



Air cooled liquid chiller with multiscroll technology for outdoor installation

ELFOEnergy Magnum

WSAT-XEM 50.4-120.4 RANGE

TECHNICAL BULLETIN



SIZE - EXCELLENCE	50.4	55.4	60.4	65.4	70.4	80.4	90.4	100.4	110.4	120.4
COOLING CAPACITY [KW]	139	154	165	176	192	215	249	280	307	342
SIZE - PREMIUM					70.4	80.4	90.4	100.4	110.4	120.4
COOLING CAPACITY [KW]					183	207	242	261	288	330

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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

ELFOEnergy Magnum: modular scroll technology for every application

WSAN-XEM 50.4 ÷ 120.4

- Air cooled heat pump
- EXCELLENCE high efficiency version
- Partial recovery of the condensing heat



WSAT-XEM 50.4 ÷ 120.4

- Air cooled water chiller
- EXCELLENCE high efficiency version
- PREMIUM compact version
- Total/partial recovery of the condensing heat



WSAN-XEM MF 50.4 ÷ 120.4

- Air cooled heat/cool heat pump with simultaneous operating
- EXCELLENCE high efficiency version
- 4-pipe system
- 2-pipe system and total condensing heat recovery



WSAN-XEM HW 35.4 ÷ 60.4

- Air cooled heat pump
- EXCELLENCE high efficiency version
- Production of hot water up to 65°C
- Extended operating range



Compressor

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

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

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

Structure

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

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.

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 (phase-cutting).

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;
- high pressure safety pressure switch;
- high and low pressure transducer;
- refrigerant temperature probe;
- electronic expansion valve;
- safety valve for high and low pressure;
- cutoff valve on compressor supply
- cut-off valve on liquid line.

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

Electrical panel

The capacity section includes:

- main door lock isolator switch
- isolating transformer for auxiliary circuit power supply
- on-off "C1" and "C2" scroll compressor protection magneto-thermic
- inverter scroll compressor protection fuses (size from 50.4 to 65.4)
- fan overload circuit breakers (size from 70.4 to 120.4)
- on-off "C1" and "C2" scroll compressor control contactor

The control section includes:

- interface terminal with graphic display
- display of the set values, the error codes and the parameter index
- keys for ON/OFF control, alarm reset
- proportional-integral water temperature control
- daily, weekly programmer of temperature set-point and unit on/off
- set point compensation in function of the outdoor air temperature
- set-point compensation with signal 0-10 V
- unit switching on management by local or remote (serial)
- antifreeze protection water side
- compressor overload protection and timer
- prealarm function for water antifreeze and high refrigerant gas pressure
- self-diagnosis system with immediate display of the fault code
- automatic rotation control for compressor starts
- compressor operating hour display
- remote ON/OFF control
- relay for remote cumulative fault signal
- inlet for demand limit (power input limitation according to a 0÷10V external signal)
- digital input for double set-point enabling
- potential-free contacts for compressor status
- phase monitor
- ECOSHARE function for the automatic management of a group of units
- numeration of electrical panel cables

Standard unit technical specifications

Accessories

- Partial energy recovery
- Total energy recovery (only for EXCELLENCE version)
- Storage tank
- Copper / aluminium condenser coil with acrylic lining
- Condenser coil with Aluminium Energy Guard DCC treatment
- Diffuser for high efficiency axial fan
- Device for fan consumption reduction of the external section, ECOBREEZE type
- Device for fan consumption reduction of the external section, on/off type
- Disposal for inrush current reduction
- Multi-function phase monitor
- Serial communication module for BACnet supervisor
- Serial communication module for Modbus supervisor
- Serial communication module for LonWorks supervisor
- Power factor correction capacitors (cosfi > 0.9)
- Finned coil protection grill
- High and low pressure gauges
- Cutoff valve on compressor supply and return
- Refrigerant leak detector with pump down function in the casing
- Electrical panel antifreeze protection for min. outdoor temperature down to -20°C
- Electrical panel antifreeze protection for min. outdoor temperature down to -25°C
- Remote control (Accessories separately supplied)
- Steel mesh strainer on the water side (Accessories separately supplied)
- User side DHW switching valve (Accessories separately supplied)
- Anti-vibration mount support (Accessories separately supplied)

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 low outdoor temperatures

MINIMUM OUTDOOR AIR TEMPERATURE		OPERATING UNIT	⁽⁵⁾ UNIT IN STAND-BY (fed unit)	UNIT IN STORAGE (unit not fed)
+11°C	1	✓ STANDARD UNIT	✓ STANDARD UNIT	✓ STANDARD UNIT ⁽⁶⁾
+2°C	2			
-5°C	4			
-7°C	3			
-10°C	4			
Tra -10°C e -20°C		NOT POSSIBLE	✓ WATER EMPTY UNIT OR WITH AN APPROPRIATE GLYCOL PERCENTAGE ✓ ELECTRICAL PANEL ANTIFREEZE PROTECTION (RE -20) ✗ NOT SUITABLE: BUILT-IN PUMPS	NOT POSSIBLE
Tra -20°C e -25°C		NOT POSSIBLE	✓ WATER EMPTY UNIT OR WITH AN APPROPRIATE GLYCOL PERCENTAGE ✓ ELECTRICAL PANEL ANTIFREEZE PROTECTION (RE -20) ✗ NOT SUITABLE: BUILT-IN PUMP	

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

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

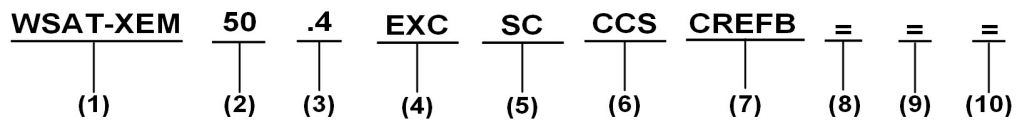
⁽⁵⁾ The water pumping unit must be fed and connected to the unit according to the manual.

⁽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.

Unit configuration



(1) Range

WSAT = Air-cooled liquid chiller

XEM = ELFOEnergy Magnum range with multiscroll compressors and R-410A refrigerant

(2) Size

50 = Nominal compressor capacity (HP)

(3) Compressors

.4 = Compressor quantity

(4) Energy version

EXC = EXCELLENCE Version

PRM = PREMIUM Version

(5) Acoustic configuration

SC = Acoustic configuration with compressor soundproofing

EN = Super-silenced acoustic configuration

(6) Condenser coils

CCS - Copper / aluminium condenser coil (standard)

CCCA - Copper / aluminium condenser coil with acrylic lining

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

(7) Fans

CREFP = Device for fan consumption reduction of the external section at variable speed (phase-cutting)

CREFB = Device for fan consumption reduction of the external section ECOBREEZE type (standard size 70.4 ÷ 120.4)

CREFO = Device for fan consumption reduction of the external section ON/OFF type (only for PREMIUM version)

(8) Diffuser for fans

(-) Not required (standard)

HEDIF - Diffuser for high efficiency axial fan (only for size 70.4 ÷ 120.4)

(9) Condensation heat recovery

(-) Not required (standard)

D - Partial energy recovery

R = Total energy recovery (only for EXCELLENCE version)

(10) Pumping unit

(-) Not required (standard)

VARYP = Varyflow + (2 inverter pumps)

HYG1 = Hydronic assembly with 1 on/off pump

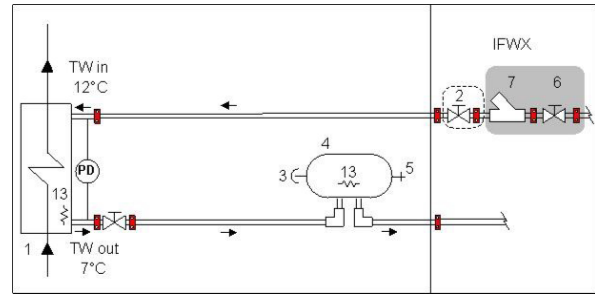
HYG2 = Hydronic assembly with 2 on/off pumps

ACC

Storage tank

Option supplied built-in the unit. 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. For sizes 50.4 ÷ 65.4 the storage tank capacity is 300L.

For sizes 70.4 ÷ 120.4 the storage tank capacity is 500L



- | | |
|---|--|
| 1- Internal exchanger | 13- Antifreeze heater |
| 2- Cutoff valve | TW in Chilled water inlet |
| 3- Purge valve | TW out Chilled water outlet |
| 4- Storage tank with antifreeze electric heater | IFWX = Steel mesh strainer on the water side |
| 5- Discharge stop valve | T - Temperature probe |
| 6- Cutoff valve | PD - Differential pressure switch |
| 7- Steel mesh strainer on the water side | |

CCCA

Copper/aluminium condenser coil with acrylic lining

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

Attention!

- cooling capacity variation -2.7%
- variation in compressor power input +4.2%
- operating range reduction -2.1°C

CCCA1

Condenser coil with Energy Guard DCC Aluminum

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

HEDIF

Diffuser for high efficiency axial fan

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

Obtaining:

- down to -3 dB of silence
- reduction of 3% of the absorbed energy

Since the fans are the unit's main noise source, the benefits are evident especially during the night hours, when the load is reduced but sensitivity to noise is enhanced.

Available only for size 70.4 ÷ 120.4.

CREFB

Device for consumption reduction of the external section ECOBREEZE fans

Axial fans with sickle profile blades terminating with "Winglets", directly coupled to the electronic controlled motor (IP54), driven by the magnetic switching of the stator. The brushless technology and the special supply increase both the life expectancy and the efficiency. As a result the electric consumption is reduced up to 50%. Fans are housed in aerodynamically shaped structures to increase efficiency and reduce noise level. The assembly is protected by accident prevention guards.

Available for size 70.4 ÷ 120.4.

CREFO

Device for fan consumption reduction of the external section, on/off type

Option that affects the external axial fans, as an alternative of the control device at variable speed, standard supplied. It requires the three-phase electric motor with an external rotor and built-in thermal protection, IP54 in progress. The condensation pressure automatic control occurs by the switching on or off of fans of the whole fan section.

Available only for Version PREMIUM.

⚠ The choice of this option limits the operating range in cooling with outdoor air temperatures higher than +15°C.

SFSTR

Disposal for inrush current reduction

Electronic device that automatically and gradually starts the compressors, thereby reducing the current peak generated in star-triangle start-ups and therefore reduces the mechanical stress on the motor and the electrodynamic stress on the power cables and on the mains.

For sizes 50.4 ÷ 65.4 the disposal for inrush current reduction is for supply voltage 400/3/50 + N.

For sizes 70.4 ÷ 120.4 the disposal for inrush current reduction is for supply voltage 400/3/50.

Built-in options

MF2 Multi-function phase monitor

The multifunction phase monitor controls all phases and their sequence, checks for voltage anomalies (+/-10%), and automatically restores operation of the unit as soon as the power supply returns to normal.

This control allows to:

- protect components inside the unit, as if they are powered by an anomalous voltage they may operate incorrectly or break;
- quickly identify, among the alarms of the unit's components, the real cause of the malfunction due to the sudden change in voltage.

CMSC8 Serial communication module to BACnet 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 configuration and management activities for the BACnet networks are the responsibility of the client.
- ⚠ The total length of each serial line do not exceed 1000 meters and the line must be connected in bus typology (in/out)

CMSC9 Serial communication module to 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 to 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.

PFCP Power-factor correction capacitors (cosfi > 0,9)

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

PGFC Finned coil protection grill

This accessory is used to protect the external coil from the accidental contact with external things or people. Ideal for installation in places where persons can pass from, such as car parks, terraces, etc.

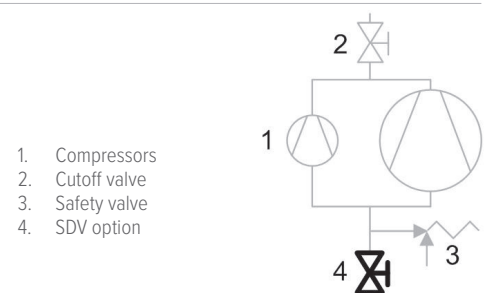
MHP High and low pressure gauges

Despite the unit already enabling a series of digital displays on the operating pressure of the refrigeration circuit, this option enables analogical measuring of refrigerant pressures at compressor intake and supply thus easing the checking of these parameters for the technicians who are managing the unit. The two liquid pressure gauges and related pressure sensors are attached built-in in easily accessible positions.

SDV Cutoff valve on compressor supply and return

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

Device installed built-in the unit.



RPRPDI

Refrigerant leak detector with pump down function in the casing

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

The device respects BREEAM regulations.

RE-20 / RE-25

Electrical panel anti-freeze protection

It includes self-regulating electric heaters with thermostat which are able to protect the electrical panel against condensation and frost guaranteeing its correct functions down to -20°C or -25°C. This accessory operates even when the unit is switched off provided that the power supply is maintained active and the unit continues to be electrically connected.

Device installed and wired built-in the unit.

- ⚠ This accessory operates even when the unit is switched off provided that the power supply is maintained active and the unit continues to be connected.
- ⚠ This accessory does not lead to substantial variations in the electrical data for the unit which has been declared in the Electrical Data section.



Accessories separately supplied

RCTX

Remote control

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

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

- ⚠ All device functions can be repeated with a normal portable PC connected to the unit with an Ethernet cable and equipped with an internet navigation browser.
- ⚠ The device should be installed on the wall using suitable plugs, electrically hooked up and connected to the unit (installation and wiring are the responsibility of the Customer). Max. remote distance 350 m without auxiliary supply.
- ⚠ Data and power supply serial connection cable n.1 twisted and shielded pair. Diameter of the individual conductor 0,8 mm.



BACX

BACnet serial communication module

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

- ⚠ The 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)

CMMBX

Serial communication module to supervisor (Modbus)

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

Accessories separately supplied

CMSLWX LonWorks serial communication module

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 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.

PGFCX Finned coil protection grill

This accessory is used to protect the external coil from the accidental contact with external things or people. Ideal for installation in places where persons can pass from, such as car parks, terraces, etc.

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

MHPX High and low pressure gauges

Despite the unit already enabling a series of digital displays on the operating pressure of the refrigeration circuit, this option enables analogical measuring of refrigerant pressures at compressor intake and supply thus easing the checking of these parameters for the technicians who are managing the unit. The two liquid pressure gauges and related pressure sensors are attached built-in in easily accessible positions.

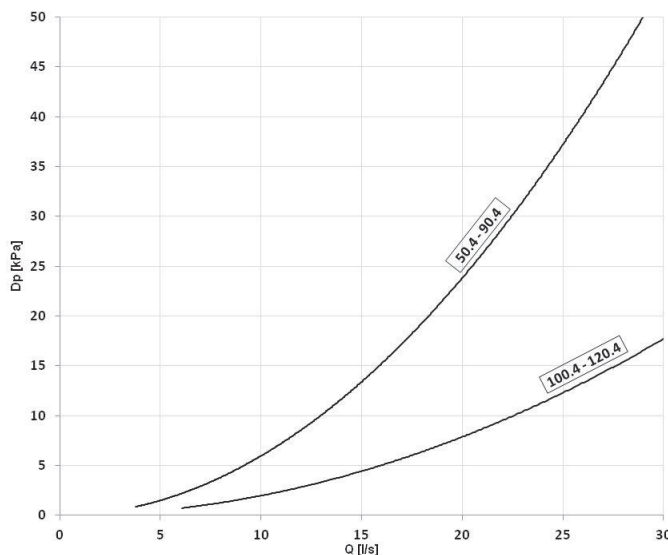


IFWX Steel mesh strainer on the water side

The device prevents any impurity in the hydraulic circuit from soiling the exchanger. The stainless steel mesh mechanical filter must be placed on the water inlet line. It needs to be easy to remove for periodical maintenance and cleaning operations. Moreover, it consists of:

- cast-iron shut-off butterfly valve with quick coupling and throttle drive and mechanical calibration stop
- quick couplings with an insulated casing

Steel mesh strainer pressure drops



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



AVIBX Anti-vibration mount support

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.

