

Air cooled reversible heat pump for outdoor installation

SPINchiller⁴

WSAN-YSC4 80.3 - 240.6 RANGE



TECHNICAL BULLETIN



SIZE - EXCELLENCE	80.3	90.4	100.4	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6
Cooling capacity [kW]	215	240	265	290	320	355	390	430	500	555	610	655
Heating capacity [kW]	225	255	280	310	335	375	415	455	530	585	640	685
SIZE - PREMIUM	90.3	100.3	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6	
Cooling capacity [kW]	235	255	275	300	335	370	405	480	530	585	630	
Heating capacity [kW]	240	265	285	315	350	385	420	500	555	610	655	

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Clivet is taking part in the EUROVENT certification programme up to 1.500 kW.
The products concerned appear in the certified products list of the EUROVENT
www.eurovent-certification.com site.

Features and benefits

SPINchiller⁴: Modular scroll technology for every application

SPINchiller⁴ is the new generation of Clivet liquid chillers and heat pump with modular scroll technology. Thanks to its high seasonal efficiency and the adoption of the R-32 refrigerant with reduced environmental impact, it represents the ideal solution for different types of installation.

WSAT-YSC4 80.3 ÷ 240.6

Air cooled water chiller with multiscroll technology

- Range 222 ÷ 675 kW
- EXCELLENCE / PREMIUM Version
- Seasonal efficiency (SEER) 4,9 / 4,6
- Operating with 50°C of outdoor air temperature
- Operating with -18°C of outdoor air temperature
- Full aluminium microchannel coils
- Partial recovery of the condensing heat
- Total recovery of the condensing heat
- Plate exchangers / shell and tube
- 2 refrigeration circuits



WSAN-YSC4 80.3 ÷ 240.6

Air cooled heat pump with multiscroll technology

- Range 215 - 655 kW
- EXCELLENCE / PREMIUM Version
- Seasonal efficiency (SEER) 4,8 / 4,5
- Operating with 48°C of outdoor air temperature in cooling
- Operating with -15°C of outdoor air temperature in heating
- Copper/aluminum condensing coil
- Partial recovery of the condensing heat
- Plate exchangers / shell and tube
- 2 refrigeration circuits



WSAN-YSC4 260.8 ÷ 480.12

Air cooled heat pump with multiscroll technology

- Range 670 - 1260 kW
- EXCELLENCE / PREMIUM Version
- Seasonal efficiency (SEER) 4,8 / 4,6
- Operating with 48°C of outdoor air temperature in cooling
- Operating with -15°C of outdoor air temperature in heating
- Copper/aluminum condensing coil
- Partial recovery of the condensing heat
- Plate exchangers / shell and tube
- 4 refrigeration circuits



Compressor

High efficiency hermetic orbiting scroll compressor complete with oil charge, motor over-temperature and over-current devices and protection against excessive gas discharge temperature with oil heater, which starts automatically, keeps the oil from being diluted by the refrigerant when the compressor stops.

Compressors, fitted on rubber antivibration mounts to prevent transmission of noise and vibration, are connected in TANDEM or TRIO on a single refrigerating circuit with biphasic oil equalisation, it allows to reach high efficiency at partial load.

Uniform compression process with reduced number of moving parts which ensure very low levels of noise and vibration.

Structure

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

Internal exchanger

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

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

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

Esternal exchanger

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

In Excellence version the fins are made of aluminium with hydrophilic treatment.

Fan

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

Refrigeration circuit

Two independent refrigeration circuits made of copper, brazed and factory-assembled, complete with:

- anti-acid dehydrator filter with solid cartridge replaceable;
- liquid flow and humidity indicator;
- ricevitore di liquido;
- electronic expansion valve;
- non return valve;
- 4-way reverse cycle valve;
- high-pressure safety pressure switch;
- safety valve for high and low pressure;
- cut-off valve on liquid line.
- inlet liquid separator.

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

Electrical panel

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

The power section includes:

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

The control section includes:

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

Standard unit technical specifications

Accessories

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

Test

Unit subjected to factory-tested in specific steps and test pressure of the piping of the refrigerant circuit (with nitrogen and hydrogen), before shipping them.

Unit equipment with outdoor air low temperatures

MINIMUM OUTDOOR AIR TEMPERATURE		OPERATING UNIT		UNIT IN STAND-BY ⁽⁵⁾ (fed unit)	UNIT IN STORAGE (unit not fed)
		COOLING*	HEATING**		
+11°C	1	✓ STANDARD UNIT (PREMIUM VERSION)		✓ STANDARD UNIT	
+2°C	2				
-5°C	4				
-7°C	3				
-10°C	4				✓ STANDARD UNIT ⁽⁶⁾
Between -10°C and -15°C		✓ STANDARD UNIT (EXCELLENCE VERSION) ✗ NOT SUITABLE: BUILT-IN INVERTER PUMPS		✓ STANDARD UNIT ✗ NOT SUITABLE: BUILT-IN INVERTER PUMPS	
Between -15°C and -25°C		NOT POSSIBLE		✓ WATER EMPTY UNIT OR WITH AN APPROPRIATE GLYCOL PERCENTAGE ✓ ELECTRICAL PANEL ANTIFREEZE PROTECTION ✗ NOT SUITABLE: BUILT-IN PUMPS, PARTIAL RECOVERY STORAGE AND SHELL AND TUBE EXCHANGER	NOT POSSIBLE

Data referred to the following conditions:

*chilled water production:

internal exchanger water = 12/7 °C

**hot water production:

internal exchanger water = 40/45 °C

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

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

⁽⁶⁾ Unit without water or containing water with an appropriate quantity of glycol.

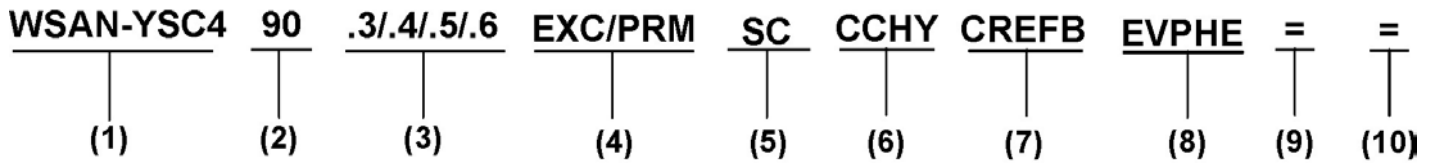
At the unit start-up the water temperature or water with glycol must be inside the operating range indicated in the "Operating range" graph.

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.

⚠ The unit, with an outdoor air temperature on average lower than -10°C, can remain stored for a maximum of 1 month.

Unit configuration



(1) Range

WSAN = Air cooled heat pump
YSC4 = SPINchiller range with multiscroll compressors and R-32 refrigerant

(2) Size

90 = Nominal compressor capacity (HP)

(3) Compressors

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

(4) Energy efficiency

EXC = EXCELLENCE Version (Standard)
PRM = PREMIUM Version

(5) Acoustic configuration

SC = Acoustic configuration with compressor soundproofing (standard)
EN = Super-silenced acoustic configuration

(6) Condensing coil

CCHY = Copper / aluminium condenser coil with hydrophilic treatment (Standard - Excellence Version)
CCS = Copper / aluminium condenser coil (Standard - Premium Version)
CCCA = Copper / aluminium condenser coil with acrylic lining
CCCA1 = Copper / aluminium condensing coils with Aluminium Energy Guard DCC treatment

(7) Fans

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

(8) Evaporator

EVPHE = Plate exchangers (Standard)
EVFTP = Shell and tube evaporator PED test

(9) Condensation heat recovery

(-) not required (standard)
D - Partial energy recovery

(10) Pumping unit

(-) Not required (standard)
1PM = Hydropack with N° 1 pump
1PMH = Hydropack with N° 1 high static pressure pump
1PMV = Hydropack with N° 1 inverter pump
1PMVH = Hydropack with N° 1 high static pressure inverter pump
2PM = Hydropack with N° 2 pumps
2PMH = Hydropack with N° 2 high static pressure pumps
2PMV = Hydropack with N° 2 inverter pumps
2PMVH = Hydropack with N° 2 high static pressure inverter pumps

IVFDT

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

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

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

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

ACC

Storage tank

Steel storage tank complete with double layer covering with closed-cell insulation, stainless steel anti-freeze immersion resistance, bleed valve, draw off cock, quick connections with insulated casing.

For size: 80.3 EXC / 90.3 ÷ 120.4 PRM the storage capacity is 420 liters.

For size: 90.4 ÷ 120.4 EXC / 130.4 ÷ 160.4 PRM the storage capacity is 500 liters.

For size: 130.4 - 160.4 EXC / 185.5 ÷ 210.6 PRM the storage capacity is 780 liters.

For size: 185.5 ÷ 240.6 EXC / 225.6 ÷ 240.6 PRM the storage capacity is 1050 liters.

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

CONTA2

Energy meter

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

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

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

CMSC9

Serial communication module for Modbus supervisor

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

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

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

CMSC10

Serial communication module for LonWorks supervisor

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

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

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

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

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

CMSC11

Serial communication module for BACnet/IP supervisor

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

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

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

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

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.

Built-in options

SPC1	Set-point compensation with 4-20 mA signal <p>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.</p>
ECS	ECOSHARE function for the automatic management of a group of units <p>The device allows automatic management of units that operate on the same hydraulic circuit, by creating a local communication network.</p> <p>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.</p> <p>Moreover: Mode 1 - it keeps all the pumps active Mode 2 - it activates only the pumps of the unit required to operate</p> <p>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 8 units (1 Master and 7 Slave). For ECOSHARE units, the minimum water content of the system is equal to that of the largest unit increased by +25% for each other unit connected.</p> <p>⚠ 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. ⚠ It is necessary to provide a non-return valve for each unit installed in hydraulic parallel and equipped with an hydronic assembly installed on board (Installation by the Customer)..</p>
PFCP	Power-factor correction capacitors (cosfi > 0.9) <p>The component is necessary to lower the phase difference between current and voltage in the electromagnetic components of the unit (e.g. asynchronous motors). The component allows to put the cosfi power factor to values on average higher than 0.9, reducing the network reactive power. This often leads to an economic benefit which the energy provider grants to the final user.</p> <p>The device is installed and wired built-in the unit.</p>
PFCC	Power-factor correction capacitors (cosfi > 0.95) <p>The component is necessary to lower the phase difference between current and voltage in the electromagnetic components of the unit (e.g. asynchronous motors). The component allows to put the cosfi power factor to values on average higher than 0.95, reducing the network reactive power. This often leads to an economic benefit which the energy provider grants to the final user.</p> <p>The device is installed and wired built-in the unit.</p>
SFSTR	Disposal for inrush current reduction <p>Electronic device which automatically starts up the compressors gradually, reducing the starting current for the unit by around 40% in comparison with the nominal value. This results in the reduction of the starting torque of the ON/OFF compressor, it is more protected from mechanical stresses leading to an increased life of the component. The noise is also reduced.</p> <p>Device installed and wired built-in the unit.</p>
RE-25	Electrical panel antifreeze protection for min. outdoor temperature down to -25°C <p>This option is necessary for very cold climates, where the external temperature can be between -15°C and -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.</p> <p>The device is built-in the unit.</p> <p>⚠ This accessory does not lead to substantial variations in the electrical data for the unit which has been declared in the Electrical Data section. ⚠ This accessory operates even when the unit is switched off provided that the power supply is maintained active and the unit continues to be connected. ⚠ It is necessary to make precautions against build up of snow and ice in front of the exhaust and outdoor air inlet locations</p>
SDV	Cutoff valve on compressor supply and return <p>It includes the cut-off valve on compressor supply and return which facilitates maintenance or substitution of compressors.</p> <p>Device installed built-in the unit.</p>
RDVS	Switching valve with dual safety valves <p>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.</p>
RPRI	Refrigerant leak detector assembled on the casing <p>Leak detector device built-in installed and placed inside the compressor box, it detects leaks of the internal refrigeration circuit.</p> <p>⚠ Option available only for acoustic configuration with compressor soundproofing (SC) and super-silenced (EN).</p>

MHP	<p>High and low pressure gauges</p> <p>It includes two liquid pressure gauges for the analog measurement of refrigerant pressures on suction and discharge lines of the compressors with pressure sockets installed in the unit in an easily accessible location. The accessory is built-in the unit.</p>
PGFC	<p>Finned coil protection grilles</p> <p>Grilles made in drawn of electro-welded steel and coated to protect the external coil from accidental contact with people and things.</p> <p>The protection grill 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 25mm.</p> <p>⚠ This option is not suitable for application in sulphuric environments.</p>
EVFTP	<p>Shell and tube evaporator PED test</p> <p>Direct expansion type exchanger with two independent circuits on the refrigerant side. The exchanger is composed of a cover made of carbon steel. The tubes, anchored to the tube plate by mechanical expansion, are made of copper, high efficiency, internally rifled to improve thermal exchange and specially designed for use with modern ecological refrigerants. It also includes a water side protection differential switch, an anti-freeze heating element to protect against icing, and covering in closed-cell thermo-insulating material that prevents the formation of condensation and heat exchange with the exterior. The water connections of the exchanger are quick-release with splined joint (Victaulic).</p> <p>⚠ This option is not compatible with the storage tank option (ACC)</p>
DLM0-10	<p>Demand limit with signal 0-10V</p> <p>The device allows to limit the absorption unit through an external signal type 0-10V.</p>
DLM4-20	<p>Demand limit with signal 4-20mA</p> <p>The device allows to limit the absorption unit through an external signal type 4-20mA.</p>
CCCA	<p>Copper / aluminium condenser coil with acrylic lining</p> <p>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.</p> <p>Attention!</p> <ul style="list-style-type: none"> - Cooling capacity variation -2.7% - Variation in compressor power input +4.2% - Operating range reduction -2.1°C
CCCA1	<p>Copper / aluminium condensing coils with Aluminium Energy Guard DCC treatment</p> <p>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.</p>
PGCCH	<p>Anti-hail protection grilles</p> <p>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.</p>
PFGP	<p>Soundproofing paneling of the pumping unit</p> <p>Configuration used to increase the hydronic assembly's silent operation. It is made up of steel casings lined internally with high-density material with a soundproofing function. The casings are pre-painted with RAL 9001 color.</p> <p>Option available for all pumping groups installed on the unit, in combination with the standard acoustic configuration (ST) and with compressor soundproofing (SC)</p>

Accessories separately supplied

RCMRX Remote control via microprocessor control

This option allows to have full control over all the unit functions from a remote position. It can be easily installed on the wall and has the same aspect and functions of the user interface on the unit.

- ⚠ All device functions can be repeated with a normal portable PC connected to the unit with an Ethernet cable and equipped with an internet navigation browser.
- ⚠ The device must be installed on the wall with suitable plugs and connected to the unit (installation and wiring to be conducted by the Customer). Maximum remote control distance 350 m without auxiliary power supply.
- ⚠ For distances greater than 350 m and in any case less than 700 m it is necessary to install the 'PSX - Mains power unit' accessory.
- ⚠ Data and power supply serial connection cable n.1 twisted and shielded pair. Diameter of the individual conductor 0.8 mm.
- ⚠ Installation is a responsibility of the Customer..

AMMX Spring antivibration mounts

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

- ⚠ Installation is a responsibility of the Customer.

AMMSX Anti-seismic spring antivibration mounts

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

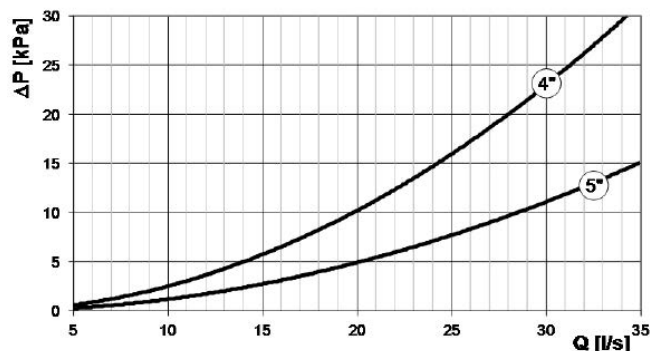
- ⚠ Installation is a responsibility of the Customer.

IFWX Steel mesh strainer on the water side

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

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

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



CSVX Couple of manually operated shut-off valves

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

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

- ⚠ Installation is the responsibility of the Client, externally to 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.

Performance - Excellence

Acoustic configuration Compressor soundproofing (SC)

SIZE		80.3	90.4	100.4	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6	
Cooling														
Cooling capacity	1	[kW]	215	240	265	290	320	355	390	430	500	556	611	656
Compressor power input	1	[kW]	67,9	68,9	77,0	87,4	98,2	104	118	133	151	174	183	203
Total power input	2	[kW]	72,3	75,7	83,9	94,1	105	113	127	142	162	186	196	216
Partial recovery heating capacity	3	[kW]	73,6	80,3	88,9	98,1	109	119	132	146	169	190	206	223
EER	1	-	2,97	3,17	3,16	3,08	3,05	3,14	3,07	3,03	3,09	2,99	3,12	3,04
Water flow-rate (User Side)	1	[l/s]	10,2	11,4	12,6	13,8	15,2	16,9	18,5	20,4	23,7	26,4	29,0	31,2
Internal exchanger pressure drops	1	[kPa]	25	30	30	27	27	31	32	32	36	44	48	39
Cooling capacity (EN14511:2018)	4	[kW]	215	240	265	290	320	355	390	430	500	555	610	655
Total power input (EN14511:2018)	4	[kW]	72,9	76,4	84,7	94,9	106	114	128	143	163	188	198	218
EER (EN14511:2018)	4	-	2,95	3,14	3,13	3,05	3,02	3,11	3,04	3,00	3,06	2,96	3,08	3,01
SEER	6	-	4,45	4,79	4,74	4,81	4,84	4,86	4,78	4,72	4,88	4,84	4,89	4,86
SEPR	7	-	5,30	5,81	5,63	5,79	6,04	6,22	5,96	6,10	5,94	6,20	6,01	5,92
Cooling capacity (AHRI 550/590)	5	[kW]	213	238	262	288	317	352	386	426	495	550	609	654
Total power input (AHRI 550/590)	5	[kW]	72,1	75,5	83,7	93,8	105	113	126	141	161	185	196	216
COP _r	5	-	2,96	3,15	3,14	3,06	3,03	3,12	3,05	3,01	3,07	2,97	3,11	3,03
IPLV	5	-	4,45	4,96	4,78	4,85	4,79	4,88	4,78	4,62	4,91	4,77	4,90	4,80
Heating														
Heating capacity	8	[kW]	225	255	280	310	335	375	415	455	530	584	639	684
Compressor power input	8	[kW]	64,5	70,7	77,5	87,0	94,8	103	115	126	146	164	181	194
Total power input	2	[kW]	69,2	78,0	84,7	94,3	102	113	124	136	158	176	196	209
COP	8	-	3,25	3,27	3,31	3,29	3,28	3,32	3,35	3,35	3,35	3,32	3,26	3,27
Water flow (user side)	8	[l/s]	10,9	12,3	13,5	15,0	16,2	18,1	20,1	22,0	25,6	28,2	30,9	33,1
Internal exchanger pressure drops	8	[kPa]	28	34	34	32	32	35	37	37	41	49	53	43
Heating capacity (EN14511:2018)	9	[kW]	225	255	280	310	335	375	415	455	530	585	640	685
Total power input (EN14511:2018)	9	[kW]	69,9	78,8	85,6	95,2	103	114	125	137	160	178	199	211
COP (EN14511:2018)	9	-	3,22	3,24	3,27	3,26	3,26	3,29	3,32	3,31	3,32	3,28	3,22	3,24
SCOP - MEDIUM Climate - W35	6	-	3,73	3,90	3,92	4,10	4,08	4,05	4,00	4,10	-	-	-	-

Super-silenced acoustic configuration (EN)

SIZE		80.3	90.4	100.4	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6	
Cooling														
Cooling capacity	1	[kW]	210	235	260	285	310	345	380	415	485	540	591	635
Compressor power input	1	[kW]	72,5	72,8	82,1	92,6	105	109	125	143	161	187	193	216
Total power input	2	[kW]	74,6	75,9	85,2	95,7	108	113	129	147	166	193	199	222
Partial recovery heating capacity	3	[kW]	73,5	80,0	88,9	98,2	108	118	131	145	168	189	204	221
EER	1	-	2,82	3,10	3,05	2,98	2,87	3,05	2,95	2,82	2,92	2,80	2,97	2,86
Water flow-rate (User Side)	1	[l/s]	9,97	11,2	12,3	13,5	14,7	16,4	18,0	19,7	23,0	25,6	28,1	30,2
Internal exchanger pressure drops	1	[kPa]	24	29	29	26	25	29	31	30	35	42	45	37
Cooling capacity (EN14511:2018)	4	[kW]	210	235	260	285	310	345	380	415	485	540	590	635
Total power input (EN14511:2018)	4	[kW]	75,1	76,6	86,0	96,4	109	114	130	148	167	195	201	224
EER (EN14511:2018)	4	-	2,79	3,06	3,02	2,95	2,85	3,03	2,92	2,80	2,89	2,77	2,94	2,84
SEER	6	-	4,39	4,73	4,68	4,74	4,78	4,83	4,73	4,68	4,87	4,83	4,82	4,76
SEPR	7	-	5,11	5,77	5,57	5,62	5,83	6,11	5,82	5,91	5,77	6,00	5,87	5,73
Cooling capacity (AHRI 550/590)	5	[kW]	208	233	258	282	307	342	377	411	480	535	589	634
Total power input (AHRI 550/590)	5	[kW]	74,3	75,7	84,9	95,4	108	113	129	146	165	192	199	222
COP _r	5	-	2,80	3,08	3,04	2,96	2,85	3,03	2,92	2,81	2,90	2,80	2,97	2,86
IPLV	5	-	4,26	4,96	4,75	4,78	4,65	4,82	4,64	4,34	4,84	4,65	4,81	4,67
Heating														
Heating capacity	8	[kW]	225	255	280	310	335	375	415	455	530	584	639	684
Compressor power input	8	[kW]	64,5	70,7	77,5	87,0	94,8	103	115	126	146	164	181	194
Total power input	2	[kW]	69,2	78,0	84,7	94,3	102	113	124	136	158	176	196	209
COP	8	-	3,25	3,27	3,31	3,29	3,28	3,32	3,35	3,35	3,35	3,32	3,26	3,27
Water flow (user side)	8	[l/s]	10,9	12,3	13,5	15,0	16,2	18,1	20,1	22,0	25,6	28,2	30,9	33,1
Internal exchanger pressure drops	8	[kPa]	28	34	34	32	32	35	37	37	41	49	53	43
Heating capacity (EN14511:2018)	9	[kW]	225	255	280	310	335	375	415	455	530	585	640	685
Total power input (EN14511:2018)	9	[kW]	69,9	78,8	85,6	95,2	103	114	125	137	160	178	199	211
COP (EN14511:2018)	9	-	3,22	3,24	3,27	3,26	3,26	3,29	3,32	3,31	3,32	3,28	3,22	3,24
SCOP - MEDIUM Climate - W35	6	-	3,73	3,90	3,92	4,10	4,08	4,05	4,00	4,10	-	-	-	-

The Product is compliant with the Erp (Energy Related Products) European Directive. It includes the Commission delegated Regulation (EU) No 2016/2281, also known as Ecodesign LOT21. Contains fluorinated greenhouse gases (GWP 675)

- 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.
- 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.
- Recovery exchanger water = 40/45 °C
- Data compliant to Standard EN 14511:2018 referred to the following conditions: Internal exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35 °C
- Data compliant to Standard AHRI 550/590 referred to the following conditions: Internal exchanger water temperature = 6,7 °C. Water flow-rate 0,043 l/s per kW. Entering external exchanger air temperature = 35 °C. Evaporator fouling factor = $0.18 \times 10^{(-4)}$ m² K/W
- Data compliant to Standard EN 14825:2018
- Data compliant according to EU regulation 2016/2281
- Data referred to the following conditions: Internal 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
- Data compliant to Standard EN 14511:2018 referred to the following conditions: Internal exchanger water temperature = 40/45 °C. Entering external exchanger air temperature = 7 °C D.B./6 °C W.B.

General technical data

Performance - Premium

Acoustic configuration Compressor soundproofing (SC)

SIZE			90.3	100.3	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6
Cooling													
Cooling capacity	1	[kW]	235	255	275	300	335	370	405	480	530	586	630
Compressor power input	1	[kW]	78,5	88,9	97,0	110	111	129	147	161	189	194	213
Total power input	2	[kW]	83,0	93,3	101	115	118	135	154	170	198	205	225
Partial recovery heating capacity	3	[kW]	81,5	89,4	96,7	107	116	130	144	167	187	203	219
EER	1	-	2,83	2,73	2,72	2,61	2,84	2,74	2,63	2,82	2,68	2,86	2,80
Water flow-rate (User Side)	1	[l/s]	11,2	12,1	13,1	14,2	15,9	17,6	19,2	22,8	25,2	27,8	29,9
Internal exchanger pressure drops	1	[kPa]	29	33	32	29	37	33	34	39	46	48	48
Cooling capacity (EN14511:2018)	4	[kW]	235	255	275	300	335	370	405	480	530	585	630
Total power input (EN14511:2018)	4	[kW]	83,7	94,1	102	116	119	136	155	172	200	207	227
EER (EN14511:2018)	4	-	2,80	2,71	2,70	2,59	2,81	2,72	2,61	2,80	2,65	2,83	2,77
SEER	6	-	4,26	4,24	4,35	4,37	4,55	4,57	4,33	4,64	4,62	4,66	4,64
SEPR	7	-	5,27	5,30	5,07	5,19	5,63	5,34	5,50	5,56	5,62	5,67	5,65
Cooling capacity (AHRI 550/590)	5	[kW]	233	253	273	298	332	367	401	476	525	580	625
Total power input (AHRI 550/590)	5	[kW]	82,7	92,9	101	114	118	135	153	169	197	204	224
COP _r	5	-	2,82	2,72	2,71	2,60	2,82	2,72	2,62	2,81	2,67	2,84	2,79
IPLV	5	-	4,37	4,38	4,22	4,25	4,50	4,44	4,14	4,67	4,53	4,68	4,59
Heating													
Heating capacity	8	[kW]	240	265	285	315	350	385	420	500	554	609	654
Compressor power input	8	[kW]	70,9	79,8	86,6	96,5	104	116	126	146	163	177	190
Total power input	2	[kW]	75,6	84,6	91,4	101	111	123	133	155	173	189	203
COP	8		3,17	3,13	3,12	3,12	3,15	3,13	3,16	3,23	3,20	3,22	3,22
Water flow (user side)	8	[l/s]	11,6	12,8	13,8	15,2	16,9	18,6	20,3	24,2	26,8	29,4	31,6
Internal exchanger pressure drops	8	[kPa]	31	36	35	34	43	37	38	43	51	53	53
Heating capacity (EN14511:2018)	9	[kW]	240	265	285	315	350	385	420	500	555	610	655
Total power input (EN14511:2018)	9	[kW]	76,4	85,5	92,3	102	112	124	134	157	175	191	206
COP (EN14511:2018)	9	-	3,15	3,10	3,09	3,09	3,12	3,10	3,13	3,19	3,17	3,18	3,18
SCOP - MEDIUM Climate - W35	6	-	3,47	3,64	3,83	3,87	3,80	3,64	3,82	3,91	-	-	-

Super-silenced acoustic configuration (EN)

SIZE			90.3	100.3	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6
Cooling													
Cooling capacity	1	[kW]	230	250	270	295	325	360	395	470	520	571	615
Compressor power input	1	[kW]	81,0	93,2	103	119	114	134	157	168	198	202	223
Total power input	2	[kW]	83,7	95,9	106	122	118	138	161	173	204	209	230
Partial recovery heating capacity	3	[kW]	80,9	89,2	97,0	108	114	128	144	166	187	201	218
EER	1	-	2,75	2,61	2,55	2,42	2,75	2,61	2,45	2,72	2,55	2,73	2,68
Water flow-rate (User Side)	1	[l/s]	10,9	11,9	12,8	14,0	15,4	17,1	18,8	22,3	24,7	27,1	29,2
Internal exchanger pressure drops	1	[kPa]	28	32	31	28	35	31	33	38	45	46	46
Cooling capacity (EN14511:2018)	4	[kW]	230	250	270	295	325	360	395	470	520	570	615
Total power input (EN14511:2018)	4	[kW]	84,4	96,7	107	123	119	139	162	174	206	211	232
EER (EN14511:2018)	4	-	2,72	2,58	2,52	2,40	2,73	2,59	2,43	2,69	2,53	2,70	2,65
SEER	6	-	4,22	4,17	4,31	4,28	4,47	4,51	4,25	4,60	4,58	4,60	4,58
SEPR	7	-	5,16	5,12	5,00	5,10	5,52	5,19	5,15	5,51	5,53	5,54	5,50
Cooling capacity (AHRI 550/590)	5	[kW]	228	248	268	293	322	357	391	466	516	566	610
Total power input (AHRI 550/590)	5	[kW]	83,4	95,5	105	121	118	137	160	172	203	208	229
COP _r	5	-	2,74	2,60	2,54	2,41	2,74	2,60	2,44	2,70	2,54	2,72	2,66
IPLV	5	-	4,21	4,27	4,11	4,13	4,46	4,31	3,91	4,62	4,43	4,60	4,48
Heating													
Heating capacity	8	[kW]	240	265	285	315	350	385	420	500	554	609	654
Compressor power input	8	[kW]	70,9	79,8	86,6	96,5	104	116	126	146	163	177	190
Total power input	2	[kW]	75,6	84,6	91,4	101	111	123	133	155	173	189	203
COP	8		3,17	3,13	3,12	3,12	3,15	3,13	3,16	3,23	3,20	3,22	3,22
Water flow (user side)	8	[l/s]	11,6	12,8	13,8	15,2	16,9	18,6	20,3	24,2	26,8	29,4	31,6
Internal exchanger pressure drops	8	[kPa]	31	36	35	34	43	37	38	43	51	53	53
Heating capacity (EN14511:2018)	9	[kW]	240	265	285	315	350	385	420	500	555	610	655
Total power input (EN14511:2018)	9	[kW]	76,4	85,5	92,3	102	112	124	134	157	175	191	206
COP (EN14511:2018)	9	-	3,15	3,10	3,09	3,09	3,12	3,10	3,13	3,19	3,17	3,18	3,18
SCOP - MEDIUM Climate - W35	6	-	3,47	3,64	3,83	3,87	3,80	3,64	3,82	3,91	-	-	-

The Product is compliant with the Erp (Energy Related Products) European Directive. It includes the Commission delegated Regulation (EU) No 2016/2281, also known as Ecodesign LOT21. Contains fluorinated greenhouse gases (GWP 675)

- 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.
- 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.
- Recovery exchanger water = 40/45 °C
- Data compliant to Standard EN 14511:2018 referred to the following conditions: Internal exchanger water temperature = 12/7 °C. Entering external exchanger air temperature = 35 °C
- Data compliant to Standard AHRI 550/590 referred to the following conditions: Internal exchanger water temperature = 6,7 °C. Water flow-rate 0,043 l/s per kW. Entering external exchanger air temperature = 35 °C. Evaporator fouling factor = $0.18 \times 10^{(-4)}$ m² K/W
- Data compliant to Standard EN 14825:2018
- Data compliant according to EU regulation 2016/2281
- Data referred to the following conditions: Internal 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
- Data compliant to Standard EN 14511:2018 referred to the following conditions: Internal exchanger water temperature = 40/45 °C. Entering external exchanger air temperature = 7 °C D.B./6 °C W.B.

