



Air-cooled multi-function heat pump with inverter technology with simultaneous hot/cold water production

SCREWLine⁴-i

WDAN-iK4 MF 220.2 - 420.2 RANGE

TECHNICAL BULLETIN



SIZE	220.2	240.2	260.2	280.2	320.2	340.2	420.2
COOLING CAPACITY [kW]	523	545	575	634	722	792	990
HEATING CAPACITY [kW]	503	508	537	631	697	776	907

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Clivet participates in the ECP Programme for "Liquid Chillers and Hydronic Heat Pumps".
Check ongoing validity of certificate on www.eurovent-certification.com

Features and benefits

SCREWLine: Screw technology for an efficient and versatile product

SCREWLine is the new generation of Clivet liquid chillers with inverter Screw compression technology: high energy efficiency, great operating reliability and maximum choice versatility, with many versions and models for different types of installation.

WDAN-iK4 MF

Air-cooled multi-function heat pump with inverter technology with simultaneous hot/cold water production

- EXCELLENCE Version
- Continuous capacity control
- Operation for 4-pipe system
- Seasonal efficiency SEER 5,1
- Operation up to 46°C outdoor air in cooling mode
- Operation down to -10°C outdoor air in heating mode
- Hot water production up to 60°C
- Copper/aluminium hydrophilic condensing coils



WDAT-iK4

Air cooled water chiller with inverter technology

- EXCELLENCE / PREMIUM Version
- Continuous capacity control
- Seasonal efficiency SEER 5,3 / 4,9
- Operating with 50°C of outdoor air temperature
- Full aluminium microchannel coils
- Partial recovery of the condensing heat



WDAT-iZ4

Air cooled water chiller with inverter technology

- EXCELLENCE Version
- Continuous capacity control
- Seasonal efficiency SEER 5,3
- Operating with 50°C of outdoor air temperature
- Full aluminium microchannel coils
- Partial recovery of the condensing heat



WDAT-iL3

Air cooled water chiller with inverter technology

- PREMIUM compact version
- Continuous capacity control
- Seasonal efficiency SEER 4,7
- Operating with 50°C of outdoor air temperature
- Copper/aluminium condensing coils
- Partial recovery of the condensing heat



Unit capable of simultaneously supplying hot and chilled water regardless of the season, according to the following functions:

- simultaneous production of chilled water and hot water;
- production of hot water only with disposal of the cooling capacity on the external source;
- production of chilled water only with disposal of the thermal energy on the external source.

The control logic ensures that the unit operates under intermediate load conditions.

Built to ISO 9001 quality standards, it consists of:

Compressor

Compact, semi hermetic, helicoidal twin-screw compressors with high efficiency integrated oil separator. The start-up with limited current absorption is achieved by progressively accelerating the compressor with the inverter. The inverter is cooled with the liquid cooler taken from the liquid line. The liquid flow is activated by a solenoid valve and is sent to the inverter cooling plate by a thermostatic valve. Subsequently, the steam generated by the heat exchange is sucked by the screws inside a closed chamber at medium pressure without thereby reducing the compressor suction capacity. The electronic boards are housed inside the inverter. They, in addition to managing the inverter and the electric motor rotation speed, perform all the functions of protection, monitoring and control of the compressor: oil level, oil temperature, motor temperature, Vi control, oil heater activation, if necessary, liquid injection for the inverter and compressor cooling, check of the operating range by specific HP and LP transducers, communication via MODBUS, operating timing, alarm management.

The inverter and electric motor supply is three-phase, the auxiliaries are supplied with single phase line. At the compressor discharge is provided a non-return valve to avoid the counter-rotating during the stop. The emergency internal overpressure valve connects the compressor discharge with suction in case of an extreme pressure drop.

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.

Cooling side exchanger

Independent shell and tube exchanger on the refrigerant side 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).

Heating side exchanger

Independent shell and tube exchanger on the refrigerant side for each compressor. The exchanger is made of a carbon steel casing. The tubes, anchored to the tube plate by a mechanical expansion process, are copper, highly efficient, internally ribbed in order to optimise heat exchange and specifically designed for use with modern ecological refrigerants. It is also complete with differential pressure switch protecting the water side, antifreeze heater to protect against the danger of icing and coating of closed cell heat insulating material, which keeps condensation from forming and heat exchange with the outside. The exchanger has quick coupling hydraulic connections with grooved joint (Victaulic).

Outdoor air exchanger

Finned coil exchanger made with copper pipes placed on staggered rows mechanically expanded to better adhere to the fin collar. Exchangers designed, engineered and manufactured directly by CLIVET. Fins in hydrophilic aluminium, properly spaced for maximum heat exchange efficiency. Subcooling circuit that ensures correct supply to the expansion valve. Finned coil exchangers directly cooled by the air flow of their specific fans.

Fan

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

ECOBREEZE type outdoor section fans consumption reduction device

Device that reduces the consumption of outdoor section fans with fine modulation control of their speed. Consisting of a Brushless electric motor with external rotor and permanent magnet with electronically commuted stator, induced by the integrated electronic control, with built-in IP54 thermal protection and class F insulation. It optimises the condensation phase at low outdoor temperatures by partialising the fans or starting the booster function at high temperatures, thereby always ensuring low noise levels.

Refrigeration circuit

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;
- non-return valve;
- 4-way cycle inversion valve;
- solenoid valve;
- high pressure safety valve;
- low pressure safety valves;
- liquid flow and humidity indicator;
- cut-off valve on compressor supply circuit;
- cut-off valve on liquid line;
- liquid receiver;
- liquid separator in extraction;
- high and low pressure gauges.

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.

Standard unit technical specifications

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;
- fuses and thermal relays for protecting the compressors;
- magneto-thermal cut-out switches to protect fans;
- electrical panel ventilation.

The control section includes:

- interface terminal with graphic display;
- view of values set, failure codes and parameters index;
- ON/OFF and alarm reset keys;
- proportional-integral-derivative water temperature control;
- anti-freeze protection water side;
- management of unit start-up from local or remote device (serial);
- compressor overload protection and timer;
- potential-free contacts for compressor status and enabling;
- self-diagnosis system with instant error code visualisation;
- visualisation of no. of hours of compressor operation;
- multifunction phase monitor;
- remote ON/OFF control;
- input for remote HEAT/COOL control;
- digital input for enabling double set point;
- automatic rotation control of compressor starts;
- relay for remoting cumulative alarm signalling;
- high refrigerant gas pressure pre-alarm function that often prevents shutdown of the unit;
- demand limit input (limitation of power input according to an external 0-10 V or 4-20 mA signal);
- service socket (max 400W).

All the features of the device can be replicated with a normal laptop connected to the unit with an Ethernet network cable and an internet browser. All electrical cables are coloured and numbered in conformity with the wiring diagram.

Test

Unit subject to factory functional testing at the end of the production line and leak test under pressure of refrigeration circuit piping (with nitrogen and hydrogen), before shipment.

Unit equipment with outdoor air low temperatures

MINIMUM OUTDOOR AIR TEMPERATURE	OPERATING UNIT COOL / HOT	UNIT IN STAND-BY ⁽²⁾ (fed unit)	UNIT IN STORAGE (unit not fed)
Up to -10°C ⁽¹⁾	✓ STANDARD UNIT	✓ STANDARD UNIT	✓ STANDARD UNIT ⁽³⁾
Between -10°C and -15°C	NOT POSSIBLE	✓ STANDARD UNIT ✓ GLYCOL IN AN APPROPRIATE PERCENTAGE ✓ ANTIFREEZE PROTECTION RE-25	✓ STANDARD UNIT ⁽³⁾
Between -15°C and -20°C	NOT POSSIBLE	✓ STANDARD UNIT ✓ GLYCOL IN AN APPROPRIATE PERCENTAGE ✓ ANTIFREEZE PROTECTION RE-25 ✗ NOT SUITABLE: BUILT-IN PUMPS	NOT POSSIBLE
Between -20°C and -25°C	NOT POSSIBLE	✓ STANDARD UNIT ✓ GLYCOL IN AN APPROPRIATE PERCENTAGE ✓ ANTIFREEZE PROTECTION RE-25 ✗ NOT SUITABLE: BUILT-IN PUMPS	NOT POSSIBLE

Data referred to the following conditions:

- cold side exchanger water = 12/7°C
- hot side exchanger water = 40/45°C

⁽¹⁾ Full load unit and outdoor air temperature at rest.

⁽²⁾ The water pumping unit must be fed and connected to the unit according to the manual.

⁽³⁾ 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.

Minimum system water content

For a proper functioning of the unit a minimum water content has to be provided to the system, using the formula:

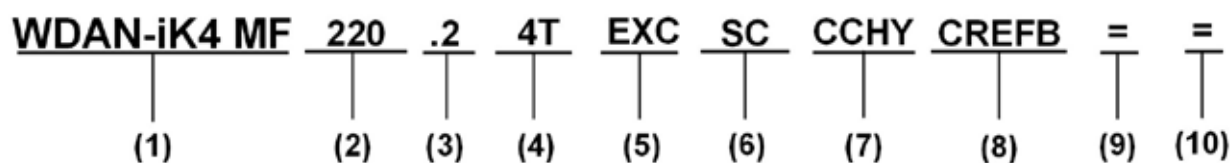
Minimum water content for [liters] = 5 x kWf comfort application

Minimum water content for [liters] = 10 x kWf process applications

kWf = Nominal cooling capacity unit

⚠ Volume calculated does not consider heat exchanger water content.

Unit configuration



(1) Range

WDAN = Air cooled heat pump

iK4 = SCREWLine4-i range with inverter screw compressor and R513A refrigerant

(2) Size

220 = Nominal compressor capacity (HP)

(3) Compressors

.2 = Compressor quantity

(4) System configuration

4T = configuration for 4-pipe system

(5) Energy efficiency

EXC = EXCELLENCE Version

(6) Acoustic configuration

SC = Acoustic configuration with compressor soundproofing (Standard)

LN = Silenced acoustic configuration

EN = Super-silenced acoustic configuration

(7) Condensing coil

CCHY = Copper / aluminium condenser coil with hydrophilic treatment (Standard)

CCCA = Copper / aluminium condenser coil with acrylic lining

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

(8) Fans

CREFB = Device for fan consumption reduction of the external section, ecobreeze type

(9) Hydronic assemblies hot side

(-) Not required (standard)

1+1PMHS = Hydropack user hot side with 1+1 on-off pump

1+1PMHSV = Hydropack user hot side with 1+1 inverter pump

2PMHS = Hydropack user hot side with 2 on-off pumps

2PMHSV = Hydropack user hot side with 2 inverter pumps

(10) Hydronic assemblies cool side

(-) Not required (standard)

1+1PMCS = Hydropack user cold side with 1+1 on-off pump

1+1PMCSV = Hydropack user cold side with 1+1 inverter pump

2PMCS = Hydropack user cold with 2 on-off pumps

2PMCSV = Hydropack user cold side with 2 inverter pumps

PGFC

Finned coil protection grilles

Grilles made in drawn of electro-welded steel and coated to protect the external coil from accidental contact with people and things.

The protection grille has a height equal to the whole unit. Therefore, all areas under the coils are protected.

This accessory also protects the rear area of the unit opposite to the electric panel.

Ideal for installation in places where persons can pass from, such as car parks, terraces, etc.

The accessory is provided and installed built-in the unit. Grille slot 25 mm.

⚠ This option is not suitable for application in sulphuric environments.

PGCCH

Anti-hail protection grilles

Grilles made in drawn of electro-welded steel and coated suitable to protect the external coil from hail damage.

Accessories supplied and installed on the unit.

⚠ This option is not suitable for application in sulphuric environments.

CCCA

Copper / aluminium condenser coil with acrylic lining

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

Attention!

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

CCCA1

Condenser coil with aluminium energy guard dcc treatment

Condensing coils with copper pipes and aluminum fins with Aluminium Energy Guard DCC treatment. Complete treatment which offers an optimal thermal exchange and guarantees and protects the finned coil exchangers from corrosion over time and UV rays. Can be used in settings with very aggressive saline concentrations and other chemical agents in the air thus maintaining the performance of the coils over time and with negligible pressure drop.

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 1200 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 900 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.

RDVS

Switching valve with dual safety valves

Allows maintenance or replacement of the safety valve without draining the unit. Two pressure relief valves (each valve is sized according to 13136 clause 6.2) connected via a changeover valve are provided.

Built-in options

SPC1	Set-point compensation with 4-20 mA signal This device enables the set-point to be varied which is pre-set using an external 4÷20 mA signal. The device is installed and wired built-in the unit.
SCP4	Set-point compensation with 0-10 V signal This device enables the set-point to be varied which is pre-set using an external 0÷10 V signal. The device is installed and wired built-in the unit.
SPC2	Set-point compensation with outdoor air temperature probe This device enables the set-point to be varied automatically which is pre-set depending on the outdoor air temperature. This device enables the liquid flow temperature to be obtained, which varies depending on external conditions, enabling energy savings throughout the entire system. The device is installed and wired built-in the unit.
RE-25	Electrical panel antifreeze protection for min. outdoor temperature down to -25°C 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. The device is built-in the unit. ⚠ It is necessary to make precautions against build up of snow and ice in front of the exhaust and outdoor air inlet locations ⚠ This accessory operates even when the unit is switched off provided that the power supply is maintained active and the unit continues to be connected. ⚠ This accessory does not lead to substantial variations in the electrical data for the unit which has been declared in the Electrical Data section.
RPRI	Refrigerant leak detector assembled on the casing Leak detector device built-in installed and placed inside the compressor box, it detects leaks of the internal refrigeration circuit.
ECS	ECOSHARE function for the automatic management of a group of units 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. Moreover: Mode 1 - it keeps all the pumps active Mode 2 - it activates only the pumps of the unit required to operate The device allows for rotation based on the criterion of minimum wear and management of units in stand-by. There are various unit sizes. Every unit must be fitted with the ECOSHARE feature. The set of units is controlled by a Master unit. The local network can be extended up to 7 units (1 Master and 6 Slave). ⚠ The unit supplied with this device can also be equipped at the same time with the RCMRX option and one of the CMSC9 / CMSC10 / CMSC11 options.
FC2	EMC filtering to reduce conducted compressor emissions The EMC filtering device, installed and wired on board the machine, reduces electromagnetic interference and makes the unit compliant with the immunity and industrial emission requirements in accordance with the EN 61000-6-2 and EN 61000-6-4 standards.
IVFCDT	Variable flow rate control cooling side by inverter according to the temperature differential Allows control of the water flow-rate to the unit under partial load conditions, keeping the temperature difference at the inlet to and outlet from the cool side exchanger constant. Flow-rate control is managed by the on-board electronics via the water temperature probes built into the unit. Designed to work on systems with a variable flow-rate primary circuit decoupled from the secondary circuit. If the building has no load, the unit switches the compressors off, and one of the following operating modes can be selected for the pumps: • keep the pumping unit running at minimum flow-rate to allow continuous monitoring of load variations on the secondary circuit; • switch off the pumping unit completely and start it periodically (with settable time) to bring the temperatures of the secondary circuit back to the primary one; • switch off the pumping unit completely and wait for the customer's consent to restart (potential-free contact). Device available with cool side inverter pumps.

IVFHDT	Variable flow rate control heating side by inverter according to the temperature differential Allows control of the water flow-rate to the unit under partial load conditions, keeping the temperature difference at the inlet to and outlet from the heat side exchanger constant. Flow-rate control is managed by the on-board electronics via the water temperature probes built into the unit. Designed to work on systems with a variable flow-rate primary circuit decoupled from the secondary circuit. If the building has no load, the unit switches the compressors off, and one of the operating modes described in the IVFCDT option can be selected for the pumps. Device available with hot side inverter pumps.
IVFCDTS	Variable flow control cooling side by inverter according to the temperature differential with pressure drop sensor Allows control of the water flow-rate to the unit under partial load conditions, keeping the temperature difference at the inlet to and outlet from the cool side exchanger constant. Flow-rate control is managed by the on-board electronics via the water temperature probes built into the unit and the differential pressure transducer that monitors the flow-rate of the cool side exchanger. Designed to work on systems with a variable flow-rate primary circuit decoupled from the secondary circuit. If the building has no load, the unit switches the compressors off, and one of the operating modes described in the IVFCDT option can be selected for the pumps. Device available with cool side inverter pumps.
IVFHDTs	Variable flow control heating side by inverter according to the temperature differential with pressure drop sensor Allows control of the water flow-rate to the unit under partial load conditions, keeping the temperature difference at the inlet to and outlet from the heat side exchanger constant. Flow-rate control is managed by the on-board electronics via the water temperature probes built into the unit and the differential pressure transducer that monitors the flow-rate of the heat side exchanger. Designed to work on systems with a variable flow-rate primary circuit decoupled from the secondary circuit. If the building has no load, the unit switches the compressors off, and one of the operating modes described in the IVFCDT option can be selected for the pumps. Device available with hot side inverter pumps.
IVFCDTF	Variable flow rate control cooling side by inverter according to the temperature differential with a flow meter meterAllows control of the water flow-rate to the unit under partial load conditions, keeping the temperature difference at the inlet to and outlet from the cool side exchanger constant. Flow-rate control is managed by the on-board electronics via the water temperature probes built into the unit and the differential pressure transducer that monitors the flow-rate of the cool side exchanger. Designed to work on systems with a variable flow-rate primary circuit decoupled from the secondary circuit. If the building has no load, the unit switches the compressors off, and one of the operating modes described in the IVFCDT option can be selected for the pumps. Device available with cool side inverter pumps. ⚠ Option available only in conjunction with FMCHX option
IVFHDTF	Variable flow rate control heating side by inverter according to the temperature differential with a flow meter Allows control of the water flow-rate to the unit under partial load conditions, keeping the temperature difference at the inlet to and outlet from the heat side exchanger constant. Flow-rate control is managed by the on-board electronics via the water temperature probes built into the unit and the differential pressure transducer that monitors the flow-rate of the heat side exchanger. Designed to work on systems with a variable flow-rate primary circuit decoupled from the secondary circuit. If the building has no load, the unit switches the compressors off, and one of the operating modes described in the IVFCDT option can be selected for the pumps. Device available with hot side inverter pumps. ⚠ Option available only in conjunction with FMCHX option
CONTA3	M-bus total electricity meter It allows to view and keep a record of the unit's main electrical parameters. The data can be displayed with the user interface on the unit or via the supervisor through the variable protocol specifications. The following can be monitored: supply voltage (V), current input (A), frequency (Hz), cosfi, power input (kW), energy input (kWh), electrical parameters of the built-in pumping units. The device is installed and wired on the unit.

Built-in options

CONTA4

Total electricity meters and m-bus pump group

It allows to view and keep a record of the unit's main electrical parameters. The data can be displayed with the user interface on the unit or via the supervisor through the variable protocol specifications. The following can be monitored: supply voltage (V), current input (A), frequency (Hz), cosfi, power input (kW), energy input (kWh), electrical parameters of the built-in pumping units. The device is installed and wired on the unit.

MISTER1

Indirect energy meter through pressure drops and unit probes temperature differential

The temperature probes measure the instantaneous capacity of the unit through indirect reading of the flow-rates and temperature differential.

⚠ Option only available in combination with the IVFCDTS and IVFHDTS options.

MISTER2

Direct energy meter by flow rate and temperature differential with unit probes

The temperature probes measure the instantaneous capacity of the unit through direct reading of the flow-rates and temperature differential.

⚠ Option only available in combination with the FMCHX option

MISTER3

Direct energy meter via M-BUS

The dedicated M-BUS controller measures the instantaneous capacity of the unit through direct reading of the flow-rates and temperature differential.

⚠ Option only available in combination with the FMCHX option

SC

Acoustic configuration with compressor soundproofing

Configuration consisting of a soundproof steel compartment, lined with high-density material designed to provide sound insulation. The technical room can be accessed through hinged doors

⚠ If built-in hydronic units are selected, they are supplied without casing

To assess the benefit of soundproofing, refer to the "Sound levels" tables

LN

Silenced acoustic configuration

Configuration used to further increase the unit's silent operation by acting on the source of the noise and improving the soundproofing of the technical room.

⚠ If built-in hydronic units are selected, they are supplied without casing

To assess the benefit of soundproofing, refer to the "Sound levels" tables

EN

Super-silenced acoustic configuration

Configuration used to further increase the unit's silent operation by acting on the source of the noise and improving the soundproofing of the technical room.

⚠ If built-in hydronic units are selected, they are supplied without casing

To assess the benefit of soundproofing, refer to the "Sound levels" tables

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-sismic 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.

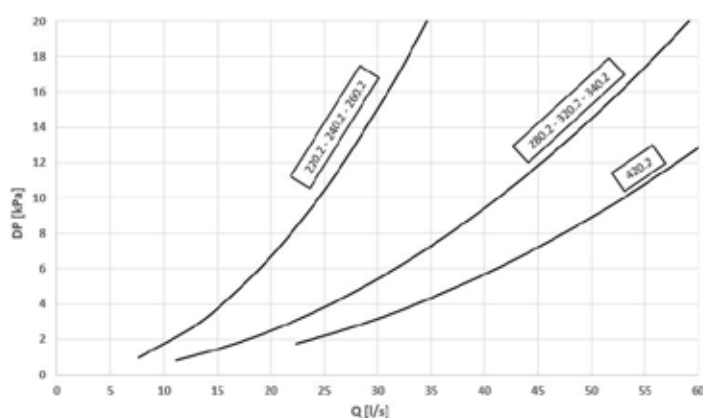
IFWX

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.

Steel mesh strainer pressure drops



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

- ⚠ 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

- ⚠ Installation is a responsibility of the Customer, outside the unit.

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 350 m.

It must be connected to the serial line at a distance of 350 m from the unit and allows to extend the length to 700 m 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.

FMCHX

Cooling and heating side flow meters

Measures the water flow-rate in the cool side and heat side exchangers.

- ⚠ The pipe section before the meter must respect a length from the center of the measuring pipe equal to 3 times the nominal diameter of the sensor and that the pipe after the meter has a straight section equal to 3 times the nominal diameter.
- ⚠ Installation is a responsibility of the Customer, outside the unit.

General technical data

Performance

Compressor soundproofing acoustic configuration (SC)

SIZE			220.2	240.2	260.2	280.2	320.2	340.2	420.2
Cooling 100% - Heating 0%									
Cooling capacity	1	kW	523	545	575	634	722	792	990
Compressor power input	1	kW	168	178	172	185	216	241	326
Total power input	2	kW	181	191	188	204	237	262	348
EER	1	-	2,88	2,85	3,06	3,11	3,05	3,02	2,85
Water flow-rate cold side	1	l/s	25,0	26,0	27,5	30,3	34,5	37,8	47,3
Cold side pressure drops	1	kPa	42	45	49	59	42	49	53
Cooling capacity (EN14511:2018)	3	kW	522	544	575	634	721	792	989
Total power input (EN14511:2018)	3	kW	183	193	190	206	239	265	351
EER (EN14511:2018)	3	-	2,85	2,82	3,03	3,07	3,01	2,98	2,82
SEER	6	-	5,10	5,08	5,08	5,17	5,12	5,05	5,05
SEPR	6	-	5,76	5,76	5,70	5,80	5,67	5,59	5,60
Cooling capacity (AHRI 550/590)	4	kW	519	540	570	628	715	785	982
Total power input (AHRI 550/590)	4	kW	181	191	187	203	236	262	346
COP _R	4	-	2,87	2,84	3,04	3,09	3,03	3,00	2,84
IPLV	4	-	5,21	5,12	5,32	5,36	5,26	5,10	5,37
Cooling 0% - Heating 100%									
Heating capacity	7	kW	503	508	537	631	697	776	907
Compressor power input	7	kW	148	150	151	184	205	228	267
Total power input	2	kW	162	164	167	203	227	250	297
COP	7	-	3,11	3,11	3,22	3,11	3,07	3,10	3,05
Water flow-rate hot side	7	l/s	24,0	24,3	25,7	30,2	33,3	37,1	43,3
Hot side pressure drops	7	kPa	32	33	28	36	29	37	25
Heating capacity (EN14511:2018)	8	kW	504	509	538	632	697	777	908
Total power input (EN14511:2018)	8	kW	163	165	168	205	229	252	299
COP (EN14511:2018)	8	-	3,09	3,09	3,20	3,09	3,05	3,08	3,03
SCOP - Clima MEDIO - W35	5	-	4,03	4,03	4,12	-	-	-	-
Cooling 100% - Heating 100%									
Cooling capacity (EN14511:2018)	9	kW	522	544	574	633	718	791	989
Heating capacity (EN14511:2018)	9	kW	668	695	728	805	917	1013	1266
Total power input (EN14511:2018)	9	kW	162	169	173	192	222	248	309
TER (EN14511:2018)	10	-	7,33	7,35	7,54	7,48	7,36	7,28	7,30

The Product is compliant with the Erp (Energy Related Products) European Directive, It includes the Commission delegated Regulation (UE) N. 813/2013 Commission (nominal heating capacity ≤400 kW at specified reference conditions) and the Commission delegated Regulation (EU) No 2016/2281, also known as Ecodesign LOT21

Contains fluorinated greenhouse gases (GWP 631)

1. Data referred to the following conditions: internal exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35°C. Evaporator fouling factor = 0.44×10^{-4} m² K/W.
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers.
3. Data compliant to Standard EN 14511:2018 referred to the following conditions: Cold side exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35°C
4. Data compliant to Standard AHRI 550/590 referred to the following conditions: Cold side 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 = 0.18×10^{-4} m² K/W
5. Data compliant according to EU regulation 813/2013
6. Data compliant according to EU regulation 2016/2281
7. Data referred to the following conditions: Hot side exchanger water temperature = 40/45 °C. Entering external exchanger air temperature = 7°C D.B./6°C W.B. Evaporator fouling factor = 0.44×10^{-4} m² K/W
8. Data compliant to Standard EN 14825:2018 referred to the following conditions: Hot side exchanger water temperature = 40/45 °C. Entering external exchanger air temperature = 7°C D.B./6°C W.B.
9. Data compliant to Standard EN 14511:2018: Cold side exchanger water temperature = * /7 °C. Hot side exchanger water temperature = * /45 °C Evaporator fouling factor = 0.44×10^{-4} m² K/W
10. TER = (Cooling capacity + Heating capacity) / Total power input

Performance

Silenced acoustic configuration (LN)

SIZE			220.2	240.2	260.2	280.2	320.2	340.2	420.2
Cooling 100% - Heating 0%									
Cooling capacity	1	kW	512	525	569	627	715	783	937
Compressor power input	1	kW	170	176	176	190	220	246	306
Total power input	2	kW	180	185	187	203	235	261	322
EER	1	-	2,85	2,84	3,03	3,10	3,04	3,00	2,91
Water flow-rate cold side	1	l/s	24,5	25,1	27,2	30,0	34,1	37,4	44,8
Cold side pressure drops	1	kPa	39	42	49	59	41	48	49
Cooling capacity (EN14511:2018)	3	kW	512	525	568	627	714	783	936
Total power input (EN14511:2018)	3	kW	181	187	189	205	237	264	325
EER (EN14511:2018)	3	-	2,82	2,81	3,00	3,06	3,01	2,97	2,88
SEER	6	-	5,08	5,11	5,13	5,16	5,12	5,13	5,05
SEPR	6	-	5,68	5,68	5,71	5,74	5,62	5,63	5,55
Cooling capacity (AHRI 550/590)	4	kW	508	521	564	622	708	776	929
Total power input (AHRI 550/590)	4	kW	179	184	187	202	234	260	320
COP _R	4	-	2,84	2,84	3,02	3,08	3,02	2,98	2,90
IPLV	4	-	5,34	5,43	5,35	5,36	5,22	5,15	5,67
Cooling 0% - Heating 100%									
Heating capacity	7	kW	499	504	533	627	691	769	854
Compressor power input	7	kW	148	150	150	184	205	228	250
Total power input	2	kW	158	159	162	197	220	243	266
COP	7	-	3,17	3,17	3,30	3,18	3,14	3,16	3,21
Water flow-rate hot side	7	l/s	23,8	24,1	25,5	29,9	33,0	36,8	40,8
Hot side pressure drops	7	kPa	32	33	26	36	29	36	23
Heating capacity (EN14511:2018)	8	kW	499	505	533	627	692	770	855
Total power input (EN14511:2018)	8	kW	159	161	163	199	222	245	268
COP (EN14511:2018)	8	-	3,14	3,14	3,27	3,15	3,12	3,14	3,19
SCOP - Clima MEDIO - W35	5	-	4,07	4,07	4,12	-	-	-	-
Cooling 100% - Heating 100%									
Cooling capacity (EN14511:2018)	9	kW	511	525	568	626	711	780	936
Heating capacity (EN14511:2018)	9	kW	652	668	719	798	908	1000	1187
Total power input (EN14511:2018)	9	kW	156	161	169	192	219	246	281
TER (EN14511:2018)	10	-	7,43	7,42	7,62	7,41	7,38	7,23	7,56

The Product is compliant with the Erp (Energy Related Products) European Directive, It includes the Commission delegated Regulation (UE) N. 813/2013 Commission (nominal heating capacity ≤400 kW at specified reference conditions) and the Commission delegated Regulation (EU) No 2016/2281, also known as Ecodesign LOT21

Contains fluorinated greenhouse gases (GWP 631)

