PRODUCT SELECTION DATA

AIR-COOLED FIXED-SPEED SCREW CHILLER

- Very economical operation
- Low sound levels
- Simple installation
- Environmentally responsible
- Exceptional reliability

30XB / 30XBP 250-1700

AQUAFORCE

Nominal cooling capacity 267-1682 kW - 50 Hz

The AquaForce™ 30XB and 30XBP liquid chillers are the economic solution for commercial and industrial applications where high reliability and economic operation in all climate conditions are key customer requirements.

The AquaForce™ 30XB and 30XBP liquid chillers are designed to meet current and future regulations for energy efficiency and operating sound levels. They use the latest Carrier technologies:

Carrier 06T twin-rotor fixed-speed screw compressors.

Low noise 6th generation of Carrier Flying Bird™ fans with AC motor (30XB) or EC motor (30XBP).

Carrier flooded shell-and-tube evaporator with new copper tube design for low pressure drops

2nd generation of "V" shape Carrier Novation™ microchannel heat exchangers with optional Enviro-Shield coatings.

Carrier Touch Pilot® control with color touch screen user interface that includes 10 langages and integrated web-server.

AHRI CERTIFIED® www.ahridirectory.org
Air-Cooled Chillers
AHRI Standards 550/590 and 551/591

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

Original document

CUSTOMER BENEFITS

The range is available in 3 efficiency levels.

- 30XB standard unit

  The AquaForce™ 30XB is equipped with fixed-speed screw compressors and fixed-speed fans with AC motors. The 30XB offers an economical solution whilst providing high full load efficiency for process applications and operation in high ambients.

  (Average SEPR of 5.2, average SEER of 4.2, average EER of 3.1)

- 30XB with variable-speed AC fan motors (Option 17)

  The 30XB with variable-speed AC fan motors offers an economical solution to enhance seasonal energy efficiency levels for comfort applications. (Average SEPR of 5.5, average SEER of 4.3, average EER of 3.1)

- 30XBP premium unit

  The 30XBP premium unit is equipped with EC fans and additional heat exchange surface to improve both the full load and part load energy efficiency. The 30XBP provides very cost effective operation in both process and comfort applications through the use of state of the art EC fan technology. (Average SEPR of 5.9, average SEER of 4.4, average EER of 3.2)

Very economical operation

Exceptionally high full load and part load energy efficiency:

- 30XB version with Eurovent energy efficiency class A, B, and SEER 12/7°C up to 4.4 with option 17 in accordance with EN14825.
- 30XBP version with Eurovent energy efficiency class A, and SEER 12/7°C up to 4.6 in accordance with EN14825.
- Twin-rotor screw compressor equipped with a high-efficiency motor and a variable capacity valve that permits exact matching of the cooling capacity to the load.
- Novation™ aluminium condenser with high-efficiency micro-channels.
- Flooded shell-and-tube evaporator with new generation of cooler tubes to reduce exchanger pressure drops, especially in applications with high percentage of glycol.
- Electronic expansion device permitting operation at a lower condensing pressure and improved utilisation of the evaporator heat exchange surface (superheat control).
- Economiser system with electronic expansion device for increased cooling capacity.

Low operating sound levels

- Compressors
  - Discharge dampers integrated in the oil separator (Carrier patent).
  - Silencer on the economiser return line.
  - Compressor and oil separator acoustic enclosure, reducing radiated noise (option).
- Condenser section
  - Condenser coils in wide angle V configuration, allowing quieter air flow across the coil
  - Low-noise 6th generation Flying Bird fans, made of a composidte material (Carrier patent), are now even quieter and do not generate intrusive low-frequency noise
  - Inverter driven EC fans on 30XBP version eliminate start stop noise during part load operation.
  - Rigid fan mounting preventing start-up noise (Carrier patent).

CUSTOMER BENEFITS

Simple installation

- Integrated hydraulic module (option)
  - Centrifugal low or high-pressure water pump (as required), based on the pressure loss of the hydraulic installation
  - Single or dual pump (as required) with run time balancing and automatic changeover to the back-up pump if a fault develops
  - Water filter to protect pump against circulating debris
  - High-capacity membrane expansion tank ensures pressurisation of the water circuit
  - Thermal insulation and aluminium cladding (option)
  - Pressure sensor to check filter condition and for direct numerical display of the water flow rate with an estimate of the instantaneous cooling capacity at the control interface
  - Water flow control valve.
- Simplified electrical connections
  - Main disconnect switch with high trip capacity
  - Transformer to supply the integrated control circuit (400/24 V).
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the controls, expansion devices, fans and compressors.

Environmental responsibility

- R-134a refrigerant
  - Range designed for use with R-134a refrigerant with the possibility to upgrade to ultra-low global warming potential R-1234ze refrigerant on site in the future.
  - 40% reduction in the refrigerant charge through the use of micro-channel heat exchangers
- Leak-tight refrigerant circuit
  - Reduction of leaks as no capillary tubes and flare connections are used
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
  - Liquid line service valve for simplified maintenance (option).

Exceptional reliability

- Screw compressors
  - Industrial-type screw compressors with oversized bearings and motor cooled by suction gas.
  - All compressor components are easily accessible on site minimising down-time.
  - Dedicated electronic compressor protection module.
- Air condenser

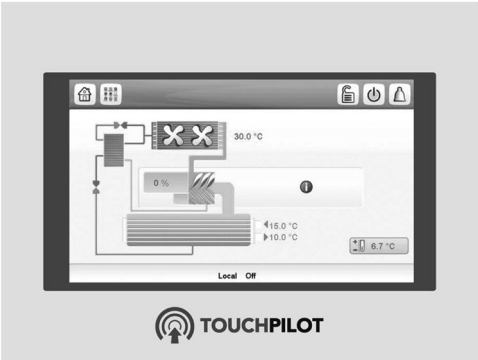
  2nd generation of "V" shape Carrier Novation™ aluminium microchannel heat exchangers (MCHE) with high corrosion resistance. The all aluminium design eliminates the formation of galvanic currents between aluminium and copper that cause coil corrosion in saline or corrosive environments.
- Evaporator

  Thermal insulation with aluminium sheet finish (option) for improved resistance to mechanical and UV damage.
- Auto-adaptive control
  - Control algorithm prevents excessive compressor cycling (Carrier patent)
  - Automatic compressor unloading in case of abnormally high condensing pressure. If condenser coil fouling or fan failure occurs, the Aquaforce continues to operate, but at reduced capacity
- Exceptional endurance tests
  - Partnerships with specialised laboratories and use of sophisticated finite element stress analysis for the design of critical components.
  - Transport simulation test in the laboratory on a vibrating table. The test is based on a military standard and equivalent to 4000 km by truck.
  - Salt mist corrosion resistance test in the laboratory for increased corrosion resistance.

TECHNICAL INSIGHTS

Touch Pilot Control

Touch Pilot, user interface



- New innovative smart control features:
  - An intuitive and user-friendly, coloured, 5'' interface (7» optional)
  - Direct access to the unit's technical drawings and the main service documents
  - Screen-shots with concise and clear information in local languages
  - Complete menu, customised for different users (end user, service personnel and Carrier-factory technicians)
  - Easy access to the control panel with inclined touch screen mounting to ensure legibility under any lighting conditions
  - Safe operation and unit setting: password protection ensures that unauthorised people cannot modify any advanced parameters
  - Simple and «smart» intelligence uses data collection from the constant monitoring of all machine parameters to optimise unit operation.
- Energy management:
  - Internal time schedule clock controls chiller on/off times and operation at a second set-point
  - The DCT (Data Collection Tool) records the alarms history to simplify and facilitate service operations.

Remote Management (Standard)

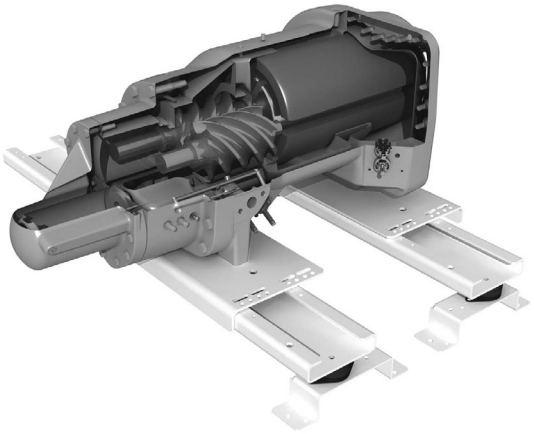
- Units with Touch Pilot control can be easily accessed from the internet, using a PC with an Ethernet connection. This makes remote control quick and easy and offers significant advantages for service operations.
- Aquaforce is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. When networked with other Carrier equipment through the CCN (Carrier Comfort Network - proprietary protocol), , and in conjunction with one of Carrier's network products (Chiller System Manager or Plant system Manager) it forms part of a fully integrated and balanced HVAC system (optional).
- Aquaforce also communicates with other building management systems via optional communication gateways.
- The following commands/visualisations are possible from remote connection:
  - Start/stop of the machine
  - Dual set-point management: through a dedicated contact is possible to activate a second set-point (for example, during unoccupied mode).
  - Demand limit setting: to limit the maximum chiller capacity to a predefined value
  - Water pump control: these outputs control the contactors of one/two evaporator water pums
  - Automatic changeover of pumps in the event of a fault (only with options 116C/116G).
  - Operation visualisation: indication if the unit is operating or in stand-by (no cooling load), (no cooling load) - alarm visualisation.

Remote Management (EMM option)

- The Energy Management Module (EMM) offers extended remote control possibilities:
  - Room temperature: Permits set-point reset based on the building indoor air temperature (if Carrier thermostat are installed)
  - Set-point reset: Allows reset of the cooling set-point based on a 4-20 mA or 0-10 V signal
  - Demand limit: Permits limitation of the maximum chiller capacity based on 0-10 V signal
  - Demand limit 1 and 2: Closing of these contacts limits the maximum chiller capacity to two predefined values
  - User safety: This contact can be used for any customer safety loop; opening the contact generates a specific alarm
  - Ice storage end: When ice storage has finished, this input permits return to the second set-point (unoccupied mode)
  - Time schedule override: closing this contact cancels the programmed time schedule.
  - Out of service: This signal indicates that the chiller is completely out of service
  - Chiller capacity: This analogue output (0-10 V) gives an immediate indication of the chiller capacity
  - Alert indication: This volt-free contact indicates the necessity to carry out a maintenance operation or the presence of a minor fault
  - Compressors running status: Set of outputs (one for each compressor) indicating which compressors are running.

TECHNICAL INSIGHTS

06T Screw Compressor



99.7%* of units without a compressor failure

* Quality rate measured over a period of 15 years operation

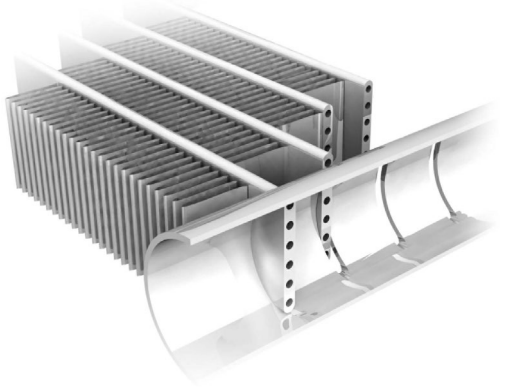
The Carrier 06T screw compressor benefits from Carrier's long experience in the development of twin-rotor screw compressors. The compressor is equipped with bearings with oversized rollers, oil pressure lubricated for reliable and durable operation, even at maximum load.

A variable control valve controlled by the oil pressure permits infinitely variable cooling capacity. This system allows optimal adjustment of the compressor cooling capacity and ensures exceptionally high stability of the chilled water leaving temperature.

Among the other advantages: if a fault occurs e.g. if the condenser is fouled or at very high outside temperature, the compressor does not switch off, but continues operation with a reduced capacity (unloaded mode).

The compressor is equipped with a separate oil separator that minimises the amount of oil in circulation in the refrigerant circuit and, with its integrated silencer, considerably reduces discharge gas pulsations for much quieter operation.

Novation® Heat Exchangers with Micro-Channel coil Technology



Already utilised in the automobile and aeronautical industries for many years, the Novation™ MCHE micro-channel heat exchanger used in the Aquaforce is entirely made of aluminium. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminium) come into contact in traditional heat exchangers. Unlike traditional heat exchangers the Novation™ MCHE heat exchanger can be used in moderate marine and urban environments (Carrier recommendation).

From an energy efficiency point-of-view the Novation™ MCHE heat exchanger is approximately 10% more efficient than a traditional coil and allows a 40% reduction in the amount of refrigerant used in the chiller. The low thickness of the Novation™ MCHE reduces air pressure losses by 50% and makes it susceptible to very little fouling (e.g. by sand). Cleaning of the Novation™ MCHE heat exchanger is very fast using a high-pressure washer.

