the exterior. The water connections of the exchanger are quick-release with splined joint (Victaulic).

## Shell and tube exchanger pressure drops (EVFTP) - Excellence



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

$$Q [l/s] = kWf / (4,186 \times DT)$$

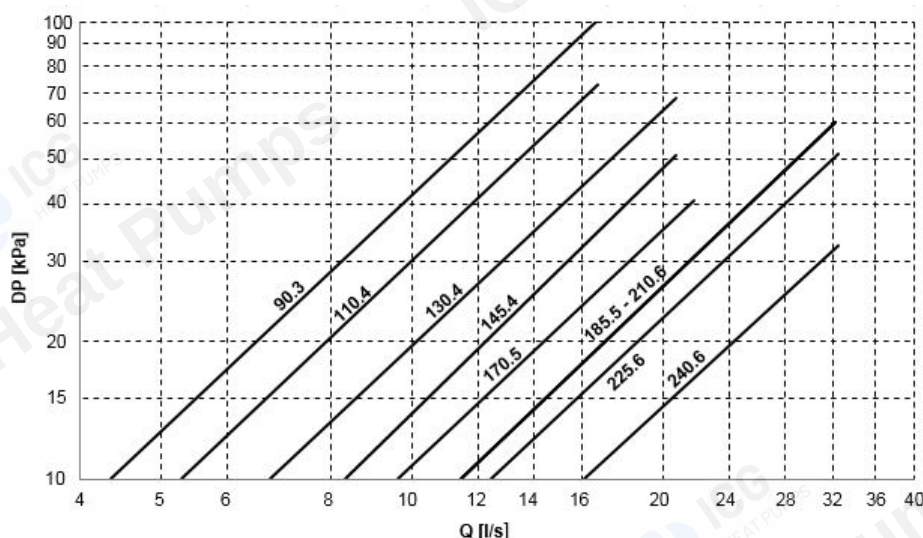
kWf = Cooling capacity in kW  
DT = Temperature difference between inlet / outlet water

## Admissible water flow-rates

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

| SIZE |       | 80.3 | 100.4 | 115.4 | 130.4 | 155.5 | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |
|------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Qmin | [l/s] | 4,4  | 5,3   | 5,6   | 8,3   | 9,6   | 11,5  | 17,2  | 12,5  | 16,1  | 15,9  |
| Qmax | [l/s] | 16,6 | 16,7  | 19,6  | 20,7  | 21,8  | 32,3  | 32,4  | 32,4  | 32,4  | 32,4  |

## Shell and tube exchanger pressure drops (EVFTP) - Premium



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

$$Q [l/s] = kWf / (4,186 \times DT)$$

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

## Admissible water flow-rates

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

| SIZE |       | 90.3 | 110.4 | 130.4 | 145.4 | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |
|------|-------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| Qmin | [l/s] | 4,4  | 5,3   | 6,8   | 8,3   | 9,6   | 11,5  | 11,5  | 12,5  | 16,1  |
| Qmax | [l/s] | 16,6 | 16,7  | 20,7  | 20,7  | 21,8  | 32,3  | 32,3  | 32,4  | 32,4  |

# Accessories - Hydronic assembly

## 1PM/1PMH - User side HydroPack with N° 1 pump

Option supplied built-in the unit. Pumping unit made up of N°1 centrifugal electric pump, with the pump body made of cast iron and the impeller made of INOX or cast iron (depending on the models).

Mechanical seal using ceramic, carbon and EPDM elastomer components.

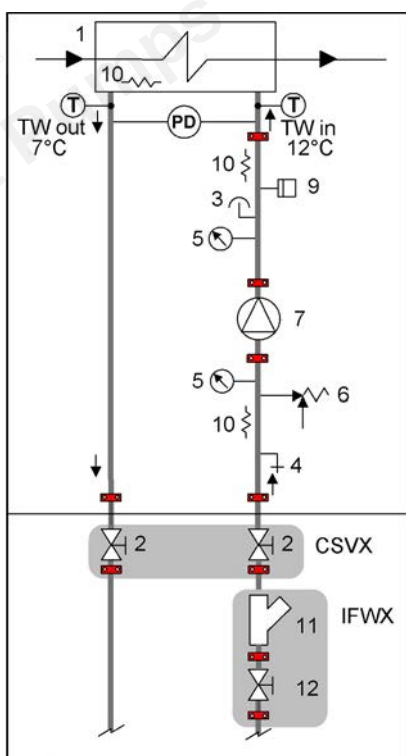
Three-phase electric motor with IP55 degree of protection. Complete with a thermoformed insulating casing, quick connections with insulated casing, safety valve, pressure gauges, system safety pressure switch, stainless steel antifreeze, intake, immersion-type heaters.

All water fittings are Victaulic.

1PM = Hydropack with N° 1 pump

1PMH = Hydropack with N° 1 high static pressure pump

## CONNECTION DIAGRAM - GROUP WITH N° 1 PUMP



- 1 - Internal exchanger
- 2 - Cutoff valve - (CSVX Couple of manually operated shut-off valves)
- 3 - Purge valve
- 4 - Discharge stop valve
- 5 - Pressure gauge
- 6 - Safety valve (6 Bar)
- 7 - Packaged electric pump with high efficiency impeller
- 9 - System load safety pressure switch (it avoids the pump operation if water is not present)
- 10 - Antifreeze heater
- 11 - Steel mesh strainer water side (IFWX)
- 12 - Cutoff valve with quick joints

T - Temperature probe  
PD - Differential pressure switch

TW in chilled water inlet  
TW out chilled water outlet

The grey area indicates further optional components.

- ⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.
- ⚠ It is necessary to provide a non-return valve for each unit installed in hydraulic parallel and equipped with an hydronic assembly installed on board (Installation by the Customer).

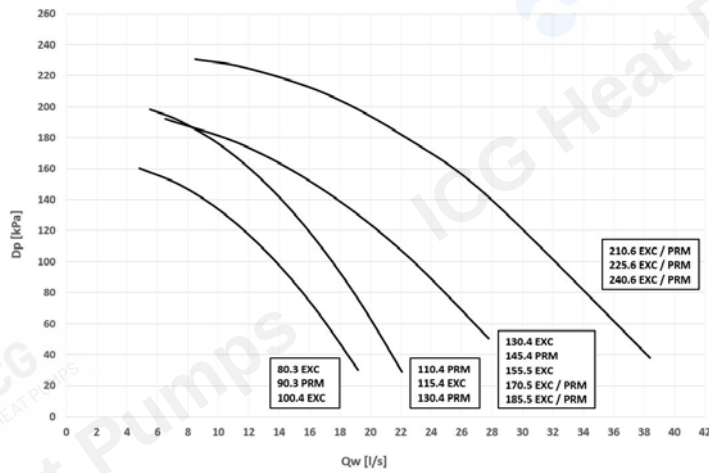
## Electrical data Hydropack

| PUMP                                      | Rated power [kW] | Nominal Current [A] |
|-------------------------------------------|------------------|---------------------|
| 1PM 80.3 - 100.4 EXC / 90.3 PRM           | 3                | 6,35                |
| 1PM 115.4 EXC / 110.4 - 130.4 PRM         | 4                | 7,8                 |
| 1PM 130.4 ÷ 185.5 EXC / 145.4 ÷ 185.5 PRM | 5,5              | 10,6                |
| 1PM 210.6 ÷ 240.6 EXC / PRM               | 7,5              | 14,4                |

| PUMP                                       | Rated power [kW] | Nominal Current [A] |
|--------------------------------------------|------------------|---------------------|
| 1PMH 80.3 ÷ 115.4 EXC / 90.3 ÷ 130.4 PRM   | 7,5              | 14,4                |
| 1PMH 130.4 ÷ 185.5 EXC / 145.4 ÷ 185.5 PRM | 11               | 20,6                |
| 1PMH 210.6 ÷ 240.6 EXC / PRM               | 15               | 27,5                |

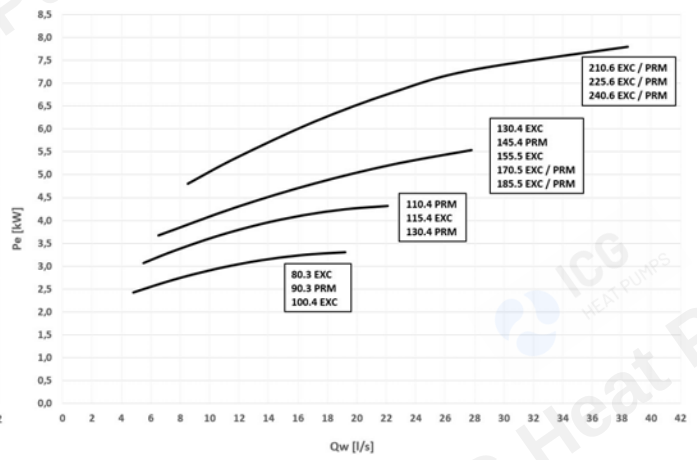
## 1PM - HYDROPACK WITH N° 1 PUMP

Head



Dp = Pump head [kPa]  
QW = Water flow-rate [l/s]

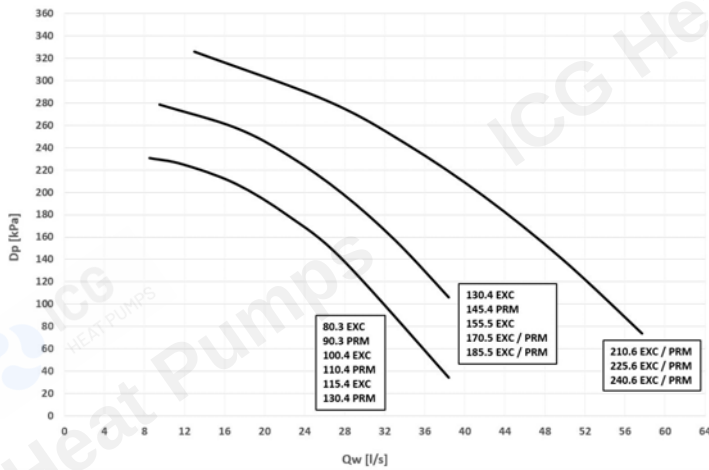
Power input



Pe = Power input [kW]  
QW = Water flow-rate [l/s]

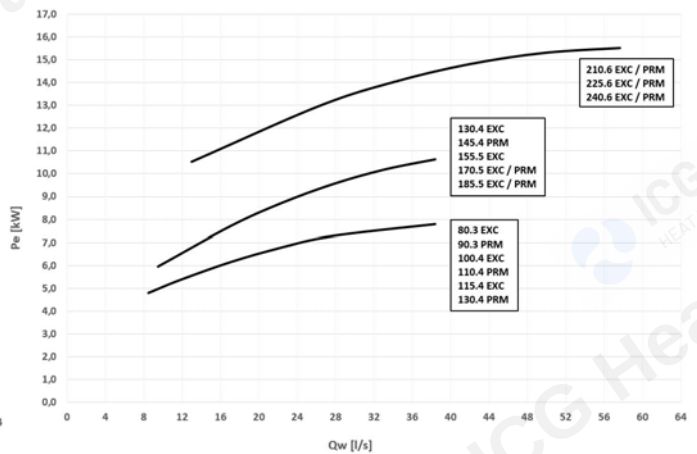
## 1PMH - HYDROPACK WITH NR.1 HIGH STATIC PRESSURE PUMP

Head



Dp = Pump head [kPa]  
QW = Water flow-rate [l/s]

Power input



Pe = Power input [kW]  
QW = Water flow-rate [l/s]

⚠ Caution: to obtain the available pressure values, you need to subtract the following from the head values represented in these diagrams:  
Internal exchanger pressure drop  
IFVX accessory –Steel mesh filter on the water side (where applicable)

# Accessories - Hydronic assembly

## 1PMV/1PMVH - Hydropack user side with N° 1 inverter pump

Option supplied on the unit. Pumping unit made up of one electropump 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 the pump body made of cast iron and the impeller made of AISI 316 stainless steel (depending on the models).