Construction

Excellence

SIZE		80.3	90.4	100.4	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6
Compressor													
Type of compressors	1	SCROLL											
Refrigerant		R-32											
No. of compressors	[Nr]	3	4	4	4	4	4	4	4	5	6	6	6
Rated power (C1)	[HP]	40	40	50	50	60	65	65	80	80	105	105	120
Rated power (C2)	[HP]	40	50	50	60	60	65	80	80	105	105	120	120
Std Capacity control steps		4	6	4	6	6	6	6	4	6	8	8	6
Oil charge (C1)	[l]	16	16	12	12	17	17	17	18	18	27	27	38
Oil charge(C2)	[l]	8	12	12	17	17	17	18	18	27	27	38	38
Refrigerant charge (C1)	[Kg]	20	34	34	34	35	45	46	47	57	58	66	68
Refrigerant charge (C2)	[Kg]	19	33	33	34	35	44	45	48	57	57	67	69
Refrigeration circuits	[Nr]	2											
Internal exchanger													
Type of internal exchanger	2	PHE											
N. of internal exchanger	[Nr]	1											
Water content	[l]	19	19	20	24	28	32	36	48	57	57	49	60
Minimum system water content	[l]	1350	1500	2700	2700	2700	2150	2350	4350	3150	3450	3750	4500
External exchanger													
Type of external exchanger	3	CCHY											
Number of coils	[Nr]	4	4	4	4	4	4	4	4	4	4	4	4
External Section Fans													
Type of fans	4	AX											
Number of fans	[Nr]	4	6	6	6	6	8	8	8	10	10	12	12
Type of motor	5	EC											
Standard airflow (SC)	[l/s]	24000	36000	36000	36000	36000	48000	48000	48000	60000	60000	72000	72000
Standard airflow (EN)	[l/s]	17933	26900	26900	26900	26900	35867	35867	35867	44833	44833	53800	53800
Connections													
Water fittings		4"	4"	4"	4"	4"	5"	5"	5"	5"	5"	5"	5"
Power supply													
Standard power supply		400/3"/50											
Electrical data													
F.L.A. - Total	[A]	158,2	165,2	194,8	213,5	232,2	256,4	282,3	310,2	359,8	405,6	437,4	465,2
F.L.I. - Total	[kW]	96,3	98,1	117,9	130,7	143,5	158,5	175,6	194,0	224,1	251,7	272,6	291,0
M.I.C. - Value	[A]	566,2	406,9	436,5	547,9	566,6	590,7	616,6	718,2	694,2	740,0	771,7	799,6
M.I.C. - with soft start accessory	[A]	314,5	290,2	379,0	406,9	425,6	440,5	438,6	466,5	516,2	562,0	593,7	621,6

1. SCROLL = SCROLL Compressor
2. PHE = Plate exchanger
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

Construction

Premium

SIZE		90.3	100.3	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6	
Compressor													
Type of compressors	1							SCROLL					
Refrigerant		R-32											
No. of compressors	[Nr]	3	3	4	4	4	4	4	5	6	6	6	
Rated power (C1)	[HP]	40	40	50	60	65	65	80	80	105	105	120	
Rated power (C2)	[HP]	50	60	60	60	65	80	80	105	105	120	120	
Std Capacity control steps		4	4	6	6	6	6	4	6	8	8	6	
Oil charge (C1)	[l]	8	8	12	17	17	17	18	18	27	27	38	
Oil charge (C2)	[l]	12	17	17	17	17	18	18	27	27	38	38	
Refrigerant charge (C1)	[Kg]	20	20	24	25	36	37	38	47	48	58	59	
Refrigerant charge (C2)	[Kg]	19	24	24	25	35	36	38	47	47	59	60	
Refrigeration circuits	[Nr]	2											
Internal exchanger													
Type of internal exchanger	2							PHE					
N. of internal exchanger	[Nr]	1											
Water content	[l]	19	19	20	24	24	32	36	48	48	57	60	
Minimum system water content	[l]	2350	2100	1750	2050	2550	2350	4050	2950	3250	3550	5450	
External exchanger													
Type of external exchanger	3							CCS					
Number of coils	[Nr]	4	4	4	4	4	4	4	4	4	4	4	
External Section Fans													
Type of fans	4							AX					
Number of fans	[Nr]	4	4	4	4	6	6	6	8	8	10	10	
Type of motor	5							EC					
Standard airflow (SC)	[l/s]	24000	24000	24000	24000	36000	36000	36000	48000	48000	60000	60000	
Standard airflow (EN)	[l/s]	20444	20444	20444	20444	30667	30667	30667	40889	40889	51111	51111	
Connections													
Standard power supply		4"	4"	4"	4"	4"	5"	5"	5"	5"	5"	5"	
Power supply													
Standard power supply		400/3~/50											
Electrical data													
F.L.A. - Total	[A]	173,0	191,7	209,7	228,4	250,6	278,4	306,3	356,0	401,8	433,5	461,4	
F.L.I. - Total	[kW]	106,2	119,0	128,2	141,0	154,7	173,1	191,5	221,6	249,2	270,1	288,5	
M.I.C. - Value	6 [A]	414,7	526,1	544,0	562,7	584,9	612,8	640,6	690,3	736,1	767,8	795,7	
M.I.C. - with soft start accessory	6 [A]	357,2	311,1	403,0	421,7	434,8	434,8	462,6	512,3	558,1	589,8	617,7	

1. SCROLL = SCROLL Compressor
2. PHE = Plate exchanger
3. CCS = Copper / aluminium condenser coil
4. AX = Axial fan
5. EC = Asynchronous motor with permanent magnet commuted electronically.
6. M.I.C.=Maximum unit starting current. The M.I.C. value is obtained adding the max. compressor starting current of the highest size to the power input at max. admissible conditions (F.L.A.) of the remaining electric components.

Unbalance between phase max 2 %

Voltage variation: max +/- 10%

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

Sound levels - Excellence

Acoustic configuration with compressor soundproofing (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)
80.3	76	78	79	83	84	80	73	63	68	87
90.4	78	80	81	85	85	81	75	65	68	88
100.4	78	80	82	85	85	81	75	65	69	89
110.4	78	81	82	85	86	82	75	64	69	89
120.4	77	81	81	84	85	81	74	62	69	89
130.4	79	82	83	86	87	83	76	66	70	91
145.4	79	81	83	86	88	83	76	65	70	91
160.4	79	81	83	86	88	84	77	65	70	91
185.5	80	83	84	88	89	85	78	67	71	92
210.6	80	83	84	88	89	85	78	67	71	92
225.6	81	84	85	89	90	86	79	68	72	93
240.6	81	84	85	89	90	86	79	68	72	93

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)
80.3	62	67	76	78	81	78	70	62	65	84
90.4	64	69	78	80	81	79	71	64	65	85
100.4	64	69	79	80	82	80	72	65	66	86
110.4	64	69	78	80	83	80	72	63	66	86
120.4	64	69	78	80	83	81	72	62	67	86
130.4	64	69	78	80	83	80	72	63	66	86
145.4	64	69	78	81	84	81	72	63	67	87
160.4	64	69	78	81	84	81	73	63	67	87
185.5	65	70	80	82	85	82	74	64	68	88
210.6	65	70	80	82	86	83	74	65	68	89
225.6	66	72	81	83	87	84	75	65	68	90
240.6	66	72	81	83	87	84	75	65	69	90

Sound levels refer to full load units, in test nominal conditions. The sound pressure level refers to 1 m. from the standard unit outer surface operating in open field. Measures according to UNI EN ISO 9614-2 regulations, with respect to the EUROVENT 8/1 certification, which provides for a tolerance of 3 dB(A).

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

General technical data

Sound levels - Premium

Acoustic configuration with compressor soundproofing (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)
90.3	76	79	80	83	84	81	74	64	68	87
100.3	76	79	81	84	85	81	74	62	69	88
110.4	76	80	82	84	85	82	74	64	69	88
120.4	75	80	81	84	85	81	74	62	68	88
130.4	78	80	82	85	86	83	75	65	70	90
145.4	78	80	82	85	87	83	76	65	70	90
160.4	78	80	82	86	87	83	76	65	70	90
185.5	79	81	83	87	88	84	77	66	71	91
210.6	79	82	84	87	88	84	77	67	71	91
225.6	80	83	85	88	89	85	78	67	72	92
240.6	80	82	84	88	89	86	78	67	72	92

Super-silenced acoustic configuration (EN)

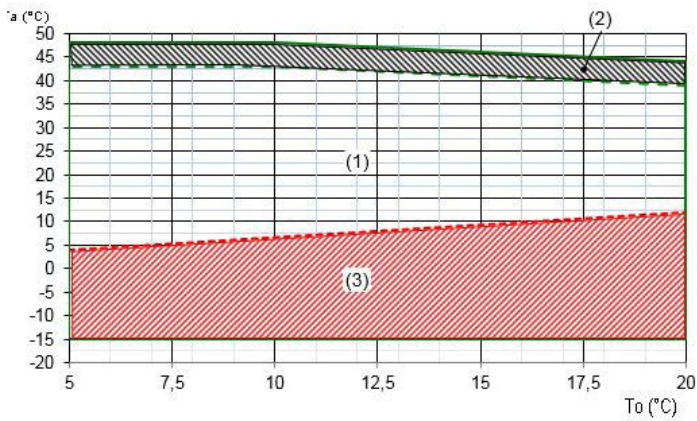
SIZE	Sound power level (dB) - Octave band (Hz)								Sound pressure level	Sound power level
	63	125	250	500	1000	2000	4000	8000	dB(A)	dB(A)
90.3	64	69	78	80	82	79	71	63	66	85
100.3	64	69	78	80	83	80	71	61	66	86
110.4	65	70	79	81	83	80	72	63	67	86
120.4	64	70	79	81	83	80	72	62	67	86
130.4	65	70	78	81	83	80	72	63	66	86
145.4	65	70	79	81	84	81	72	63	67	87
160.4	65	70	79	81	84	81	73	63	67	87
185.5	66	72	80	83	85	82	74	64	68	88
210.6	66	72	81	83	86	83	74	65	68	89
225.6	68	73	82	84	87	84	75	65	69	90
240.6	68	73	82	84	87	84	75	65	69	90

Sound levels refer to full load units, in test nominal conditions. The sound pressure level refers to 1 m. from the standard unit outer surface operating in open field. Measures according to UNI EN ISO 9614-2 regulations, with respect to the EUROVENT 8/1 certification, which provides for a tolerance of 3 dB(A).

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

Operating range - Cooling

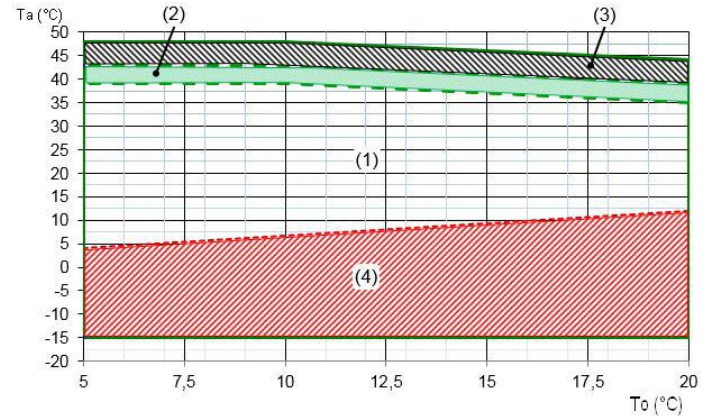
Excellence SC



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

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

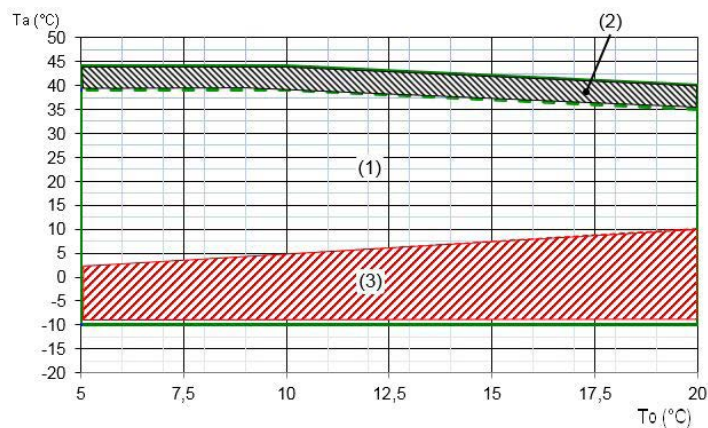
Excellence EN



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

1. Standard unit operating range at full load
2. Extended operating range with air flow-rate automatic increasing. Inside this field the sound levels are the same of the 'compressor soundproofing (SC)' acoustic configuration
3. Unit operating range with automatic staging of the compressor capacity
4. Unit operating range with air flow-rate automatic modulation

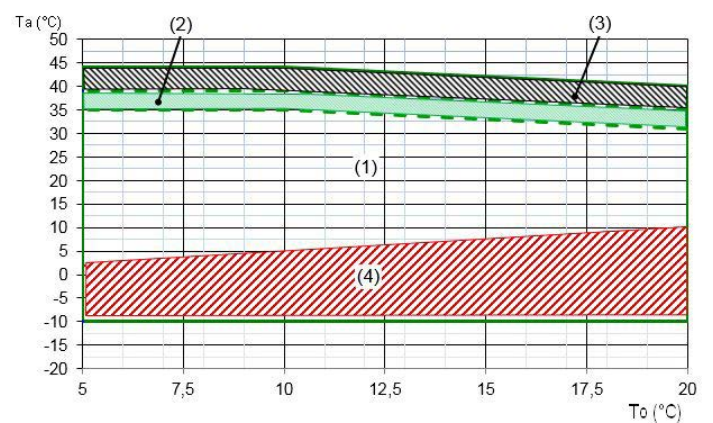
Premium SC



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

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

Premium EN



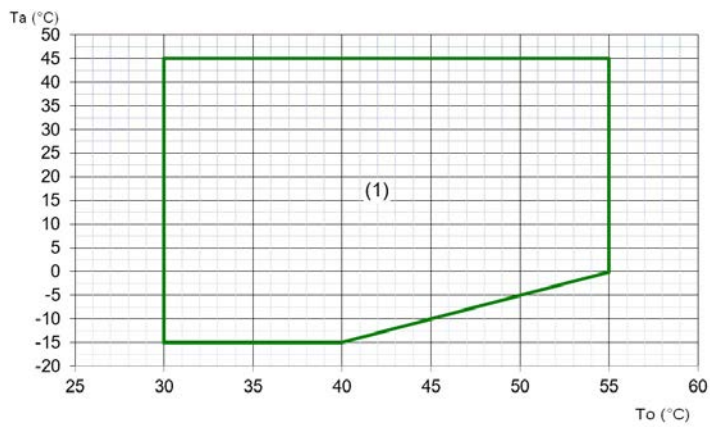
Ta (°C) = external exchanger inlet air temperature (D.B.)
To (°C) = internal exchanger outlet water temperature

1. Standard unit operating range at full load
2. Extended operating range with air flow-rate automatic increasing. Inside this field the sound levels are the same of the 'compressor soundproofing (SC)' acoustic configuration
3. Unit operating range with automatic staging of the compressor capacity
4. Unit operating range with air flow automatic modulation

General technical data

Operating range - Heating

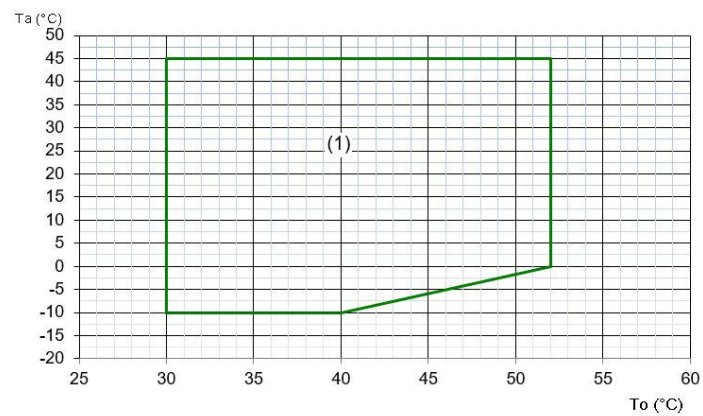
Excellence SC/EN



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

1. Standard unit operating range at full load

Premium SC/EN



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

1. Standard unit operating range at full load

Correction factors for ethylene glycol use

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

Correction factors for propylene glycol use

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

Fouling Correction Factors

INTERNAL EXCHANGER (EVAPORATOR)

M2 °C/W	F1	FK1
0,44 x 10 (-4)	1,0	1,0
0,88 x 10 (-4)	0,97	0,99
1,76 x 10 (-4)	0,94	0,98

F1 = Cooling capacity correction factors

FK1 = Compressor power input correction factor

Exchanger operating range

INTERNAL EXCHANGER (EVAPORATOR)

		DPR	DPW
Plate exchanger	PED (CE)	4500	1000
Shell and tube exchanger	PED (CE)	4500	1000

DPr = Maximum operating pressure on refrigerant side in kPa

DPw = Maximum operating pressure on water side in kPa

Overload and control device calibrations

		OPEN	CLOSE	VALUE
High pressure switch	kPa	4050		-
Antifreeze protection	°C	4	5,5	-
High pressure safety valve	kPa	-	-	4500
Low pressure safety valve	kPa	-	-	3000
Max no. of compressor starts per hour	n°	-	-	10
Discharge safety thermostat	°C	-	-	150

Performances

Excellence

Cooling - SC

Entering external exchanger air temperature (°C)

SIZE	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		43		48*	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
80.3	5	219	54,8	210	60,3	200	66,5	190	73,3	183	77,8	143	67,0
	6	226	55,1	217	60,9	207	67,1	196	74,0	189	78,5	148	67,6
	7	235	55,9	225	61,7	215	67,9	203	74,8	196	79,3	152	68,1
	10	247	56,8	236	62,6	225	68,9	212	75,9	205	80,4	161	69,1
	15	282	59,5	271	65,7	258	72,3	245	79,5	236	84,2	186	71,9
	18	306	61,4	294	67,7	280	74,5	266	81,9	256	86,6	203	73,7
	20	323	62,7	309	69,1	295	76,1	280	83,5	270	88,2	108	43,2
90.4	5	243	55,7	234	61,4	223	67,7	212	74,6	205	79,0	146	60,8
	6	250	56,1	241	61,7	230	68,2	219	75,2	212	79,6	151	61,2
	7	260	56,6	251	62,4	240	68,9	228	75,9	220	80,4	156	61,6
	10	275	57,4	264	63,3	252	69,8	239	76,9	231	81,4	164	62,3
	15	314	59,2	302	65,5	289	72,4	275	79,8	266	84,5	191	64,3
	18	342	60,4	329	67,0	315	74,1	299	81,7	289	86,5	208	65,6
	20	361	61,3	347	68,0	332	75,2	316	82,9	305	87,8	220	66,4
100.4	5	268	62,3	258	68,5	247	75,5	235	83,2	227	88,1	117	44,4
	6	277	62,8	266	69,1	254	76,2	242	83,9	234	88,8	121	44,7
	7	287	63,5	277	69,9	265	77,0	252	84,8	243	89,8	124	44,9
	10	305	64,5	292	71,0	279	78,2	264	86,0	255	91,1	132	45,4
	15	346	67,0	333	73,8	318	81,3	302	89,5	293	94,8	154	46,7
	18	376	68,6	362	75,7	346	83,4	329	91,8	318	97,2	168	47,5
	20	397	69,8	381	77,0	365	84,9	347	93,4	335	98,8	178	48,0
110.4	5	294	70,5	283	77,6	270	85,6	256	94,3	247	100	197	87,2
	6	304	71,1	292	78,3	279	86,3	264	95,2	255	101	205	87,9
	7	316	71,9	303	79,3	290	87,4	275	96,3	265	102	211	88,6
	10	333	73,2	320	80,6	305	88,7	288	97,7	278	103	222	89,7
	15	379	76,4	364	84,1	348	92,7	330	102	319	108	257	93,2
	18	412	78,5	395	86,6	378	95,3	359	105	347	111	280	95,4
	20	434	80,1	417	88,3	399	97,2	378	107	366	113	296	96,9
120.4	5	326	79,1	313	87,1	298	96,1	282	106	272	113	183	78,1
	6	336	79,9	322	88,0	307	97,0	291	107	281	114	191	78,7
	7	350	80,5	335	89,1	320	98,2	303	108	292	115	196	79,1
	10	368	82,3	352	90,6	335	99,8	317	110	305	116	208	80,1
	15	419	86,3	402	95,1	384	105	364	115	352	122	242	83,0
	18	454	89,1	436	98,1	417	108	395	119	382	126	264	84,9
	20	479	91,0	460	100	439	110	417	121	403	128	279	86,2
130.4	5	360	83,9	346	92,3	330	102	313	112	303	119	189	77,0
	6	371	84,6	357	93,1	341	103	323	113	312	120	197	77,5
	7	386	85,5	371	94,2	355	104	336	115	325	122	203	77,9
	10	408	86,9	391	95,7	373	105	354	116	341	123	215	78,7
	15	464	90,3	446	99,6	427	110	406	121	392	128	250	81,1
	18	505	92,6	485	102	464	113	441	124	427	132	274	82,7
	20	533	94,3	512	104	490	115	466	126	451	134	290	83,8
145.4	5	396	94,7	380	104	363	115	344	127	331	135	236	103
	6	408	95,6	392	105	374	116	354	128	342	136	244	103
	7	425	96,2	408	107	390	118	370	130	357	138	254	104
	10	453	98,7	434	109	413	120	390	132	376	140	269	105
	15	517	103	496	114	474	125	450	138	434	146	313	109
	18	561	106	539	117	515	129	489	142	472	150	341	112
	20	592	109	568	120	543	132	516	145	499	153	361	114

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

To (°C) = Internal exchanger outlet water temperature

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

* Unit operating range with automatic staging of the compressor capacity

Excellence Cooling - SC

SIZE	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		43		48*	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
160.4	5	437	107	419	118	399	130	377	144	363	153	189	75,2
	6	451	108	432	119	412	131	389	145	375	155	197	75,8
	7	469	109	450	121	430	133	406	147	392	156	203	76,2
	10	497	112	476	123	453	136	429	150	413	159	218	77,1
	15	571	118	548	130	523	143	495	157	478	167	254	79,6
	18	620	122	595	134	568	147	538	162	519	172	278	81,1
	20	653	124	627	137	599	151	568	165	548	175	295	82,2
185.5	5	507	121	487	134	465	148	440	163	425	173	355	162
	6	523	123	502	135	479	149	454	165	439	175	368	163
	7	544	124	522	137	500	151	474	167	457	177	383	165
	10	577	127	553	139	528	154	500	169	483	180	406	167
	15	663	133	637	147	609	161	578	178	559	188	472	174
	18	720	137	692	151	661	166	628	183	608	194	515	178
	20	759	140	730	154	698	170	663	187	641	197	544	181
210.6	5	564	140	542	155	516	170	489	188	471	200	355	161
	6	583	141	558	156	532	172	504	190	485	202	368	163
	7	605	144	581	158	556	174	525	193	506	204	382	164
	10	644	147	616	162	586	178	554	196	534	208	406	166
	15	736	155	706	170	674	187	638	206	616	218	471	173
	18	798	160	766	176	731	193	693	212	669	225	514	177
	20	841	164	807	180	770	198	730	217	705	229	544	180
225.6	5	638	149	613	163	585	180	554	199	535	212	426	185
	6	654	150	628	165	599	182	567	200	546	213	435	186
	7	667	150	639	166	611	183	577	201	556	214	442	187
	10	709	154	678	169	644	186	608	205	586	218	469	190
	15	811	162	777	178	740	196	701	215	676	228	545	197
	18	880	167	843	184	803	202	761	222	734	235	594	202
	20	927	171	888	188	847	207	802	227	774	240	629	205
240.6	5	689	165	661	182	631	200	596	221	574	235	384	160
	6	705	166	676	183	644	202	608	223	586	236	391	161
	7	718	166	687	184	656	203	618	224	595	238	397	161
	10	765	170	729	188	692	207	652	228	628	242	422	163
	15	874	179	835	198	795	217	752	239	724	253	490	170
	18	948	185	906	204	863	224	816	247	787	261	534	174
			999	190	955	209	909	229	860	252	830	266	565

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

To (°C) = Internal exchanger outlet water temperature

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

* Unit operating range with automatic staging of the compressor capacity

Performances

Excellence

Cooling - EN

Entering external exchanger air temperature (°C)