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 10⁻⁴ m² K/W.
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers.
3. Data compliant to Standard EN 14511:2018 referred to the following conditions: Cold side exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35°C
4. Data compliant to Standard AHRI 550/590 referred to the following conditions: Cold side 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 10⁻⁴ m² K/W
5. Data compliant according to EU regulation 813/2013
6. Data compliant according to EU regulation 2016/2281
7. Data referred to the following conditions: Hot side exchanger water temperature = 40/45 °C. Entering external exchanger air temperature = 7°C D.B./6°C W.B. Evaporator fouling factor = 0.44 x 10⁻⁴ m² K/W
8. Data compliant to Standard EN 14825:2018 referred to the following conditions: Hot side exchanger water temperature = 40/45 °C. Entering external exchanger air temperature = 7°C D.B./6°C W.B.
9. Data compliant to Standard EN 14511:2018: Cold side exchanger water temperature = * /7 °C. Hot side exchanger water temperature = * /45 °C Evaporator fouling factor = 0.44 x 10⁻⁴ m² K/W
10. TER = (Cooling capacity + Heating capacity) / Total power input

General technical data

Performance

Super-silenced acoustic configuration (EN)

SIZE			220.2	240.2	260.2	280.2	320.2	340.2	420.2
Cooling 100% - Heating 0%									
Cooling capacity	1	kW	450	496	538	597	676	755	876
Compressor power input	1	kW	147	170	170	184	211	244	283
Total power input	2	kW	153	176	178	193	221	254	293
EER	1	-	2,94	2,82	3,03	3,10	3,06	2,98	2,99
Water flow-rate cold side	1	l/s	21,5	23,7	25,7	28,5	32,3	36,1	41,8
Cold side pressure drops	1	kPa	34	39	45	54	38	45	43
Cooling capacity (EN14511:2018)	3	kW	450	496	538	596	676	755	875
Total power input (EN14511:2018)	3	kW	154	178	179	195	223	256	296
EER (EN14511:2018)	3	-	2,91	2,79	3,00	3,06	3,03	2,94	2,96
SEER	6	-	5,15	5,16	5,18	5,18	5,17	5,06	5,05
SEPR	6	-	5,71	5,69	5,71	5,71	5,63	5,51	5,50
Cooling capacity (AHRI 550/590)	4	kW	447	492	533	591	670	749	869
Total power input (AHRI 550/590)	4	kW	153	175	177	192	220	253	292
COP _R	4	-	2,92	2,81	3,01	3,08	3,04	2,96	2,98
IPLV	4	-	5,64	5,51	5,49	5,27	5,40	5,23	5,55
Cooling 0% - Heating 100%									
Heating capacity	7	kW	443	476	513	570	636	736	808
Compressor power input	7	kW	129	141	145	164	188	219	235
Total power input	2	kW	136	148	153	173	198	229	246
COP	7	-	3,26	3,22	3,36	3,29	3,21	3,21	3,29
Water flow-rate hot side	7	l/s	21,2	22,7	24,5	27,2	30,4	35,2	38,6
Hot side pressure drops	7	kPa	27	30	26	29	24	33	21
Heating capacity (EN14511:2018)	8	kW	443	476	514	570	636	737	808
Total power input (EN14511:2018)	8	kW	137	149	154	175	199	231	247
COP (EN14511:2018)	8	-	3,24	3,20	3,34	3,26	3,20	3,19	3,27
SCOP - Clima MEDIO - W35	5	-	4,14	4,12	4,21	-	-	-	-
Cooling 100% - Heating 100%									
Cooling capacity (EN14511:2018)	6	kW	449	495	537	596	676	755	875
Heating capacity (EN14511:2018)	6	kW	571	629	680	757	867	967	1101
Total power input (EN14511:2018)	6	kW	135	149	159	180	212	237	253
TER (EN14511:2018)	7		7,55	7,53	7,63	7,50	7,29	7,25	7,81

The Product is compliant with the Erp (Energy Related Products) European Directive, It includes the Commission delegated Regulation (UE) N. 813/2013 Commission (nominal heating capacity ≤400 kW at specified reference conditions) and the Commission delegated Regulation (EU) No 2016/2281, also known as Ecodesign LOT21
Contains fluorinated greenhouse gases (GWP 631)

1. Data referred to the following conditions: internal exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35°C. Evaporator fouling factor = $0.44 \times 10^{(-4)}$ m² K/W.
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers.
3. Data compliant to Standard EN 14511:2018 referred to the following conditions: Cold side exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35°C
4. Data compliant to Standard AHRI 550/590 referred to the following conditions: Cold side 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 = $0.18 \times 10^{(-4)}$ m² K/W
5. Data compliant according to EU regulation 813/2013
6. Data compliant according to EU regulation 2016/2281
7. Data referred to the following conditions: Hot side exchanger water temperature = 40/45 °C. Entering external exchanger air temperature = 7°C D.B./6°C W.B. Evaporator fouling factor = $0.44 \times 10^{(-4)}$ m² K/W
8. Data compliant to Standard EN 14825:2018 referred to the following conditions: Hot side exchanger water temperature = 40/45 °C. Entering external exchanger air temperature = 7°C D.B./6°C W.B.
9. Data compliant to Standard EN 14511:2018: Cold side exchanger water temperature = * /7 °C. Hot side exchanger water temperature = * /45 °C Evaporator fouling factor = $0.44 \times 10^{(-4)}$ m² K/W
10. TER = (Cooling capacity + Heating capacity) / Total power input

Construction

SIZE		220.2	240.2	260.2	280.2	320.2	340.2	420.2
Compressor								
Type of compressors	1				ISW			
Refrigerant					R513A			
N° compressors	Nr	2	2	2	2	2	2	2
Rated power (C1)	HP	125	125	125	125	160	160	240
Rated power (C2)	HP	125	125	125	125	160	160	240
Std Capacity control steps					STEPLESS			
Oil charge (C1)	l	18	18	18	18	18	18	35
Oil charge (C2)	l	18	18	18	18	18	18	35
Refrigerant charge (C1)	kg	144	144	156	174	222	260	277
Refrigerant charge (C2)	kg	144	144	156	174	222	260	277
Refrigeration circuits	Nr				2			
Cold side exchanger								
Type of internal exchanger	2				S&T			
N. of internal exchanger	Nr				1			
Water content	l	283	283	496	496	530	530	495
Hot side exchanger								
Type of internal exchanger	2				S&T			
N. of internal exchanger	Nr				2			
Water content	l	54	54	62	62	76	76	120
External exchanger								
Type of external exchanger	3				CCHY			
Number of coils	Nr	4	4	4	4	4	4	4
External Section Fans								
Type of fans	4				AX			
Number of fans	Nr	10	10	12	14	16	16	16
Type of motor	5				EC			
Standard airflow (SC)	l/s	56175	56175	67425	78724	90358	87700	87170
Standard airflow (LN)	l/s	49610	49609	59545	69525	79755	77385	76902
Standard airflow (EN)	l/s	43201	43201	51854	60546	69516	67322	66886
Connections								
Cold side water fittings		5"	5"	5"	6"	6"	6"	8"
Hot side water fittings		5"	5"	5"	6"	6"	6"	8"
Power supply								
Standard power supply					400/3~/50			
Electrical data (SC)								
F.L.A. - Total	A	370,5	383,9	397,9	444,5	510,3	538,3	750,3
F.L.I. - Total	kW	226,2	235,2	243,8	274,0	317,2	335,2	464,6
M.I.C. - Value	6 A	232,6	239,3	251,8	280,6	319,0	333,0	439,0
Electrical data (LN)								
F.L.A. - Total	A	367,9	375,5	397,9	444,5	502,3	538,3	706,3
F.L.I. - Total	kW	224,6	230,0	243,8	274,0	312,2	335,2	436,6
M.I.C. - Value	6 A	231,3	235,1	251,8	280,6	315,0	333,0	417,0
Electrical data (EN)								
F.L.A. - Total	A	335,9	363,1	384,5	424,9	477,5	526,3	634,3
F.L.I. - Total	kW	209,6	221,4	235,0	261,2	295,4	327,4	389,4
M.I.C. - Value	6 A	215,3	228,9	245,1	270,8	302,6	327,0	381,0

1. ISW = Double inverter screw compressor
2. S&T = Shell and tube
3. CCHY = Copper / aluminium condenser coil with hydrophilic treatment
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

Sound level

Compressor soundproofing acoustic configuration (SC)

SIZE	Sound power level (dB) - Octave band (Hz)								Sound pressure level	Sound power level
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
220.2	95	89	87	93	94	89	83	77	76	97
240.2	95	89	87	93	94	89	83	77	76	97
260.2	98	92	89	95	96	91	86	79	77	99
280.2	98	93	90	95	97	92	86	80	77	99
320.2	99	93	91	98	96	95	88	81	78	101
340.2	98	92	90	97	95	94	87	80	77	100
420.2	97	91	96	102	93	90	89	79	78	101

Silenced acoustic configuration (LN)

SIZE	Sound power level (dB) - Octave band (Hz)								Sound pressure level	Sound power level
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
220.2	85	79	77	86	88	82	75	65	69	90
240.2	86	80	77	86	89	83	76	66	69	91
260.2	86	81	78	87	89	83	76	66	69	91
280.2	88	82	79	88	90	84	77	68	70	92
320.2	87	82	80	89	87	87	79	67	70	92
340.2	87	82	80	89	87	87	79	68	70	92
420.2	89	83	86	95	88	84	83	71	72	94

Super-silenced acoustic configuration (EN)

SIZE	Sound power level (dB) - Octave band (Hz)								Sound pressure level	Sound power level
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
220.2	84	78	76	87	79	77	70	63	64	86
240.2	84	78	76	87	79	77	70	63	64	86
260.2	84	79	75	86	85	80	74	62	66	88
280.2	85	79	76	86	85	80	74	63	66	88
320.2	84	79	77	88	83	83	76	62	67	89
340.2	85	79	77	88	83	83	76	63	67	89
420.2	85	79	81	89	80	77	76	65	66	88

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 9614-1 regulations, with respect to the EUROVENT 8/1 certification.

Data referred to the following conditions:

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

Operating range

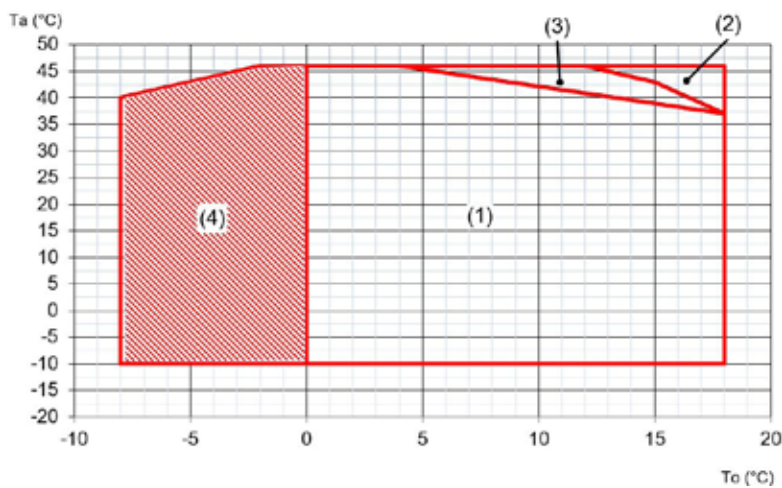
Cooling - SC



T_a (°C) = External exchanger inlet air temperature (D.B.)
 T_o (°C) = Cold side exchanger outlet water temperature

1. Standard unit operating range at full load
2. Unit operating with automatic staging of the compressor capacity
4. Data provided on request

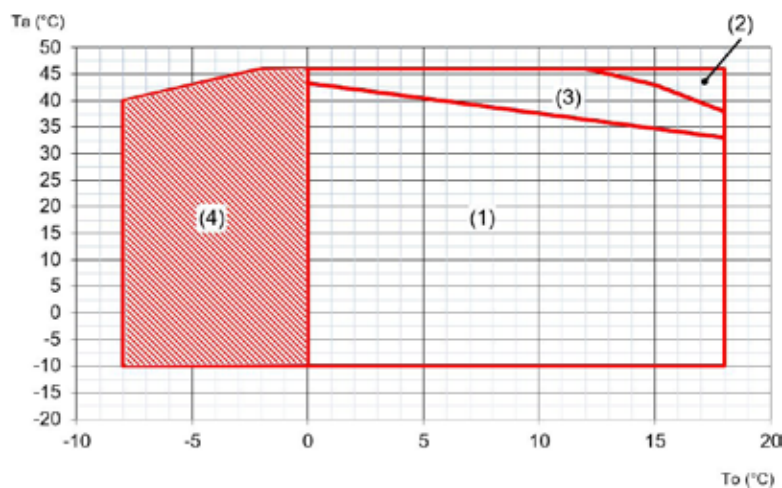
Cooling - LN



T_a (°C) = External exchanger inlet air temperature (D.B.)
 T_o (°C) = Cold side exchanger outlet water temperature

1. Standard unit operating range at full load
2. Unit operating with automatic staging of the compressor capacity
3. Standard unit operating range with air flow automatic modulation
4. Data provided on request

Cooling - EN



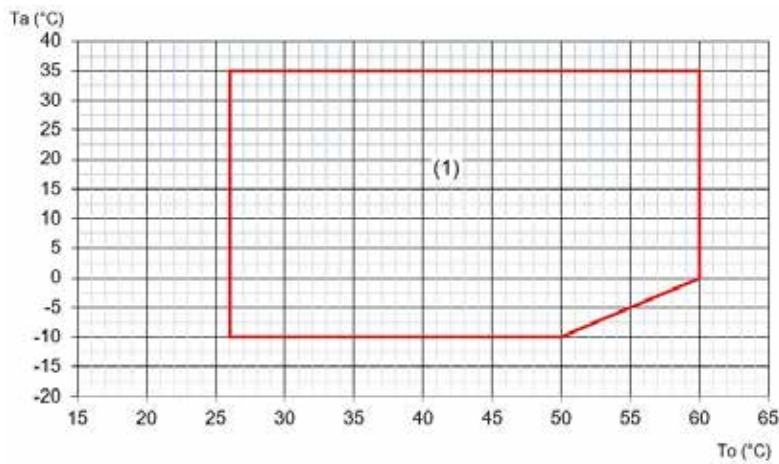
T_a (°C) = External exchanger inlet air temperature (D.B.)
 T_o (°C) = Cold side exchanger outlet water temperature

1. Standard unit operating range at full load
2. Unit operating with automatic staging of the compressor capacity
3. Standard unit operating range with air flow automatic modulation
4. Data provided on request

General technical data

Operating range

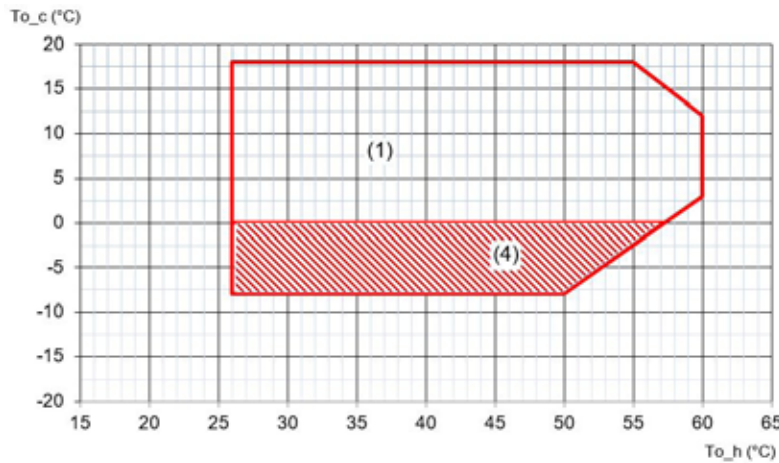
Heating



Ta (°C) = External exchanger inlet air temperature (D.B.)
To (°C) = Hot side exchanger outlet water temperature

- 1. Standard unit operating range

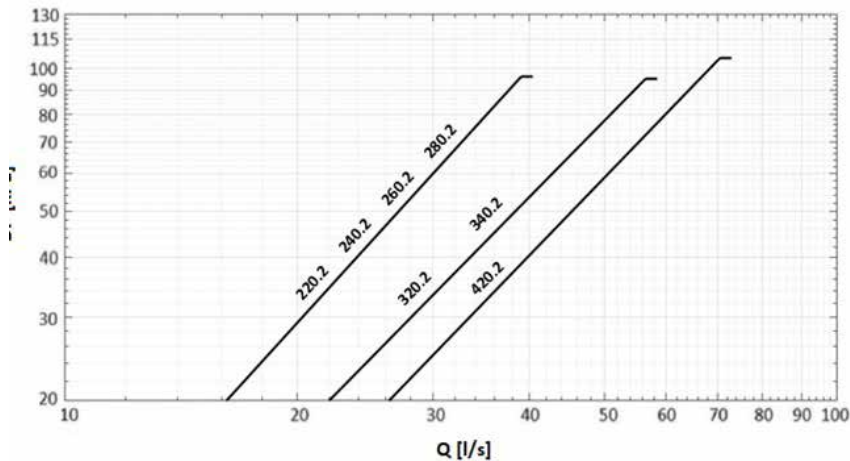
Cooling 100% - Heating 100%



To_h = Hot side exchanger outlet water temperature
To_c = Cold side exchanger outlet water temperature

- 1. Standard unit operating range at full load
- 4. Data provided on request

Cold side exchanger pressure drop



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

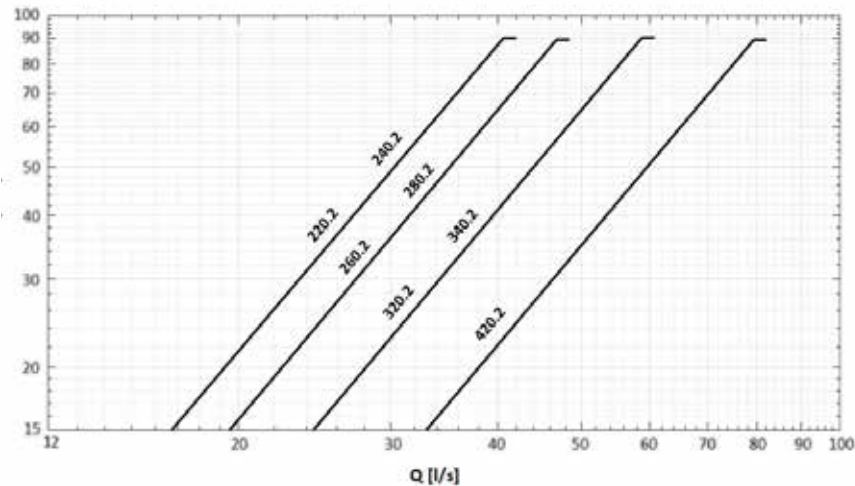
DT = Temperature difference between inlet / outlet water

Admissible water flow-rates

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

SIZE		220.2	240.2	260.2	280.2	320.2	340.2	420.2
Qmin	[l/s]	16,2	16,2	16,2	16,2	22,0	22,0	26,3
Qmax	[l/s]	39,0	39,0	39,0	39,0	56,5	56,5	70,5

Hot side exchanger pressure drop



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		220.2	240.2	260.2	280.2	320.2	340.2	420.2
Qmin	[l/s]	16,7	16,7	19,5	19,5	24,4	24,4	33,0
Qmax	[l/s]	40,6	40,6	46,8	46,8	58,8	58,8	79,3

General technical data

Correction factors for ethylene glycol use

% ETHYLENE GLYCOL BY WEIGHT		5%	10%	15%	20%	25%	30%	35%	40%	45%	50%
Freezing temperature	°C	-2,0	-3,9	-6,5	-8,9	-11,8	-15,6	-19	-23,4	-27,8	-32,7
Safety temperature	°C	3	1	-1	-4	-6	-10	-14	-19	-23,8	-29,4
Cold side exchanger cooling capacity Factor	-	0,995	0,989	0,983	0,977	0,971	0,964	0,956	0,949	0,941	0,933
Compressor power input Factor (cold side)	-	0,998	0,997	0,995	0,994	0,992	0,990	0,989	0,987	0,986	0,984
Cold side exchanger pressure drop factor	-	1,041	1,085	1,131	1,180	1,231	1,285	1,341	1,400	1,461	1,525
Cooling capacity Factor (hot side)	-	0,998	0,996	0,994	0,992	0,990	0,988	0,986	0,984	0,982	0,980
Compressor power input Factor (hot side)	-	1,003	1,006	1,009	1,012	1,015	1,018	1,021	1,024	1,027	1,030
Hot side exchanger heating capacity Factor	-	0,999	0,998	0,997	0,996	0,995	0,994	0,993	0,992	0,991	0,990
Hot side exchanger pressure drop factor	-	1,037	1,077	1,118	1,162	1,208	1,257	1,307	1,360	1,415	1,473

Correction factors for propylene glycol use

% PROPYLENE GLYCOL BY WEIGHT		5%	10%	15%	20%	25%	30%	35%	40%	45%	50%
Freezing temperature	°C	-2,0	-3,9	-6,5	-8,9	-11,8	-15,6	-19	-23,4	-27,8	-32,7
Safety temperature	°C	3	1	-1	-4	-6	-10	-14	-19	-23,8	-29,4
Cold side exchanger cooling capacity Factor	-	0,993	0,985	0,977	0,968	0,958	0,947	0,936	0,925	0,912	0,899
Compressor power input Factor (cold side)	-	0,998	0,995	0,993	0,990	0,987	0,983	0,980	0,976	0,972	0,968
Cold side exchanger pressure drop factor	-	1,052	1,108	1,170	1,237	1,309	1,386	1,467	1,554	1,646	1,743
Cooling capacity Factor (hot side)	-	0,996	0,992	0,987	0,982	0,977	0,971	0,965	0,959	0,952	0,945
Compressor power input Factor (hot side)	-	1,004	1,007	1,011	1,014	1,018	1,021	1,025	1,028	1,032	1,035
Hot side exchanger heating capacity Factor	-	0,998	0,996	0,994	0,991	0,988	0,984	0,980	0,976	0,971	0,966
Hot side exchanger pressure drop factor	-	1,047	1,098	1,153	1,213	1,278	1,347	1,421	1,499	1,581	1,669

Fouling Correction Factors

M2 °C/W	Cold side exchanger		Hot side exchanger	
	F1	FK1	F2	FK2
0,44 x 10 (-4)	1,0	1,0	1,0	1,0
0,88 x 10 (-4)	0,97	0,99	0,97	1,08
1,76 x 10 (-4)	0,94	0,98	0,92	1,05

F1 = Cooling capacity correction factors
 FK1 = Compressor power input correction factor
 F2 = Cooling capacity correction factors
 FK2 = Compressor power input correction factor

Exchanger operating range

	Cold side exchanger		Hot side exchanger	
	DPR	DPW	DPR	DPW
PED (CE)	2400	1000	3500	1600

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	2100	1500	
Antifreeze protection	°C	3	5,5	
High pressure safety valve	kPa			2400
Low pressure safety valve	kPa			1500
Max no. of compressor starts per hour	n°			6
Discharge safety thermostat	°C			120

Cooling - SC

		Entering external exchanger air temperature (°C)											
SIZE	To (°C)	25		30		35		40		43		46	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
220.2	5	538	132	515	148	491	165	467	184	452	196	437	209
	6	552	133	528	149	504	167	479	186	464	198	449	210
	7	572	135	548	151	523	168	498	187	482	200	467	213
	10	623	138	598	154	571	172	544	192	528	205	512	218
	15	711	143	683	160	654	179	626	199	608	212	305	107
	18	782	147	753	165	723	184	360	83,1	352	98	-	-
240.2	5	563	140	537	157	512	175	486	194	470	207	454	220
	6	577	141	552	158	526	176	499	196	483	209	467	222
	7	598	143	572	160	545	178	518	198	501	211	485	224
	10	651	147	623	164	595	183	566	203	549	216	531	230
	15	742	153	712	171	681	190	650	211	631	225	315	110
	18	815	157	784	176	752	196	373	85,7	364	101	-	-
260.2	5	590	135	565	151	539	169	512	189	496	201	479	214
	6	606	136	580	152	553	170	526	190	509	202	493	215
	7	629	137	602	154	575	172	547	192	530	204	514	218
	10	683	140	654	157	625	176	596	196	578	209	560	222
	15	782	146	752	163	720	182	689	203	669	216	326	110
	18	849	149	816	166	784	186	388	84,6	375	101	-	-
280.2	5	654	145	624	163	594	182	563	203	545	217	526	231
	6	671	146	641	164	610	183	579	205	560	218	541	232
	7	696	147	666	165	634	185	602	206	583	220	563	234
	10	756	151	723	169	690	189	656	211	635	225	614	239
	15	866	157	830	175	794	196	757	218	735	232	360	116
	18	940	160	902	179	864	200	427	89,8	413	107	-	-
320.2	5	741	174	710	193	677	212	644	233	623	246	602	259
	6	758	176	727	194	694	214	660	234	639	247	618	260
	7	788	178	756	196	722	216	687	237	665	250	644	263
	10	859	183	824	202	788	222	750	242	728	256	705	269
	15	971	191	933	210	894	230	853	251	829	265	409	132
	18	1071	199	1032	218	991	238	486	106	475	123	-	-
340.2	5	816	194	781	215	744	236	706	259	682	273	659	287
	6	835	196	799	216	762	238	723	261	699	275	676	289
	7	868	198	831	219	792	241	752	264	728	278	704	292
	10	945	205	905	226	864	248	822	271	796	286	770	300
	15	1067	215	1024	237	979	259	933	282	911	298	452	143
	18	1176	225	1130	247	1083	269	555	116	521	134	-	-
420.2	5	1004	269	966	293	927	318	887	345	862	362	837	379
	6	1031	272	993	296	954	321	912	348	887	365	862	382
	7	1070	277	1031	300	990	326	948	353	922	370	896	387
	10	1168	287	1126	311	1083	337	1038	364	1011	381	983	399
	15	1309	303	1265	327	1219	353	1171	381	1142	398	547	166
	18	1452	319	1403	343	642	136	1302	397	624	157	-	-

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

To (°C) = Cold side exchanger outlet water temperature

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

Performances at part load

Performances

Cooling - LN

		Entering external exchanger air temperature (°C)											
SIZE	To (°C)	25		30		35		40		43		46	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
220.2	5	528	134	505	150	481	167	457	186	442	199	428	211
	6	541	135	518	151	494	169	470	188	455	200	440	213
	7	561	137	537	153	512	170	487	190	472	202	457	215
	10	611	140	585	157	559	175	533	195	517	208	501	221
	15	696	146	669	163	640	182	612	203	595	216	569	227
	18	766	151	737	168	708	188	679	210	659	223	629	230
240.2	5	542	138	518	155	493	173	468	192	453	205	438	217
	6	556	140	532	156	507	174	481	194	466	206	450	219
	7	580	142	551	158	525	176	499	196	483	209	467	222
	10	627	145	601	162	573	181	546	201	529	214	512	228
	15	714	152	685	169	656	189	626	210	609	223	581	234
	18	785	156	755	175	724	194	693	212	671	226	640	238
260.2	5	585	139	559	155	533	173	506	193	490	206	474	219
	6	600	140	574	156	547	174	520	194	503	207	487	220
	7	623	141	596	158	569	176	541	196	524	209	507	223
	10	675	144	647	162	618	180	589	201	571	214	553	227
	15	774	150	743	168	712	187	680	208	661	222	630	232
	18	839	154	807	172	774	192	741	210	719	226	687	239
280.2	5	648	149	618	167	588	186	557	208	538	221	520	235
	6	664	150	634	168	603	188	572	209	553	223	534	237
	7	690	151	659	170	627	190	595	211	576	225	556	239
	10	748	155	716	174	682	194	648	216	627	230	607	244
	15	856	161	821	181	784	202	748	224	725	238	695	250
	18	929	166	891	185	853	206	816	226	791	242	758	256
320.2	5	735	178	703	196	671	216	637	237	617	250	596	263
	6	752	179	720	198	687	218	653	238	632	251	611	265
	7	782	182	749	200	715	220	680	241	658	254	637	267
	10	851	187	816	206	779	226	742	247	720	260	697	274
	15	961	196	923	215	884	236	843	257	819	270	787	282
	18	1060	204	1021	224	980	244	938	260	912	276	879	289
340.2	5	808	198	773	219	736	241	698	264	674	278	651	293
	6	827	200	791	221	753	243	715	266	691	280	667	295
	7	859	203	822	224	783	246	744	269	719	284	695	298
	10	935	210	895	231	854	253	811	277	786	291	760	306
	15	1055	221	1011	243	967	265	921	289	893	303	865	313
	18	1162	232	1116	253	1069	276	1021	300	991	316	961	323
420.2	5	950	253	915	275	878	299	840	325	816	341	793	357
	6	976	256	940	278	903	302	864	328	840	344	816	360
	7	1012	260	975	282	937	306	897	332	873	348	848	365
	10	1104	269	1065	292	1023	317	981	343	955	359	929	376
	15	1236	284	1195	307	1151	332	1106	358	1078	375	1045	389
	18	1368	298	1323	321	1276	346	1229	371	1199	389	1165	401