Performance - Excellence

Acoustic configuration: compressor soundproofing (SC)

SIZE			50.4	55.4	60.4	65.4	70.4	80.4	90.4	100.4	110.4	120.4
Cooling capacity	1	[kW]	139	154	166	177	193	216	250	280	307	343
Compressor power input	1	[kW]	42,3	46,8	51,5	55,2	58,0	66,9	80,1	83,7	94,7	108
Total power input	2	[kW]	45,5	50,0	54,7	58,4	62,3	71,3	84,4	90,3	101	114
Partial recovery heating capacity	3	[kW]	36,3	40,1	43,4	46,4	50,1	56,5	66,0	72,7	80,4	90,1
Total recovery heating capacity	3	[kW]	174	193	208	223	241	271	317	349	386	432
EER	1		3,06	3,08	3,03	3,02	3,09	3,03	2,96	3,10	3,03	2,99
Water flow-rate	1	[l/s]	6,62	7,30	7,87	8,39	9,15	10,2	11,9	13,3	14,6	16,3
User side exchanger pressure drops	1	[kPa]	29,0	25,1	28,9	32,7	27,4	34,1	24,4	30,3	21,8	19,4
Cooling capacity (EN14511:2018)	4	[kW]	139	154	165	176	192	215	249	280	307	342
Total power input (EN14511:2018)	4	[kW]	45,9	50,4	55,2	59,1	62,9	72,1	85,1	91,1	102	115
EER (EN14511:2018)	4		3,03	3,05	3,00	2,99	3,06	2,99	2,93	3,07	3,01	2,97
SEER	6		4,51	4,36	4,50	4,56	4,54	4,63	4,72	4,40	4,44	4,48
SEPR	6		5,73	6,01	5,88	5,72	5,37	5,39	5,37	5,27	5,32	5,39
Cooling capacity (AHRI 550/590)	5	[kW]	139	153	165	176	191	215	248	279	306	341
Compressor power input (AHRI 550/590)	5	[kW]	45,4	49,9	54,6	58,3	62,2	71,1	84,3	90,2	101	114
COP _R	5		3,06	3,07	3,02	3,02	3,08	3,02	2,95	3,09	3,03	2,99
IPLV	5		5,07	5,11	5,06	5,09	5,03	5,12	5,12	4,86	4,90	4,91

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 2087,5)

1. Data referred to the following conditions: internal exchanger water temperature = 12 / 7 °C Entering external exchanger air temperature = 35°C Evaporator fouling factor = 0.44 x 10⁴(-4) m² K/W
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers
3. Option. Recovery exchanger water = 40/45°C
4. Data compliant to Standard EN 14511:2018 referred to the following conditions: - Internal exchanger water temperature = 12/7°C - Entering external exchanger air temperature = 35°C
5. Data compliant to Standard AHRI 550/590 referred to the following conditions: internal exchanger water temperature = 6,7 °C. Water flow-rate 0,043 l/s per kW. Entering external exchanger air temperature 35°C. Evaporator fouling factor = 0.18 x 10⁴(-4) m² K/
6. Data calculated according to the EU 2016/2281 Regulation

Acoustic configuration: super-silenced (EN)

SIZE			50.4	55.4	60.4	65.4	70.4	80.4	90.4	100.4	110.4	120.4
Cooling capacity	1	kW	139	154	166	177	193	216	250	280	307	343
Compressor power input	1	kW	42,3	46,8	51,5	55,2	58,0	66,9	80,1	83,7	94,7	108
Total power input	2	kW	45,5	50,0	54,7	58,4	62,3	71,3	84,4	90,3	101	114
Partial recovery heating capacity	3	kW	36,3	40,1	43,4	46,4	50,1	56,5	66,0	72,7	80,4	90,1
Total recovery heating capacity	3	kW	174	193	208	223	241	271	317	349	386	432
EER	1		3,06	3,08	3,03	3,02	3,09	3,03	2,96	3,10	3,03	2,99
Water flow-rate	1	l/s	6,62	7,30	7,87	8,39	9,15	10,2	11,9	13,3	14,6	16,3
User side exchanger pressure drops	1	kPa	29,0	25,1	28,9	32,7	27,4	34,1	24,4	30,3	21,8	19,4
Cooling capacity (EN14511:2018)	4	kW	139	154	165	176	192	215	249	280	307	342
Total power input (EN14511:2018)	4	kW	45,9	50,4	55,2	59,1	62,9	72,1	85,1	91,1	102	115
EER (EN14511:2018)	4		3,03	3,05	3,00	2,99	3,06	2,99	2,93	3,07	3,01	2,97
SEER	6		4,51	4,36	4,50	4,56	4,54	4,63	4,72	4,40	4,44	4,48
SEPR	6		5,73	6,01	5,88	5,72	5,37	5,39	5,37	5,27	5,32	5,39
Cooling capacity (AHRI 550/590)	5	kW	139	153	165	176	191	215	248	279	306	341
Compressor power input (AHRI 550/590)	5	kW	45,4	49,9	54,6	58,3	62,2	71,1	84,3	90,2	101	114
COP _R	5		3,06	3,07	3,02	3,02	3,08	3,02	2,95	3,09	3,03	2,99
IPLV	5		5,07	5,11	5,06	5,09	5,03	5,12	5,12	4,86	4,90	4,91

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 2087,5)

1. Data referred to the following conditions: internal exchanger water temperature = 12 / 7 °C Entering external exchanger air temperature = 35°C Evaporator fouling factor = 0.44 x 10⁴(-4) m² K/W
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers
3. Option. Recovery exchanger water = 40/45°C
4. Data compliant to Standard EN 14511:2018 referred to the following conditions: - Internal exchanger water temperature = 12/7°C - Entering external exchanger air temperature = 35°C
5. Data compliant to Standard AHRI 550/590 referred to the following conditions: internal exchanger water temperature = 6,7 °C. Water flow-rate 0,043 l/s per kW. Entering external exchanger air temperature 35°C. Evaporator fouling factor = 0.18 x 10⁴(-4) m² K/
6. Data calculated according to the EU 2016/2281 Regulation

General technical data

Performance - Premium

Acoustic configuration: compressor soundproofing (SC)

GRANDEZZE			70.4	80.4	90.4	100.4	110.4	120.4
Cooling capacity	1	kW	184	207	242	261	288	330
Compressor power input	1	kW	59,9	68,5	82,0	88,9	97,5	110
Total power input	2	kW	66,1	74,9	88,5	95,4	104	121
Partial recovery heating capacity	3	kW	48,8	55,3	65,0	70,2	77,3	88,4
EER	1		2,78	2,77	2,73	2,74	2,76	2,72
Water flow-rate	1	l/s	8,72	9,84	11,5	12,4	13,7	15,7
User side exchanger pressure drops	1	kPa	35,5	44,7	32,2	37,3	36,2	25,0
Cooling capacity (EN14511:2018)	4	kW	183	207	242	261	288	330
Total power input (EN14511:2018)	4	kW	66,7	75,8	89,3	96,3	105	122
EER (EN14511:2018)	4		2,75	2,73	2,71	2,71	2,73	2,70
SEER	6		4,10	4,13	4,32	4,17	4,19	4,10
SEPR	6		5,27	5,27	5,55	5,31	5,45	5,26
Cooling capacity (AHRI 550/590)	5	kW	183	206	241	260	287	329
Compressor power input (AHRI 550/590)	5	kW	66,1	75,0	88,4	95,3	104	121
COPr	5		2,77	2,75	2,73	2,73	2,75	2,72
IPLV	5		4,51	4,54	4,66	4,67	4,68	4,51

The Product is compliant with the Erp (Energy Related Products) European Directive. It includes the Commission delegated Regulation (EU) No 2016/2281, also known as Ecodesign Lot21. 'Contains fluorinated greenhouse gases'(GWP 2087,5)

1. Data referred to the following conditions: internal exchanger water temperature = 12 / 7 °C Entering external exchanger air temperature = 35°C Evaporator fouling factor = 0.44 x 10^{^(-4)} m² K/W
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers
3. Option. Recovery exchanger water = 40/45°C
4. Data compliant to Standard EN 14511:2018 referred to the following conditions: - Internal exchanger water temperature = 12/7°C - Entering external exchanger air temperature = 35°C
5. Data compliant to Standard AHRI 550/590 referred to the following conditions: internal exchanger water temperature = 6,7 °C. Water flow-rate 0,043 l/s per kW. Entering external exchanger air temperature 35°C. Evaporator fouling factor = 0.18 x 10^{^(-4)} m² K/
6. Data calculated according to the EU 2016/2281 Regulation

Acoustic configuration: super-silenced (EN)

SIZE			70.4	80.4	90.4	100.4	110.4	120.4
Cooling capacity	1	kW	178	201	234	251	276	319
Compressor power input	1	kW	62,3	71,4	85,0	93,0	102	115
Total power input	2	kW	66,6	75,8	89,3	97,3	106	122
Partial recovery heating capacity	3	kW	48,0	54,4	63,9	68,8	75,7	86,8
EER	1		2,67	2,64	2,62	2,58	2,60	2,62
Water flow-rate	1	l/s	8,44	9,52	11,1	11,9	13,1	15,1
User side exchanger pressure drops	1	kPa	33,3	41,9	30,3	34,5	33,5	23,3
Cooling capacity (EN14511:2018)	4	kW	177	200	234	251	276	318
Total power input (EN14511:2018)	4	kW	67,2	76,7	90,0	98,1	107	123
EER (EN14511:2018)	4		2,64	2,61	2,60	2,55	2,57	2,60
SEER	6		4,10	4,26	4,36	4,25	4,22	4,15
SEPR	6		5,43	5,42	5,37	5,50	5,46	5,37
Cooling capacity (AHRI 550/590)	5	kW	177	200	233	250	275	317
Compressor power input (AHRI 550/590)	5	kW	66,5	75,7	89,1	97,1	106	122
COPr	5		2,66	2,64	2,62	2,57	2,59	2,61
IPLV	5		4,66	4,67	4,69	4,73	4,70	4,56

The Product is compliant with the Erp (Energy Related Products) European Directive. It includes the Commission delegated Regulation (EU) No 2016/2281, also known as Ecodesign Lot21. 'Contains fluorinated greenhouse gases'(GWP 2087,5)

1. Data referred to the following conditions: internal exchanger water temperature = 12 / 7 °C Entering external exchanger air temperature = 35°C Evaporator fouling factor = 0.44 x 10^{^(-4)} m² K/W
2. The Total Power Input value does not take into account the part related to the pumps and required to overcome the pressure drops for the circulation of the solution inside the exchangers
3. Option. Recovery exchanger water = 40/45°C
4. Data compliant to Standard EN 14511:2018 referred to the following conditions: - Internal exchanger water temperature = 12/7°C - Entering external exchanger air temperature = 35°C
5. Data compliant to Standard AHRI 550/590 referred to the following conditions: internal exchanger water temperature = 6,7 °C. Water flow-rate 0,043 l/s per kW. Entering external exchanger air temperature 35°C. Evaporator fouling factor = 0.18 x 10^{^(-4)} m² K/
6. Data calculated according to the EU 2016/2281 Regulation

Construction - Excellence

SIZE		50.4	55.4	60.4	65.4	70.4	80.4	90.4	100.4	110.4	120.4
Compressor											
Type of compressors		Scroll									
Refrigerant		R-410A									
No. of compressors	Nr	4	4	4	4	4	4	4	4	4	4
Rated power (C1)	HP	25	25	30	35	35	40	45	50	55	60
Rated power (C2)	HP	25	30	30	30	35	40	45	50	55	60
Std Capacity control steps		6	5	4	5	6	6	6	6	6	4
Oil charge (C1)	l	7	7	7	7	8	10	10	11	13	13
Oil charge (C2)	l	7	7	7	8	8	10	10	11	13	13
Refrigerant charge (C1)	1 kg	16	18	22	22	26	27	28	37	37	42
Refrigerant charge (C2)	1 kg	16	18	22	22	26	27	28	37	37	42
Refrigeration circuits	Nr	2	2	2	2	2	2	2	2	2	2
Internal exchanger (evaporator)											
Type of internal exchanger	2	PHE									
Water content	l	15,6	18,8	18,8	18,8	23,2	23,2	31,6	31,6	42,0	52,4
Minimum system water content	3 l	592	593	881	878	889	881	865	1129	1427	1834
External Section Fans											
Type of fans	4	AX									
Number of fans	Nr	8	8	8	8	4	4	4	6	6	6
Type of motor	5	AC/P									
Standard airflow (SC)	l/s	20722	19917	19900	19472	23856	22947	22944	33833	33611	33833
Standard airflow (EN)	l/s	16700	16700	16100	16100	19340	18500	18500	27800	27800	27230
Installed unit power	kW	0,6	0,6	0,6	0,6	1,8	1,8	1,8	1,8	1,8	1,8
Connections											
Water fittings		3"	3"	3"	3"	3"	3"	3"	4"	4"	4"
Power supply											
Standard power supply	V	400/3/50+N									
Electrical data											
F.L.A. - Total	A	111,3	122,1	133,0	139,0	150,9	167,7	196,5	216,7	233,5	262,3
F.L.I. - Total	kW	60,4	65,6	70,7	76,3	86,9	96,9	113,9	128,9	138,9	155,9
M.I.C. - Value	6 A	254,3	265,1	276,0	327,0	338,9	394,3	446,7	466,9	483,7	512,5
M.I.C. - with soft start accessory	6 A	192,3	203,1	214,0	229,8	241,7	261,5	308,9	329,1	345,9	374,7

- Indicative values for standard units with possible +/-10% variation. The actual data are indicated on the label of the unit.
- PHE = plate exchanger
- The minimum system water content calculated value does not consider the internal exchanger water content. With outdoor air low temperature applications or low medium requested loads, the minimum installation water volume is obtained doubling the indicated value
- AX = axial fan
- AC/P = asynchronous three-phase external rotor motor with phase cutting speed automatic control

- 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		70.4	80.4	90.4	100.4	110.4	120
Compressor							
Type of compressors		SCROLL					
Refrigerant		R-410A					
No. of compressors	Nr	4	4	4	4	4	4
Rated power (C1)	HP	35	40	45	50	55	60
Rated power (C2)	HP	35	40	45	50	55	60
Std Capacity control steps		6	6	6	6	6	4
Oil charge (C1)	l	8	10	10	11	13	13
Oil charge (C2)	l	8	10	10	11	13	13
Refrigerant charge (C1)	1 kg	18	24	26	27	32	35
Refrigerant charge (C2)	1 kg	18	24	26	27	32	35
Refrigeration circuits	Nr	2	2	2	2	2	2
Internal exchanger (evaporator)							
Type of internal exchanger	2	PHE					
Water content	l	19,2	19,2	26,4	26,4	29,5	42,0
Minimum system water content	3 l	828	817	807	1028	1299	1713
External Section Fans							
Type of fans	4	AX					
Number of fans	Nr	4	4	4	4	4	6
Type of motor	5	AC/P					
Standard airflow (SC)	l/s	23800	23550	24450	24450	23900	34450
Standard airflow (EN)	l/s	18900	18330	18900	19440	18900	28060
Installed unit power	kW	1,8	1,8	1,8	1,8	1,8	1,8
Connections							
Water fittings		3"	3"	3"	4"	4"	4"
Power supply							
Standard power supply	V	400/3/50+N					
Electrical data							
F.L.A. - Total	A	150,9	167,7	196,5	208,5	225,3	262,3
F.L.I. - Total	kW	86,9	96,94	113,9	125,1	135,1	155,9
M.I.C. - Value	6 A	338,9	394,3	446,7	458,7	475,5	512,5
M.I.C. - with soft start accessory	6 A	241,7	264,5	308,9	320,9	337,7	374,7

1. Indicative values for standard units with possible +/-10% variation. The actual data are indicated on the label of the unit.
2. PHE = plate exchanger
3. The minimum system water content calculated value does not consider the internal exchanger water content. With outdoor air low temperature applications or low medium requested loads, the minimum installation water volume is obtained doubling the indicated value
4. AX = axial fan
5. AC/P = asynchronous three-phase external rotor motor with phase cutting speed automatic control

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: compressor soundproofing (SC)

Standard unit

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)
50.4	88	95	84	84	83	81	68	61	88	69
55.4	88	95	84	84	83	81	68	61	88	69
60.4	88	95	84	84	83	81	68	61	88	69
65.4	88	95	84	84	83	81	68	61	88	69
70.4	91	88	88	85	83	82	67	60	88	68
80.4	91	88	88	85	83	82	67	60	88	68
90.4	91	88	88	85	83	82	67	60	88	68
100.4	93	90	90	88	88	85	71	62	92	72
110.4	93	90	90	88	88	85	71	62	92	72
120.4	93	90	90	88	88	85	71	62	92	72

Unit with HEDIF “Diffuser for high efficiency axial fan” option

SIZE	Sound pressure level	Sound power level
	dB(A)	dB(A)
70.4	86	66
80.4	86	66
90.4	86	66
100.4	90	70
110.4	90	70
120.4	90	70

Acoustic configuration: super-silenced (EN)

Standard unit

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)
50.4	82	89	78	78	77	75	62	55	82	63
55.4	82	89	78	78	77	75	62	55	82	63
60.4	82	89	78	78	77	75	62	55	82	63
65.4	82	89	78	78	77	75	62	55	82	63
70.4	85	82	82	79	77	76	61	54	82	62
80.4	85	82	82	79	77	76	61	54	82	62
90.4	85	82	82	79	77	76	61	54	82	62
100.4	87	84	84	82	82	79	65	56	86	66
110.4	87	84	84	82	82	79	65	56	86	66
120.4	87	84	84	82	82	79	65	56	86	66

Unit with HEDIF “Diffuser for high efficiency axial fan” option

SIZE	Sound pressure level	Sound power level
	dB(A)	dB(A)
70.4	81	61
80.4	81	61
90.4	81	61
100.4	85	65
110.4	85	65
120.4	85	65

Sound levels refer to units with full load under nominal test conditions.

The sound pressure level refers to a distance of 1 meter from the outer surface of the unit operating in open field.

Measures are according to UNI EN ISO 9614-2 regulations, with respect to the EUROVENT 8/1 certification, which provides for a tolerance of 3 dB(A) on the sound power level, which is the only acoustic data to be considered binding.

Data referred to the following conditions:

Internal exchanger water = 12/7°C

Ambient temperature = 35 °C

General technical data

Sound levels - Premium

Acoustic configuration: compressor soundproofing (SC)

Standard unit

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)
70.4	88	85	85	83	83	81	67	59	87	67
80.4	88	85	86	83	83	81	67	59	87	67
90.4	89	86	86	84	84	81	67	59	88	68
100.4	90	87	86	84	84	81	67	59	88	68
110.4	90	87	87	84	84	81	67	59	88	68
120.4	93	90	90	88	88	85	71	62	92	71

Unit with HEDIF “Diffuser for high efficiency axial fan” option

GRANDEZZE	Livello di Potenza Sonora dB(A)	Livello di Pressione Sonora dB(A)
70.4	85	65
80.4	85	65
90.4	86	66
100.4	86	66
110.4	86	66
120.4	90	69

Acoustic configuration: super-silenced (EN)

Standard unit

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)
70.4	82	79	79	77	77	75	61	53	81	61
80.4	82	79	80	77	77	75	61	53	81	61
90.4	83	80	80	78	78	75	61	53	82	62
100.4	84	81	80	78	78	75	61	53	82	62
110.4	84	81	81	78	78	75	61	53	82	62
120.4	87	84	84	82	82	79	65	56	86	65

Unit with HEDIF “Diffuser for high efficiency axial fan” option

SIZE	Sound pressure level dB(A)	Sound power level dB(A)
70.4	80	60
80.4	80	60
90.4	81	61
100.4	81	61
110.4	81	61
120.4	85	64

Sound levels refer to units with full load under nominal test conditions.