SIZE	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		39		43		48*	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
80.3	5	216	58,4	206	64,2	196	70,8	187	76,5	183	77,8	143	67,0
	6	222	59,0	213	65,0	202	71,6	193	77,3	189	78,5	148	67,6
	7	231	59,9	221	65,9	210	72,5	200	78,3	196	79,3	152	68,1
	10	242	61,0	231	67,1	219	73,7	209	79,5	205	80,4	161	69,1
	15	276	64,5	264	70,9	251	77,9	240	84,0	236	84,2	186	71,9
	18	305	62,1	291	68,3	279	74,9	265	82,4	256	86,6	203	73,7
	20	321	63,7	306	70,0	294	76,7	279	84,2	270	88,2	108	43,2
90.4	5	239	58,8	229	64,8	219	71,3	210	77,0	205	79,0	146	60,8
	6	246	59,4	236	65,4	226	72,0	217	77,7	212	79,6	151	61,2
	7	256	59,9	246	66,1	235	72,8	225	78,6	220	80,4	156	61,6
	10	270	60,9	259	67,2	247	73,9	236	79,7	231	81,4	164	62,3
	15	308	63,4	295	70,0	282	77,1	271	83,3	266	84,5	191	64,3
	18	334	65,1	321	72,0	306	79,3	294	85,6	289	86,5	208	65,6
	20	352	66,3	338	73,3	323	80,8	309	87,1	305	87,8	220	66,4
100.4	5	265	66,3	254	72,9	243	80,2	233	86,5	227	88,1	117	44,4
	6	273	67,0	262	73,6	250	81,0	240	87,4	234	88,8	121	44,7
	7	284	67,6	272	74,6	260	82,1	249	88,5	243	89,8	124	44,9
	10	300	69,0	287	75,9	273	83,5	261	90,0	255	91,1	132	45,4
	15	340	72,2	326	79,5	311	87,4	298	94,2	293	94,8	154	46,7
	18	368	74,4	353	81,9	337	90,0	323	97,0	318	97,2	168	47,5
	20	388	76,0	372	83,6	355	91,8	340	98,9	335	98,8	178	48,0
110.4	5	291	74,6	279	82,1	266	90,4	255	97,7	247	100	197	87,2
	6	300	75,4	288	83,0	274	91,4	262	98,7	255	101	205	87,9
	7	312	76,4	299	84,2	285	92,6	272	100	265	102	211	88,6
	10	328	77,9	314	85,7	299	94,3	285	102	278	103	222	89,7
	15	373	82,0	357	90,2	341	99,2	326	107	319	108	257	93,2
	18	407	83,9	390	92,2	371	101	356	109	347	111	280	95,4
	20	429	85,8	410	94,3	390	104	374	111	366	113	296	96,9
120.4	5	318	84,3	304	92,9	290	102	277	111	272	113	183	78,1
	6	327	85,3	313	93,9	298	103	285	112	281	114	191	78,7
	7	340	86,6	326	95,3	310	105	296	113	292	115	196	79,1
	10	357	88,3	341	97,1	324	107	309	115	305	116	208	80,1
	15	406	93,5	389	103	370	113	354	122	352	122	242	83,0
	18	447	92,0	427	101	406	111	389	119	382	126	264	84,9
	20	470	94,3	449	104	427	114	409	122	403	128	279	86,2
130.4	5	355	87,5	340	96,5	322	106	307	115	303	119	189	77,0
	6	366	88,6	350	97,6	332	108	317	117	312	120	197	77,5
	7	379	89,9	363	99,1	345	109	329	118	325	122	203	77,9
	10	400	92,2	382	101	362	112	345	120	341	123	215	78,7
	15	451	97,4	431	107	410	118	391	127	392	128	250	81,1
	18	490	101	468	111	444	121	425	131	427	132	274	82,7
	20	515	103	492	114	467	125	447	134	451	134	290	83,8
145.4	5	388	101	372	111	354	122	338	132	331	135	236	103
	6	400	102	383	112	365	123	348	134	342	136	244	103
	7	415	103	398	114	380	125	363	136	357	138	254	104
	10	442	106	422	116	401	128	382	138	376	140	269	105
	15	503	111	482	122	459	135	439	145	434	146	313	109
	18	551	114	527	125	502	137	481	148	472	150	341	112
	20	580	116	555	128	529	140	507	151	499	153	361	114

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

To (°C) = Internal exchanger outlet water temperature

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

* Unit operating range with automatic staging of the compressor capacity

Excellence

Cooling - EN

SIZE	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		39		43		48*	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
160.4	5	425	114	406	126	386	139	368	151	363	153	189	75,2
	6	438	116	419	127	398	140	379	152	375	155	197	75,8
	7	456	117	436	129	415	143	395	154	392	156	203	76,2
	10	481	120	459	132	437	145	417	157	413	159	218	77,1
	15	551	128	527	140	502	154	479	166	478	167	254	79,6
	18	617	126	589	138	560	151	535	163	519	172	278	81,1
	20	649	129	620	141	589	155	564	167	548	175	295	82,2
185.5	5	494	130	474	143	451	157	431	170	425	173	355	162
	6	509	131	488	144	465	159	445	172	439	175	368	163
	7	530	133	508	146	485	161	463	175	457	177	383	165
	10	561	136	537	150	511	165	489	178	483	180	406	167
	15	643	144	616	158	587	174	562	188	559	188	472	174
	18	708	145	678	159	646	175	619	188	608	194	515	178
	20	746	149	713	163	680	179	652	193	641	197	544	181
210.6	5	554	150	530	166	503	183	480	198	471	200	355	161
	6	570	152	545	167	518	185	495	200	485	202	368	163
	7	592	155	567	170	540	187	515	203	506	204	382	164
	10	628	159	599	174	569	191	542	207	534	208	406	166
	15	716	168	685	185	651	203	622	219	616	218	471	173
	18	795	162	759	178	728	195	690	217	669	225	514	177
	20	836	166	798	183	766	200	726	222	705	229	544	180
225.6	5	622	157	595	173	567	191	542	206	535	212	426	185
	6	637	158	609	174	580	192	553	208	546	213	435	186
	7	648	160	620	176	591	193	562	209	556	214	442	187
	10	682	163	653	180	620	197	591	213	586	218	469	190
	15	778	174	746	191	710	209	678	226	676	228	545	197
	18	858	176	820	193	780	212	746	228	734	235	594	202
	20	902	181	863	198	821	217	784	233	774	240	629	205
240.6	5	673	176	644	193	612	213	584	231	574	235	384	160
	6	688	177	657	195	624	215	595	232	586	236	391	161
	7	699	178	668	196	635	216	605	234	595	238	397	161
	10	734	183	702	201	667	221	636	238	628	242	422	163
	15	837	194	803	213	764	234	729	252	724	253	490	170
	18	936	191	896	210	852	230	814	247	787	261	534	174
	20	984	196	942	215	896	236	856	253	830	266	565	177

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

To (°C) = Internal exchanger outlet water temperature

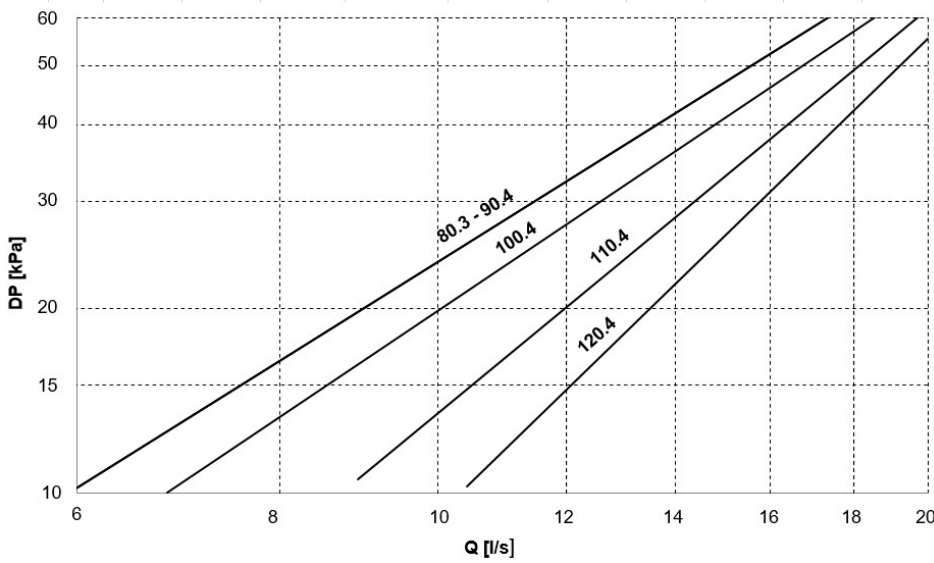
Performances in function of the inlet/outlet water temperature differential = 5°C

* Unit operating range with automatic staging of the compressor capacity

Performances

Excellence

Plate exchangers pressure drop (EVPHE) - Size 80.3 ÷ 120.4



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

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

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

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

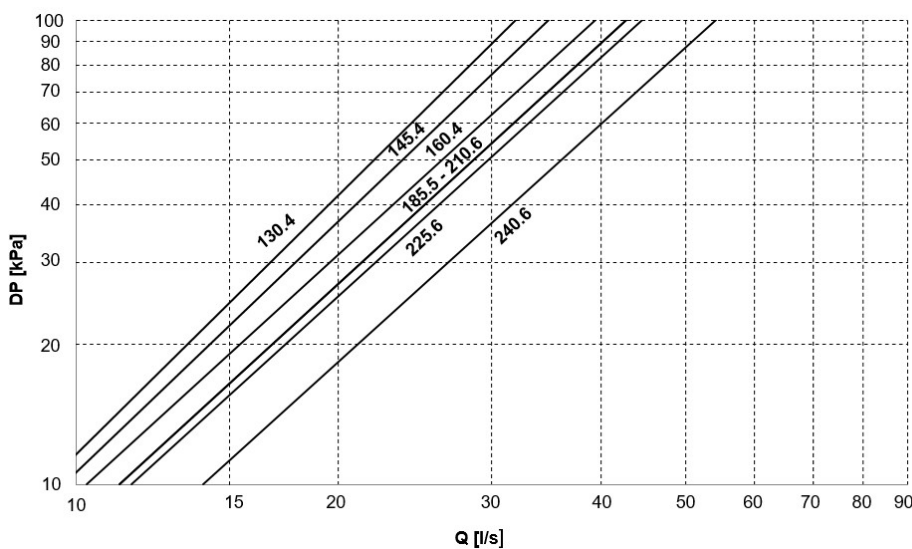
kWf = Cooling capacity in kW
DT = Temperature difference between inlet / outlet water

Admissible water flow-rates

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

SIZE		80.3	90.4	100.4	110.4	120.4
Qmin	[l/s]	5,9	5,9	6,8	8,9	10,4
Qmax	[l/s]	18,8	18,8	18,8	20,0	20,0

Plate exchangers pressure drop (EVPHE) - Size 130.4 ÷ 240.6



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

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

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

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

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

Admissible water flow-rates

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

SIZE		130.4	145.4	160.4	185.5	210.6	225.6	240.6
Qmin	[l/s]	9,2	9,7	10,3	11,2	11,2	11,6	14,0
Qmax	[l/s]	32,0	34,8	39,5	42,8	42,8	44,6	54,2

Premium Cooling - SC

SIZE	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		37		39		44*	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
90.3	5	240	63,2	230	69,6	219	76,7	215	79,7	210	82,8	151	62,8
	6	248	63,9	237	70,4	226	77,5	221	80,5	216	83,7	156	63,4
	7	257	64,8	247	71,4	235	78,5	230	81,6	224	84,8	161	63,9
	10	271	66,1	259	72,7	246	79,9	240	83,0	235	86,2	169	64,8
	15	308	69,6	295	76,6	281	84,1	275	87,3	269	90,6	196	67,6
	18	333	72,1	319	79,2	304	86,9	298	90,2	291	93,6	213	69,4
	20	351	73,8	336	81,0	320	88,9	313	92,2	307	95,6	225	70,6
100.3	5	262	71,3	251	78,6	238	86,7	233	90,1	227	93,8	181	78,2
	6	270	72,1	258	79,5	246	87,6	240	91,1	234	94,8	187	79,0
	7	280	73,2	268	80,7	255	88,9	249	92,4	243	96,1	194	79,7
	10	296	75,0	282	82,4	268	90,6	261	94,2	255	97,8	203	80,8
	15	334	79,2	320	87,0	304	95,6	297	99,3	290	103	235	84,6
	18	361	82,3	346	90,3	329	99,1	322	103	314	107	255	87,0
	20	380	84,4	364	92,6	346	101	338	105	330	109	269	88,7
110.4	5	283	77,9	271	85,8	257	94,4	251	98,2	245	102	198	87,1
	6	292	78,9	279	86,8	265	95,5	259	99,3	252	103	205	88,0
	7	302	80,1	289	88,1	275	97,0	268	101	262	105	212	89,0
	10	319	82,0	304	90,1	289	99,0	282	103	275	107	222	90,3
	15	359	86,6	344	95,2	327	104	319	108	312	112	255	94,8
	18	388	90,1	371	98,8	353	108	345	112	337	116	276	97,7
	20	408	92,4	390	101	371	111	362	115	354	119	291	99,7
120.4	5	310	88,4	296	97,4	281	107	274	112	267	116	184	77,6
	6	319	89,6	305	98,6	289	109	282	113	275	117	191	78,3
	7	331	91,1	316	100	300	110	292	115	285	119	197	79,0
	10	348	93,3	332	102	314	113	306	117	298	121	207	80,2
	15	393	99,1	375	109	356	119	347	124	339	128	240	83,9
	18	424	103,0	405	113	384	124	375	129	366	133	261	86,3
	20	445	106,0	425	116	403	127	394	132	384	137	275	88,0
130.4	5	343	89,4	328	98,6	313	109	306	113	299	118	190	73,9
	6	353	90,3	338	99,6	322	110	315	114	308	119	197	74,5
	7	366	91,5	351	101	335	111	327	116	320	120	204	75,1
	10	388	93,5	371	103	353	113	345	118	336	122	214	75,9
	15	-	-	-	-	400	119	392	123	383	128	249	78,8
	18	-	-	-	-	417	121	412	126	407	131	272	80,7
	20	-	-	-	-	-	-	-	-	-	-	287	82,0
145.4	5	380	103	364	114	345	126	337	131	329	136	237	101
	6	392	104	374	115	356	127	348	132	339	137	246	102
	7	406	106	389	117	370	129	361	134	352	139	254	103
	10	429	108	410	119	389	131	379	136	370	142	267	104
	15	485	114	464	125	441	138	431	143	421	149	308	109
	18	525	118	502	130	478	143	467	148	457	154	335	112
	20	552	121	528	133	503	146	492	152	481	157	354	114
160.4	5	417	118	398	130	378	143	368	149	359	156	192	73,3
	6	429	119	410	131	389	145	379	151	370	157	200	73,9
	7	445	121	426	133	405	147	395	153	385	159	207	74,5
	10	474	124	452	137	427	150	417	156	406	163	220	75,5
	15	537	132	513	145	487	159	476	165	464	172	255	78,4
	18	581	137	555	150	527	165	515	171	503	178	279	80,3
	20	611	141	584	154	555	169	542	176	529	182	295	81,6

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

To (°C) = Internal exchanger outlet water temperature

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

* Unit operating range with automatic staging of the compressor capacity

Performances

Premium Cooling - SC

SIZE	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		37		39		44*	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
185.5	5	490	129	470	142	447	157	437	163	427	170	359	157
	6	505	130	484	144	461	158	450	165	440	171	371	158
	7	524	132	503	146	480	161	469	167	458	174	387	160
	10	558	135	534	149	507	164	496	170	484	177	409	163
	15	637	143	610	157	582	173	569	180	556	187	473	171
	18	690	149	661	163	630	179	617	186	603	193	515	176
	20	726	152	696	167	664	184	650	191	635	198	543	179
	210.6	5	544	152	520	167	495	184	483	192	471	199	359
6		561	153	536	169	509	186	498	194	485	202	371	160
7		580	156	556	171	530	189	517	197	505	205	387	162
10		620	160	592	176	561	193	547	201	534	209	409	164
15		703	170	673	186	640	205	625	212	610	221	473	172
18		761	176	728	193	692	212	677	220	661	228	514	177
20		800	181	765	199	728	218	712	226	695	234	543	181
225.6		5	597	156	572	172	545	189	533	197	520	205	417
	6	616	157	590	173	562	191	549	199	536	207	431	180
	7	638	160	613	176	586	194	572	202	558	210	449	182
	10	681	164	651	180	619	198	605	206	590	214	475	185
	15	776	173	744	190	709	209	694	217	678	225	549	193
	18	841	179	807	197	769	216	753	224	736	233	597	199
	20	886	183	849	201	810	221	793	229	775	238	630	203
	240.6	5	645	171	617	189	587	208	574	217	560	226	379
6		664	173	636	191	605	210	591	219	577	228	393	153
7		688	176	660	193	630	213	615	222	601	231	408	154
10		734	180	702	198	666	218	651	227	635	236	433	157
15		836	191	801	210	763	230	746	239	729	249	502	163
18		906	198	868	217	827	239	809	248	790	257	547	168
20		953	203	914	223	871	245	852	254	832	264	578	171

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

To (°C) = Internal exchanger outlet water temperature

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

* Unit operating range with automatic staging of the compressor capacity

Premium Cooling - EN

SIZE	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		37		39		44*	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
90.3	5	236	65,2	226	71,7	215	78,9	215	79,7	210	82,8	151	62,8
	6	243	66,0	233	72,6	222	79,8	221	80,5	216	83,7	156	63,4
	7	253	67,0	242	73,7	230	81,0	230	81,6	224	84,8	161	63,9
	10	265	68,4	253	75,1	240	82,5	240	83,0	235	86,2	169	64,8
	15	301	72,4	288	79,5	274	87,2	275	87,3	269	90,6	196	67,6
	18	326	75,2	311	82,5	296	90,4	298	90,2	291	93,6	213	69,4
	20	342	77,2	327	84,6	311	92,6	313	92,2	307	95,6	225	70,6
100.3	5	259	74,7	247	82,3	234	90,7	233	90,1	227	93,8	181	78,2
	6	266	75,7	254	83,3	241	91,8	240	91,1	234	94,8	187	79,0
	7	276	76,9	263	84,6	250	93,2	249	92,4	243	96,1	194	79,7
	10	290	78,8	277	86,6	262	95,1	261	94,2	255	97,8	203	80,8
	15	328	83,7	313	91,9	297	101	297	99,3	290	103	235	84,6
	18	354	87,3	338	95,7	321	105	322	103	314	107	255	87,0
	20	371	89,8	355	98,3	337	108	338	105	330	109	269	88,7
110.4	5	280	82,6	267	90,9	253	100	251	98,2	245	102	198	87,1
	6	288	83,7	275	92,1	260	101	259	99,3	252	103	205	88,0
	7	298	85,1	285	93,6	270	103	268	101	262	105	212	89,0
	10	314	87,3	299	95,8	283	105	282	103	275	107	222	90,3
	15	353	92,8	337	102	319	111	319	108	312	112	255	94,8
	18	380	96,8	363	106	344	116	345	112	337	116	276	97,7
	20	399	99,6	380	109	361	119	362	115	354	119	291	99,7
120.4	5	308	95,1	293	105	277	115	274	112	267	116	184	77,6
	6	316	96,5	301	106	284	117	282	113	275	117	191	78,3
	7	328	98,3	312	108	295	119	292	115	285	119	197	79,0
	10	344	101	326	111	308	121	306	117	298	121	207	80,2
	15	387	108	368	118	349	129	347	124	339	128	240	83,9
	18	417	113	396	123	375	135	375	129	366	133	261	86,3
	20	437	116	415	127	393	139	394	132	384	137	275	88,0
130.4	5	334	91,8	319	101	303	112	306	113	299	118	190	73,9
	6	344	92,9	329	102	313	113	315	114	308	119	197	74,5
	7	356	94,2	341	104	325	114	327	116	320	120	204	75,1
	10	377	96,4	360	106	341	117	345	118	336	122	214	75,9
	15	-	-	407	112	387	123	392	123	383	128	249	78,8
	18	-	-	-	-	408	126	412	126	407	131	272	80,7
	20	-	-	-	-	-	-	-	-	-	-	287	82,0
145.4	5	372	108	355	119	337	131	337	131	329	136	237	101
	6	383	109	365	120	346	132	348	132	339	137	246	102
	7	397	111	379	122	360	134	361	134	352	139	254	103
	10	418	113	399	125	377	137	379	136	370	142	267	104
	15	472	120	451	132	428	145	431	143	421	149	308	109
	18	510	125	487	137	463	150	467	148	457	154	335	112
	20	536	128	512	141	486	154	492	152	481	157	354	114
160.4	5	409	125	390	138	369	153	368	149	359	156	192	73,3
	6	421	127	401	140	379	155	379	151	370	157	200	73,9
	7	436	129	416	142	395	157	395	153	385	159	207	74,5
	10	463	133	440	146	416	161	417	156	406	163	220	75,5
	15	524	142	499	156	473	171	476	165	464	172	255	78,4
	18	565	148	539	162	511	178	515	171	503	178	279	80,3
	20	594	153	566	167	537	183	542	176	529	182	295	81,6

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

To (°C) = Internal exchanger outlet water temperature

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

* Unit operating range with automatic staging of the compressor capacity

Performances

Premium Cooling - EN

SIZE	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		37		39		44*	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
185.5	5	482	134	461	148	438	163	437	163	427	170	359	157
	6	496	136	475	150	451	165	450	165	440	171	371	158
	7	515	138	493	152	470	168	469	167	458	174	387	160
	10	547	142	522	156	496	172	496	170	484	177	409	163
	15	623	151	596	166	567	182	569	180	556	187	473	171
	18	674	157	645	172	613	189	617	186	603	193	515	176
	20	709	161	678	177	645	194	650	191	635	198	543	179
210.6	5	537	159	512	175	486	193	483	192	471	199	359	158
	6	552	161	527	177	500	195	498	194	485	202	371	160
	7	572	163	547	180	520	198	517	197	505	205	387	162
	10	609	168	580	185	549	203	547	201	534	209	409	164
	15	690	180	658	197	624	216	625	212	610	221	473	172
	18	745	187	711	205	674	225	677	220	661	228	514	177
	20	782	193	746	211	708	231	712	226	695	234	543	181
225.6	5	585	162	559	178	532	197	533	197	520	205	417	178
	6	602	164	576	180	548	199	549	199	536	207	431	180
	7	624	166	598	183	571	202	572	202	558	210	449	182
	10	664	171	634	188	602	206	605	206	590	214	475	185
	15	756	181	723	199	688	219	694	217	678	225	549	193
	18	818	188	783	207	745	227	753	224	736	233	597	199
	20	860	194	823	212	784	233	793	229	775	238	630	203
240.6	5	632	178	604	196	574	217	574	217	560	226	379	152
	6	651	181	622	199	591	219	591	219	577	228	393	153
	7	675	183	646	202	615	223	615	222	601	231	408	154
	10	718	189	685	207	649	228	651	227	635	236	433	157
	15	816	201	780	220	742	242	746	239	729	249	502	163
	18	883	209	844	229	802	252	809	248	790	257	547	168
	20	928	215	887	236	843	258	852	254	832	264	578	171

kWf = Cooling capacity in kW

kWe = Compressor power input in kW

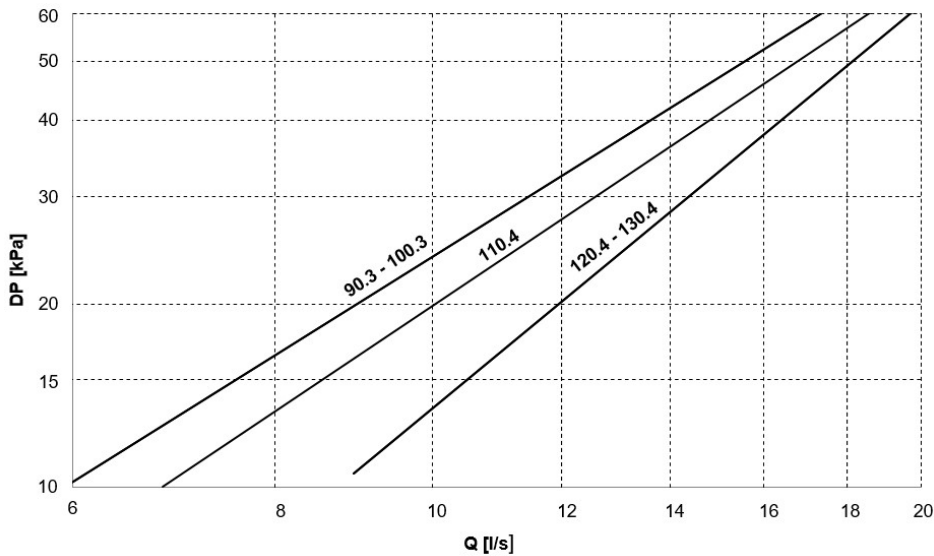
To (°C) = Internal exchanger outlet water temperature

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

*

Premium

Plate exchangers pressure drop (EVPHE) - Size 90.3 ÷ 130.4



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

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

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

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

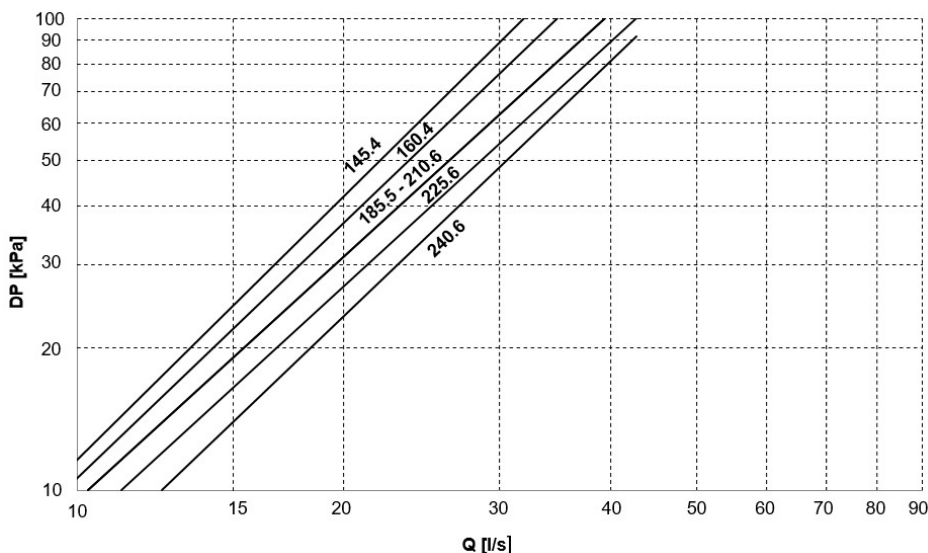
kWf = Cooling capacity in kW
DT = Temperature difference between inlet / outlet water

Admissible water flow-rates

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

SIZE		90.3	100.3	110.4	120.4	130.4
Qmin	[l/s]	5,9	5,9	6,8	8,9	8,9
Qmax	[l/s]	18,8	18,8	18,8	20,0	20,0

Plate exchangers pressure drop (EVPHE) - Size 145.4 ÷ 240.6



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

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

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

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

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

Admissible water flow-rates

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

SIZE		145.4	160.4	185.5	210.6	225.6	240.6
Qmin	[l/s]	9,2	9,7	10,3	10,3	11,2	12,5
Qmax	[l/s]	32,0	34,8	39,5	39,5	42,8	42,8