Carrier Novation® MCHE with Super Enviro-shield® coating, the ideal customer choice

To further enhance long-term performance, and to protect coils from early deterioration, Carrier offers (as options) dedicated treatments for installations in corrosive environments.

The Novation™ MCHE with Enviro-Shield protection (option 262) are recommended for installations in moderately corrosive environments. The Enviro-Shield protection utilises corrosion inhibitors which actively arrest oxidation in case of mechanical damage.

The Novation™ MCHE with the exclusive Super Enviro-Shield protection (option 263) are recommended for installations in corrosive environments. The Super Enviro-Shield protection consist in an extremely durable and flexible epoxy coating uniformly applied over all coil surfaces for complete isolation from the contaminated environment.

TECHNICAL INSIGHTS

Novation® Heat Exchangers with Micro-Channel coil Technology

After a total of more than 7,000 hours of testing following various test standards in UTC laboratories, the Carrier Novation® MCHE with Super Enviro-shield® coating appears to be the ideal customer choice to minimize the harmful effects of corrosive atmospheres and ensure long equipment life.

- Best corrosion resistance per ASTM B117/D610 test
- Best heat transfer performance per Carrier Marine 1 test
- Proven reliability per ASTM B117 test

Coil Types (ranked by performance)	Visual Corrosion Evaluation	Heat Transfer Performance Degradation	Time to Failure	Test Campaign Conclusions
Super Enviro-shield® Novation™ MCHE	Very good	Very good	No coil leak	Best
Super Enviro-shield® Cu/Al coil	Very good	Good	No coil leak	Very good
Enviro-shield® Novation™ MCHE	Very good	Good	No coil leak	Very good
Al/Al coil	Very good	Good	No coil leak	Very good
Novation™ MCHE	Good	Good	No coil leak	Good
Cu/Cu coil	Good	Good	Leak	Acceptable
Blygold® Cu/Al coil	Good	Good	No coil leak	Acceptable
Precoat Cu/Al coil	Bad	Bad	No coil leak	Bad
Cu/Al coil	Bad	Bad	No coil leak	Bad

New Generation of Flying Bird VI fans with EC motor

The 30XB and 30XBP utilize Carrier's 6th generation Flying Bird™ fan technology, engineered for maximum efficiency, super low noise, and wide operating range. The fan includes Carrier patented rotating shroud technology and back-swept blades with a unique wave-serration trailing edge inspired from nature.

It was designed and optimized for the 30XB air management system configuration and heat exchanger technology and is offered with induction and EC motor options. The fan meets the latest European eco-design requirements for fan efficiency. The fan uses Carrier's robust and proven injection molded composite-thermoplastic construction.

OPTIONS

Options	No.	Description	Advantages	Use for 30XB / 30XBP
Coil with anti-corrosion post treatment	2B	Factory application of Blygold Polual treatment on the copper/aluminum coils	Improved corrosion resistance, recommended for industrial, rural and marine environments	30XB/30XBP 250-1700
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminum (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	30XB/30XBP 250-1700
Medium-temperature brine solution	5	Implementation of new control algorithms and redesigned evaporator to allow chilled brine solution production down to -12°C when ethylene glycol is used (-8°C with propylene glycol)	Covers specific applications such as ice storage and industrial processes	30XB/30XBP 250-1700
Low-temperature brine solution	6	Implementation of new control algorithms and redesigned evaporator to allow chilled brine solution production down to -15°C when ethylene glycol is used (-10°C with propylene glycol)	Covers specific applications such as ice storage and industrial processes	30XB/30XBP 250-1700
Light-brine solution, down to -3°C	8	Implementation of new control algorithms to allow chilled brine solution production down to -6°C when ethylene glycol is used (-3°C with propylene glycol)	Matches with most application requirements for ground-sourced heat pumps and fits with many industrial processes requirements	30XB/30XBP 250-1700
Unit equipped for air discharge ducting	10	Fans equipped with discharge connection flanges - maximum available pressure 60 Pa	Facilitates connections to the discharge ducts	30XB/30XBP 250-1700
Low noise level	15	Aesthetic and sound absorbing compressor enclosure	Noise level reduction	30XB/30XBP 250-1700
Very low noise level	15LS	Aesthetic and sound absorbing compressor enclosure associated with low-speed fans	Noise level reduction in sensitive environments	30XB/30XBP 250-1700
Ultra low noise level	15LS+	Acoustic compressor enclosure, low-speed fans and enhanced sound insulation of main noise sources	Noise level reduction in sensitive environments	30XB/30XBP 250-1700
Variable speed fans	17	Unit equipped with variable speed fans	Enhances the unit seasonal energy efficiency performance and reduces the noise emission thanks to a smooth fan speed variation.	30XB 250-1700
IP54 control box	20A	Increased leak tightness of the unit	Protects the inside of the electrical box from dust, water and sand. In general this option is recommended for installations in polluted environments	30XB/30XBP 250-1700
Tropicalisation of the electrical box	22	Electrical box equipped with an electrical heater and a fan. Electrical connections on the compressors painted with a special varnish and covered with an anti-condensation foam.	Allows safe operation in typical "tropical" climate. This option is recommended for all applications where humidy inside the electrical box can reach 80% at 40°C and unit can remain in stand-by for a long time under these conditions.	30XB/30XBP 250-1700
Grilles and enclosure panels	23	Metal grilles on the 4 unit sides, plus side enclosure panels at each end of each coil	Improves aesthetics, protection against intrusion to the unit interior, coil and piping protection against impacts.	30XB/30XBP 250-1700
Enclosure panels	23A	Side enclosure panels at each end of each coil	Improves aesthetics, coil and piping protection against impacts.	30XB/30XBP 250-1700
Low inrush current	25C	Specific compressor loading and unloading sequence to limit the unit start-up current	Reduced start-up current	30XB/30XBP 250-1700
Winter operation down to -20°C	28	Fan speed control via frequency converter	Stable unit operation for air temperature down to -20°C	30XB 250-1700
Water exchanger frost protection	41A	Electric resistance heater on the water exchanger and discharge valve	Water exchanger frost protection down to -20°C outside temperature	30XB/30XBP 250-1700
Evaporator & hydraulic module frost protection	41B	Electric resistance heater on water exchanger, discharge valve and hydraulic module	Water exchanger and hydraulic module frost protection down to -20°C outside temperature	30XB/30XBP 250-500
Total heat recovery	50	Unit equipped with additional heat exchanger in parallel with the condenser coils.	Production of free hot-water simultaneously with chilled water production	30XB/30XBP 250-1000
Master/slave operation	58	Unit equipped with supplementary water outlet temperature sensor kit (to be field installed) allowing master/slave operation of two units connected in parallel	Optimised operation of two units connected in parrallele operation with operating time equalisation	30XB/30XBP 250-1700
Single power connection point	81	Unit power connection via one main supply connection	Quick and easy installation	30XB/30XBP 1100-1550

OPTIONS

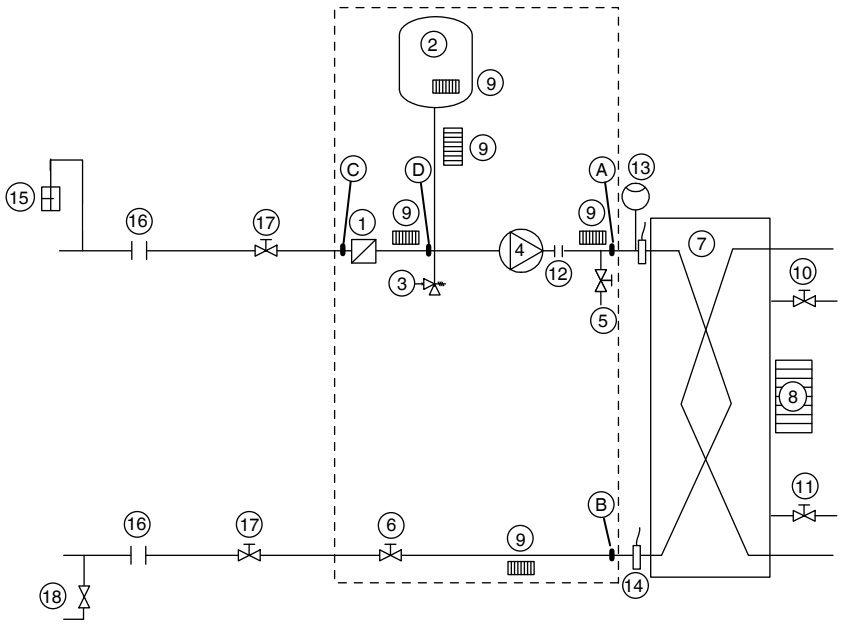
Options	No.	Description	Advantages	Use for 30XB / 30XBP
Service valve set	92	Liquid line valve (evaporator inlet), compressor suction and discharge line valves and economiser line valve	Allow isolation of various refrigerant circuit components for simplified service and maintenance	30XB/30XBP 250-1700
Compressor discharge valves	93A	Shut-off valve on the compressor discharge piping	Simplified maintenance	30XB/30XBP 250-1700
Evaporator with one pass more	100A	Evaporator with one pass more on the water side	Optimise chiller operation when the chilled water circuit is designed with low waterflows (high evaporator delta T)	30XB/30XBP 250-1700
Evaporator with one pass less	100C	Evaporator with one pass less on the water side. Evaporator inlet and outlet on opposite sides.	Easy to install, depending on site. Reduced pressure drops	30XB/30XBP 250-1000
21 bar evaporator	104	Reinforced evaporator for extension of the maximum water-side service pressure to 21 bar (standard 10 bar)	Covers applications with a high water column evaporator side (typically high-rise buildings)	30XB/30XBP 250-1700
Reversed evaporator water connections	107	Evaporator with reversed water inlet/outlet	Easy installation on sites with specific requirements	30XB/30XBP 250-1700
HP single-pump hydraulic module	116B	Complete hydraulic module equipped with water filter, expansion tank with relief valve, one high pressure pump, drain valve and water flow control valve. For more details, refer to the dedicated chapter	Easy and fast installation (plug & play). Increased system reliability	30XB/30XBP 250-500
HP dual-pump hydraulic module	116C	Complete hydraulic module equipped with water filter, expansion tank with relief valve, two high pressure pumps, drain valve and water flow control valve. For more details, refer to the dedicated chapter	Easy and fast installation (plug & play). Increased system reliability	30XB/30XBP 250-500
LP single-pump hydraulic module	116F	Complete hydraulic module equipped with water filter, expansion tank with relief valve, one low pressure pump, drain valve and water flow control valve. For more details, refer to the dedicated chapter	Easy and fast installation (plug & play). Increased system reliability	30XB/30XBP 250-500
LP dual-pump hydraulic module	116G	Complete hydraulic module equipped with water filter, expansion tank with relief valve, two low pressure pumps, drain valve and water flow control valve. For more details, refer to the dedicated chapter	Easy and fast installation (plug & play). Increased system reliability	30XB/30XBP 250-500
Dx Free Cooling system on two circuits	118A	Patented Carrier free-cooling system with cooling micro-pump on both refrigerant circuits. Operation without glycol, no extra free-cooling coil. See Dx Free-cooling option chapter	Energy savings for applications with cooling demand throughout the entire year	30XB/30XBP 250-1000
High Energy Efficiency	119	Additional condenser coil to improve unit energy efficiency	Enhances the unit energy efficiency performance	30XB 1000-1100
J-Bus gateway	148B	Bi-directional communication board complying with JBus protocol	Connects the unit by communication bus to a building management system	30XB/30XBP 250-1700
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	30XB/30XBP 250-1700
Bacnet over IP	149	Bi-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	30XB/30XBP 250-1700
Energy Management Module	156	EMM Control board with additional inputs/ outputs. See Energy Management Module option chapter	Extended remote control capabilities (Set-point reset, ice storage end, demand limits, boiler on/off command...)	30XB/30XBP 250-1700
7" user interface	158A	Control supplied with a 7 inch colour touch screen user interface	Enhanced ease of use.	30XB/30XBP 250-1700
Input contact for Refrigerant leack detection	159	0-10 V signal to report any refrigerant leakage in the unit directly on the controlller (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	30XB/30XBP 250-1700
Dual relief valves on 3-way valve	194	Three-way valve upstream of dual relief valves on the evaporator and the oil separator	Valve replacement and inspection facilitated without refrigerant loss. Comforms to European standard EN378/BGVD4	30XB/30XBP 250-1000
Compliance with Swiss regulations	197	Additional tests on the water heat exchangers: supply (additional of PED documents) supplementary certificates and test certifications	Conformance with Swiss regulations	30XB/30XBP 250-1700