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

To (°C) = Cold side exchanger outlet water temperature

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

 Performances at part load

Cooling - EN

SIZE	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		43		46	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
220.2	5	461	115	442	129	423	144	402	161	390	173	378	184
	6	474	116	454	130	434	145	414	163	401	174	389	186
	7	491	117	471	131	450	147	429	164	417	176	404	188
	10	535	120	514	134	492	151	544	192	457	180	443	193
	15	610	124	588	140	565	157	626	199	527	187	260	96
	18	673	128	650	143	723	184	360	83,1	301	87	-	-
240.2	5	511	133	489	149	466	166	442	185	428	197	414	210
	6	524	134	502	150	478	168	455	187	440	199	426	212
	7	543	136	520	152	496	170	472	189	457	201	442	214
	10	591	140	567	156	541	175	566	203	500	207	485	220
	15	674	146	647	164	620	182	650	211	576	216	286	104
	18	741	151	713	169	752	196	373	85,7	331	95	-	-
260.2	5	552	134	528	150	504	167	479	186	464	198	449	211
	6	567	135	542	151	518	168	492	187	477	200	462	213
	7	588	136	564	152	538	170	512	189	497	202	481	215
	10	638	139	611	156	585	174	596	196	541	207	525	220
	15	724	143	696	160	668	179	689	203	621	212	328	114
	18	792	149	762	166	784	186	388	84,6	379	105	-	-
280.2	5	615	144	587	162	559	181	530	201	513	214	496	228
	6	631	146	603	163	574	182	545	203	527	216	510	230
	7	655	147	626	165	597	184	567	205	549	218	531	232
	10	710	151	680	169	648	188	656	211	598	223	579	237
	15	809	156	777	175	743	195	757	218	689	230	336	112
	18	881	161	846	180	864	200	427	89,8	389	103	-	-
320.2	5	695	171	665	189	635	207	603	227	584	240	565	253
	6	711	172	681	190	650	209	619	229	599	241	579	254
	7	739	175	708	193	676	211	644	231	624	244	603	256
	10	804	180	771	198	737	217	750	242	682	250	661	262
	15	909	188	873	206	836	226	853	251	777	259	381	126
	18	1004	196	966	214	991	238	486	106	443	118	-	-
340.2	5	780	197	745	217	710	239	673	261	651	275	628	289
	6	798	199	763	219	727	240	689	263	667	277	644	291
	7	829	202	793	222	755	244	717	266	694	280	670	295
	10	902	209	863	229	823	251	822	271	757	288	733	302
	15	1017	220	975	241	931	263	933	282	860	300	428	140
	18	1119	230	1075	251	1083	269	555	116	497	131	-	-
420.2	5	889	233	856	254	821	276	786	300	764	315	742	331
	6	913	235	880	256	844	279	808	303	786	318	763	334
	7	947	239	912	260	876	283	839	307	816	322	793	338
	10	1031	247	994	269	956	292	1038	364	892	332	868	347
	15	1154	260	1115	282	1073	305	1171	381	1005	346	479	152
	18	1274	272	1231	294	642	136	1302	397	548	143	-	-

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

To (°C) = Cold side exchanger outlet water temperature

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

 Performances at part load

Performances

Cooling at part load - SC

SIZE	Load %	Entering external exchanger air temperature (°C)											
		20°C			25°C			30°C			35°C		
		kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER
220.2	100	595	133	4,47	572	148	3,87	548	164	3,34	523	181	2,88
	75	437	89,5	4,88	423	99,3	4,26	407	111	3,68	391	124	3,15
	50	294	54,6	5,39	285	61,2	4,65	275	69,6	3,95	263	79,7	3,31
	25	147	27,3	5,39	142	30,6	4,65	137	34,8	3,95	132	39,8	3,31
240.2	100	623	141	4,43	598	156	3,83	572	173	3,31	545	191	2,85
	75	459	94,4	4,86	443	105	4,24	426	116	3,66	409	130	3,15
	50	304	56,4	5,39	295	63,2	4,66	284	71,7	3,96	272	81,8	3,33
	25	152	28,2	5,39	147	31,6	4,66	142	35,8	3,96	136	40,9	3,33
260.2	100	661	139	4,77	629	153	4,11	602	170	3,55	575	188	3,06
	75	488	95,5	5,11	466	105	4,42	449	117	3,84	431	130	3,31
	50	325	58,7	5,54	310	65,3	4,74	299	73,6	4,07	288	83,5	3,44
	25	162	29,4	5,54	155	32,6	4,74	149	36,8	4,07	144	41,8	3,44
280.2	100	732	150	4,89	696	166	4,20	666	184	3,62	634	204	3,11
	75	538	104	5,17	514	115	4,48	495	127	3,90	475	141	3,38
	50	357	65,2	5,47	341	72,0	4,74	329	80,4	4,10	317	90,5	3,50
	25	179	32,6	5,47	170	36,0	4,74	165	40,2	4,10	159	45,2	3,50
320.2	100	819	181	4,52	788	199	3,97	756	217	3,48	722	237	3,05
	75	606	125	4,83	586	138	4,25	564	151	3,72	541	166	3,26
	50	403	77,5	5,20	390	86,6	4,51	376	96,7	3,89	361	108	3,34
	25	201	38,8	5,20	195	43,3	4,51	188	48,4	3,89	180	54,0	3,34
340.2	100	907	201	4,52	868	220	3,95	831	241	3,45	792	262	3,02
	75	671	138	4,87	644	151	4,25	620	166	3,73	594	182	3,27
	50	447	85,3	5,24	428	94,7	4,51	413	105	3,91	396	117	3,38
	25	223	42,6	5,24	214	47,4	4,51	206	52,7	3,91	198	58,6	3,38
420.2	100	1107	276	4,01	1070	298	3,59	1031	322	3,20	990	348	2,85
	75	826	167	4,94	801	182	4,39	773	199	3,89	744	216	3,44
	50	556	99,0	5,62	538	109	4,92	518	121	4,27	495	134	3,69
	25	278	49,5	5,62	269	54,6	4,92	259	60,6	4,27	248	67,2	3,69

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

kWf = cooling capacity in kW

kWe_tot = unit total power input in kW

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

Cooling at part load - LN

SIZE	Load %	Entering external exchanger air temperature (°C)											
		20°C			25°C			30°C			35°C		
		kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER
220.2	100	584	131	4,45	561	146	3,85	537	162	3,31	512	180	2,85
	75	430	87,1	4,94	416	96,9	4,29	400	108	3,70	384	121	3,16
	50	286	52,6	5,45	277	59,1	4,69	267	67,3	3,97	256	77,3	3,32
	25	143	26,3	5,45	139	29,5	4,69	134	33,7	3,97	128	38,6	3,32
240.2	100	600	135	4,44	580	151	3,85	551	167	3,30	525	185	2,84
	75	442	89,3	4,95	427	99,3	4,30	411	111	3,70	394	124	3,17
	50	294	53,8	5,46	284	60,3	4,71	274	68,6	3,99	263	78,6	3,34
	25	147	26,9	5,46	142	30,2	4,71	137	34,3	3,99	131	39,3	3,34
260.2	100	655	137	4,77	623	152	4,09	596	169	3,53	569	187	3,03
	75	476	93,2	5,11	461	103	4,46	444	115	3,86	427	128	3,33
	50	316	58,1	5,44	306	64,5	4,75	296	72,7	4,07	284	82,6	3,44
	25	158	29,0	5,44	153	32,3	4,75	148	36,3	4,07	142	41,3	3,44
280.2	100	726	148	4,91	690	164	4,20	659	183	3,61	627	203	3,10
	75	526	102	5,17	508	112	4,53	490	125	3,93	470	139	3,40
	50	347	64,5	5,38	337	71,1	4,74	326	79,5	4,10	314	89,5	3,50
	25	174	32,3	5,38	168	35,6	4,74	163	39,7	4,10	157	44,8	3,50
320.2	100	813	179	4,55	782	196	3,98	749	215	3,48	715	235	3,04
	75	600	123	4,89	580	135	4,29	559	149	3,75	536	163	3,28
	50	400	76,8	5,20	387	85,8	4,51	373	95,9	3,89	358	107	3,34
	25	200	38,4	5,20	194	42,9	4,51	187	48,0	3,89	179	53,6	3,34
340.2	100	895	199	4,51	859	218	3,94	822	239	3,44	783	261	3,00
	75	659	135	4,88	637	148	4,29	613	163	3,76	588	179	3,28
	50	437	84,2	5,19	423	93,7	4,52	408	104	3,91	392	116	3,38
	25	218	42,1	5,19	212	46,8	4,52	204	52,2	3,91	196	58,0	3,38
420.2	100	1047	254	4,13	1012	275	3,68	975	297	3,28	937	322	2,91
	75	781	155	5,05	757	169	4,48	731	185	3,96	703	202	3,48
	50	527	93,0	5,66	509	103	4,94	490	115	4,28	468	127	3,67
	25	263	46,5	5,66	255	51,5	4,94	245	57,3	4,28	234	63,7	3,67

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

kWf = cooling capacity in kW

kWe_tot = unit total power input in kW

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

Performances

Cooling at part load - EN

SIZE	Load %	Entering external exchanger air temperature (°C)											
		20°C			25°C			30°C			35°C		
		kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER
220.2	100	510	110	4,61	491	123	3,99	471	137	3,43	450	153	2,94
	75	378	73,2	5,17	366	82	4,46	352	92,6	3,80	338	105	3,22
	50	253	43,1	5,88	245	49,1	4,98	235	57,0	4,13	225	66,6	3,38
	25	127	21,5	5,88	122	24,6	4,98	118	28,5	4,13	113	33,3	3,38
240.2	100	566	128	4,43	543	142	3,82	520	158	3,28	496	176	2,82
	75	417	82,8	5,04	403	92,6	4,35	388	104	3,73	372	117	3,18
	50	278	48,4	5,75	269	54,9	4,90	259	63,1	4,10	248	73,1	3,39
	25	139	24,2	5,75	134	27,4	4,90	129	31,6	4,10	124	36,5	3,39
260.2	100	612	129	4,74	588	144	4,10	564	160	3,53	538	178	3,03
	75	451	86,2	5,23	436	96,0	4,54	421	107	3,91	404	121	3,35
	50	330	57,3	5,76	314	64,2	4,90	303	72,8	4,17	292	83,1	3,51
	25	165	28,6	5,76	157	32,1	4,90	152	36,4	4,17	146	41,6	3,51
280.2	100	683	140	4,88	655	156	4,20	626	174	3,61	597	193	3,10
	75	500	94,4	5,30	483	105	4,62	466	117	3,99	448	130	3,44
	50	337	57,9	5,82	321	64,4	4,98	310	72,7	4,26	298	82,7	3,61
	25	168	28,9	5,82	160	32,2	4,98	155	36,4	4,26	149	41,3	3,61
320.2	100	768	168	4,58	739	185	4,00	708	203	3,49	676	221	3,06
	75	569	114	4,98	550	126	4,35	529	140	3,79	507	154	3,30
	50	379	67,8	5,60	367	76,6	4,79	353	86,6	4,08	338	97,5	3,47
	25	190	33,9	5,60	184	38,3	4,79	177	43,3	4,08	169	48,8	3,47
340.2	100	864	193	4,48	829	212	3,91	793	232	3,41	755	254	2,98
	75	636	128	4,96	614	142	4,34	591	156	3,79	567	171	3,30
	50	422	77,5	5,44	408	86,9	4,70	394	97,5	4,04	378	109	3,46
	25	211	38,7	5,44	204	43,5	4,70	197	48,7	4,04	189	54,6	3,46
420.2	100	979	229	4,27	947	249	3,80	912	270	3,37	876	293	2,99
	75	733	141	5,19	709	155	4,58	684	170	4,02	657	187	3,52
	50	495	83,6	5,93	478	93,4	5,12	459	105	4,38	438	117	3,73
	25	248	41,8	5,93	239	46,7	5,12	229	52,3	4,38	219	58,7	3,73

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

kWf = cooling capacity in kW

kWe_tot = unit total power input in kW

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

Heating - SC

SIZE	Ta (°C) D.B./ W.B.	Hot side exchanger outlet water temperature (°C)											
		35		40		45		50		55		60	
		kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe
220.2	-7/-8	350	112	354	124	359	138	366	154	-	-	-	-
	-5/-6	369	113	372	125	377	140	383	156	390	174	-	-
	0/-1	418	115	421	128	425	144	430	161	436	180	444	202
	2/1	441	116	443	130	447	145	451	163	457	182	465	204
	7/6	500	119	501	132	503	148	506	167	511	186	517	208
	12/11	566	121	566	135	566	151	568	169	571	189	575	211
240.2	-7/-8	354	113	358	125	363	139	369	156	-	-	-	-
	-5/-6	372	114	376	127	381	141	387	158	394	176	-	-
	0/-1	422	116	425	130	429	145	434	163	441	182	449	204
	2/1	445	117	448	131	451	147	456	165	462	184	469	206
	7/6	505	120	506	134	508	150	512	169	516	188	522	211
	12/11	572	122	572	137	572	153	573	171	576	191	581	213
260.2	-7/-8	375	114	378	127	383	141	388	157	-	-	-	-
	-5/-6	395	115	398	128	402	143	406	159	413	178	-	-
	0/-1	448	117	450	131	453	146	457	164	462	183	468	204
	2/1	472	118	474	132	476	148	479	165	484	185	490	206
	7/6	536	120	536	135	537	151	539	169	542	189	546	210
	12/11	608	122	606	137	605	153	605	171	606	190	609	212
280.2	-7/-8	446	139	450	155	455	172	460	191	-	-	-	-
	-5/-6	470	140	473	156	477	174	482	194	488	216	-	-
	0/-1	531	143	532	160	534	178	538	199	542	222	548	246
	2/1	559	144	560	161	561	180	564	201	567	224	572	249
	7/6	633	147	632	165	631	184	632	205	633	229	636	253
	12/11	716	150	713	168	710	187	708	208	707	232	707	257
320.2	-7/-8	491	159	497	177	501	193	506	212	-	-	-	-
	-5/-6	517	160	522	178	526	195	531	215	537	235	-	-
	0/-1	583	162	587	182	588	199	589	220	591	241	594	263
	2/1	615	163	617	183	618	201	618	222	619	243	621	266
	7/6	698	166	698	186	697	205	695	227	694	249	693	272
	12/11	791	169	789	190	785	210	781	231	778	253	775	278
340.2	-7/-8	549	177	553	195	557	214	562	235	-	-	-	-
	-5/-6	577	179	581	197	584	216	588	237	592	259	-	-
	0/-1	653	182	654	200	655	221	656	243	657	267	660	291
	2/1	688	183	688	202	688	223	688	246	688	269	690	295
	7/6	782	187	779	207	776	228	773	252	771	276	769	302
	12/11	887	191	881	211	875	233	869	257	865	282	860	308
420.2	-7/-8	622	199	628	217	642	244	658	268	-	-	-	-
	-5/-6	658	201	674	227	684	248	695	273	707	298	-	-
	0/-1	748	207	757	233	761	255	767	280	774	306	782	335
	2/1	790	210	798	236	801	258	804	284	811	310	818	339
	7/6	901	217	907	244	907	267	908	293	911	320	913	349
	12/11	1023	224	1027	252	1025	275	1020	301	1021	329	1021	359

kWt = Heating capacity in kW

kWe = Compressor power input in kW

Ta (°C) = Entering external exchanger air temperature.

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

D.B. = Dry bulb

W.B. = Wet bulb

Performances

Heating - LN

SIZE	Ta (°C) D.B./ W.B.	Hot side exchanger outlet water temperature (°C)											
		35		40		45		50		55		60	
		kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe
220.2	-7/-8	347	112	351	124	356	138	363	154	-	-	-	-
	-5/-6	365	113	369	125	374	139	380	156	387	174	-	-
	0/-1	414	115	417	128	421	143	427	161	433	180	441	201
	2/1	437	116	439	129	443	145	448	163	454	182	462	204
	7/6	495	118	497	132	499	148	502	167	507	186	514	208
	12/11	561	121	561	135	561	151	563	169	566	189	571	211
240.2	-7/-8	350	113	355	125	360	139	366	155	-	-	-	-
	-5/-6	369	114	373	127	378	141	384	158	391	176	-	-
	0/-1	419	116	422	130	426	145	431	163	438	182	446	203
	2/1	441	117	444	131	448	147	453	165	459	184	466	206
	7/6	501	120	502	134	504	150	508	168	512	188	519	210
	12/11	567	122	567	136	567	153	569	171	572	191	577	213
260.2	-7/-8	372	114	375	127	380	141	385	157	-	-	-	-
	-5/-6	392	115	395	128	399	142	404	159	410	178	-	-
	0/-1	445	117	447	131	450	146	454	164	459	183	466	204
	2/1	469	118	470	132	472	147	476	165	481	185	487	206
	7/6	532	120	532	134	533	150	535	168	538	188	543	210
	12/11	602	122	601	136	600	152	601	170	602	190	605	212
280.2	-7/-8	443	139	447	154	451	171	457	191	-	-	-	-
	-5/-6	466	140	469	156	473	174	478	193	485	215	-	-
	0/-1	526	143	528	160	530	178	534	199	539	222	545	246
	2/1	554	144	555	161	557	180	560	201	564	224	569	248
	7/6	628	147	627	164	627	184	627	205	629	229	632	253
	12/11	710	150	707	167	704	187	702	208	702	232	703	257
320.2	-7/-8	490	161	494	177	497	193	502	212	-	-	-	-
	-5/-6	515	162	518	178	521	195	526	214	531	235	-	-
	0/-1	581	165	582	181	584	199	586	219	588	241	591	263
	2/1	612	166	612	183	613	201	614	222	615	243	618	266
	7/6	694	169	692	186	691	205	690	226	689	248	689	272
	12/11	786	172	783	190	779	209	775	231	772	253	770	277
340.2	-7/-8	544	177	549	195	553	213	558	234	-	-	-	-
	-5/-6	572	178	576	196	580	215	584	237	588	259	-	-
	0/-1	647	181	648	200	650	220	651	243	653	266	656	291
	2/1	682	183	682	202	682	222	683	245	684	269	685	294
	7/6	774	186	772	206	769	228	767	251	765	276	764	302
	12/11	878	190	873	211	867	233	862	257	858	282	854	308
420.2	-7/-8	590	192	597	210	604	230	614	252	-	-	-	-
	-5/-6	623	194	629	213	637	233	647	256	661	281	-	-
	0/-1	709	200	713	219	717	240	724	264	731	289	740	316
	2/1	749	203	752	222	755	243	760	267	808	296	774	320
	7/6	853	209	853	229	854	250	856	275	886	302	864	329
	12/11	969	216	967	236	965	258	964	283	964	309	965	337

kWt = Heating capacity in kW

kWe = Compressor power input in kW

Ta (°C) = Entering external exchanger air temperature.

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

D.B. = Dry bulb

W.B. = Wet bulb

Heating - EN

SIZE	Ta (°C) D.B./ W.B.	Hot side exchanger outlet water temperature (°C)											
		35		40		45		50		55		60	
		kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe
220.2	-7/-8	305	97,3	309	108	314	120	320	135	-	-	-	-
	-5/-6	321	98,0	325	109	330	122	336	137	342	153	-	-
	0/-1	366	100	369	112	373	125	378	142	384	159	393	179
	2/1	386	101	389	113	392	127	397	143	403	161	411	181
	7/6	439	103	440	115	443	129	447	146	452	164	458	184
	12/11	497	104	497	117	499	131	501	148	505	166	511	186
240.2	-7/-8	330	107	334	118	339	131	345	147	-	-	-	-
	-5/-6	347	107	351	119	356	133	362	149	369	166	-	-
	0/-1	394	109	397	122	401	137	407	154	413	172	422	193
	2/1	415	110	418	123	422	138	427	156	433	174	441	195
	7/6	471	113	473	126	476	141	479	159	484	178	491	199
	12/11	534	115	534	128	535	143	538	161	541	180	547	202
260.2	-7/-8	357	110	361	122	365	136	370	151	-	-	-	-
	-5/-6	376	111	380	123	384	137	389	154	395	172	-	-
	0/-1	427	113	429	126	433	141	437	158	443	177	449	197
	2/1	451	114	452	127	455	142	459	160	464	179	470	199
	7/6	511	116	512	130	513	145	515	163	519	182	524	203
	12/11	579	118	578	131	578	147	579	165	581	184	584	205
280.2	-7/-8	400	124	404	138	408	154	413	171	-	-	-	-
	-5/-6	421	125	424	140	428	155	433	173	440	193	-	-
	0/-1	477	128	479	143	482	160	485	178	490	199	497	221
	2/1	502	129	503	144	505	161	509	180	513	201	519	223
	7/6	570	132	569	147	570	164	571	184	574	205	578	228
	12/11	645	134	643	149	641	167	641	186	642	207	644	230
320.2	-7/-8	451	148	454	162	457	177	461	194	-	-	-	-
	-5/-6	474	149	476	163	479	179	482	197	486	215	-	-
	0/-1	534	151	536	166	537	183	539	201	541	221	544	242
	2/1	563	152	563	168	564	184	565	203	567	223	569	244
	7/6	638	154	637	170	636	188	635	207	635	228	636	250
	12/11	722	157	719	173	717	191	714	211	712	231	711	254
340.2	-7/-8	521	171	526	188	530	205	535	225	-	-	-	-
	-5/-6	548	172	552	189	555	207	559	228	564	249	-	-
	0/-1	624	175	620	193	622	212	624	233	626	256	629	279
	2/1	652	176	653	194	653	214	654	236	655	258	658	283
	7/6	740	179	738	198	736	219	735	241	734	265	733	290
	12/11	839	183	834	202	830	223	826	246	822	270	820	296
420.2	-7/-8	558	181	564	198	572	216	582	238	-	-	-	-
	-5/-6	589	183	595	200	602	219	611	242	621	265	-	-
	0/-1	670	188	673	206	678	226	685	249	693	273	702	300
	2/1	707	191	710	209	714	228	720	252	726	276	734	303
	7/6	806	196	807	215	808	235	810	259	814	284	819	312
	12/11	915	202	914	221	912	242	912	266	912	291	914	319

kWt = Heating capacity in kW

kWe = Compressor power input in kW

Ta (°C) = Entering external exchanger air temperature.

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

D.B. = Dry bulb

W.B. = Wet bulb

Performances

Heating at part load - SC

SIZE	Load %	Entering external exchanger air temperature (°C)																	
		-7/-8			-5/-6			0/-1			2/1			7/6			12/11		
		kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP
220.2	100	359	151	2,37	377	153	2,46	425	157	2,70	447	159	2,81	503	162	3,11	566	164	3,44
	75	264	107	2,46	278	109	2,55	315	112	2,82	332	113	2,95	377	115	3,28	425	116	3,67
	50	176	71,3	2,46	185	72,3	2,55	209	74,3	2,82	221	74,9	2,95	250	75,9	3,30	283	75,8	3,73
	25	87,9	35,7	2,46	92,3	36,1	2,55	105	37,1	2,82	110	37,5	2,95	125	37,9	3,30	141	37,9	3,73
240.2	100	363	153	2,37	381	155	2,46	429	159	2,70	451	160	2,82	508	164	3,11	572	166	3,44
	75	267	109	2,46	281	110	2,55	319	113	2,82	336	114	2,95	381	116	3,28	430	117	3,67
	50	179	72,4	2,47	188	73,4	2,56	213	75,5	2,82	224	76,1	2,95	255	77,1	3,30	288	77,0	3,73
	25	89,3	36,2	2,47	93,9	36,7	2,56	106	37,7	2,82	112	38,1	2,95	127	38,5	3,30	144	38,5	3,73
260.2	100	383	157	2,44	402	159	2,53	453	163	2,79	476	164	2,90	537	167	3,22	605	169	3,58
	75	282	112	2,51	297	114	2,62	337	116	2,90	356	117	3,03	403	119	3,39	454	120	3,80
	50	188	74,8	2,52	198	75,7	2,61	224	77,6	2,89	237	78,2	3,03	269	79,0	3,40	304	78,7	3,86
	25	94,2	37,4	2,52	98,9	37,9	2,61	112	38,8	2,89	118	39,1	3,03	134	39,5	3,40	152	39,3	3,86
280.2	100	455	191	2,38	477	193	2,47	534	197	2,71	561	199	2,82	631	203	3,11	710	206	3,44
	75	334	134	2,50	352	135	2,60	398	138	2,88	419	139	3,01	474	142	3,34	535	143	3,74
	50	221	86,3	2,56	232	87,3	2,66	263	89,4	2,94	278	90,1	3,08	316	91,1	3,46	357	91,1	3,92
	25	110	43,1	2,56	116	43,6	2,66	132	44,7	2,94	139	45,1	3,08	158	45,6	3,46	178	45,5	3,92
320.2	100	501	215	2,33	526	217	2,43	588	221	2,66	618	223	2,77	697	227	3,07	618	223	2,77
	75	373	154	2,43	392	155	2,52	441	158	2,78	465	160	2,91	523	161	3,24	465	160	2,91
	50	247	99,1	2,50	259	100	2,59	293	102	2,87	308	103	3,01	348	103	3,38	308	103	3,01
	25	124	49,5	2,50	130	50,1	2,59	146	51,0	2,87	154	51,3	3,01	174	51,4	3,38	154	51,3	3,01
340.2	100	557	236	2,36	584	238	2,45	655	243	2,69	688	245	2,81	776	250	3,10	875	256	3,42
	75	416	170	2,45	436	171	2,55	491	174	2,81	517	176	2,94	582	178	3,27	657	180	3,64
	50	276	109	2,53	289	110	2,62	326	112	2,90	343	113	3,04	388	113	3,42	437	113	3,87
	25	138	54,5	2,53	145	55,1	2,62	163	56,2	2,90	172	56,4	3,04	194	56,7	3,42	219	56,5	3,87
420.2	100	642	274	2,34	684	279	2,45	761	286	2,66	801	289	2,77	907	297	3,05	1025	306	3,35
	75	480	186	2,58	505	188	2,69	572	192	2,97	601	194	3,10	680	198	3,44	768	202	3,81
	50	325	121	2,69	340	122	2,80	382	123	3,10	402	124	3,25	453	124	3,65	510	124	4,10
	25	163	60,5	2,69	170	60,8	2,80	191	61,6	3,10	201	61,8	3,25	227	62,2	3,65	255	62,2	4,10

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

kWt = heating capacity in kW

kWe_tot = unit total power input in kW

Hot side exchanger water temperature = entering 40°C / leaving 45°C / variable flow-rate with external exchanger air temperature.

Heating at part load - LN

SIZE.	Load %	Entering external exchanger air temperature (°C)																	
		-7/-8			-5/-6			0/-1			2/1			7/6			12/11		
		kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP
220.2	100	356	147	2,42	374	149	2,51	421	153	2,76	443	154	2,87	499	158	3,17	561	160	3,50
	75	262	107	2,46	276	108	2,55	313	111	2,82	330	112	2,95	374	114	3,28	422	115	3,67
	50	175	71,2	2,46	184	72,1	2,55	209	74,1	2,81	220	74,8	2,94	250	75,7	3,30	282	75,6	3,73
	25	87,6	35,6	2,46	92,1	36,1	2,55	104	37,1	2,81	110	37,4	2,94	125	37,9	3,30	141	37,8	3,73
240.2	100	360	149	2,42	378	150	2,51	426	154	2,76	448	156	2,87	504	159	3,17	567	162	3,50
	75	265	108	2,46	279	109	2,55	316	112	2,82	334	113	2,95	378	115	3,28	427	116	3,67
	50	177	71,9	2,46	186	72,9	2,55	211	74,9	2,81	222	75,6	2,94	252	76,5	3,30	285	76,4	3,73
	25	88,5	36,0	2,46	93,0	36,4	2,55	105	37,5	2,81	111	37,8	2,94	126	38,3	3,30	142	38,2	3,73
260.2	100	380	152	2,50	399	154	2,59	450	157	2,85	472	159	2,97	533	162	3,30	600	164	3,66
	75	280	111	2,51	295	113	2,62	334	115	2,90	353	116	3,03	400	118	3,39	451	119	3,80
	50	187	74,3	2,52	196	75,3	2,61	223	77,1	2,89	235	77,7	3,02	267	78,5	3,40	301	78,2	3,85
	25	93,5	37,2	2,52	98,2	37,6	2,61	111	38,6	2,89	117	38,9	3,02	133	39,2	3,40	151	39,1	3,85
280.2	100	451	185	2,44	473	187	2,53	530	191	2,77	557	193	2,88	627	197	3,18	704	200	3,51
	75	331	132	2,50	348	134	2,60	394	137	2,88	416	138	3,01	470	140	3,35	530	142	3,74
	50	219	85,7	2,56	230	86,7	2,65	261	88,8	2,94	276	89,5	3,08	313	90,4	3,46	354	90,4	3,91
	25	110	42,8	2,56	115	43,3	2,65	131	44,4	2,94	138	44,7	3,08	156	45,2	3,46	177	45,2	3,91
320.2	100	497	208	2,39	521	210	2,48	584	214	2,72	613	216	2,84	691	220	3,14	613	216	2,84
	75	370	153	2,42	389	154	2,52	438	157	2,78	461	158	2,91	519	160	3,24	461	158	2,91
	50	245	98,4	2,50	257	99,4	2,59	290	101	2,87	306	102	3,00	345	102	3,38	306	102	3,00
	25	123	49,2	2,50	129	49,7	2,59	145	50,7	2,87	153	50,9	3,00	173	51,0	3,38	153	50,9	3,00
340.2	100	553	229	2,42	580	231	2,51	650	236	2,75	682	238	2,86	769	243	3,16	867	249	3,49
	75	412	168	2,45	432	170	2,55	487	173	2,81	512	174	2,94	577	177	3,27	651	178	3,65
	50	273	108	2,53	287	109	2,62	323	111	2,90	341	112	3,04	385	113	3,42	434	112	3,87
	25	137	54,1	2,53	144	54,7	2,62	162	55,7	2,90	170	56,0	3,04	192	56,3	3,42	217	56,1	3,87
420.2	100	604	245	2,46	637	249	2,56	1079	399	2,70	755	259	2,92	854	266	3,21	965	274	3,53
	75	452	174	2,59	476	176	2,71	539	180	3,00	569	181	3,14	640	184	3,47	723	187	3,86
	50	308	115	2,67	322	116	2,78	361	117	3,08	379	117	3,23	427	118	3,63	480	117	4,09
	25	154	57,7	2,67	161	57,9	2,78	180	58,5	3,08	189	58,7	3,23	213	58,8	3,63	240	58,7	4,09

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

kWt = heating capacity in kW

kWe_tot = unit total power input in kW

Hot side exchanger water temperature = entering 40°C / leaving 45°C / variable flow-rate with external exchanger air temperature.