Performances

Excellence

Cooling at part load - SC

SIZE	Load	Entering external exchanger air temperature (°C)											
		35°C			30°C			25°C			20°C		
		kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER
80.3	100	215	72,3	2,98	225	66,1	3,41	235	60,3	3,90	244	55,2	4,42
	75	161	50,4	3,20	169	46,0	3,68	176	41,9	4,21	183	38,2	4,80
	50	108	32,0	3,36	113	29,3	3,85	118	26,8	4,39	122	24,4	5,00
	Minimum	44,9	12,3	3,64	46,8	11,2	4,19	48,8	10,0	4,86	50,8	8,90	5,70
90.4	100	240	75,7	3,17	251	69,2	3,62	260	63,4	4,11	270	57,9	4,66
	75	180	52,6	3,43	188	48,0	3,91	195	43,9	4,45	202	40,0	5,06
	50	120	32,1	3,74	125	29,2	4,29	130	26,5	4,92	135	23,8	5,66
	Minimum	44,7	11,6	3,85	46,6	10,5	4,45	48,6	9,40	5,19	50,6	8,20	6,14
100.4	100	265	83,9	3,16	277	76,7	3,61	287	70,3	4,09	298	64,3	4,63
	75	199	58,4	3,41	208	53,4	3,89	216	48,8	4,42	223	44,6	5,00
	50	133	35,5	3,73	138	32,4	4,27	144	29,6	4,86	149	26,9	5,52
	Minimum	70,5	18,9	3,73	73,6	17,2	4,27	76,5	15,7	4,86	79,3	14,4	5,52
110.4	100	290	94,1	3,09	303	86,0	3,53	316	78,6	4,02	327	72,0	4,54
	75	218	63,6	3,42	227	58,2	3,91	237	53,3	4,44	245	48,6	5,05
	50	145	38,9	3,73	152	35,5	4,27	158	32,4	4,87	164	29,6	5,53
	Minimum	56,8	14,5	3,91	59,2	13,2	4,48	61,5	12,0	5,13	63,7	10,9	5,84
120.4	100	320	105	3,05	335	95,9	3,50	350	87,3	4,01	362	80,1	4,52
	75	240	70,5	3,41	251	64,4	3,90	262	59,1	4,44	272	53,7	5,06
	50	160	43,5	3,69	168	39,7	4,22	175	36,4	4,8	181	33,0	5,49
	Minimum	57,4	14,5	3,96	59,8	13,2	4,54	62,2	12,0	5,19	64,4	10,9	5,92
130.4	100	355	113	3,14	371	103	3,59	386	94,7	4,07	400	86,5	4,62
	75	267	77,4	3,44	278	70,5	3,94	289	64,5	4,48	300	58,7	5,11
	50	178	47,5	3,74	186	43,3	4,28	193	39,5	4,88	200	35,9	5,56
	Minimum	72,1	18,5	3,89	75,2	16,9	4,45	78,2	15,4	5,09	80,9	14,0	5,79
145.4	100	390	127	3,08	408	116	3,53	425	105	4,04	439	96,6	4,55
	75	293	86,2	3,40	306	78,5	3,89	318	71,7	4,44	329	65,4	5,04
	50	195	52,1	3,75	204	47,4	4,30	212	43,5	4,89	219	39,4	5,58
	Minimum	72,3	18,2	3,98	75,4	16,6	4,55	78,4	15,1	5,21	81,2	13,7	5,93
160.4	100	430	142	3,03	450	130	3,47	469	118	3,96	487	108	4,49
	75	323	97,7	3,30	338	89,1	3,79	352	81,6	4,31	365	74,5	4,90
	50	215	58,7	3,67	225	53,5	4,21	235	49,1	4,78	243	44,6	5,46
	Minimum	117	31,8	3,67	122	29,0	4,21	127	26,5	4,77	131	24,1	5,45
185.5	100	500	162	3,09	522	148	3,53	544	135	4,01	563	124	4,55
	75	375	109	3,44	392	99,7	3,93	408	91,3	4,47	422	83,2	5,08
	50	250	66,4	3,77	261	60,7	4,30	272	55,3	4,91	282	50,1	5,62
	Minimum	73,4	17,9	4,10	76,4	16,3	4,69	79,3	14,8	5,34	82,0	13,5	6,07
210.6	100	556	186	2,99	581	169	3,43	605	155	3,91	627	142	4,43
	75	417	124	3,37	436	113	3,85	454	104	4,37	470	94,7	4,97
	50	278	74,5	3,73	290	68,2	4,26	302	62,2	4,86	313	56,4	5,56
	Minimum	73,5	17,8	4,12	76,6	16,3	4,71	79,5	14,8	5,37	82,3	13,5	6,10
225.6	100	611	196	3,12	639	179	3,57	667	164	4,07	692	150	4,61
	75	458	131	3,49	479	120	4,00	500	110	4,54	519	100	5,18
	50	305	79,5	3,84	320	72,6	4,40	333	66,3	5,02	346	60,0	5,76
	Minimum	74,5	17,7	4,22	77,6	16,1	4,81	80,5	14,7	5,48	83,2	13,4	6,21
240.6	100	656	216	3,03	687	198	3,48	718	180	3,99	745	166	4,50
	75	492	145	3,40	515	132	3,89	539	122	4,43	559	111	5,05
	50	328	88,7	3,70	343	81,2	4,23	359	74,5	4,82	373	67,4	5,52
	Minimum	120	30,4	3,96	126	27,7	4,53	131	25,2	5,20	136	22,7	5,98

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

kWf = cooling capacity in kW

kWe_tot = unit total power input in kW

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

Excellence

Cooling at part load - EN

SIZE	Load	Entering external exchanger air temperature (°C)											
		35°C			30°C			25°C			20°C		
		kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER
80.3	100	210	74,6	2,82	221	67,9	3,25	231	61,9	3,73	240	56,5	4,25
	75	158	51,3	3,07	165	47,0	3,52	173	42,9	4,03	180	39,2	4,60
	50	105	32,8	3,21	110	30,0	3,68	115	27,5	4,19	120	25,1	4,77
	Minimum	45,3	12,4	3,67	47,3	11,2	4,21	49,3	10,1	4,89	51,3	9,00	5,73
90.4	100	235	75,9	3,10	246	69,2	3,55	256	63,0	4,06	265	57,4	4,62
	75	176	52,3	3,38	184	47,8	3,85	192	43,8	4,38	199	40,0	4,98
	50	118	31,6	3,73	123	28,8	4,27	128	26,1	4,90	133	23,5	5,65
	Minimum	44,8	11,7	3,83	46,7	10,6	4,42	48,7	9,40	5,15	50,7	8,30	6,10
100.4	100	260	85,2	3,06	272	77,7	3,50	284	70,7	4,01	294	64,7	4,54
	75	195	58,4	3,34	204	53,5	3,81	213	49,2	4,32	220	45,0	4,90
	50	130	35,1	3,71	136	32,1	4,24	142	29,3	4,83	147	26,8	5,49
	Minimum	71,0	19,1	3,71	74,1	17,5	4,24	77,1	15,9	4,83	79,8	14,5	5,49
110.4	100	285	95,7	2,98	299	87,2	3,43	312	79,5	3,92	324	72,5	4,46
	75	214	64,1	3,34	224	58,8	3,81	234	54,1	4,33	243	49,4	4,91
	50	143	37,9	3,76	149	34,7	4,30	156	31,8	4,90	162	29,0	5,57
	Minimum	57,5	14,6	3,95	59,9	13,2	4,53	62,3	12,0	5,18	64,5	10,9	5,90
120.4	100	310	108	2,87	326	98,4	3,31	340	89,7	3,79	354	81,8	4,32
	75	233	72,5	3,21	244	66,5	3,67	255	61,0	4,18	265	55,8	4,75
	50	155	43,2	3,59	163	39,7	4,10	170	36,4	4,67	177	33,2	5,32
	Minimum	57,5	14,6	3,95	60,0	13,2	4,53	62,3	12,0	5,19	64,5	10,9	5,91
130.4	100	345	113	3,04	363	103	3,51	379	94,1	4,03	395	85,7	4,61
	75	259	77,7	3,34	272	71,3	3,81	284	65,7	4,32	296	60,2	4,92
	50	173	46,7	3,69	181	42,9	4,22	190	39,4	4,81	197	36,1	5,47
	Minimum	71,9	18,5	3,88	75,0	16,9	4,44	78,0	15,4	5,08	80,7	14,0	5,78
145.4	100	380	129	2,94	398	118	3,38	415	107	3,88	431	97,7	4,41
	75	285	88,1	3,24	299	80,6	3,71	311	73,6	4,23	323	67,5	4,79
	50	190	52,3	3,63	199	47,8	4,16	208	43,9	4,73	215	39,9	5,40
	Minimum	72,5	18,3	3,97	75,7	16,6	4,55	78,7	15,1	5,20	81,5	13,8	5,92
160.4	100	415	147	2,83	436	133	3,27	456	121	3,75	473	111	4,27
	75	312	101	3,09	327	92,3	3,54	342	84,8	4,03	355	77,7	4,57
	50	208	60,5	3,43	218	55,3	3,94	228	51,0	4,47	237	46,4	5,11
	Minimum	113	32,8	3,43	118	29,9	3,94	122	27,4	4,47	127	24,9	5,10
185.5	100	485	166	2,92	508	152	3,35	530	138	3,84	550	126	4,37
	75	364	111	3,27	381	102	3,74	398	93,7	4,24	413	85,6	4,82
	50	243	64,5	3,76	254	59,3	4,29	265	54,2	4,89	275	49,2	5,59
	Minimum	73,4	18,0	4,08	76,5	16,4	4,66	79,4	14,9	5,32	82,1	13,6	6,04
210.6	100	540	193	2,81	567	175	3,24	592	160	3,71	615	146	4,22
	75	405	128	3,16	425	118	3,61	444	108	4,09	461	99,2	4,65
	50	270	73,1	3,70	284	67,3	4,21	296	61,6	4,80	308	56,0	5,49
	Minimum	74,1	17,9	4,13	77,2	16,4	4,72	80,2	14,9	5,39	82,9	13,6	6,12
225.6	100	591	199	2,96	620	182	3,41	648	166	3,91	674	151	4,45
	75	443	133	3,32	465	122	3,79	486	113	4,31	505	103	4,91
	50	295	78,1	3,78	310	71,7	4,32	324	65,6	4,94	337	59,5	5,66
	Minimum	74,3	17,7	4,20	77,3	16,1	4,79	80,3	14,7	5,45	82,9	13,4	6,19
240.6	100	635	222	2,86	668	202	3,30	699	185	3,79	728	169	4,31
	75	477	149	3,21	501	137	3,67	524	125	4,18	546	115	4,75
	50	318	88,1	3,61	334	81,1	4,12	349	74,4	4,70	364	67,7	5,37
	Minimum	121	30,5	3,95	126	27,8	4,53	131	25,3	5,19	136	22,8	5,97

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

kWf = cooling capacity in kW

kWe_tot = unit total power input in kW

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

Performances

Premium

Cooling at part load - ST/SC

SIZE	Load	Entering external exchanger air temperature (°C)											
		35°C			30°C			25°C			20°C		
		kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER
90.3	100	235	83,0	2,83	247	75,9	3,25	257	69,3	3,71	267	63,5	4,21
	75	176	55,7	3,17	185	50,9	3,63	193	46,6	4,14	202	42,7	4,73
	50	118	35,4	3,32	123	32,4	3,81	129	29,7	4,33	135	27,2	4,95
	Minimum	69,8	20,4	3,43	73,0	18,6	3,92	75,9	17,0	4,46	79,3	15,6	5,10
100.3	100	255	93,3	2,74	268	85,1	3,15	280	77,6	3,61	291	70,9	4,11
	75	192	61,1	3,14	201	55,9	3,60	210	51,2	4,11	220	46,9	4,69
	50	128	38,0	3,36	134	34,8	3,85	140	31,8	4,40	147	29,1	5,04
	Minimum	55,5	15,4	3,60	58,0	14,0	4,13	60,3	12,8	4,72	63,0	11,6	5,41
110.4	100	275	101	2,71	289	92,6	3,12	302	84,5	3,58	314	77,2	4,07
	75	207	69,5	2,97	217	63,7	3,40	227	58,3	3,89	237	53,4	4,44
	50	138	42,6	3,24	145	39,0	3,71	151	35,7	4,24	158	32,6	4,85
	Minimum	55,5	15,4	3,60	58,0	14,0	4,13	60,3	12,8	4,72	63,0	11,6	5,42
120.4	100	300	115	2,62	316	105	3,02	331	95,6	3,47	345	87,2	3,96
	75	225	81,1	2,78	237	74,1	3,20	249	67,8	3,67	261	62,0	4,21
	50	150	43,7	3,43	158	40,1	3,94	166	36,9	4,50	174	33,8	5,15
	Minimum	55,8	15,4	3,63	58,4	14,0	4,17	60,7	12,8	4,76	63,4	11,6	5,46
130.4	100	335	118	2,84	351	108	3,26	366	98,3	3,72	379	90,0	4,22
	75	252	81,8	3,07	263	74,7	3,52	274	68,3	4,02	287	62,5	4,59
	50	168	47,2	3,56	175	43,2	4,06	183	39,6	4,62	191	36,1	5,29
	Minimum	70,3	19,2	3,66	73,3	17,5	4,18	76,3	16,0	4,77	79,7	14,6	5,47
145.4	100	370	135	2,74	389	123	3,15	406	113	3,61	422	103	4,11
	75	278	88,8	3,13	291	81,4	3,58	304	74,7	4,07	319	68,5	4,66
	50	185	53,1	3,49	194	48,8	3,98	203	44,8	4,53	213	41,0	5,18
	Minimum	70,7	19,0	3,72	73,7	17,4	4,24	76,8	15,8	4,85	80,1	14,4	5,55
160.4	100	405	154	2,63	426	140	3,04	445	128	3,48	463	116	3,98
	75	304	102	2,98	319	93,1	3,43	333	85,2	3,91	350	77,8	4,50
	50	203	63,0	3,21	213	57,7	3,69	222	52,9	4,20	233	48,3	4,83
	Minimum	114	33,3	3,42	119	30,4	3,91	124	27,8	4,45	130	25,4	5,11
185.5	100	480	170	2,83	503	155	3,25	524	141	3,72	543	129	4,21
	75	360	111	3,26	377	101	3,72	393	92,8	4,24	410	84,8	4,84
	50	240	66,4	3,62	251	60,6	4,15	262	55,5	4,72	274	50,4	5,43
	Minimum	72,3	18,2	3,98	75,4	16,5	4,56	78,4	15,1	5,21	81,7	13,7	5,97
210.6	100	530	198	2,68	556	180	3,08	580	165	3,52	602	151	4,00
	75	398	127	3,14	417	116	3,59	435	106	4,09	455	97,6	4,66
	50	265	75,8	3,50	278	69,4	4,01	290	63,6	4,56	303	57,9	5,24
	Minimum	72,4	18,3	3,95	75,5	16,7	4,52	78,6	15,2	5,17	81,9	13,8	5,93
225.6	100	586	205	2,85	613	187	3,27	638	171	3,74	662	156	4,23
	75	439	134	3,27	459	123	3,73	479	113	4,23	500	103	4,84
	50	293	82,0	3,57	306	75,3	4,07	319	69,0	4,62	333	62,9	5,30
	Minimum	73,2	18,0	4,05	76,2	16,5	4,63	79,2	15,0	5,28	82,5	13,6	6,05
240.6	100	630	225	2,80	660	205	3,22	688	187	3,68	714	171	4,17
	75	473	146	3,23	495	134	3,69	516	123	4,19	539	113	4,79
	50	315	88,7	3,56	330	81,4	4,06	344	74,5	4,62	360	67,7	5,31
	Minimum	120	31,5	3,80	125	28,8	4,34	130	26,2	4,96	136	23,7	5,73

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

kWf = cooling capacity in kW

kWe_tot = unit total power input in kW

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

Premium Cooling at part load - EN

SIZE	Load	Entering external exchanger air temperature (°C)											
		35°C			30°C			25°C			20°C		
		kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER
90.3	100	230	83,7	2,75	242	76,3	3,17	253	69,7	3,63	263	63,6	4,13
	75	173	56,1	3,08	181	51,4	3,52	189	47,2	4,02	199	43,3	4,59
	50	115	35,7	3,23	121	32,7	3,69	126	30,0	4,21	132	27,6	4,80
	Minimum	68,3	20,5	3,33	71,4	18,7	3,81	74,3	17,2	4,33	77,7	15,7	4,95
100.3	100	250	95,9	2,61	263	87,3	3,02	276	79,5	3,47	287	72,6	3,96
	75	188	62,2	3,02	198	57,2	3,46	207	52,4	3,95	217	48,2	4,50
	50	125	37,8	3,31	132	34,7	3,80	138	31,9	4,33	145	29,2	4,96
	Minimum	55,9	15,4	3,62	58,4	14,0	4,16	60,7	12,8	4,74	63,4	11,6	5,45
110.4	100	270	106	2,56	285	96,3	2,95	298	87,8	3,39	311	80,1	3,88
	75	203	71,8	2,83	213	65,9	3,24	224	60,5	3,69	235	55,7	4,22
	50	135	42,8	3,16	142	39,3	3,62	149	36,1	4,13	157	33,1	4,73
	Minimum	56,0	15,6	3,59	58,5	14,2	4,13	60,9	12,9	4,71	63,6	11,8	5,41
120.4	100	295	122	2,43	312	111	2,82	328	101	3,25	343	92,1	3,72
	75	222	85,0	2,61	234	78,0	3,00	246	71,6	3,44	259	65,6	3,94
	50	148	43,9	3,36	156	40,5	3,85	164	37,4	4,39	173	34,4	5,01
	Minimum	56,8	15,7	3,61	59,3	14,3	4,15	61,7	13,0	4,73	64,4	11,9	5,43
130.4	100	325	118	2,75	341	108	3,16	356	98,2	3,62	370	89,7	4,12
	75	244	81,5	3,00	256	74,6	3,43	267	68,3	3,91	279	62,6	4,47
	50	163	46,0	3,54	170	42,3	4,03	178	38,8	4,59	186	35,4	5,25
	Minimum	69,6	19,0	3,66	72,6	17,4	4,18	75,6	15,8	4,78	78,9	14,4	5,47
145.4	100	360	138	2,60	379	126	3,01	397	115	3,46	413	105	3,95
	75	270	90,8	2,98	284	83,6	3,40	298	76,9	3,87	312	70,6	4,42
	50	180	53,2	3,39	190	49,1	3,86	198	45,3	4,38	208	41,5	5,02
	Minimum	70,5	19,0	3,71	73,6	17,4	4,24	76,6	15,8	4,84	79,9	14,4	5,54
160.4	100	395	161	2,45	416	146	2,84	436	133	3,27	454	121	3,75
	75	297	107	2,78	312	98,1	3,18	327	90,1	3,63	343	82,3	4,17
	50	198	66,1	2,99	208	60,7	3,43	218	55,8	3,91	229	51,0	4,49
	Minimum	111	34,9	3,18	116	31,9	3,64	121	29,2	4,14	127	26,6	4,76
185.5	100	470	173	2,72	493	158	3,13	515	143	3,59	535	131	4,09
	75	353	112	3,14	370	103	3,59	386	94,7	4,08	404	86,8	4,66
	50	235	64,6	3,64	247	59,2	4,16	258	54,4	4,74	270	49,4	5,45
	Minimum	72,5	18,2	3,99	75,5	16,5	4,57	78,5	15,1	5,21	81,9	13,7	5,98
210.6	100	520	204	2,55	547	185	2,95	572	169	3,39	595	154	3,87
	75	390	131	2,99	410	120	3,42	429	110	3,89	450	101	4,43
	50	260	74,6	3,49	273	68,6	3,99	286	63,1	4,53	300	57,7	5,20
	Minimum	72,9	18,4	3,97	76,1	16,7	4,55	79,1	15,2	5,20	82,5	13,8	5,96
225.6	100	571	209	2,73	598	190	3,15	624	173	3,61	649	158	4,12
	75	428	137	3,13	449	126	3,57	468	116	4,05	490	106	4,63
	50	285	81,5	3,50	299	75,1	3,99	312	69,0	4,52	327	63,1	5,18
	Minimum	72,9	18,0	4,04	75,9	16,4	4,62	78,9	15,0	5,27	82,1	13,6	6,03
240.6	100	615	230	2,68	646	209	3,09	675	190	3,55	703	173	4,06
	75	462	149	3,09	485	138	3,52	506	127	4,00	531	116	4,56
	50	308	87,9	3,50	323	80,9	3,99	337	74,3	4,54	354	67,9	5,21
	Minimum	120	31,5	3,81	125	28,8	4,35	130	26,2	4,97	136	23,7	5,74

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

kWf = cooling capacity in kW

kWe_tot = unit total power input in kW

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

Performances

Excellence

Heating - SC/EN

SIZE	Ta (°C) D.B./W.B.	Leaving internal exchanger water temperature (°C)									
		35		40		45		50		55	
		kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe
80.3	-7 / -8	158	48,0	158	53,6	159	60,6	-	-	-	-
	-5 / -6	167	48,8	167	54,4	167	61,5	168	69,4	-	-
	0 / -1	190	50,1	189	56,5	189	63,0	188	70,1	188	73,2
	2 / 1	200	50,7	199	57,2	198	63,4	197	70,5	197	73,5
	7 / 6	227	52,6	226	58,3	225	64,5	222	71,5	220	79,2
	12 / 11	253	53,9	251	59,5	248	65,6	245	72,3	242	79,6
90.4	-7 / -8	178	52,8	178	59,2	178	65,8	-	-	-	-
	-5 / -6	188	54,3	188	60,1	188	66,8	188	73,8	-	-
	0 / -1	216	55,9	214	62,1	213	68,5	212	75,6	211	83,2
	2 / 1	227	56,7	226	62,7	224	69,2	223	76,2	221	83,9
	7 / 6	259	57,9	257	64,1	255	70,7	251	77,9	249	85,6
	12 / 11	289	60,4	286	66,5	282	73,1	277	80,2	273	87,7
100.4	-7 / -8	195	57,7	196	65,1	196	71,7	-	-	-	-
	-5 / -6	207	59,6	207	65,9	207	72,6	207	80,0	-	-
	0 / -1	236	61,4	235	67,8	234	74,8	233	82,3	233	90,5
	2 / 1	249	62,0	248	68,5	246	75,5	245	83,2	244	91,4
	7 / 6	284	63,5	282	70,2	280	77,5	276	85,3	273	93,6
	12 / 11	317	66,0	313	72,7	309	79,8	305	87,6	301	95,8
110.4	-7 / -8	217	65,2	217	72,9	218	81,3	-	-	-	-
	-5 / -6	229	66,6	229	73,9	230	82,5	230	91,4	-	-
	0 / -1	262	68,5	261	76,2	260	84,4	259	93,4	258	103
	2 / 1	276	69,4	274	76,9	273	85,1	271	94,2	270	104
	7 / 6	314	71,0	312	78,6	310	87,0	306	96,1	303	106
	12 / 11	350	73,4	347	80,9	342	89,1	338	98,0	333	108
120.4	-7 / -8	235	70,9	235	79,2	236	89,7	-	-	-	-
	-5 / -6	248	71,8	248	80,6	248	90,7	248	101	-	-
	0 / -1	283	74,7	282	83,2	281	92,4	280	103	279	114
	2 / 1	298	75,5	296	83,8	295	93,0	293	103	291	115
	7 / 6	339	77,1	337	85,6	335	94,8	331	105	327	116
	12 / 11	378	79,4	374	87,6	370	96,6	365	107	360	117
130.4	-7 / -8	263	77,4	263	87,8	264	98,2	-	-	-	-
	-5 / -6	278	79,1	278	88,8	278	98,9	278	110	-	-
	0 / -1	317	81,7	316	90,7	315	101	313	112	312	124
	2 / 1	334	82,4	332	91,4	330	101	328	113	326	125
	7 / 6	381	84,3	378	93,4	375	103	370	115	366	127
	12 / 11	425	87,6	420	96,5	414	106	408	117	402	129
145.5	-7 / -8	291	86,0	291	96,2	292	109	-	-	-	-
	-5 / -6	308	87,1	308	97,6	308	110	308	124	-	-
	0 / -1	351	89,8	349	100	348	112	346	125	345	140
	2 / 1	369	90,8	367	101	365	113	363	126	361	140
	7 / 6	421	93,0	417	103	415	115	409	127	405	142
	12 / 11	469	96,1	464	106	459	117	452	129	446	143
160.4	-7 / -8	319	93,1	320	104	321	118	-	-	-	-
	-5 / -6	338	94,3	338	105	338	119	339	136	-	-
	0 / -1	385	97,4	383	109	382	122	380	139	379	156
	2 / 1	405	98,8	403	110	401	124	398	139	396	156
	7 / 6	461	102	457	114	455	126	449	141	445	157
	12 / 11	514	105	508	117	503	129	496	142	490	158

kWt = Internal exchanger heating capacity (kW)

kWe = Compressor power input in kW.

Ta = Entering external exchanger air temperature.

D.B. = Dry bulb

W.B. = Wet bulb

Excellence Heating - SC/EN

SIZE	Ta (°C) D.B./W.B.	Leaving internal exchanger water temperature (°C)									
		35		40		45		50		55	
		kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe
185.5	-7 / -8	371	108	371	120	372	136	-	-	-	-
	-5 / -6	392	109	392	122	392	137	393	156	-	-
	0 / -1	448	113	446	126	444	141	442	158	441	179
	2 / 1	472	114	469	127	466	142	463	160	461	179
	7 / 6	538	118	533	131	530	146	523	163	518	181
	12 / 11	600	122	593	135	586	149	578	165	571	182
210.6	-7 / -8	410	122	411	136	412	153	-	-	-	-
	-5 / -6	433	123	433	137	434	155	435	177	-	-
	0 / -1	494	128	492	142	491	160	489	179	488	200
	2 / 1	520	130	517	145	515	161	512	180	510	200
	7 / 6	592	133	588	148	584	164	578	182	573	203
	12 / 11	660	137	654	151	646	167	638	184	630	204
225.6	-7 / -8	449	137	450	154	452	172	-	-	-	-
	-5 / -6	475	139	475	155	475	173	476	195	-	-
	0 / -1	541	142	539	158	537	176	535	197	533	221
	2 / 1	570	144	567	160	564	178	560	198	557	222
	7 / 6	650	147	644	163	639	181	631	202	625	225
	12 / 11	723	153	715	169	707	186	697	206	687	227
240.6	-7 / -8	481	147	482	165	484	185	-	-	-	-
	-5 / -6	508	148	509	166	509	186	510	210	-	-
	0 / -1	579	152	577	169	575	189	573	212	571	238
	2 / 1	610	153	607	171	604	190	600	213	597	238
	7 / 6	695	157	689	175	684	194	676	216	669	241
	12 / 11	774	163	766	179	757	198	746	219	736	243

kWt = Internal exchanger heating capacity (kW)
kWe = Compressor power input in kW.
Ta = Entering external exchanger air temperature.
D.B. = Dry bulb
W.B. = Wet bulb

Integrated heating capacities

Entering external exchanger air temperature °C (D.B. / W.B.)	-7/-8	-5/-6	0/-1	2/1	Altri
Heating capacity multiplication coefficient	0,90	0,89	0,88	0,90	1,00

The integrated heating capacity represents the real heating capacity considering the defrost cycles too.

To obtain the integrated heating capacity multiply the heating performance value in kWt (shown in the heating performance tables) by the coefficients indicated in the table.

In case of below zero outdoor air temperature with a long period of heat pump operating mode it is necessary to help the evacuation of the water produced during the defrost cycle; this to avoid the formation of ice in the unit basement. Pay attention that the evacuation will not create inconveniences to things or persons

Performances

Premium Heating - SC/EN

SIZE	Ta (°C) D.B./W.B.	Leaving internal exchanger water temperature (°C)									
		35		40		45		50		52	
		kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe
90.3	-7 / -8	168	52,8	169	59,1	-	-	-	-	-	-
	-5 / -6	178	53,4	178	60,1	179	67,2	-	-	-	-
	0 / -1	202	55,5	202	62,1	202	68,9	202	76,4	201	79,7
	2 / 1	213	56,3	212	62,7	212	69,4	211	77,0	211	80,2
	7 / 6	242	57,8	241	64,1	240	70,9	237	78,5	237	81,7
	12 / 11	269	59,2	267	65,3	265	72,0	262	79,4	260	82,5
100.3	-7 / -8	186	60,4	187	67,5	-	-	-	-	-	-
	-5 / -6	197	61,1	197	68,2	198	76,7	-	-	-	-
	0 / -1	223	62,5	223	70,0	223	78,1	223	87,1	223	91,0
	2 / 1	235	63,3	234	70,6	234	78,5	233	87,5	233	91,4
	7 / 6	267	64,9	266	72,0	265	79,8	262	88,7	261	92,5
	12 / 11	296	66,1	294	73,0	292	80,7	289	89,2	287	92,8
110.4	-7 / -8	200	65,6	201	73,2	-	-	-	-	-	-
	-5 / -6	211	66,2	212	74,1	213	82,2	-	-	-	-
	0 / -1	240	68,4	240	75,9	240	84,1	240	93,1	240	97,0
	2 / 1	252	69,1	252	76,5	252	84,8	251	93,9	251	97,7
	7 / 6	286	70,7	285	78,3	285	86,6	283	95,8	282	100
	12 / 11	318	71,9	316	79,4	313	87,5	311	96,5	309	100
120.4	-7 / -8	221	72,4	223	82,0	-	-	-	-	-	-
	-5 / -6	233	72,9	235	83,1	236	92,6	-	-	-	-
	0 / -1	265	76,1	265	84,6	266	94,1	266	105	266	109
	2 / 1	278	76,7	278	85,3	279	94,8	278	105	278	110
	7 / 6	316	78,4	315	87,0	315	96,5	312	107	312	112
	12 / 11	350	79,5	348	87,9	346	97,1	343	107	342	112
130.4	-7 / -8	245	79,6	247	88,8	-	-	-	-	-	-
	-5 / -6	260	80,4	260	89,5	261	99,7	-	-	-	-
	0 / -1	295	82,2	295	91,2	295	101	294	113	294	118
	2 / 1	311	82,9	310	92,0	309	102	308	113	307	118
	7 / 6	353	84,7	351	93,9	350	104	346	115	345	120
	12 / 11	392	86,9	389	95,9	385	106	381	117	379	121
145.4	-7 / -8	271	88,4	272	99,3	-	-	-	-	-	-
	-5 / -6	286	89,0	287	100	289	112	-	-	-	-
	0 / -1	325	91,6	325	102	325	114	325	127	324	133
	2 / 1	341	92,3	341	103	340	114	339	127	339	133
	7 / 6	388	93,2	386	105	385	116	381	129	380	135
	12 / 11	431	96,2	427	106	424	117	419	130	417	135
160.4	-7 / -8	295	94,9	297	107	-	-	-	-	-	-
	-5 / -6	312	96,2	313	108	315	122	-	-	-	-
	0 / -1	354	98,0	354	110	354	123	354	138	354	145
	2 / 1	372	100	372	111	371	124	371	139	370	145
	7 / 6	422	102	421	113	420	126	416	140	415	146
	12 / 11	469	103	466	114	462	127	458	140	456	146
185.5	-7 / -8	350	109	352	121	-	-	-	-	-	-
	-5 / -6	370	110	371	123	373	139	-	-	-	-
	0 / -1	421	113	421	127	420	142	420	159	419	166
	2 / 1	443	115	442	128	441	143	439	160	439	167
	7 / 6	505	118	502	131	500	146	495	162	493	169
	12 / 11	562	121	557	133	552	147	546	163	543	170

kWt = Internal exchanger heating capacity (kW)

kWe = Compressor power input in kW.