OPTIONS

Options	No.	Description	Advantages	Use for 30XB / 30XBP
Compliance with Russian regulations	199	EAC certification	Conformance with Russian regulations	30XB/30XBP 250-1700
Compliance with Australian regulations	200	Unit approved to Australian code	Conformance with Australian regulations	30XB/30XBP 250-1700
Power factor correction	231	Capacitors for automatic regulation of power factor (cos phi) value to 0,95.	Reduction of the apparent electrical power, compliance with minimum power factor limit set by utilities	30XB/30XBP 250-1000
Traditional coils (Cu/Al)	254	Coils made of copper tubes with aluminum fins	None	30XB 250-1700 (not available for size 1500)
Traditional coils (Cu/Al) without slots	255	Coils made of copper tubes with aluminum fins without slots	None	30XB 250-1700 (not available for size 1500)
Insulation of the evap. in/out ref.lines	256	Thermal insulation of the evaporator entering/leaving refrigerant lines with flexible, UV resistant insulation	Prevents condensation on the evaporator entering/leaving refrigerant lines	30XB/30XBP 250-1700
Enviro-Shield anti-corrosion protection	262	Coating by conversion process which modifies the surface of the aluminum producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested 4000 hours salt spray per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	30XB/30XBP 250-1700
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied on micro channel heat exchangers by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested 6000 hours constant neutral salt spray per ASTM B117, superior impact resistance per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	30XB/30XBP 250-1700
Welded evaporator connection kit	266	Victaulic pipe adapters for welded joints	Easy installation	30XB/30XBP 250-1700
Compressor enclosure	279a	Compressor enclosure	Improved aesthetic, compressor protection against external elements (dust, sand, water…)	30XB/30XBP 250-1700
Evaporator with aluminum jacket	281	Evaporator covered with an aluminum sheet for thermal insulation protection	Improved resistance to aggressive climate conditions	30XB/30XBP 250-1700
230V electrical plug	284	230V AC power supply source provided with plug socket and transformer (180 VA, 0,8 Amps)	Permits connection of a laptop or an electrical device during unit commissioning or servicing	30XB/30XBP 250-1700
US screw compressor	297	Screw compressor made in US		30XB/XBP 1100-1500
Carrier Connect link (only European distribution companies)	298	3G router board NOTE 1: require option 149 NOTE 2: when more than one machine is installed on site, only one of them shall be equipped with option 298 while all of them must be equipped with option 149 NOTE 3: if the Carrier® PlantCTRL™ is on site, option 298 shall be integrated in the Carrier® PlantCTRL™ while option 149 is still mandatory for each single unit.	Enabler for Carrier Connect service offer	30XB/30XBP 250-1700
Variable Water Flow control	299	Hydraulic control function package that permits control of the water flow rate based on different possible logics (at customer choice): constant ΔT, constant outlet pressure and “fixed-speed” control	When variable-speed pumps on the primary circuit, the VWF control modulates flow rate through the evaporator, minimising pump consumption while ensuring safe/optimised chiller operation	30XB/XBP 250-1700
Free-cooling dry-cooler control	313	Remote control of 09PE or 09VE dry-cooler based on a 0-10V signal.	Easy system management, extended control capabilities of a remote dry-cooler used in free-cooling mode	30XB/XBP 250-1700
Compliance with UAE regulation	318	Additional label on the unit with rated power input, rated current and EER following AHRI 550/590	Compliance with ESMA standard UAE 5010-5 :2014.	30XB/30XBP 250-1700
Compliance with Qatar regulation	319	Specific nameplate on the unit with power supply 415 V+/-6%	Compliance with KAHRAMAA regulation in Qatar.	30XB/30XBP 250-1700

HYDRAULIC MODULE (OPTIONS 116B, C, F, G)

Typical water circuit diagram



Legend

Components of unit and hydraulic module

A Pressure sensor (A-B = Δp evaporator)
B Pressure sensor
C Pressure sensor (C-D = Δp water filter)
D Pressure sensor
1 Victaulic screen filter
2 Expansion tank
3 Relief valve
4 Water pump
5 Drain valve
6 Water flow control valve
7 Evaporator
8 Evaporator defrost heater (option)
9 Hydraulic module defrost heater
10 Air vent (evaporator)
11 Water purge (evaporator)
12 Expansion compensator (flexible connections)
13 Flow switch
14 Water temperature sensor

System components (field-supplied)

15 Air vent
16 Flexible connection
17 Shut-down valves
18 Charge valve
---- Hydraulic module (option)

ELECTRICAL DATA (OPTIONS 116B, C, F, G)

The pumps that are factory-installed in these units comply with the European Ecodesign directive ErP. The additional electrical data required by regulation 640/2009 is given in the installation, operation and maintenance manual.

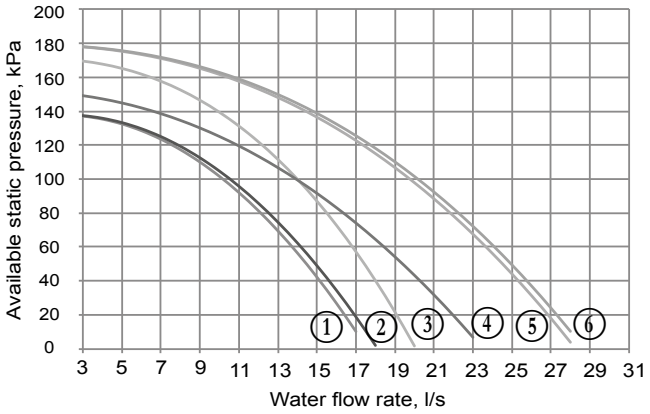
This regulation concerns the application of directive 2009/125/EC on the eco-design requirements for electric motors.

PUMP CURVE (OPTIONS 116B, C, F, G)

Conditions and limits of use:

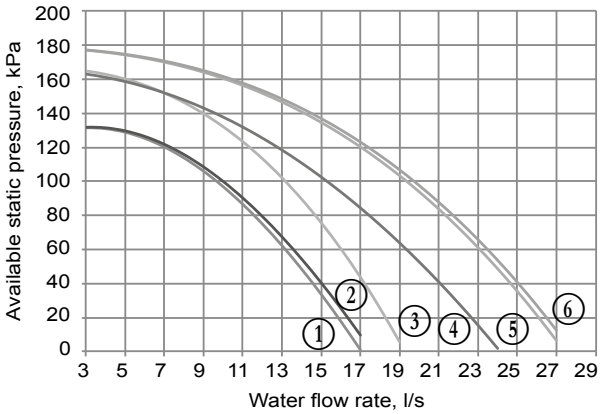
- Fresh water 20°C
- In case of use of the glycol, the maximum water flow is reduced.
- When the glycol is used, it's limited to 40%.

Single pump low pressure



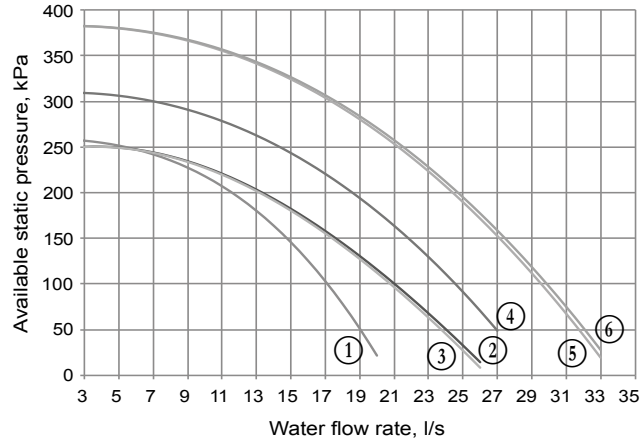
1 30XB/XBP 250
2 30XB/XBP 300
3 30XB/XBP 350
4 30XB/XBP 400
5 30XB/XBP 450
6 30XB/XBP 500

Dual pump low pressure



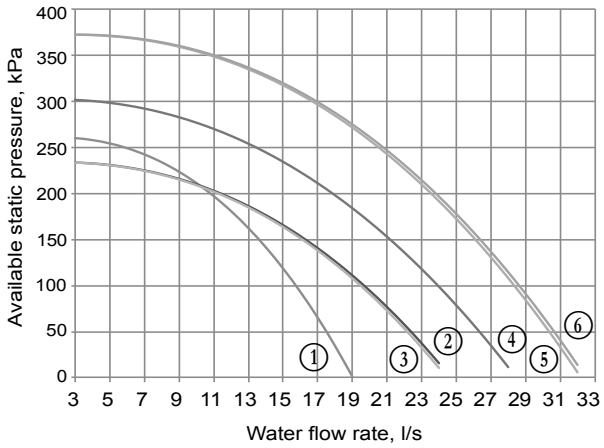
1 30XB/XBP 250
2 30XB/XBP 300
3 30XB/XBP 350
4 30XB/XBP 400
5 30XB/XBP 450
6 30XB/XBP 500

Single pump high pressure



1 30XB/XBP 250
2 30XB/XBP 300
3 30XB/XBP 350
4 30XB/XBP 400
5 30XB/XBP 450
6 30XB/XBP 500

Dual pump high pressure



1 30XB/XBP 250
2 30XB/XBP 300
3 30XB/XBP 350
4 30XB/XBP 400
5 30XB/XBP 450
6 30XB/XBP 500

TOTAL HEAT RECLAIM (OPTION 50)

Suitable for heating, domestic hot water production, agriculture and food industry, industrial processes and other hot-water requirements.

With the total heat reclaim option it is possible to reduce the energy consumption bill considerably, when compared to conventional heating equipment such as fossil fuel boilers or electric water tanks.

Operating principle

If hot water production is required, the compressor discharge gases are directed towards the heat reclaim condenser. The refrigerant releases its heat to the hot water that leaves the condenser at a temperature of up to 60°C. In this way 100% of the heat rejected by the liquid chiller can be used to produce hot water. When the demand for heat is satisfied, the hot gas is again directed towards the air condenser where the heat is rejected to the outside air by the fans. Hot water temperature control is ensured by the chiller Touch Pilot control that independently controls the reclaim operation of each refrigerant circuit.

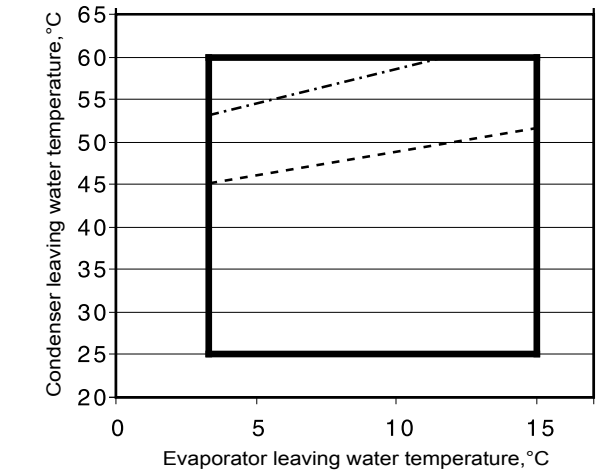
NOTE: Heat reclaim is only possible, possible if the unit is producing cooling at the same time.

Condenser water temperature (°C)	Minimum	Maximum
Entering temperature at start-up	12.5*	55
Entering temperature during operation	20	55
Leaving temperature during operation	25	60
Evaporator water temperature (°C)	**Minimum**	**Maximum**
Entering temperature at start-up	-	45
Entering temperature during operation	6.8	21

* The entering water temperature at start-up must not fall below 12.5°C. For installations with a lower temperature a three-way valve must be used.

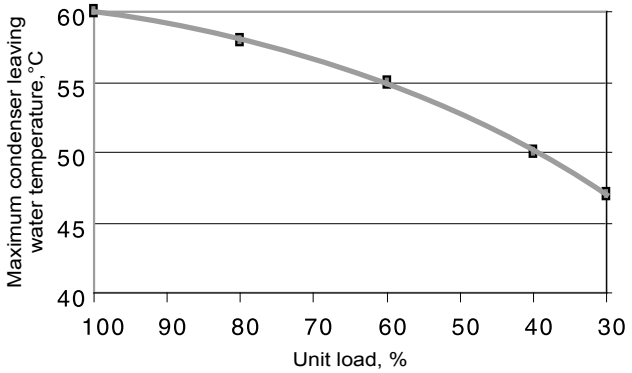
Note: If the evaporator leaving water temperature is below 4°C, a glycol-water solution or the frost protection option must be used.

In part-load operation, the limitation of the condenser leaving water temperature is due to the operating range of the screw compressor. If the condenser leaving water temperature is above the limit value given in the curves below, the unit will automatically change over to air-cooled operating mode:



Full load
Part load limit, approx. 60%
Minimum load limit, approx. 30%

Part load operating limits (evaporator leaving water temperature = 7°C)



DX FREE COOLING SYSTEM (OPTION 118A)

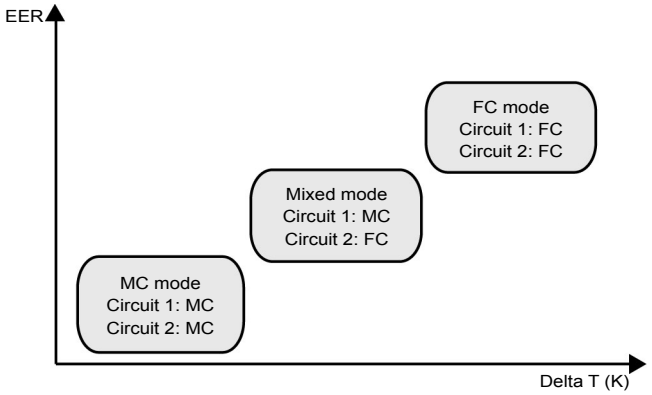
The DX free cooling option permits significant energy savings for all applications that require cooling in winter. In the free cooling mode the compressors are stopped and only the fan and refrigerant micro-pump are running. The changeover from compressor cooling mode to free cooling mode is automatically controlled by the Touch Pilot control, based on the chiller cooling load and the temperature difference between chilled water and ambient air.