The sound pressure level refers to a distance of 1 meter from the outer surface of the unit operating in open field.

Measures are according to UNI EN ISO 9614-2 regulations, with respect to the EUROVENT 8/1 certification, which provides for a tolerance of 3 dB(A) on the sound power level, which is the only acoustic data to be considered binding.

Data referred to the following conditions:

Internal exchanger water = 12/7°C

Ambient temperature = 35 °C

Admissible water flow-rates

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

EXCELLENCE (SC/EN)		50.4	55.4	60.4	65.4	70.4	80.4	90.4	100.4	110.4	120.4
Qmin	[l/s]	3,8	4,5	4,5	4,5	5,4	5,4	7,4	7,4	9,7	11,5
Qmax	[l/s]	12,6	15,1	15,1	15,1	18,0	18,0	25,0	25,0	32,5	38,5

PREMIUM (SC/EN)		70.4	80.4	90.4	100.4	110.4	120.4
Qmin	[l/s]	4,5	4,5	6,2	6,2	6,9	9,7
Qmax	[l/s]	15,0	15,0	20,9	20,9	23,5	32,5

Correction factors for glycol use

% ethylene glycol by weight		5%	10%	15%	20%	25%	30%	35%	40%
Freezing temperature	°C	-2,0	-3,9	-6,5	-8,9	-11,8	-15,6	-19,0	-23,4
Safety temperature	°C	3	1	-1	-4	-6	-10	-14	-19
Cooling Capacity Factor	Nr	0,995	0,990	0,985	0,981	0,977	0,974	0,971	0,968
Compressor power input Factor	Nr	0,997	0,993	0,990	0,988	0,986	0,984	0,982	0,981
Internal exchanger glycol solution flow factor	Nr	1,003	1,010	1,020	1,033	1,050	1,072	1,095	1,124
Pressure drop Factor	Nr	1,029	1,060	1,090	1,118	1,149	1,182	1,211	1,243

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

Fouling Correction Factors

Internal exchanger		
m ² °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

Overload and control device calibrations

		open	closed	value
High pressure switch (gas side)	[kPa]	4050	3300	-
Low pressure alarm (gas side)	[kPa]	450	600	-
Antifreeze protection	[°C]	4,0	6,0	-
High pressure safety valve (gas side)	[kPa]	-	-	4500
Low pressure safety valve (gas side)	[kPa]	-	-	3000
Max no. of compressor starts per hour (gas side)	[n°]	-	-	10
Differential pressure switch (water side)	[kPa]	3	5	-
Max. pressure without hydronic assembly (water side)	[kPa]	-	-	1000
Max. pressure with hydronic assembly (water side)	[kPa]	-	-	600
Safety valve calibration (water side) (1)	[kPa]	-	-	600

(1) Available only with hydronic assembly option

Exchanger operating range

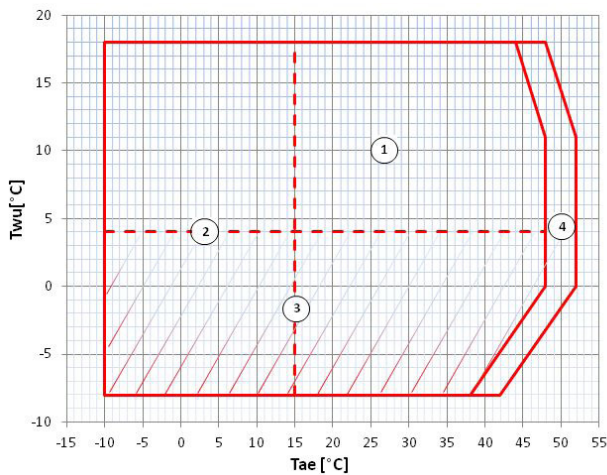
Internal exchanger			
	DPr		DPw
PED (CE)	4500	4500	1000

DPr = Maximum operating pressure on refrigerant side in kPa

DPw = Maximum operating pressure on water side in kPa

General technical data

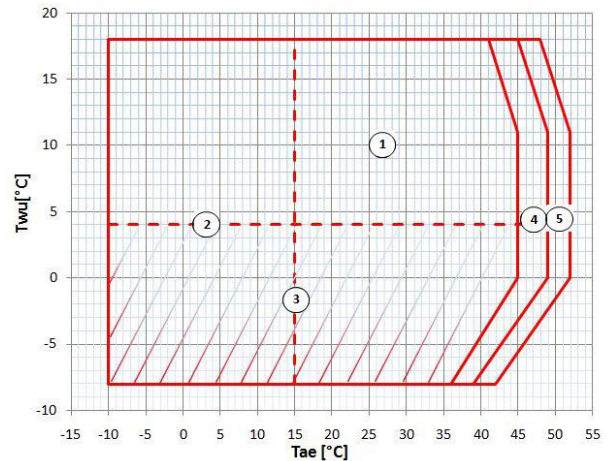
Operating range - Excellence SC



T_{wu} [°C] = Internal exchanger outlet water temperature
 T_{ae} [°C] = External exchanger inlet air temperature

1. Standard unit operating range at full load
2. Standard unit operating range with air flow automatic modulation
3. Operating range where the use of ethylene glycol is mandatory in relation to the temperature of the water at the outlet of the user side exchanger
4. Unit operating range with automatic staging of the compressor capacity

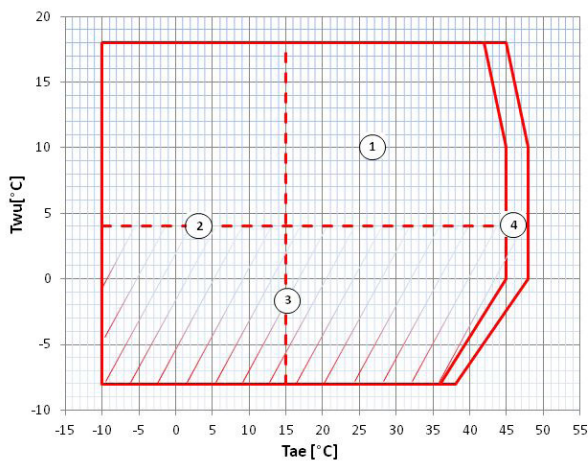
Operating range - Excellence EN



T_{wu} [°C] = Internal exchanger outlet water temperature
 T_{ae} [°C] = External exchanger inlet air temperature

1. Standard unit operating range at full load
2. Standard unit operating range with air flow automatic modulation
3. Operating range where the use of ethylene glycol is mandatory in relation to the temperature of the water at the outlet of the user side exchanger
4. 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
5. Unit operating range with automatic staging of the compressor capacity

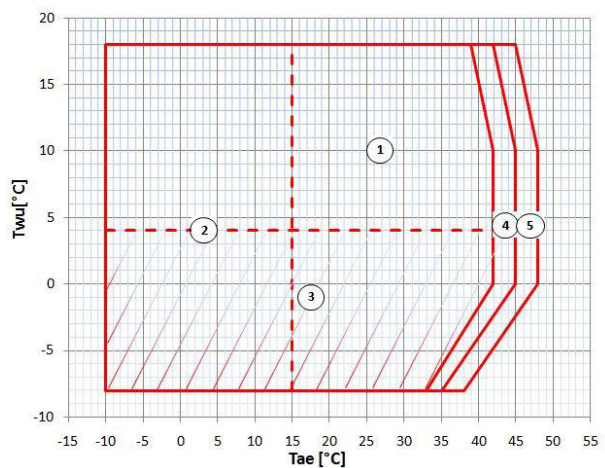
Operating range - Premium SC



T_{wu} [°C] = Internal exchanger outlet water temperature
 T_{ae} [°C] = External exchanger inlet air temperature

1. Standard unit operating range at full load
2. Standard unit operating range with air flow automatic modulation
3. Operating range where the use of ethylene glycol is mandatory in relation to the temperature of the water at the outlet of the user side exchanger
4. Unit operating range with automatic staging of the compressor capacity.

Operating range - Premium EN



T_{wu} [°C] = Internal exchanger outlet water temperature
 T_{ae} [°C] = External exchanger inlet air temperature

1. Standard unit operating range at full load
2. Standard unit operating range with air flow automatic modulation
3. Operating range where the use of ethylene glycol is mandatory in relation to the temperature of the water at the outlet of the user side exchanger
4. 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
5. Unit operating range with automatic staging of the compressor capacity

Excellence Cooling - SC

		Entering external exchanger air temperature (°C)											
Size	To (°C)	25		30		35		40		48		52	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
50.4	5	151	33,5	144	36,9	136	40,4	125	44,5	115	49,0	63,9	28,7
	7	160	34,1	152	37,5	143	41,0	132	45,1	120	49,7	67,6	29,0
	10	173	34,9	164	38,4	155	41,9	142	46,1	132	50,7	76,3	29,1
	12	183	35,6	174	39,2	163	42,6	151	46,8	-	-	-	-
	15	198	36,6	188	40,2	176	43,7	163	48,0	-	-	-	-
	18	214	37,8	202	41,5	190	45,1	175	49,2	-	-	-	-
55.4	5	167	37,2	159	40,9	149	44,6	137	49,1	126	53,9	70,0	31,6
	7	176	37,8	168	41,7	158	45,3	145	49,8	133	54,6	74,9	31,8
	10	192	38,9	182	42,8	171	46,5	157	51,0	145	55,8	84,4	32,1
	12	203	39,6	192	43,6	181	47,3	166	51,9	-	-	-	-
	15	220	40,8	208	44,7	196	48,7	180	53,3	-	-	-	-
	18	238	42,0	225	46,1	211	50,0	194	54,6	-	-	-	-
60.4	5	181	40,8	172	44,8	162	48,7	149	53,4	137	58,3	76,2	34,2
	7	191	41,6	181	48,6	171	49,5	157	54,3	144	59,2	81,1	34,5
	10	208	42,8	197	47,0	186	50,8	171	55,6	158	60,7	91,6	34,9
	12	219	43,6	208	47,9	196	51,9	180	56,6	-	-	-	-
	15	238	44,9	225	49,2	211	53,4	195	58,3	-	-	-	-
	18	256	46,2	242	50,6	228	54,9	210	59,9	-	-	-	-
65.4	5	194	43,9	184	48,2	173	52,4	159	57,6	147	63,1	81,7	37,0
	7	204	44,8	194	49,1	183	53,3	168	58,4	154	63,9	86,6	37,2
	10	220	46,0	209	50,4	196	54,7	181	59,8	168	65,4	97,2	37,6
	12	232	46,9	220	51,3	207	55,6	191	60,9	-	-	-	-
	15	251	48,3	239	53,0	224	57,4	206	62,7	-	-	-	-
	18	271	49,9	256	54,5	241	59,1	222	64,5	-	-	-	-
70.4	5	207	46,3	198	50,8	187	55,2	172	60,8	158	66,9	88,1	39,2
	7	220	47,3	209	51,7	198	56,1	183	61,7	168	67,7	94,3	39,4
	10	241	48,7	228	53,3	215	57,8	198	63,4	184	69,5	106	39,9
	12	254	49,7	241	54,3	227	58,7	209	64,5	-	-	-	-
	15	276	51,3	262	56,1	246	60,7	227	66,3	-	-	-	-
	18	299	53,3	282	57,9	265	62,6	246	68,3	-	-	-	-
80.4	5	234	52,9	224	58,1	211	63,8	195	69,4	180	76,1	100	44,6
	7	248	53,9	238	59,0	224	64,9	206	70,3	191	76,8	107	44,7
	10	271	55,4	257	60,6	243	66,4	224	72,3	207	78,6	120	45,2
	12	287	56,7	272	62,0	256	67,9	236	73,4	-	-	-	-
	15	311	58,3	294	63,6	278	69,7	256	75,5	-	-	-	-
	18	337	60,2	318	65,9	299	71,5	276	77,2	-	-	-	-
90.4	5	273	63,3	258	69,3	244	75,3	225	82,8	208	90,7	116	53,2
	7	288	64,7	274	70,6	259	76,6	238	84,2	219	92,2	123	53,6
	10	305	65,8	289	72,2	274	78,0	252	85,8	235	93,6	136	53,8
	12	325	67,9	308	73,7	291	79,7	268	87,5	-	-	-	-
	15	355	70,2	337	76,5	317	82,6	293	90,3	-	-	-	-
	18	381	72,2	361	78,9	337	85,2	314	93,1	-	-	-	-

kWf = Internal exchanger cooling capacity (kW)

kWe = Compressor power input (kW)

To (°C) = Leaving internal exchanger water temperature (°C)

Performances in function of the entering/leaving water temperature differential = 5°C

Performances

Excellence

Cooling - SC

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		48		52	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
100.4	5	302	67,0	288	73,3	274	79,8	254	88,0	233	97,2	130	57,0
	7	320	68,3	305	74,3	288	81,1	265	89,4	245	98,4	137	57,3
	10	340	69,6	323	75,7	306	82,4	280	90,9	258	99,7	150	57,3
	12	355	70,9	339	76,9	321	83,7	296	92,4	-	-	-	-
	15	391	73,2	373	79,6	351	86,8	326	94,8	-	-	-	-
	18	417	75,5	396	81,8	376	88,8	347	97,4	-	-	-	-
110.4	5	336	69,6	320	69,6	302	90,3	277	99,4	255	109	142	64,1
	7	353	77,2	335	84,1	316	91,6	291	101	267	110	150	64,1
	10	372	78,5	353	85,7	332	93,0	306	102	283	112	164	64,3
	12	394	80,3	375	87,5	353	95,3	327	104	-	-	-	-
	15	449	83,3	449	90,6	384	98,1	355	107	-	-	-	-
	18	461	85,8	435	93,2	409	100	380	110	-	-	-	-
120.4	5	375	85,1	355	92,9	336	102	310	112	285	123	159	72,0
	7	397	86,9	377	94,9	355	103	328	113	301	125	169	72,7
	10	433	90,1	410	97,9	387	106	355	117	329	128	191	73,4
	12	458	91,9	432	100	407	108	376	118	-	-	-	-
	15	494	95,3	467	104	441	112	405	122	-	-	-	-
	18	535	98,7	506	107	474	116	436	126	-	-	-	-

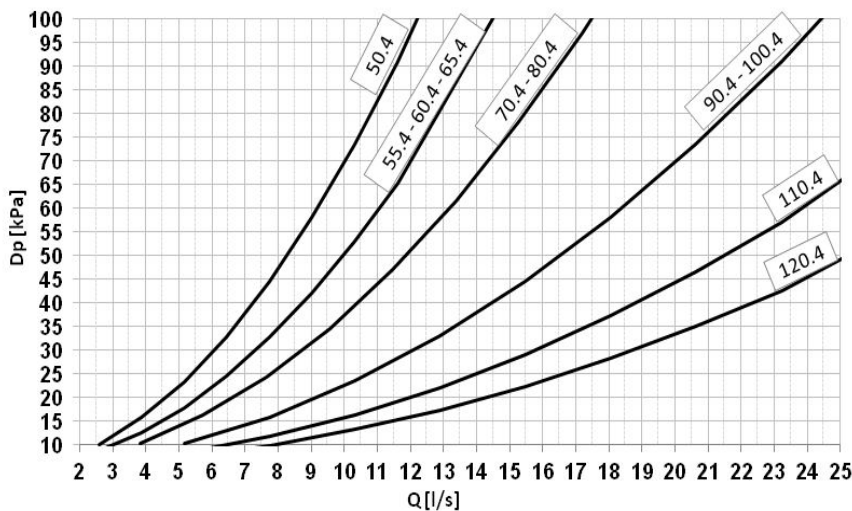
kWf = Internal exchanger cooling capacity (kW)

kWe = Compressor power input (kW)

To (°C) = Leaving internal exchanger water temperature (°C)

Performances in function of the entering/leaving water temperature differential = 5°C

Internal exchanger pressure drop curves



The pressure drops on the water side are calculated by considering an average water temperature at 7°C.

Q = Water flow-rate [l/s]

Dp = Pressure drop [Pa]

The water flow rate must be calculated with the following formula

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

kWf = Cooling capacity [kW]

DT = Temperature difference between entering / leaving water.