Ta = Entering external exchanger air temperature.

D.B. = Dry bulb

W.B. = Wet bulb

Premium Heating - SC/EN

SIZE	Ta (°C) D.B./W.B.	Leaving internal exchanger water temperature (°C)									
		35		40		45		50		52	
		kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe
210.6	-7 / -8	389	123	391	138	-	-	-	-	-	-
	-5 / -6	411	125	413	140	415	158	-	-	-	-
	0 / -1	467	128	467	144	467	160	467	178	467	187
	2 / 1	491	130	491	145	490	161	489	179	488	187
	7 / 6	559	133	556	147	554	163	550	182	548	190
	12 / 11	622	135	617	149	612	165	606	183	603	190
225.6	-7 / -8	428	132	429	148	-	-	-	-	-	-
	-5 / -6	452	134	453	150	454	170	-	-	-	-
	0 / -1	515	138	514	155	512	173	511	194	510	203
	2 / 1	542	140	540	156	538	174	535	194	534	203
	7 / 6	617	143	613	159	609	177	603	197	600	206
	12 / 11	688	146	681	162	674	179	665	198	662	207
240.6	-7 / -8	460	142	462	159	-	-	-	-	-	-
	-5 / -6	486	144	487	161	489	183	-	-	-	-
	0 / -1	552	149	551	167	551	187	550	209	549	219
	2 / 1	581	150	579	168	578	188	575	210	574	220
	7 / 6	662	154	657	171	654	190	648	212	645	221
	12 / 11	736	157	730	174	723	192	715	213	711	222

kWt = Internal exchanger heating capacity (kW)

kWe = Compressor power input in kW.

Ta = Entering external exchanger air temperature.

D.B. = Dry bulb

W.B. = Wet bulb

Integrated heating capacities

Entering external exchanger air temperature °C (D.B. / W.B.)	-7/-8	-5/-6	0/-1	2/1	Altri
Heating capacity multiplication coefficient	0,90	0,89	0,88	0,90	1,00

The integrated heating capacity represents the real heating capacity considering the defrost cycles too.

To obtain the integrated heating capacity multiply the heating performance value in kWt (shown in the heating performance tables) by the coefficients indicated in the table.

In case of below zero outdoor air temperature with a long period of heat pump operating mode it is necessary to help the evacuation of the water produced during the defrost cycle; this to avoid the formation of ice in the unit basement. Pay attention that the evacuation will not create inconveniences to things or persons

Performances

Excellence

Heating at part load- SC/EN

SIZE	Load	Entering external exchanger air temperature (°C)																	
		-7/-8			-5/-6			0/-1			2/1			7/6			12/11		
		kWt	kWe_tot	COP	kWt	kWe_tot	COP	kWt	kWe_tot	COP	kWt	kWe_tot	COP	kWt	kWe_tot	COP	kWt	kWe_tot	COP
80.3	100	159	65,4	2,43	167	66,2	2,53	189	67,8	2,79	199	68,2	2,91	225	69,2	3,24	249	70,3	3,54
	75	119	46,4	2,57	126	46,8	2,68	142	47,5	2,99	149	47,7	3,12	169	48,3	3,49	186	47,9	3,89
	50	79,5	29,6	2,69	83,7	29,7	2,82	94,6	29,8	3,17	99	29,9	3,32	112	30,2	3,72	124	29,9	4,16
	Minimum	34,1	12,2	2,79	36,2	12,3	2,95	41,4	12,4	3,34	43,7	12,5	3,50	49,8	12,7	3,93	56,5	12,9	4,39
90.4	100	179	73,0	2,45	188	74,0	2,55	214	75,8	2,82	225	76,4	2,94	255	78,0	3,27	282	80,3	3,51
	75	134	48,2	2,78	141	48,7	2,90	160	50,1	3,20	169	50,6	3,33	191	52,1	3,67	212	52,4	4,04
	50	89,3	30,9	2,89	94,2	31,2	3,02	107	31,8	3,36	112	32,1	3,50	127	32,8	3,88	141	32,9	4,29
	Minimum	34,7	12,3	2,81	36,5	12,4	2,95	41,9	12,5	3,34	44,1	12,6	3,50	50,4	12,8	3,94	57,4	13,0	4,41
100.4	100	197	78,9	2,49	207	79,9	2,60	235	82,0	2,87	247	82,8	2,98	280	84,7	3,30	310	87,1	3,56
	75	147	54,0	2,73	155	54,6	2,85	176	56,0	3,15	185	56,5	3,27	210	58,1	3,61	232	58,2	3,99
	50	98,3	33,3	2,95	104	33,7	3,08	117	34,6	3,40	123	35,0	3,53	140	36,1	3,87	155	36,6	4,23
	Minimum	53,3	18,1	2,95	56,5	18,4	3,08	64,6	19,0	3,39	68,0	19,3	3,53	77,3	20,0	3,87	87,6	20,7	4,23
110.4	100	218	88,6	2,46	230	89,7	2,56	260	91,7	2,84	273	92,4	2,96	310	94,3	3,28	343	96,4	3,56
	75	164	60,3	2,71	172	61,0	2,83	195	62,7	3,12	205	63,4	3,23	232	64,6	3,59	257	64,2	4,01
	50	109	37,0	2,95	115	37,3	3,08	130	38,1	3,42	137	38,4	3,56	155	39,2	3,95	172	39,1	4,38
	Minimum	44,0	14,5	3,03	46,5	14,7	3,16	53,3	15,2	3,52	56,1	15,3	3,67	64,1	15,7	4,08	72,9	16,1	4,52
120.4	100	236	96,9	2,44	249	98,0	2,54	282	100	2,83	296	100	2,95	335	102	3,28	371	104	3,57
	75	177	65,3	2,71	187	65,8	2,84	211	67,4	3,14	222	68,1	3,26	251	70,3	3,57	278	70,0	3,97
	50	118	40,9	2,89	124	41,2	3,02	141	41,9	3,36	148	42,2	3,50	167	43,1	3,88	185	42,7	4,34
	Minimum	43,6	14,3	3,05	46,2	14,5	3,19	52,9	14,9	3,55	55,8	15,1	3,70	63,7	15,4	4,13	72,5	15,8	4,59
130.4	100	264	108	2,45	279	109	2,57	315	110	2,86	331	111	2,98	375	113	3,31	415	116	3,58
	75	198	73,9	2,68	209	74,4	2,81	236	75,9	3,12	248	76,6	3,24	281	78,8	3,56	311	78,2	3,98
	50	132	45,4	2,91	139	45,8	3,04	158	46,5	3,39	165	46,9	3,53	187	48,0	3,90	208	47,6	4,36
	Minimum	55,0	18,1	3,03	58,0	18,3	3,16	66,5	18,9	3,52	70,1	19,1	3,67	80,0	19,7	4,07	91,0	20,2	4,50
145.4	100	293	118	2,47	309	119	2,59	349	122	2,87	366	122	2,99	415	124	3,34	459	127	3,62
	75	220	81,0	2,71	231	81,1	2,85	262	82,0	3,19	275	82,5	3,33	311	84,0	3,70	345	84,0	4,10
	50	146	50,4	2,90	154	50,6	3,05	174	51,2	3,41	183	51,4	3,56	207	52,4	3,96	230	52,4	4,39
	Minimum	54,9	18,0	3,04	58,0	18,2	3,18	66,6	18,7	3,55	70,1	18,9	3,71	80,2	19,4	4,14	91,4	19,8	4,61
160.4	100	322	128	2,52	339	129	2,63	383	132	2,90	402	134	3,00	455	136	3,34	504	138	3,64
	75	241	88,0	2,74	254	88,5	2,87	287	89,9	3,19	301	90,6	3,32	341	92,0	3,71	378	91,2	4,14
	50	161	54,9	2,93	169	55,1	3,08	191	55,5	3,45	201	55,7	3,60	227	56,6	4,02	252	56,6	4,45
	Minimum	87,8	30,0	2,93	92,8	30,2	3,07	106	30,7	3,45	111	30,9	3,60	127	31,6	4,01	144	32,4	4,45
185.5	100	373	148	2,53	393	149	2,63	445	153	2,90	467	155	3,02	530	158	3,35	587	162	3,63
	75	280	100	2,79	295	101	2,93	334	103	3,25	351	104	3,38	397	106	3,74	440	106	4,15
	50	187	63,2	2,95	197	63,2	3,11	223	63,7	3,50	234	63,9	3,66	265	64,7	4,09	294	64,2	4,58
	Minimum	56,2	18,3	3,06	59,2	18,5	3,20	67,9	19,0	3,58	71,6	19,1	3,75	82,0	19,5	4,21	93,7	19,8	4,73
210.6	100	413	165	2,50	435	167	2,60	492	172	2,85	516	173	2,98	584	176	3,32	648	179	3,62
	75	310	111	2,78	326	112	2,92	369	114	3,23	387	118	3,29	438	119	3,70	486	119	4,09
	50	207	70,1	2,95	218	70,4	3,09	246	71,4	3,44	258	73,8	3,50	292	73,1	4,00	324	72,7	4,45
	Minimum	55,7	18,2	3,07	58,7	18,3	3,20	67,4	18,8	3,59	71,1	18,9	3,76	81,3	19,3	4,22	92,9	19,7	4,73
225.6	100	453	187	2,42	476	188	2,54	538	191	2,82	565	192	2,94	639	196	3,26	708	201	3,53
	75	339	128	2,65	357	129	2,78	404	130	3,10	424	131	3,24	480	133	3,61	531	132	4,04
	50	226	78,7	2,87	238	79,2	3,01	269	80,1	3,36	283	80,5	3,51	320	81,9	3,90	354	81,8	4,33
	Minimum	56,8	18,5	3,06	59,8	18,7	3,19	68,4	19,2	3,56	72,1	19,4	3,73	82,5	19,8	4,17	94,2	20,2	4,65
240.6	100	485	200	2,43	510	201	2,54	576	204	2,83	605	205	2,95	684	209	3,28	758	213	3,56
	75	364	137	2,66	383	138	2,78	432	141	3,08	454	141	3,21	513	143	3,59	569	142	4,01
	50	243	84,0	2,89	255	84,4	3,02	288	85,3	3,38	302	85,6	3,53	342	86,8	3,94	379	86,2	4,40
	Minimum	91,8	30,7	2,99	96,8	30,9	3,13	111	31,5	3,51	117	31,8	3,67	133	32,5	4,09	151	33,4	4,54

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

kWt = Heating capacity (kW)

kWe_tot = Unit total power input in kW

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

Premium

Heating at part load - ST/SC/EN

SIZE	Load	-5/-6			0/-1			2/1			7/6			12/11		
		kWt	kWe_tot	COP	kWt	kWe_tot	COP	kWt	kWe_tot	COP	kWt	kWe_tot	COP	kWt	kWe_tot	COP
90.3	100	179	71,9	2,49	202	73,6	2,75	212	74,1	2,86	240	75,6	3,17	265	76,7	3,46
	75	134	48,5	2,77	152	49,5	3,06	159	49,9	3,19	180	50,9	3,53	199	50,9	3,90
	50	89,6	30,6	2,92	101	31,4	3,22	106	31,7	3,34	120	32,6	3,68	133	32,8	4,04
	Minimum	54,6	18,1	3,02	62,1	18,7	3,32	65,3	19,0	3,44	74,1	19,6	3,77	83,8	20,3	4,12
100.3	100	199	81,4	2,44	224	82,8	2,70	234	83,3	2,82	265	84,6	3,13	292	85,4	3,42
	75	149	54,5	2,73	168	55,5	3,02	176	55,8	3,15	199	56,6	3,51	219	56,1	3,91
	50	99,3	34,1	2,91	112	34,7	3,22	117	34,9	3,36	132	35,5	3,73	146	35,3	4,14
	Minimum	44,4	14,4	3,09	50,8	14,8	3,42	53,5	15,0	3,56	60,9	15,5	3,94	69,2	15,9	4,34
110.4	100	214	87,1	2,45	241	88,9	2,71	252	89,6	2,82	285	91,4	3,11	314	92,4	3,40
	75	160	58,8	2,73	181	60,1	3,00	189	60,5	3,13	213	61,5	3,47	236	61,2	3,85
	50	107	35,7	2,99	120	36,4	3,31	126	36,6	3,44	142	37,4	3,80	157	37,4	4,19
	Minimum	44,5	14,4	3,09	50,8	14,9	3,41	53,5	15,1	3,55	61,0	15,5	3,93	69,3	16,0	4,33
120.4	100	237	97,5	2,43	266	99,0	2,69	279	99,6	2,80	315	101,0	3,10	347	102,0	3,40
	75	178	64,8	2,74	200	66,3	3,01	209	67,1	3,12	236	68,7	3,43	260	67,9	3,83
	50	118	40,0	2,96	133	40,6	3,28	140	40,9	3,41	157	41,6	3,78	173	41,0	4,23
	Minimum	45,2	14,5	3,12	51,7	14,9	3,46	54,5	15,1	3,61	62,1	15,5	4,01	70,6	15,9	4,44
130.4	100	262	107	2,45	295	109	2,72	310	109	2,83	350	111	3,14	386	113	3,42
	75	196	72,1	2,73	221	73,6	3,01	232	74,4	3,12	262	75,3	3,48	290	74,6	3,88
	50	131	44,0	2,98	148	44,8	3,30	155	45,1	3,43	175	45,9	3,81	193	45,7	4,23
	Minimum	56,3	18,2	3,09	64,3	18,8	3,41	67,6	19,1	3,55	77,0	19,6	3,92	87,5	20,3	4,32
145.4	100	289	119	2,42	325	121	2,69	341	121	2,81	385	123	3,12	425	125	3,41
	75	217	79,7	2,72	244	80,7	3,02	256	81,3	3,15	288	83,1	3,47	318	82,7	3,85
	50	145	49,4	2,93	163	50,0	3,25	170	50,4	3,38	192	51,5	3,73	212	51,2	4,14
	Minimum	56,0	18,0	3,11	64,0	18,5	3,45	67,4	18,7	3,59	76,8	19,3	3,98	87,3	19,8	4,40
160.4	100	316	129	2,44	355	130	2,72	372	131	2,84	420	133	3,16	463	134	3,47
	75	237	86,3	2,75	266	86,9	3,07	279	87,2	3,20	315	88,4	3,56	347	87,9	3,95
	50	158	53,6	2,95	178	54,1	3,28	186	54,3	3,42	210	55,2	3,80	232	55,5	4,18
	Minimum	88,1	29,9	2,95	100	30,5	3,28	105	30,8	3,42	120	31,6	3,80	136	32,5	4,17
185.5	100	373	149	2,51	421	151	2,78	442	153	2,89	500	155	3,22	553	157	3,52
	75	280	97,7	2,87	316	99,6	3,17	331	100	3,30	375	103	3,65	415	103	4,04
	50	187	60,9	3,07	211	61,2	3,44	221	61,4	3,60	250	62,1	4,02	276	61,7	4,48
	Minimum	57,8	18,1	3,19	66,3	18,6	3,58	69,9	18,7	3,74	80,0	19,1	4,19	91,3	19,5	4,68
210.6	100	416	167	2,48	468	169	2,76	491	170	2,88	554	173	3,20	613	175	3,51
	75	312	109	2,85	351	112	3,14	368	113	3,26	416	116	3,59	460	116	3,97
	50	208	68,2	3,05	234	68,7	3,41	245	68,9	3,56	277	69,9	3,96	306	69,6	4,41
	Minimum	57,6	18,0	3,21	66,1	18,4	3,59	69,7	18,6	3,76	79,7	19,0	4,21	91,0	19,3	4,71
225.6	100	455	182	2,50	514	185	2,77	539	186	2,89	609	189	3,22	675	191	3,52
	75	341	119	2,87	385	121	3,19	404	122	3,31	457	126	3,63	506	126	4,02
	50	227	74,1	3,07	257	74,6	3,44	269	74,9	3,59	305	76,0	4,01	337	75,5	4,47
	Minimum	58,7	18,3	3,20	67,3	18,7	3,59	71,0	18,9	3,76	81,3	19,3	4,22	92,9	19,6	4,73
240.6	100	490	196	2,50	552	199	2,77	579	200	2,90	654	203	3,23	724	205	3,54
	75	367	128	2,87	414	130	3,18	434	131	3,31	491	134	3,65	543	136	4,01
	50	245	79,6	3,08	276	80,0	3,45	289	80,3	3,60	327	81,3	4,02	362	80,8	4,48
	Minimum	95,3	30,2	3,16	109	30,7	3,55	115	30,9	3,71	131	31,5	4,16	149	32,2	4,63

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

kWt = Heating capacity (kW)

kWe_tot = Unit total power input in kW

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

Configurations

SC - Acoustic configuration with compressor soundproofing (Standard)

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

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

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



EN - Super-silenced acoustic configuration

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

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

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



PFGP - Soundproofing paneling of the pumping unit

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

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

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

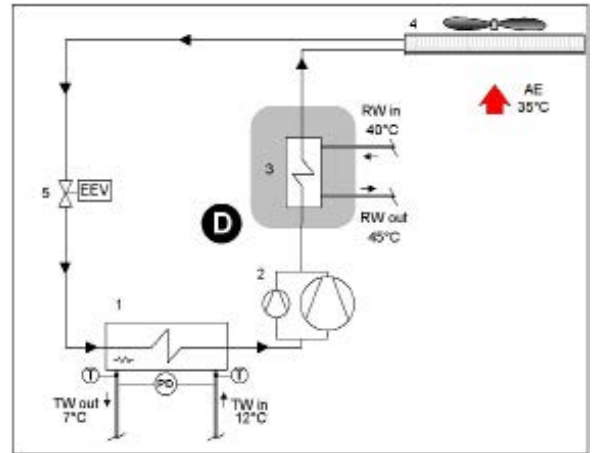
D - Partial energy recovery

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

This option is also known as “desuperheater”. It is made up of a Inox 316 stainless steel brazed plate heat exchangers, suitable for recovering a part of the capacity dispersed by the unit (the dispersed heating capacity is equal to the sum of the cooling capacity and the electrical input capacity of the compressors). The partial recovery device is considered to be operating when it is powered by the water flow which is to be heated. This condition improves the unit performance, since it reduces the condensation temperature: in nominal conditions the cooling capacity increases indicatively by 3.2% and the power input of the compressors is reduced by 3.6%.

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

The partial energy recovery water connections are 2" 1/2 for all sizes.

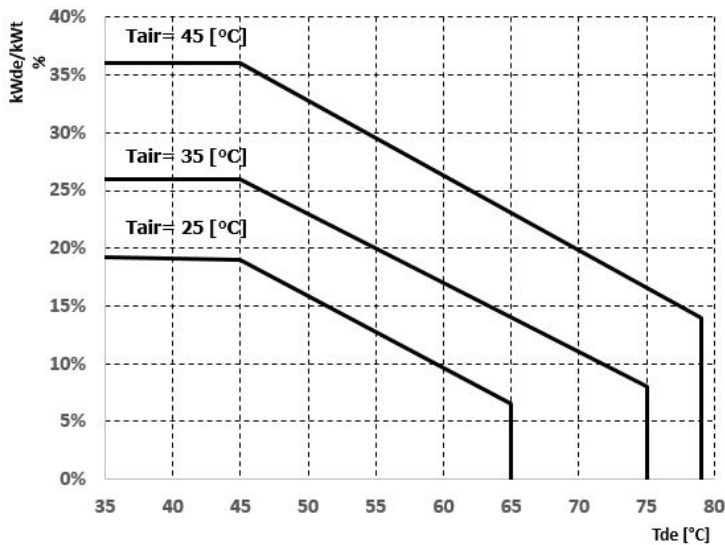


D - Partial recovery device

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

- TW in chilled water inlet
- TW out chilled water outlet
- RW in - Recovery water input
- RW out - Recovery water output
- T - Temperature probe
- PD - Differential pressure switch
- AE Outdoor air

Partial recovery heating capacity



$kWde/kWt$ = Potenza termica desurriscaldatore / Potenza termica al condensatore (potenza frigo+assorbita compressori) [%]

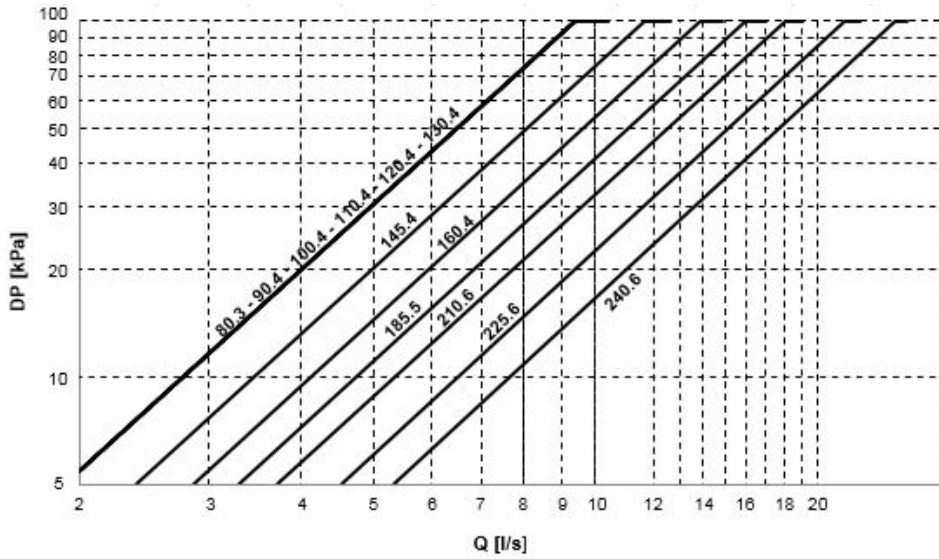
Tde = Temperatura uscita acqua desurriscaldatore [°C]

⚠ Valori con tolleranza ± 2%

Configurations

Pressure drops of partial energy recovery exchanger

Excellence



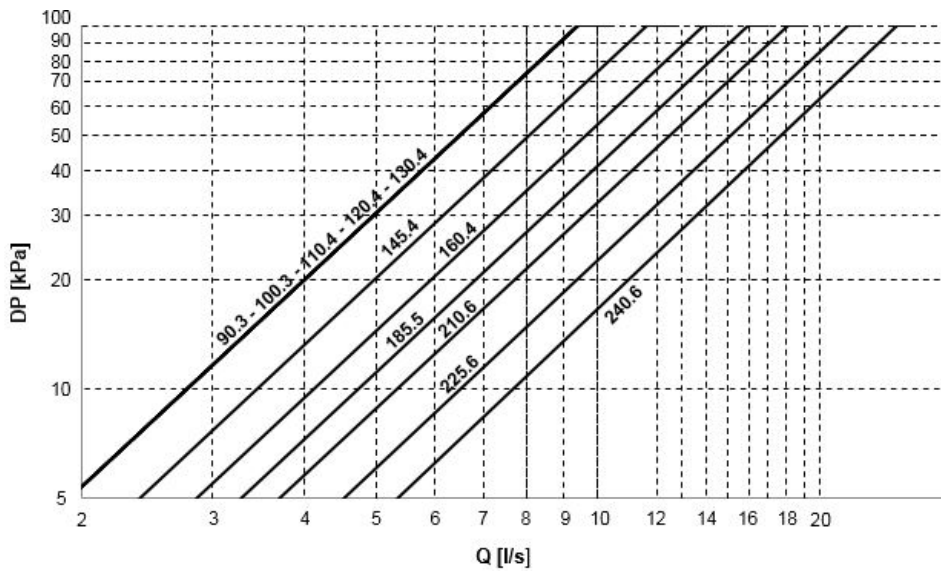
Q = Water flow-rate[l/s]
DP = Water side pressure drops (kPa)

Admissible water flow-rates

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

SIZE		80.3	90.4	100.4	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6
Qmin	[l/s]	1,9	1,9	1,9	1,9	1,9	1,9	2,4	2,9	3,3	3,7	4,5	5,3
Qmax	[l/s]	9,4	9,4	9,4	9,4	9,4	9,4	11,6	13,9	16,0	18,1	21,8	25,4

Premium



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

Admissible water flow-rates

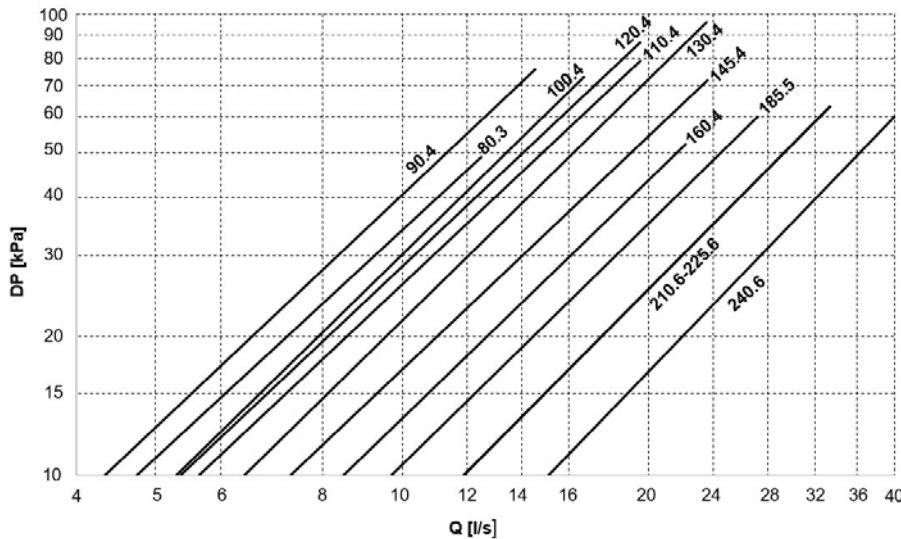
Minimum (Qmin) and maximum (Qmax) admissible water flow for the unit to operate correctly

SIZE		90.3	100.3	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6
Qmin	[l/s]	1,9	1,9	1,9	1,9	1,9	2,4	2,9	3,3	3,7	4,5	5,3
Qmax	[l/s]	9,4	9,4	9,4	9,4	9,4	11,6	13,9	16,0	18,1	21,8	25,4

EVFTP - Shell and tube exchanger PED test

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

Shell and tube exchanger pressure drops (EVFTP) - Excellence



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

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

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

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

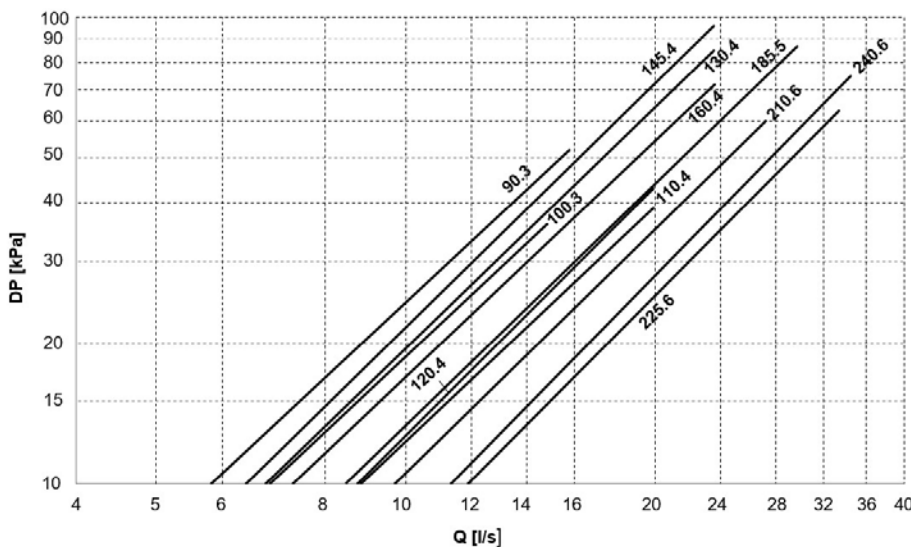
kWf = Cooling capacity in kW
DT = Temperature difference between inlet / outlet water

Admissible water flow-rates

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

SIZE		80.3	90.4	100.4	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6
Qmin	[l/s]	4,7	4,3	5,3	5,6	5,4	6,4	7,3	8,5	9,7	11,9	11,9	15,1
Qmax	[l/s]	12,5	14,5	16,7	19,6	19,6	23,6	23,6	22,2	27,2	33,3	33,3	42,5

Shell and tube exchanger pressure drops (EVFTP) - Premium



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

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

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

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

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

Admissible water flow-rates

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

SIZE		90.3	100.3	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6
Qmin	[l/s]	5,8	6,9	8,8	8,7	6,8	6,4	7,3	8,5	9,7	11,9	11,3
Qmax	[l/s]	15,8	14,8	19,9	19,9	23,6	23,6	23,6	29,7	27,2	33,3	34,4

Accessories - Hydronic assembly

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

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

Mechanical seal using ceramic, carbon and EPDM elastomer components.