IMPORTANT: ***In order to optimise chiller performance, it is recommended to use the leaving water set point reset function.***

Operating principle

When the chilled water to air temperature difference exceeds a threshold value, the Touch Pilot control carries out a comparison between the instantaneous chiller cooling capacity and the available free cooling capacity. If the operating conditions allow free cooling operation, the compressors are stopped, a set of valves on the suction piping connects the evaporator with the condenser, allowing the migration of the refrigerant gas to the condenser. The refrigerant condenses in the condenser coils, and the refrigerant micro-pump transfers the liquid to the evaporator. The cooling capacity in free cooling mode is controlled by the opening of the electronic expansion valve (EXV).

Operation in combined FC (free-cooling) and MC (mechanical cooling) mode is possible in the two independent refrigerant circuits. This can optimise the free-cooling operation and at the same time ensures that the cooling requirements of the system are met.



Legend

MC	Mechanical cooling (compressors)
FC	Free cooling
Delta T	Difference between the leaving water temperature and the entering air temperature, K

Advantages of the DX free cooling system

- Operation without glycol

  Unlike traditional hydraulic free-cooling systems that require the use of a glycol solution, the Aquaforce DX free cooling chiller works with pure water. The evaporator is protected against frost down to -20°C by an electric resistance heater (option).

- Low water pressure losses

  The Aquaforce DX free cooling chiller does not include a three-way valve nor free cooling coils connected in series with the evaporator. The Aquaforce free cooling chiller has the same water pressure losses as a standard chiller.

- Weight and dimensions gain
  - The DX free cooling option has practically no impact on the weight of the liquid chiller.
  - The Aquaforce free cooling chiller has the same dimensions as a standard chiller.

- Increased energy efficiency
  - In free cooling mode only the fans and the refrigerant micro-pump run. At an air-water temperature difference of 10K, for example, the average chiller energy efficiency (EER) is 23 (kW/kW).
  - In the mechanical cooling mode chiller cooling capacity and efficiency are not compromised by the use of a water-glycol solution.
  - As the pressure losses of the water circuit are low, the water pumps use less energy.

COOLING CAPACITIES

30XB &30XBP 250 to 1000 in Free Cooling mode (Option 118A)

LWT (10°C)	Condenser entering air temperature,°C					
	0		-5		-10	
	Qc	EER	Qc	EER	Qc	EER
	kW	kW/kW	kW	kW/kW	kW	kW/kW
250	143	21,9	183	27,7	186	28,0
300	143	22,3	183	28,3	186	28,5
350	143	22,0	183	27,9	186	28,1
400	183	20,2	255	27,9	275	29,8
450	183	20,0	255	27,7	275	29,6
500	203	19,9	284	27,7	307	29,6
600	253	19,7	373	28,7	416	31,7
700	277	20,2	408	29,5	454	32,6
750	272	19,9	400	29,1	446	32,2
800	275	19,7	405	28,8	451	31,8
850	324	19,9	477	29,1	531	32,2
900	328	20,4	483	29,8	538	32,9
1000	368	20,6	542	30,2	604	33,3

Note: Calculations according to the standard performances (in accordance with EN14511-3:2011) and Eurovent-certified. Evaporator fouling factor 0 m^2 K/W.
Legend
LWT Leaving water temperature,°C
Qc Cooling capacity, kW
EER Energy efficiency ratio, kW/kW

OPERATING LIMITS

Cooling mode			
Evaporator		**Minimum**	**Maximum**
Entering water temperature at start-up	°C	-	45
Entering water temperature during operation	°C	6,8	21
Leaving water temperature during operation	°C	3,3	15
Condenser (air)		Minimum	Maximum
Outdoor ambient operating temperature	°C	-10	55*
With winter operation option (option 28)	°C	-20	55*
Free-cooling mode			
Evaporator		**Minimum**	**Maximum**
Entering water temperature at start-up	°C	-	45
Leaving water temperature during operation	°C	3,3	26*
Condenser (air)		Minimum	Maximum
Outdoor ambient operating temperature	°C	-10	20
With winter operation option (option 28)	°C	-20	20

*Maximum configurable set-point

FAN WITH AVAILABLE PRESSURE (OPTION 10)

This option allows a duct connection at the discharge side of the condenser fan. The unit is equipped with a duct connection frame. The chiller can operate at a static discharge pressure of up to 60 Pa with reduced performance. The performance can be estimated using the coefficients below, applicable at the conditions shown in the curve below.

Selection method

The base performances for the calculation are those of option 119 (only Novation™ MCHE heat exchangers, see pages 24 and 25 of this manual). To obtain the capacities at the static duct pressure, apply the coefficients shown in the table below.

30XB option 10

		Correction factors			
Fan pressure drop	**Pa**	**0**	**20**	**40**	**60**
Air flow	%	0	-3,5%	-7,5%	-12,1%
Cooling capacity	%	0	-0,5%	-1,0%	-1,5%
EER	%	0	-1,5%	-3,5%	-5,0%
Power input	%	0	+1,0%	+2,5%	+3,5%

Note: All fans must be individually ducted.

Example

30XB-0800 with 40 Pa pressure drop

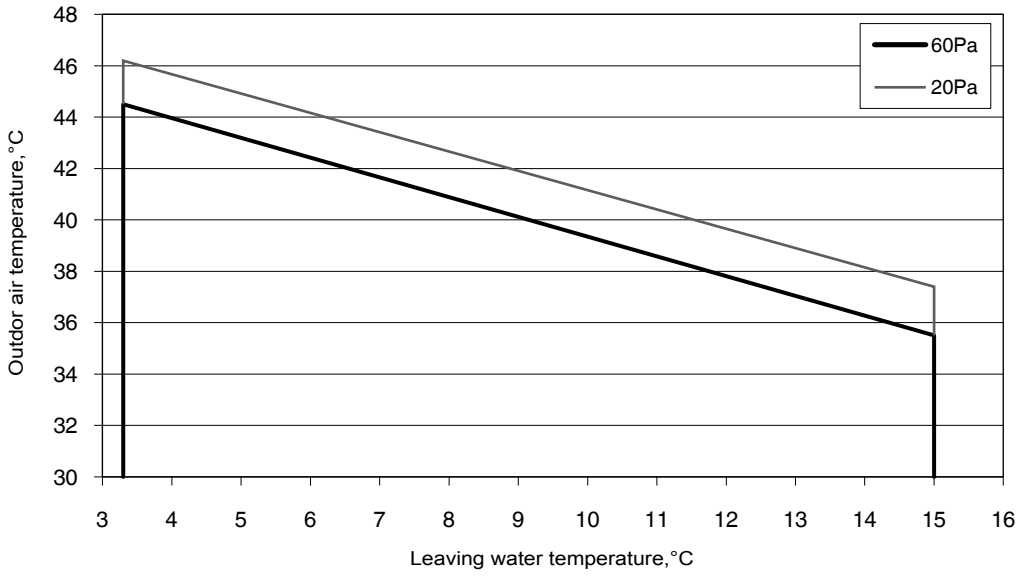
Performance at the following conditions:

- 35°C outside air temperature
- 12/7°C entering/leaving water temperature

30XB option 10

		0 Pa	Correction factors	40 Pa
Air flow	l/s	57840	-7,5%	53502
Cooling capacity	kW	788	-1,0%	781
EER	kW/kW	3,14	-3,5%	3,03
Power input	kW	251	2,5%	257

Application limits for correction factors for high air temperatures



PHYSICAL DATA, SIZES 30XB-250 TO 800

30XB				250	300	350	400	450	500	600	700	750	800
Cooling													
Standard unit Full load performances*	CA1	Nominal capacity	kW	274	299	327	393	444	496	615	682	726	788
		EER	kW/kW	3,14	3,11	3,11	3,22	3,11	3,1	3,15	3,34	3,11	3,14
		Eurovent class		A	A	A	A	A	A	A	A	A	A
Unit with option 15LS (+) Full load performances*	CA1	Nominal capacity	kW	270	294	321	382	430	485	607	661	698	767
		EER	kW/kW	3,1	3,05	3,07	3,17	2,98	2,93	3,12	3,2	3	2,97
		Eurovent class		A	B	B	A	B	B	A	A	B	B
Standard unit Seasonal energy efficiency **		**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**4,12**	**4,16**	**4,24**	**4,00**	NA	NA	NA	**4,26**	NA	**4,17**
		ηs cool $_{12/7°C}$	**%**	**162**	**164**	**166**	**157**	NA	NA	NA	**167**	NA	**164**
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**4,74**	**5,15**	**5,51**	**4,95**	**5,33**	**5,00**	**5,20**	**5,50**	**5,07**	**5,09**
Unit with Option 5 Seasonal energy efficiency **		**SEPR $_{-2/-8°C}$ Process medium temp.*** **	**kWh/kWh**	NA	**2,89**	**2,97**	**2,6**	**3,43**	**2,94**	**3,57**	**3,71**	**3,39**	**3,33**
Unit with Option 17 & 299 Seasonal energy efficiency **		**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**4,12**	**4,16**	**4,23**	**4,28**	**4,27**	**4,09**	**4,13**	**4,47**	**4,21**	**4,36**
		ηs cool $_{12/7°C}$	**%**	**162**	**164**	**166**	**168**	**168**	**161**	**162**	**176**	**166**	**171**
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**4,75**	**5,16**	**5,54**	**4,99**	**5,21**	**5,02**	**5,25**	**5,55**	**5,10**	**5,13**
Unit with Option 5&17 Seasonal energy efficiency **		**SEPR $_{-2/-8°C}$ Process medium temp.*** **	**kWh/kWh**	**2,79**	**3,1**	**3,27**	**2,93**	**3,66**	**3,71**	**3,82**	**3,93**	**3,59**	**3,49**
Unit with Option 15LS (+) Seasonal energy efficiency **		**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**4,26**	**4,29**	**4,51**	**4,26**	**4,18**	**4,13**	NA	**4,34**	NA	NA
		ηs cool $_{12/7°C}$	**%**	**167**	**169**	**177**	**167**	**164**	**162**	NA	**171**	NA	NA
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**5,03**	**5,24**	**5,98**	**5,17**	**5,50**	**5,13**	**5,66**	**5,69**	**5,40**	**5,52**
Unit with Option 5 & 15LS (+) Seasonal energy efficiency **		**SEPR $_{-2/-8°C}$ Process medium temp.*** **	**kWh/kWh**	**2,67**	**2,96**	**3,08**	NA	**3,59**	**3,12**	**3,92**	**3,94**	**3,66**	**3,70**
Unit with Option 17 & 299 & 15LS (+) Seasonal energy efficiency **		**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**4,15**	**4,17**	**4,39**	**4,37**	**4,30**	**4,20**	**4,21**	**4,41**	**4,23**	**4,23**
		ηs cool $_{12/7°C}$	**%**	**163**	**164**	**173**	**172**	**169**	**165**	**165**	**174**	**166**	**166**
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**5,69**	**5,80**	**6,10**	**5,61**	**5,58**	**5,78**	**5,73**	**5,91**	**5,52**	**5,57**
Unit with Option 5, 17, 15LS(+) Seasonal energy efficiency **		**SEPR $_{-2/-8°C}$ Process medium temp.*** **	**kWh/kWh**	**2,80**	**3,17**	**3,39**	**2,95**	**3,69**	**3,83**	**3,96**	**3,99**	**3,69**	**3,72**
Sound levels													
Standard unit													
Sound power(1)			dB(A)	99	99	99	99	101	99	101	99	103	103
Sound pressure at 10 m(2)			dB(A)	67	67	67	67	69	67	68	67	70	70
Unit + option 15(3)													
Sound power(1)			dB(A)	93	93	94	95	95	95	97	96	97	98
Sound pressure at 10 m(2)			dB(A)	61	61	62	63	63	63	65	63	64	65
Unit + option 15LS(3)													
Sound power(1)			dB(A)	87	87	87	90	91	91	93	92	94	94
Sound pressure at 10 m(2)			dB(A)	55	55	55	58	59	59	60	59	61	61
Unit + option 15LS+(3)													
Sound power(1)			dB(A)	-	-	-	-	89	89	91	90	91	92
Sound pressure at 10 m(2)			dB(A)	-	-	-	-	56	56	57	56	58	58
Dimensions													
Standard unit													
Length			mm	3604	3604	3604	4798	4798	4798	7186	7186	7186	7186
Width			mm	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height			mm	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322