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

Premium Cooling - SC

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		45		48	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
70.4	5	199	49,5	187	53,9	175	58,7	161	64,4	149	70,8	87,6	39,8
	7	209	50,5	197	55,0	184	59,9	169	65,5	158	71,8	92,6	40,0
	10	224	51,8	211	56,5	197	61,5	182	67,3	172	73,8	102	40,9
	12	237	53,0	223	57,8	209	62,9	194	68,6	-	-	-	-
	15	257	55,0	241	59,8	226	64,9	210	70,9	-	-	-	-
	18	275	56,9	257	61,8	241	66,8	225	73,0	-	-	-	-
80.4	5	223	56,7	211	61,9	198	67,2	182	73,7	168	80,5	99,0	45,2
	7	236	57,9	223	63,1	208	68,5	191	74,7	179	81,6	105	45,5
	10	252	59,2	238	64,6	222	70,1	205	76,5	193	83,2	115	46,1
	12	265	60,4	251	65,9	236	71,7	217	77,9	-	-	-	-
	15	290	62,7	272	67,9	254	73,5	236	80,0	-	-	-	-
	18	310	64,5	290	69,9	272	75,7	254	82,2	-	-	-	-
90.4	5	260	67,3	245	73,8	231	80,0	212	87,7	197	95,9	116	48,3
	7	277	68,8	261	75,0	243	82,0	223	89,5	210	97,5	123	50,1
	10	291	70,6	274	77,0	257	83,6	238	91,2	224	99,9	133	50,4
	12	308	72,6	290	78,7	271	85,4	252	92,9	-	-	-	-
	15	335	75,6	315	82,1	294	88,4	276	96,5	-	-	-	-
	18	359	78,2	336	84,5	315	91,2	297	99,4	-	-	-	-
100.4	5	279	73,2	264	79,8	247	87,2	228	95,9	213	106	125	59,4
	7	296	74,8	280	81,6	262	88,9	241	97,8	226	108	133	60,0
	10	313	76,3	295	83,4	276	91,2	256	99,4	241	110	143	61,1
	12	332	78,1	312	85,3	291	93,2	271	102	-	-	-	-
	15	362	81,5	340	88,7	317	96,5	297	106	-	-	-	-
	18	386	84,4	363	91,7	338	99,6	319	109	-	-	-	-
110.4	5	308	80,2	292	87,8	274	95,6	252	105	235	115	138	58,0
	7	326	82,0	307	89,4	289	97,5	265	107	247	117	145	60,0
	10	347	83,8	325	91,5	304	99,4	280	109	264	119	157	60,0
	12	359	85,2	339	93,0	318	101	294	111	-	-	-	-
	15	389	88,4	366	96,1	343	104	319	114	-	-	-	-
	18	415	91,2	391	99,3	367	107	341	117	-	-	-	-
120.4	5	359	90,8	338	99,3	315	109	288	119	269	131	152	58,0
	7	380	92,8	357	101	332	110	305	121	286	133	160	60,0
	10	414	95,8	388	105	361	114	332	125	315	137	170	60,0
	12	439	98,5	410	107	382	117	353	128	-	-	-	-
	15	474	103	442	111	412	121	384	132	-	-	-	-
	18	508	106	474	115	443	125	416	136	-	-	-	-

kWf = Internal exchanger cooling capacity (kW)

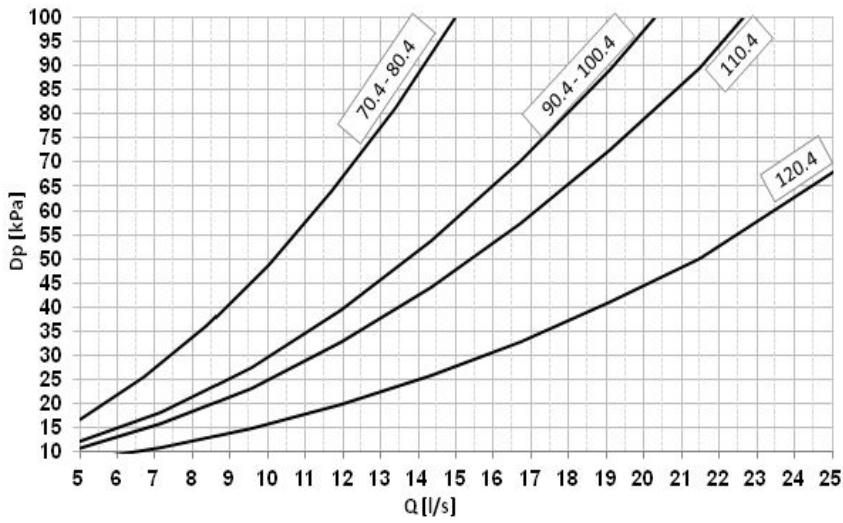
kWe = Compressor power input (kW)

To (°C) = Leaving internal exchanger water temperature (°C)

Performances in function of the entering/leaving water temperature differential = 5°C

Performances

Internal exchanger pressure drop curves



The pressure drops on the water side are calculated by considering an average water temperature at 7°C.

Q = Water flow-rate [l/s]

Dp = Pressure drop [Pa]

The water flow rate must be calculated with the following formula

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

kWf = Cooling capacity [kW]

DT = Temperature difference between entering / leaving water.

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

Excellence

Cooling - EN

Entering external exchanger air temperature (°C)

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		48		52	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
50.4	5	149	34,7	141	38,1	133	41,6	121	45,8	115	49,0	50,2	32,4
	7	157	35,3	149	38,8	139	42,3	128	46,5	120	49,7	54,2	33,2
	10	169	36,4	161	39,9	150	43,4	139	47,7	132	50,7	60,3	33,5
	12	179	37,1	169	40,7	159	44,2	146	48,5	-	-	-	-
	15	194	38,3	183,0	41,9	171	45,5	157	49,8	-	-	-	-
	18	208	39,5	196	43,1	183	46,8	169	51,1	-	-	-	-
55.4	5	164	38,5	156	42,3	146	46,0	134	50,5	126	53,9	56,9	35,3
	7	174	39,2	164	43,0	154	46,8	141	51,3	133	54,6	61,4	35,9
	10	188	40,4	178	44,2	167	48,0	153	52,6	145	55,8	68,7	36,8
	12	199	41,3	188	45,2	176	49,0	162	53,6	-	-	-	-
	15	215	42,6	203	46,6	189	50,5	174	55,1	-	-	-	-
	18	232	44,0	218	48,0	204	52,0	189	56,7	-	-	-	-
60.4	5	177	42,6	168	46,7	157	50,5	144	55,2	137	58,3	61,4	38,4
	7	187	43,6	177	47,6	166	51,5	152	56,2	144	59,2	66,4	39,6
	10	202	44,9	191	49,1	178	53,0	165	57,9	158	60,7	73,7	40,2
	12	214	45,9	201	50,1	188	54,2	174	59,1	-	-	-	-
	15	231	47,4	218	51,7	203	55,9	187	60,8	-	-	-	-
	18	249	49,0	233	53,4	218	57,4	202	62,7	-	-	-	-
65.4	5	189	45,7	179	49,9	168	54,2	155	59,5	147	63,1	67,0	41,8
	7	200	46,7	189	51,0	177	55,2	162	60,5	154	63,9	71,5	42,4
	10	215	48,0	203	52,4	190	56,7	175	62,0	168	65,4	78,2	42,4
	12	227	49,1	214	53,6	200	57,9	185	63,2	-	-	-	-
	15	245	50,7	230	55,3	215	59,8	200	65,0	-	-	-	-
	18	263	52,4	248	57,2	231	61,6	214	67,2	-	-	-	-
70.4	5	204	48,1	194	52,4	182	57,0	168	62,7	158	66,9	70,3	44,8
	7	216	49,2	204	53,7	193	58,0	177	63,8	168	67,7	75,4	45,4
	10	235	50,9	222	55,3	209	59,7	192	65,6	184	69,5	84,9	47,2
	12	248	52,0	235	56,5	220	61,0	203	66,9	-	-	-	-
	15	268	53,8	253	58,4	238	63,0	219	68,8	-	-	-	-
	18	291	55,8	273	60,5	256	65,1	237	71,4	-	-	-	-
80.4	5	229	55,5	217	60,6	205	65,6	188	72,2	180	76,1	83,7	49,9
	7	243	56,7	230	62,0	216	66,9	199	73,3	191	76,8	89,9	50,6
	10	263	58,4	249	63,8	234	69,1	216	75,4	207	78,6	98,8	51,9
	12	278	59,8	263	65,1	246	70,5	228	76,8	-	-	-	-
	15	300	61,9	284	67,1	265	72,5	245	78,9	-	-	-	-
	18	324	63,8	306	69,3	285	74,9	265	81,3	-	-	-	-
90.4	5	265	66,4	251	72,5	237	78,5	217	86,4	208	90,7	98,8	60,9
	7	282	67,9	266	74,1	250	80,1	229	87,7	219	92,2	107	62,0
	10	297	69,7	282	75,7	264	81,6	243	89,9	235	93,6	115	63,1
	12	315	71,7	298	77,8	280	83,8	257	92,1	-	-	-	-
	15	343	74,7	323	81,1	304	87,1	279	95,3	-	-	-	-
	18	367	77,3	344	83,5	323	90,0	300	98,1	-	-	-	-

kWf = Internal exchanger cooling capacity (kW)

kWe = Compressor power input (kW)

To (°C) = Leaving internal exchanger water temperature (°C)

Performances in function of the entering/leaving water temperature differential = 5°C

Performances

Excellence

Cooling - EN

Entering external exchanger air temperature (°C)

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		48		52	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
100.4	5	297	68,0	282	75,6	266	82,7	246	91,0	233	97,2	112	64,3
	7	314	70,7	296	77,2	280	83,7	258	92,5	245	98,4	118	65,2
	10	332	72,3	315	78,7	296	85,3	272	94,0	258	99,7	126	67,1
	12	351	73,9	333	80,5	314	87,2	289	95,9	-	-	-	-
	15	380	76,4	361	83,1	340	90,0	313	98,9	-	-	-	-
	18	405	78,7	383	85,7	361	92,8	335	101	-	-	-	-
110.4	5	329	78,9	311	86,3	294	93,2	270	103	255	109	124	72,8
	7	345	80,5	326	87,8	307	94,7	280	104	267	110	131	73,7
	10	363	82,1	343	89,0	322	96,6	297	106	283	112	141	74,8
	12	384	84,2	364	91,3	341	98,8	315	108	-	-	-	-
	15	417	87,3	396	94,7	370	102	342	111	-	-	-	-
	18	444	90,2	419	97,1	396	105	365	114	-	-	-	-
120.4	5	366	88,7	347	97,0	326	105	299	116	285	123	140	82,0
	7	386	90,9	366	99,0	343	108	316	118	301	125	150	84,5
	10	421	94,0	396	102	372	111	342	122	329	128	163	86,0
	12	444	96,4	418	105	392	113	362	124	-	-	-	-
	15	480	100	451	108	421	117	392	128	-	-	-	-
	18	517	104	486	113	454	121	422	132	-	-	-	-

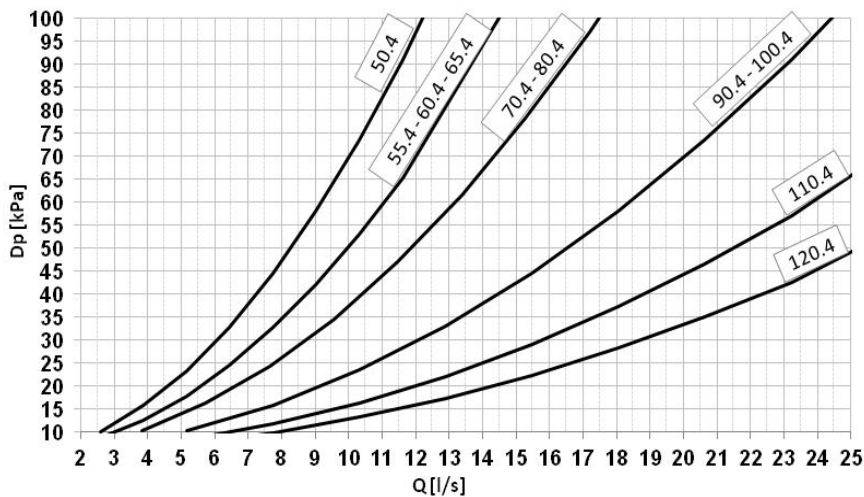
kWf = Internal exchanger cooling capacity (kW)

kWe = Compressor power input (kW)

To (°C) = Leaving internal exchanger water temperature (°C)

Performances in function of the entering/leaving water temperature differential = 5°C

Internal exchanger pressure drop curves



The pressure drops on the water side are calculated by considering an average water temperature at 7°C.

Q = Water flow-rate [l/s]

Dp = Pressure drop [Pa]

The water flow rate must be calculated with the following formula

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

kWf = Cooling capacity [kW]

DT = Temperature difference between entering / leaving water.

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

Premium Cooling - EN

Size	To (°C)	Entering external exchanger air temperature (°C)											
		25		30		35		40		45		48	
		kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe	kWf	kWe
70.4	5	193	51,4	182	56,1	169	61,3	156	67,0	149	70,8	75,4	43,8
	7	203	52,6	191	57,2	178	62,3	164	68,2	158	71,8	79,8	45,2
	10	218	54,3	204	59,0	190	64,1	176	70,1	172	73,8	86,8	46,8
	12	230	55,7	215	60,6	201	65,7	188	71,8	-	-	-	-
	15	248	57,9	232	62,9	217	68,1	205	74,3	-	-	-	-
	18	263	59,9	245	64,8	231	70,2	223	77,3	-	-	-	-
80.4	5	218	59,3	204	64,6	191	70,2	176	76,4	168	80,5	86,1	49,0
	7	229	60,5	215	65,8	201	71,4	185	77,8	179	81,6	91,7	50,9
	10	244	62,2	229	67,7	214	73,2	199	79,7	193	83,2	101	52,0
	12	257	63,7	242	69,2	226	74,8	211	81,4	-	-	-	-
	15	278	65,9	261	71,5	244	77,2	230	83,8	-	-	-	-
	18	296	68,1	278	73,8	260	79,6	248	86,5	-	-	-	-
90.4	5	255	70,4	240	76,8	224	83,5	206	91,2	197	95,9	102	58,5
	7	268	72,0	251	78,5	234	85,0	216	92,9	210	97,5	107	60,3
	10	283	73,9	264	80,2	245	86,9	229	94,5	224	99,9	114	61,1
	12	298	75,8	279	82,3	259	89,1	243	97	-	-	-	-
	15	320	78,6	301	85,4	280	92,2	265	101	-	-	-	-
	18	339	81,8	317	87,8	299	95,0	285	104	-	-	-	-
100.4	5	272	76,5	255	83,2	239	91,1	220	100	213	106	110	65,7
	7	287	78,3	269	85,4	251	93,0	232	102	226	108	117	68,3
	10	302	80,0	284	87,2	265	95,1	246	104	241	110	124	69,4
	12	319	82,4	300	89,8	281	97,7	264	107	-	-	-	-
	15	345	86,1	326	93,7	304	102	290	111	-	-	-	-
	18	370	89,8	346	97,0	327	105	318	116	-	-	-	-
110.4	5	298	84,1	282	91,9	264	100	243	110	235	115	120	71,8
	7	316	86,2	297	93,8	276	102	255	112	247	117	127	73,5
	10	333	88,3	311	96,1	290	104	269	114	264	119	135	75,7
	12	350	90,5	327	98,3	306	107	286	116	-	-	-	-
	15	375	93,8	351	102	329	110	312	121	-	-	-	-
	18	397	96,5	372	105	350	113	335	124	-	-	-	-
120.4	5	349	94,9	326	104	303	113	278	124	269	131	137	80,3
	7	368	97,1	344	106	319	115	295	126	286	133	146	81,8
	10	399	101	372	110	346	119	322	130	315	137	161	84,0
	12	421	104	392	113	366	122	344	134	-	-	-	-
	15	454	108	423	117	396	127	377	139	-	-	-	-
	18	485	112	451	122	424	132	416	145	-	-	-	-

kWf = Internal exchanger cooling capacity (kW)

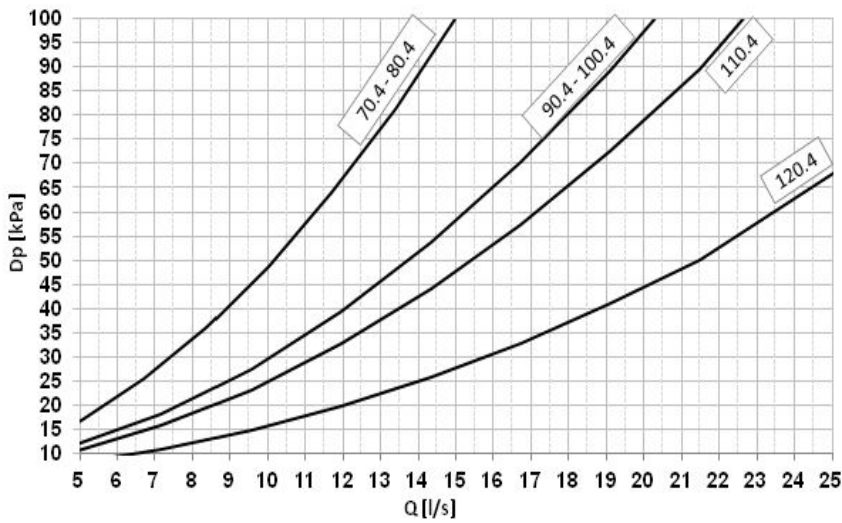
kWe = Compressor power input (kW)

To (°C) = Leaving internal exchanger water temperature (°C)

Performances in function of the entering/leaving water temperature differential = 5°C

Performances

Internal exchanger pressure drop curves



The pressure drops on the water side are calculated by considering an average water temperature at 7°C.

Q = Water flow-rate [l/s]

Dp = Pressure drop [Pa]

The water flow rate must be calculated with the following formula

$$Q \text{ [l/s]} = \frac{kWf}{4,186 \times DT}$$

kWf = Cooling capacity [kW]

DT = Temperature difference between entering / leaving water.