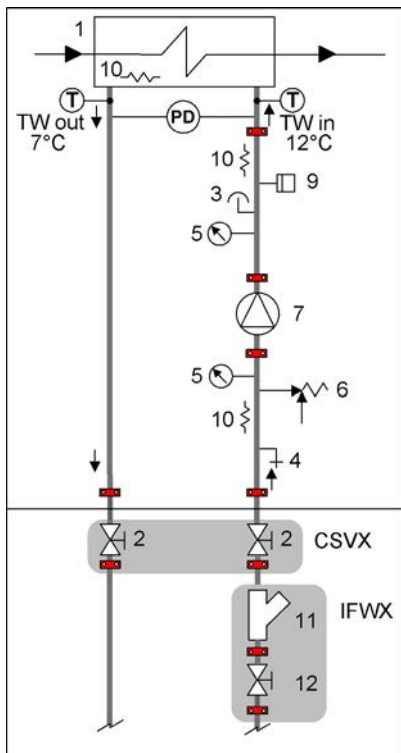
Three-phase electric motor with IP55 degree of protection. Complete with a thermoformed insulating casing, quick connections with insulated casing, safety valve, pressure gauges, system safety pressure switch, stainless steel antifreeze, intake, immersion-type heaters.

All water fittings are Victaulic.

1PM = Hydropack with N° 1 pump

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

CONNECTION DIAGRAM - GROUP WITH N° 1 PUMP



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

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

The grey area indicates further optional components.

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

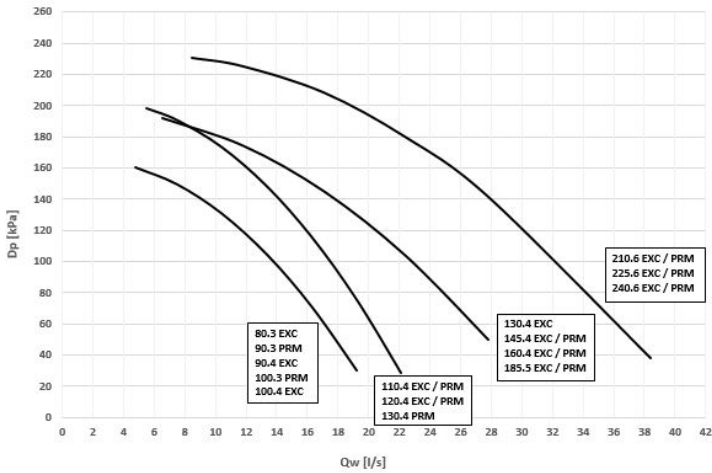
Electrical data Hydropack

PUMP	Rated power [kW]	Nominal Current [A]
1PM 80.3 ÷ 100.4 EXC / 90.3 - 100.3 PRM	3	6,35
1PM 110.4 - 120.4 EXC / 110.4 ÷ 130.4 PRM	4	7,8
1PM 130.4 ÷ 185.5 EXC / 145.4 ÷ 185.5 PRM	5,5	10,6
1PM 210.6 ÷ 240.6 EXC / 210.6 ÷ 240.6 PRM	7,5	14,4

PUMP	Rated power [kW]	Nominal Current [A]
1PMH 80.3 ÷ 110.4 EXC / 90.3 ÷ 130.4 PRM	7,5	14,4
1PMH 120.4 ÷ 185.5 EXC / 145.4 ÷ 185.5 PRM	11	20,6
1PMH 210.6 ÷ 240.6 EXC / 210.6 ÷ 240.6 PRM	15	27,5

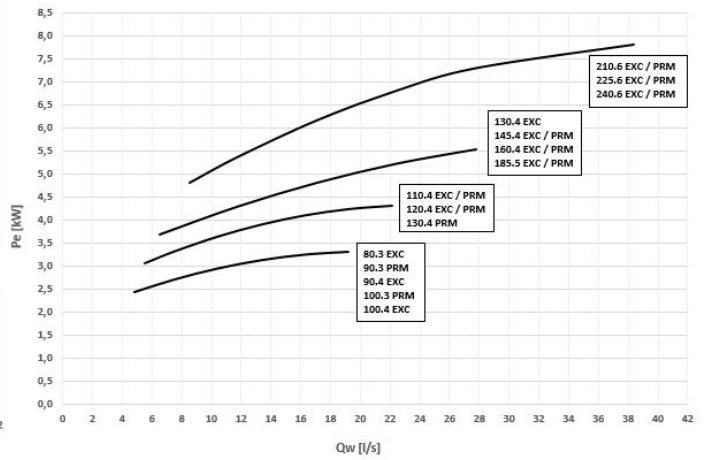
1PM - HYDROPACK WITH N° 1 PUMP

Head



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

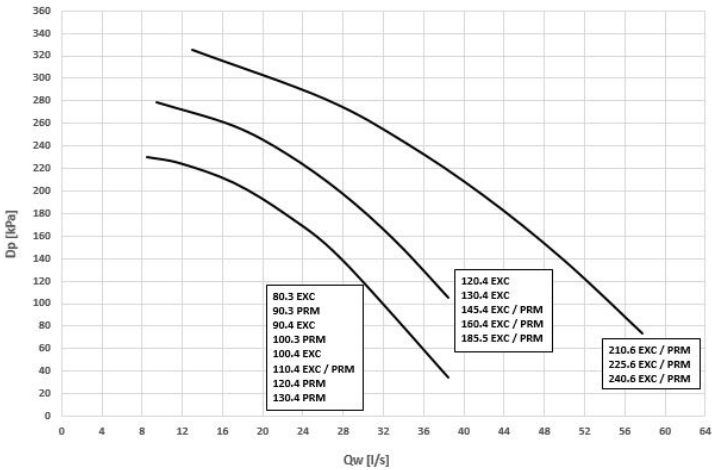
Power input



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

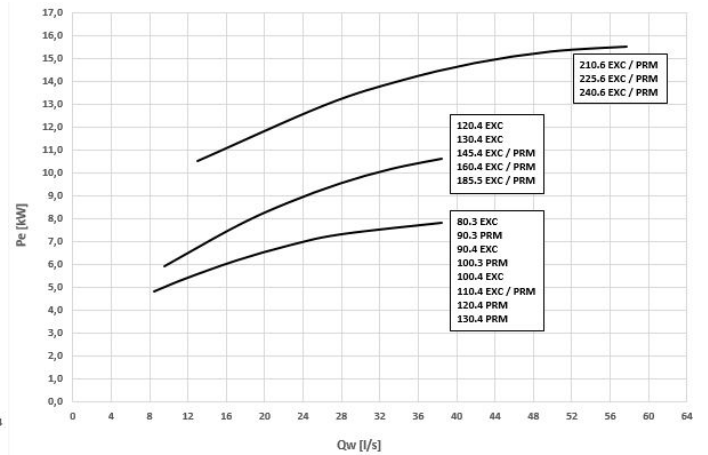
1PMH - HYDROPACK WITH N° 1 HIGH STATIC PRESSURE PUMP

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

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

Option supplied on the unit. Pumping unit made up of one electropump controlled by inverter to adapt to the different application conditions. It enables the automatic reduction of the liquid flow rate in critical conditions, avoiding blocks due to overloading and consequential intervention work by specialised technical personnel.

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

Centrifugal electric pump with the pump body made of cast iron and the impeller made of AISI 316 stainless steel (depending on the models).

Mechanical seal using ceramic, carbon and EPDM elastomer components

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

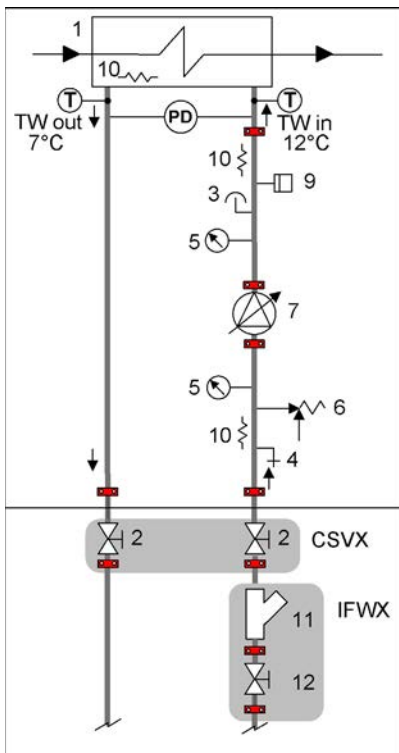
In combination with the "IVFDT" - Variable flow-rate control option, it allows the water flow rate variation to the installation in part load operation to obtain the maximum unit efficiency and lower pumping unit consumption.

All water fittings are Victaulic.

1PMV = Hydropack with N° 1 inverter pump

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

CONNECTION DIAGRAM - GROUP WITH N° 1 INVERTER PUMP



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

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

The grey area indicates further optional components.

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

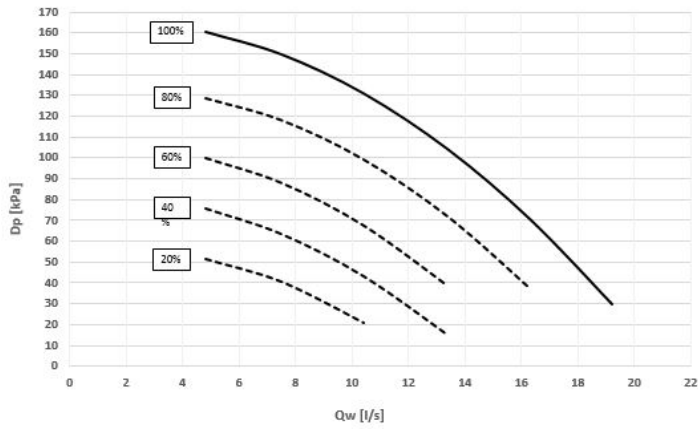
Electrical data Hydropack

PUMP	Rated power [kW]	Nominal Current [A]
1PMV 80.3 ÷ 100.4 EXC / 90.3 - 100.3 PRM	3	6,35
1PMV 110.4 - 120.4 EXC / 110.4 ÷ 130.4 PRM	4	7,8
1PMV 130.4 ÷ 185.5 EXC / 145.4 ÷ 185.5 PRM	5,5	10,6
1PMV 210.6 ÷ 240.6 EXC / 210.6 ÷ 240.6 PRM	7,5	14,4

PUMP	Rated power [kW]	Nominal Current [A]
1PMVH 80.3 ÷ 110.4 EXC / 90.3 ÷ 130.4 PRM	7,5	14,4
1PMVH 120.4 ÷ 185.5 EXC / 145.4 ÷ 185.5 PRM	11	20,6
1PMVH 210.6 ÷ 240.6 EXC / 210.6 ÷ 240.6 PRM	15	27,5

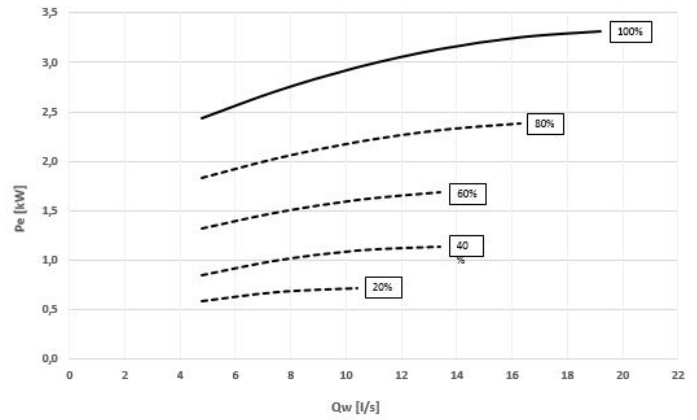
1PMV - HYDROPACK WITH N° 1 INVERTER PUMP

Head - Size 80.3 - 100.4 EXC / 90.3 - 100.3 PRM



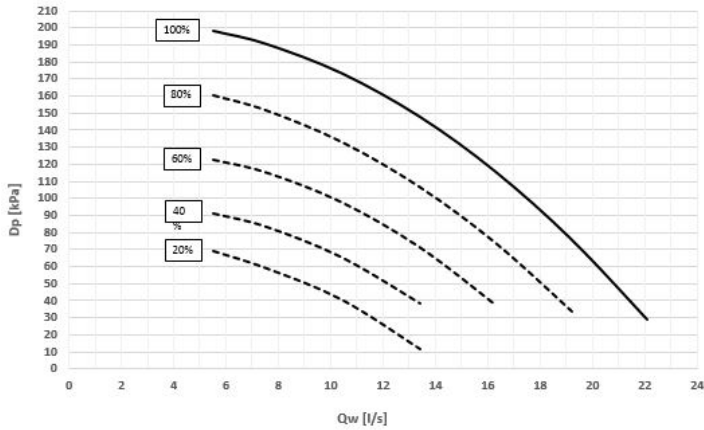
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 80.3 - 100.4 EXC / 90.3 - 100.3 PRM



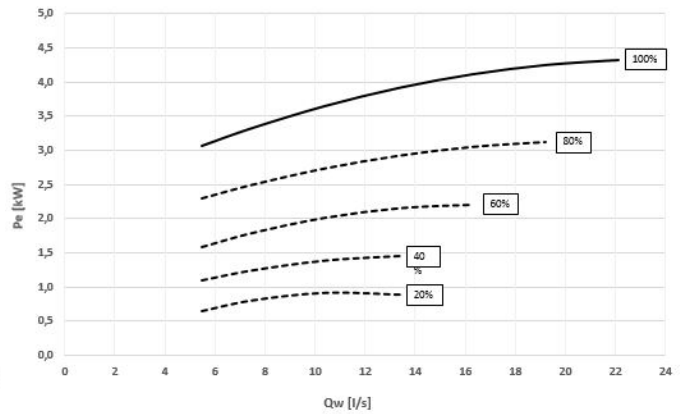
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 110.4 - 120.4 EXC / 110.4 - 130.4 PRM



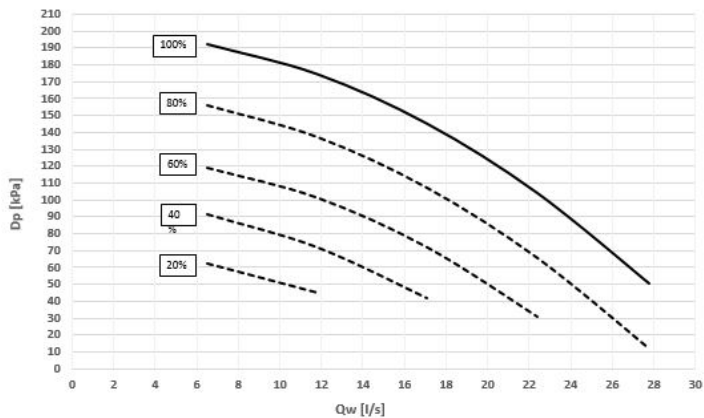
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 110.4 - 120.4 EXC / 110.4 - 130.4 PRM



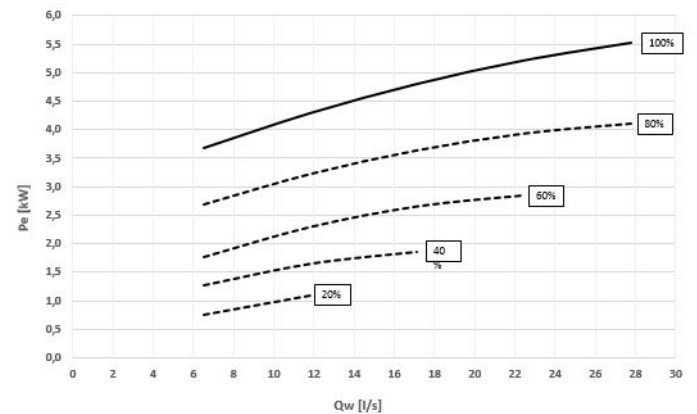
Pe = Power input [kW]
QW = Water flow-rate [l/s]

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



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

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

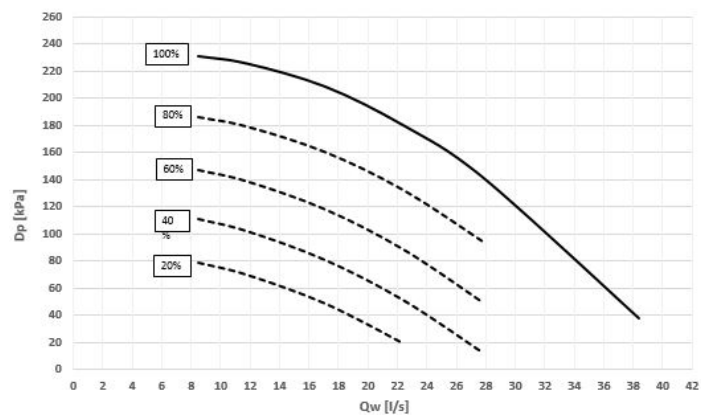


Pe = Power input [kW]
QW = Water flow-rate [l/s]

Accessories - Hydronic assembly

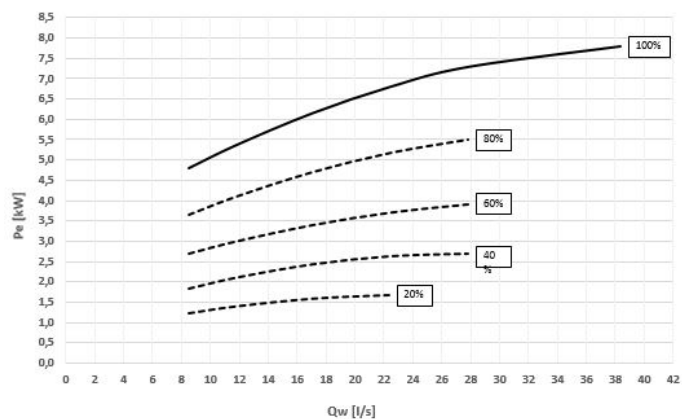
1PMV - HYDROPACK WITH N° 1 INVERTER PUMP

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



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

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

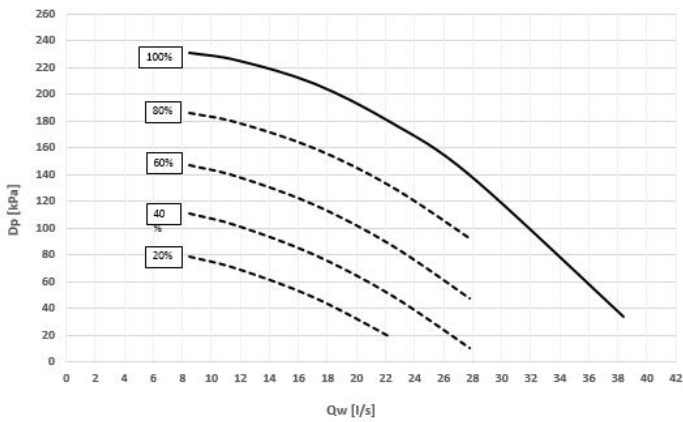


Pe = Power input [kW]
Qw = Water flow-rate [l/s]

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

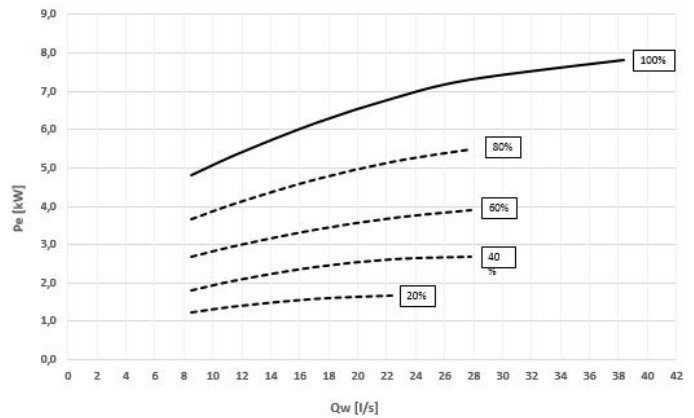
1PMVH - HYDROPACK WITH N° 1 HIGH STATIC PRESSURE PUMP

Head - Size 80.3 - 110.4 EXC / 90.3 - 130.4 PRM



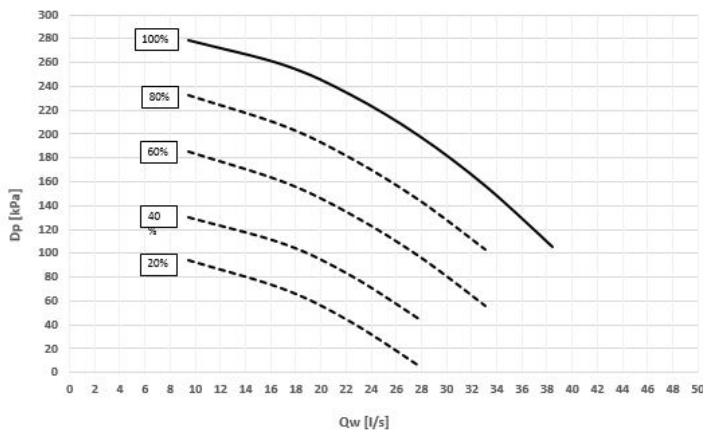
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 80.3 - 110.4 EXC / 90.3 - 130.4 PRM



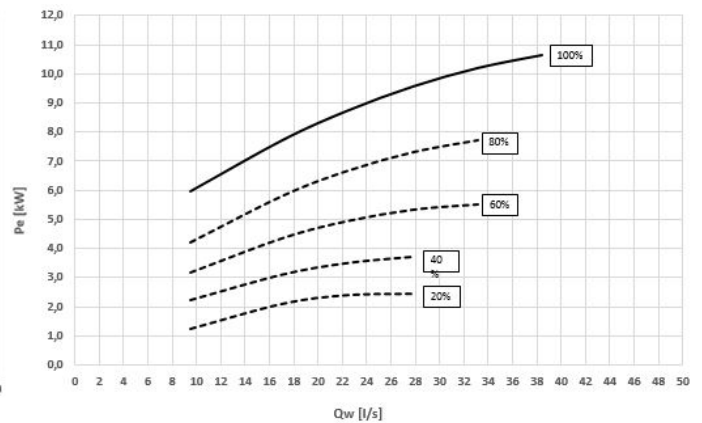
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 120.4 - 185.5 EXC / 145.4 - 185.5 PRM



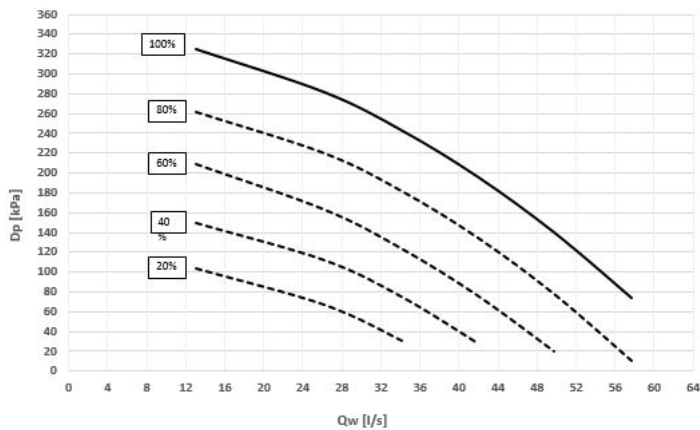
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 120.4 - 185.5 EXC / 145.4 - 185.5 PRM



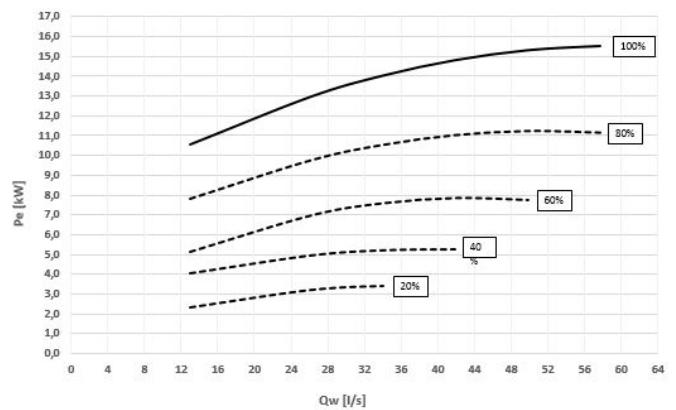
Pe = Power input [kW]
QW = Water flow-rate [l/s]

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



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

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



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

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

Accessories - Hydronic assembly

2PM/2PMH - HydroPack with N° 2 pumps

Option supplied built-in the unit. Pumping unit made up of two electric pumps laid out in parallel, with auto-adaptive modular logic activation. It enables the automatic reduction of the liquid flow-rate in critical conditions, avoiding blocks due to overloading and consequential intervention work by specialised technical personnel.

Centrifugal electric pump, with the pump body made of cast iron and the impeller made of AISI 316 stainless steel.

Mechanical seal using ceramic, carbon and EPDM elastomer components.

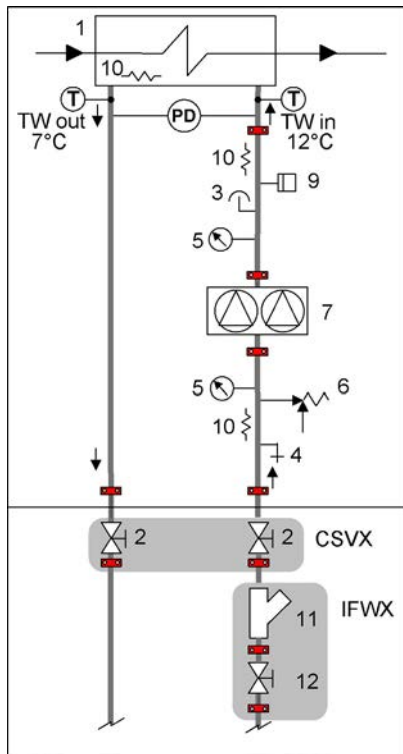
Three-phase electric motor with IP55 degree of protection. Complete with a thermoformed insulating casing, quick connections with insulated casing, safety valve, pressure gauges, system safety pressure switch, stainless steel antifreeze, intake, immersion-type heaters.

All water fittings are Victaulic.

2PM = HydroPack with N° 2 pump

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

CONNECTION DIAGRAM - GROUP WITH N° 2 PUMPS



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

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

The grey area indicates further optional components.