* In accordance with standard EN14511-3:2013.
** In accordance with standard EN14825:2016, average climate
*** With EG 30%
CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fooling factor 0 m².K/W
ηs cool$_{12/7°C}$ & SEER $_{12/7°C}$ **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
SEPR $_{-2/-8°C}$ **Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application**
NA Non Authorized for the specific application for CEE market

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

Eurovent certified values

PHYSICAL DATA, SIZES 30XB-250 TO 800

30XB		250	300	350	400	450	500	600	700	750	800
Operating weight(4)											
Standard unit	l	2992	3023	3042	3620	3684	3746	4717	4849	5115	5431
Unit + option 15(3)	l	3237	3268	3287	3889	3952	4015	5005	5134	5400	5716
Unit + option 118 a(3)		3053	3084	3103	3694	3757	4100	4806	4935	5216	5532
Unit + option 50(3)		3314	3345	3364	4023	4164	4515	5428	5657	5923	6245
Compressors		06T semi-hermetic screw compressor, 50 r/s									
Circuit A		1	1	1	1	1	1	1	1	1	1
Circuit B		1	1	1	1	1	1	1	1	1	1
No. of control stages											
Refrigerant(4)		R134a									
Circuit A	kg	37	35	35	51	52	54	58	58	65	69
	$teqCO_2$	52,9	50,1	50,1	72,2	74,4	76,5	82,9	82,9	93,0	98,7
Circuit B	kg	39	36	37	37	37	33	59	62	58	65
	$teqCO_2$	55,1	51,5	52,9	52,2	52,9	46,5	84,4	88,7	82,9	93,0
Oil											
Circuit A	l	20,8	20,8	20,8	23,5	23,5	23,5	23,5	23,5	27,6	27,6
Circuit B	l	20,8	20,8	20,8	20,8	20,8	20,8	23,5	23,5	23,5	23,5
Capacity control		Touch Pilot, , Electronic Expansion Valve (EXV)									
Minimum capacity	%	15	15	15	15	15	15	15	15	15	15
Air heat exchanger		Aluminum micro-channel coils (MCHE)									
Fans		FLYING-BIRD 6, axial fan with rotating impeller									
Standard unit											
Quantity		6	6	6	8	8	8	11	12	12	12
Maximum total air flow	l/s	28920	28920	28920	38560	38560	38560	53020	57840	57840	57840
Maximum rotation speed	r/s	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7
Unit + option 15LS											
Maximum total air flow	l/s	23580	23580	23580	31440	31440	31440	43230	47160	47160	47160
Maximum rotation speed	r/s	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7
Water heat exchanger		Flooded multi-tube type									
Water volume	l	58	61	61	66	70	77	79	94	98	119
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)									
Pump		Centrifugal pump, monocell, 48,3r/s, low or high pressure (as required), single or dual (as required)									
Expansion vessel volume	l	50	50	50	50	50	80				
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400				
Water connections without or with hydraulic module		Victaulic® type									
Standard & option 8, without option 116											
Nominal diameter	in	5	5	5	5	5	5	5	6	6	6
Actual outside diameter	mm	141,3	141,3	141,3	141,3	141,3	141,3	141,3	168,3	168,3	168,3
Options 5, 6 et 100A											
Nominal diameter	in	4	4	4	4	4	4	5	5	5	5
Actual outside diameter	mm	114,3	114,3	114,3	114,3	114,3	114,3	141,3	141,3	141,3	141,3
Options 100C											
Nominal diameter	in	5	5	5	5	5	5	6	6	6	6
Actual outside diameter	mm	141,3	141,3	141,3	141,3	141,3	141,3	168,3	168,3	168,3	168,3
Options 116											
Nominal diameter	in	4	4	4	4	4	4	-	-	-	-
Actual outside diameter	mm	114,3	114,3	114,3	114,3	114,3	114,3	-	-	-	-
Casing paint		Colour code RAL 7035									

(3) Options : 15 = Low noise, 15LS = Very Low noise, 118a = Dx freecooling option, 50= heat recovery.
(4) Values are guidelines only. Refer to the unit name plate.
(5) Depends of options

PHYSICAL DATA, SIZES 30XB-850 TO 1700

30XB				850	900	1000	1100	1200	1300	1400	1500	1550	1700
Cooling													
Standard unit Full load performances*	CA1	Nominal capacity	kW	828	890	965	1126	1244	1332	1440	1492	1532	1689
		EER	kW/kW	3,13	3,13	2,97	3,08	3,1	3,18	3,08	3,12	3,23	3,25
		Eurovent class		A	A	B	B	A	A	B	A	-	-
Unit with option 15LS (+) Full load performances*	CA1	Nominal capacity	kW	775	859	929	1111	1211	1298	1391	1418	1457	1627
		EER	kW/kW	2,8	2,97	2,96	2,9	3,03	2,9	2,77	2,94	2,96	3,1
		Eurovent class		C	B	B	B	B	B	C	B	-	-
Standard unit Seasonal energy efficiency **		**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	NA	**4,12**	NA	NA	**4,18**	NA	**4,16**	NA	**4,17**	NA
		ηs cool $_{12/7°C}$	**%**	NA	**162**	NA	NA	**164**	NA	**163**	NA	**164**	NA
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**5,18**	**5,08**	**5,13**	**5,31**	**5,46**	**5,33**	**5,43**	**5,17**	**5,31**	**5,24**
Unit with Option 5 Seasonal energy efficiency **		**SEPR $_{-2/-8°C}$ Process medium temp.*** **	**kWh/kWh**	NA	NA	**3,49**	**3,50**	**3,39**	**3,36**	**3,40**	NA	**3,57**	**3,77**
Unit with Option 17 & 299 Seasonal energy efficiency **		**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**4,10**	**4,26**	**4,1** [1)]	**4,09**	**4,26**	**4,16**	**4,19**	**4,18**	**-**	**4,22**
		ηs cool $_{12/7°C}$	**%**	**161**	**167**	**161** [1)]	**161**	**167**	**164**	**165**	**164**	**-**	**166**
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**5,58**	**5,39**	**5,23**	**5,49**	**5,55**	**5,61**	**5,58**	**5,43**	**-**	**5,38**
Unit with Option 5 & 17 Seasonal energy efficiency **		**SEPR $_{-2/-8°C}$ Process medium temp.*** **	**kWh/kWh**	**3,76**	**3,70**	**3,60**	**3,68**	**3,61**	**3,68**	**3,67**	**3,48**	**-**	**3,89**
Unit with Option 15LS (+) Seasonal energy efficiency **		**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		ηs cool $_{12/7°C}$	%	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**5,23**	**5,37**	**5,31**	**5,10**	**5,34**	NA	NA	NA	**5,39**	**5,23**
Unit with Option 5 & 15LS (+) Seasonal energy efficiency **		**SEPR $_{-2/-8°C}$ Process medium temp.*** **	**kWh/kWh**	**3,27**	NA	**3,82**	**3,50**	**3,47**	**3,24**	**3,27**	NA	**3,70**	**3,97**
Unit with Option 17 & 299 & 15LS (+) Seasonal energy efficiency **		**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**4,10**	**4,18**	**4,1**[+]	NA	**4,09**	NA	NA	**4,09**	**-**	**4,09**
		ηs cool $_{12/7°C}$	**%**	**161**	**164**	**161**[+]	NA	**161**	NA	NA	**161**	**-**	**161**
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**5,64**	**5,66**	**5,43**	**5,15**	**5,43**	**5,06**	**5,05**	**5,21**	**-**	**5,30**
Unit with Option 5, 17, 15LS(+) Seasonal energy efficiency **		**SEPR $_{-2/-8°C}$ Process medium temp.*** **	**kWh/kWh**	**3,80**	**3,83**	**3,81**	**3,55**	**3,52**	**3,28**	**3,33**	**3,63**	**-**	**3,97**
Sound levels													
Standard unit													
Sound power(1)			dB(A)	101	104	102	103	102	104	104	104	104	104
Sound pressure at 10 m(2)			dB(A)	70	71	69	70	69	71	71	71	71	70
Unit + option 15(3)													
Sound power(1)			dB(A)	97	99	98	98	98	100	99	99	100	100
Sound pressure at 10 m(2)			dB(A)	65	66	65	65	65	67	65	65	67	66
Unit + option 15LS(3)													
Sound power(1)			dB(A)	94	95	94	94	94	99	95	96	96	96
Sound pressure at 10 m(2)			dB(A)	61	62	61	61	61	66	62	63	63	62
Unit + option 15LS+(3)													
Sound power(1)			dB(A)	91	93	92	93	93	97	94	95	93	93
Sound pressure at 10 m(2)			dB(A)	58	60	59	60	60	66	61	62	60	60

* In accordance with standard EN14511-3:2013.
** In accordance with standard EN14825:2016, average climate
*** With EG 30%
\+ SEER calculated with the option 119
CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fooling factor 0 m².K/W
ηs cool$_{12/7°C}$ & SEER $_{12/7°C}$ **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
SEPR $_{-2/-8°C}$ **Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application**
NA Non Authorized for the specific application for CEE market
\- Not applicable

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Eurovent certified values

PHYSICAL DATA, SIZES 30XB-850 TO 1700

30XB		850	900	1000	1100	1200	1300	1400	1500	1550	1700
Dimensions											
Standard unit											
Length	mm	7186	7186	8380	9574	10770	11962	11962	13157	9574/ 4798	8380/ 8380
Width	mm	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height	mm	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322
Operating weight(4)											
Standard unit	kg	5480	5749	6244	7202	7650	8545	8622	8928	3356/ 6612	5835/ 5835
Unit + option 15(3)	kg	5765	6034	6521	7511	7952	8840	8917	9215	3557/ 6985	6234/ 6234
Unit + option 118(3)	kg	5868	6157	6643	-	-	-	-	-	-	-
Unit + option 50(3)	kg	6294	6660	7144	-	-	-	-	-	-	-
Compressors		06T semi-hermetic screw compressor, 50 r/s									
Circuit A		1	1	1	1	1	1	1	1	1	1
Circuit B		1	1	1	1	1	1	1	1	1	1
Circuit C										1	1
Circuit D											1
No. of control stages											
Refrigerant(4)		R134a									
Circuit A	kg	69	67	71	76	76	110	116	132	85	72
	$teqCO_2$	98,7	95,8	100,8	108,7	108,7	157,3	165,9	188,8	121,6	103,0
Circuit B	kg	65	67	72	108	120	116	124	120	88	63
	$teqCO_2$	93,0	95,8	103,0	154,4	171,6	165,9	177,3	171,6	125,8	90,1
Circuit C	kg									80,0	72,0
	$teqCO_2$									114,4	103,0
Circuit D	kg										63,0
	$teqCO_2$										90,1
Oil		Oil type									
Circuit A	l	27,6	27,6	27,6	27,6	27,6	36,0	36,0	36,0	27,6	27,6
Circuit B	l	23,5	27,6	27,6	36,0	36,0	36,0	36,0	36,0	27,6	23,5
Circuit C	l									27,6	27,6
Circuit D	l										23,5
Capacity control		Touch Pilot, Electronic Expansion Valve (EXV)									
Minimum capacity	%	15	15	15	15	15	15	15	15	10	8
Air heat exchanger		Aluminum micro-channel coils (MCHE)									
Fans		FLYING-BIRD 6, axial fan with rotating impeller									
Standard unit											
Quantity		12	12	14	16	18	20	20	22	24	28
Maximum total air flow	l/s	57840	57840	67480	77120	86760	96400	96400	106040	115680	134960
Maximum rotation speed	r/s	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7
Unit + option 15LS											
Maximum total air flow	l/s	47160	47160	55020	62880	70740	78600	78600	86460	94320	110040
Maximum rotation speed	r/s	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7
Water heat exchanger		Flooded multi-tube type									
Water volume	l	119	130	140	164	174	180	189	189	240	240
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Water connections without or with hydraulic module		Victaulic® type									
Standard & option 8											
Nominal diameter	in	6	6	8	6	6	6	6	6	8/6	6
Actual outside diameter	mm	168,3	168,3	219,1	168,3	168,3	168,3	168,3	168,3	219,1/ 168,3	168,3
Options 5, 6 et 100A											
Nominal diameter	in	5	5	6	6	6	6	6	6	8/5	6/6
Actual outside diameter	mm	141,3	141,3	168,3	168,3	168,3	168,3	168,3	168,3	219,1/ 141,3	168,3/ 168,3
Options 100C											
Nominal diameter	in	6	6	8	-	-	-	-	-	-	-
Actual outside diameter	mm	168,3	168,3	219,1	-	-	-	-	-	-	-
Casing paint		Colour code RAL 7035									