Performances

Heating at part load - EN

SIZE	Load %	Entering external exchanger air temperature (°C)																	
		-7/-8			-5/-6			0/-1			2/1			7/6			12/11		
		kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP	kWt	kWe	COP
220.2	100	314	127	2,48	330	128	2,57	373	132	2,83	392	133	2,95	443	136	3,26	499	138	3,62
	75	232	95,6	2,43	244	96,8	2,53	277	99,4	2,79	293	100	2,92	333	102	3,27	376	102	3,67
	50	160	67,9	2,35	167	68,8	2,43	189	70,6	2,67	199	71,2	2,80	225	71,9	3,13	253	71,7	3,54
	25	79,8	35,5	2,24	83,7	36,0	2,33	94,4	36,9	2,56	99,5	37,2	2,68	113	37,5	3,00	127	37,4	3,39
240.2	100	339	137	2,47	356	139	2,56	401	143	2,81	422	144	2,92	476	148	3,22	535	150	3,57
	75	249	102	2,44	263	103	2,54	298	106	2,80	314	107	2,93	357	109	3,27	403	110	3,66
	50	170	71,5	2,38	179	72,4	2,47	202	74,4	2,72	213	75,0	2,84	241	75,9	3,18	272	75,8	3,59
	25	85,2	37,3	2,28	89,3	37,8	2,36	101	38,8	2,61	107	39,1	2,73	121	39,5	3,05	136	39,5	3,45
260.2	100	365	143	2,55	384	145	2,65	433	149	2,91	455	150	3,03	513	153	3,36	578	155	3,74
	75	269	108	2,50	284	109	2,60	322	112	2,88	339	113	3,02	385	114	3,37	434	115	3,79
	50	184	75,9	2,43	193	76,8	2,52	218	78,6	2,78	230	79,2	2,91	261	79,9	3,26	294	79,6	3,69
	25	92,1	39,8	2,31	96,6	40,3	2,40	109	41,2	2,65	115	41,5	2,77	130	41,9	3,11	147	41,7	3,53
280.2	100	408	162	2,51	428	164	2,61	482	168	2,86	505	170	2,97	570	173	3,29	641	176	3,65
	75	300	121	2,49	316	122	2,59	358	125	2,87	378	126	3,00	427	128	3,34	483	129	3,75
	50	204	83,5	2,45	214	84,4	2,54	242	86,4	2,80	256	87,0	2,94	289	87,9	3,30	327	87,7	3,73
	25	102	44,0	2,32	107	44,4	2,41	121	45,4	2,67	128	45,7	2,79	145	46,1	3,14	163	46,0	3,55
320.2	100	457	187	2,44	479	189	2,54	537	193	2,79	564	194	2,90	636	198	3,21	714	199	3,55
	75	340	141	2,41	357	143	2,51	403	145	2,77	424	146	2,9	477	148	3,23	534	149	3,57
	50	227	92,1	2,46	243	97,3	2,49	273	99,1	2,75	287	99,5	2,88	323	99,7	3,24	361	100	3,61
	25	113	48,6	2,33	121	51,2	2,37	136	52,1	2,62	143	52,3	2,74	162	52,4	3,09	181	52,5	3,40
340.2	100	530	216	2,46	555	218	2,55	622	222	2,80	653	224	2,91	736	229	3,21	830	234	3,55
	75	395	161	2,44	413	163	2,54	465	166	2,8	490	167	2,93	553	169	3,26	623	171	3,65
	50	267	109	2,45	280	110	2,54	315	112	2,81	331	113	2,94	374	113	3,30	421	113	3,74
	25	134	57,0	2,34	140	57,6	2,43	157	58,6	2,69	166	58,9	2,81	187	59,1	3,16	211	58,8	3,58
420.2	100	572	227	2,52	602	230	2,62	678	236	2,87	714	239	2,99	808	246	3,29	912	252	3,62
	75	428	165	2,59	451	167	2,70	510	170	3,00	537	171	3,14	606	174	3,48	684	176	3,88
	50	298	115	2,58	311	116	2,68	347	117	2,97	365	117	3,11	410	117	3,49	460	117	3,93
	25	149	60,2	2,47	156	60,5	2,57	174	61,0	2,85	182	61,2	2,98	205	61,3	3,35	230	61,1	3,77

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

kWt = heating capacity in kW

kWe_tot = unit total power input in kW

Hot side exchanger water temperature = entering 40°C / leaving 45°C / variable flow-rate with external exchanger air temperature.

Cooling 100% - Heating 100% - SC

		Hot side exchanger outlet water temperature (°C)																							
Gr.	To_c (°C)	35				40				45				50				55				60			
		kWf	kWe	kWt	TER	kWf	kWe	kWt	TER	kWf	kWe	kWt	TER	kWf	kWe	kWt	TER	kWf	kWe	kWt	TER	kWf	kWe	kWt	TER
220.2	5	534	126	647	9,39	512	140	639	8,21	489	157	632	7,15	463	176	626	6,19	438	196	622	5,40	412	219	618	4,71
	6	549	126	661	9,61	527	141	654	8,40	503	157	647	7,31	477	177	640	6,33	452	197	636	5,52	425	220	632	4,82
	7	570	126	683	9,92	547	141	675	8,67	523	158	667	7,54	496	177	660	6,52	470	198	655	5,69	443	221	651	4,96
	10	625	127	737	10,7	601	142	728	9,35	575	159	719	8,13	547	179	711	7,04	519	200	705	6,13	491	223	700	5,34
	15	720	128	831	12,2	693	143	819	10,5	664	161	809	9,16	635	180	799	7,96	605	202	791	6,91	-	-	-	-
	18	798	128	907	13,3	769	144	894	11,6	739	162	883	10,0	708	181	872	8,71	508	144	639	7,95	-	-	-	-
240.2	5	557	130	674	9,45	534	145	666	8,25	509	163	658	7,18	482	182	651	6,21	455	203	645	5,42	428	226	641	4,73
	6	573	131	689	9,67	549	146	681	8,44	524	163	673	7,34	496	183	666	6,35	469	204	660	5,54	441	227	655	4,83
	7	595	131	712	9,98	571	146	703	8,71	544	164	694	7,57	516	184	686	6,55	489	205	680	5,71	460	228	674	4,98
	10	653	132	769	10,8	626	148	758	9,38	598	165	748	8,15	569	185	739	7,07	539	207	731	6,14	510	230	725	5,36
	15	752	133	867	12,2	722	149	854	10,6	692	167	842	9,17	660	187	831	7,96	628	209	821	6,92	-	-	-	-
	18	832	133	946	13,3	801	150	932	11,6	769	168	918	10,0	736	189	906	8,71	527	148	662	8,02	-	-	-	-
260.2	5	588	133	706	9,72	562	149	697	8,43	535	167	688	7,32	508	187	681	6,37	480	208	675	5,54	451	232	670	4,83
	6	604	134	723	9,94	578	150	713	8,62	551	168	704	7,49	523	187	696	6,51	494	209	689	5,66	465	233	684	4,94
	7	629	134	747	10,3	602	150	737	8,91	575	168	728	7,75	546	188	719	6,72	516	210	712	5,85	487	234	706	5,10
	10	686	135	804	11,1	658	151	793	9,60	628	169	782	8,33	597	190	771	7,21	567	212	763	6,28	535	236	756	5,47
	15	792	135	909	12,6	762	152	895	10,9	729	171	882	9,43	697	191	870	8,20	663	214	859	7,13	-	-	-	-
	18	866	136	982	13,6	834	153	967	11,8	799	172	952	10,2	765	192	938	8,86	547	151	684	8,14	-	-	-	-
280.2	5	653	147	784	9,76	622	165	772	8,43	592	185	761	7,32	558	207	750	6,32	526	231	741	5,50	493	256	734	4,79
	6	671	148	802	9,97	640	166	790	8,62	608	185	778	7,48	575	208	767	6,45	542	231	758	5,61	508	257	750	4,89
	7	698	148	829	10,3	667	166	816	8,92	634	186	804	7,71	600	209	792	6,66	566	233	782	5,80	531	259	774	5,05
	10	762	149	893	11,1	729	167	879	9,61	693	188	864	8,26	657	210	851	7,16	621	235	838	6,21	584	261	828	5,41
	15	881	151	1011	12,5	844	170	994	10,8	806	191	977	9,34	767	213	961	8,10	727	238	946	7,03	-	-	-	-
	18	961	152	1091	13,5	922	171	1072	11,7	883	192	1053	10,1	841	215	1034	8,74	599	169	752	8,00	-	-	-	-
320.2	5	737	176	895	9,25	706	194	882	8,19	671	214	867	7,18	637	235	854	6,35	600	257	840	5,60	563	281	827	4,95
	6	755	177	914	9,43	724	195	900	8,34	688	215	885	7,32	654	236	872	6,47	617	258	857	5,71	579	282	844	5,04
	7	787	178	946	9,73	755	196	932	8,60	718	216	916	7,55	682	237	901	6,67	644	260	886	5,89	605	284	871	5,20
	10	861	181	1022	10,4	827	199	1006	9,20	789	220	988	8,09	750	241	971	7,14	710	263	954	6,31	668	288	937	5,58
	15	981	186	1144	11,4	943	204	1125	10,1	903	224	1104	8,94	860	246	1084	7,90	817	269	1064	7,00	-	-	-	-
	18	1090	190	1254	12,3	1050	209	1233	10,9	1008	229	1212	9,71	964	250	1190	8,60	690	188	861	8,23	-	-	-	-
340.2	5	816	196	991	9,23	780	216	976	8,14	740	238	959	7,14	700	261	942	6,30	659	285	925	5,55	616	312	909	4,90
	6	836	197	1012	9,40	799	216	995	8,29	759	239	979	7,27	719	262	961	6,41	677	287	944	5,65	633	313	927	4,99
	7	871	198	1048	9,67	833	218	1031	8,53	792	241	1012	7,49	750	264	994	6,60	707	289	976	5,82	662	315	958	5,14
	10	953	202	1132	10,3	913	223	1113	9,09	869	245	1092	8,00	823	269	1071	7,04	778	294	1050	6,22	730	320	1029	5,50
	15	1085	209	1268	11,2	1040	230	1244	9,92	993	252	1220	8,77	943	276	1195	7,74	894	301	1171	6,86	-	-	-	-
	18	1203	216	1390	12,0	1156	236	1364	10,7	1105	259	1337	9,43	1055	283	1311	8,37	702	206	889	7,74	-	-	-	-
420.2	5	997	250	1223	8,87	962	272	1209	7,98	923	297	1195	7,14	883	322	1181	6,40	841	350	1168	5,73	798	380	1154	5,14
	6	1027	252	1253	9,04	991	274	1239	8,14	951	298	1225	7,29	911	324	1210	6,54	867	352	1195	5,85	824	382	1182	5,25
	7	1067	255	1296	9,28	1030	277	1281	8,36	990	301	1265	7,50	948	327	1250	6,72	904	355	1234	6,02	860	385	1219	5,41
	10	1171	261	1403	9,86	1132	283	1386	8,90	1090	307	1369	8,01	1045	333	1351	7,18	999	361	1333	6,45	951	391	1315	5,79
	15	1321	270	1560	10,7	1281	292	1541	9,67	1237	316	1521	8,73	1189	342	1500	7,86	1139	370	1480	7,07	-	-	-	-
	18	1474	280	1719	11,4	1431	301	1697	10,4	1382	325	1673	9,41	1332	351	1649	8,50	959	253	1188	8,47	-	-	-	-

kWf = Cold side exchanger cooling capacity (kW).

kWt = Hot side exchanger heating capacity (kW).

kWe = Compressor power input in kW

TER = (Cooling capacity + Heating capacity) / Total power input

To_c = Cold side exchanger outlet water temperature

The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers.

 Performances at part load

Performances

Cooling 100% - Heating 100% - LN

Gr.	To_c (°C)	Hot side exchanger outlet water temperature (°C)																							
		35				40				45				50				55				60			
		kWf	kWe	kWt	TER	kWf	kWe	kWt	TER	kWf	kWe	kWt	TER	kWf	kWe	kWt	TER	kWf	kWe	kWt	TER	kWf	kWe	kWt	TER
220.2	5	522	121	631	9,51	501	135	624	8,31	478	151	617	7,24	454	170	611	6,27	430	190	607	5,47	405	212	604	4,77
	6	537	121	645	9,73	515	136	638	8,50	492	152	631	7,40	467	171	625	6,41	443	190	621	5,59	418	212	617	4,87
	7	558	122	666	10,0	536	136	658	8,78	512	152	651	7,64	486	171	645	6,61	461	191	640	5,76	435	213	636	5,02
	10	611	122	719	10,9	588	137	710	9,49	563	153	702	8,24	536	173	694	7,13	510	193	688	6,21	482	216	684	5,41
	15	705	123	811	12,3	678	138	800	10,7	651	155	790	9,30	623	174	781	8,09	594	195	773	7,01	-	-	-	-
	18	781	123	886	13,6	753	138	873	11,7	725	155	862	10,2	695	175	852	8,86	498	140	625	8,02	-	-	-	-
240.2	5	537	124	648	9,52	514	139	640	8,31	491	155	633	7,24	465	174	627	6,27	440	194	622	5,47	414	217	618	4,77
	6	552	125	663	9,74	529	139	655	8,51	505	156	648	7,40	479	175	641	6,41	454	195	636	5,59	427	217	632	4,87
	7	573	125	684	10,0	550	140	676	8,78	525	156	668	7,63	499	176	661	6,60	473	196	655	5,76	446	218	651	5,02
	10	628	126	739	10,9	603	141	729	9,47	577	158	720	8,23	549	177	712	7,13	522	198	705	6,20	493	221	700	5,41
	15	676	126	786	11,6	696	142	821	10,7	667	159	810	9,28	638	178	800	8,06	608	200	792	6,99	-	-	-	-
	18	802	127	910	13,5	772	142	896	11,7	743	160	885	10,2	712	180	873	8,82	511	144	641	8,01	-	-	-	-
260.2	5	581	130	697	9,81	556	146	688	8,51	530	164	679	7,39	503	183	672	6,43	476	204	666	5,59	448	227	661	4,88
	6	597	131	713	10,03	572	146	704	8,71	545	164	695	7,56	518	183	687	6,58	490	205	681	5,72	462	228	676	4,99
	7	622	131	738	10,4	595	147	728	9,00	569	164	718	7,83	540	184	710	6,79	512	206	703	5,91	483	229	698	5,15
	10	678	132	794	11,2	650	148	782	9,69	622	165	772	8,43	592	186	762	7,28	565	208	758	6,36	531	231	747	5,53
	15	790	132	904	12,8	759	149	890	11,1	728	167	877	9,61	695	187	865	8,34	656	212	850	7,12	-	-	-	-
	18	857	133	970	13,7	825	149	955	11,9	791	168	940	10,3	758	188	927	8,97	542	150	679	8,11	-	-	-	-
280.2	5	645	147	777	9,66	615	165	765	8,35	585	185	754	7,24	552	207	744	6,26	520	231	736	5,45	487	256	728	4,74
	6	663	148	795	9,87	633	166	783	8,54	602	185	771	7,40	568	208	761	6,39	536	231	752	5,56	502	257	744	4,85
	7	690	148	822	10,2	659	166	809	8,83	627	186	797	7,64	593	209	786	6,60	559	233	776	5,74	525	259	768	5,00
	10	754	149	885	11,0	721	167	871	9,51	685	188	856	8,18	650	210	843	7,10	614	235	832	6,16	577	261	822	5,36
	15	877	151	1007	12,5	841	170	990	10,8	803	190	973	9,32	764	213	957	8,08	709	239	929	6,85	-	-	-	-
	18	951	152	1081	13,3	912	171	1062	11,5	873	192	1043	10,0	832	215	1025	8,65	592	172	748	7,81	-	-	-	-
320.2	5	729	174	885	9,28	699	192	873	8,19	665	212	859	7,19	631	232	846	6,37	595	254	832	5,62	558	278	819	4,95
	6	748	175	905	9,44	717	193	892	8,34	682	213	877	7,32	648	233	863	6,49	611	255	849	5,72	574	279	836	5,05
	7	779	176	936	9,74	747	194	922	8,60	712	214	907	7,57	676	235	893	6,68	639	257	878	5,90	600	281	863	5,21
	10	853	179	1011	10,4	819	197	996	9,21	781	217	978	8,11	743	238	961	7,16	703	260	944	6,33	663	284	928	5,60
	15	972	183	1132	11,5	935	202	1114	10,1	894	222	1094	8,95	852	243	1073	7,92	810	265	1054	7,03	-	-	-	-
	18	1081	188	1244	12,4	1040	206	1221	11,0	999	226	1201	9,73	955	247	1178	8,64	683	186	852	8,24	-	-	-	-
340.2	5	803	195	978	9,13	768	214	962	8,09	730	237	948	7,08	691	259	931	6,26	650	284	915	5,51	608	310	900	4,87
	6	824	196	1000	9,30	788	215	983	8,24	749	238	967	7,21	709	261	951	6,36	668	285	934	5,62	625	311	918	4,96
	7	858	197	1034	9,60	821	217	1017	8,47	781	239	1000	7,45	740	263	983	6,55	697	287	964	5,79	654	313	948	5,11
	10	938	201	1116	10,2	899	221	1098	9,03	857	244	1079	7,93	812	267	1057	7,00	768	292	1039	6,19	721	318	1018	5,47
	15	1069	207	1250	11,2	1025	228	1228	9,88	979	250	1204	8,73	931	274	1181	7,71	883	299	1158	6,83	-	-	-	-
	18	1186	214	1372	12,0	1139	234	1346	10,6	1091	257	1321	9,39	1041	280	1295	8,34	743	211	935	7,94	-	-	-	-
420.2	5	943	227	1147	9,19	910	248	1134	8,25	874	270	1121	7,39	836	294	1108	6,60	797	320	1095	5,90	756	348	1082	5,28
	6	970	229	1175	9,37	937	249	1162	8,43	900	272	1148	7,54	862	296	1134	6,74	822	322	1121	6,03	780	350	1108	5,40
	7	1008	231	1214	9,63	974	251	1201	8,67	937	274	1186	7,75	897	298	1171	6,94	856	324	1157	6,21	814	352	1143	5,56
	10	1106	236	1315	10,3	1069	256	1299	9,24	1029	279	1282	8,29	988	303	1265	7,43	944	330	1248	6,65	900	357	1232	5,96
	15	1247	243	1460	11,1	1209	263	1442	10,1	1167	286	1424	9,07	1123	310	1404	8,14	1077	337	1385	7,31	-	-	-	-
	18	1388	250	1606	12,0	1348	270	1586	10,9	1303	292	1564	9,81	1256	317	1541	8,83	904	232	1114	8,68	-	-	-	-

kWf = Cold side exchanger cooling capacity (kW).

kWt = Hot side exchanger heating capacity (kW).

kWe = Compressor power input in kW

TER = (Cooling capacity + Heating capacity) / Total power input

To_c = Cold side exchanger outlet water temperature

The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers.

 Performances at part load

Cooling 100% - Heating 100% - EN

		Hot side exchanger outlet water temperature (°C)																							
Gr.	Tw (°C)	35				40				45				50				55				60			
		kWf	kWe	kWt	TER	kWf	kWe	kWt	TER	kWf	kWe	kWt	TER	kWf	kWe	kWt	TER	kWf	kWe	kWt	TER	kWf	kWe	kWt	TER
220.2	5	457	105	550	9,61	439	117	545	8,39	420	131	540	7,31	399	148	537	6,32	379	166	534	5,50	358	186	533	4,78
	6	470	105	563	9,85	451	117	557	8,59	433	132	553	7,48	412	149	549	6,46	391	167	546	5,63	369	187	545	4,89
	7	488	105	581	10,2	469	118	575	8,88	450	132	570	7,72	428	149	566	6,67	407	167	563	5,80	385	188	561	5,04
	10	534	105	627	11,0	515	118	620	9,63	495	133	615	8,36	472	150	610	7,21	450	168	606	6,27	427	189	604	5,44
	15	616	105	706	12,6	595	118	699	11,0	573	133	692	9,50	549	151	685	8,19	525	170	681	7,11	-	-	-	-
	18	684	105	773	13,9	662	118	764	12,1	639	133	756	10,5	614	150	749	9,07	-	-	-	-	-	-	-	-
240.2	5	505	116	608	9,62	485	129	601	8,41	463	144	595	7,33	440	162	590	6,34	417	181	586	5,53	393	203	583	4,81
	6	519	116	622	9,85	498	129	615	8,61	477	145	609	7,49	453	163	603	6,48	429	182	599	5,65	405	203	596	4,92
	7	539	116	642	10,2	518	130	635	8,89	496	145	628	7,73	471	164	622	6,69	447	183	618	5,83	422	204	614	5,07
	10	591	117	693	11,0	569	130	685	9,62	545	146	677	8,35	519	165	670	7,22	494	184	665	6,28	468	206	661	5,47
	15	681	117	782	12,5	656	131	772	10,9	630	147	762	9,44	604	166	754	8,19	576	186	747	7,10	-	-	-	-
	18	755	117	855	13,8	729	132	843	11,9	702	148	833	10,4	674	166	824	9,01	648	186	816	8,08	-	-	-	-
260.2	5	548	123	658	9,78	525	138	650	8,51	501	155	642	7,39	476	173	636	6,43	451	193	631	5,60	425	215	628	4,89
	6	563	123	673	10,0	540	138	664	8,70	515	155	657	7,56	490	173	650	6,58	465	194	645	5,72	438	216	641	5,00
	7	586	124	696	10,4	562	139	687	9,01	538	155	679	7,83	512	174	672	6,81	486	195	667	5,92	459	217	662	5,16
	10	639	124	748	11,2	614	139	738	9,70	588	156	729	8,43	560	175	721	7,31	533	196	714	6,36	504	219	709	5,54
	15	738	125	846	12,7	712	140	834	11,1	683	157	823	9,59	655	177	815	8,32	625	198	806	7,24	-	-	-	-
	18	808	125	914	13,8	779	140	901	12,0	748	158	888	10,4	718	177	877	9,01	694	198	874	8,09	-	-	-	-
280.2	5	611	139	735	9,70	584	156	725	8,40	556	174	716	7,30	526	195	707	6,33	497	217	700	5,51	466	242	694	4,80
	6	628	139	752	9,92	600	156	741	8,59	572	175	732	7,46	542	196	723	6,47	512	218	715	5,63	481	242	709	4,91
	7	654	140	778	10,2	625	157	767	8,88	596	175	756	7,72	565	197	746	6,67	534	219	738	5,81	503	244	732	5,07
	10	714	141	837	11,0	684	158	825	9,57	652	177	812	8,28	619	198	801	7,17	586	221	791	6,23	553	246	783	5,43
	15	824	141	947	12,5	792	159	931	10,9	757	179	917	9,36	723	200	905	8,13	687	224	892	7,07	-	-	-	-
	18	901	143	1023	13,5	866	160	1006	11,7	830	180	989	10,1	793	201	974	8,78	756	224	980	7,88	-	-	-	-
320.2	5	693	168	844	9,13	664	185	833	8,08	632	205	820	7,09	600	225	808	6,27	566	246	796	5,54	532	269	785	4,90
	6	711	169	862	9,30	682	186	850	8,24	649	206	837	7,23	616	225	825	6,40	582	247	812	5,65	547	270	801	4,99
	7	740	170	892	9,60	711	187	880	8,50	677	207	866	7,46	644	227	853	6,60	608	248	840	5,83	572	272	827	5,15
	10	811	173	963	10,3	779	190	949	9,10	743	210	934	8,00	707	230	918	7,08	670	252	903	6,26	632	275	888	5,53
	15	924	176	1078	11,3	889	194	1061	10,0	851	214	1043	8,87	811	234	1025	7,84	772	256	1007	6,95	-	-	-	-
	18	1028	180	1184	12,3	990	198	1164	10,9	952	217	1145	9,66	910	238	1125	8,56	852	256	1107	8,11	-	-	-	-
340.2	5	777	188	945	9,16	743	207	931	8,09	706	228	915	7,10	669	250	901	6,27	629	274	885	5,53	589	299	871	4,88
	6	796	189	965	9,33	762	208	950	8,24	724	229	934	7,23	686	251	919	6,38	647	275	903	5,63	606	300	888	4,97
	7	829	190	999	9,61	794	209	984	8,49	755	231	967	7,45	716	253	950	6,58	675	277	934	5,81	634	302	917	5,13
	10	908	194	1080	10,3	870	213	1062	9,06	829	235	1042	7,97	786	258	1023	7,02	743	281	1004	6,21	699	307	986	5,49
	15	1034	200	1209	11,2	991	220	1187	9,91	948	241	1165	8,77	902	264	1142	7,74	855	288	1120	6,86	-	-	-	-
	18	1147	205	1325	12,0	1102	225	1301	10,7	1057	247	1277	9,46	1009	270	1253	8,39	920	288	1207	7,94	-	-	-	-
420.2	5	881	205	1064	9,48	850	224	1053	8,50	818	244	1041	7,61	782	267	1028	6,77	746	291	1016	6,04	707	318	1005	5,39
	6	907	206	1091	9,68	876	225	1078	8,69	842	245	1066	7,77	806	269	1053	6,92	769	293	1040	6,18	730	319	1028	5,51
	7	942	208	1127	9,96	910	227	1114	8,94	876	247	1101	8,00	839	270	1087	7,12	801	295	1073	6,36	761	321	1060	5,68
	10	1032	212	1219	10,6	999	230	1204	9,56	962	251	1189	8,55	923	274	1173	7,64	882	299	1157	6,82	840	325	1142	6,10
	15	1164	217	1354	11,6	1128	236	1337	10,4	1090	257	1320	9,38	1048	280	1301	8,40	1005	304	1283	7,52	-	-	-	-
	18	1294	222	1486	12,5	1255	241	1467	11,3	1214	262	1446	10,17	1170	285	1425	9,12	1114	304	1407	8,72	-	-	-	-

kWf = Cold side exchanger cooling capacity (kW).

kWt = Hot side exchanger heating capacity (kW).

kWe = Compressor power input in kW

TER = (Cooling capacity + Heating capacity) / Total power input

To_c = Cold side exchanger outlet water temperature

The data do not consider the part related to the pumps, required to overcome the pressure drop for the solution circulation inside the exchangers.

 Performances at part load

Arrangement of hydronic groups

The hydronic assemblies are supplied as an built-in options.
Compared to the standard unit, the length of the complete hydronic assembly varies according to the following indications.

⚠ If the hydronic units assemblies on the unit are selected, they are supplied with acoustic casing

Size 220.2 - 240.2:



SIZE - EXCELLENCE		220.2	240.2
Standard length	[mm]	7756	7756
Length with hydronic assembly option	[mm]	8751	8751

Size 260.2 ÷ 420.2:



SIZE - EXCELLENCE		260.2	280.2	320.2	340.2	420.2
Standard length	[mm]	8725	9700	10680	10680	10755
Length with hydronic assembly option	[mm]	8725	9700	10680	10680	10755

1+1PMCS - HYDROPACK COOLIG SIDE WITH 1+1 ON-OFF PUMP

Pumping unit made up of N°1+1 electric pump, (1 in stand by), with the pump body made of cast iron and the impeller made of INOX or cast iron (depending on the models).

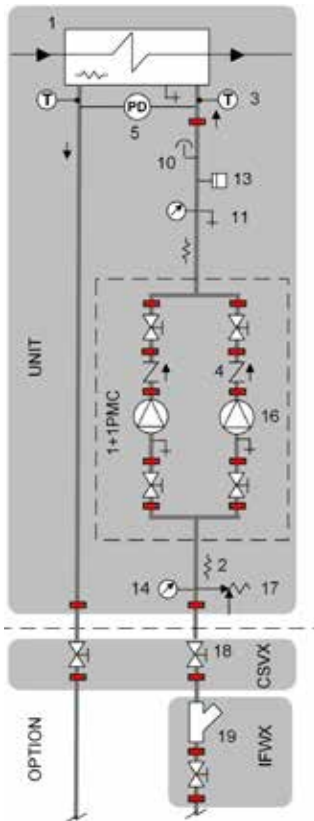
Mechanical seal using ceramic, carbon and EPDM elastomer components.

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

All water fittings are Victaulic.

Option supplied built-in the unit, completed with acoustic casing.

CONNECTION DIAGRAM



1. Exchanger
2. Antifreeze heater
3. Water temperature probe
4. Non-return valve
5. Differential pressure switch
10. Vent
11. Drain
13. System load safety pressure switch
14. Pressure gauge
16. Packaged electric pump with high efficiency impeller
17. Safety valve
18. Shut-off valve
19. Filter

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.

⚠ The head and absorption graphs of the hydronic assembly refer to operation with pure water. In the presence of a mixture of water and glycol, please contact Clivet office to check the correct operating point of the hydronic assembly.