Mechanical seal using ceramic, carbon and EPDM elastomer components

Three-phase electric motor with IP55-protection. Complete with thermoformed insulated casing, fast fittings with insulated casing, safety valve, pressure gauges, system load safety pressure switch, stainless steel anti-freeze immersion resistances located at the intake and at the supply point.

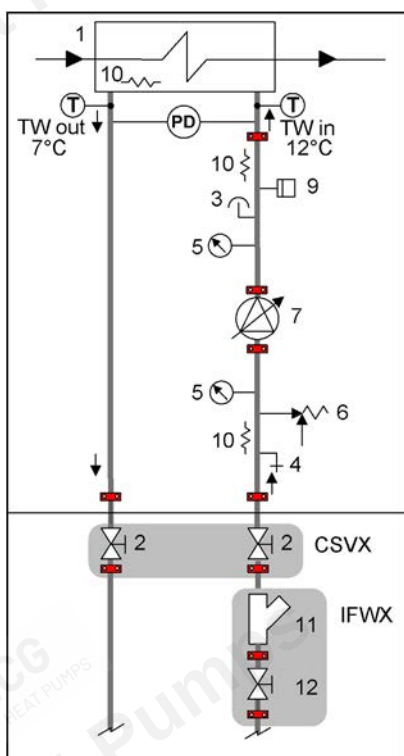
In combination with the "IVFDT" - Variable flow-rate control option, it allows the water flow rate variation to the installation in part load operation to obtain the maximum unit efficiency and lower pumping unit consumption.

All water fittings are Victaulic.

1PMV = Hydropack with N° 1 inverter pump

1PMVH = Hydropack with N° 1 high static pressure inverter pump

## CONNECTION DIAGRAM - GROUP WITH N° 1 INVERTER PUMP



- 1 - Internal exchanger
- 2 - Cutoff valve - (CSVX Couple of manually operated shut-off valves)
- 3 - Purge valve
- 4 - Discharge stop valve
- 5 - Pressure gauge
- 6 - Safety valve (6 Bar)
- 7 - Packaged electric pump with high efficiency impeller
- 9 - System load safety pressure switch (it avoids the pump operation if water is not present)
- 10 - Antifreeze heater
- 11 - Steel mesh strainer water side (IFWX)
- 12 - Cutoff valve with quick joints

T - Temperature probe  
PD - Differential pressure switch

TW in chilled water inlet  
TW out chilled water outlet

The grey area indicates further optional components.

- ⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.
- ⚠ It is necessary to provide a non-return valve for each unit installed in hydraulic parallel and equipped with an hydronic assembly installed on board (Installation by the Customer).

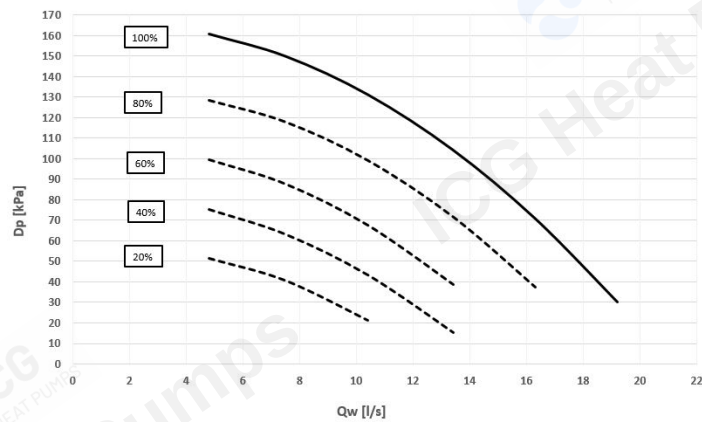
## Electrical data Hydropack

| PUMP                                       | Rated power [kW] | Nominal Current [A] |
|--------------------------------------------|------------------|---------------------|
| 1PMV 80.3 - 100.4 EXC / 90.3 PRM           | 3                | 6,35                |
| 1PMV 115.4 EXC / 110.4 - 130.4 PRM         | 4                | 7,8                 |
| 1PMV 130.4 ÷ 185.5 EXC / 145.4 ÷ 185.5 PRM | 5,5              | 10,6                |
| 1PMV 210.6 ÷ 240.6 EXC / PRM               | 7,5              | 14,4                |

| PUMP                                        | Rated power [kW] | Nominal Current [A] |
|---------------------------------------------|------------------|---------------------|
| 1PMVH 80.3 ÷ 115.4 EXC / 90.3 ÷ 130.4 PRM   | 7,5              | 14,4                |
| 1PMVH 130.4 ÷ 185.5 EXC / 145.4 ÷ 185.5 PRM | 11               | 20,6                |
| 1PMVH 210.6 ÷ 240.6 EXC / PRM               | 15               | 27,5                |

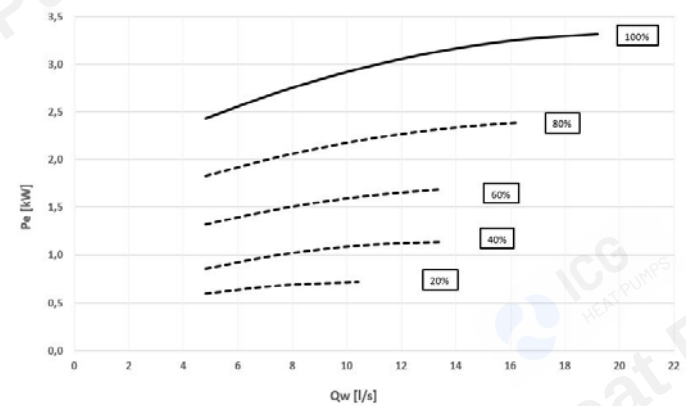
## 1PMV - HYDROPACK WITH N° 1 INVERTER PUMP

### Head - Size 80.3 - 100.4 EXC / 90.3 PRM



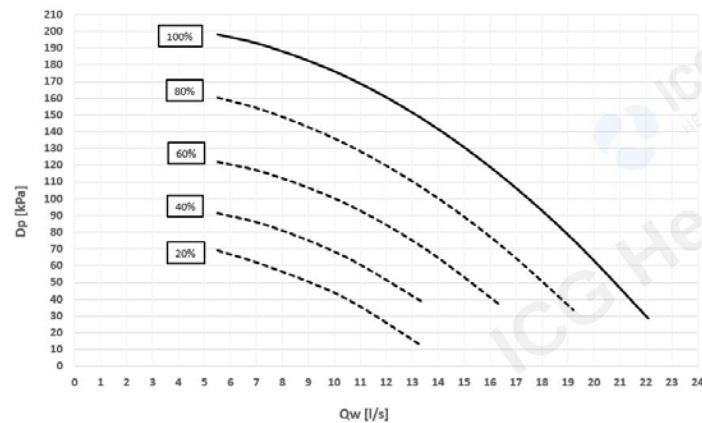
Dp = Pump head [kPa]  
QW = Water flow-rate [l/s]

### Power input - Size 80.3 - 100.4 EXC / 90.3 PRM



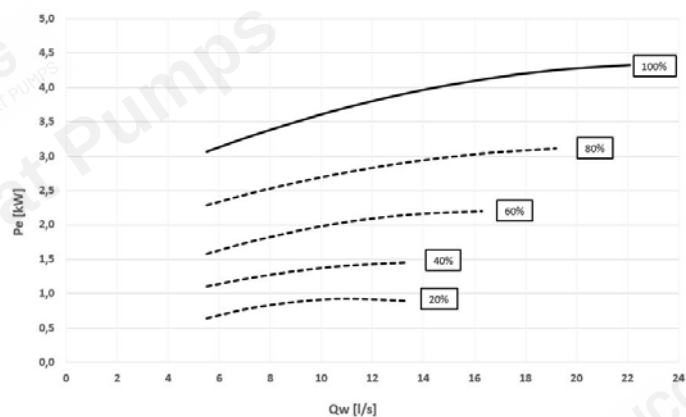
Pe = Power input [kW]  
QW = Water flow-rate [l/s]

### Head - Size 115.4 EXC / 110.4 - 130.4 PRM



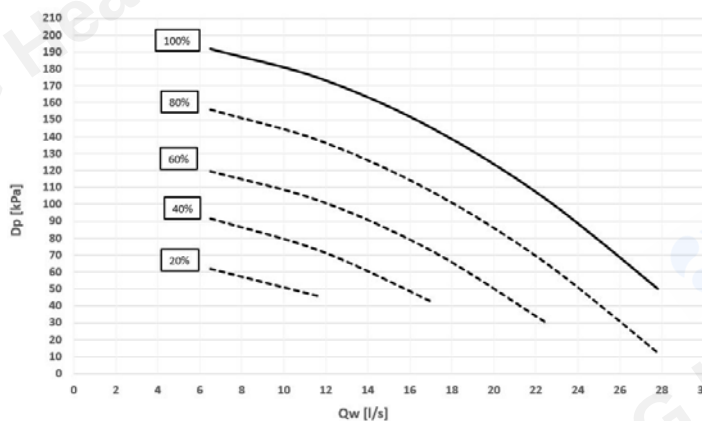
Dp = Pump head [kPa]  
QW = Water flow-rate [l/s]

### Power input - Size 115.4 EXC / 110.4 - 130.4 PRM



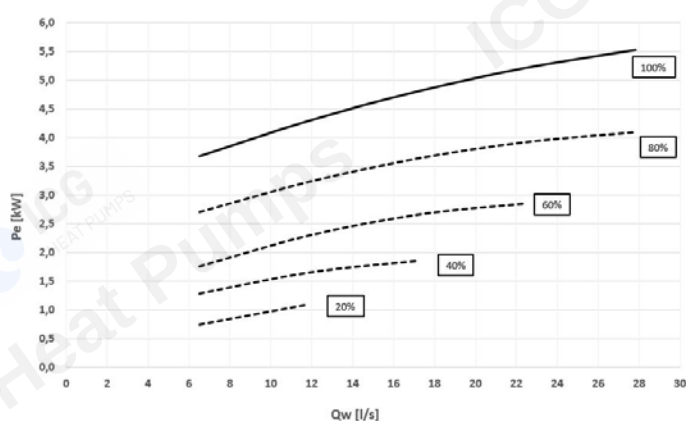
Pe = Power input [kW]  
QW = Water flow-rate [l/s]

### Head - Size 130.4 ÷ 185.5 EXC / 145.4 ÷ 185.5 PRM



Dp = Pump head [kPa]  
QW = Water flow-rate [l/s]

### Power input - Size 130.4 ÷ 185.5 EXC / 145.4 ÷ 185.5 PRM

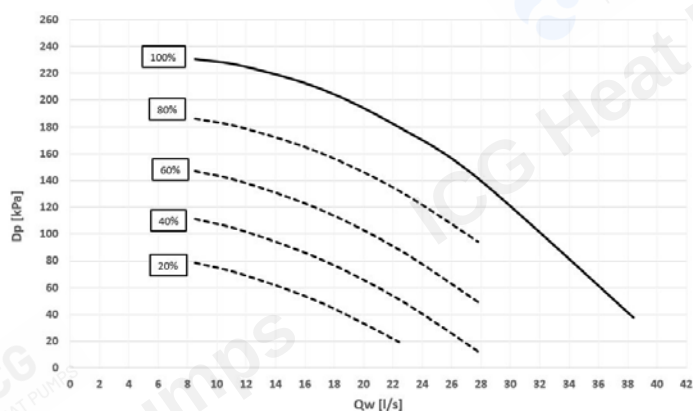


Pe = Power input [kW]  
QW = Water flow-rate [l/s]