(3) Options : 15 = Low noise, 15LS = Very Low noise, 118a = Dx freecooling option, 50= heat recovery.
(4) Values are guidelines only. Refer to the unit name plate.
(5) Depends of options

PHYSICAL DATA, SIZES 30XBP-250 TO 800

30XBP			250	300	350	400	450	500	600	700	750	800
Cooling												
Standard unit Full load performances* CA1	Nominal capacity	kW	274	299	327	394	444	501	615	682	727	789
	EER	kW/kW	3,22	3,19	3,15	3,32	3,13	3,22	3,23	3,34	3,17	3,19
	Eurovent class		A	A	A	A	A	A	A	A	A	A
Unit with Option 15LS Full load performances* CA1	Nominal capacity	kW	270	294	321	382	430	478	607	661	698	767
	EER	kW/kW	3,12	3,1	3,11	3,2	2,99	3,04	3,14	3,22	3,01	2,99
	Eurovent class		A	A	A	A	B	B	A	A	B	B
Standard unit Seasonal energy efficiency **	**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**4,45**	**4,50**	**4,51**	**4,42**	**4,28**	**4,50**	**4,15**	**4,59**	**4,23**	**4,48**
	ηs cool $_{12/7°C}$	**%**	**175**	**177**	**177**	**174**	**168**	**177**	**163**	**180**	**166**	**176**
	SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**6,07**	**6,23**	**6,35**	**5,94**	**5,89**	**6,06**	**5,82**	**6,31**	**5,69**	**5,75**
Unit with option 5 Seasonal energy efficiency **	**SEPR $_{-2/-8°C}$ Process medium temp.*** **	**kWh/kWh**	**2,92**	**3,34**	**3,5**	**3,09**	**3,84**	**3,96**	**4,02**	**4,2**	**3,76**	**3,78**
Unit with Option 15LS Seasonal energy efficiency **	**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**4,39**	**4,49**	**4,65**	**4,40**	**4,29**	**4,44**	**4,20**	**4,48**	**4,15**	**4,18**
	ηs cool $_{12/7°C}$	**%**	**172**	**177**	**183**	**173**	**169**	**175**	**165**	**176**	**163**	**164**
	SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**5,94**	**6,16**	**6,47**	**5,89**	**5,82**	**5,89**	**5,98**	**6,20**	**5,66**	**5,76**
Unit with option 5 & 15LS Seasonal energy efficiency **	**SEPR $_{-2/-8°C}$ Process medium temp.*** **	**kWh/kWh**	**2,91**	**3,32**	**3,53**	**3,06**	**3,8**	**3,86**	**4,11**	**4,14**	**3,79**	**3,83**
Sound levels												
Standard unit												
Sound power(1)		dB(A)	99	99	99	99	101	99	101	99	103	103
Sound pressure at 10 m(2)		dB(A)	67	67	67	67	69	67	68	67	70	70
Unit + option 15(3)												
Sound power(1)		dB(A)	93	93	94	95	95	95	97	96	97	98
Sound pressure at 10 m(2)		dB(A)	61	61	62	63	63	63	65	63	64	65
Unit + option 15LS(3)												
Sound power(1)		dB(A)	87	87	87	90	91	91	93	92	94	94
Sound pressure at 10 m(2)		dB(A)	55	55	55	58	59	59	60	59	61	61
Unit + option 15LS+(3)												
Sound power(1)		dB(A)	-	-	-	-	89	89	91	90	91	92
Sound pressure at 10 m(2)		dB(A)	-	-	-	-	56	56	57	56	58	58
Dimensions												
Standard unit												
Length		mm	3604	3604	3604	4798	4798	5992	7186	7186	7186	7186
Width		mm	2253	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height		mm	2322	2322	2322	2322	2322	2322	2322	2322	2322	2322
Operating weight(4)												
Standard unit		kg	2992	3023	3042	3620	3684	4018	4717	4849	5115	5431
Unit + option 15(3)		kg	3237	3268	3287	3889	3952	4283	5005	5134	5400	5716
Compressors			06T semi-hermetic screw compressor, 50 r/s									
Circuit A			1	1	1	1	1	1	1	1	1	1
Circuit B			1	1	1	1	1	1	1	1	1	1
No. of control stages												
Refrigerant(4)			R134a									
Circuit A		kg	37,0	35,0	35,0	50,5	52,0	53,5	58,0	58,0	65,0	69,0
		teqCO_2	52,9	50,1	50,1	72,2	74,4	76,5	82,9	82,9	93,0	98,7
Circuit B		kg	38,5	36	37	36,5	37	32,5	59	62	58	65
		teqCO_2	55,1	51,5	52,9	52,2	52,9	46,5	84,4	88,7	82,9	93,0

* In accordance with standard EN14511-3:2013.
** In accordance with standard EN14825:2016, average climate
*** With EG 30%
CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fooling factor 0 m².K/W
ηs cool$_{12/7°C}$ & SEER $_{12/7°C}$ **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
SEPR $_{-2/-8°C}$ **Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application**
NA Non Authorized for the specific application for CEE market

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PHYSICAL DATA, SIZES 30XBP-250 TO 800

30XBP		250	300	350	400	450	500	600	700	750	800
Oil											
Circuit A	l	20,8	20,8	20,8	23,5	23,5	23,5	23,5	23,5	27,6	27,6
Circuit B	l	20,8	20,8	20,8	20,8	20,8	20,8	23,5	23,5	23,5	23,5
Capacity control		Touch Pilot, , Electronic Expansion Valve (EXV)									
Minimum capacity	%	15	15	15	15	15	15	15	15	15	15
Air heat exchanger		Aluminum micro-channel coils (MCHE)									
Fans		FLYING-BIRD 6, axial fan with rotating impeller									
Standard unit											
Quantity		6	6	6	8	8	9	11	12	12	12
Maximum total air flow	l/s	28920	28920	28920	38560	38560	43380	53020	57840	57840	57840
Maximum rotation speed	r/s	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7
Unit + option 15LS											
Maximum total air flow	l/s	23580	23580	23580	31440	31440	35370	43230	47160	47160	47160
Maximum rotation speed	r/s	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7
Water heat exchanger		Flooded multi-tube type									
Water volume	l	58	61	61	66	70	77	79	94	98	119
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)									
Pump		Centrifugal pump, monocell, 48,3r/s, low or high pressure (as required), single or dual (as required)									
Expansion vessel volume	l	50	50	50	50	50	80				
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400				
Water connections without or with hydraulic module		Victaulic® type									
Standard & option 8, without option 116											
Nominal diameter	in	5	5	5	5	5	5	5	6	6	6
Actual outside diameter	mm	141,3	141,3	141,3	141,3	141,3	141,3	141,3	168,3	168,3	168,3
Options 5, 6 et 100A											
Nominal diameter	in	4	4	4	4	4	4	5	5	5	5
Actual outside diameter	mm	114,3	114,3	114,3	114,3	114,3	114,3	141,3	141,3	141,3	141,3
Options 100C											
Nominal diameter	in	5	5	5	5	5	5	6	6	6	6
Actual outside diameter	mm	141,3	141,3	141,3	141,3	141,3	141,3	168,3	168,3	168,3	168,3
Options 116											
Nominal diameter	in	4	4	4	4	4	4	-	-	-	-
Actual outside diameter	mm	114,3	114,3	114,3	114,3	114,3	114,3	-	-	-	-
Casing paint		Colour code RAL 7035									

(5) Depends of options

PHYSICAL DATA, SIZES 30XBP-850 TO 1500

30XBP				850	900	1000	1100	1200	1300	1400	1500
Cooling											
Standard unit		Nominal capacity	kW	845	890	980	1150	1253	1333	1440	1493
Full load performances*	CA1	EER	kW/kW	3,32	3,19	3,2	3,36	3,3	3,22	3,12	3,19
		Eurovent class		A	A	A	A	A	A	A	A
Unit with Option 15LS		Nominal capacity	kW	815	884	976	1118	1230	1298	1391	1443
Full load performances *	CA1	EER	kW/kW	3,1	3,02	3,06	3,12	3,16	2,97	2,83	2,94
		Eurovent class		A	B	B	A	A	B	C	B
Standard unit Seasonal energy efficiency **		**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**4,58**	**4,24**	**4,17**	**4,51**	**4,53**	**4,22**	**4,26**	**4,10**
		ηs cool $_{12/7°C}$	**%**	**180**	**166**	**164**	**177**	**178**	**166**	**167**	**161**
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**5,97**	**5,77**	**5,66**	**5,94**	**5,92**	**5,74**	**5,68**	**5,50**
Unit with option 5 Seasonal energy efficiency **		**SEPR $_{-2/-8°C}$ Process medium temp.*** **	**kWh/kWh**	**3,98**	**3,82**	**3,81**	**3,92**	**3,81**	**3,78**	**3,88**	**3,55**
Unit with Option 15LS Seasonal energy efficiency **		**SEER $_{12/7°C}$ Comfort low temp.**	**kWh/kWh**	**4,49**	**4,14**	**4,17**	**4,22**	**4,34**	NA	NA	**4,22**
		ηs cool $_{12/7°C}$	**%**	**177**	**163**	**164**	**166**	**171**	NA	NA	**166**
		SEPR $_{12/7°C}$ Process high temp.	**kWh/kWh**	**5,86**	**5,69**	**5,73**	**5,58**	**5,69**	**5,35**	**5,30**	**5,49**
Unit with option 5 & 15LS Seasonal energy efficiency **		**SEPR $_{-2/-8°C}$ Process medium temp.*** **	**kWh/kWh**	**3,9**	**3,8**	**3,87**	**3,69**	**3,63**	**3,48**	**3,52**	**3,85**
Sound levels											
Standard unit											
Sound power(1)			dB(A)	101	104	102	103	102	104	104	104
Sound pressure at 10 m(2)			dB(A)	70	71	69	70	69	71	71	71
Unit + option 15(3)											
Sound power(1)			dB(A)	97	99	98	98	98	100	99	99
Sound pressure at 10 m(2)			dB(A)	65	66	65	65	65	67	65	65
Unit + option 15LS(3)											
Sound power(1)			dB(A)	94	95	94	94	94	99	95	96
Sound pressure at 10 m(2)			dB(A)	61	62	61	61	61	66	62	63
Unit + option 15LS+(3)											
Sound power(1)			dB(A)	91	93	92	93	93	97	94	95
Sound pressure at 10 m(2)			dB(A)	58	60	59	60	60	66	61	62
Dimensions											
Standard unit											
Length			mm	8380	8380	9574	11962	11962	11962	11962	13157
Width			mm	2253	2253	2253	2253	2253	2253	2253	2253
Height			mm	2322	2322	2322	2322	2322	2322	2322	2322
Operating weight(4)											
Standard unit			kg	5781	6066	6545	7795	7929	8545	8622	8928
Unit + option 15(3)			kg	6058	6344	6814	8089	8223	8840	8917	9215
Compressors				06T semi-hermetic screw compressor, 50 r/s							
Circuit A				1	1	1	1	1	1	1	1
Circuit B				1	1	1	1	1	1	1	1
No. of control stages											
Refrigerant(4)				R134a							
Circuit A			kg	72	69	75	76	76	110	116	132
			teqCO_2	103,0	98,7	107,3	108,7	108,7	157,3	165,9	188,8
Circuit B			kg	63	76	79	108	120	116	124	120
			teqCO_2	90,1	108,7	113,0	154,4	171,6	165,9	177,3	171,6

* In accordance with standard EN14511-3:2013.
** In accordance with standard EN14825:2016, average climate
*** With EG 30%
CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fooling factor 0 m².K/W
ηs cool$_{12/7°C}$ & SEER $_{12/7°C}$ **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**
SEPR $_{-2/-8°C}$ **Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application**
NA Non Authorized for the specific application for CEE market

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Eurovent certified values

PHYSICAL DATA, SIZES 30XBP-850 TO 1700

30XBP		850	900	1000	1100	1200	1300	1400	1500
Oil									
Circuit A	l	27,6	27,6	27,6	27,6	27,6	36,0	36,0	36,0
Circuit B	l	23,5	27,6	27,6	36,0	36,0	36,0	36,0	36,0
Capacity control		Touch Pilot, , Electronic Expansion Valve (EXV)							
Minimum capacity	%	15	15	15	15	15	15	15	15
Air heat exchanger		Aluminum micro-channel coils (MCHE)							
Fans		FLYING-BIRD 6, axial fan with rotating impeller							
Standard unit									
Quantity		14	14	16	20	20	20	20	22
Maximum total air flow	l/s	67480	67480	77120	96400	96400	96400	96400	106040
Maximum rotation speed	r/s	15,7	15,7	15,7	15,7	15,7	15,7	15,7	15,7
Unit + option 15LS									
Maximum total air flow	l/s	55020	55020	62880	78600	78600	78600	78600	86460
Maximum rotation speed	r/s	11,7	11,7	11,7	11,7	11,7	11,7	11,7	11,7
Water heat exchanger		Flooded multi-tube type							
Water volume	l	119	130	140	164	174	180	189	189
Max. water-side operating pressure without hydraulic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000
Hydraulic module (option)		Pump, Victaulic screen filter, relief valve, water and air drain valve, pressure sensors, expansion tank (option)							
Pump		Centrifugal pump, monocell, 48,3r/s, low or high pressure (as required), single or dual (as required)							
Expansion vessel volume	l								
Max. water-side operating pressure with hydraulic module	kPa								
Water connections without or with hydraulic module		Victaulic® type							
Standard & option 8									
Nominal diameter	in	6	6	8	6	6	6	6	6
Actual outside diameter	mm	168,3	168,3	219,1	168,3	168,3	168,3	168,3	168,3
Options 5, 6 et 100A									
Nominal diameter	in	5	5	6	6	6	6	6	6
Actual outside diameter	mm	141,3	141,3	168,3	168,3	168,3	168,3	168,3	168,3
Options 100C									
Nominal diameter	in	6	6	8	-	-	-	-	-
Actual outside diameter	mm	168,3	168,3	219,1	-	-	-	-	-
Casing paint		Colour code RAL 7035							