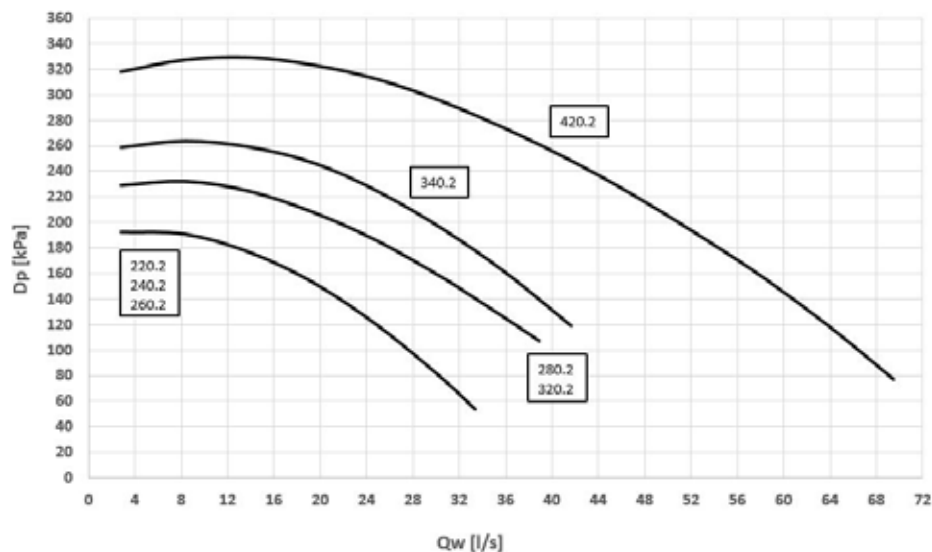
Electrical data

PUMP	Rated power [kW]	Nominal Current [A]
1+1PMCS 220.2 ÷ 260.2	5,5	11,99
1+1PMCS 280.0 ÷ 320.2	7,5	15,48
1+1PMCS 340.2	11,0	22,89
1+1PMCS 420.2	18,5	36,52

Accessories - Hydronic assembly

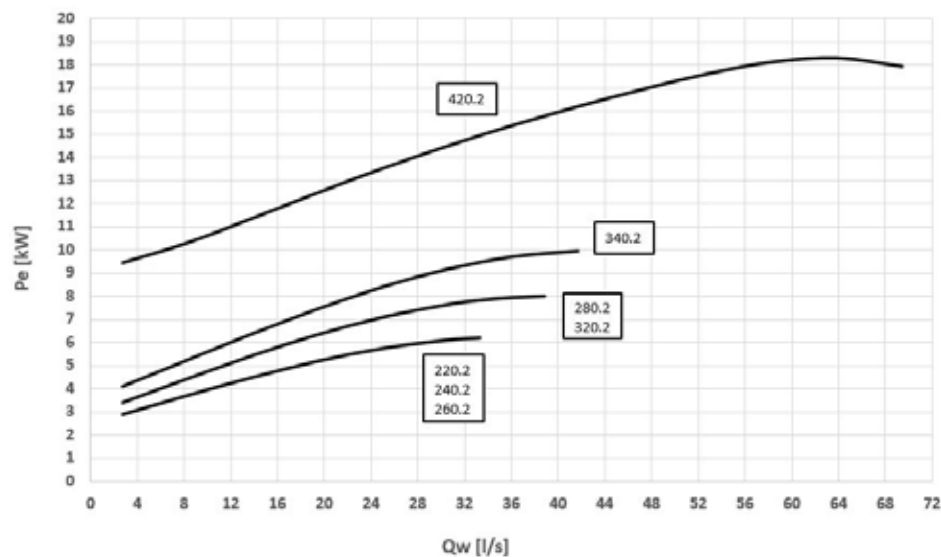
1+1PMCS - HYDROPACK COOLING SIDE WITH 1+1 ON-OFF PUMP

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)

1+1PMCSV - HYDROPACK COOLING SIDE WITH 1+1 INVERTER PUMP

Pumping unit made up of 1+1 electric pump (1 in stand by) 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).

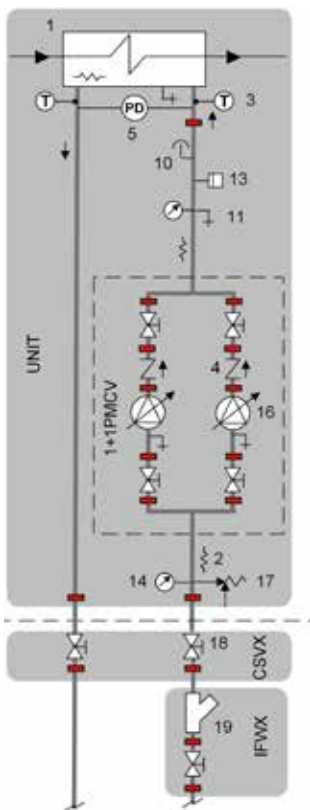
Mechanical seal using ceramic, carbon and EPDM elastomer components.

Three-phase electric motor with IP55-protection. Complete with thermoformed insulated casing, fast fittings with insulated casing, no-return valve, safety valve, pressure gauges, system load safety pressure switch, stainless steel anti-freeze immersion resistances located at the intake and at the supply point.

All water fittings are Victaulic.

Option supplied built-in the unit, completed with acoustic casing.

CONNECTION DIAGRAM



1. Exchanger
2. Antifreeze heater
3. Water temperature probe
4. Non-return valve
5. Differential pressure switch
10. Vent
11. Drain
13. System load safety pressure switch
14. Pressure gauge
16. Packaged electric pump with high efficiency impeller
17. Safety valve
18. Shut-off valve
19. Filter

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.

⚠ The head and absorption graphs of the hydronic assembly refer to operation with pure water. In the presence of a mixture of water and glycol, please contact Clivet office to check the correct operating point of the hydronic assembly.

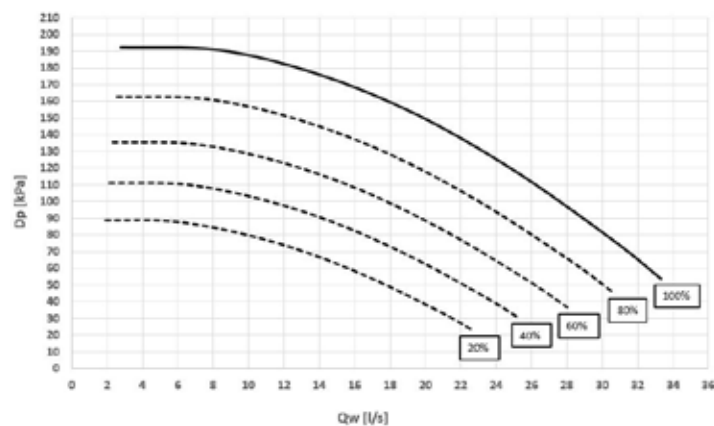
Electrical data

PUMP	Rated power [kW]	Nominal Current [A]
1+1PMCSV 220.2 ÷ 260.2	5,5	11,99
1+1PMCSV 280.0 ÷ 320.2	7,5	15,48
1+1PMCSV 340.2	11,0	22,89
1+1PMCSV 420.2	18,5	36,52

Accessories - Hydronic assembly

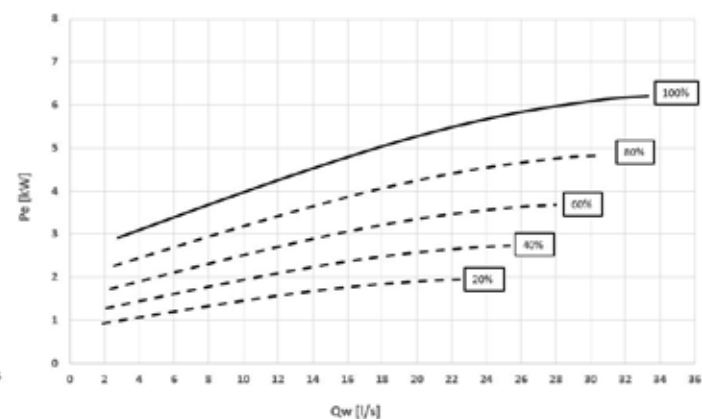
1+1PMCSV - HYDROPACK COOLING SIDE WITH 1+1 INVERTER PUMP

Head - Size 220.2 ÷ 260.2



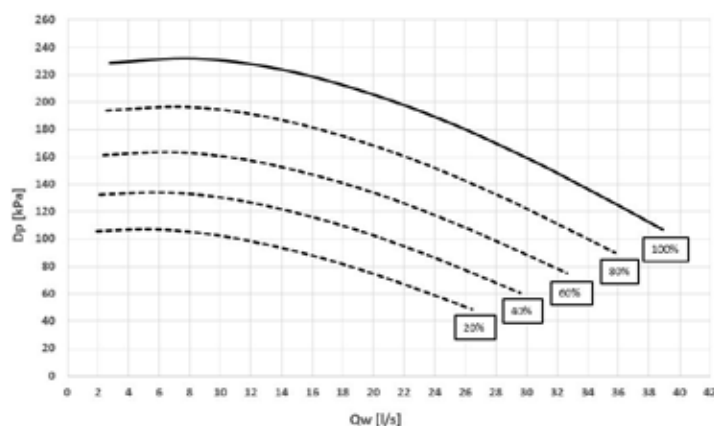
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 220.2 ÷ 260.2



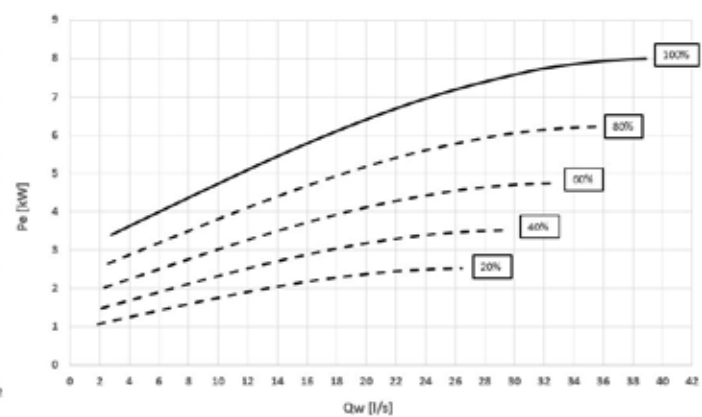
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 280.2 ÷ 320.2



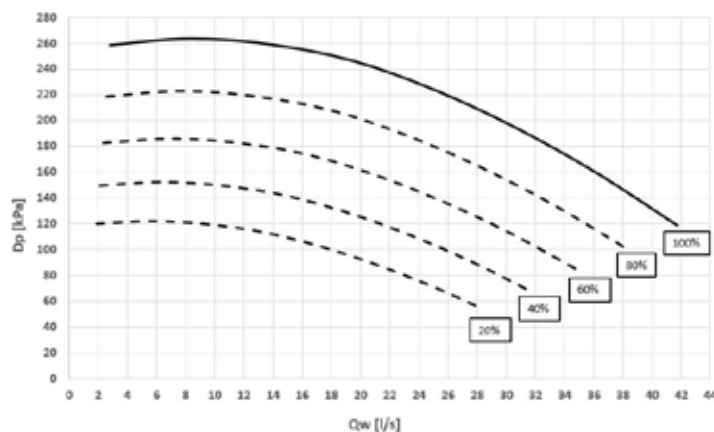
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 280.2 ÷ 320.2



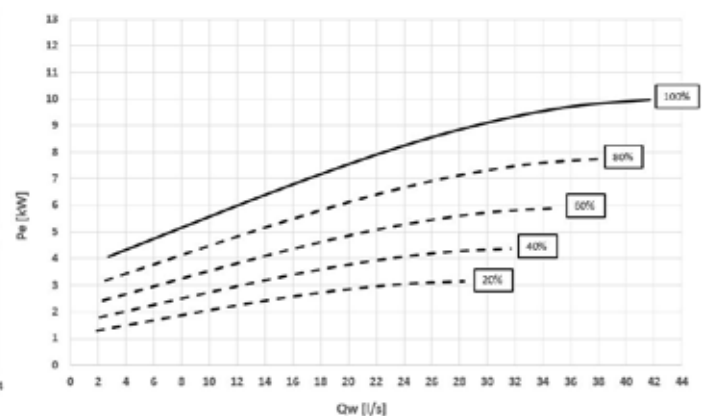
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 340.2



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

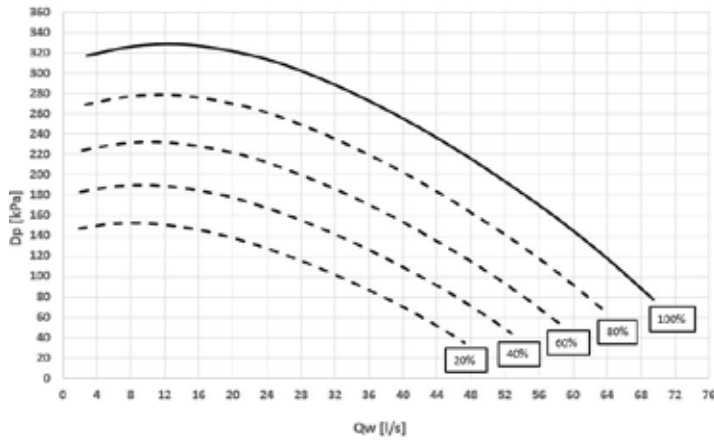
Power input - Size 340.2



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

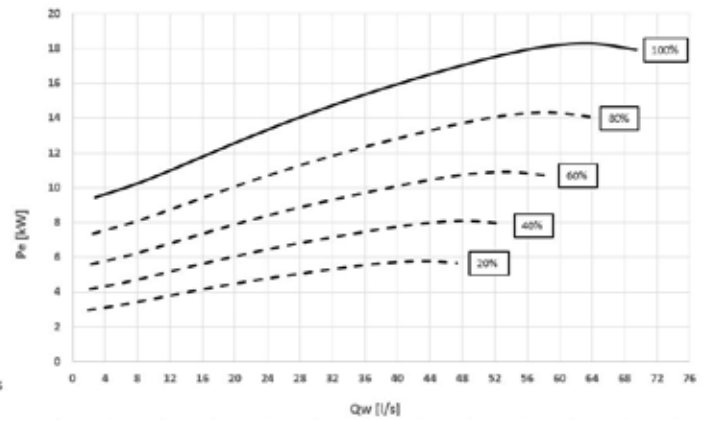
1+1PMCSV - HYDROPACK COOLING SIDE WITH 1+1 INVERTER PUMP

Head - Size 420.2



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

Power input - Size 420.2



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

2PMCS - HYDROPACK COOLING SIDE WITH 2 ON-OFF PUMPS

Pumping unit made up of two electric pumps laid out in parallel.

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.

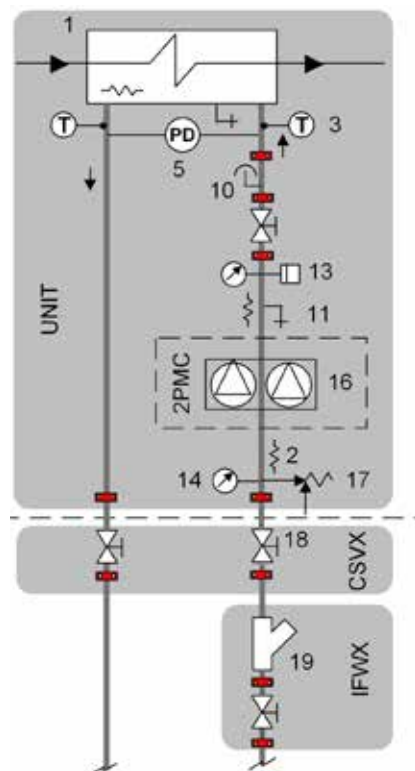
Mechanical seal using ceramic, carbon and EPDM elastomer components.

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

All water fittings are Victaulic

Option supplied built-in the unit, completed with acoustic casing.

CONNECTION DIAGRAM



1. Exchanger
2. Antifreeze heater
3. Water temperature probe
5. Differential pressure switch
10. Vent
11. Drain
13. System load safety pressure switch
14. Pressure gauge
16. Packaged electric pump with high efficiency impeller
17. Safety valve
18. Shut-off valve
19. Filter

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.

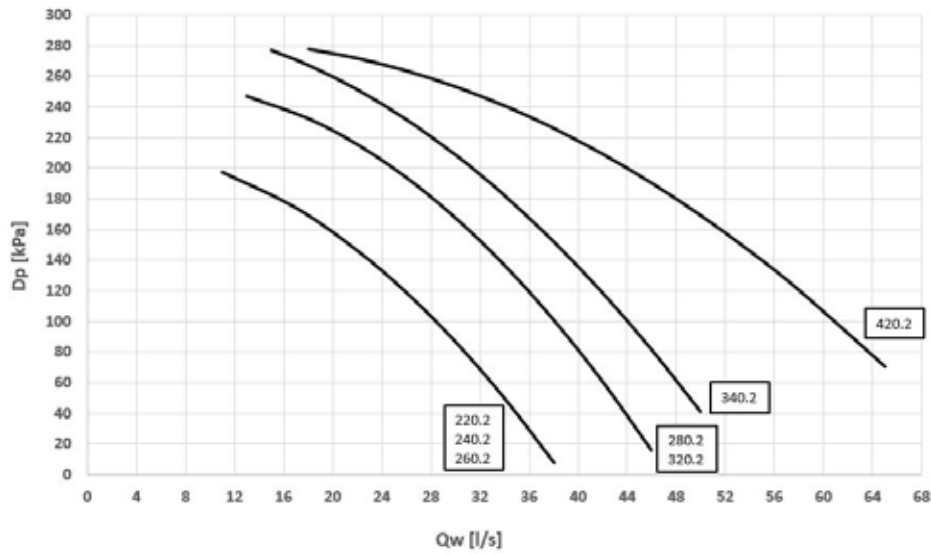
⚠ The head and absorption graphs of the hydronic assembly refer to operation with pure water. In the presence of a mixture of water and glycol, please contact Clivet office to check the correct operating point of the hydronic assembly.

Electrical data

PUMP	Rated power [kW]	Nominal Current [A]
2PMCS 220.2 ÷ 260.2	2 x 4	2 x 8,5
2PMCS 280.2 ÷ 320.2	2 x 5,5	2 x 11,45
2PMCS 340.2	2 x 7,5	2 x 15,37
2PMCS 420.2	2 x 11	2 x 22,02

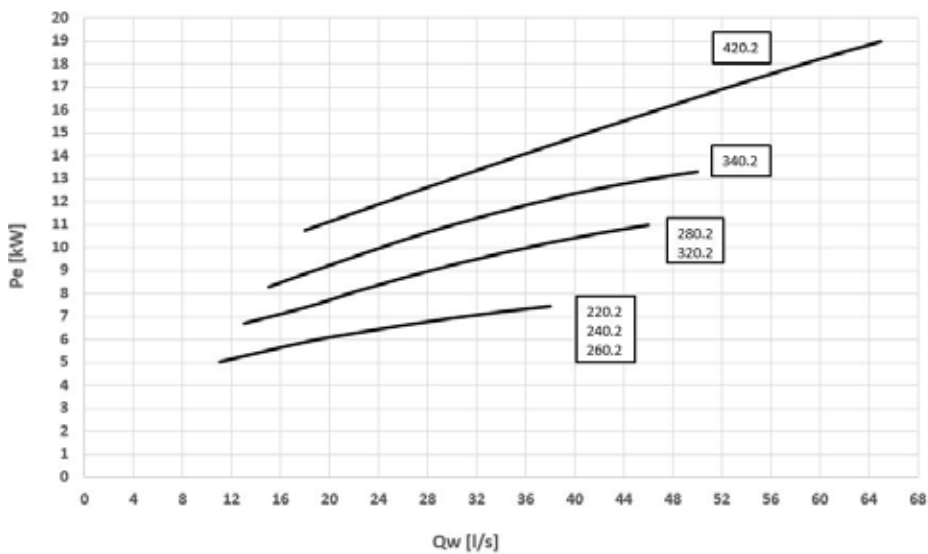
2PMCS - HYDROPACK COOLING SIDE WITH 2 ON-OFF PUMPS

Head



D_p = Pump head [kPa]
 Q_w = Water flow-rate [l/s]

Power input



P_e = Power input [kW]
 Q_w = 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

2PMCSV - HYDROPACK COOLING SIDE WITH 2 INVERTER PUMPS

Pumping unit made up of two electric pumps laid out in parallel and controlled by inverter to adapt to the different application conditions. It enables the automatic reduction of the liquid flow-rate in critical conditions, avoiding blocks due to overloading and consequential intervention work by specialised technical personnel.

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

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

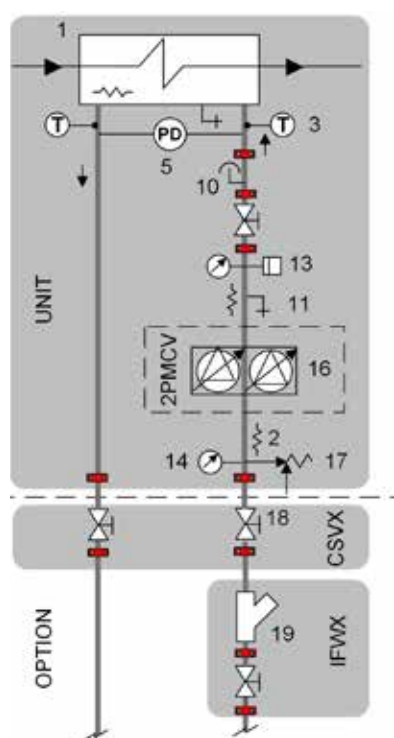
Mechanical seal using ceramic, carbon and EPDM elastomer components.

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

All water fittings are Victaulic.

Option supplied built-in the unit, completed with acoustic casing.

CONNECTION DIAGRAM



1. Exchanger
2. Antifreeze heater
3. Water temperature probe
5. Differential pressure switch
10. Vent
11. Drain
13. System load safety pressure switch
14. Pressure gauge
16. Packaged electric pump with high efficiency impeller
17. Safety valve
18. Shut-off valve
19. Filter

T - Temperature probe

PD - Differential pressure switch

TW in chilled water inlet

TW out chilled water outlet

⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.

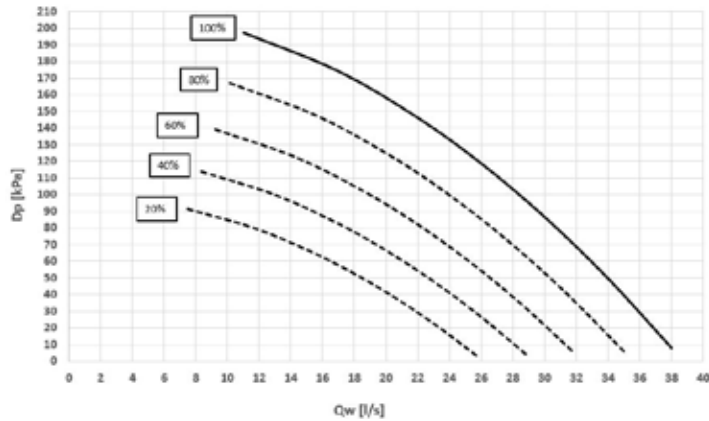
⚠ The head and absorption graphs of the hydronic assembly refer to operation with pure water. In the presence of a mixture of water and glycol, please contact Clivet office to check the correct operating point of the hydronic assembly.

Electrical data

PUMP	Rated power [kW]	Nominal Current [A]
2PMCSV 220.2 ÷ 260.2	2 x 4	2 x 8,5
2PMCSV 280.2 ÷ 320.2	2 x 5,5	2 x 11,45
2PMCSV 340.2	2 x 7,5	2 x 15,37
2PMCSV 420.2	2 x 11	2 x 22,02

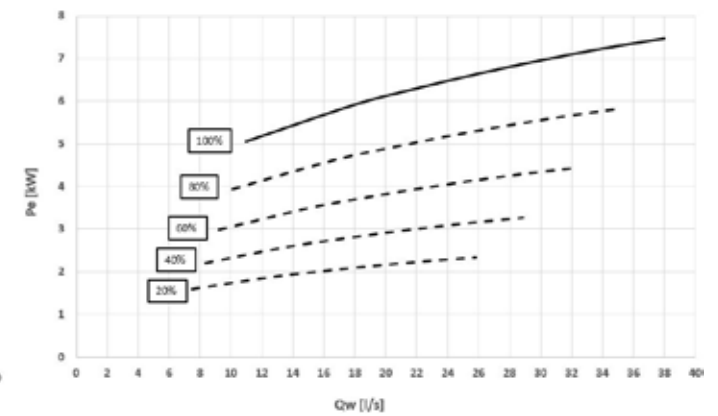
2PMCSV - HYDROPACK COOLING SIDE WITH 2 INVERTER PUMPS

Head - Size 220.2 ÷ 260.2



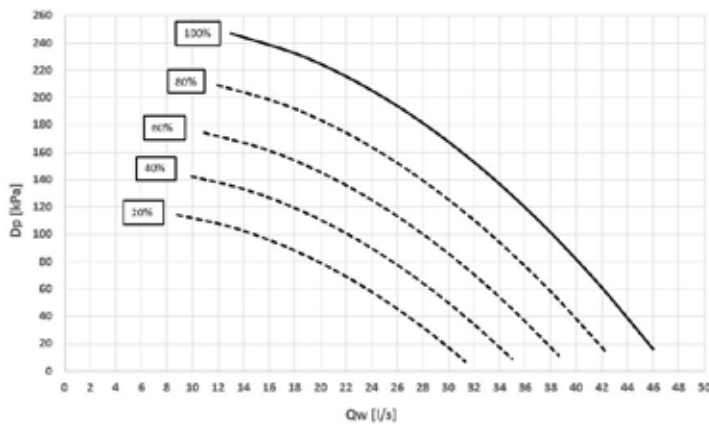
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 220.2 ÷ 260.2



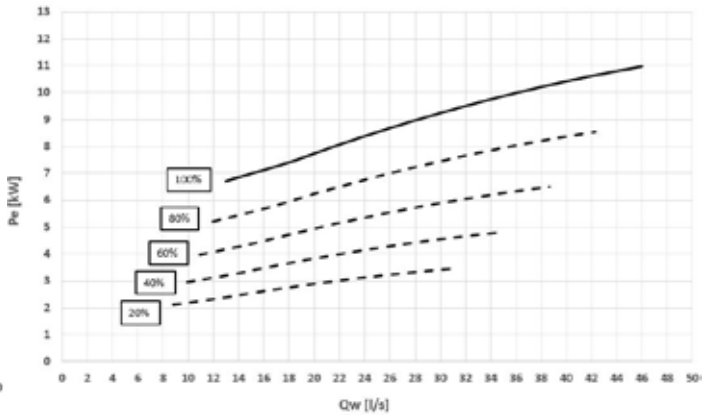
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 280.2 ÷ 320.2



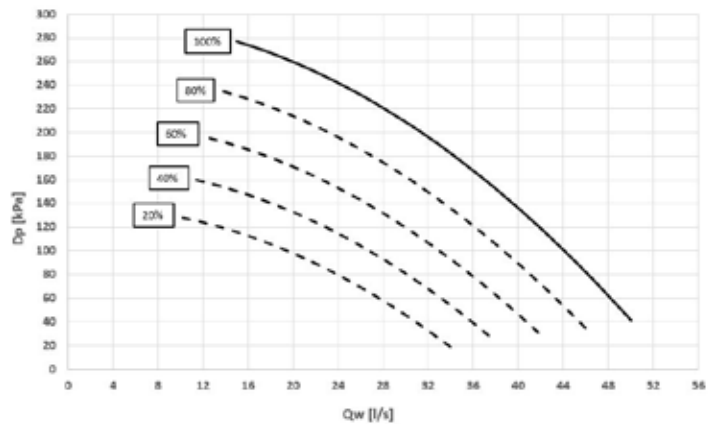
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 280.2 ÷ 320.2



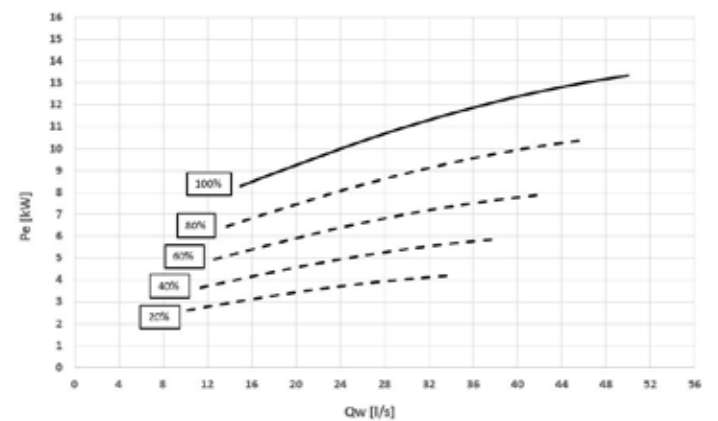
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 340.2



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

Power input - Size 340.2

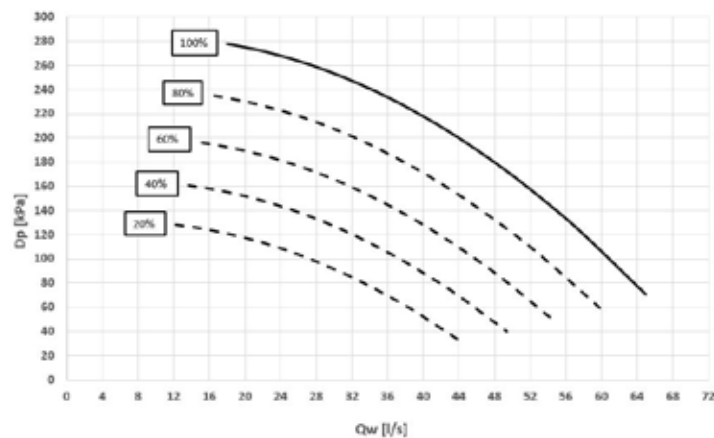


Pe = Power input [kW]
QW = Water flow-rate [l/s]

Accessories - Hydronic assembly

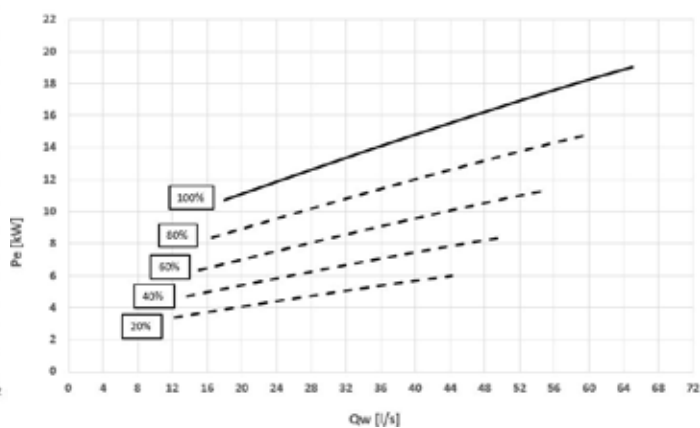
2PMCSV - HYDROPACK COOLING SIDE WITH 2 INVERTER PUMPS

Head - Size 420.2



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

Power input - Size 420.2



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)

1+1PMHS - HYDROPACK HEATING SIDE WITH 1+1 ON-OFF PUMP

Pumping unit made up of 1+1 electric pump (1 in stand by), with the pump body made of cast iron and the impeller made of INOX or cast iron (depending on the models).