# Accessories - Hydronic assembly

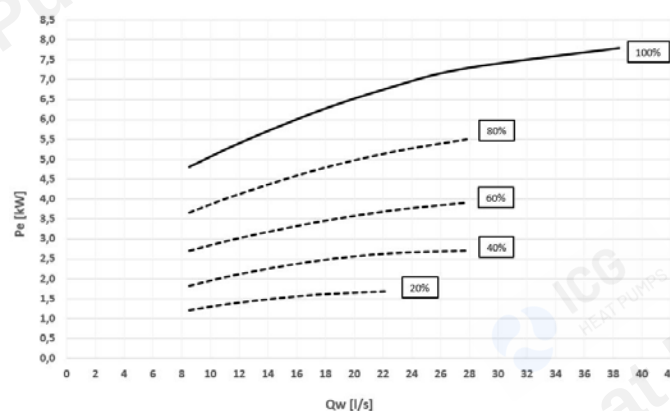
## 1PMV - HYDROPACK CON N° 1 POMPA AD INVERTER

Head - Size 210.6 ÷ 240.6 EXC / PRM



Dp = Pump head [kPa]  
Qw = Water flow-rate [l/s]

Power input - Size 210.6 ÷ 240.6 EXC / PRM

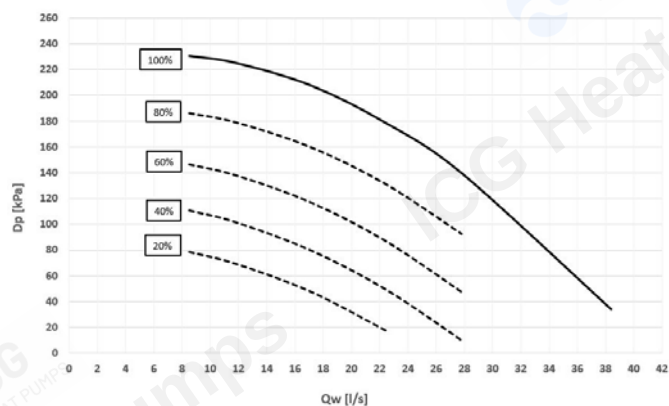


Pe = Power input [kW]  
Qw = Water flow-rate [l/s]

⚠ Caution: to obtain the available pressure values, you need to subtract the following from the head values represented in these diagrams:  
Internal exchanger pressure drop  
IFVX accessory –Steel mesh filter on the water side (where applicable)

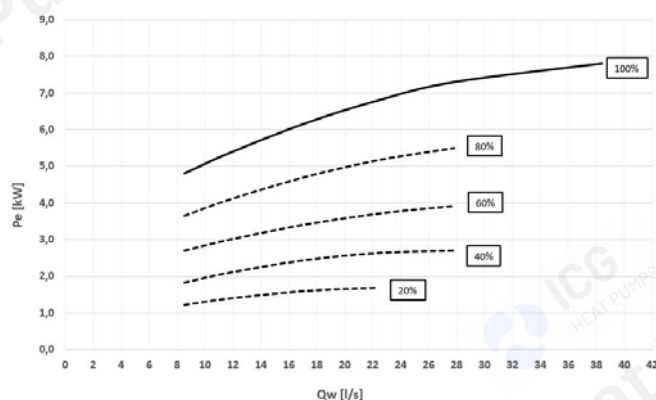
## 1PMVH - HYDROPACK CON N° 1 POMPA AD INVERTER ALTA PREVALENZA

Head - Size 80.3 ÷ 115.4 EXC / 90.3 ÷ 130.4 PRM



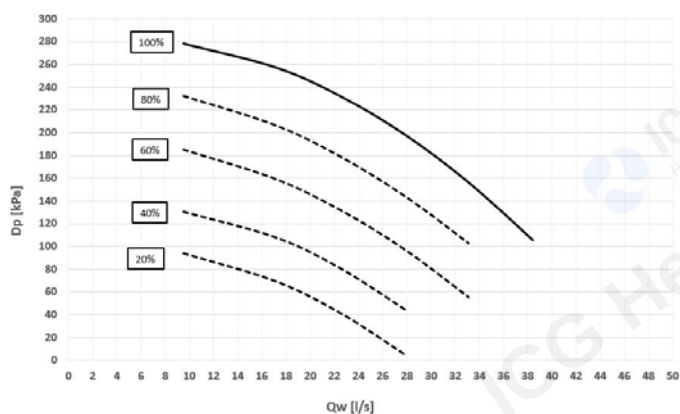
Dp = Pump head [kPa]  
QW = Water flow-rate [l/s]

Power input - Size Gr. 80.3 ÷ 115.4 EXC / 90.3 ÷ 130.4 PRM



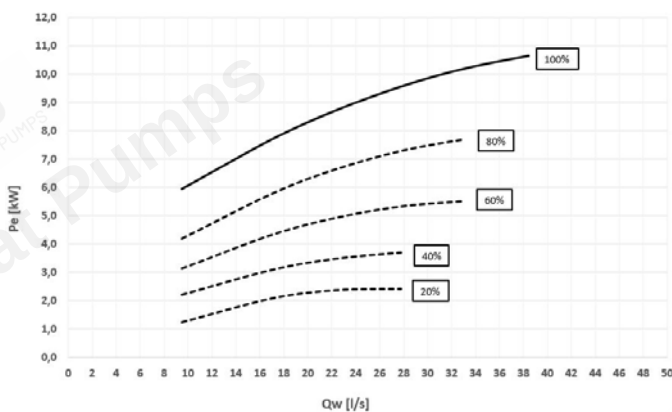
Pe = Power input [kW]  
QW = Water flow-rate [l/s]

Head - Size 130.4 ÷ 185.5 EXC / 145.4 ÷ 185.5 PRM



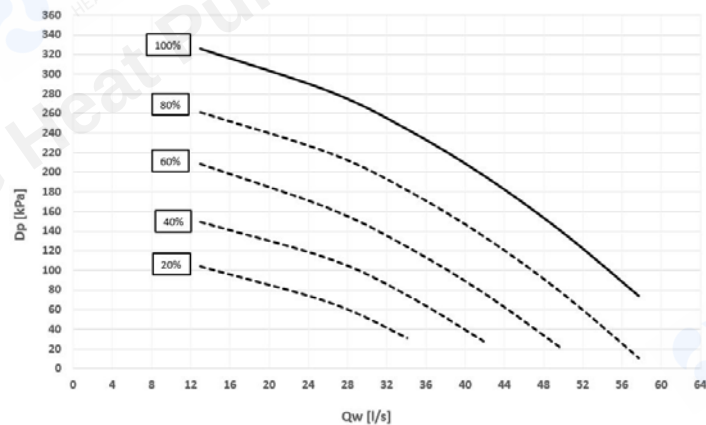
Dp = Pump head [kPa]  
QW = Water flow-rate [l/s]

Power input - Size Gr. 130.4 ÷ 185.5 EXC / 145.4 ÷ 185.5 PRM



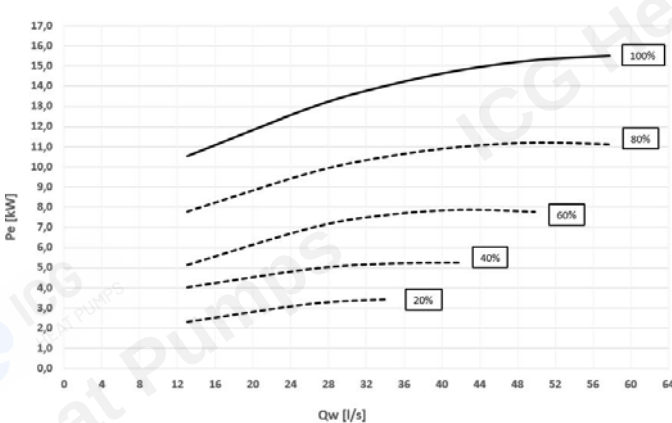
Pe = Power input [kW]  
QW = Water flow-rate [l/s]

Head - Size 210.6 ÷ 240.6 EXC / PRM



Dp = Pump head [kPa]  
QW = Water flow-rate [l/s]

Power input - Size 210.6 ÷ 240.6 EXC / PRM



Pe = Power input [kW]  
QW = Water flow-rate [l/s]

⚠ Caution: to obtain the available pressure values, you need to subtract the following from the head values represented in these diagrams:  
Internal exchanger pressure drop  
IFVX accessory –Steel mesh filter on the water side (where applicable)

# Accessories - Hydronic assembly

## 2PM/2PMH - HydroPack with N° 2 pumps

Option supplied built-in the unit. Pumping unit made up of two electric pumps laid out in parallel, with auto-adaptive modular logic activation. 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 the pump body made of cast iron and the impeller made of AISI 316 stainless steel.

Mechanical seal using ceramic, carbon and EPDM elastomer components.

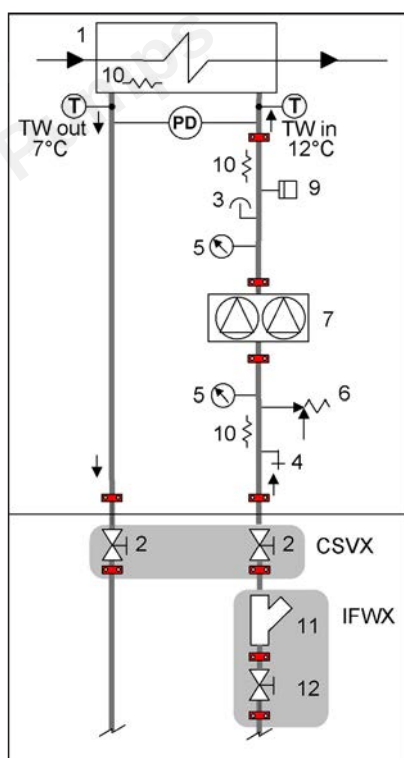
Three-phase electric motor with IP55 degree of protection. Complete with a thermoformed insulating casing, quick connections with insulated casing, safety valve, pressure gauges, system safety pressure switch, stainless steel antifreeze, intake, immersion-type heaters.

All water fittings are Victaulic.

2PM = Hydropack with N° 2 pump

2PMH = Hydropack with N° 2 high static pressure pump

## CONNECTION DIAGRAM - GROUP WITH N° 2 PUMPS



- 1 - Internal exchanger
- 2 - Cutoff valve - (CSVX Couple of manually operated shut-off valves)
- 3 - Purge valve
- 4 - Discharge stop valve
- 5 - Pressure gauge
- 6 - Safety valve (6 Bar)
- 7 - Packaged electric pump with high efficiency impeller
- 9 - System load safety pressure switch (it avoids the pump operation if water is not present)
- 10 - Antifreeze heater
- 11 - Steel mesh strainer water side (IFWX)
- 12 - Cutoff valve with quick joints

T - Temperature probe  
PD - Differential pressure switch

TW in chilled water inlet  
TW out chilled water outlet

The grey area indicates further optional components.

- ⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.
- ⚠ It is necessary to provide a non-return valve for each unit installed in hydraulic parallel and equipped with an hydronic assembly installed on board (Installation by the Customer).