(5) Depends of options

ELECTRICAL DATA, 30XB-250 TO 1000

30XB		250	300	350	400	450	500	600	700	750	800	850	900	1000
Power circuit supply														
Nominal voltage	V-ph-Hz	400-3-50												
Voltage range	V	360-440												
Control circuit supply		24 V via internal transformer												
Maximum operating input power(1) - 30XB														
Standard unit	kW	128	139	149	174	194	212	260	281	314	336	364	379	444
Unit + option 15LS	kW	121	132	143	165	185	203	247	267	300	322	350	365	427
Power factor at maximum power(1) - 30XB														
Standard unit														
Displacement Power Factor (Cos Phi)		0,87	0,87	0,87	0,87	0,87	0,87	0,87	0,87	0,87	0,88	0,88	0,86	0,87
Unit + option 15LS														
Displacement Power Factor (Cos Phi)		0,87	0,87	0,87	0,87	0,87	0,87	0,87	0,87	0,87	0,88	0,88	0,86	0,87
Nominal operating current draw(2) - 30XB														
Standard unit	A	154	170	186	215	246	267	332	358	409	430	446	502	542
Unit + option 15LS	A	143	159	175	200	231	252	311	335	386	407	423	479	515
Maximum operating current draw (Un)(1) - 30XB														
Standard unit	A	212	230	248	289	322	352	431	466	521	551	597	636	736
Unit + option 15LS	A	201	219	237	274	307	337	410	443	498	528	574	613	709
Maximum current (Un-10%)(1) - 30XB														
Standard unit	A	224	243	262	305	340	372	455	492	551	583	632	674	780
Unit + option 15LS	A	212	231	250	290	325	357	434	469	528	560	609	651	754
Nominal start-up current(3) - 30XB														
Standard unit	A	247	247	263	380	481	481	542	567	741	762	762	838	858
Unit + option 15LS	A	241	241	257	374	475	475	532	555	731	752	752	826	845
Unit + option 25C	A	213	224	224	346	442	442	492	492	676	691	691	733	756
Maximum start-up current(Un)(2) - 30XB														
Standard unit	A	276	277	294	417	519	523	591	621	797	822	837	905	955
Unit + option 15LS	A	270	271	288	411	513	518	582	609	787	813	828	893	942
Unit + option 25C	A	213	224	224	346	442	442	492	492	676	691	691	733	756

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.
(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

ELECTRICAL DATA, 30XB-1100 TO 1700

30XB		1100	1200	1300	1400	1500	1550	1700
Power circuit supply								
Nominal voltage	V-ph-Hz	400-3-50						
Voltage range	V	360-440						
Control circuit supply		24 V via internal transformer						
Maximum operating input power(1) - 30XB								
Standard unit	kW							
Circuit 1(a)	kW	195	222	268	286	309	450	369
Circuit 2(a)	kW	283	309	286	307	309	225	369
Option 081	kW	477	531	553	592	618		
Unit + option 15LS								
Circuit 1(a)	kW	187	214	256	274	296	431	353
Circuit 2(a)	kW	273	296	274	295	296	216	353
Option 081	kW	459	510	530	569	593		
Power factor at maximum power(1) - 30XB								
Standard unit								
Displacement Power Factor (Cos Phi)		0,87	0,87	0,87	0,87	0,87	0,87	0,88
Unit + option 15LS								
Displacement Power Factor (Cos Phi)		0,87	0,87	0,87	0,87	0,87	0,87	0,88
Nominal operating current draw(2) - 30XB								
Standard unit	kW							
Circuit 1(a)	kW	255	271	345	358	394	551	454
Circuit 2(a)	kW	354	394	358	390	394	275	454
Option 081	kW	609	665	703	748	789	-	-
Unit + option 15LS								
Circuit 1(a)	kW	242	258	326	339	373	520	428
Circuit 2(a)	kW	337	373	339	371	373	260	428
Option 081	kW	579	631	665	710	747	-	-
Maximum operating current draw (Un)(1) - 30XB								
Standard unit	kW							
Circuit 1(a)	kW	322	368	443	473	512	745	605
Circuit 2(a)	kW	469	512	473	508	512	372	605
Option 081	kW	791	880	916	981	1025	-	-
Unit + option 15LS								
Circuit 1(a)	kW	309	355	424	454	491	715	578
Circuit 2(a)	kW	452	491	454	489	491	357	578
Option 081	kW	761	846	878	943	983	-	-

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.
(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.
(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B or for units 30XB1550 to 1700 units: Circuit 1 supplies circuits A and B, circuit 2 supplies circuits C and D.

ELECTRICAL DATA, 30XB-1100 TO 1700

30XB		1100	1200	1300	1400	1500	1550	1700
Maximum current (Un-10%)(1) - 30XB								
Standard unit	kW							
Circuit 1(a)	kW	341	390	479	511	543	789	640
Circuit 2(a)	kW	507	543	511	539	543	394	640
Option 081	kW	848	933	990	1050	1087	-	-
Unit + option 15LS								
Circuit 1(a)	kW	335	384	473	502	534	779	629
Circuit 2(a)	kW	501	538	505	533	538	389	631
Option 081	kW	817	899	952	1012	1045	-	-
Nominal start-up current (3) - 30XB								
Standard unit	kW							
Circuit 1(a)	kW	587	587	629	629	629	959	766
Circuit 2(a)	kW	629	629	629	629	629	587	766
Option 081	kW	941	981	987	1019	1023	-	-
Option 081 & Opt 25c		687	702	729	744	744	-	-
Unit + option 15LS	kW							
Circuit 1(a)	kW	576	576	613	613	611	941	793
Circuit 2(a)	kW	629	629	629	629	629	587	766
Option 081		924	960	968	1000	1002	-	-
Option 081 & Opt 25c		670	681	710	725	723	-	-
Maximum start-up current(Un)(2) - 30XB								
Standard unit	kW							
Circuit 1(a)	kW	587	587	629	629	629	959	766
Circuit 2(a)	kW	629	629	629	629	629	587	766
Option 081	kW	1032	1089	1094	1136	1141	-	-
Option 081 & Opt 25c		687	702	729	744	744	-	-
Unit + option 15LS	kW							
Circuit 1(a)	kW	576	576	613	613	611	941	793
Circuit 2(a)	kW	629	629	629	629	629	587	766
Option 081		1015	1068	1075	1117	1120	-	-
Option 081 & Opt 25c		670	681	710	725	723	-	-

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.
(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.
(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B or for units 30XB1550 to 1700 units: Circuit 1 supplies circuits A and B, circuit 2 supplies circuits C and D.

ELECTRICAL DATA, 30XBP-250 TO 1000

30XBP		250	300	350	400	450	500	600	700	750	800	850	900	1000
Power circuit supply														
Nominal voltage	V-ph-Hz	400-3-50												
Voltage range	V	360-440												
Control circuit supply		24 V via internal transformer												
Maximum operating input power(1) - 30XBP														
Standard unit	kW	127	138	148	174	192	211	260	281	315	334	362	378	443
Unit + option 15LS	kW	123	135	144	169	187	205	253	273	307	326	354	369	433
Power factor at maximum power(1) - 30XBP														
Standard unit														
Displacement Power Factor (Cos Phi)		0,90	0,90	0,89	0,90	0,89	0,89	0,90	0,90	0,90	0,90	0,90	0,88	0,89
Unit + option 15LS														
Displacement Power Factor (Cos Phi)		0,90	0,90	0,89	0,90	0,89	0,89	0,90	0,90	0,90	0,90	0,90	0,88	0,89
Nominal operating current draw(2) - 30XBP														
Standard unit	A	146	162	178	205	236	257	318	342	393	414	430	486	524
Unit + option 15LS	A	140	156	172	197	228	248	307	330	381	402	416	472	508
Maximum operating current draw (Un)(1) - 30XBP														
Standard unit	A	204	222	240	279	312	342	417	450	505	535	581	620	718
Unit + option 15LS	A	198	216	234	271	304	333	406	438	493	523	567	606	702
Maximum current (Un-10%)(1) - 30XBP														
Standard unit	A	216	235	254	295	330	365	441	476	535	567	622	664	768
Unit + option 15LS	A	208	227	246	285	320	358	427	460	519	551	612	654	756
Nominal start-up current(3) - 30XBP														
Standard unit	A	243	243	259	376	477	477	535	559	734	755	755	830	849
Unit + option 15LS	A	237	237	253	370	471	471	526	548	725	746	746	819	836
Unit + option 25C	A	207	218	218	338	434	434	481	480	664	679	679	721	742
Maximum start-up current(Un)(2) - 30XBP														
Standard unit	A	272	273	290	413	515	520	585	613	790	816	831	897	946
Unit + option 15LS	A	266	267	284	407	509	514	575	602	781	806	821	886	933
Unit + option 25C	A	207	218	218	338	434	434	481	480	664	679	679	721	742

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.
(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

ELECTRICAL DATA, 30XBP-1100 TO 1500

30XBP		1100	1200	1300	1400	1500
Power circuit supply						
Nominal voltage	V-ph-Hz	400-3-50				
Voltage range	V	360-440				
Control circuit supply		24 V via internal transformer				
Maximum operating input power(1) - 30XBP						
Standard unit						
Circuit 1(a)	kW	152	162	205	213	235
Circuit 2(a)	kW	211	235	213	233	235
Option 081	kW	363	396	418	446	469
Unit + option 15LS						
Circuit 1(a)	kW	147	157	199	207	228
Circuit 2(a)	kW	206	228	207	227	228
Option 081	kW	351	384	406	433	456
Power factor at maximum power(1) - 30XBP						
Standard unit						
Displacement Power Factor (Cos Phi)		0,89	0,89	0,89	0,89	0,89
Unit + option 15LS						
Displacement Power Factor (Cos Phi)		0,89	0,89	0,89	0,89	0,89

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B or for units 30XBP1550 to 1700 units: Circuit 1 supplies circuits A and B, circuit 2 supplies circuits C and D.

ELECTRICAL DATA, 30XBP-1100 TO 1500

30XBP		1100	1200	1300	1400	1500
Nominal operating current draw(2) - 30XBP						
Standard unit						
Circuit 1(a)	A	246	262	332	345	380
Circuit 2(a)	A	342	380	345	377	380
Option 081	A	588	642	677	722	760
Unit + option 15LS						
Circuit 1(a)	A	239	255	322	335	369
Circuit 2(a)	A	333	369	335	367	369
Option 081	A	569	622	657	702	738
Maximum operating current draw (Un)(1) - 30XBP						
Standard unit						
Circuit 1(a)	A	313	359	430	460	498
Circuit 2(a)	A	457	498	460	495	498
Option 081	A	770	857	890	955	996
Unit + option 15LS						
Circuit 1(a)	A	306	352	420	450	487
Circuit 2(a)	A	448	487	450	485	487
Option 081	A	751	837	870	935	974
Maximum current (Un-10%)(1) - 30XBP						
Standard unit						
Circuit 1(a)	A	335	384	466	498	529
Circuit 2(a)	A	501	532	498	526	529
Option 081	A	836	916	964	1024	1058
Unit + option 15LS						
Circuit 1(a)	A	325	374	453	485	515
Circuit 2(a)	A	487	516	485	513	515
Option 081		824	899	938	998	1029
Nominal start-up current(3) - 30XBP						
Standard unit						
Circuit 1(a)	A	587	587	629	629	629
Circuit 2(a)	A	629	629	629	629	629
Option 081	A	929	967	974	1006	1009
Option 081 & Opt 25c	A	687	702	729	744	744
Unit + option 15LS						
Circuit 1(a)	A	587	587	629	629	629
Circuit 2(a)	A	629	629	629	629	629
Option 081	A	912	946	955	987	988
Option 081 & Opt 25c	A	670	681	710	725	723
Maximum start-up current(Un)(2) - 30XBP						
Standard unit						
Circuit 1(a)	A	587	587	629	629	629
Circuit 2(a)	A	629	629	629	629	629
Option 081	A	1020	1075	1081	1123	1127
Option 081 & Opt 25c	A	687	702	729	744	744
Unit + option 15LS						
Circuit 1(a)	A	587	587	629	629	629
Circuit 2(a)	A	629	629	629	629	629
Option 081	A	1003	1054	1062	1104	1106
Option 081 & Opt 25c	A	670	681	710	725	723

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.
(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.
(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B or for units 30XBP1550 to 1700 units: Circuit 1 supplies circuits A and B, circuit 2 supplies circuits C and D.