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

Excellence

Cooling at part load - SC

Entering external exchanger air temperature (°C)

Size	Load	35°C			30°C			25°C			20°C		
		kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER
50.4	100%	143	45,4	3,15	152	42,0	3,63	160	38,5	4,16	167	35,3	4,74
	75%	107	31,5	3,41	114	29,0	3,93	120	27,0	4,44	125	25,1	5,00
	50%	71,6	19,3	3,71	76,1	18,1	4,21	80,1	17,1	4,69	83,6	16,1	5,20
	25%	36,3	9,87	3,68	38,3	9,18	4,17	40,1	8,62	4,65	41,8	8,12	5,15
	Minimun	36,3	9,87	3,68	38,3	9,18	4,17	39,7	8,54	4,65	40,9	7,94	5,14
55.4	100%	158	49,8	3,16	168	46,2	3,63	176	42,4	4,16	184	38,8	4,74
	75%	118	34,4	3,44	126	31,8	3,95	132	29,6	4,46	138	27,4	5,02
	50%	78,8	21,0	3,76	83,8	19,7	4,25	88,1	18,6	4,75	91,8	17,4	5,27
	25%	40,0	10,7	3,73	42,2	9,99	4,22	44,0	9,36	4,71	45,9	8,80	5,22
	Minimun	40,0	10,7	3,73	42,2	9,99	4,22	43,6	9,26	4,71	44,9	8,61	5,21
60.4	100%	171	54,0	3,16	181	53,1	3,41	191	46,1	4,14	198	42,1	4,71
	75%	128	37,2	3,44	136	36,4	3,74	143	32,1	4,46	149	29,7	5,02
	50%	85,4	22,5	3,79	90,6	22,2	4,08	95,4	19,9	4,78	99,2	18,7	5,31
	25%	43,3	11,5	3,77	45,6	11,3	4,05	47,7	10,0	4,75	49,6	9,43	5,26
	Minimun	43,3	11,5	3,77	45,6	11,3	4,05	47,2	9,95	4,75	48,5	9,22	5,26
65.4	100%	183	57,9	3,16	194	53,6	3,61	204	49,4	4,13	213	45,3	4,70
	75%	137	39,7	3,45	145	36,7	3,95	153	34,3	4,46	160	31,8	5,02
	50%	91,3	23,9	3,81	96,8	22,5	4,31	102	21,2	4,81	107	19,9	5,34
	25%	46,3	12,2	3,79	48,8	11,4	4,29	51,0	10,7	4,78	53,3	10,0	5,30
	Minimun	46,3	12,2	3,79	48,8	11,4	4,29	50,5	10,6	4,78	52,1	9,83	5,30
70.4	100%	198	62,5	3,16	209	58,1	3,60	220	53,6	4,10	230	49,6	4,63
	75%	148	43,4	3,42	157	40,2	3,90	165	37,7	4,38	172	35,3	4,89
	50%	98,8	26,7	3,70	105	25,2	4,15	110	23,9	4,61	115	22,7	5,07
	25%	50,1	13,6	3,68	52,6	12,8	4,13	55,0	12,0	4,58	57,5	11,4	5,03
	Minimun	50,1	13,6	3,68	52,6	12,8	4,13	54,5	11,9	4,58	56,2	11,2	5,03
80.4	100%	224	71,5	3,14	238	65,6	3,63	248	60,5	4,11	259	55,9	4,63
	75%	168	49,4	3,41	179	45,2	3,95	186	42,3	4,40	194	39,5	4,91
	50%	112	30,2	3,72	119	28,0	4,24	124	26,6	4,68	129	25,2	5,14
	25%	56,9	15,4	3,70	59,9	14,2	4,22	62,1	13,4	4,65	64,7	12,7	5,11
	Minimun	56,9	15,4	3,70	59,9	14,2	4,22	61,5	13,2	4,65	63,2	12,4	5,10
90.4	100%	259	83,1	3,12	274	77,2	3,55	288	71,2	4,04	301	65,5	4,59
	75%	194	57,0	3,41	206	52,8	3,89	216	49,5	4,37	226	46,0	4,90
	50%	130	34,4	3,77	137	32,3	4,25	144	30,6	4,71	150	28,8	5,22
	25%	65,7	17,5	3,75	69,0	16,3	4,23	72,0	15,4	4,69	75,2	14,5	5,19
	Minimun	65,7	17,5	3,75	69,0	16,3	4,23	71,3	15,2	4,69	73,5	14,2	5,19
100.4	100%	288	90,8	3,17	305	84,1	3,63	320	78,1	4,09	333	72,4	4,60
	75%	216	63,2	3,42	229	58,4	3,91	240	55,1	4,35	250	51,7	4,84
	50%	144	39,1	3,68	152	36,8	4,14	160	35,1	4,55	167	33,4	4,99
	25%	73,0	19,9	3,66	76,8	18,6	4,13	79,9	17,6	4,53	83,4	16,8	4,96
	Minimun	73,0	19,9	3,66	76,8	18,6	4,13	79,1	17,5	4,53	81,5	16,4	4,96
110.4	100%	316	101	3,12	335	93,9	3,57	353	87,0	4,06	368	80,7	4,57
	75%	237	70,1	3,38	251	64,9	3,87	265	61,0	4,34	276	57,2	4,83
	50%	158	43,0	3,67	168	40,4	4,15	177	38,4	4,60	184	36,5	5,04
	25%	80,1	21,9	3,66	84,4	20,4	4,13	88,3	19,3	4,58	92,1	18,4	5,02
	Minimun	80,1	21,9	3,66	84,4	20,4	4,13	87,4	19,1	4,58	90,0	18,0	5,02
120.4	100%	355	113	3,14	377	105	3,60	397	96,8	4,10	415	89,9	4,61
	75%	267	78,1	3,41	283	72,1	3,92	297	67,6	4,40	311	63,4	4,91
	50%	178	47,5	3,74	188	44,5	4,24	198	42,2	4,70	207	40,1	5,17
	25%	90,1	24,1	3,73	94,9	22,5	4,22	99,1	21,2	4,69	104	20,1	5,15
	Minimun	90,1	24,1	3,73	94,9	22,5	4,22	98,1	20,9	4,69	101	19,7	5,15

kWf = Cooling capacity in kW

kWe_tot = Overall electrical capacity input by the unit in kW

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

Acqua scambiatore interno = uscita 7°C / ingresso * (variabile) / portata costante, pari al valore nominal

Performances

Excellence

Cooling at part load - SC

Entering external exchanger air temperature (°C)

Size	Load	35°C			30°C			25°C			20°C		
		kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER	kWf	kWe_tot	EER
70.4	100%	184	67,5	2,72	197	62,6	3,14	209	58,1	3,59	219	53,8	4,08
	75%	138	47,1	2,92	148	43,7	3,38	157	41,1	3,81	165	38,5	4,27
	50%	91,8	29,4	3,13	98,4	27,6	3,56	104	26,4	3,96	110	25,1	4,38
	25%	46,6	15,6	2,99	49,5	14,6	3,39	52,2	13,9	3,76	54,9	13,2	4,14
	Minimun	46,6	15,6	2,99	49,5	14,6	3,39	51,7	13,8	3,76	53,7	13,0	4,13
80.4	100%	208	76,1	2,74	223	70,7	3,15	236	65,5	3,60	247	60,5	4,09
	75%	156	52,8	2,96	167	49,0	3,41	177	46,0	3,85	185	43,0	4,31
	50%	104	32,5	3,20	111	30,6	3,64	118	29,1	4,06	124	27,6	4,48
	25%	52,8	17,1	3,10	56,1	16,0	3,51	59,0	15,1	3,90	61,8	14,4	4,30
	Minimun	52,8	17,1	3,10	56,1	16,0	3,51	58,4	15,0	3,90	60,4	14,1	4,29
90.4	100%	243	89,6	2,71	261	82,7	3,16	277	76,4	3,62	291	70,8	4,11
	75%	182	61,7	2,95	196	56,8	3,44	208	53,3	3,90	218	49,9	4,37
	50%	122	37,4	3,24	130	35,0	3,73	138	33,2	4,17	145	31,4	4,62
	25%	61,6	19,7	3,12	65,7	18,4	3,58	69,2	17,3	3,99	72,6	16,5	4,41
	Minimun	61,6	19,7	3,12	65,7	18,4	3,58	68,5	17,2	3,99	71,0	16,1	4,40
100.4	100%	262	96,5	2,72	280	89,3	3,13	296	82,4	3,60	311	76,1	4,08
	75%	197	66,2	2,97	210	61,1	3,43	222	57,3	3,88	233	53,5	4,36
	50%	131	40,0	3,28	140	37,4	3,74	148	35,4	4,19	155	33,5	4,64
	25%	66,5	21,0	3,17	70,4	19,5	3,60	74,1	18,4	4,03	77,7	17,4	4,45
	Minimun	66,5	21,0	3,17	70,4	19,5	3,60	73,4	18,2	4,02	75,9	17,1	4,44
110.4	100%	289	105	2,75	307	96,9	3,17	326	89,5	3,65	343	82,6	4,15
	75%	217	71,8	3,02	230	66,1	3,48	245	61,9	3,95	257	57,8	4,45
	50%	145	43,0	3,36	154	40,1	3,83	163	38,0	4,30	171	35,9	4,78
	25%	73,3	22,4	3,27	77,3	20,8	3,71	81,6	19,6	4,16	85,7	18,5	4,62
	Minimun	73,3	22,4	3,27	77,3	20,8	3,71	80,8	19,4	4,16	83,8	18,2	4,62
120.4	100%	332	121	2,74	357	112	3,18	380	104	3,66	400	96,0	4,16
	75%	249	83,9	2,97	268	77,4	3,46	285	72,6	3,93	300	67,8	4,42
	50%	166	51,2	3,25	178	47,9	3,72	190	45,5	4,18	200	43,1	4,64
	25%	84,3	26,7	3,16	89,8	24,9	3,61	95,0	23,5	4,04	99,9	22,3	4,48
	Minimun	84,3	26,7	3,16	89,8	24,9	3,61	94,0	23,3	4,04	97,7	21,8	4,47

kWf = Cooling capacity in kW

kWe_tot = Overall electrical capacity input by the unit in kW

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

Acqua scambiatore interno = uscita 7°C / ingresso * (variabile) / portata costante, pari al valore nominal

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
50.4	100%	139	45,5	3,06	149	42,0	3,54	157	38,5	4,08	162	34,8	4,66
	75%	105	30,8	3,40	112	28,5	3,91	118	26,6	4,44	122	24,3	5,01
	50%	69,7	18,1	3,85	74,4	17,0	4,37	78,6	16,1	4,88	81,1	14,9	5,44
	25%	36,1	9,36	3,85	37,9	8,66	4,37	39,3	8,05	4,88	40,6	7,45	5,44
	Minimun	36,1	9,36	3,85	37,9	8,66	4,37	39,2	8,03	4,88	40,0	7,35	5,44
55.4	100%	154	50,0	3,08	164	46,2	3,55	174	42,4	4,09	178	38,2	4,66
	75%	115	33,7	3,42	123	31,3	3,93	130	29,2	4,47	134	26,6	5,03
	50%	76,9	19,7	3,91	82,1	18,5	4,43	86,8	17,5	4,95	89,1	16,2	5,50
	25%	39,8	10,2	3,91	41,8	9,44	4,43	43,4	8,76	4,95	44,5	8,09	5,51
	Minimun	39,8	10,2	3,91	41,8	9,44	4,43	43,3	8,74	4,95	44,0	7,98	5,51
60.4	100%	166	54,7	3,03	177	50,8	3,47	187	46,8	4,00	192	42,1	4,56
	75%	124	36,8	3,38	132	34,3	3,86	140	32,0	4,37	144	29,2	4,93
	50%	82,8	21,4	3,88	88,3	20,2	4,37	93,4	19,1	4,89	96,0	17,6	5,44
	25%	42,9	11,1	3,88	45,0	10,3	4,37	46,7	9,56	4,89	48,0	8,81	5,45
	Minimun	42,9	11,1	3,88	45,0	10,3	4,37	46,6	9,53	4,89	47,4	8,69	5,45
65.4	100%	177	58,4	3,02	189	54,2	3,48	200	49,9	4,01	206	45,1	4,58
	75%	133	39,2	3,38	142	36,5	3,88	150	34,1	4,40	155	31,2	4,96
	50%	88,4	22,7	3,90	94,4	21,4	4,42	100	20,3	4,94	103	18,7	5,50
	25%	45,8	11,8	3,90	48,1	10,9	4,42	50,0	10,1	4,94	51,6	9,36	5,51
	Minimun	45,8	11,8	3,90	48,1	10,9	4,42	49,9	10,1	4,94	50,9	9,24	5,51
70.4	100%	193	62,3	3,09	204	58,1	3,52	216	53,6	4,04	222	48,7	4,57
	75%	145	42,1	3,43	153	39,4	3,89	162	36,9	4,39	167	34,0	4,91
	50%	96,4	24,7	3,89	102	23,5	4,35	108	22,3	4,84	111	20,8	5,35
	25%	49,9	12,8	3,89	52,1	12,0	4,35	54,1	11,2	4,84	55,6	10,4	5,35
	Minimun	49,9	12,8	3,89	52,1	12,0	4,35	53,9	11,1	4,84	54,9	10,2	5,35
80.4	100%	216	71,3	3,03	230	66,4	3,46	243	61,1	3,98	250	55,5	4,50
	75%	162	48,0	3,37	172	44,9	3,83	182	41,9	4,35	188	38,6	4,86
	50%	108	28,0	3,86	115	26,5	4,33	122	25,1	4,84	125	23,4	5,35
	25%	55,9	14,5	3,86	58,5	13,5	4,33	60,8	12,6	4,84	62,5	11,7	5,35
	Minimun	55,9	14,5	3,86	58,5	13,5	4,33	60,6	12,5	4,84	61,7	11,5	5,35
90.4	100%	250	84,4	2,96	266	78,5	3,39	282	72,3	3,90	289	65,8	4,40
	75%	187	56,6	3,31	200	52,8	3,78	211	49,4	4,28	217	45,4	4,77
	50%	125	32,6	3,83	133	30,9	4,32	141	29,2	4,82	145	27,2	5,32
	25%	64,7	16,9	3,83	67,8	15,7	4,32	70,4	14,6	4,82	72,3	13,6	5,33
	Minimun	64,7	16,9	3,83	67,8	15,7	4,32	70,2	14,6	4,82	71,4	13,4	5,33
100.4	100%	280	90,3	3,10	296	83,8	3,54	314	77,3	4,06	324	70,7	4,58
	75%	210	61,1	3,44	222	57,0	3,90	235	53,4	4,41	243	49,4	4,91
	50%	140	36,0	3,89	148	34,1	4,35	157	32,4	4,84	162	30,4	5,33
	25%	72,5	18,7	3,89	75,5	17,4	4,35	78,4	16,2	4,84	80,9	15,2	5,33
	Minimun	72,5	18,7	3,89	75,5	17,4	4,35	78,2	16,2	4,84	79,8	15,0	5,33
110.4	100%	307	101	3,03	326	94,4	3,45	345	87,1	3,96	356	79,2	4,50
	75%	230	68,3	3,37	244	63,9	3,82	259	59,9	4,32	267	55,1	4,85
	50%	154	39,9	3,85	163	37,9	4,30	172	36,0	4,79	178	33,5	5,32
	25%	79,6	20,7	3,85	82,9	19,3	4,30	86,2	18,0	4,79	89,1	16,7	5,32
	Minimun	79,6	20,7	3,85	82,9	19,3	4,30	85,9	17,9	4,79	87,9	16,5	5,32
120.4	100%	343	114	2,99	366	106	3,46	386	97,6	3,95	400	88,7	4,50
	75%	257	76,9	3,34	274	71,3	3,85	289	66,9	4,33	300	61,5	4,87
	50%	171	44,6	3,84	183	41,9	4,36	193	39,9	4,84	200	37,1	5,38
	25%	88,7	23,1	3,84	93,1	21,4	4,36	96,5	19,9	4,84	99,9	18,5	5,39
	Minimun	88,7	23,1	3,84	93,1	21,4	4,36	96,2	19,9	4,84	98,6	18,3	5,39

kWf = Cooling capacity in kW

kWe_tot = Overall electrical capacity input by the unit in kW

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

Acqua scambiatore interno = uscita 7°C / ingresso * (variabile) / portata costante, pari al valore nominal

Performances

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
70.4	100%	178	66,6	2,67	191	61,5	3,10	203	56,9	3,57	211	52,3	4,02
	75%	133	44,9	2,97	143	41,7	3,43	152	39,1	3,90	158	36,4	4,34
	50%	88,9	26,3	3,38	95,3	24,7	3,86	102	23,5	4,32	105	22,1	4,76
	25%	46,0	13,6	3,38	48,5	12,6	3,86	50,8	11,8	4,32	52,7	11,1	4,76
	Minimun	46,0	13,6	3,38	48,5	12,6	3,86	50,7	11,7	4,32	52,0	10,9	4,76
80.4	100%	201	75,8	2,64	215	70,2	3,06	229	64,9	3,53	240	59,1	4,06
	75%	150	51,0	2,95	161	47,4	3,40	172	44,4	3,86	180	40,9	4,39
	50%	100	29,6	3,39	107	27,9	3,85	114	26,5	4,32	120	24,7	4,85
	25%	51,9	15,3	3,39	54,7	14,2	3,85	57,2	13,3	4,32	59,9	12,3	4,86
	Minimun	51,9	15,3	3,39	54,7	14,2	3,85	57,1	13,2	4,32	59,1	12,2	4,86
90.4	100%	234	89,3	2,62	251	82,8	3,04	268	76,3	3,51	279	69,9	3,99
	75%	176	59,7	2,94	189	55,6	3,39	201	52,0	3,87	209	48,1	4,35
	50%	117	34,3	3,42	126	32,3	3,89	134	30,6	4,38	139	28,6	4,87
	25%	60,7	17,8	3,42	64,0	16,5	3,89	67,0	15,3	4,38	69,7	14,3	4,88
	Minimun	60,7	17,8	3,42	64,0	16,5	3,89	66,8	15,3	4,38	68,8	14,1	4,88
100.4	100%	251	97,3	2,58	269	89,7	3,00	287	82,6	3,47	303	75,6	4,01
	75%	188	64,9	2,90	202	60,1	3,36	215	56,1	3,83	227	52,0	4,37
	50%	126	37,1	3,38	135	34,8	3,87	143	32,9	4,35	152	30,8	4,92
	25%	65,0	19,2	3,38	68,6	17,7	3,87	71,7	16,5	4,35	75,8	15,4	4,93
	Minimun	65,0	19,2	3,38	68,6	17,7	3,87	71,5	16,4	4,35	74,8	15,2	4,93
110.4	100%	276	106	2,60	297	98,1	3,03	316	90,6	3,49	328	82,4	3,98
	75%	207	70,9	2,92	223	65,6	3,39	237	61,5	3,86	246	56,5	4,35
	50%	138	40,4	3,42	148	37,8	3,92	158	35,9	4,40	164	33,3	4,92
	25%	71,5	20,9	3,42	75,6	19,3	3,92	79,0	17,9	4,41	82,0	16,6	4,93
	Minimun	71,5	20,9	3,42	75,6	19,3	3,92	78,8	17,9	4,41	80,9	16,4	4,93
120.4	100%	319	122	2,62	344	113	3,05	368	104	3,55	384	94,7	4,05
	75%	239	81,7	2,92	258	75,8	3,40	276	70,8	3,89	288	65,4	4,40
	50%	159	47,2	3,37	172	44,4	3,87	184	42,0	4,37	192	39,3	4,89
	25%	82,6	24,5	3,37	87,5	22,6	3,87	91,9	21,0	4,37	95,9	19,6	4,90
	Minimun	82,6	24,5	3,37	87,5	22,6	3,87	91,6	21,0	4,37	94,7	19,3	4,90

kWf = Cooling capacity in kW

kWe_tot = Overall electrical capacity input by the unit in kW

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

Acqua scambiatore interno = uscita 7°C / ingresso * (variabile) / portata costante, pari al valore nominal

D - Partial energy recovery

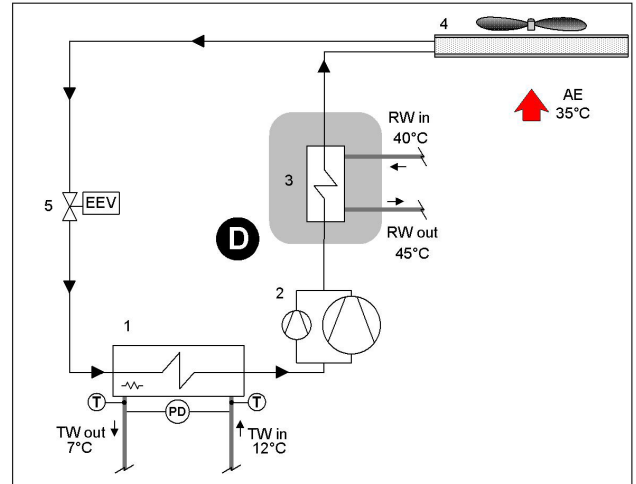
Configuration with recovery side brazed stainless steel (316 AISI) plate exchangers, and components per the legend of the enclosed plumbing circuit diagram. All water fittings are Victaulic type.