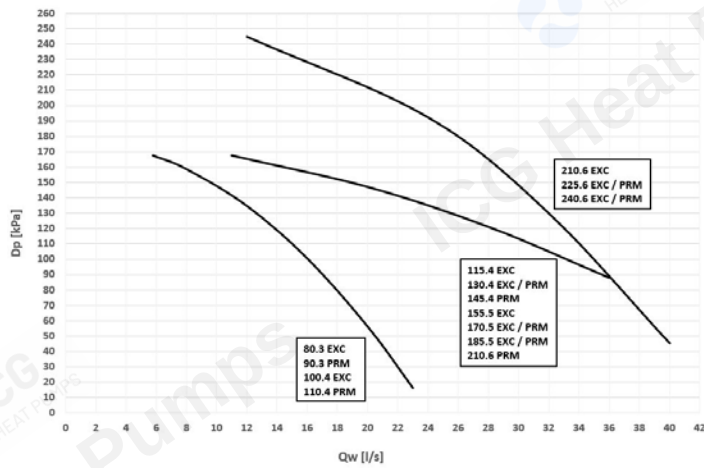
## Electrical data Hydropack

| PUMP                                      | Rated power [kW] | Nominal Current [A] |
|-------------------------------------------|------------------|---------------------|
| 2PM 80.3 - 100.4 EXC / 90.3 - 110.4 PRM   | 2 x 2,2          | 2 x 4,56            |
| 2PM 115.4 ÷ 185.5 EXC / 130.4 ÷ 210.6 PRM | 2 x 4            | 2 x 7,62            |
| 2PM 210.6 ÷ 240.6 EXC / 225.6 - 240.6 PRM | 2 x 5,5          | 2 x 10,5            |

| PUMP                                       | Rated power [kW] | Nominal Current [A] |
|--------------------------------------------|------------------|---------------------|
| 2PMH 80.3 - 100.4 EXC / 90.3 - 110.4 PRM   | 2 x 4            | 2 x 7,62            |
| 2PMH 115.4 - 130.4 EXC / 130.4 - 145.4 PRM | 2 x 5,5          | 2 x 10,5            |
| 2PMH 155.5 ÷ 210.6 EXC / 170.5 - 185.5 PRM | 2 x 7,5          | 2 x 14,1            |
| 2PMH 225.6 - 240.6 EXC / 210.6 ÷ 240.6 PRM | 2 x 11           | 2 x 20,2            |

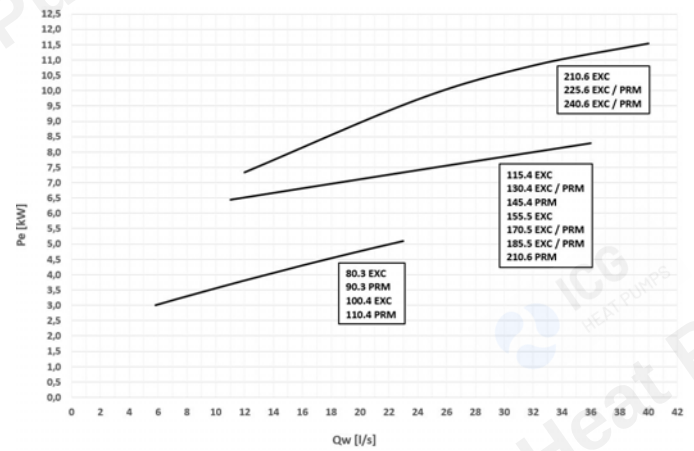
## 2PM- HYDROPACK WITH N° 2 PUMPS

Head



Dp = Pump head [kPa]  
QW = Water flow-rate [l/s]

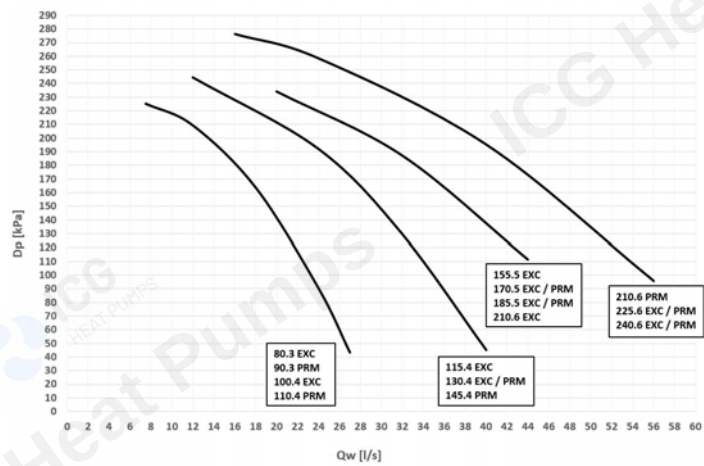
Power input



Pe = Power input [kW]  
QW = Water flow-rate [l/s]

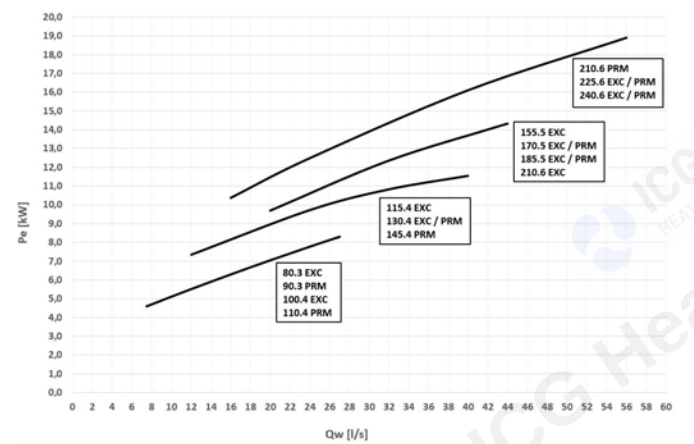
## 2PMH - HYDROPACK CON N° 2 POMPE ALTA PREVALENZA

Head



Dp = Pump head [kPa]  
QW = Water flow-rate [l/s]

Power input



Pe = Power input [kW]  
QW = Water flow-rate [l/s]

⚠ Caution: to obtain the available pressure values, you need to subtract the following from the head values represented in these diagrams:  
Internal exchanger pressure drop  
IFVX accessory –Steel mesh filter on the water side (where applicable)

# Accessories - Hydronic assembly

## 2PMV/2PMVH - Hydropack user side with no. 2 of 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.

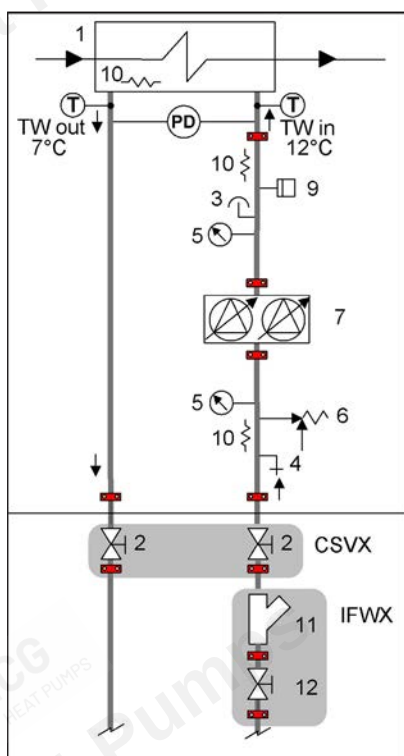
Three-phase electric motor with IP44-protection. Complete with thermoformed insulated casing, quick connections with insulated casing, safety valve, pressure gauges, system load safety pressure switch, stainless steel antifreeze immersion heaters located at the return and supply point. In combination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

All water fittings are Victaulic.

2PMV = Hydropack with N° 2 inverter pump

2PMVH = Hydropack with N° 2 high static pressure inverter pump

### CONNECTION DIAGRAM - GROUP WITH 2 INVERTER PUMPS



- 1 - Internal exchanger
- 2 - Cutoff valve - (CSVX Couple of manually operated shut-off valves)
- 3 - Purge valve
- 4 - Discharge stop valve
- 5 - Pressure gauge
- 6 - Safety valve (6 Bar)
- 7 - Packaged electric pump with high efficiency impeller
- 9 - System load safety pressure switch (it avoids the pump operation if water is not present)
- 10 - Antifreeze heater
- 11 - Steel mesh strainer water side (IFWX)
- 12 - Cutoff valve with quick joints

T - Temperature probe

PD - Differential pressure switch

TW in chilled water inlet

TW out chilled water outlet

The grey area indicates further optional components.

- ⚠ 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
- ⚠ It is necessary to provide a non-return valve for each unit installed in hydraulic parallel and equipped with an hydronic assembly installed on board (Installation by the Customer).

### Electrical data Hydropack

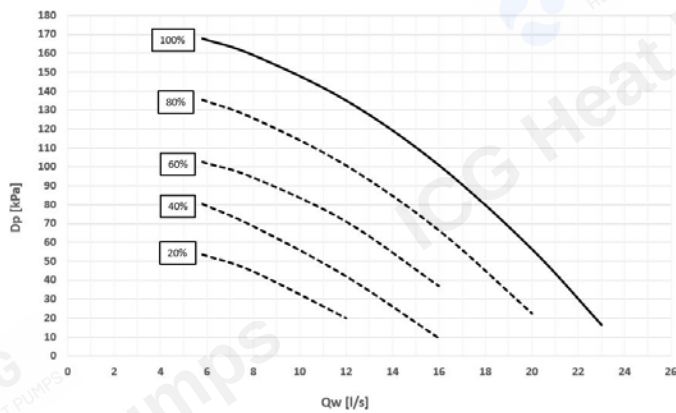
| PUMP                                       | Rated power [kW] | Nominal Current [A] |
|--------------------------------------------|------------------|---------------------|
| 2PMV 80.3 - 100.4 EXC / 90.3 - 110.4 PRM   | 2 x 2,2          | 2 x 4,56            |
| 2PMV 115.4 ÷ 185.5 EXC / 130.4 ÷ 210.6 PRM | 2 x 4            | 2 x 7,62            |
| 2PMV 210.6 ÷ 240.6 EXC / 225.6 - 240.6 PRM | 2 x 5,5          | 2 x 10,5            |

| PUMP                                        | Rated power [kW] | Nominal Current [A] |
|---------------------------------------------|------------------|---------------------|
| 2PMVH 80.3 - 100.4 EXC / 90.3 - 110.4 PRM   | 2 x 4            | 2 x 7,62            |
| 2PMVH 115.4 - 130.4 EXC / 130.4 - 145.4 PRM | 2 x 5,5          | 2 x 10,5            |
| 2PMVH 155.5 ÷ 210.6 EXC / 170.5 - 185.5 PRM | 2 x 7,5          | 2 x 14,1            |
| 2PMVH 225.6 - 240.6 EXC / 210.6 ÷ 240.6 PRM | 2 x 11           | 2 x 20,2            |

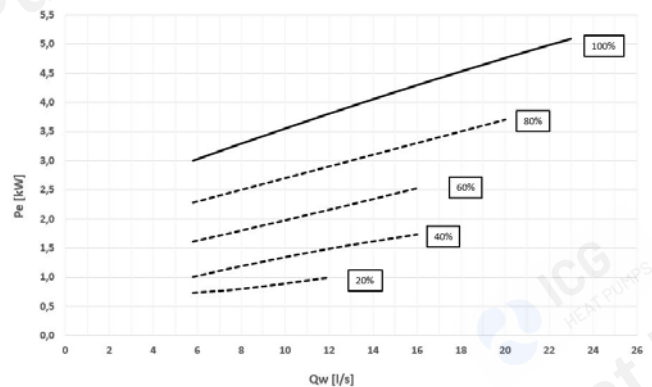
## 2PMV - HYDROPACK WITH N° 2 INVERTER PUMPS

Head - Size 80.3 - 100.4 EXC / 90.3 - 110.4 PRM



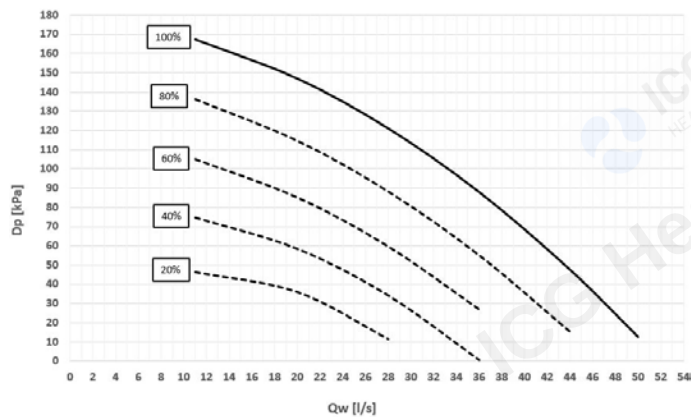
Dp = Pump head [kPa]  
QW = Water flow-rate [l/s]