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

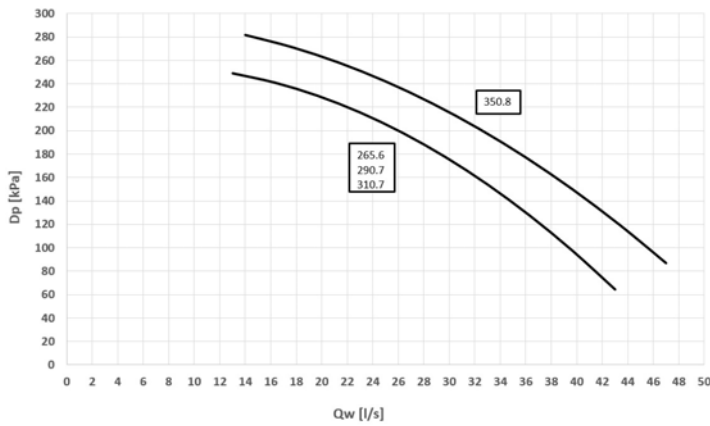
Electrical data HydroPack

PUMP	Rated power [kW]	Nominal Current [A]
2PM 80.3 ÷ 100.4 EXC / 90.3 ÷ 110.4 PRM	2 x 2,2	2 x 4,56
2PM 110.4 ÷ 185.5 EXC / 120.4 ÷ 210.6 PRM	2 x 4	2 x 7,62
2PM 210.6 ÷ 240.6 EXC / 225.6 - 240.6 PRM	2 x 5,5	2 x 10,5

PUMP	Rated power [kW]	Nominal Current [A]
2PMH 80.3 - 100.4 EXC / 90.3 ÷ 110.4 PRM	2 x 4	2 x 7,62
2PMH 110.4 ÷ 145.4 EXC / 120.4 ÷ 145.4 PRM	2 x 5,5	2 x 10,5
2PMH 160.4 ÷ 210.6 EXC / 160.4 - 185.5 PRM	2 x 7,5	2 x 14,1
2PMH 225.6 - 240.6 EXC / 210.6 ÷ 240.6 PRM	2 x 11	2 x 20,2

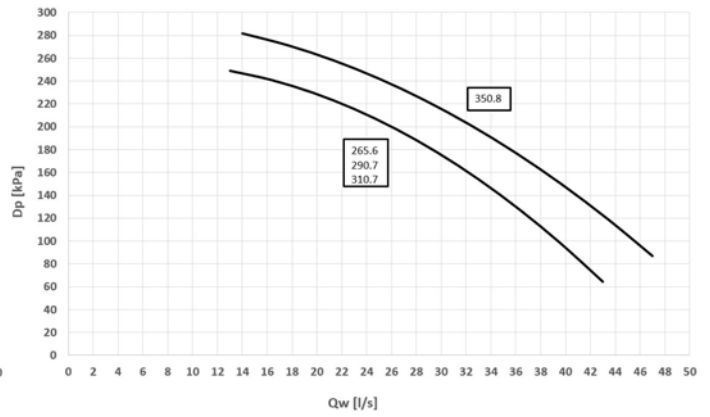
2PM - HYDROPACK WITH N° 2 PUMPS

Head



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

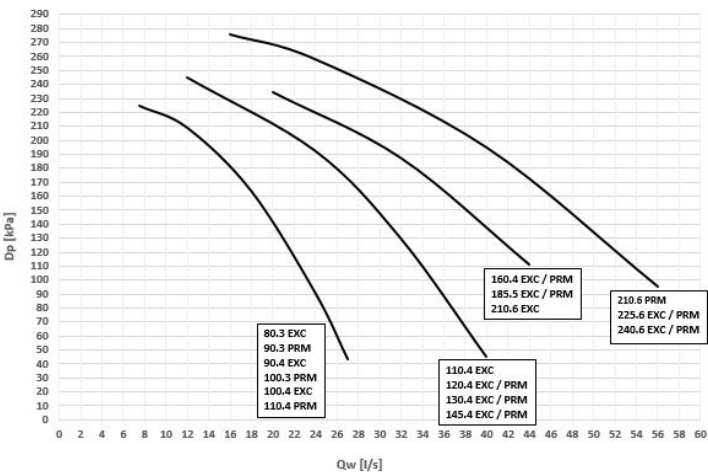
Power input



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

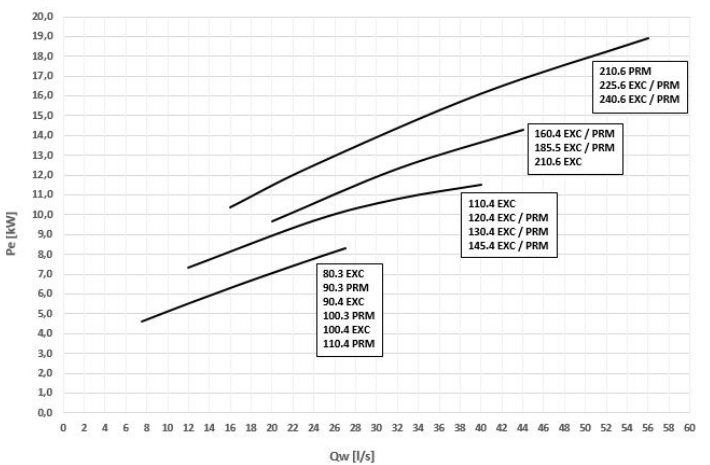
2PMH - HYDROPACK WITH N° 2 HIGH STATIC PRESSURE PUMPS

Head



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

Power input



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

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

Accessories - Hydronic assembly

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

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

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

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

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

Mechanical seal using ceramic, carbon and EPDM elastomer components.

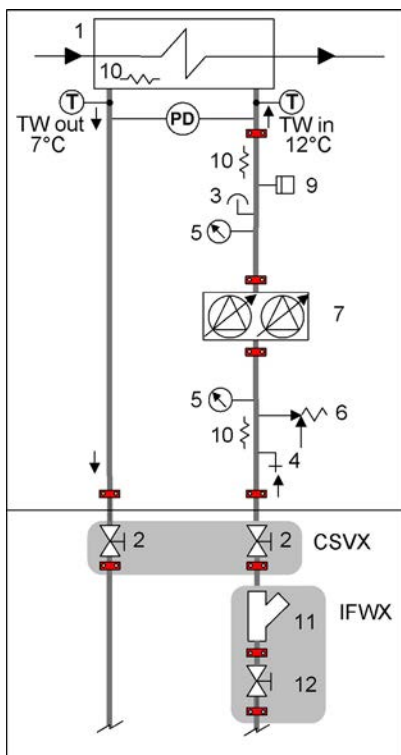
Three-phase electric motor with IP44-protection. Complete with thermoformed insulated casing, quick connections with insulated casing, safety valve, pressure gauges, system load safety pressure switch, stainless steel antifreeze immersion heaters located at the return and supply point. In combination with the "IVFDT" - Variable flow-rate control option, it allows the water flow-rate variation to the installation in part load operation to obtain the maximum unit efficiency and lower pumping unit consumption.

All water fittings are Victaulic.

2PMV = Hydropack with N° 2 inverter pump

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

CONNECTION DIAGRAM - GROUP WITH 2 INVERTER PUMPS



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

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

The grey area indicates further optional components.

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

Electrical data Hydropack

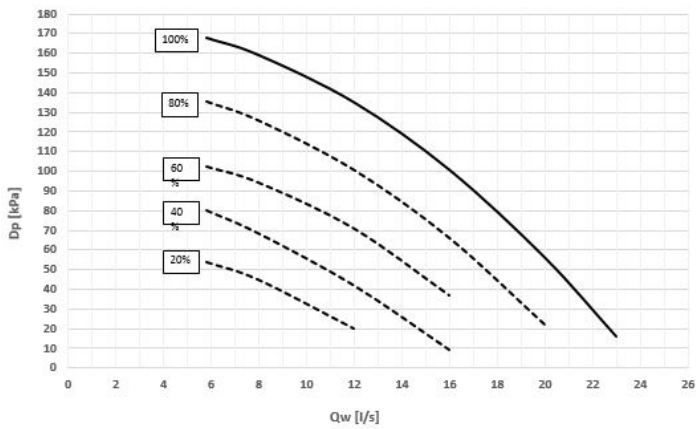
PUMP	Rated power [kW]	Nominal Current [A]
2PMV 80.3 ÷ 100.4 EXC / 90.3 ÷ 110.4 PRM	2 x 2,2	2 x 4,56
2PMV 110.4 ÷ 185.5 EXC / 120.4 ÷ 210.6 PRM	2 x 4	2 x 7,62
2PMV 210.6 ÷ 240.6 EXC / 225.6 - 240.6 PRM	2 x 5,5	2 x 10,5

PUMP	Rated power [kW]	Nominal Current [A]
2PMVH 80.3 - 100.4 EXC / 90.3 ÷ 110.4 PRM	2 x 4	2 x 7,62
2PMVH 110.4 ÷ 145.4 EXC / 120.4 ÷ 145.4 PRM	2 x 5,5	2 x 10,5
2PMVH 160.4 ÷ 210.6 EXC / 160.4 - 185.5 PRM	2 x 7,5	2 x 14,1
2PMVH 225.6 - 240.6 EXC / 210.6 ÷ 240.6 PRM	2 x 11	2 x 20,2

Accessories - Hydronic assembly

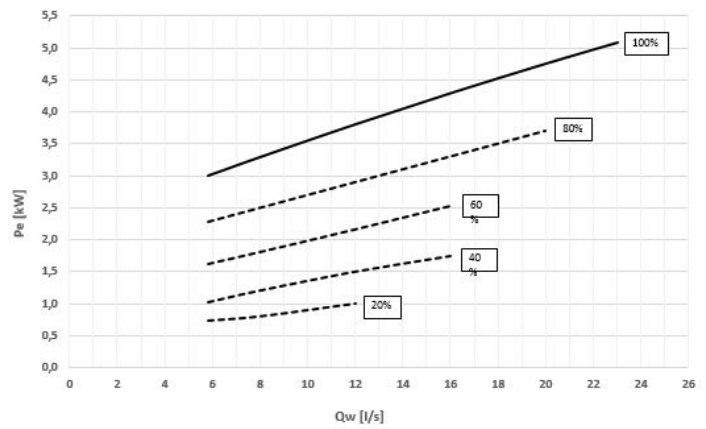
2PMV - HYDROPACK WITH N° 2 INVERTER PUMPS

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



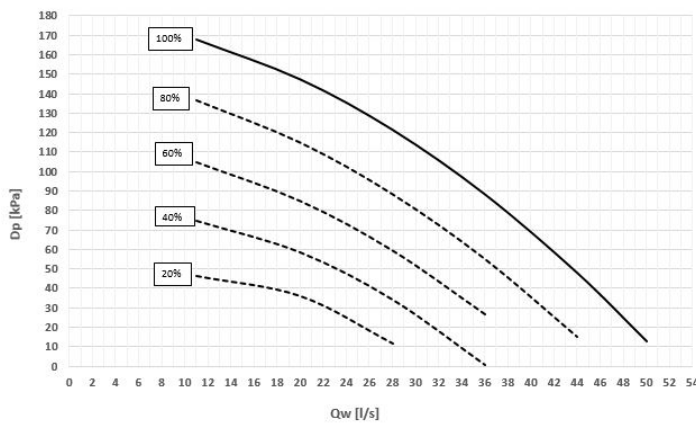
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

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



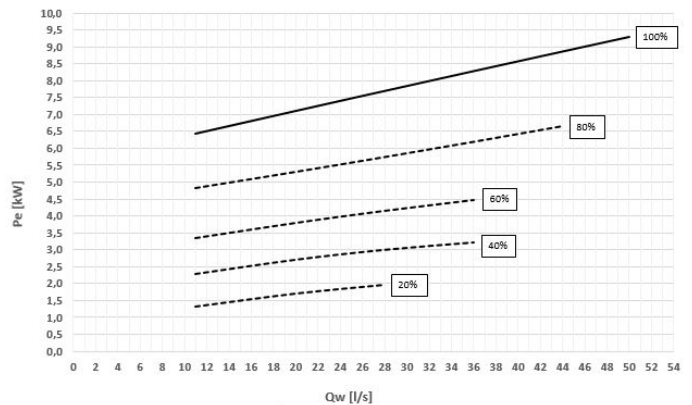
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 110.4 - 185.5 EXC / 120.4 - 210.6 PRM



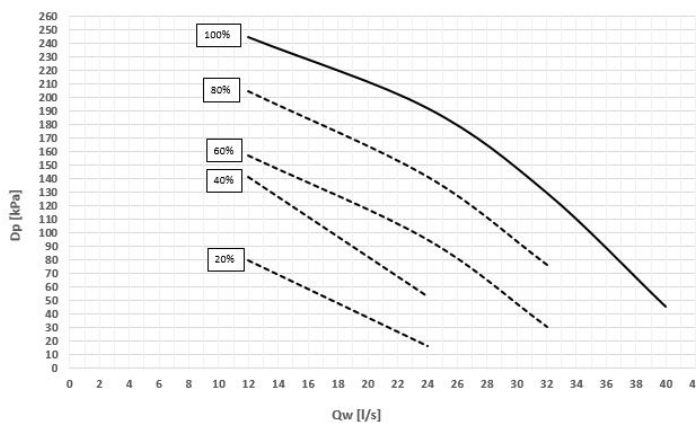
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 110.4 - 185.5 EXC / 120.4 - 210.6 PRM



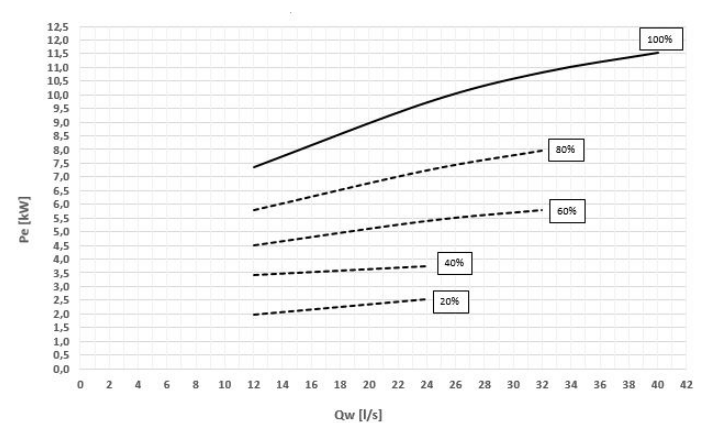
Pe = Power input [kW]
QW = Water flow-rate [l/s]

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



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

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



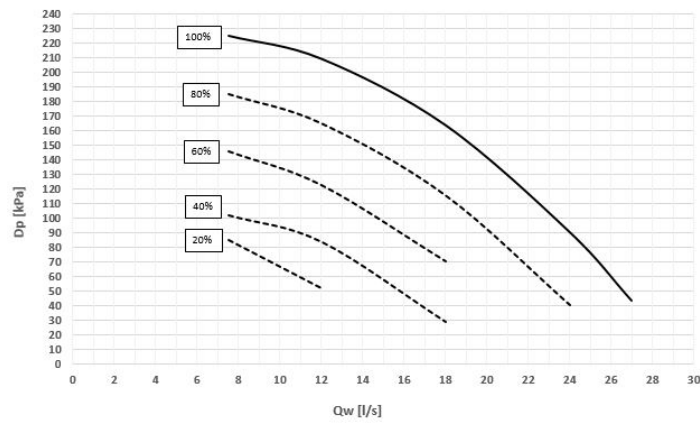
Pe = Power input [kW]
QW = Water flow-rate [l/s]

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

Accessories - Hydronic assembly

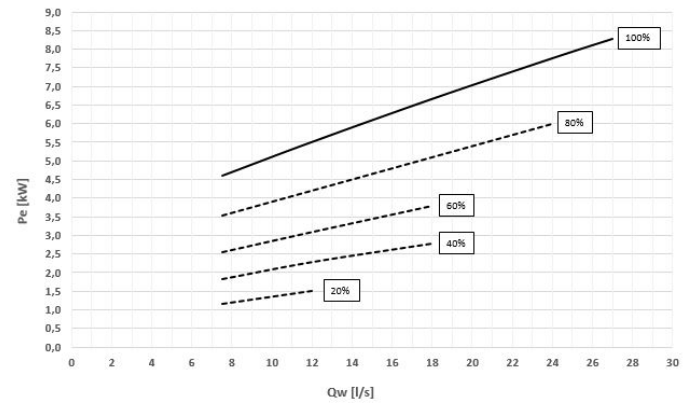
2PMVH - HYDROPACK WITH N° 2 HIGH STATIC PRESSURE INVERTER PUMPS

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



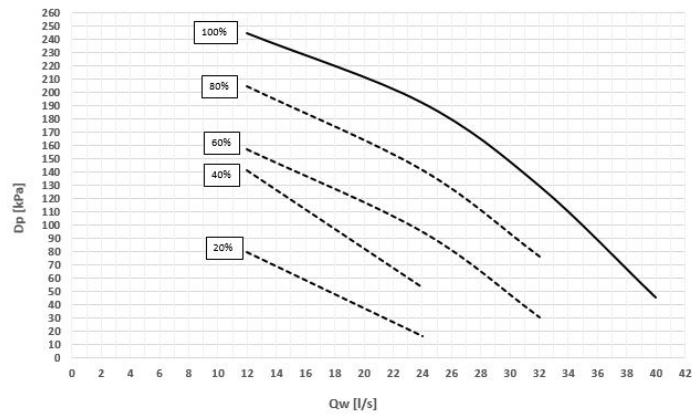
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

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



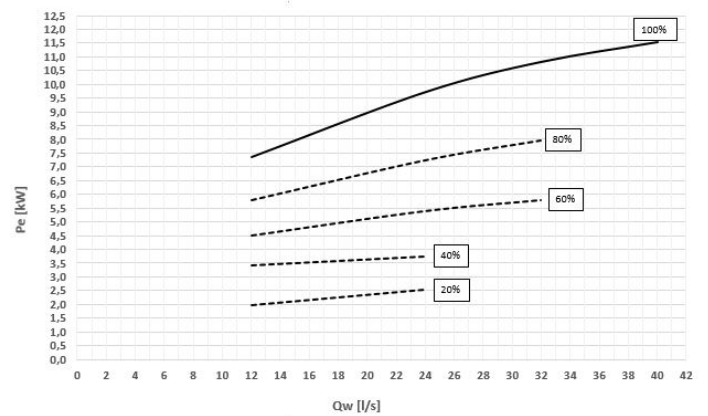
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 110.4 - 145.4 EXC / 120.2 - 145.5 PRM



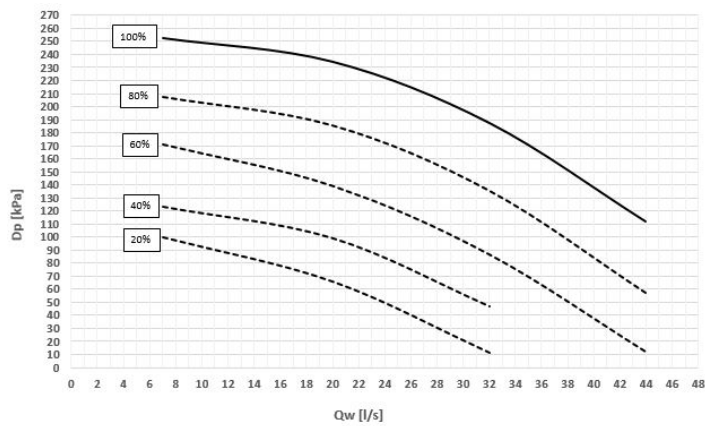
Dp = Pump head [kPa]
QW = Water flow-rate [l/s]

Power input - Size 110.4 - 145.4 EXC / 120.2 - 145.5 PRM



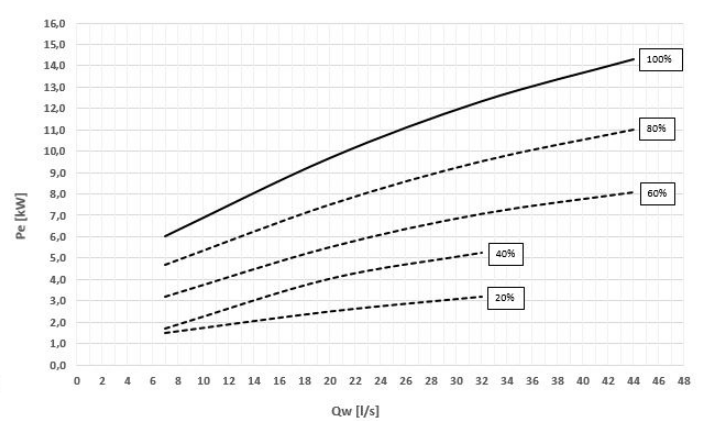
Pe = Power input [kW]
QW = Water flow-rate [l/s]

Head - Size 160.4 - 210.6 EXC / 160.4 - 185.5 PRM



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

Power input - Size 160.4 - 210.6 EXC / 160.4 - 185.5 PRM

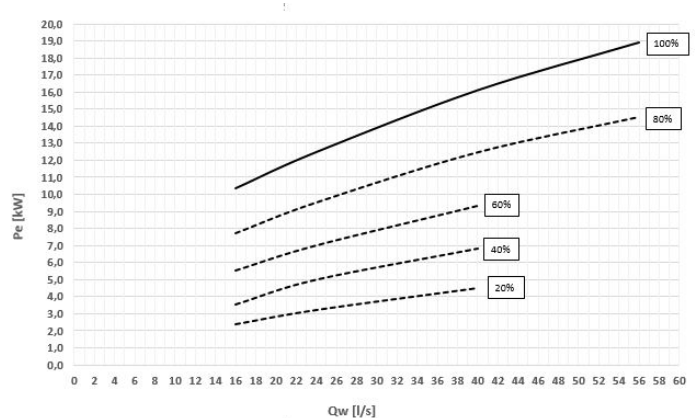
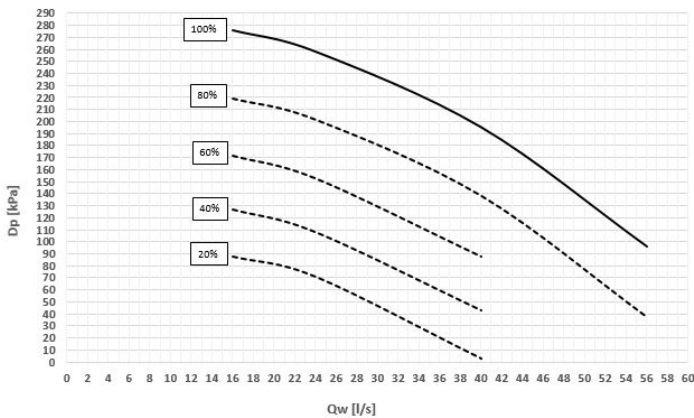


Pe = Power input [kW]
QW = Water flow-rate [l/s]

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

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

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



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

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

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

ACC - Storage tank

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

Sizes 80.3 EXC / 90.3 ÷ 120.4 PRM: the storage tank capacity is 420 liters.

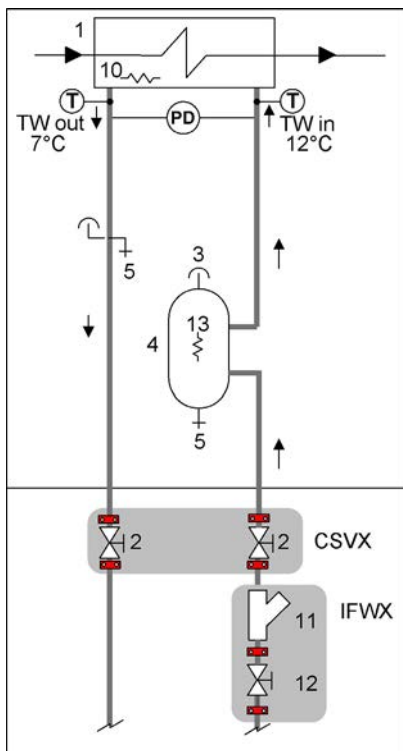
Sizes 90.4 ÷ 120.4 EXC / 130.4 ÷ 160.4 PRM: the storage tank capacity is 500 liters.

Sizes 130.4 - 160.4 EXC / 185.5 ÷ 210.6 PRM: the storage tank capacity is 780 liters.

Sizes 185.5 ÷ 240.6 EXC / 225.6 ÷ 240.6 PRM: the storage tank capacity is 1050 liters.

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

CONNECTION DIAGRAM



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

T - Temperature probe
PD - Differential pressure switch

TW in chilled water inlet
TW out chilled water outlet

The grey area indicates further optional components.

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

Option compatibility

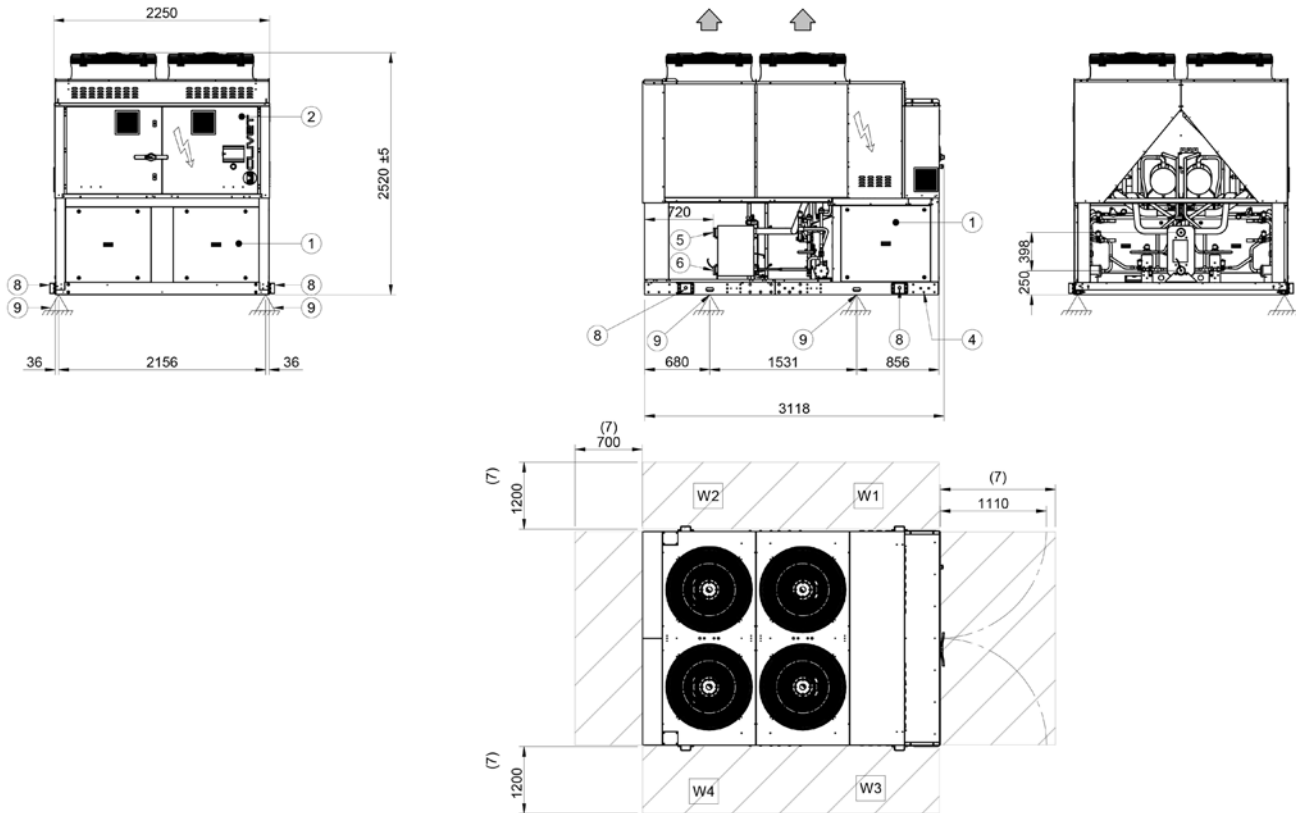
REF	DESCRIPTION	80.3	90.3	90.4	100.4	110.4	120.4	130.4	145.4	160.4	185.5	210.6	225.6	240.6
Configurations and main accessories														
D	Partial energy recovery	0	0	0	0	0	0	0	0	0	0	0	0	0
ACC	Storage tank	0	0	0	0	0	0	0	0	0	0	0	0	0
EVFTP	Shell and tube evaporator PED test	0	0	0	0	0	0	0	0	0	0	0	0	0
1PM	Hydropack with n° 1 pump	0	0	0	0	0	0	0	0	0	0	0	0	0
2PM	Hydropack with n° 2 pumps	0	0	0	0	0	0	0	0	0	0	0	0	0
1PMV	Hydropack with n° 1 inverter pump	0	0	0	0	0	0	0	0	0	0	0	0	0
2PMV	Hydropack with n° 2 inverter pumps	0	0	0	0	0	0	0	0	0	0	0	0	0
1PMH	Hydropack with n° 1 high static pressure pump	0	0	0	0	0	0	0	0	0	0	0	0	0
2PMH	Hydropack with n° 2 high static pressure pumps	0	0	0	0	0	0	0	0	0	0	0	0	0
1PMVH	Hydropack with n° 1 high static pressure inverter pump	0	0	0	0	0	0	0	0	0	0	0	0	0
2PMVH	Hydropack with n° 2 high static pressure inverter pumps	0	0	0	0	0	0	0	0	0	0	0	0	0
EVFTP - Shell and tube evaporator PED test														
+ ACC	+ Storage tank	-	-	-	-	-	-	-	-	-	-	-	-	-
IVFDT - Inverter driven variable flow-rate user side control depending on the temperature differential														
(1PM) (2PM)	Hydropack with n°1 pump / Hydropack user side with n°2 pumps	-	-	-	-	-	-	-	-	-	-	-	-	-
(1PMH) (2PMH)	Hydropack with n°1 high static pressure pump / Hydropack user side with n°2 high static pressure pumps	-	-	-	-	-	-	-	-	-	-	-	-	-
(1PMV) (2PMV)	Hydropack user side with n°1 inverter pump / Hydropack user with n°2 inverter pumps	0	0	0	0	0	0	0	0	0	0	0	0	0
(1PMVH) (2PMVH)	Hydropack userside with n°1 high static pressure inverter pump/ Hydropack user side with n°2 high static pressure inverter pumps	0	0	0	0	0	0	0	0	0	0	0	0	0
Other accessories														
SFSTR	Disposal for inrush current reduction	0	0	0	0	0	0	0	0	0	0	0	0	0

0 Option

- Not available

SIZE 80.3 EXC / 90.3 - 120.4 PRM

DAAN40003_00
DATA/DATE 18/12/2020



1. Compressor enclosure
2. Electrical panel
3. Control keypad
4. Power input
5. Water inlet 4" Victaulic
6. Water outlet 4" Victaulic
7. Functional spaces
8. Lifting bracket (removed)
9. Support points