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 rejected to the external heat source. It is possible to recovery about 20% of the unit rejected heating capacity equal to the sum of the cooling capacity and the compressor power input.

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%.

Hot water availability is always subordinate to the production of chilled water. The heating capacity request is made by the digital contact enabling, that activates the pump recovery side (outside the unit).

The partial energy recovery option (D) is available both in the EXCELLENCE (EXC) and PREMIUM (PRM) configuration.



D - Partial recovery device

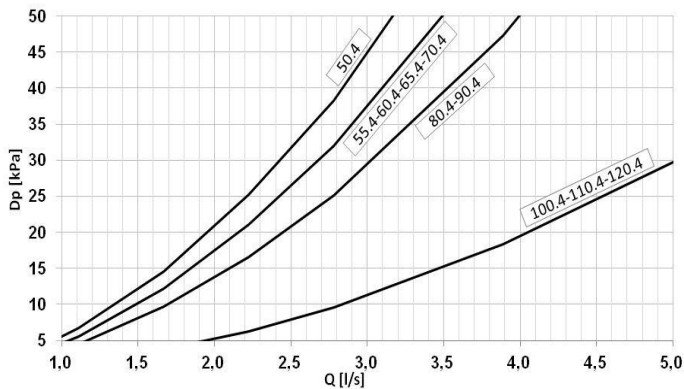
- 1 - Internal exchanger
- 2 - Compressors
- 3 - Recovery exchanger
- 4 - External exchanger
- 5 - Electronic expansion valve

TW out chilled water outlet
TW out Uscita acqua refrigerata

RW in - Ingresso acqua recupero
RW out - Uscita acqua recupero

T - Sonda di temperatura
PD - Pressostato differenziale
AE Aria esterna

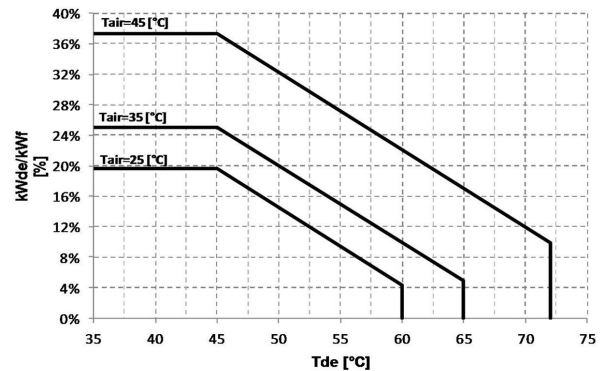
Partial energy recovery pressure drop curves



The pressure drops on the water side are calculated by considering an average water temperature at 7°C.

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

Partial recovery heating capacity



$kWde/kWf = \text{Heat recovered/Cooling capacity} [\%]$
 $Tde = \text{Heat recovering device outlet water temperature} [^{\circ}\text{C}]$

Configurations

R - Total energy recovery

Configuration with recovery side brazed stainless steel (316 AISI) plate exchangers, ON/OFF solenoid valves, temperature sensors on the supply and return of the hot water circuit and components according to the key on the diagram shown below.

A configuration which enables the production of hot water free-of-charge while operating in the cooling mode, thanks to the total recovery of condensation heat that would otherwise be disposed of into the external heat source. 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 rejected to the external heat source. It is possible to recover approximately 100% of the rejected unit heating capacity equal to the sum of the cooling capacity and the relative compressor power input.

Hot water availability is always subordinate to the production of chilled water. The heating capacity request is made by the digital contact enabling, that activates the pump recovery side (outside the unit).

See the following example:

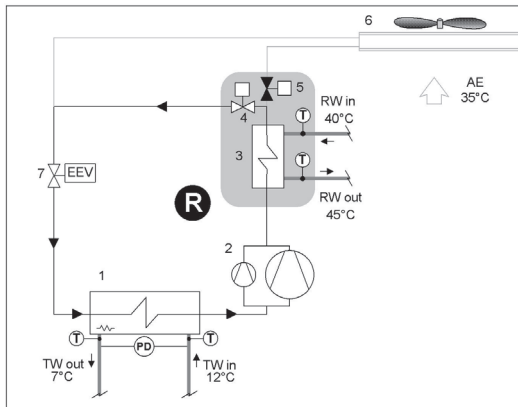
1. cooling capacity request = 100% / Heating capacity request = 0% >Production only of cooling capacity;
2. cooling capacity request = 100% / Heating capacity request = 0% >Production of cooling and heating capacity by recovery;
3. cooling capacity request = 50% / Heating capacity request = 100% >Production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

The total energy recovery (R) is available only in the EXCELLENCE (EXC) configuration.

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

Total operating energy recovery

The pump on the recovery exchanger must be activated when hot water is required. Condensation takes place entirely in the recovery circuit

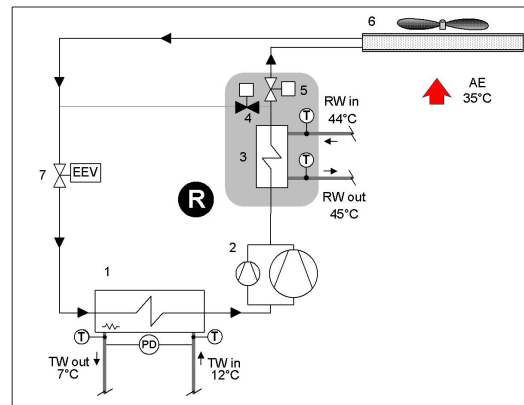


R - Total recovery device

- 1 - Internal exchanger
- 2 - Compressors
- 3 - Recovery exchanger
- 4 - Total recovery enabling valve
- 5 - External exchanger enabling valve
- 6 - External exchanger

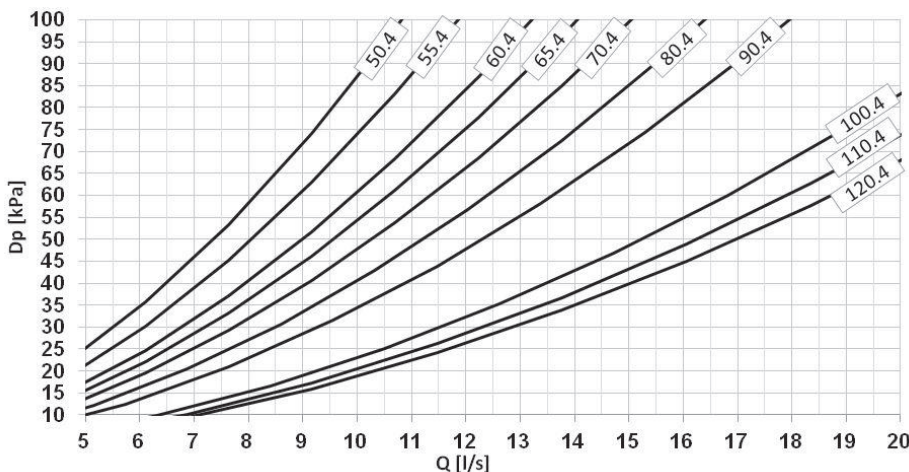
Total non-operating energy recovery

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



- 7 - Expansion electronic valve
- T - Temperature probe
- PD - Differential pressure switch
- TW in chilled water inlet
- TW out chilled water outlet
- RW in - Recovery water inlet
- RW out - Recovery water outlet
- AE Outdoor air

Pressure drops of the total energy recovery exchanger



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

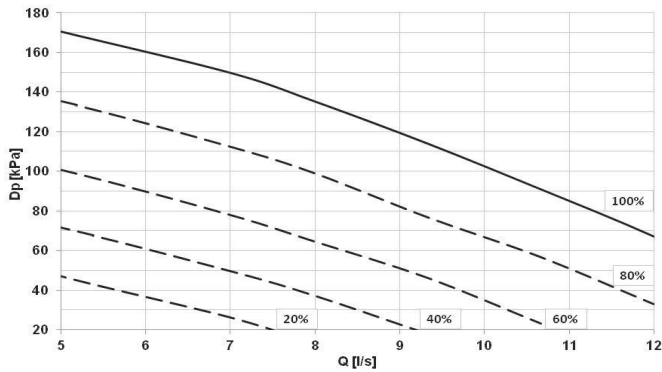
VARYP - VARYFLOW+ (2 inverter pumps)

Configuration with 2 centrifugal electric pumps arranged in parallel and controlled by inverter, with housing and impeller made with AISI 304 stainless steel, and components as described on the water diagram key. All water fittings are Victaulic type.

The electric pumps are equipped with three-phase electric motor with IP55-protection and complete with thermoformed insulated casing.

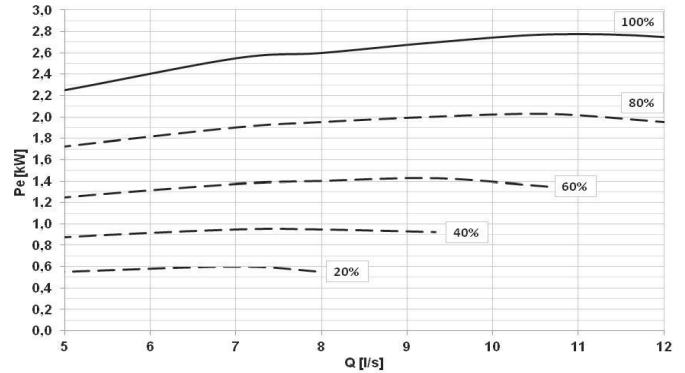
The control, modulates the water flow-rate keeping constant the delta T. If the water temperature is in critical conditions, it allows to extend the unit operating ranges guaranteeing its operating, automatically reducing the water flow-rate. In the event of one of the two pumps is temporarily unavailable, it guarantees about the 80% of the nominal flow-rate.

Pressure head VARYFLOW+ (Size 50.4 ÷ 65.4)



Q = Water flow-rate [l/s]
DP = Pressure head [kPa]

Absorption curves VARYFLOW+ (Size 50.4 ÷ 65.4)

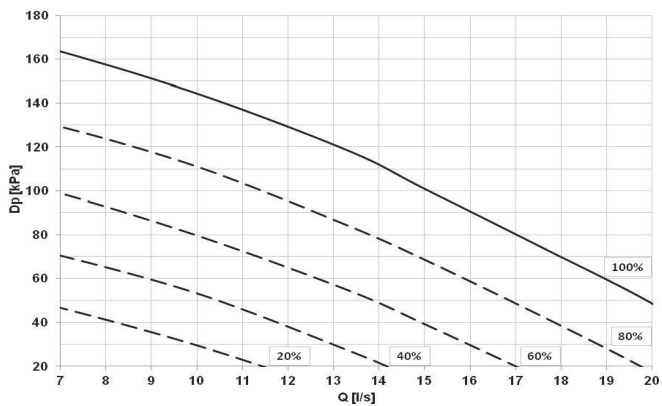


Q = Water flow-rate [l/s]
Pe = Electric power consumption [kW]

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

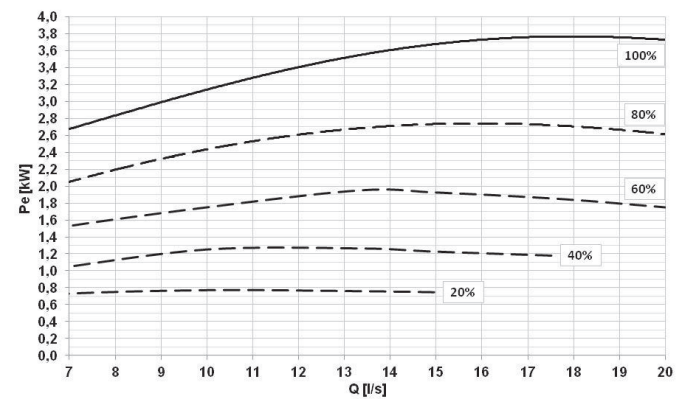
- Evaporator pressure drops user side
- IFWX accessory –Steel mesh filter on the water side (where applicable)

Pressure head VARYFLOW+ (Size 70.4 ÷ 90.4)



Q = Water flow-rate [l/s]
DP = Pressure head [kPa]

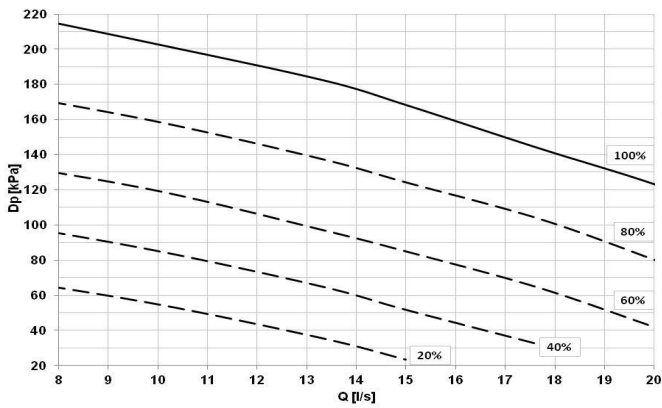
Absorption curves VARYFLOW+ (Size 70.4 ÷ 90.4)



Q = Portata acqua [l/s]
Pe = Potenza elettrica assorbita [kW]

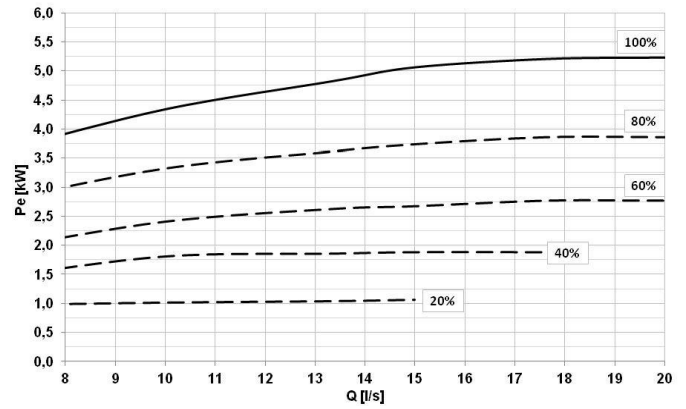
Accessories - Hydronic assembly

Pressure head VARYFLOW+ (Size. 100.4 ÷ 120.4)



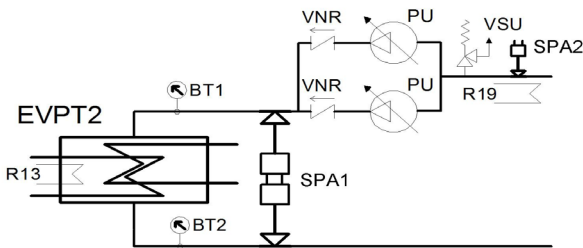
Q = Water flow-rate [l/s]
DP = Pressure head [kPa]

Absorption curves VARYFLOW+ (Size 100.4 ÷ 120.4)



Q = Water flow-rate [l/s]
Pe = Electric power consumption [kW]

Water diagram



EVPT2 = Plate evaporator 2 circuits
R13 = Evaporator group heater
BT1 = Probes of entering water temperature
BT2 = Probes of leaving water temperature
VNR = Non return valves
SPA1 = Differential water pressure switch
PU = Hydronic assembly VARYFLOW +
VSU = Water safety valve
R19 = Hydronic assembly heaters
SPA2 = System water pressure switch

Electrical data

SIZE		50.4	55.4	60.4	65.4	70.4	80.4	90.4	100.4	110.4	120.4
EXCELLENCE											
F.L.A.	A	6,4	6,4	6,4	6,4	7,4	7,4	7,4	9,0	9,0	9,0
F.L.I.	Kw	2,2	2,2	2,2	2,2	3,0	3,0	3,0	4,4	4,4	4,4
PREMIUM											
F.L.A.	A	-	-	-	-	7,4	7,4	7,4	9,0	9,0	9,0
F.L.I.	Kw	-	-	-	-	3,0	3,0	3,0	4,4	4,4	4,4

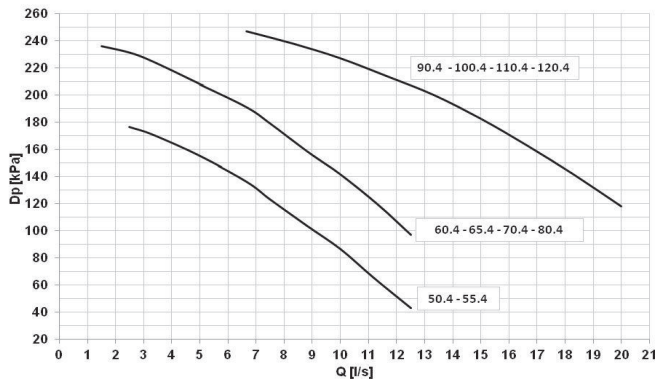
Electrical data refer to the entire hydronic group.