Power input - Size 80.3 - 100.4 EXC / 90.3 - 110.4 PRM



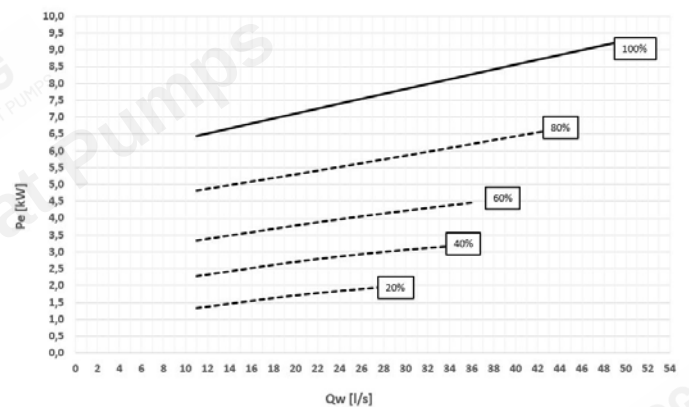
Pe = Power input [kW]  
QW = Water flow-rate [l/s]

Head - Size 115.4 ÷ 185.5 EXC / 130.4 ÷ 210.6 PRM



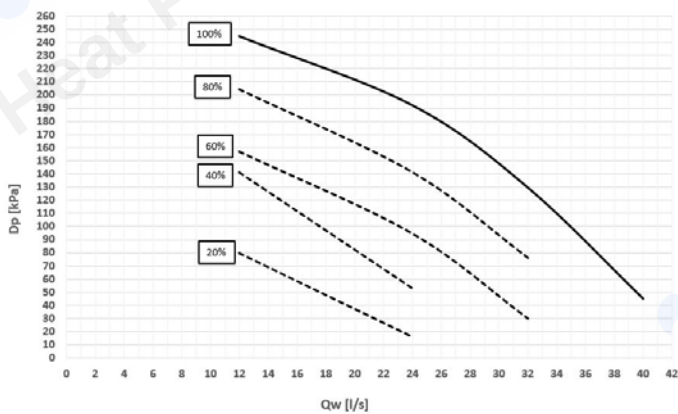
Dp = Pump head [kPa]  
QW = Water flow-rate [l/s]

Power input - Size 115.4 ÷ 185.5 EXC / 130.4 ÷ 210.6 PRM



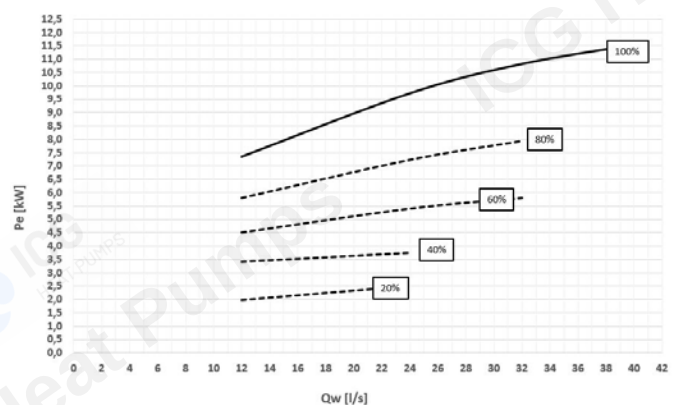
Pe = Power input [kW]  
QW = Water flow-rate [l/s]

Head - Size 210.6 ÷ 240.6 EXC / 225.6 - 240.6 PRM



Dp = Pump head [kPa]  
QW = Water flow-rate [l/s]

Power input - Size 210.6 ÷ 240.6 EXC / 225.6 - 240.6 PRM



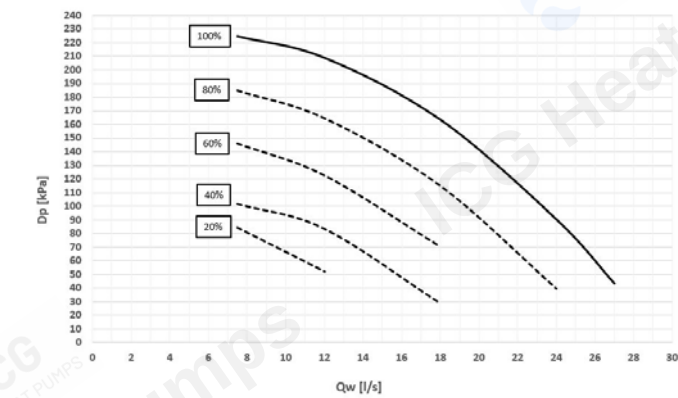
Pe = Power input [kW]  
QW = Water flow-rate [l/s]

⚠ Caution: to obtain the available pressure values, you need to subtract the following from the head values represented in these diagrams:  
Internal exchanger pressure drop  
IFVX accessory –Steel mesh filter on the water side (where applicable)

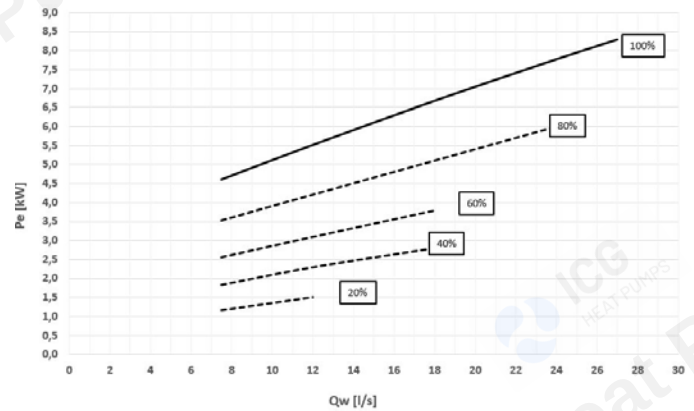
# Accessories - Hydronic assembly

## 2PMVH - HYDROPACK WITH N° 2 HIGH STATIC PRESSURE INVERTER PUMPS

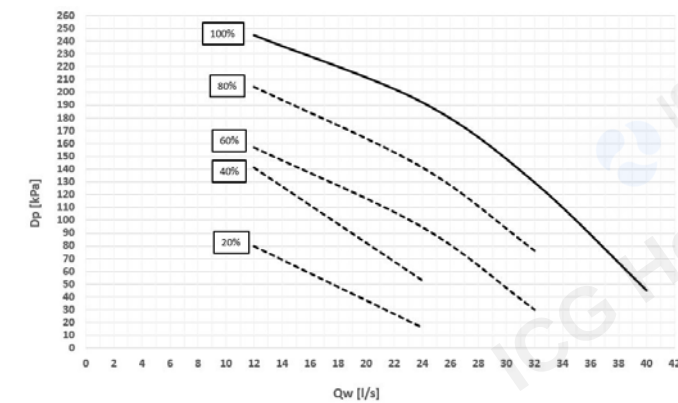
Head - Size 80.3 - 100.4 EXC / 90.3 - 110.4 PRM



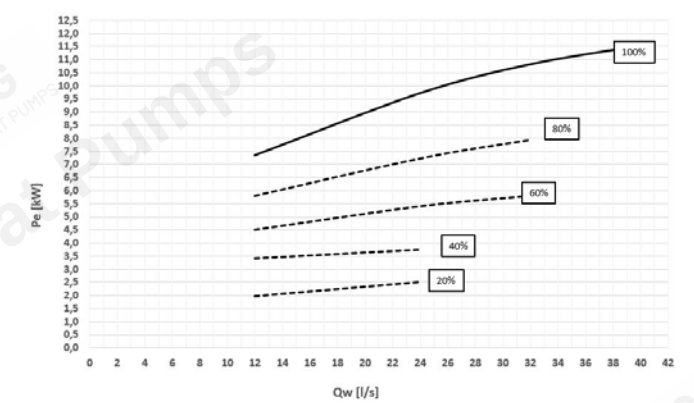
Power input - Size 80.3 - 100.4 EXC / 90.3 - 110.4 PRM



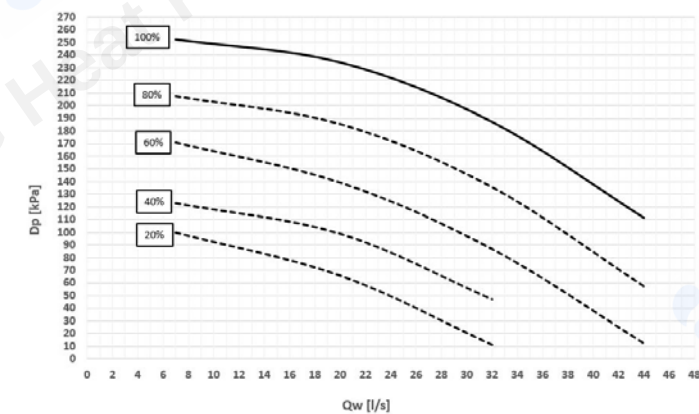
Head - Size 115.4 - 130.4 EXC / 130.4 - 145.4 PRM



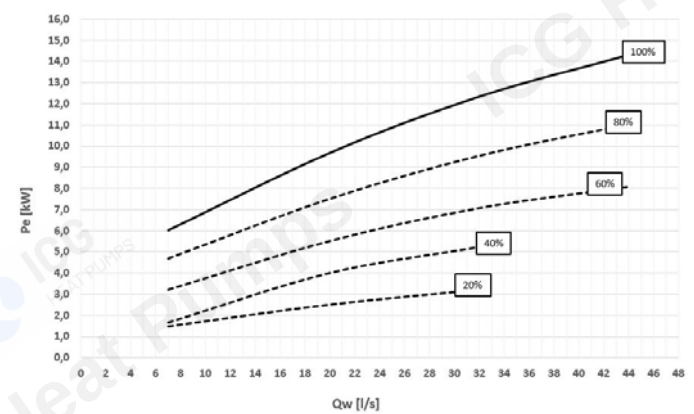
Power input - Size 115.4 - 130.4 EXC / 130.4 - 145.4 PRM



Head - Size 155.5 ÷ 210.6 EXC / 170.5 - 185.5 PRM



Power input - Size 155.5 ÷ 210.6 EXC / 170.5 - 185.5 PRM

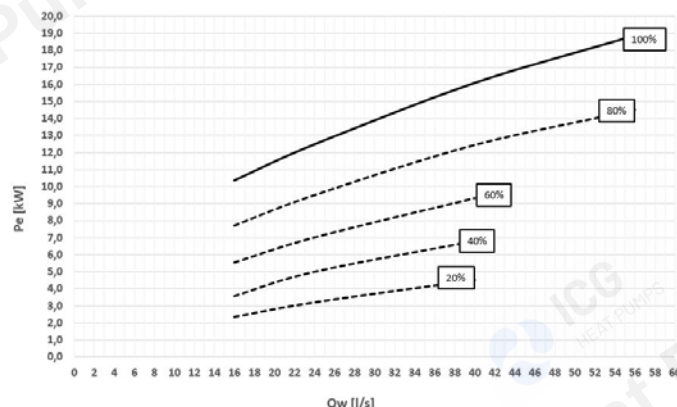
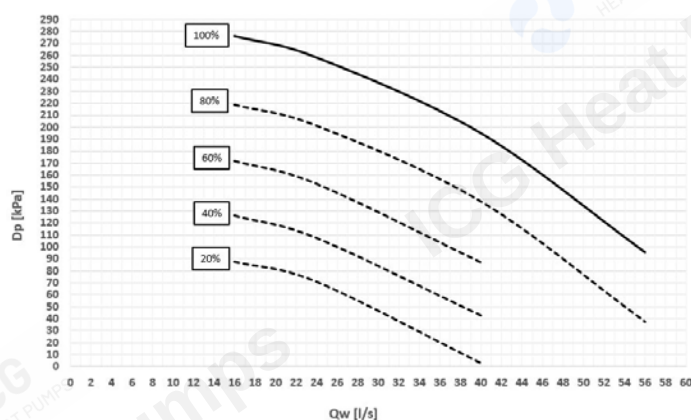


# Accessories - Hydronic assembly

## 2PMVH - HYDROPACK WITH N° 2 HIGH STATIC PRESSURE INVERTER PUMPS

Head - Size 225.6 - 240.6 EXC / 210.6 ÷ 240.6 PRM

Power input - Size 225.6 - 240.6 EXC / 210.6 ÷ 240.6 PRM



Dp = Pump head [kPa]  
QW = Water flow-rate [l/s]

Pe = Power input [kW]  
QW = Water flow-rate [l/s]

⚠ Caution: to obtain the available pressure values, you need to subtract the following from the head values represented in these diagrams:  
Internal exchanger pressure drop  
IFVX accessory –Steel mesh filter on the water side (where applicable)

### ACC - Storage tank

Steel storage tank complete with double layer covering with closed-cell insulation, stainless steel anti-freeze immersion resistance, bleed valve, draw off cock, cast-iron shut-off butterfly valve with quick connections and activation lever with a mechanical calibration lock at the evaporator output, quick connections with insulated casing.