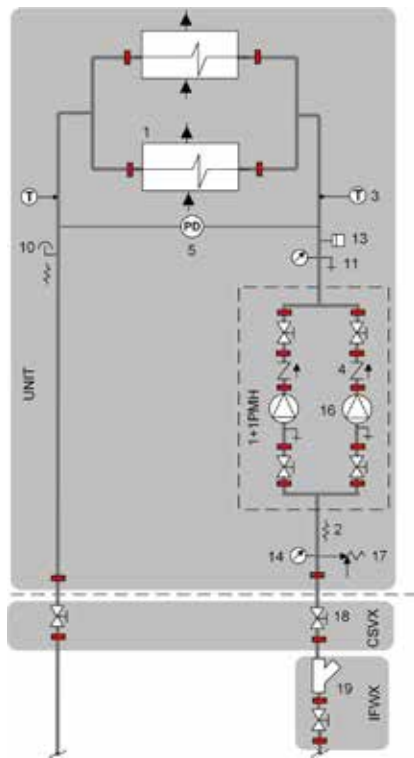
Mechanical seal using ceramic, carbon and EPDM elastomer components.

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

All water fittings are Victaulic.

Option supplied built-in the unit, completed with acoustic casing.

CONNECTION DIAGRAM



1. Exchanger
2. Antifreeze heater
3. Water temperature probe
4. Non-return valve
5. Differential pressure switch
10. Vent
11. Drain
13. System load safety pressure switch
14. Pressure gauge
16. Packaged electric pump with high efficiency impeller
17. Safety valve
18. Shut-off valve
19. Filter

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.

⚠ The head and absorption graphs of the hydronic assembly refer to operation with pure water. In the presence of a mixture of water and glycol, please contact Clivet office to check the correct operating point of the hydronic assembly.

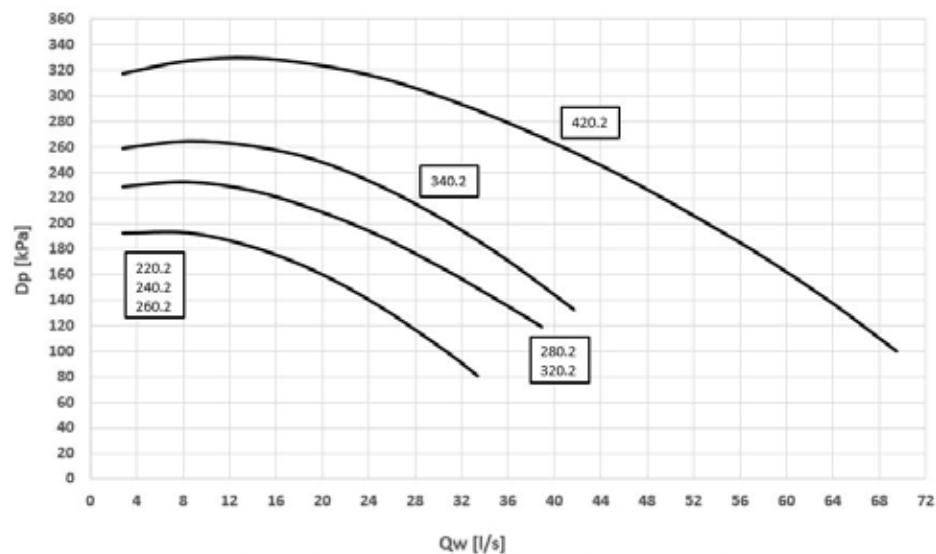
Electrical data

PUMP	Rated power [kW]	Nominal Current [A]
1+1PMHS 220.2 ÷ 260.2	5,5	11,99
1+1PMHS 280.0 ÷ 320.2	7,5	15,48
1+1PMHS 340.2	11,0	22,89
1+1PMHS 420.2	18,5	36,52

Accessories - Hydronic assembly

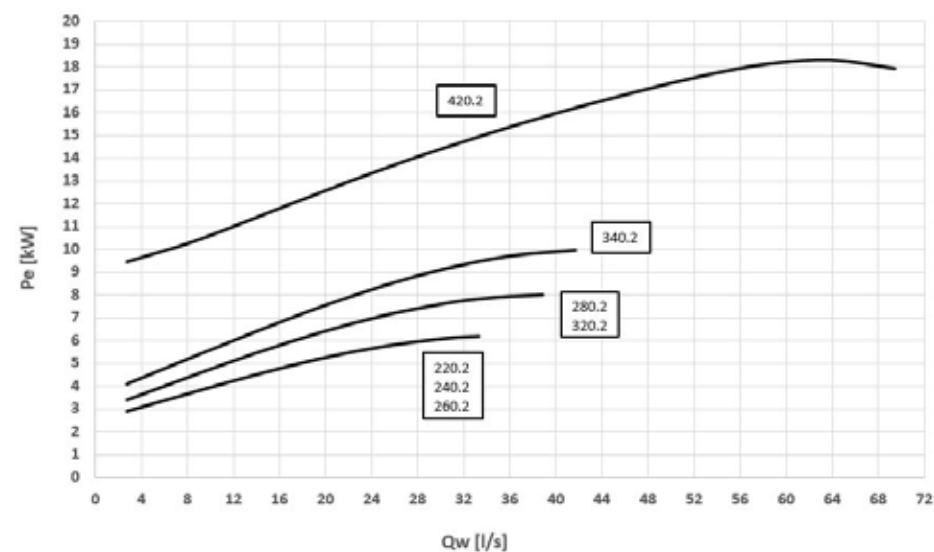
1+1PMHS - HYDROPACK HEATING SIDE WITH 1+1 ON-OFF PUMP

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)

1+1PMHSV - HYDROPACK HEATING SIDE WITH 1+1 INVERTER PUMP

Pumping unit made up of 1+1 electric pump (1 in stand by), 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).

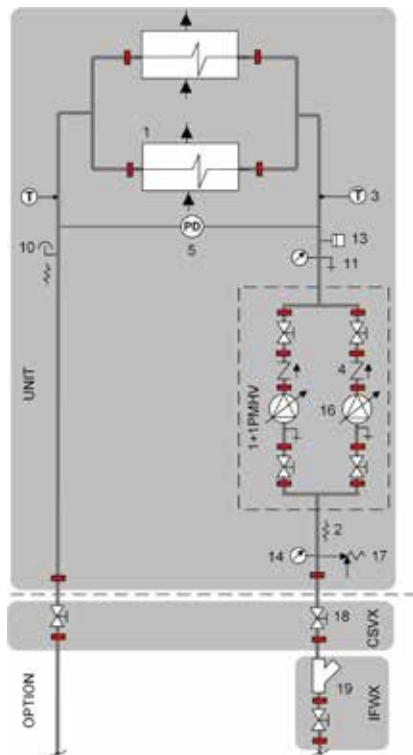
Mechanical seal using ceramic, carbon and EPDM elastomer components

Three-phase electric motor with IP55-protection. Complete with thermoformed insulated casing, fast fittings with insulated casing, no-return valve, safety valve, pressure gauges, system load safety pressure switch, stainless steel anti-freeze immersion resistances located at the intake and at the supply point.

All water fittings are Victaulic.

Option supplied built-in the unit, completed with acoustic casing.

CONNECTION DIAGRAM



1. Exchanger
2. Antifreeze heater
3. Water temperature probe
4. Non-return valve
5. Differential pressure switch
10. Vent
11. Drain
13. System load safety pressure switch
14. Pressure gauge
16. Packaged electric pump with high efficiency impeller
17. Safety valve
18. Shut-off valve
19. Filter

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.

⚠ The head and absorption graphs of the hydronic assembly refer to operation with pure water. In the presence of a mixture of water and glycol, please contact Clivet office to check the correct operating point of the hydronic assembly.

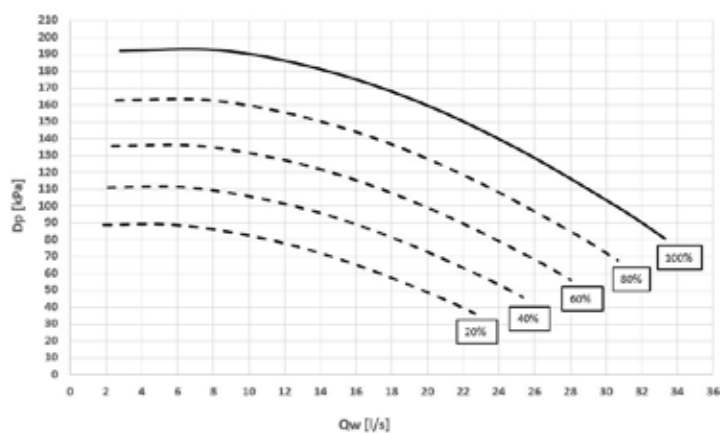
Electrical data

PUMP	Rated power [kW]	Nominal Current [A]
1+1PMHSV 220.2 ÷ 260.2	5,5	11,99
1+1PMHSV 280.0 ÷ 320.2	7,5	15,48
1+1PMHSV 340.2	11,0	22,89
1+1PMHSV 420.2	18,5	36,52

Accessories - Hydronic assembly

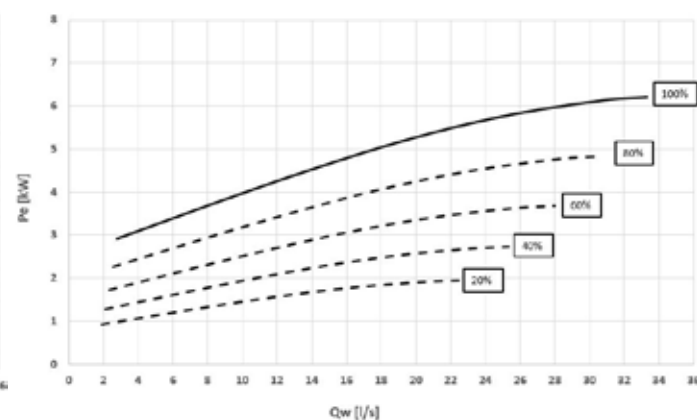
1+1PMHSV - HYDROPACK HEATING SIDE WITH 1+1 INVERTER PUMP

Head - Size 220.2 ÷ 260.2



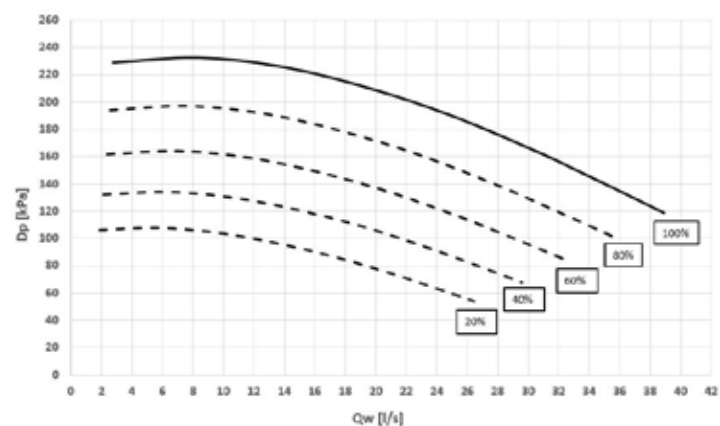
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 220.2 ÷ 260.2



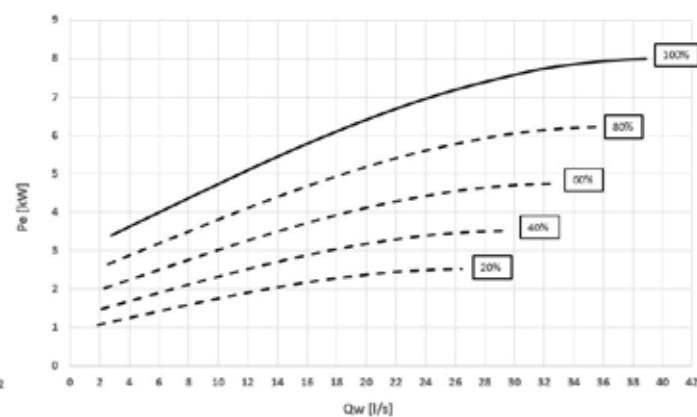
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 280.2 ÷ 320.2



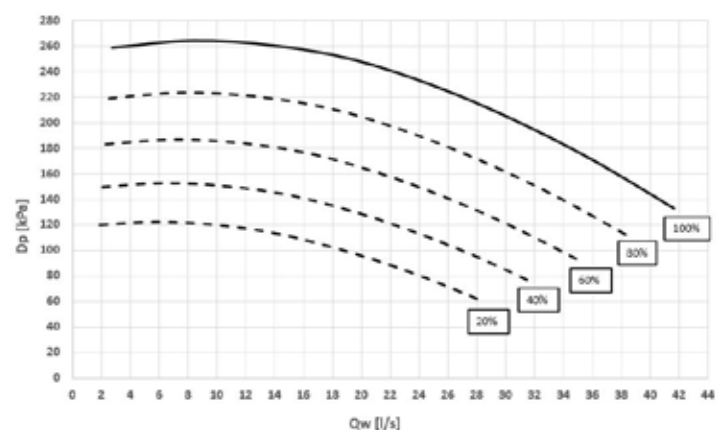
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 280.2 ÷ 320.2



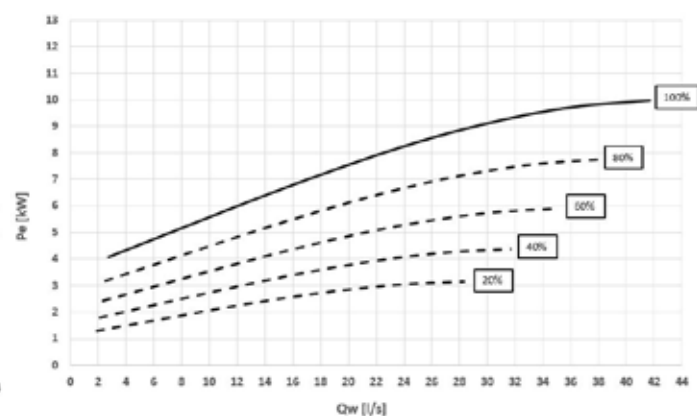
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 340.2



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

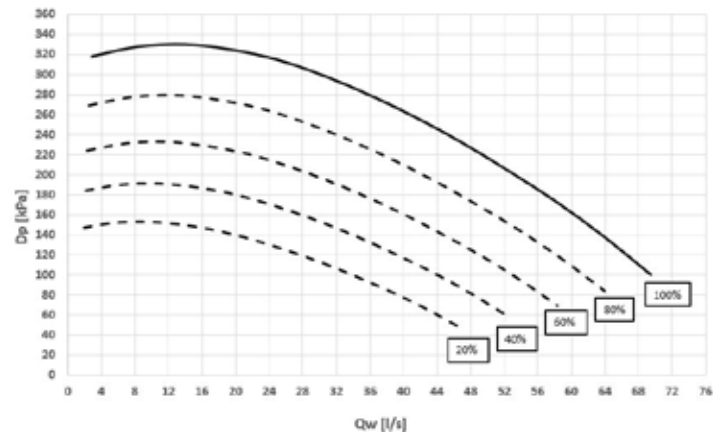
Power input - Size 340.2



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

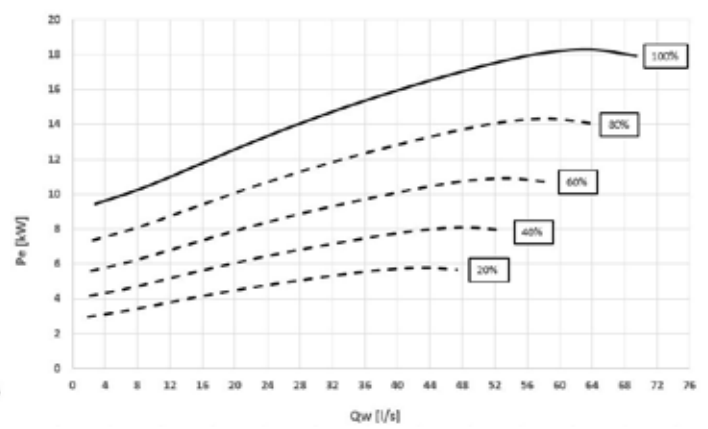
1+1PMHSV - HYDROPACK HEATING SIDE WITH 1+1 INVERTER PUMP

Head - Size 420.2



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

Power input - Size 420.2



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

2PMHS - HYDROPACK HEATING SIDE WITH 2 ON-OFF PUMPS

Pumping unit made up of two electric pumps laid out in parallel.

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.

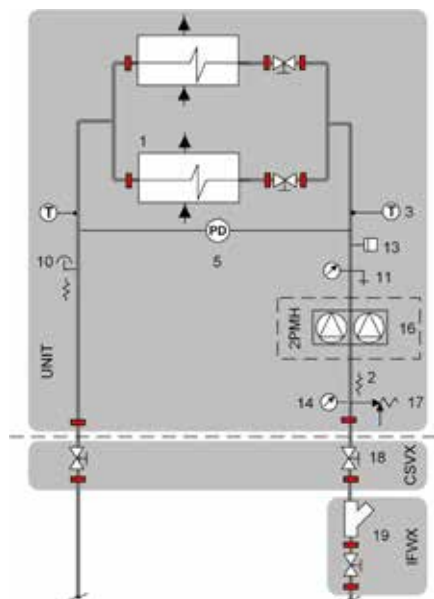
Mechanical seal using ceramic, carbon and EPDM elastomer components.

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

All water fittings are Victaulic.

Option supplied built-in the unit, completed with acoustic casing.

CONNECTION DIAGRAM



1. Exchanger
2. Antifreeze heater
3. Water temperature probe
5. Differential pressure switch
10. Vent
11. Drain
13. System load safety pressure switch
14. Pressure gauge
16. Packaged electric pump with high efficiency impeller
17. Safety valve
18. Shut-off valve
19. Filter

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.

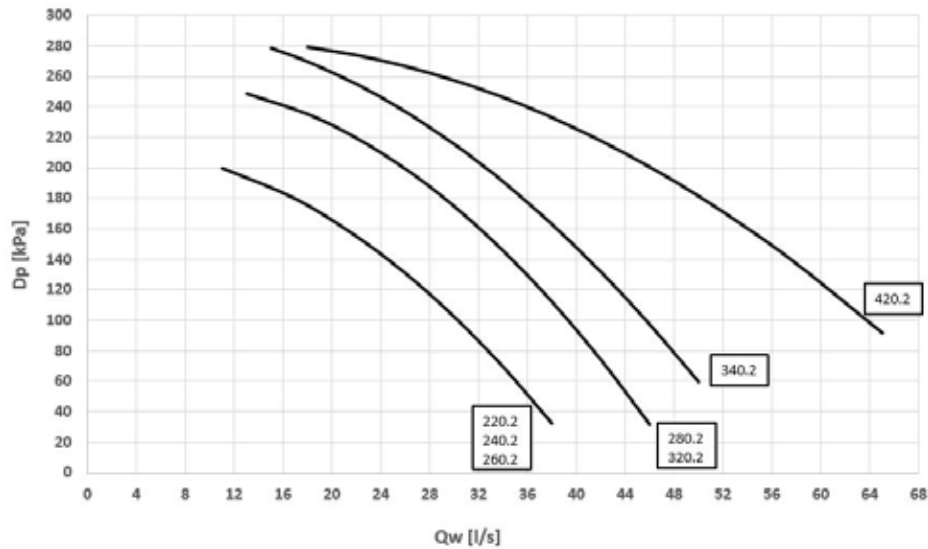
⚠ The head and absorption graphs of the hydronic assembly refer to operation with pure water. In the presence of a mixture of water and glycol, please contact Clivet office to check the correct operating point of the hydronic assembly.

Electrical data

PUMP	Rated power [kW]	Nominal Current [A]
2PMHS 220.2 ÷ 260.2	2 x 4	2 x 8,5
2PMHS 280.2 ÷ 320.2	2 x 5,5	2 x 11,45
2PMHS 340.2	2 x 7,5	2 x 15,37
2PMHS 420.2	2 x 11	2 x 22,02

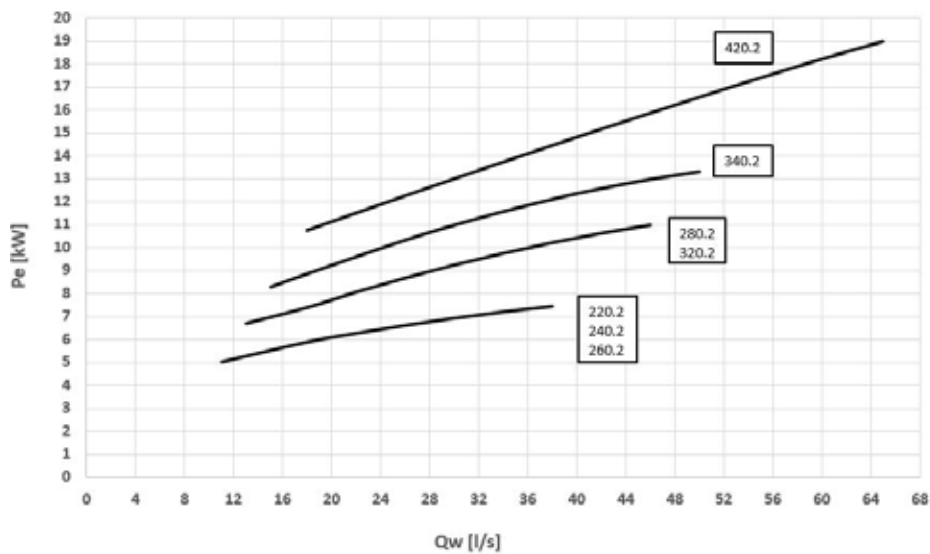
2PMHS - HYDROPACK HEATING SIDE WITH 2 ON-OFF PUMPS

Head



D_p = Pump head [kPa]
 Q_w = Water flow-rate [l/s]

Power input



P_e = Power input [kW]
 Q_w = 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

2PMHSV - HYDROPACK HEATING SIDE WITH 2 INVERTER PUMPS

Pumping unit made up of two electric pumps laid out in parallel and controlled by inverter to adapt to the different application conditions. It enables the automatic reduction of the liquid flow-rate in critical conditions, avoiding blocks due to overloading and consequential intervention work by specialised technical personnel.

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

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

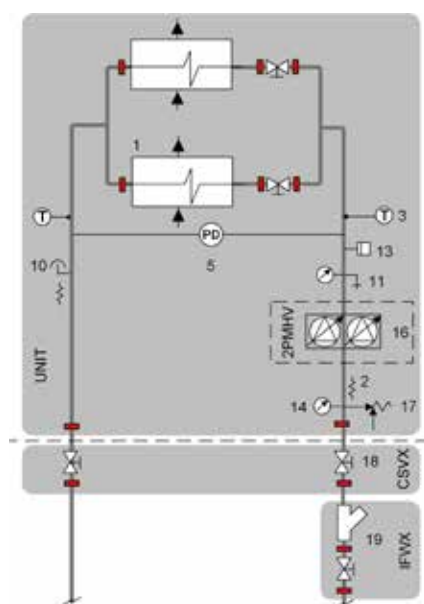
Mechanical seal using ceramic, carbon and EPDM elastomer components.

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

All water fittings are Victaulic.

Option supplied built-in the unit, completed with acoustic casing.

CONNECTION DIAGRAM



1. Exchanger
2. Antifreeze heater
3. Water temperature probe
4. Non-return valve
5. Differential pressure switch
10. Vent
11. Drain
13. System load safety pressure switch
14. Pressure gauge
16. Packaged electric pump with high efficiency impeller
17. Safety valve
18. Shut-off valve
19. Filter

T - Temperature probe

PD - Differential pressure switch

TW in chilled water inlet

TW out chilled water outlet

⚠ Provide hydraulic interceptions outside the unit ('CSVX - Couple of manually operated shut-off valves' option) to facilitate any possible extraordinary maintenance interventions.

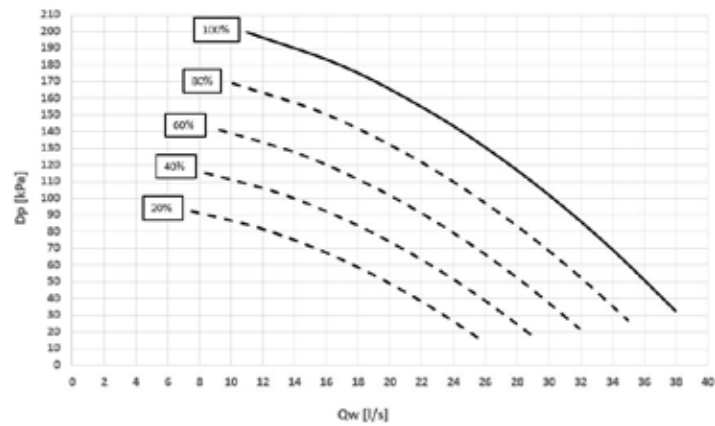
⚠ The head and absorption graphs of the hydronic assembly refer to operation with pure water. In the presence of a mixture of water and glycol, please contact Clivet office to check the correct operating point of the hydronic assembly.