HYG1 - Hydronic assembly with one ON/OFF pump

Configuration with 1 centrifugal electric pump, with housing and impeller made with AISI 304 stainless steel, and components as described on the water diagram key. All water fittings are Victaulic type.

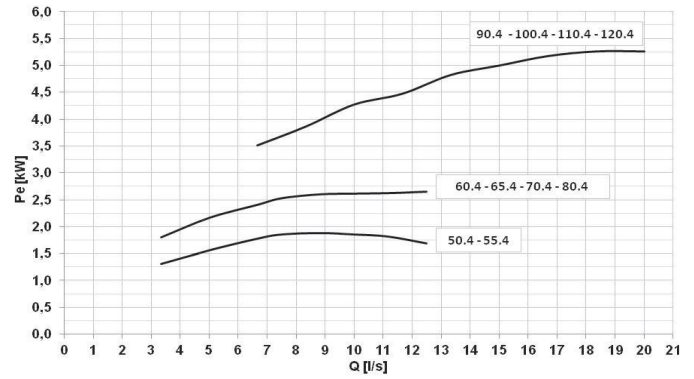
The electric pump is equipped with three-phase electric motor with IP55-protection and complete with thermoformed insulated casing.

Pressure head ON/OFF pump (Size 50.4 - 120.4)



Q = Water flow-rate [l/s]
DP = Pressure head [kPa]

Absorption curves ON/OFF pump (Size 50.4 - 120.4)

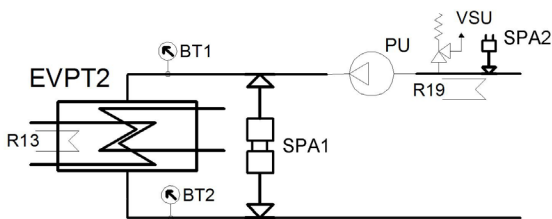


Q = Water flow-rate [l/s]
Pe = Electric power consumption [kW]

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

- Evaporator pressure drops user side
- IFWX accessory –Steel mesh filter on the water side (where applicable)

Water diagram



EVPT2 = Plate evaporator 2 circuits
R13 = Evaporator group heater
BT1 = Probes of entering water temperature
BT2 = Probes of leaving water temperature
SPA1 = Differential water pressure switch
PU = Hydronic assembly 1 ON/OFF pump
VSU = Water safety valve
R19 = Hydronic assembly heaters
SPA2 = System water pressure switch

Electrical data

SIZE		50.4	55.4	60.4	65.4	70.4	80.4	90.4	100.4	110.4	120.4
EXCELLENCE											
F.L.A.	A	3,7	3,7	4,5	4,5	4,5	4,5	8,7	8,7	8,7	8,7
F.L.I.	Kw	1,5	1,5	2,2	2,2	2,2	2,2	4,0	4,0	4,0	4,0
PREMIUM											
F.L.A.	A	-	-	-	-	4,5	4,5	8,7	8,7	8,7	8,7
F.L.I.	Kw	-	-	-	-	2,2	2,2	4,0	4,0	4,0	4,0

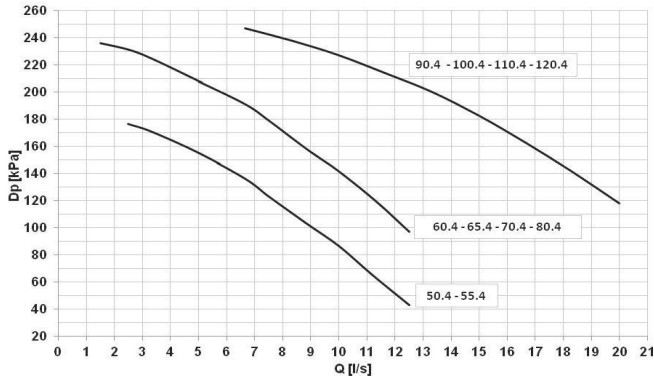
Accessories - Hydronic assembly

HYG2 - Hydronic assembly with two ON/OFF pumps

Configuration with 2 centrifugal electric pumps, 1 stand-by, with housing and impeller made with AISI 304 stainless steel, and components as described on the water diagram key. All water fittings are Victaulic type. The electric pumps are equipped with three-phase electric motor with IP55-protection and complete with thermoformed insulated casing.

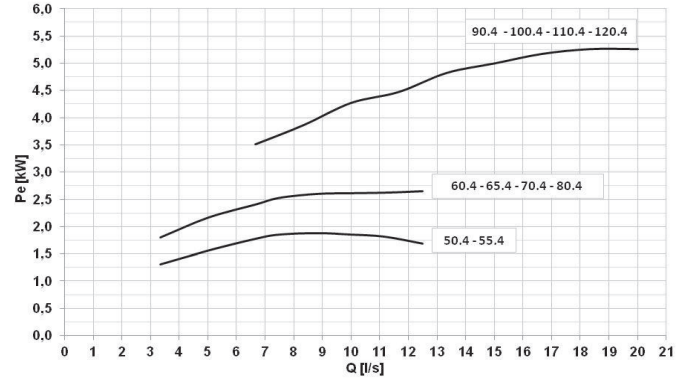
The control balances the operating hours and in case of failure it is signaled and the stand-by pump is automatically activated.

Pressure head ON/OFF pump (Size 50.4 - 120.4)



Q = Water flow-rate [l/s]
DP = Pressure head [kPa]

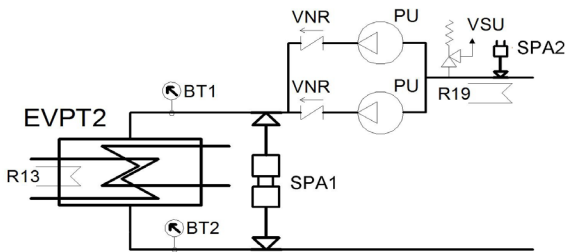
Absorption curves ON/OFF pump (Size 50.4 - 120.4)



Q = Water flow-rate [l/s]
Pe = Electric power consumption [kW]

- ⚠ Caution: to obtain the available pressure values, you need to subtract the following from the head values represented in these diagrams:
- Evaporator pressure drops user side
 - IFWX accessory –Steel mesh filter on the water side (where applicable)

Water diagram



EVPT2 = Plate evaporator 2 circuits
R13 = Evaporator group heater
BT1 = Probes of entering water temperature
BT2 = Probes of leaving water temperature
VNR = Non return valves
SPA1 = Differential water pressure switch
PU = Hydronic assembly 2 ON/OFF pumps
VSU = Water safety valve
R19 = Hydronic assembly heaters
SPA2 = System water pressure switch

Electrical data

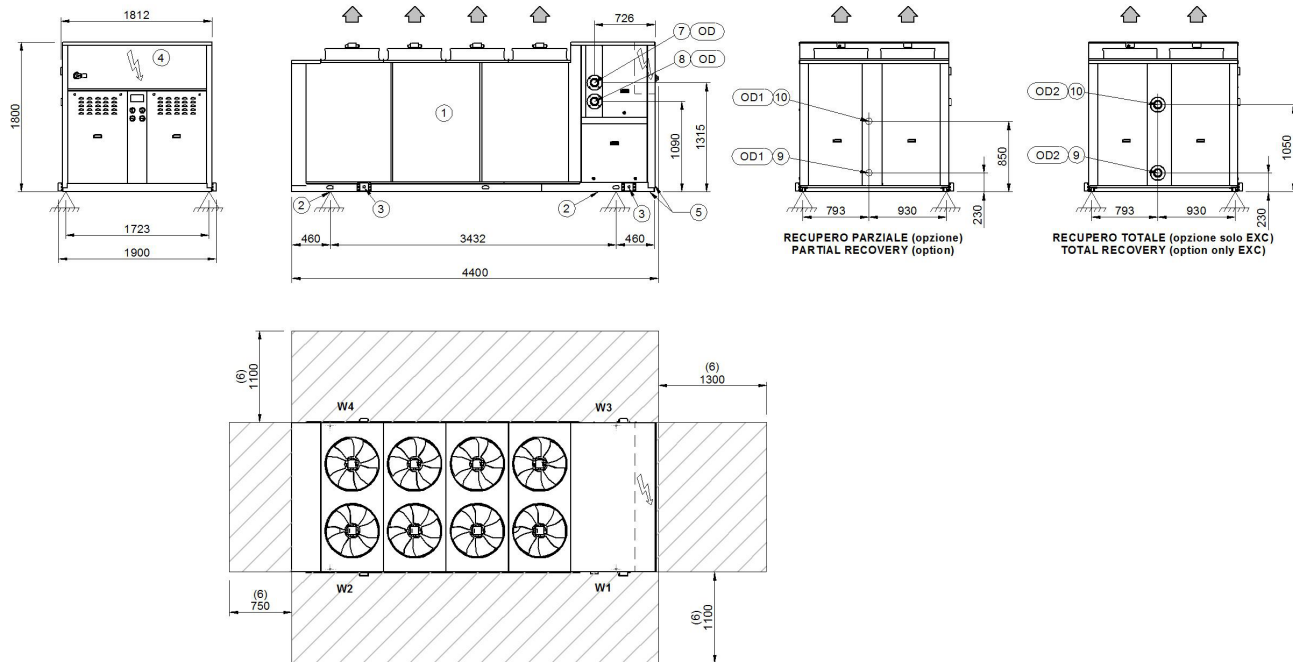
SIZE		50.4	55.4	60.4	65.4	70.4	80.4	90.4	100.4	110.4	120.4
EXCELLENCE											
F.L.A.	A	3,7	3,7	4,5	4,5	4,5	4,5	8,7	8,7	8,7	8,7
F.L.I.	Kw	1,5	1,5	2,2	2,2	2,2	2,2	4,0	4,0	4,0	4,0
PREMIUM											
F.L.A.	A	-	-	-	-	4,5	4,5	8,7	8,7	8,7	8,7
F.L.I.	Kw	-	-	-	-	2,2	2,2	4,0	4,0	4,0	4,0

Electrical data refer to the entire hydronic group.

EXCELLENCE - Compressor soundproofing (SC) / super-silenced (EN)

Size 50.4 - 55.4 - 60.4 - 65.4

DAAL250.4_65.4 EXC_1 REV01
Data/Date 17/05/2016



1. External exchanger
2. Unit fixing holes \varnothing 25mm
3. Lifting brackets (removable)
4. Main electrical panel
5. Power input supply
6. Recommended functional clearances
7. Water inlet user side of no pumps unit / Water outlet user side of unit with pumps (optional)
8. Water outlet user side of no pumps unit / Water inlet user side of unit with pumps (optional)
9. Recovery side exchanger water inlet (optional)
10. Recovery side exchanger water outlet (optional)

SIZE		50.4	55.4	60.4	65.4
OD (internal exchanger)	mm	88,9	88,9	88,9	88,9
OD1 (partial recovery)	mm	48,3	48,3	48,3	48,3
OD2 (total recovery)	mm	88,9	88,9	88,9	88,9
Length	mm	4400	4400	4400	4400
Height	mm	1800	1800	1800	1800
Depth	mm	1812	1812	1812	1812
W1 Supporting point	kg	434	440	457	481
W2 Supporting point	kg	294	300	313	315
W3 Supporting point	kg	439	450	461	500
W4 Supporting point	kg	299	310	317	334
Shipping weight	kg	1445	1480	1524	1605
Operating weight	kg	1466	1500	1548	1630

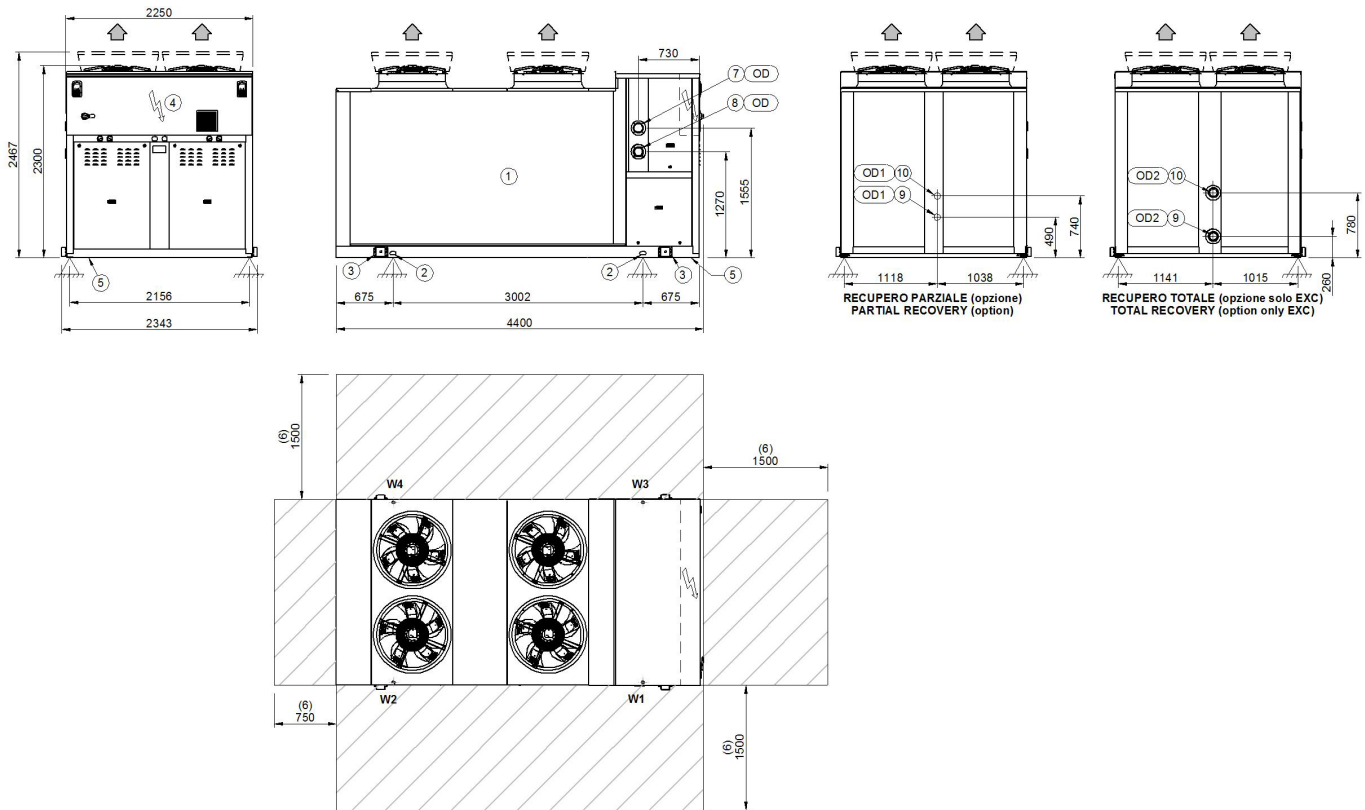
The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional drawings

EXCELLENCE - Compressor soundproofing (SC) / super-silenced (EN)

Size 70.4 - 80.4 - 90.4

DAAL290.4_100.4_110.4_PRM_EXC_3 REV03
Data/Date 16/05/2016



1. External exchanger
2. Unit fixing holes \varnothing 25mm
3. Lifting brackets (removable)
4. Main electrical panel
5. Power input supply
6. Recommended functional clearances
7. Water inlet user side of no pumps unit / Water outlet user side of unit with pumps (optional)
8. Water outlet user side of no pumps unit / Water inlet user side of unit with pumps (optional)
9. Recovery side exchanger water inlet (optional)
10. Recovery side exchanger water outlet (optional)

	SIZE	70.4	80.4	90.4
OD (internal exchanger)	mm	88,9	88,9	88,9
OD1 (partial recovery)	mm	48,3	48,3	48,3
OD2 (total recovery)	mm	88,9	88,9	88,9
Length	mm	4400	4400	4400
Height	mm	2300	2300	2300
Height with AXITOP	mm	2460	2460	2460
Depth	mm	2250	2250	2250
W1 Supporting point	kg	694	721	760
W2 Supporting point	kg	441	454	471
W3 Supporting point	kg	717	748	793
W4 Supporting point	kg	464	481	503
Shipping weight	kg	2280	2361	2475
Operating weight	kg	2317	2403	2527

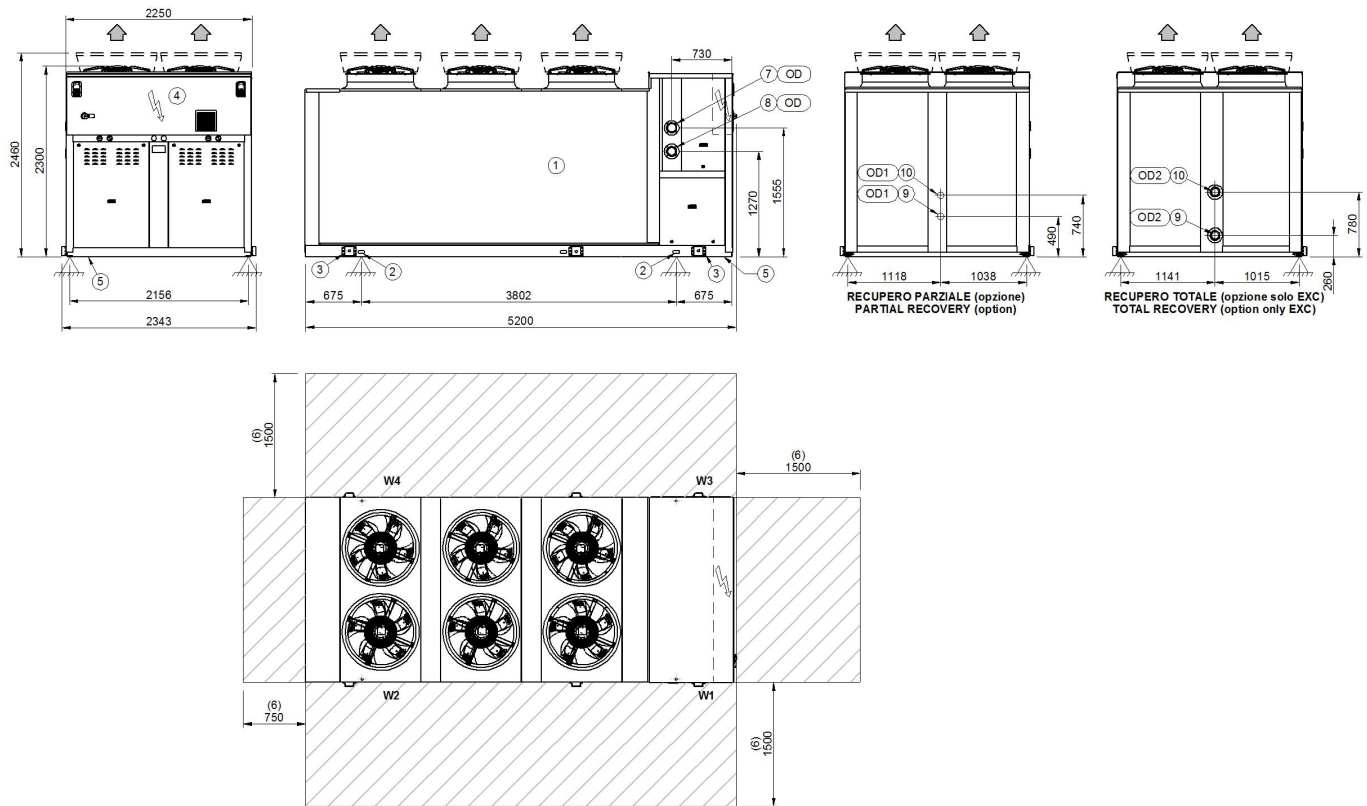
The presence of optional accessories may result in a substantial variation of the weights shown in the table.