Sizes 80.3 and 100.4 excellence and 90.3, 110.4 and 130.4 premium: the storage tank capacity is 420 liters.

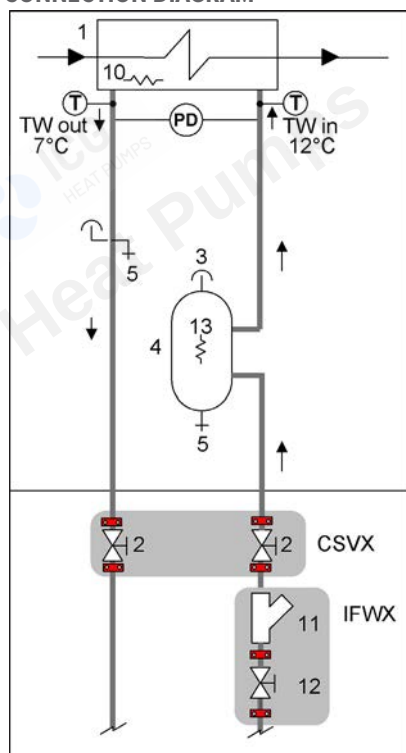
Sizes 115.4, 130.4 excellence and 145.4, 170.5 and 185.5 premium: the storage tank capacity is 500 liters.

Sizes 155.5, 170.5 and 185.5 excellence and 210.6, 225.6 and 240.6 premium: the storage tank capacity is 780 liters.

Sizes 210.6, 225.6 and 240.6 excellence: the storage tank capacity is 1050 liters.

The device is installed and wired built-in the unit, and is placed on the return from the system.

### CONNECTION DIAGRAM



- 1 - Internal exchanger
- 2 - Cutoff valve - (CSVX - Couple of manually operated shut-off valve)
- 3 - Purge valve
- 4 - Storage tank
- 5 - Discharge stop valve
- 10 - Exchanger antifreeze heater
- 11 - Steel mesh strainer water side - (IFWX)
- 12 - Cutoff valve with quick joints
- 13 - Immersion antifreeze heater

T - Temperature probe  
PD - Differential pressure switch

TW in chilled water inlet  
TW out chilled water outlet

The grey area indicates further optional components.

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

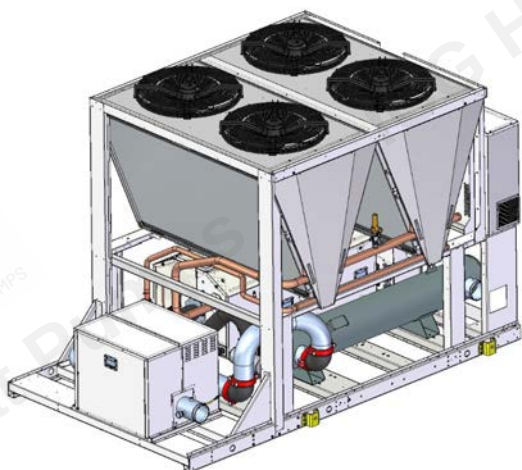
# Arrangement of hydronic groups

## Unit with shell and tube exchanger and built in hydronic assembly:

The hydronic assemblies are supplied as an built-in options.

Compared to the standard unit, the length of the unit complete with hydronic assembly in combination with the shell and tube exchanger (EVFTP) varies according to the following indications:

**Size 80.3÷ 100.4 Excellence and 90.3 ÷ 130.4 Premium: Increases by 1 meter**



### SIZE - EXCELLENCE

|                                                                            |      | 80.3 | 100.4 |
|----------------------------------------------------------------------------|------|------|-------|
| Unit length with plate heat exchanger and any built in hydronic assembly   | [mm] | 2925 | 2925  |
| Unit length with shell & tube exchanger and any built in hydronic assembly | [mm] | 3925 | 3925  |

### SIZE - PREMIUM

|                                                                            |      | 90.3 | 110.4 | 130.4 |
|----------------------------------------------------------------------------|------|------|-------|-------|
| Unit length with plate heat exchanger and any built in hydronic assembly   | [mm] | 2925 | 2925  | 2925  |
| Unit length with shell & tube exchanger and any built in hydronic assembly | [mm] | 3925 | 3925  | 3925  |

**For all other sizes, the Length remains unchanged**

- ⚠ With the standard acoustic configuration, if the hydronic assemblies are installed on board, they are supplied without casing.
- ⚠ With the acoustic configuration with compressor soundproofing if the hydronic assemblies are installed on board, they are supplied without casing.
- ⚠ With the super-silenced acoustic configuration, if the hydronic assemblies are installed on board, they are supplied with casing.

# Option compatibility

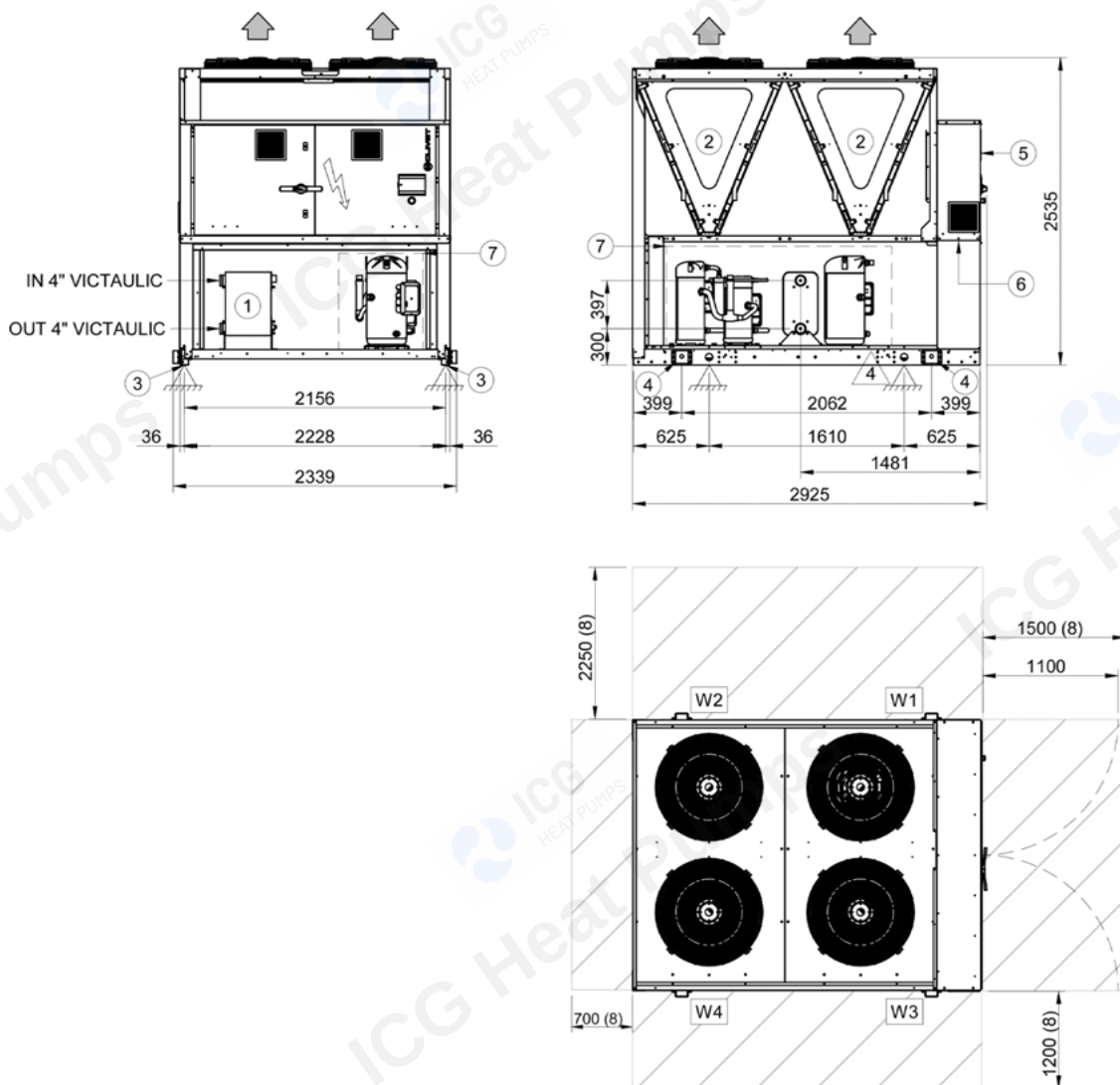
| REF                                                                                                           | DESCRIPTION                                                                                                                      | 80.3 | 90.3 | 100.4 | 110.4 | 115.4 | 130.4 | 145.4 | 155.5 | 170.5 | 185.5 | 210.6 | 225.6 | 240.6 |
|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>Configurations and main accessories</b>                                                                    |                                                                                                                                  |      |      |       |       |       |       |       |       |       |       |       |       |       |
| <b>B</b>                                                                                                      | Low water temperature                                                                                                            | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>D</b>                                                                                                      | Partial energy recovery                                                                                                          | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>R</b>                                                                                                      | Total energy recovery                                                                                                            | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>B + D</b>                                                                                                  | Low water temperature + Partial energy recovery                                                                                  | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>B + R</b>                                                                                                  | Low water temperature + Total energy recovery                                                                                    | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <b>ACC</b>                                                                                                    | Storage tank                                                                                                                     | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>EVFTP</b>                                                                                                  | Shell and tube evaporator PED test                                                                                               | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>1PM</b>                                                                                                    | Hydropack with n° 1 pump                                                                                                         | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>2PM</b>                                                                                                    | Hydropack with n° 2 pumps                                                                                                        | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>1PMV</b>                                                                                                   | Hydropack with n° 1 inverter pump                                                                                                | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>2PMV</b>                                                                                                   | Hydropack with n° 2 inverter pumps                                                                                               | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>1PMH</b>                                                                                                   | Hydropack with n° 1 high static pressure pump                                                                                    | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>2PMH</b>                                                                                                   | Hydropack with n° 2 high static pressure pumps                                                                                   | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>1PMVH</b>                                                                                                  | Hydropack with n° 1 high static pressure inverter pump                                                                           | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>2PMVH</b>                                                                                                  | Hydropack with n° 2 high static pressure inverter pumps                                                                          | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>EVFTP - Shell and tube evaporator PED test</b>                                                             |                                                                                                                                  |      |      |       |       |       |       |       |       |       |       |       |       |       |
| <b>+R</b>                                                                                                     | + Total energy recovery                                                                                                          | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <b>+ ACC</b>                                                                                                  | + Storage tank                                                                                                                   | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <b>1PM / 1PMH / 1PMV / 1PMVH</b>                                                                              |                                                                                                                                  |      |      |       |       |       |       |       |       |       |       |       |       |       |
| <b>+ ACC + D</b>                                                                                              | + Storage tank + Partial energy recovery                                                                                         | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <b>+ ACC + R</b>                                                                                              | + Storage tank + Total energy recover                                                                                            | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <b>2PM / 2PMH / 2PMV / 2PMVH</b>                                                                              |                                                                                                                                  |      |      |       |       |       |       |       |       |       |       |       |       |       |
| <b>+ ACC + D</b>                                                                                              | + Storage tank + Partial energy recovery                                                                                         | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <b>+ ACC + R</b>                                                                                              | + Storage tank + Total energy recover                                                                                            | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <b>IVFDT - Inverter driven variable flow-rate user side control depending on the temperature differential</b> |                                                                                                                                  |      |      |       |       |       |       |       |       |       |       |       |       |       |
| <b>(1PM)<br/>(2PM)</b>                                                                                        | Hydropack with n°1 pump / Hydropack user side with n°2 pumps                                                                     | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <b>(1PMH)<br/>(2PMH)</b>                                                                                      | Hydropack with n°1 high static pressure pump / Hydropack user side with n°2 high static pressure pumps                           | -    | -    | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| <b>(1PMV)<br/>(2PMV)</b>                                                                                      | Hydropack user side with n°1 inverter pump / Hydropack user with n°2 inverter pumps                                              | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>(1PMVH)<br/>(2PMVH)</b>                                                                                    | Hydropack userside with n°1 high static pressure inverter pump/ Hydropack user side with n°2 high static pressure inverter pumps | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| <b>Other accessories</b>                                                                                      |                                                                                                                                  |      |      |       |       |       |       |       |       |       |       |       |       |       |
| <b>CREFB</b>                                                                                                  | Device for fan consumption reduction of the external section, ecobreeze type                                                     | ●    | ●    | ●     | ●     | ●     | ●     | ●     | ●     | ●     | ●     | ●     | ●     | ●     |
| <b>SFSTR</b>                                                                                                  | Disposal for inrush current reduction                                                                                            | 0    | 0    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |