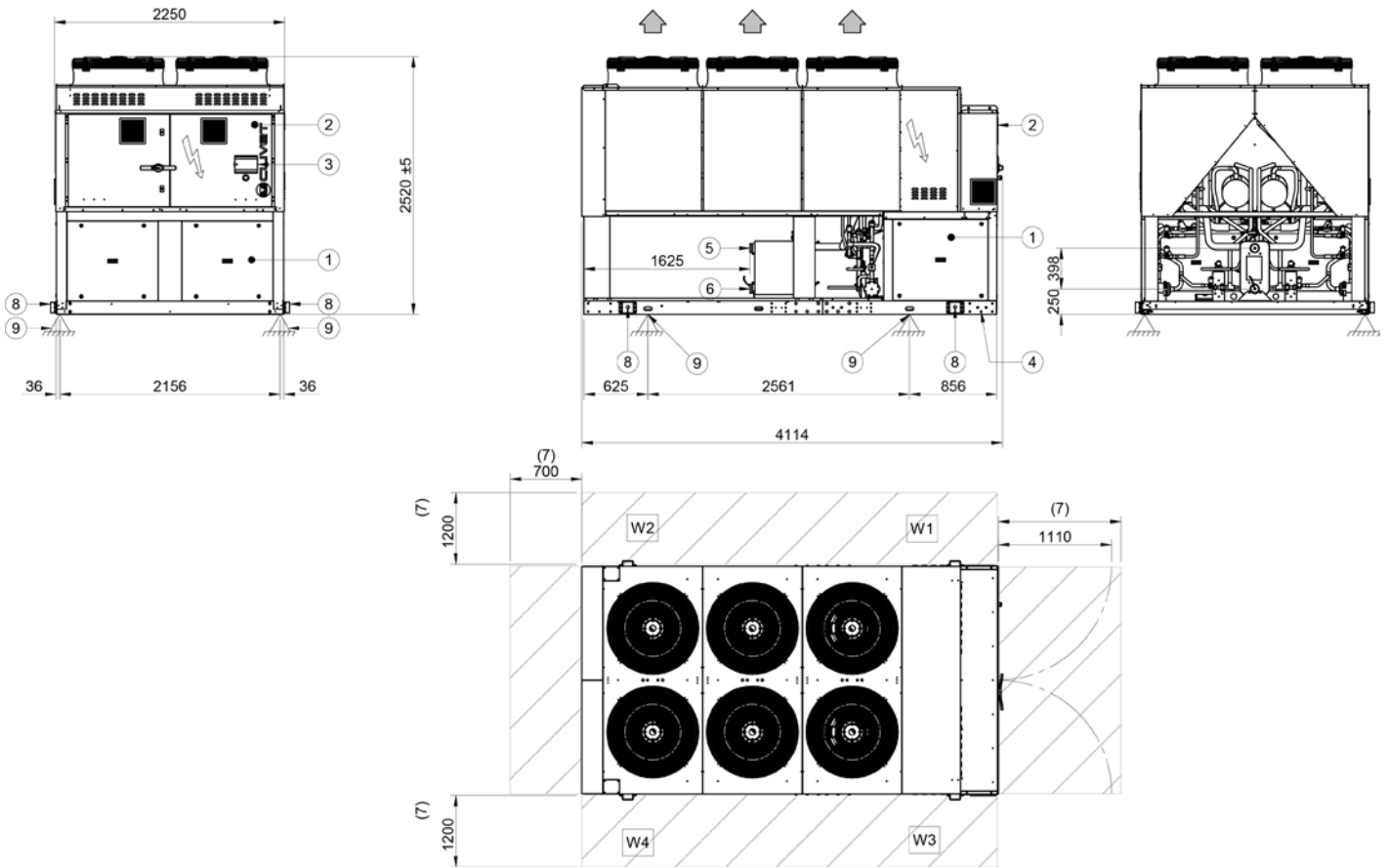
SIZE		80.3 EXC	90.0 PRM	100.3 PRM	110.4 PRM	120.4 PRM
		SC/EN	SC/EN	SC/EN	SC/EN	SC/EN
Length	mm	3118	3118	3118	3118	3118
Depth	mm	2250	2250	2250	2250	2250
Height	mm	2520	2520	2520	2520	2523
W1 Supporting point	kg	668	673	721	712	753
W2 Supporting point	kg	490	488	521	526	532
W3 Supporting point	kg	660	672	701	691	749
W4 Supporting point	kg	482	487	502	505	528
Operating weight	kg	2300	2320	2445	2434	2562
Shipping weight	kg	2278	2298	2423	2413	2535

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

Dimensional drawings

SIZE 90.4 - 120.4 EXC / 130.4 PRM

DAAN40001_00
DATA/DATE 18/12/2020



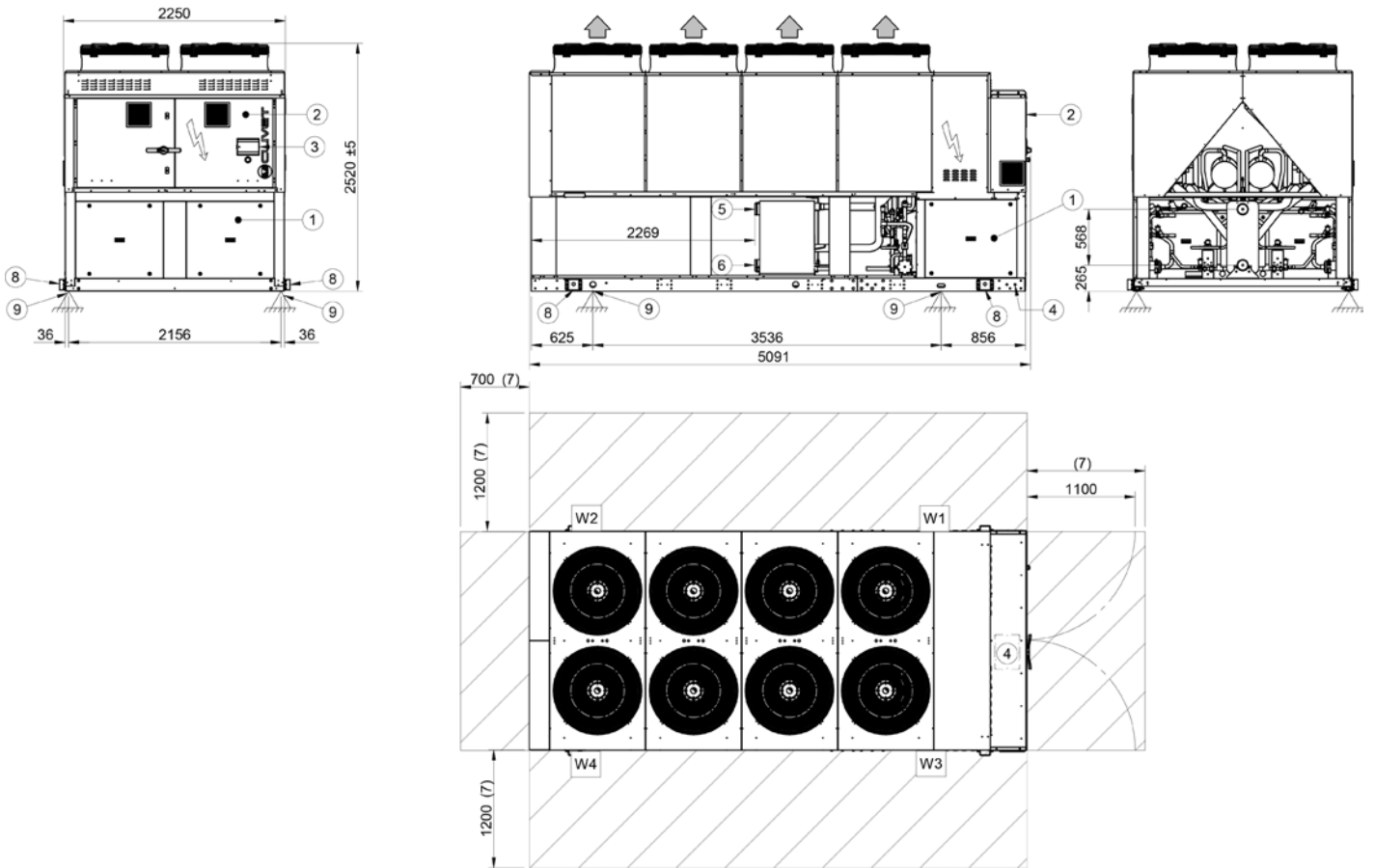
1. Compressor enclosure
2. Electrical panel
3. Control keypad
4. Power input
5. Water inlet 4" Victaulic
6. Water outlet 4" Victaulic
7. Functional spaces
8. Lifting bracket (removed)
9. Support points

SIZE		90.4 EXC	100.4 EXC	110.4 EXC	120.4 EXC	130.4 PRM
		SC/EN	SC/EN	SC/EN	SC/EN	SC/EN
Length	mm	4114	4114	4114	4114	4114
Depth	mm	2250	2250	2250	2250	2250
Height	mm	2520	2520	2520	2520	2520
W1 Supporting point	kg	751	756	807	844	845
W2 Supporting point	kg	564	566	594	598	598
W3 Supporting point	kg	752	760	792	847	848
W4 Supporting point	kg	565	570	579	601	601
Operating weight	kg	2631	2652	2772	2890	2893
Shipping weight	kg	2591	2612	2732	2850	2853

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

SIZE 130.4 - 160.4 EXC

DAAN40002
DATA/DATE 10/02/2021



1. Compressor enclosure
2. Electrical panel
3. Control keypad
4. Power input
5. Water inlet 5" Victaulic
6. Water outlet 5" Victaulic
7. Functional spaces
8. Lifting bracket (removed)
9. Support points

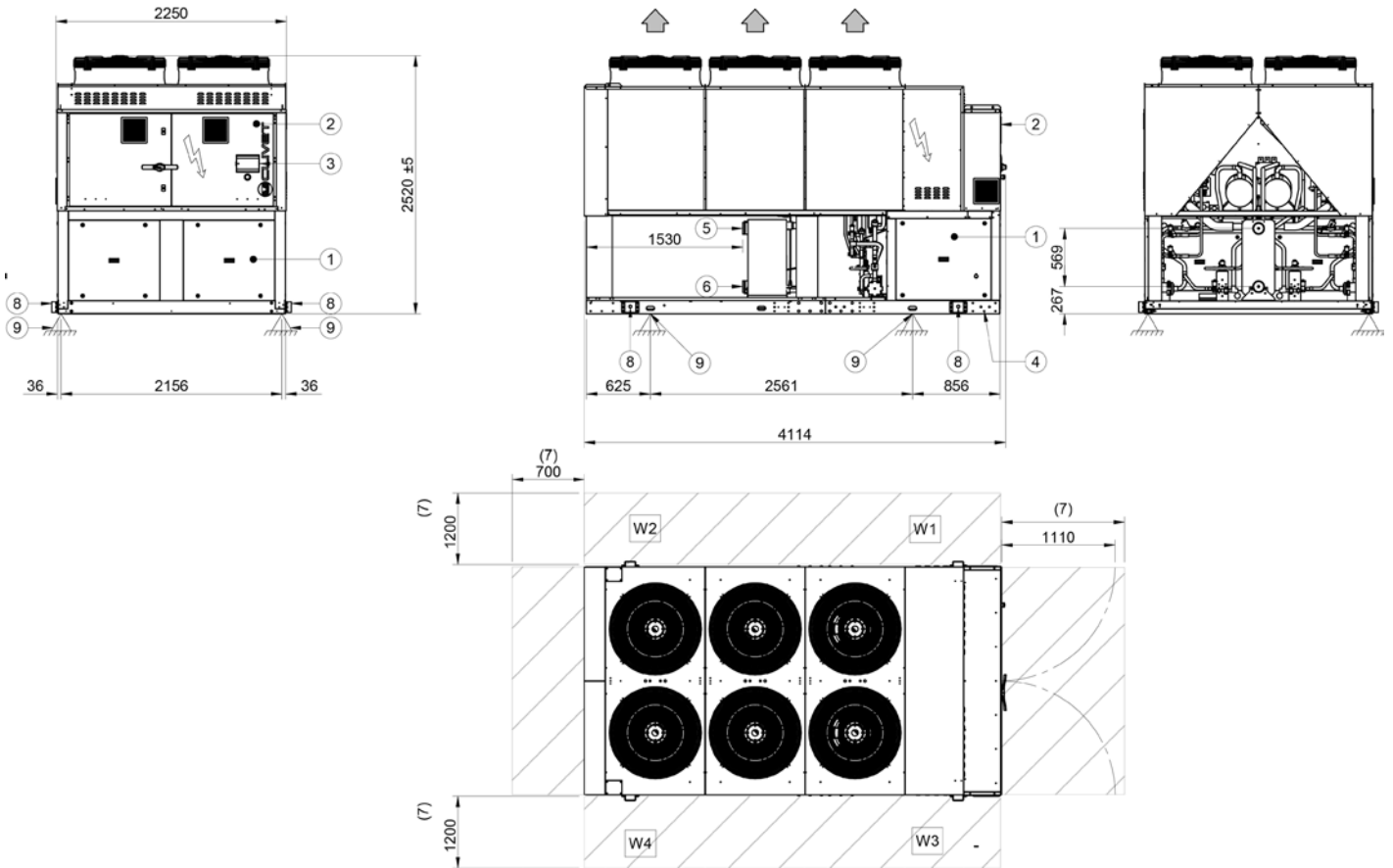
SIZE		130.4 EXC	145.4 EXC	160.4 EXC
		SC/EN	SC/EN	SC/EN
Length	mm	5091	5091	5091
Depth	mm	2250	2250	2250
Height	mm	2520	2520	2520
W1 Supporting point	kg	954	1014	1057
W2 Supporting point	kg	694	724	741
W3 Supporting point	kg	954	995	1056
W4 Supporting point	kg	693	705	740
Operating weight	kg	3295	3438	3594
Shipping weight	kg	3279	3396	3538

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

Dimensional drawings

SIZE 145.4 - 160.4 PRM

DAAN40007_00
DATA/DATE 12/02/2021



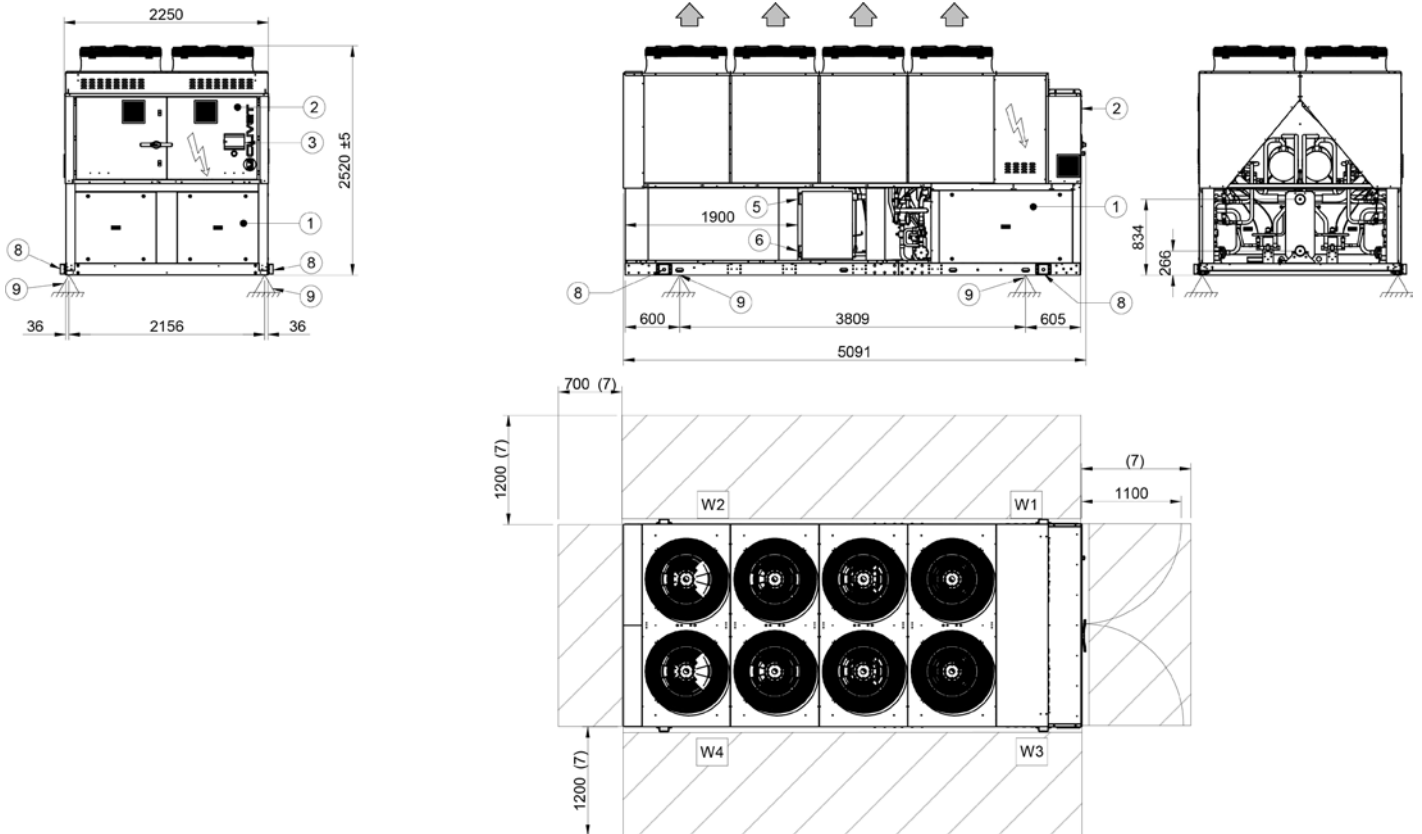
1. Compressor enclosure
2. Electrical panel
3. Control keypad
4. Power input
5. Water inlet 5" Victaulic
6. Water outlet 5" Victaulic
7. Functional spaces
8. Lifting bracket (removed)
9. Support points

SIZE		145.4 PRM	160.4 PRM
		SC/EN	SC/EN
Length	mm	4114	4114
Depth	mm	2250	2250
Height	mm	2520	2520
W1 Supporting point	kg	900	935
W2 Supporting point	kg	624	634
W3 Supporting point	kg	885	937
W4 Supporting point	kg	609	637
Operating weight	kg	3018	3143
Shipping weight	kg	2985	3105

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

SIZE 185.5 - 210.6 PRM

DAAN40008
DATA/DATE 11/02/2021



1. Compressor enclosure
2. Electrical panel
3. Control keypad
4. Power input
5. Water inlet 5" Victaulic
6. Water outlet 5" Victaulic
7. Functional spaces
8. Lifting bracket (removed)
9. Support points

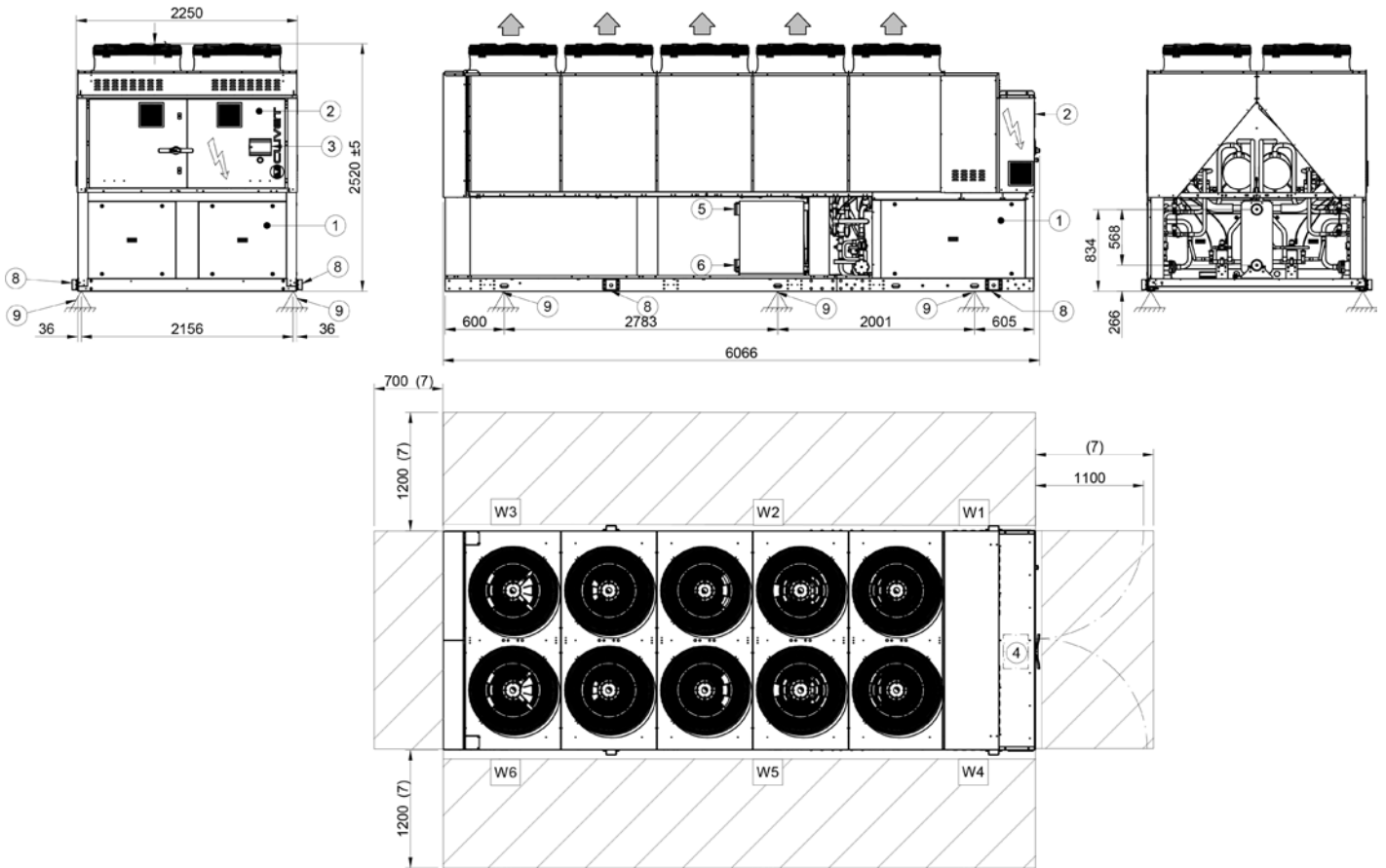
SIZE		185.5 PRM	210.6 PRM
		SC/EN	SC/EN
Length	mm	5091	5091
Depth	mm	2250	2250
Height	mm	2520	2520
W1 Supporting point	kg	1098	1115
W2 Supporting point	kg	806	817
W3 Supporting point	kg	1084	1116
W4 Supporting point	kg	791	819
Operating weight	kg	3779	3867
Shipping weight	kg	3724	3812

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

Dimensional drawings

SIZE 185.5 - 210.6 EXC / 225.6 - 240.6 PRM

DAAN40006_00
DATA/DATE 10/02/2021



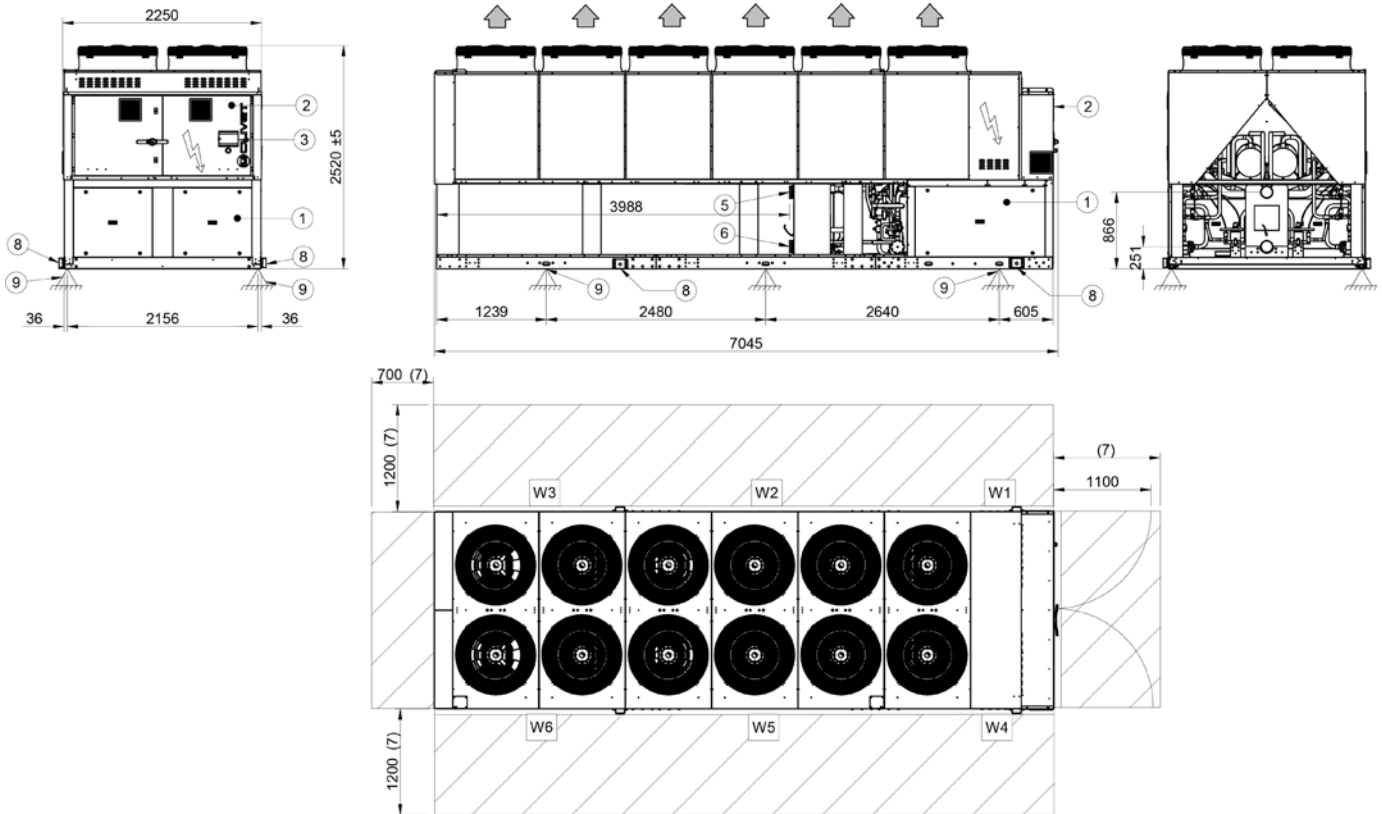
1. Compressor enclosure
2. Electrical panel
3. Control keypad
4. Power input
5. Water inlet 5" Victaulic
6. Water outlet 5" Victaulic
7. Functional spaces
8. Lifting bracket (removed)
9. Support points

SIZE		185.5 EXC	210.6 EXC	225.6 PRM	240.6 PRM
		SC/EN	SC/EN	SC/EN	SC/EN
Length	mm	6066	6066	6066	6066
Depth	mm	2250	2250	2250	2250
Height	mm	2520	2520	2520	2520
W1 Supporting point	kg	817	893	907	990
W2 Supporting point	kg	867	878	881	900
W3 Supporting point	kg	330	329	329	328
W4 Supporting point	kg	858	871	949	964
W5 Supporting point	kg	899	901	919	928
W6 Supporting point	kg	327	327	325	325
Operating weight	kg	4097	4199	4310	4435
Shipping weight	kg	4031	4133	4244	4365

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

SIZE 225.6 - 240.6 EXC

DAAN40004
DATA/DATE 11/02/2021



1. Compressor enclosure
2. Electrical panel
3. Control keypad
4. Power input
5. Water inlet 5" Victaulic
6. Water outlet 5" Victaulic
7. Functional spaces
8. Lifting bracket (removed)
9. Support points

SIZE		225.6 EXC	240.6 EXC
		SC/EN	SC/EN
Length	mm	7045	7045
Depth	mm	2250	2250
Height	mm	2520	2520
W1 Supporting point	kg	1103	1117
W2 Supporting point	kg	868	870
W3 Supporting point	kg	444	444
W4 Supporting point	kg	1059	1137
W5 Supporting point	kg	836	845
W6 Supporting point	kg	450	449
Operating weight	kg	4761	4861
Shipping weight	kg	4701	4801

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

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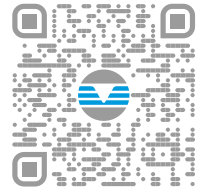
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