Electrical data

PUMP	Rated power [kW]	Nominal Current [A]
2PMHSV 220.2 ÷ 260.2	2 x 4	2 x 8,5
2PMHSV 280.2 ÷ 320.2	2 x 5,5	2 x 11,45
2PMHSV 340.2	2 x 7,5	2 x 15,37
2PMHSV 420.2	2 x 11	2 x 22,02

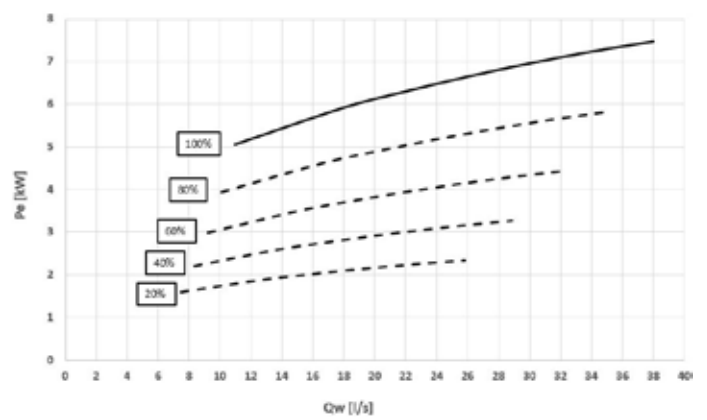
2PMHSV - HYDROPACK HEATING SIDE WITH 2 INVERTER PUMPS

Head - Size 220.2 ÷ 260.2



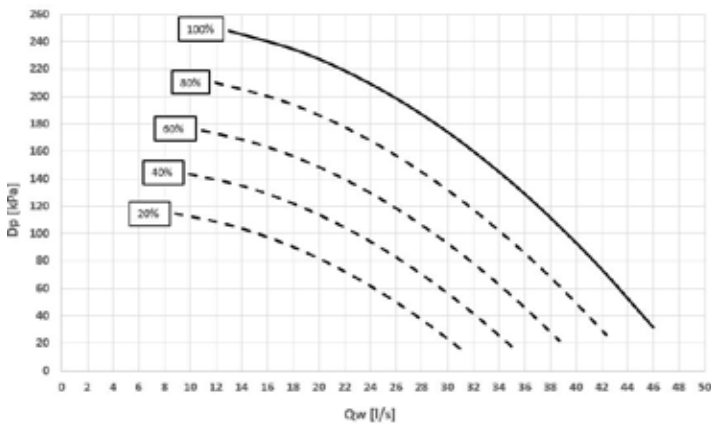
D_p = Pump head [kPa]
 Q_w = Water flow-rate [l/s]

Power input - Size 220.2 ÷ 260.2



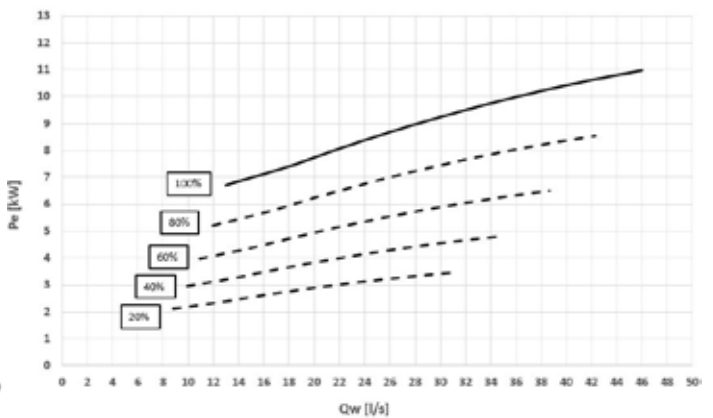
P_e = Power input [kW]
 Q_w = Water flow-rate [l/s]

Head - Size 280.2 ÷ 320.2



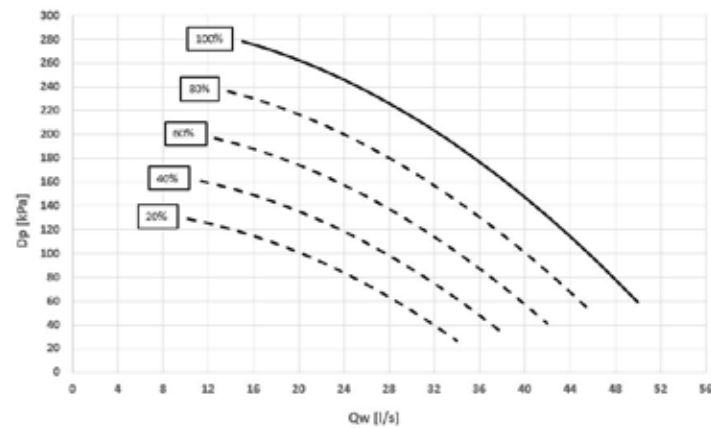
D_p = Pump head [kPa]
 Q_w = Water flow-rate [l/s]

Power input - Size 280.2 ÷ 320.2



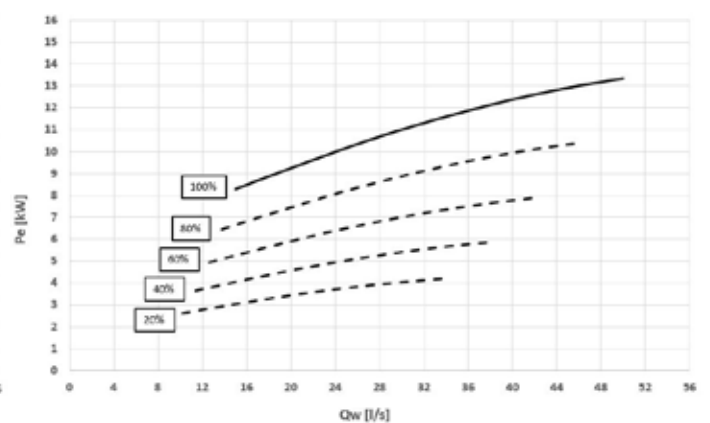
P_e = Power input [kW]
 Q_w = Water flow-rate [l/s]

Head - Size 340.2



D_p = Pump head [kPa]
 Q_w = Water flow-rate [l/s]

Power input - Size 340.2

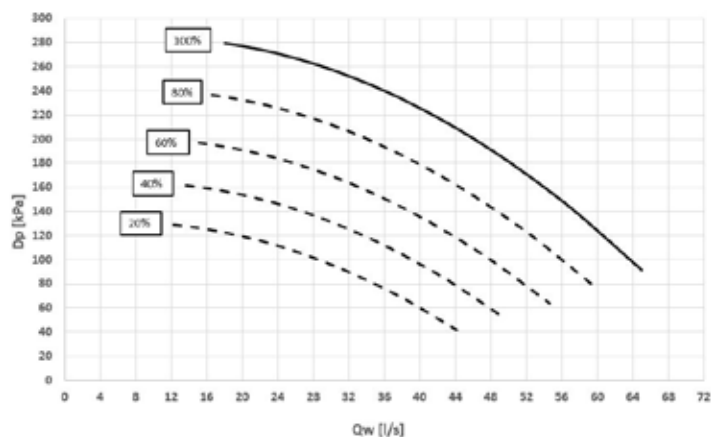


P_e = Power input [kW]
 Q_w = Water flow-rate [l/s]

Accessories - Hydronic assembly

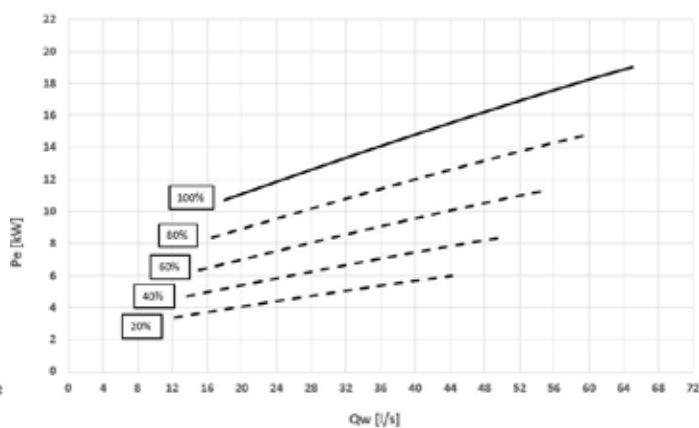
2PMHSV - HYDROPACK HEATING SIDE WITH 2 INVERTER PUMPS

Head - Size 420.2



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

Power input - Size 420.2



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)

REF	DESCRIPTION	220.2	240.2	260.2	280.2	320.2	340.2	420.2
IVFCDT - Cold user side inverter variable flow-rate control based on the temperature differential								
-	Hydropack user cold side: not required	0	0	0	0	0	0	0
1+1PMCS	Hydropack user cold side with n° 1+1 on-off pump	-	-	-	-	-	-	-
2PMCS	Hydropack user cold side with n° 2 on-off pumps	-	-	-	-	-	-	-
1+1PMCSV	Hydropack user cold side with n° 1+1 inverter pump	0	0	0	0	0	0	0
2PMCSV	Hydropack user cold side with n° 2 inverter pumps	0	0	0	0	0	0	0
IVFHDT - Hot user side inverter variable flow-rate control based on the temperature differential								
-	Hydropack user hot side: not required	0	0	0	0	0	0	0
1+1PMHS	Hydropack user hot side with n° 1+1 on-off pump	-	-	-	-	-	-	-
2PMHS	Hydropack user hot side with n° 2 on-off pumps	-	-	-	-	-	-	-
1+1PMHSV	Hydropack user hot side with n° 1+1 inverter pump	0	0	0	0	0	0	0
2PMHSV	Hydropack user hot side with n° 2 inverter pumps	0	0	0	0	0	0	0
IVFCDTs - Cold user side inverter variable flow-rate control based on the temperature differential with pressure drop sensor								
-	Hydropack user cold side: not required	0	0	0	0	0	0	0
1+1PMCS	Hydropack user cold side with n° 1+1 on-off pump	-	-	-	-	-	-	-
2PMCS	Hydropack user cold side with n° 2 on-off pumps	-	-	-	-	-	-	-
1+1PMCSV	Hydropack user cold side with n° 1+1 inverter pump	0	0	0	0	0	0	0
2PMCSV	Hydropack user cold side with n° 2 inverter pumps	0	0	0	0	0	0	0
IVFHDTs - Hot user side inverter variable flow-rate control based on the temperature differential with pressure drop sensor								
-	Hydropack user hot side: not required	0	0	0	0	0	0	0
1+1PMHS	Hydropack user hot side with n° 1+1 on-off pump	-	-	-	-	-	-	-
2PMHS	Hydropack user hot side with n° 2 on-off pumps	-	-	-	-	-	-	-
1+1PMHSV	Hydropack user hot side with n° 1+1 inverter pump	0	0	0	0	0	0	0
2PMHSV	Hydropack user hot side with n° 2 inverter pumps	0	0	0	0	0	0	0
IVFCDTF - Cold user side inverter variable flow-rate control based on the temperature differential with flow meter								
-	Hydropack user cold side: not required	0	0	0	0	0	0	0
1+1PMCS	Hydropack user cold side with n° 1+1 on-off pump	-	-	-	-	-	-	-
2PMCS	Hydropack user cold side with n° 2 on-off pumps	-	-	-	-	-	-	-
1+1PMCSV	Hydropack user cold side with n° 1+1 inverter pump	0	0	0	0	0	0	0
2PMCSV	Hydropack user cold side with n° 2 inverter pumps	0	0	0	0	0	0	0
IVFHDTF - Hot user side inverter variable flow-rate control based on the temperature differential with flow meter								
-	Hydropack user hot side: not required	0	0	0	0	0	0	0
1+1PMHS	Hydropack user hot side with n° 1+1 on-off pump	-	-	-	-	-	-	-
2PMHS	Hydropack user hot side with n° 2 on-off pumps	-	-	-	-	-	-	-
1+1PMHSV	Hydropack user hot side with n° 1+1 inverter pump	0	0	0	0	0	0	0
2PMHSV	Hydropack user hot side with n° 2 inverter pumps	0	0	0	0	0	0	0
IVFCDTF - Cold user side inverter variable flow-rate control based on the temperature differential with flow meter								
-	Water flow meters: not required	-	-	-	-	-	-	-
FMCHX	Water flow meters	0	0	0	0	0	0	0
IVFHDTF - Hot user side inverter variable flow-rate control based on the temperature differential with flow meter								
-	Water flow meters: not required	-	-	-	-	-	-	-
FMCHX	Water flow meters	0	0	0	0	0	0	0
MISTER1 - Indirect energy meter via pressure drop and temperature differential with unit probes								
IVFCDT	Cold user side inverter variable flow-rate control based on the temperature differential	-	-	-	-	-	-	-
IVFCDTs	Cold user side inverter variable flow-rate control based on the temperature differential with pressure drop sensor	0	0	0	0	0	0	0
IVFCDTF	Cold user side inverter variable flow-rate control based on the temperature differential with flow meter	-	-	-	-	-	-	-
-	Integrated variable primary flow, hot water side: not required	-	-	-	-	-	-	-
IVFHDT	Hot user side inverter variable flow-rate control based on the temperature differential	-	-	-	-	-	-	-
IVFHDTs	Hot user side inverter variable flow-rate control based on the temperature differential with pressure drop sensor	0	0	0	0	0	0	0
IVFHDTF	Hot user side inverter variable flow-rate control based on the temperature differential with flow meter	-	-	-	-	-	-	-

Option compatibility

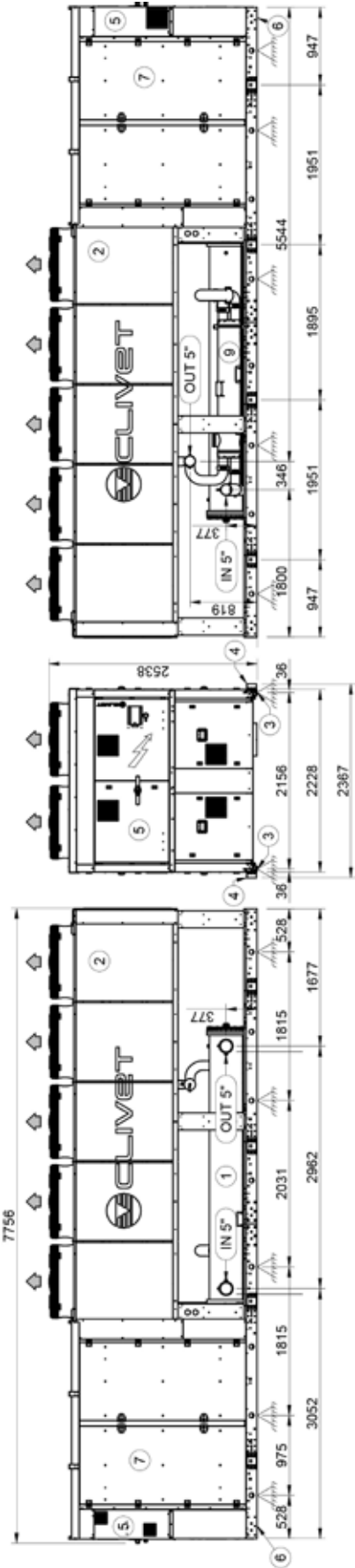
REF	DESCRIPTION	220.2	240.2	260.2	280.2	320.2	340.2	420.2
MISTER2 - Direct energy meter via flow-rate and temperature differential with unit probes								
-	Integrated variable primary flow, chilled water side: not required	-	-	-	-	-	-	-
IVFCDT	Cold user side inverter variable flow-rate control based on the temperature differential	-	-	-	-	-	-	-
IVFCDTS	Cold user side inverter variable flow-rate control based on the temperature differential with pressure drop sensor	-	-	-	-	-	-	-
IVFCDTF	Cold user side inverter variable flow-rate control based on the temperature differential with flow meter	0	0	0	0	0	0	0
-	Integrated variable primary flow, hot water side: not required	-	-	-	-	-	-	-
IVFHDT	Hot user side inverter variable flow-rate control based on the temperature differential	-	-	-	-	-	-	-
IVFHDTs	Hot user side inverter variable flow-rate control based on the temperature differential with pressure drop sensor	-	-	-	-	-	-	-
IVFHDTF	Cold user side inverter variable flow-rate control based on the temperature differential with flow meter	0	0	0	0	0	0	0
MISTER3 - Direct energy meter via M-BUS								
-	Integrated variable primary flow, chilled water side: not required	-	-	-	-	-	-	-
IVFCDT	Cold user side inverter variable flow-rate control based on the temperature differential	-	-	-	-	-	-	-
IVFCDTS	Cold user side inverter variable flow-rate control based on the temperature differential with pressure drop sensor	-	-	-	-	-	-	-
IVFCDTF	Cold user side inverter variable flow-rate control based on the temperature differential with flow meter	0	0	0	0	0	0	0
-	Integrated variable primary flow, hot water side: not required	-	-	-	-	-	-	-
IVFHDT	Hot user side inverter variable flow-rate control based on the temperature differential	-	-	-	-	-	-	-
IVFHDTs	Hot user side inverter variable flow-rate control based on the temperature differential with pressure drop sensor	-	-	-	-	-	-	-
IVFHDTF	Cold user side inverter variable flow-rate control based on the temperature differential with flow meter	0	0	0	0	0	0	0
Hydropack user cold side: not required								
-	Hydropack user hot side: not required	0	0	0	0	0	0	0
1+1PMHS	Hydropack user hot side with n° 1+1 on-off pump	-	-	-	-	-	-	-
2PMHS	Hydropack user hot side with n° 2 on-off pumps	-	-	-	-	-	-	-
1+1PMHSV	Hydropack user hot side with n° 1+1 inverter pump	-	-	-	-	-	-	-
2PMHSV	Hydropack user hot side with n° 2 inverter pumps	-	-	-	-	-	-	-
1+1PMCS - Hydropack user cold side with n° 1+1 on-off pump								
-	Hydropack user hot side: not required	-	-	-	-	-	-	-
1+1PMHS	Hydropack user hot side with n° 1+1 on-off pump	0	0	0	0	0	0	0
2PMHS	Hydropack user hot side with n° 2 on-off pumps	-	-	-	-	-	-	-
1+1PMHSV	Hydropack user hot side with n° 1+1 inverter pump	-	-	-	-	-	-	-
2PMHSV	Hydropack user hot side with n° 2 inverter pumps	-	-	-	-	-	-	-
2PMCS - Hydropack user cold side with n° 2 on-off pumps								
-	Hydropack user hot side: not required	-	-	-	-	-	-	-
1+1PMHS	Hydropack user hot side with n° 1+1 on-off pump	-	-	-	-	-	-	-
2PMHS	Hydropack user hot side with n° 2 on-off pumps	0	0	0	0	0	0	0
1+1PMHSV	Hydropack user hot side with n° 1+1 inverter pump	-	-	-	-	-	-	-
2PMHSV	Hydropack user hot side with n° 2 inverter pumps	-	-	-	-	-	-	-
1+1PMCSV - Hydropack user cold side with n° 1+1 inverter pump								
-	Hydropack user hot side: not required	-	-	-	-	-	-	-
1+1PMHS	Hydropack user hot side with n° 1+1 on-off pump	-	-	-	-	-	-	-
2PMHS	Hydropack user hot side with n° 2 on-off pumps	-	-	-	-	-	-	-
1+1PMHSV	Hydropack user hot side with n° 1+1 inverter pump	0	0	0	0	0	0	0
2PMHSV	Hydropack user hot side with n° 2 inverter pumps	-	-	-	-	-	-	-
2PMCSV - Hydropack user cold side with n° 2 inverter pumps								
-	Hydropack user hot side: not required	-	-	-	-	-	-	-
1+1PMHS	Hydropack user hot side with n° 1+1 on-off pump	-	-	-	-	-	-	-
2PMHS	Hydropack user hot side with n° 2 on-off pumps	-	-	-	-	-	-	-
1+1PMHSV	Hydropack user hot side with n° 1+1 inverter pump	-	-	-	-	-	-	-
2PMHSV	Hydropack user hot side with n° 2 inverter pumps	0	0	0	0	0	0	0

0 Option

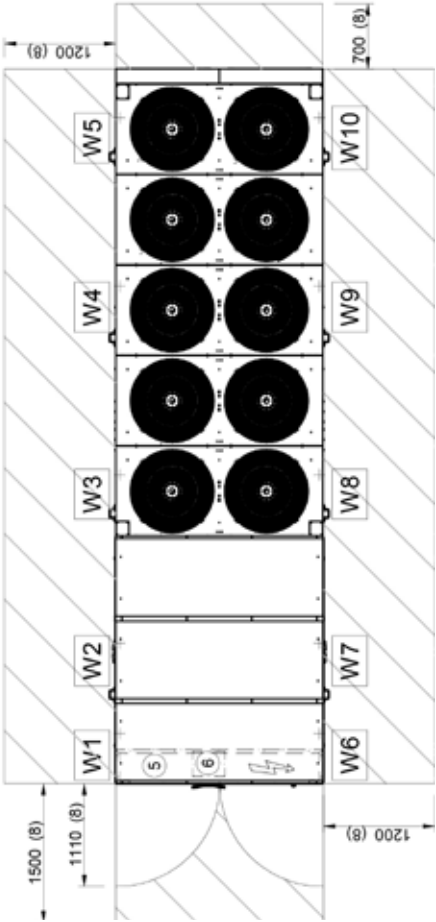
- Not available

Size 220.2 - 240.2 - Without hydronic assembly

DAA2A0001_00
DATA/DATE: 26/03/2021



- 1. Cold side Exchanger
- 2. External Exchanger
- 3. Unit fixing holes
- 4. Lifting brackets (removable)
- 5. Electrical panel
- 6. Power input
- 7. Sound proof enclosure
- 8. Clearance access recommended
- 9. Hot side Exchanger



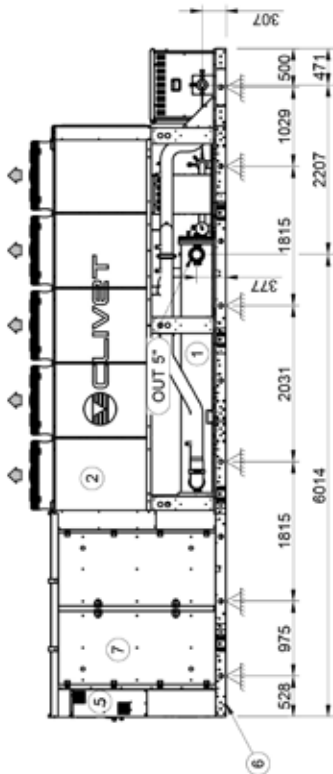
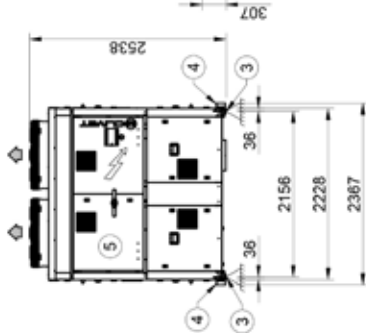
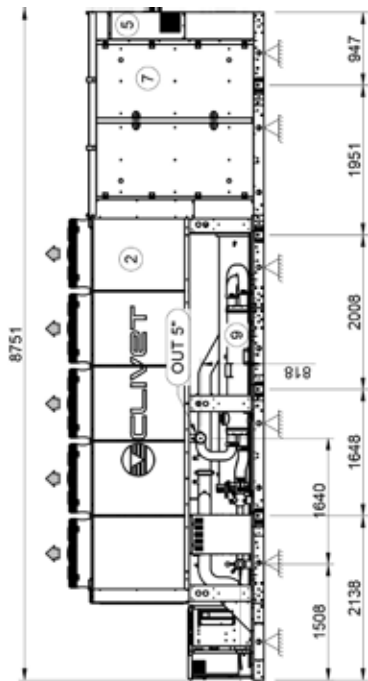
SIZE	220.2	240.2
Length	7756	7756
Depth	2228	2228
Height	2538	2538
W1 Supporting point	668	668
W2 Supporting point	858	858
W3 Supporting point	717	717
W4 Supporting point	1179	1179
W5 Supporting point	282	282
W6 Supporting point	469	469
W7 Supporting point	1021	1021
W8 Supporting point	1013	1013
W9 Supporting point	1396	1396
W10 Supporting point	266	266
Operating weight	7869	7869
Shipping weight	7437	7437

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

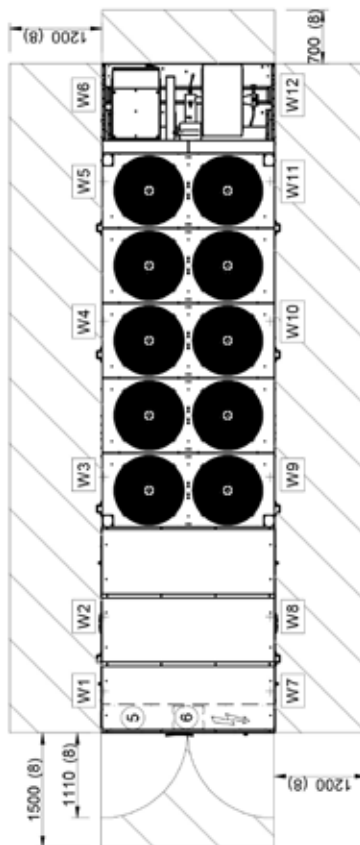
Dimensional drawings

Size 220.2 - 240.2 - With hydronic assembly

DAA2A0010_00
DATA/DATE: 26/03/2021



1. Cold side Exchanger
2. External Exchanger
3. Unit fixing holes
4. Lifting brackets (removable)
5. Electrical panel
6. Power input
7. Sound proof enclosure
8. Clearance access recommended
9. Hot side Exchanger

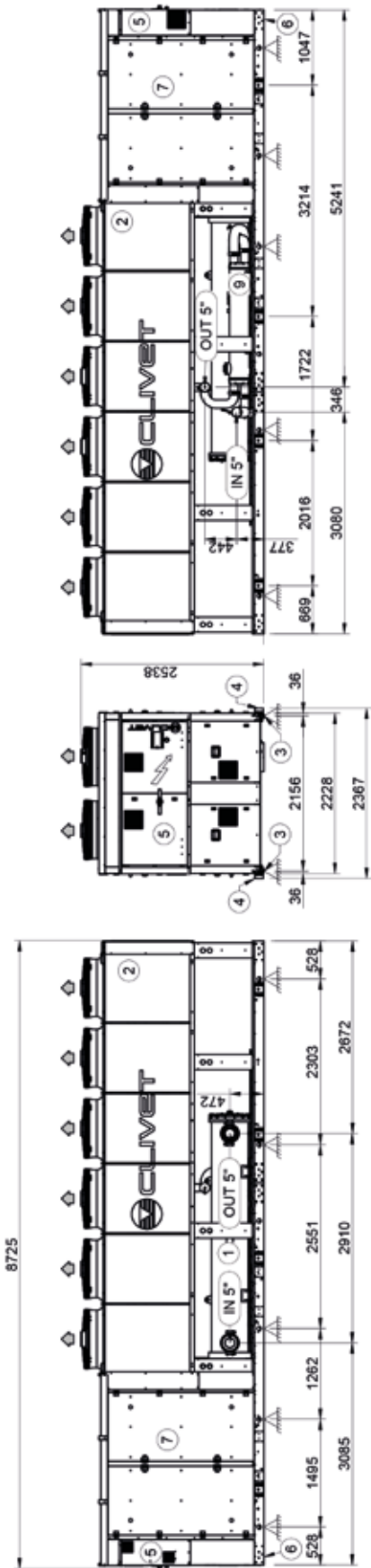


SIZE	220.2	240.2
Length	mm 8751	8751
Depth	mm 2228	2228
Height	mm 2538	2538
W1 Supporting point	kg 656	656
W2 Supporting point	kg 848	848
W3 Supporting point	kg 682	682
W4 Supporting point	kg 1224	1224
W5 Supporting point	kg 569	569
W6 Supporting point	kg 199	199
W7 Supporting point	kg 457	457
W8 Supporting point	kg 1010	1010
W9 Supporting point	kg 980	980
W10 Supporting point	kg 1480	1480
W11 Supporting point	kg 341	341
W12 Supporting point	kg 393	393
Operating weight	kg 8839	8839
Shipping weight	kg 8344	8344

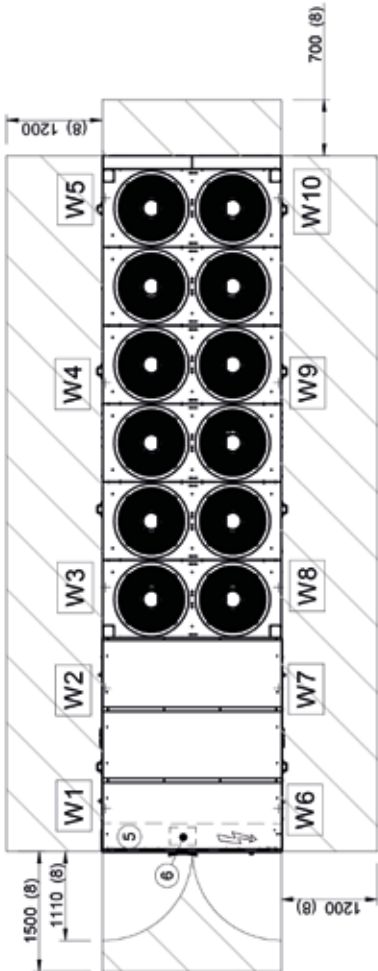
The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Size 260.2 - Without hydronic assembly

DAA2A0004_00
DATA/DATE: 17/06/2021



- 1. Cold side Exchanger
- 2. External Exchanger
- 3. Unit fixing holes
- 4. Lifting brackets (removable)
- 5. Electrical panel
- 6. Power input
- 7. Sound proof enclosure
- 8. Clearance access recommended
- 9. Hot side Exchanger



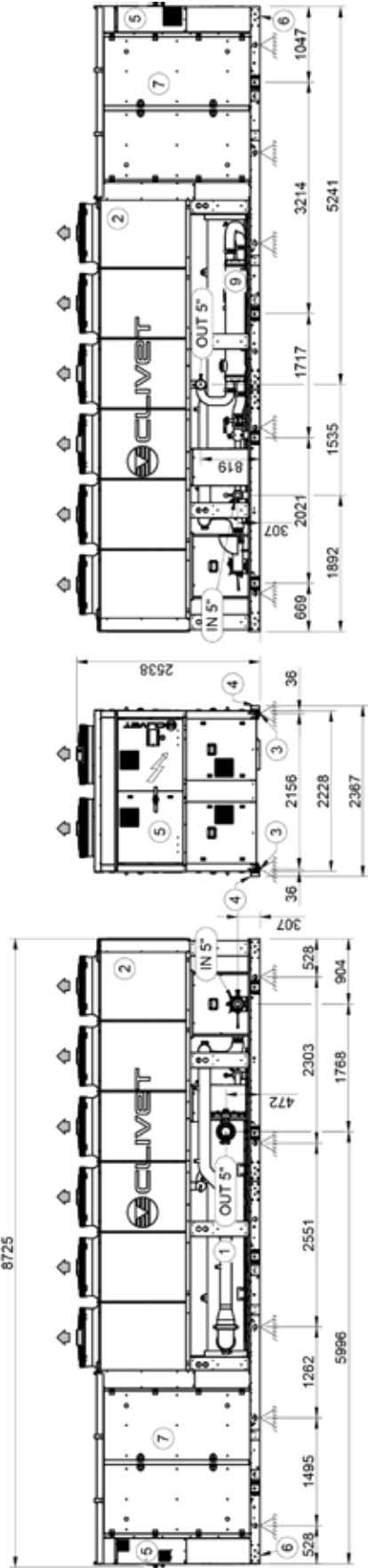
SIZE	260.2
Length	mm 8725
Depth	mm 2228
Height	mm 2538
W1 Supporting point	kg 1030
W2 Supporting point	kg 1204
W3 Supporting point	kg 502
W4 Supporting point	kg 1318
W5 Supporting point	kg 575
W6 Supporting point	kg 889
W7 Supporting point	kg 1347
W8 Supporting point	kg 457
W9 Supporting point	kg 1290
W10 Supporting point	kg 585
Operating weight	kg 9197
Shipping weight	kg 8589

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

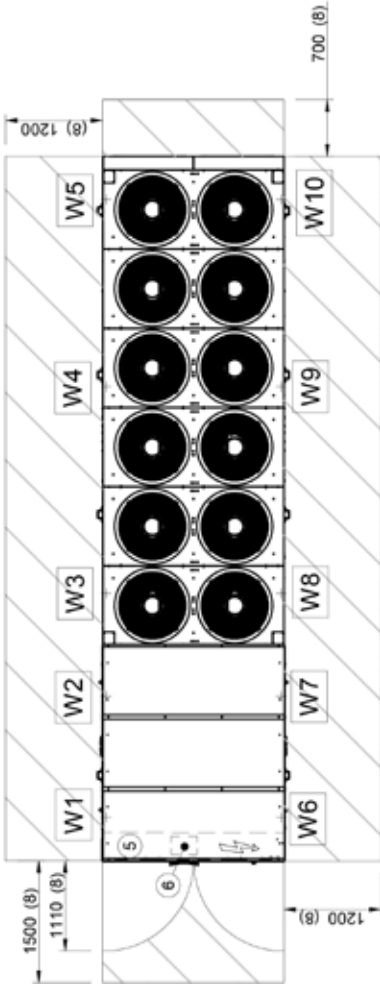
Dimensional drawings

Size 260.2 - With hydronic assembly

DAA2A0007_00
DATA/DATE: 30/06/2021



- 1. Cold side Exchanger
- 2. External Exchanger
- 3. Unit fixing holes
- 4. Lifting brackets (removable)
- 5. Electrical panel
- 6. Power input
- 7. Sound proof enclosure
- 8. Clearance access recommended
- 9. Hot side Exchanger