0 Option  
- Not available  
● Standard

# Dimensional drawings

SIZE 80.3 - 100.4 EXC / 90.3 ÷ 130.4 PRM

DAAT40001\_00  
DATA/DATE 10/03/2020



1. Internal exchanger (evaporator)
2. External exchanger (condenser)
3. Unit fixing holes
4. Lifting brackets (removable)
5. Electrical panel
6. Power input
7. Sound proof enclosure (optional)
8. Clearance access recommended

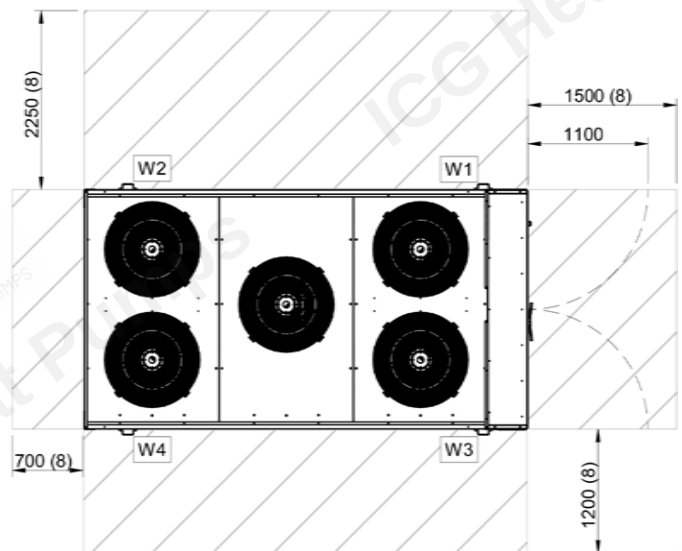
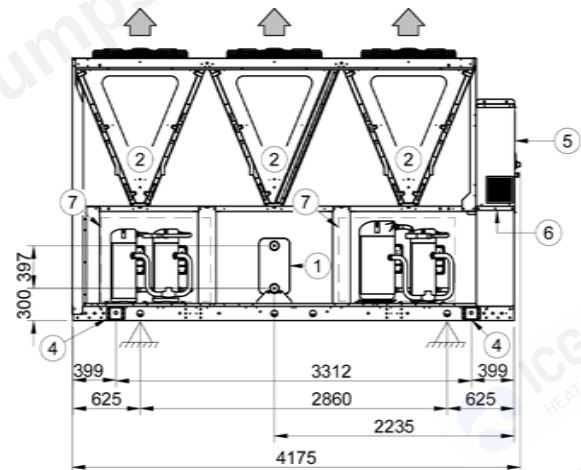
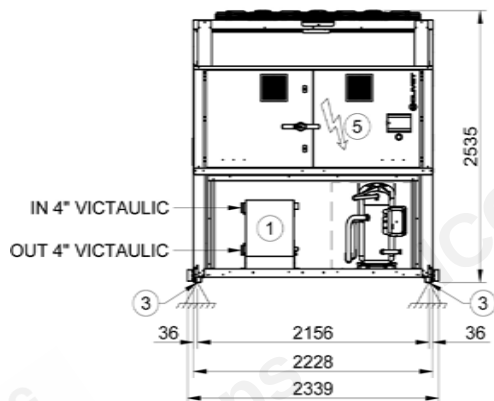
| SIZE                |    | 80.3 EXC |       | 100.4 EXC |       | 90.3 PRM |       | 110.4 PRM |       | 130.4 PRM |       |
|---------------------|----|----------|-------|-----------|-------|----------|-------|-----------|-------|-----------|-------|
|                     |    | ST       | SC/EN | ST        | SC/EN | ST       | SC/EN | ST        | SC/EN | ST        | SC/EN |
| Length              | mm | 2925     | 2925  | 2925      | 2925  | 2925     | 2925  | 2925      | 2925  | 2925      | 2925  |
| Depth               | mm | 2228     | 2228  | 2228      | 2228  | 2228     | 2228  | 2228      | 2228  | 2228      | 2228  |
| Height              | mm | 2535     | 2535  | 2535      | 2535  | 2535     | 2535  | 2535      | 2535  | 2535      | 2535  |
| W1 Supporting point | kg | 450      | 509   | 463       | 522   | 485      | 544   | 504       | 563   | 526       | 585   |
| W2 Supporting point | kg | 432      | 494   | 431       | 493   | 406      | 468   | 455       | 517   | 505       | 567   |
| W3 Supporting point | kg | 413      | 446   | 423       | 456   | 446      | 479   | 450       | 483   | 458       | 491   |
| W4 Supporting point | kg | 395      | 431   | 391       | 427   | 367      | 403   | 401       | 437   | 437       | 473   |
| Operating weight    | kg | 1689     | 1879  | 1708      | 1898  | 1703     | 1893  | 1810      | 2000  | 1926      | 2116  |
| Shipping weight     | kg | 1628     | 1818  | 1647      | 1837  | 1642     | 1832  | 1749      | 1939  | 1868      | 2058  |

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

# Dimensional drawings

SIZE 115.4 - 130.4 EXC / 145.4 PRM

DAAT40002\_00  
DATA/DATE 29/11/2020



1. Internal exchanger (evaporator)
2. External exchanger (condenser)
3. Unit fixing holes
4. Lifting brackets (removable)
5. Electrical panel
6. Power input
7. Sound proof enclosure (optional)
8. Clearance access recommended

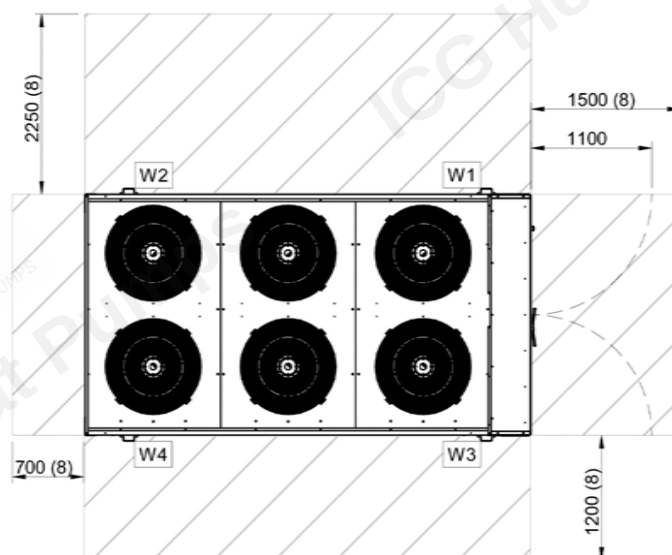
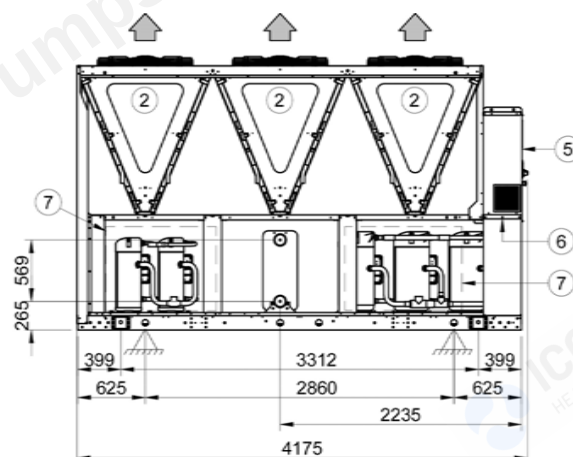
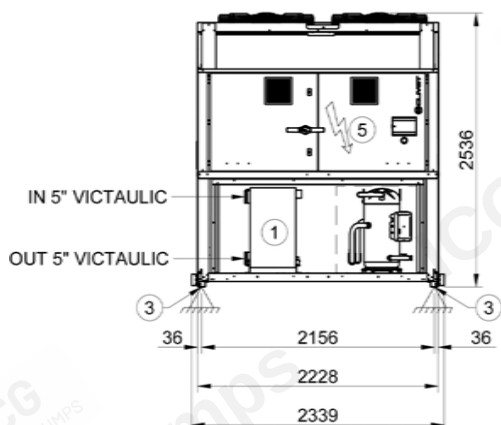
| SIZE                |    | 115.4 EXC |       | 130.4 EXC |       | 145.4 PRM |       |
|---------------------|----|-----------|-------|-----------|-------|-----------|-------|
|                     |    | ST        | SC/EN | ST        | SC/EN | ST        | SC/EN |
| Length              | mm | 4175      | 4175  | 4175      | 4175  | 4175      | 4175  |
| Depth               | mm | 2228      | 2228  | 2228      | 2228  | 2228      | 2228  |
| Height              | mm | 2535      | 2535  | 2535      | 2535  | 2535      | 2535  |
| W1 Supporting point | kg | 588       | 647   | 640       | 700   | 654       | 713   |
| W2 Supporting point | kg | 542       | 607   | 577       | 642   | 619       | 684   |
| W3 Supporting point | kg | 531       | 566   | 570       | 605   | 569       | 604   |
| W4 Supporting point | kg | 485       | 525   | 507       | 547   | 534       | 575   |
| Operating weight    | kg | 2145      | 2345  | 2294      | 2494  | 2376      | 2576  |
| Shipping weight     | kg | 2115      | 2315  | 2254      | 2454  | 2336      | 2536  |

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

# Dimensional drawings

SIZE 170.5 - 180.5 PRM

DAAT40003\_00  
DATA/DATE 19/03/2020



1. Internal exchanger (evaporator)
2. External exchanger (condenser)
3. Unit fixing holes
4. Lifting brackets (removable)
5. Electrical panel
6. Power input
7. Sound proof enclosure (optional)
8. Clearance access recommended