EXCELLENCE - Compressor soundproofing (SC) / super-silenced (EN)

Size 100.4 - 110.4 - 120.4

DAAL2120.4_PRM_EXC_3 REV03

Data/Date 16/05/2016



1. External exchanger
2. Unit fixing holes \varnothing 25mm
3. Lifting brackets (removable)
4. Main electrical panel
5. Power input supply
6. Recommended functional clearances
7. Water inlet user side of no pumps unit / Water outlet user side of unit with pumps (optional)
8. Water outlet user side of no pumps unit / Water inlet user side of unit with pumps (optional)
9. Recovery side exchanger water inlet (optional)
10. Recovery side exchanger water outlet (optional)

SIZE		100.4	110.4	120.4
OD (internal exchanger)	mm	114,3	114,3	114,3
OD1 (partial recovery)	mm	60,3	60,3	60,3
OD2 (total recovery)	mm	114,3	114,3	114,3
Length	mm	5200	5200	5200
Height	mm	2300	2300	2300
Height with AXITOP	mm	2460	2460	2460
Depth	mm	2250	2250	2250
W1 Supporting point	kg	883	909	948
W2 Supporting point	kg	557	564	593
W3 Supporting point	kg	905	932	970
W4 Supporting point	kg	579	586	615
Shipping weight	kg	2876	2935	3070
Operating weight	kg	2924	2991	3126

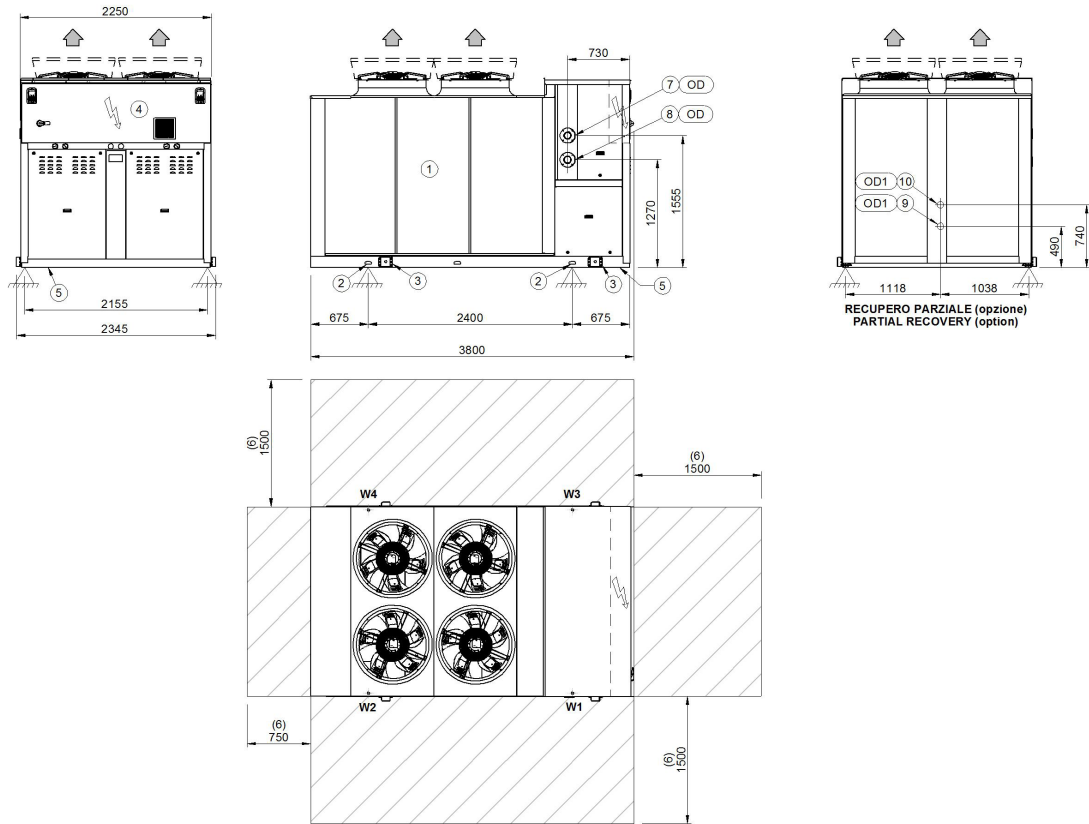
The presence of optional accessories may result in a substantial variation of the weights shown in the table.

Dimensional drawings

PREMIUM - Compressor soundproofing (SC) / super-silenced (EN)

Size 70.4 - 80.4

DAAL270.4_80.4 PRM_1 REV01
Data/Date 22/07/2015



1. External exchanger
2. Unit fixing holes \varnothing 25mm
3. Lifting brackets (removable)
4. Main electrical panel
5. Power input supply
6. Recommended functional clearances
7. Water inlet user side of no pumps unit / Water outlet user side of unit with pumps (optional)
8. Water outlet user side of no pumps unit / Water inlet user side of unit with pumps (optional)
9. Recovery side exchanger water inlet (optional)
10. Recovery side exchanger water outlet (optional)

	SIZE	70.4	80.4
OD (internal exchanger)	mm	88,9	88,9
OD1 (partial recovery)	mm	48,3	48,3
Length	mm	3800	3800
Height	mm	2300	2300
Height with AXITOP	mm	2460	2460
Depth	mm	2250	2250
W1 Supporting point	kg	650	681
W2 Supporting point	kg	392	410
W3 Supporting point	kg	675	712
W4 Supporting point	kg	418	440
Shipping weight	kg	2100	2200
Operating weight	kg	2135	2244

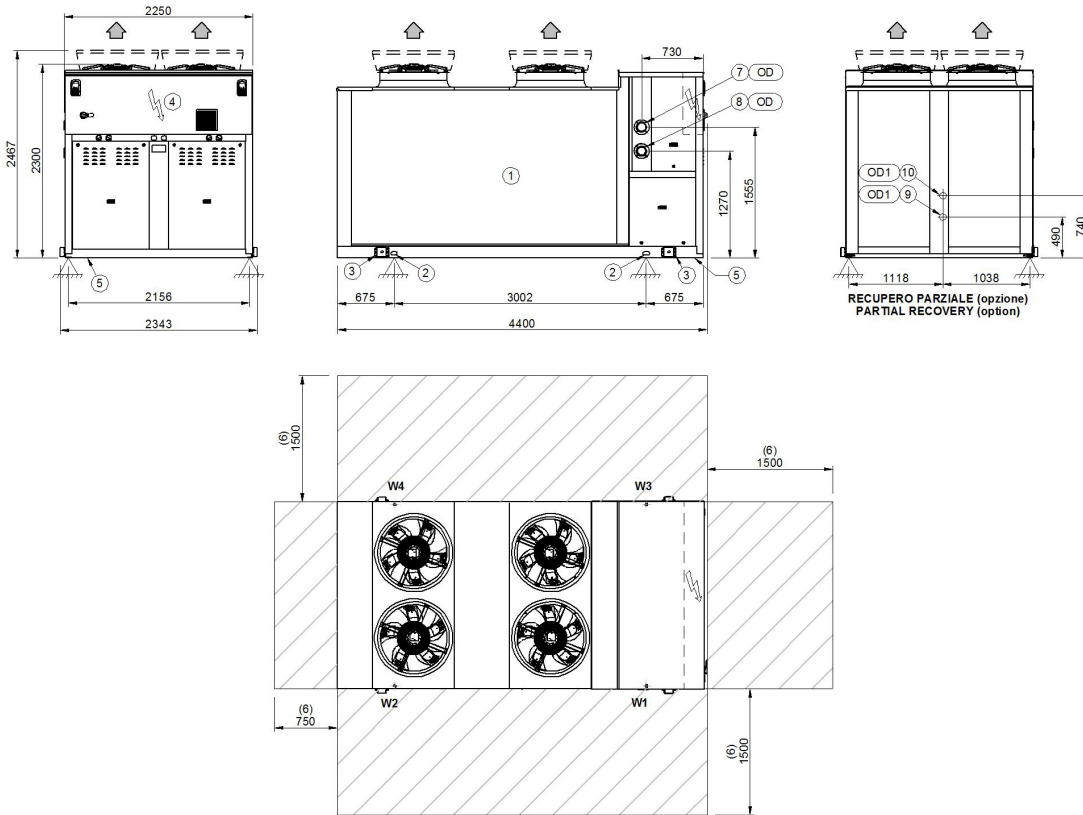
The presence of optional accessories may result in a substantial variation of the weights shown in the table.

PREMIUM - Compressor soundproofing (SC) / super-silenced (EN)

Size 90.4 - 100.4 - 110.4

DAAL290.4_100.4_110.4_PRM_EXC_3 REV03

Data/Date 16/05/2016



1. External exchanger
2. Unit fixing holes \varnothing 25mm
3. Lifting brackets (removable)
4. Main electrical panel
5. Power input supply
6. Recommended functional clearances
7. Water inlet user side of no pumps unit / Water outlet user side of unit with pumps (optional)
8. Water outlet user side of no pumps unit / Water inlet user side of unit with pumps (optional)
9. Recovery side exchanger water inlet (optional)
10. Recovery side exchanger water outlet (optional)

	SIZE	90.4	100.4	110.4
OD (internal exchanger)	mm	88,9	114,3	114,3
OD1 (partial recovery)	mm	48,3	60,3	60,3
Length	mm	4400	4400	4400
Height	mm	2300	2300	2300
Height with AXITOP	mm	2460	2460	2460
Depth	mm	2250	2250	2250
W1 Supporting point	kg	734	810	840
W2 Supporting point	kg	451	473	487
W3 Supporting point	kg	763	832	862
W4 Supporting point	kg	480	495	509
Shipping weight	kg	2380	2560	2650
Operating weight	kg	2328	2610	2698

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

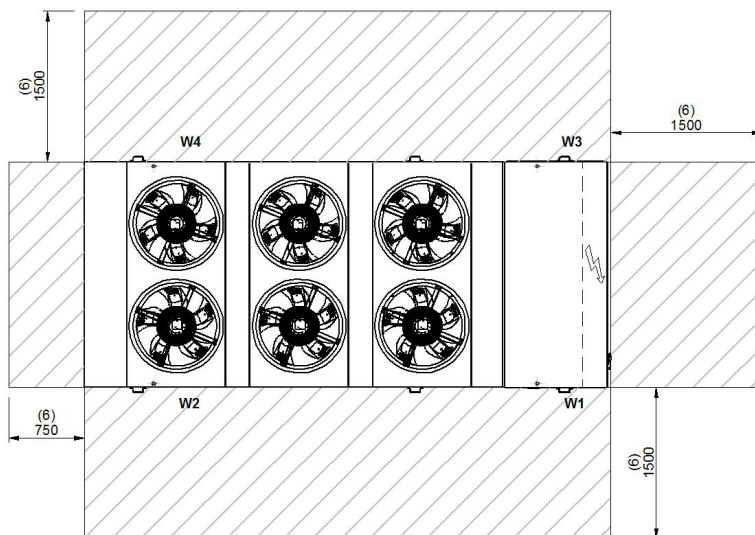
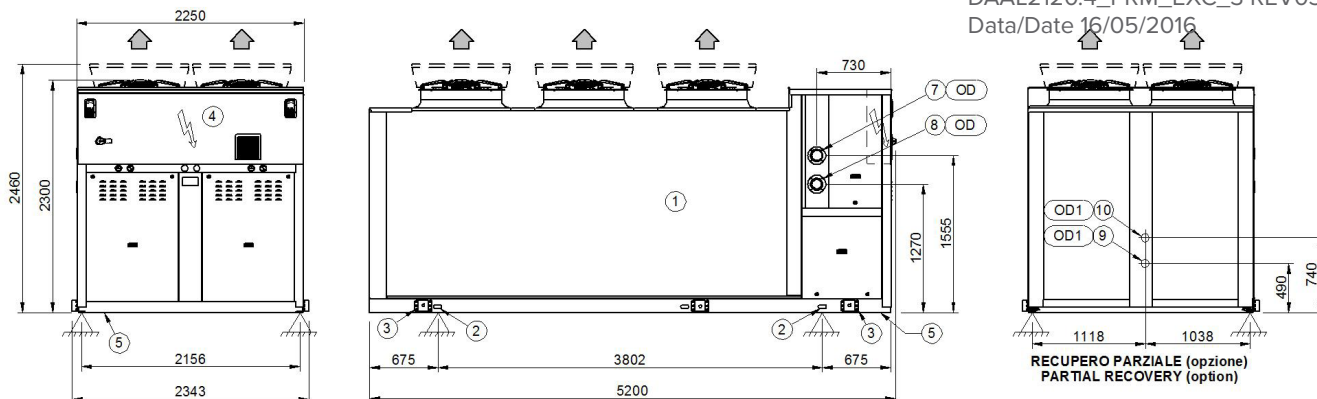
Dimensional drawings

PREMIUM - Compressor soundproofing (SC) / super-silenced (EN)

Size 120.4

DAAL2120.4_PRM_EXC_3 REV03

Data/Date 16/05/2016



1. External exchanger
2. Unit fixing holes \varnothing 25mm
3. Lifting brackets (removable)
4. Main electrical panel
5. Power input supply
6. Recommended functional clearances
7. Water inlet user side of no pumps unit / Water outlet user side of unit with pumps (optional)
8. Water outlet user side of no pumps unit / Water inlet user side of unit with pumps (optional)
9. Recovery side exchanger water inlet (optional)
10. Recovery side exchanger water outlet (optional)

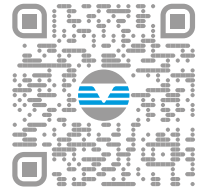
SIZE	120.4	
OD (internal exchanger)	mm	114,3
OD1 (partial recovery)	mm	60,3
Length	mm	5200
Height	mm	2300
Height with AXITOP	mm	2460
Depth	mm	2250
W1 Supporting point	kg	919
W2 Supporting point	kg	564
W3 Supporting point	kg	939
W4 Supporting point	kg	584
Shipping weight	kg	2995
Operating weight	kg	3006

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

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CLIVET S.p.A.

Via Camp Lonc 25, Z.I. Villapaiera
32032 Feltre (BL) - Italy
Tel. +39 0439 3131 - info@clivet.it

CLIVET GMBH

Hummelsbütteler Steindamm 84,
22851 Norderstedt, Germany
Tel. +49 40 325957-0 - info.de@clivet.com

Clivet Group UK LTD

Units F5 & F6 Railway Triangle,
Portsmouth, Hampshire PO6 1TG
Tel. +44 02392 381235 -
Enquiries@Clivetgroup.co.uk

CLIVET LLC

Office 508-511, Elektroavodskaya st. 24,
Moscow, Russian Federation, 107023
Tel. +7495 6462009 - info.ru@clivet.com

CLIVET MIDEAST FZCO

Dubai Silicon Oasis (DSO) Headquarter
Building, Office EG-05, P.O Box-342009,
Dubai, UAE
Tel. +971 (0) 4501 5840- info@clivet.ae

Clivet South East Europe

Jarušćica 9b
10000, Zagreb, Croatia
Tel. +385916065691 - info.see@clivet.com

Clivet Airconditioning Systems Pvt Ltd

Office No.501 & 502,5th Floor, Commercial -I,
Kohinoor City, Old Premier Compound, Off
LBS Marg, Kiroi Road, Kurla West, Mumbai
Maharashtra 400070, India
Tel. +91 22 30930200 - sales.india@clivet.com