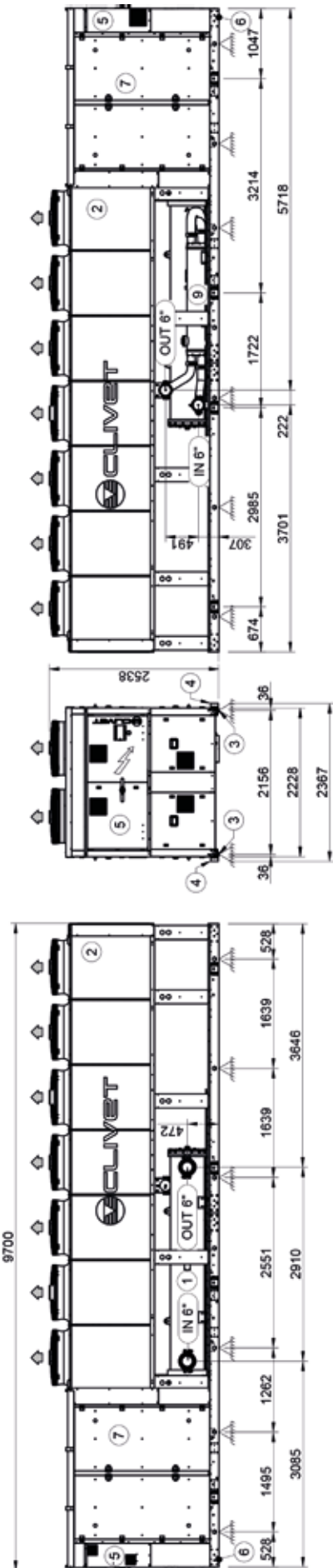


SIZE	260.2
Length	mm 8725
Depth	mm 2228
Height	mm 2538
W1 Supporting point	kg 1022
W2 Supporting point	kg 1260
W3 Supporting point	kg 281
W4 Supporting point	kg 1595
W5 Supporting point	kg 801
W6 Supporting point	kg 884
W7 Supporting point	kg 1382
W8 Supporting point	kg 356
W9 Supporting point	kg 1689
W10 Supporting point	kg 902
Operating weight	kg 10173
Shipping weight	kg 9489

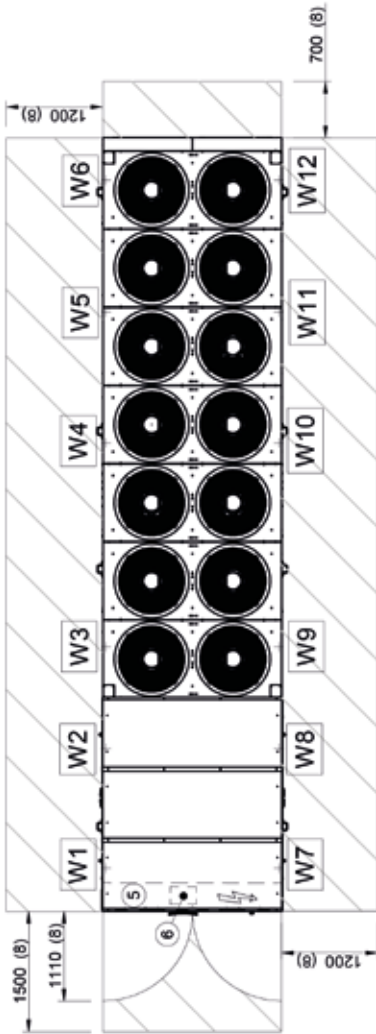
The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Size 280.2 - Without hydronic assembly

DAA2A0006_00
DATA/DATE :26/03/2021



- 1. Cold side Exchanger
- 2. External Exchanger
- 3. Unit fixing holes
- 4. Lifting brackets (removable)
- 5. Electrical panel
- 6. Power input
- 7. Sound proof enclosure
- 8. Clearance access recommended
- 9. Hot side Exchanger



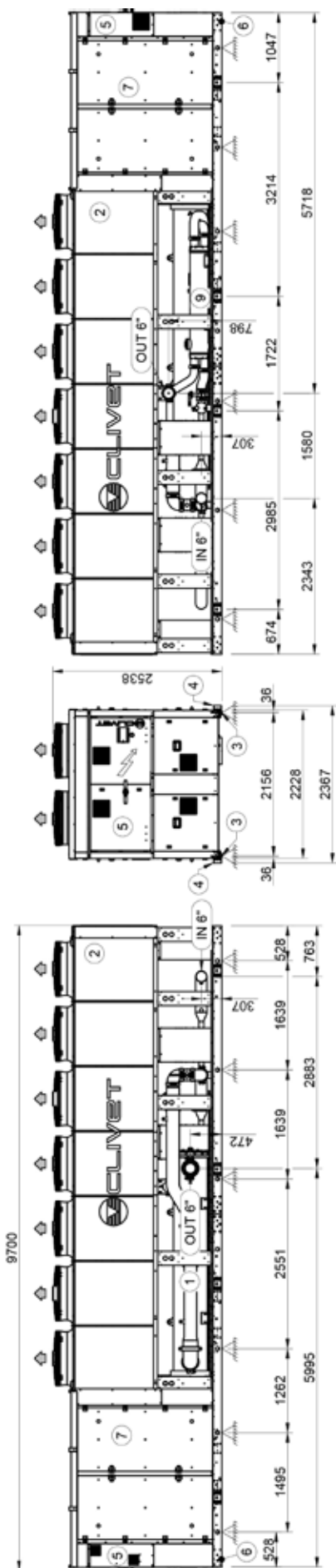
SIZE	280.2
Length	9700 mm
Depth	2228 mm
Height	2538 mm
W1 Supporting point	1059 kg
W2 Supporting point	964 kg
W3 Supporting point	1044 kg
W4 Supporting point	927 kg
W5 Supporting point	238 kg
W6 Supporting point	516 kg
W7 Supporting point	921 kg
W8 Supporting point	1083 kg
W9 Supporting point	1134 kg
W10 Supporting point	1080 kg
W11 Supporting point	225 kg
W12 Supporting point	517 kg
Operating weight	9708 kg
Shipping weight	9153 kg

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

Dimensional drawings

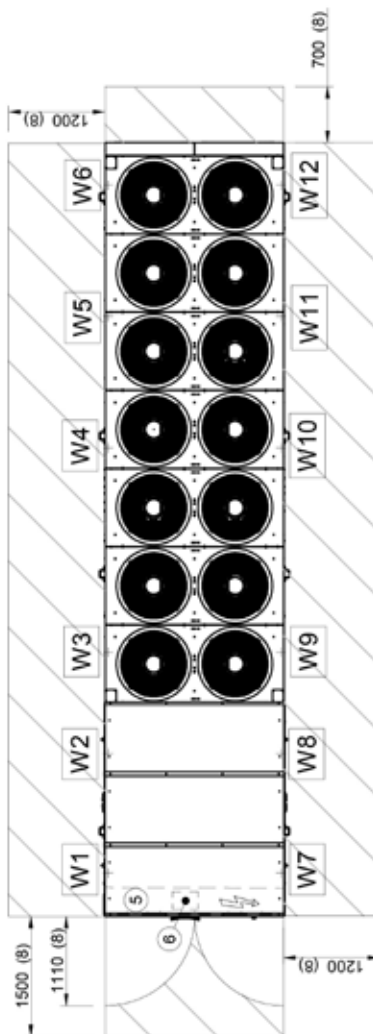
Size 280.2 -With hydronic assembly

DAA2A0008_00
DATA/DATE :21/06/2021



1. Cold side Exchanger
2. External Exchanger
3. Unit fixing holes
4. Lifting brackets (removable)
5. Electrical panel
6. Power input
7. Sound proof enclosure
8. Clearance access recommended
9. Hot side Exchanger

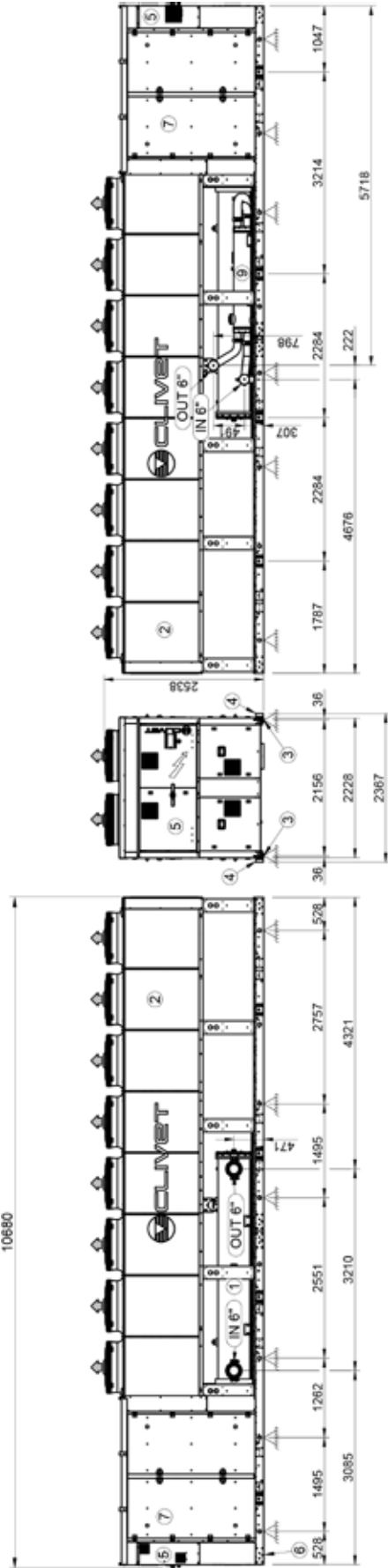
SIZE	280.2
Length	mm 9700
Depth	mm 2228
Height	mm 2538
W1 Supporting point	kg 1058
W2 Supporting point	kg 971
W3 Supporting point	kg 1029
W4 Supporting point	kg 1071
W5 Supporting point	kg 438
W6 Supporting point	kg 524
W7 Supporting point	kg 921
W8 Supporting point	kg 1085
W9 Supporting point	kg 1131
W10 Supporting point	kg 1194
W11 Supporting point	kg 396
W12 Supporting point	kg 536
Operating weight	kg 10354
Shipping weight	kg 9727



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

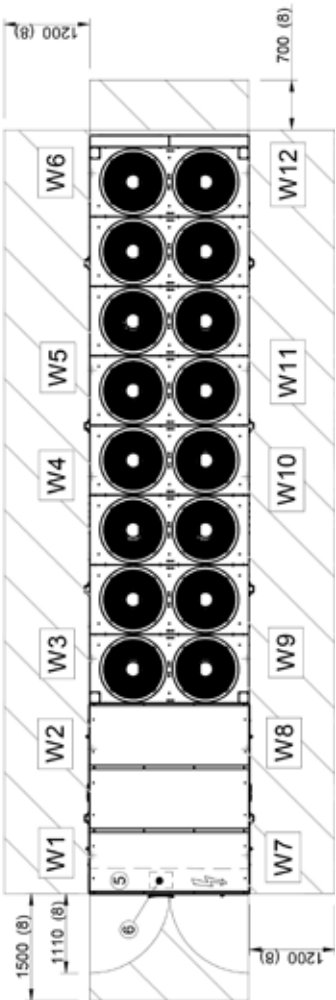
Size 320.2 - Without hydronic assembly

DAA2A0012_00
DATA/DATE: 18/06/2021



1. Cold side Exchanger
2. External Exchanger
3. Unit fixing holes
4. Lifting brackets (removable)
5. Electrical panel
6. Power input
7. Sound proof enclosure
8. Clearance access recommended
9. Hot side Exchanger

SIZE	320.2
Length	mm 10680
Depth	mm 2228
Height	mm 2538
W1 Supporting point	kg 1052
W2 Supporting point	kg 937
W3 Supporting point	kg 1138
W4 Supporting point	kg 903
W5 Supporting point	kg 376
W6 Supporting point	kg 593
W7 Supporting point	kg 916
W8 Supporting point	kg 1059
W9 Supporting point	kg 1212
W10 Supporting point	kg 1060
W11 Supporting point	kg 367
W12 Supporting point	kg 594
Operating weight	kg 10207
Shipping weight	kg 9581

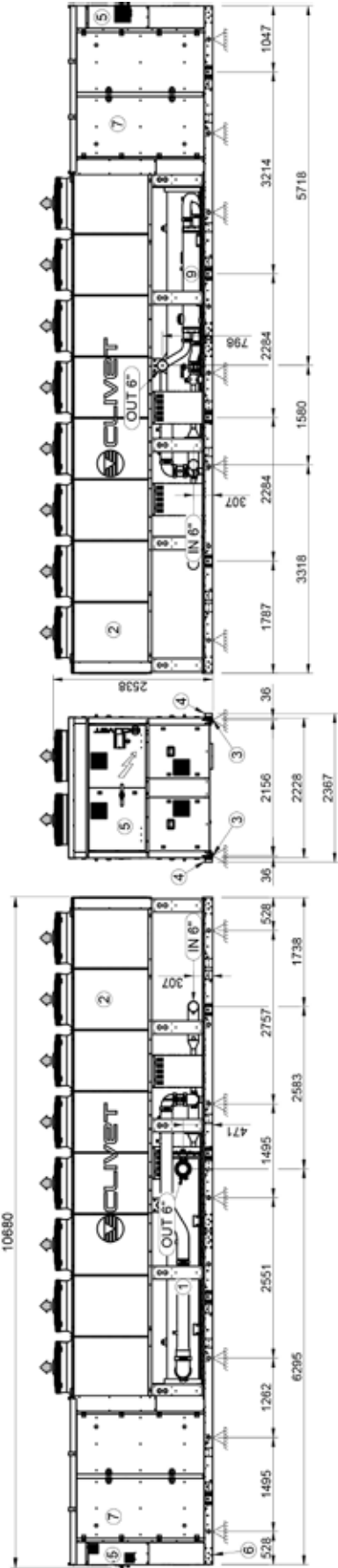


The presence of optional accessories may result in a substantial variation of the weights shown in the table.

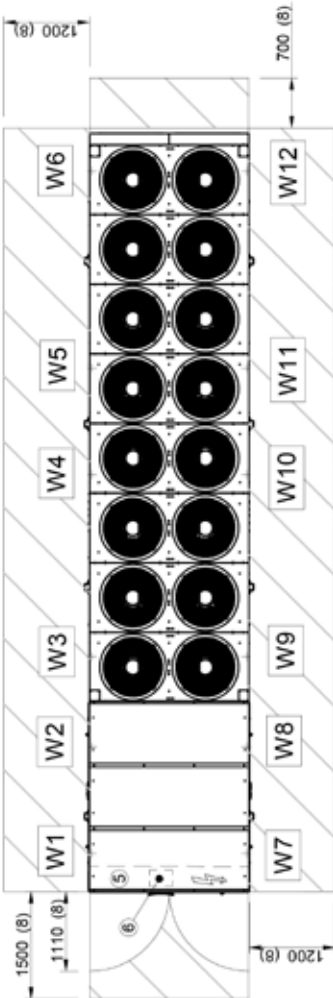
Dimensional drawings

Size 320.2 - With hydronic assembly

DAA2A0014_00
DATA/DATE: 01/07/2021



- 1. Cold side Exchanger
- 2. External Exchanger
- 3. Unit fixing holes
- 4. Lifting brackets (removable)
- 5. Electrical panel
- 6. Power input
- 7. Sound proof enclosure
- 8. Clearance access recommended
- 9. Hot side Exchanger

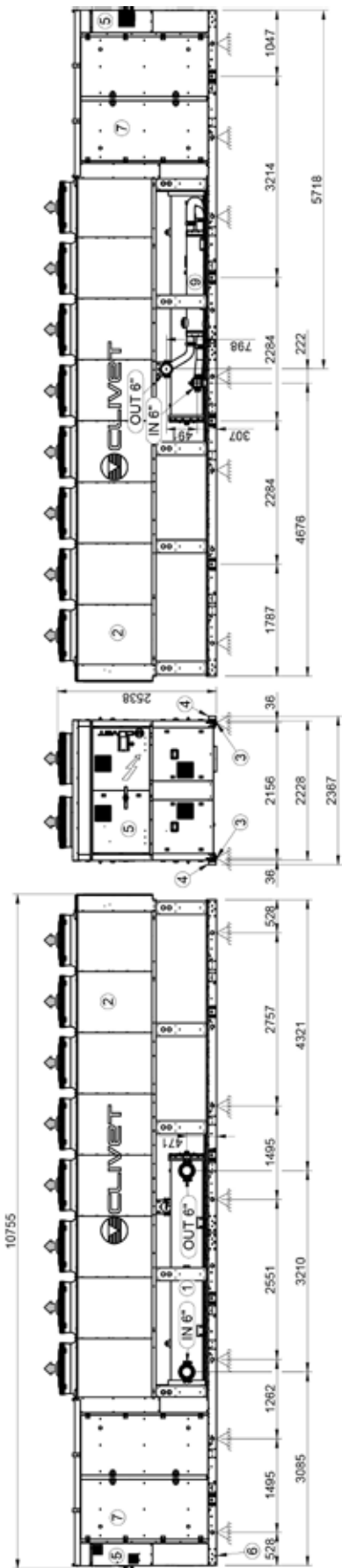


SIZE	320.2
Length	mm 10680
Depth	mm 2228
Height	mm 2538
W1 Supporting point	kg 1050
W2 Supporting point	kg 940
W3 Supporting point	kg 1124
W4 Supporting point	kg 1025
W5 Supporting point	kg 590
W6 Supporting point	kg 598
W7 Supporting point	kg 915
W8 Supporting point	kg 1057
W9 Supporting point	kg 1210
W10 Supporting point	kg 1155
W11 Supporting point	kg 557
W12 Supporting point	kg 604
Operating weight	kg 10826
Shipping weight	kg 10128

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

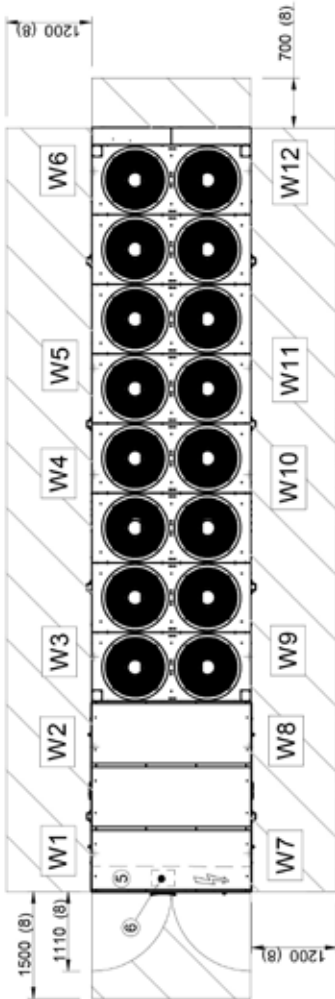
Size 340.2 - Without hydronic assembly

DAA2A0013_00
DATA/DATE: 18/06/2021



1. Cold side Exchanger
2. External Exchanger
3. Unit fixing holes
4. Lifting brackets (removable)
5. Electrical panel
6. Power input
7. Sound proof enclosure
8. Clearance access recommended
9. Hot side Exchanger

SIZE	340.2
Length	mm 10755
Depth	mm 2228
Height	mm 2538
W1 Supporting point	kg 1056
W2 Supporting point	kg 948
W3 Supporting point	kg 1174
W4 Supporting point	kg 933
W5 Supporting point	kg 407
W6 Supporting point	kg 636
W7 Supporting point	kg 920
W8 Supporting point	kg 1070
W9 Supporting point	kg 1249
W10 Supporting point	kg 1089
W11 Supporting point	kg 398
W12 Supporting point	kg 636
Operating weight	kg 10516
Shipping weight	kg 9889

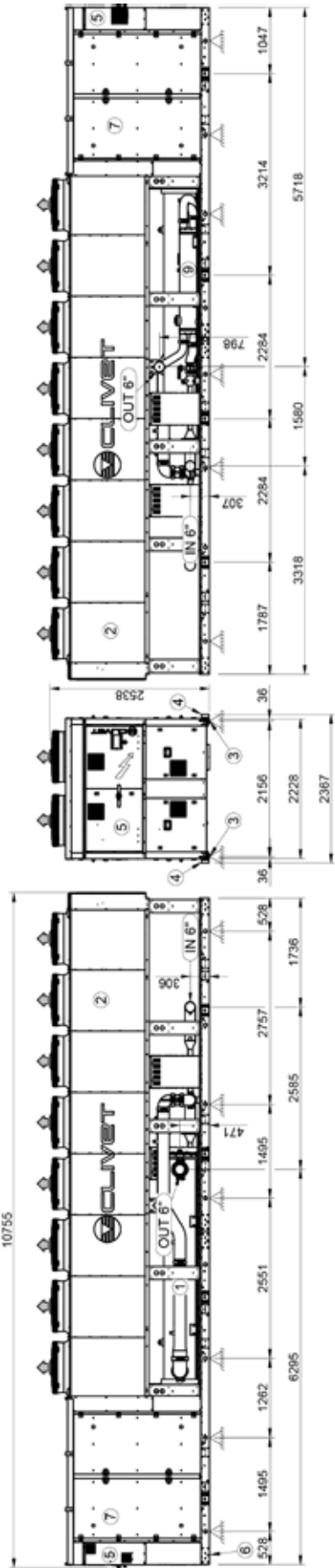


The presence of optional accessories may result in a substantial variation of the weights shown

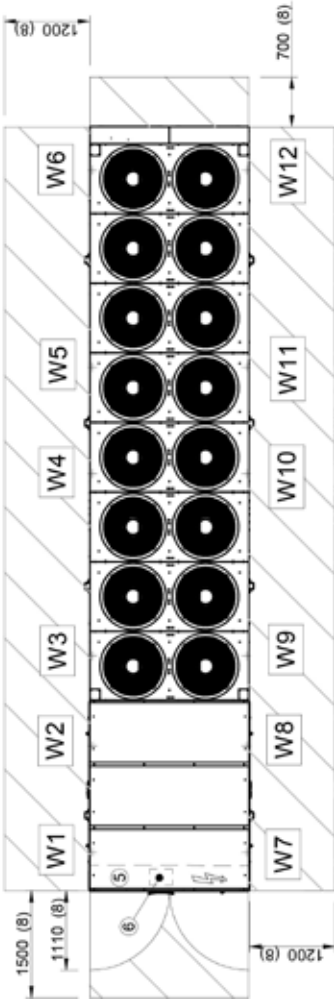
Dimensional drawings

Size 340.2 - With hydronic assembly

DAA2A0015_00
DATA/DATE: 01/07/2021



- 1. Cold side Exchanger
- 2. External Exchanger
- 3. Unit fixing holes
- 4. Lifting brackets (removable)
- 5. Electrical panel
- 6. Power input
- 7. Sound proof enclosure
- 8. Clearance access recommended
- 9. Hot side Exchanger

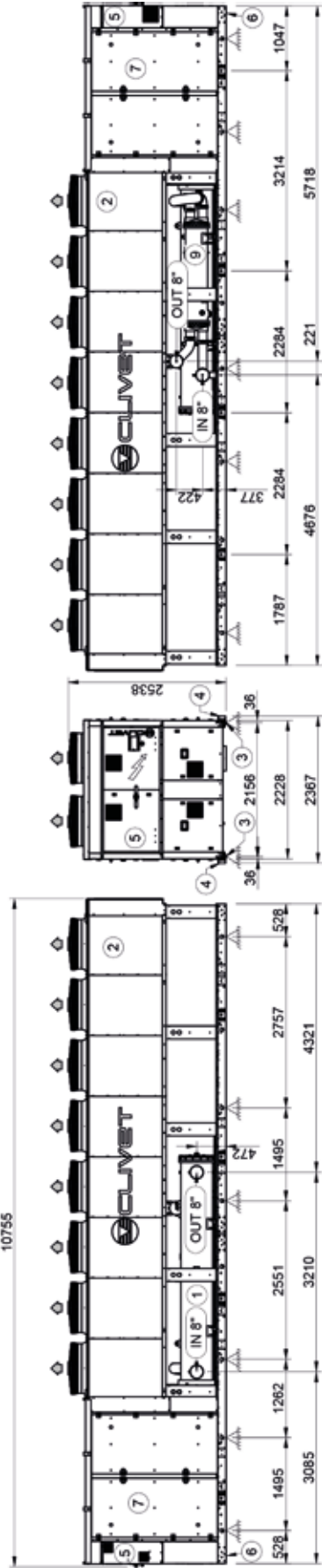


SIZE	340.2
Length	10755 mm
Depth	2228 mm
Height	2538 mm
W1 Supporting point	1053 kg
W2 Supporting point	952 kg
W3 Supporting point	1159 kg
W4 Supporting point	1070 kg
W5 Supporting point	651 kg
W6 Supporting point	642 kg
W7 Supporting point	918 kg
W8 Supporting point	1068 kg
W9 Supporting point	1247 kg
W10 Supporting point	1186 kg
W11 Supporting point	614 kg
W12 Supporting point	648 kg
Operating weight	11209 kg
Shipping weight	10511 kg

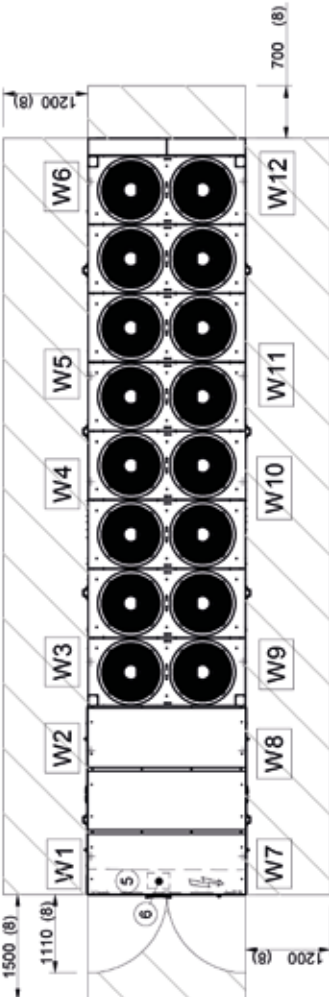
The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Size 420.2 - Without hydronic assembly

DAA2A0003_00
DATA/DATE: 12/05/2021



- 1. Cold side Exchanger
- 2. External Exchanger
- 3. Unit fixing holes
- 4. Lifting brackets (removable)
- 5. Electrical panel
- 6. Power input
- 7. Sound proof enclosure
- 8. Clearance access recommended
- 9. Hot side Exchanger



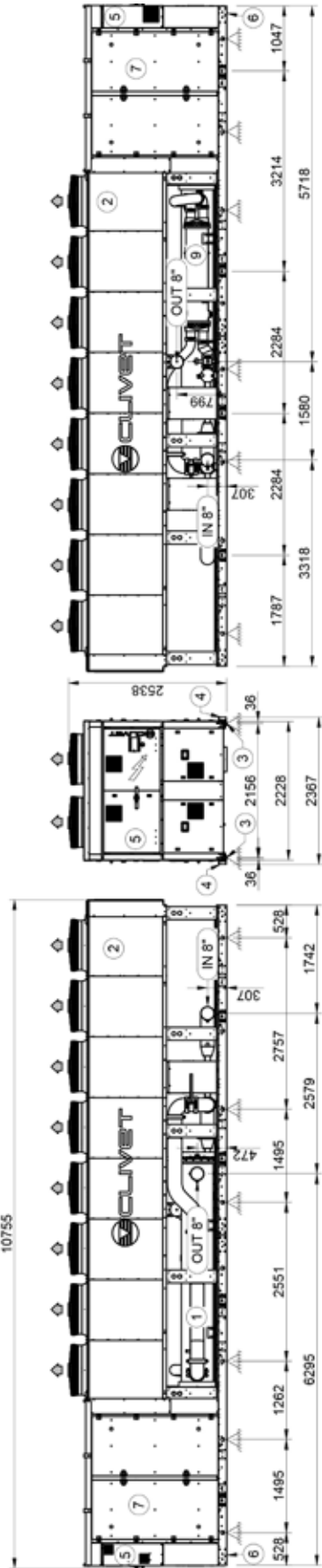
SIZE	420.2
Length	mm 10755
Depth	mm 2228
Height	mm 2538
W1 Supporting point	kg 1256
W2 Supporting point	kg 1100
W3 Supporting point	kg 1516
W4 Supporting point	kg 1171
W5 Supporting point	kg 295
W6 Supporting point	kg 622
W7 Supporting point	kg 1031
W8 Supporting point	kg 1380
W9 Supporting point	kg 1355
W10 Supporting point	kg 1203
W11 Supporting point	kg 327
W12 Supporting point	kg 619
Operating weight	kg 11875
Shipping weight	kg 11154

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

Dimensional drawings

Size 420.2 - With hydronic assembly

DAA2A0002_00
DATA/DATE: 20/04/2021



- 1. Cold side Exchanger
- 2. External Exchanger
- 3. Unit fixing holes
- 4. Lifting brackets (removable)
- 5. Electrical panel
- 6. Power input
- 7. Sound proof enclosure
- 8. Clearance access recommended
- 9. Hot side Exchanger

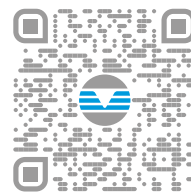
SIZE	420.2
Length	10755 mm
Depth	2228 mm
Height	2538 mm
W1 Supporting point	1257 kg
W2 Supporting point	1110 kg
W3 Supporting point	1501 kg
W4 Supporting point	1337 kg
W5 Supporting point	621 kg
W6 Supporting point	679 kg
W7 Supporting point	1034 kg
W8 Supporting point	1382 kg
W9 Supporting point	1360 kg
W10 Supporting point	1227 kg
W11 Supporting point	609 kg
W12 Supporting point	684 kg
Operating weight	12801 kg
Shipping weight	11830 kg

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

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