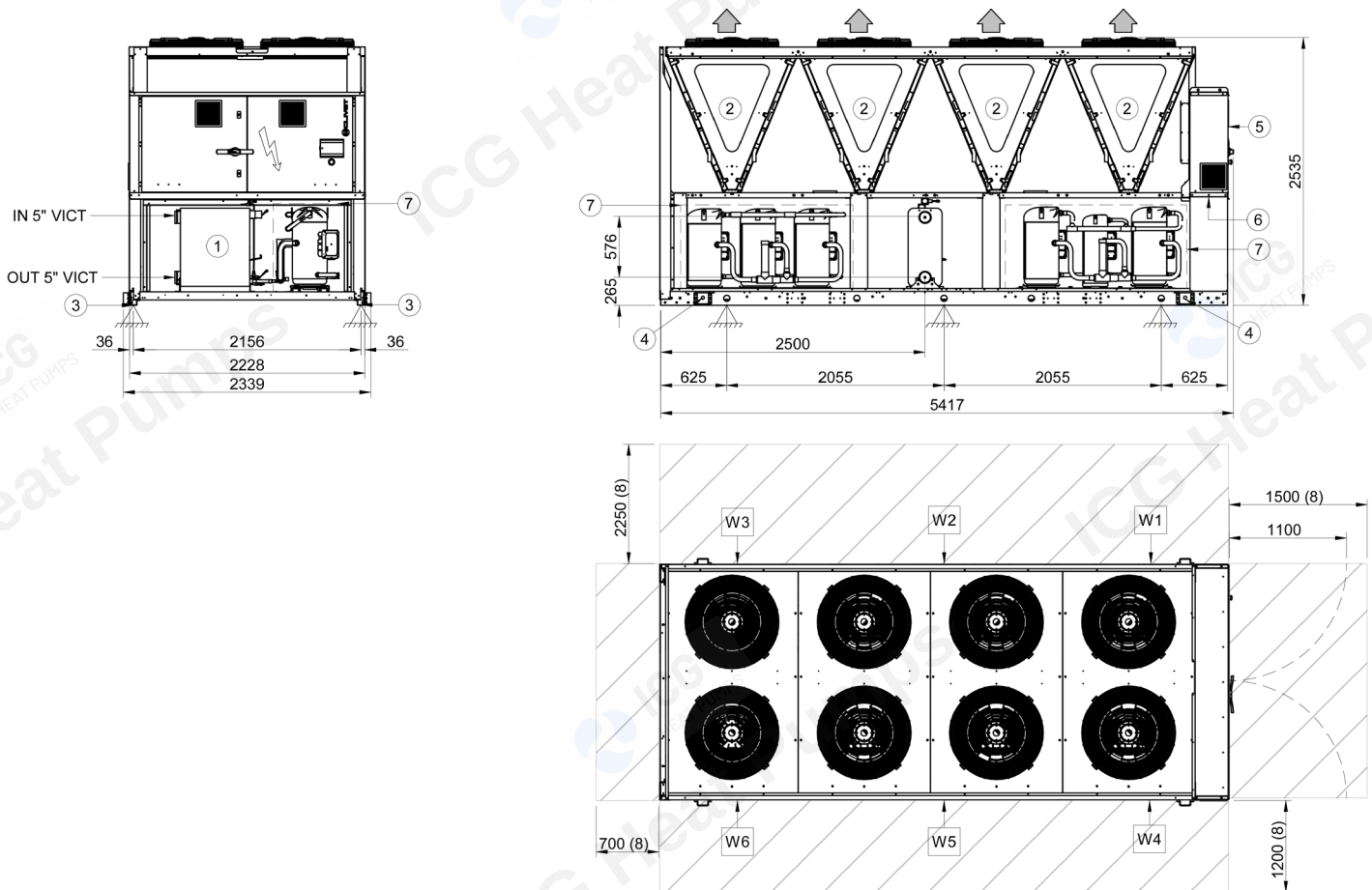
| SIZE                |    | 170.5 PRM |       | 185.5 PRM |       |
|---------------------|----|-----------|-------|-----------|-------|
|                     |    | ST        | SC/EN | ST        | SC/EN |
| Length              | mm | 4175      | 4175  | 4175      | 4175  |
| Depth               | mm | 2228      | 2228  | 2228      | 2228  |
| Height              | mm | 2535      | 2535  | 2535      | 2535  |
| W1 Supporting point | kg | 741       | 806   | 777       | 841   |
| W2 Supporting point | kg | 632       | 693   | 697       | 757   |
| W3 Supporting point | kg | 649       | 689   | 672       | 712   |
| W4 Supporting point | kg | 540       | 576   | 592       | 628   |
| Operating weight    | kg | 2563      | 2763  | 2738      | 2938  |
| Shipping weight     | kg | 2513      | 2713  | 2678      | 2878  |

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

# Dimensional drawings

SIZE 155.5 ÷ 185.5 EXC / 210.6 ÷ 240.6 PRM

DAAT40006\_00  
DATA/DATE 08/07/2020



1. Internal exchanger (evaporator)
2. External exchanger (condenser)
3. Unit fixing holes
4. Lifting brackets (removable)
5. Electrical panel
6. Power input
7. Sound proof enclosure (optional)
8. Clearance access recommended

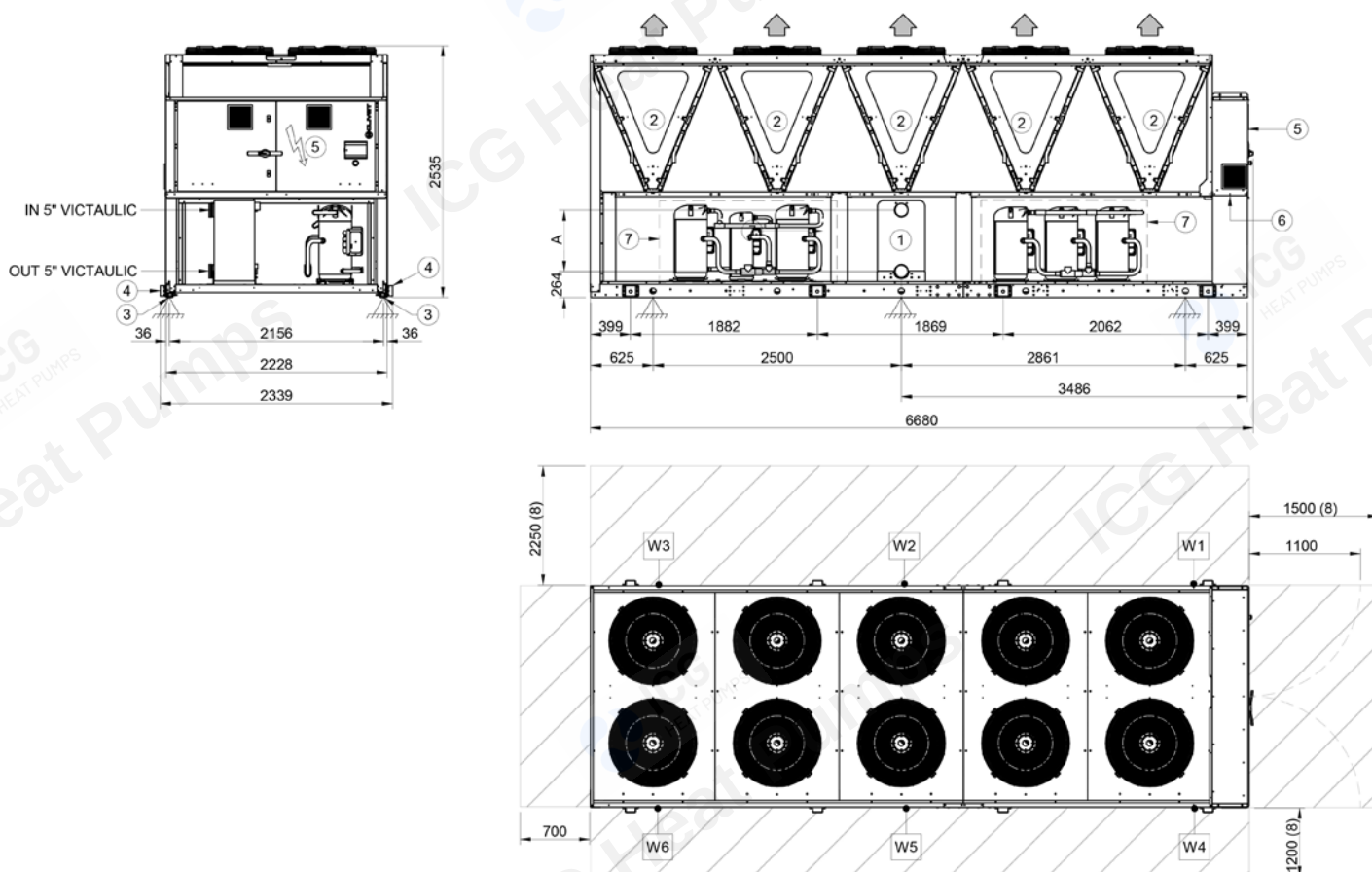
| SIZE                |    | 155.5 EXC |       | 170.5 EXC |       | 185.5 EXC |       | 210.6 PRM |       | 225.6 PRM |       | 240.6 PRM |       |
|---------------------|----|-----------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
|                     |    | ST        | SC/EN | ST        | SC/EN | ST        | SC/EN | ST        | SC/EN | ST        | SC/EN | ST        | SC/EN |
| Length              | mm | 5417      | 5417  | 5417      | 5417  | 5417      | 5417  | 5417      | 5417  | 5417      | 5417  | 5417      | 5417  |
| Depth               | mm | 2228      | 2228  | 2228      | 2228  | 2228      | 2228  | 2228      | 2228  | 2228      | 2228  | 2228      | 2228  |
| Height              | mm | 2535      | 2535  | 2535      | 2535  | 2535      | 2535  | 2535      | 2535  | 2535      | 2535  | 2535      | 2535  |
| W1 Supporting point | kg | 601       | 651   | 599       | 649   | 603       | 653   | 606       | 611   | 660       | 710   | 659       | 708   |
| W2 Supporting point | kg | 606       | 658   | 645       | 697   | 677       | 729   | 663       | 670   | 725       | 780   | 748       | 803   |
| W3 Supporting point | kg | 345       | 395   | 415       | 465   | 481       | 531   | 541       | 546   | 545       | 608   | 608       | 672   |
| W4 Supporting point | kg | 428       | 443   | 427       | 442   | 432       | 448   | 437       | 442   | 458       | 474   | 459       | 474   |
| W5 Supporting point | kg | 519       | 535   | 561       | 577   | 593       | 609   | 553       | 561   | 606       | 623   | 621       | 638   |
| W6 Supporting point | kg | 281       | 297   | 305       | 321   | 328       | 344   | 341       | 346   | 348       | 368   | 370       | 389   |
| Operating weight    | kg | 2779      | 2979  | 2952      | 3152  | 3114      | 3314  | 3141      | 3176  | 3343      | 3563  | 3464      | 3684  |
| Shipping weight     | kg | 2729      | 2929  | 2892      | 3092  | 3044      | 3244  | 3085      | 3120  | 3277      | 3497  | 3394      | 3614  |

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

# Dimensional drawings

SIZE 210.6 ÷ 240.6 EXC

DAAT40004\_00  
DATA/DATE 19/05/2020



1. Internal exchanger (evaporator)
2. External exchanger (condenser)
3. Unit fixing holes
4. Lifting brackets (removable)
5. Electrical panel
6. Power input
7. Sound proof enclosure (optional)
8. Clearance access recommended

| SIZE                |    | 210.6 EXC |       | 225.6 EXC |       | 240.6 EXC |       |
|---------------------|----|-----------|-------|-----------|-------|-----------|-------|
|                     |    | ST        | SC/EN | ST        | SC/EN | ST        | SC/EN |
| Length              | mm | 6680      | 6680  | 6680      | 6680  | 6680      | 6680  |
| Depth               | mm | 2228      | 2228  | 2228      | 2228  | 2228      | 2228  |
| Height              | mm | 2535      | 2535  | 2535      | 2535  | 2535      | 2535  |
| W1 Supporting point | kg | 562       | 598   | 598       | 634   | 594       | 630   |
| W2 Supporting point | kg | 1019      | 1119  | 1060      | 1161  | 1115      | 1216  |
| W3 Supporting point | kg | 438       | 479   | 430       | 471   | 474       | 515   |
| W4 Supporting point | kg | 451       | 463   | 462       | 475   | 461       | 474   |
| W5 Supporting point | kg | 791       | 826   | 844       | 880   | 894       | 930   |
| W6 Supporting point | kg | 310       | 325   | 308       | 323   | 322       | 336   |
| Operating weight    | kg | 3570      | 3810  | 3703      | 3943  | 3860      | 4100  |
| Shipping weight     | kg | 3500      | 3740  | 3633      | 3873  | 3780      | 4020  |

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

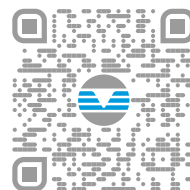
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