ELECTRICAL DATA, 30XB WITH OPTION CU/AL HEAT EXCHANGER

30XB with option 254 or 255		250	300	350	400	450	500	600	700	750	800	850	900	1000
Power circuit supply														
Nominal voltage	V-ph-Hz	400-3-50												
Voltage range	V	360-440												
Control circuit supply		24 V via internal transformer												
Maximum operating input power(1) - 30XB														
Standard unit	kW	129	140	154	176	198	220	266	288	325	344	375	403	462
Unit + option 15LS	kW	122	134	147	167	189	211	253	273	310	329	361	388	446
Power factor at maximum power(1) - 30XB														
Standard unit														
Displacement Power Factor (Cos Phi)		0,88	0,88	0,88	0,88	0,89	0,89	0,89	0,89	0,89	0,89	0,89	0,90	0,90
Unit + option 15LS														
Displacement Power Factor (Cos Phi)		0,88	0,88	0,88	0,88	0,89	0,89	0,89	0,89	0,89	0,89	0,89	0,90	0,90
Nominal operating current draw(2) - 30XB														
Standard unit	A	154	170	190	215	246	272	332	358	413	434	454	515	542
Unit + option 15LS	A	143	159	179	200	231	257	311	335	390	411	431	492	524
Maximum operating current draw (Un)(1) - 30XB														
Standard unit	A	212	230	252	289	322	357	431	466	525	555	605	649	745
Unit + option 15LS	A	201	219	241	274	307	342	410	443	502	532	582	626	718
Maximum current (Un-10%)(1) - 30XB														
Standard unit	A	224	243	258	305	340	367	455	492	547	579	624	661	780
Unit + option 15LS	A	212	231	246	290	325	352	434	469	524	556	601	638	745
Nominal start-up current(3) - 30XB														
Standard unit	A	247	247	263	380	481	481	542	567	741	762	762	838	858
Unit + option 15LS	A	241	241	257	374	475	475	532	555	731	752	752	826	845
Unit + option 25C	A	213	224	224	346	442	442	492	492	676	691	691	733	756
Maximum start-up current(Un)(2) - 30XB														
Standard unit	A	276	277	294	417	519	523	591	621	797	822	837	905	955
Unit + option 15LS	A	270	271	288	411	513	518	582	609	787	813	828	893	942
Unit + option 25C	A	213	224	224	346	442	442	492	492	676	691	691	733	756

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.
(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

ELECTRICAL DATA, 30XB WITH OPTION CU/AL HEAT EXCHANGER

30XB with option 254 or 255		1100	1200	1300	1400	1500	1550	1700
Power circuit supply								
Nominal voltage	V-ph-Hz	400-3-50						
Voltage range	V	360-440						
Control circuit supply		24 V via internal transformer						
Maximum operating input power(1) - 30XB								
Standard unit								
Circuit 1(a)	kW	201	225	268	286	309	462	366
Circuit 2(a)	kW	287	309	286	307	309	231	366
Option 081	kW	491	536	553	592	618	1	
Unit + option 15LS								
Circuit 1(a)	kW	190	218	256	274	296	443	354
Circuit 2(a)	kW	273	297	274	295	296	222	354
Option 081	kW	467	517	530	569	593	1	
Power factor at maximum power(1) - 30XB								
Standard unit								
Displacement Power Factor (Cos Phi)		0,87	0,87	0,87	0,87	0,87	0,89	0,89
Unit + option 15LS								
Displacement Power Factor (Cos Phi)		0,87	0,87	0,87	0,87	0,87	0,89	0,89
Nominal operating current draw(2) - 30XB								
Standard unit								
Circuit 1(a)	A	262	276	345	358	394	551	454
Circuit 2(a)	A	354	394	358	390	394	275	454
Option 081	A	622	674	703	748	789		
Unit + option 15LS								
Circuit 1(a)	A	248	262	326	339	373	520	428
Circuit 2(a)	A	337	373	339	371	373	260	428
Option 081	A	592	640	665	710	747		
Maximum operating current draw (Un)(1) - 30XB								
Standard unit								
Circuit 1(a)	A	329	373	443	473	512	745	605
Circuit 2(a)	A	469	512	473	508	512	372	605
Option 081	A	804	889	916	981	1025		
Unit + option 15LS								
Circuit 1(a)	A	315	359	424	454	491	715	578
Circuit 2(a)	A	452	491	454	489	491	357	578
Option 081	A	774	855	878	943	983		
Maximum current (Un-10%)(1) - 30XB								
Standard unit								
Circuit 1(a)	A	345	394	479	511	543	789	640
Circuit 2(a)	A	515	548	511	539	543	394	640
Option 081	A	835	924	990	1050	1087		
Unit + option 15LS								
Circuit 1(a)	A	330	379	460	492	522	758	614
Circuit 2(a)	A	494	525	492	520	522	379	614
Option 081	A	804	890	952	1012	1045		
Nominal start-up current(3) - 30XB								
Standard unit								
Circuit 1(a)	A	587	587	629	629	629	959	766
Circuit 2(a)	A	629	629	629	629	629	587	766
Option 081	A	949	986	985	1015	1019	1316	
Option 081 & Opt 25c	A	941	981	987	1019	1023		
Unit + option 15LS								
Circuit 1(a)	A	587	587	629	629	629	959	766
Circuit 2(a)	A	629	629	629	629	629	587	766
Option 081	A	924	960	968	1000	1002	1393	
Option 081 & Opt 25c	A	776	795	812	830	826		

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)
(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.
(3) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.
(a) When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B or for units 30XB1550 to 1700 units: Circuit 1 supplies circuits A and B, circuit 2 supplies circuits C and D.

ELECTRICAL DATA, 30XB WITH OPTION CU/AL HEAT EXCHANGER

30XB with option 254 or 255		1100	1200	1300	1400	1500	1550	1700
Maximum start-up current(Un)(2) - 30XB								
Standard unit								
Circuit 1(a)	A	587	587	629	629	629	959	766
Circuit 2(a)	A	629	629	629	629	629	587	766
Option 081	A	1055	1101	1095	1130	1134	1431	
Option 081 & Opt 25c	A	811	820	844	862	862		
Unit + option 15LS								
Circuit 1(a)	A	587	587	629	629	629	959	766
Circuit 2(a)	A	629	629	629	629	629	587	766
Option 081	A	1020	1070	1063	1098	1099	1393	
Option 081 & Opt 25c	A	776	795	812	830	826		

(2) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.
(a When the machines are equipped with two power supplies, circuit 1 supplies the refrigerant circuit A and circuit 2 supplies the refrigerant circuit B or for units 30XB1550 to 1700 units: Circuit 1 supplies circuits A and B, circuit 2 supplies circuits C and D.

ELECTRICAL DATA

Electrical data notes and operating conditions for 30XB units:

- 30XB&XBP 250 to 1000 units have a single power connection point; 30XB & XBP 1100 to 1700 units have two connection points.
- The control box includes the following standard features:
  - One general disconnect switch per circuit
  - Starter and motor protection devices for each compressor, the fan(s) and the pump
  - Control devices

Field connections:

- All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 30XB & 30XBP units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (corresponds to IEC 60204-1) (machine safety - electrical machine components - part 1: General regulations) are specifically taken into account, when designing the electrical equipment.

IMPORTANT:

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation regulations.
- Conformance with EN 60204 is the best means of ensuring compliance with the Machines Directive ˜ 1.5.1.
  Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.

1. Environment* . Environment as classified in EN 60364 (corresponds to IEC 60364):
   - Outdoor installation*
   - Ambient temperature range: from -20°C to +55°C**
   - Altitude less than or equal to 2000 m (for hydraulic module, see paragraph 4.7 in the IOM)
   - Presence of hard solids, class AE3 (no significant dust present)*
   - Presence of corrosive and polluting substances, class AF1 (negligible)
   - Competence of persons: BA4 (Persons wise); 30XB &30XBP machines are not intended to be installed in locations open to anyone, including people with disabilities and children.
2. Compatibility for low-frequency conducted disturbances according to IEC61000-2-2 and to class 2 levels per IEC61000-2-4 standard:
   - Power supply frequency variation : +-2Hz
   - Phase imbalance : 2%
   - Total Voltage Harmonic Distortion (THDV) : 8%
3. The neutral (N) line must not be connected directly to the unit (if necessary use a transformer).
4. Overcurrent protection of the power supply conductors is not provided with the unit.
5. The factory.installed disconnect switch(es)/circuit breaker(s) is (are) of a type suitable for power interruption in accordance with EN 60947-3 (corresponds to IEC 60947-3).
6. The units are designed for simplified connection on TN(s) networks (IEC 60364). For IT networks provide a local earth and consult competent local organisations to complete the electrical installation. Units delivered with variable frequency drive(s) (options : 28, 17) are not compatible with IT network. 30XB units are designed to use for domestic / residential and industrial environments:
   Machines that are not equipped with variable frequency drive(s) are in accordance with the codes :
   - 61000-6-3: General standards - Standard emission for residential, commercial and light industry.
   - 61000-6-2: General standards - Immunity for industrial environments.
   Machines that are equipped with variable frequency drive(s) (options : 28, 17) are in accordance with standard EN61800 - 3 electric power variable speed drives - art 3: EMC requirements and specific test methods for the following classifications:
   - Use in the first and second environments***.
   - Category C2 applicable in the first environment, on stationary devices designed to be installed and commissioned by a professional.

Warning: In a residential environment, this product may cause radio interference in which case additional mitigation measures could be required.

- Leakage currents: If protection by monitoring the leakage currents is necessary to ensure the safety of the installation, the presence of additional leakage currents introduced by the use of variable frequency drive(s) in the unit must be considered. In particular these protection devices shall be of reinforced immunity types and have a threshold not lower than 150 mA.
- Capacitors that are integrated as part of the option 231 can generate electrical disturbances in the installation the unit is connected to. Presence of these capacitors must be considered during the electrical study prior to the start-up.

NOTE: If particular aspects of an actual installation do not conform to the conditions described above, or if there are other conditions which should be considered, always contact your local Carrier representative.

* The required protection level for this class is IP43BW (according to reference document IEC 60529). All 30XB & XBP units are protected to IP44CW and fulfil this protection condition.

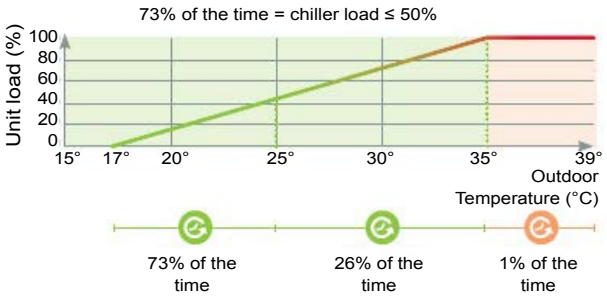
**The maximum ambiant temperature allowed for machines equipped with option 231 is +40°C

PART LOAD PERFORMANCE

SEER for comfort chillers (in accordance with EU ECODESIGN)

The SEER (Seasonal energy efficiency ratio) permits the evaluation of the average energy efficiency of comfort chillers, based on multiple operating conditions (load variation from 0% to 100%). From 1st January 2018, Tier 1 and from 1st January 2021, Tier 2, European member states will impose minimum SEER values to meet the requirements of Eco-design directive for ENER Lot 21 comfort cooling chillers. The Ecodesign Directive aims to minimize the environmental impact of energy-related products through consideration of their full lifecycle.

SEER is the new metric forchillers in comfort cooling applications.



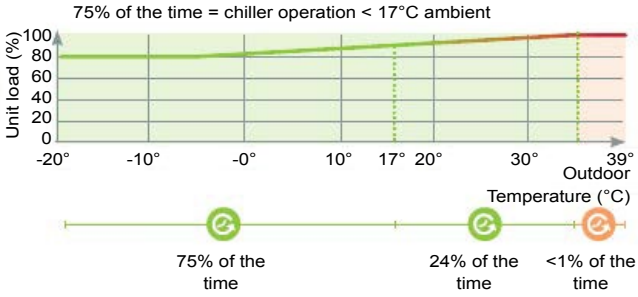
EU ECODESIGN MEPS(*) for air-cooled chillers		Tier 1 (from 01/01/2018)	Tier 2 (from 01/01/2021)
SEER for comfort Chillers < 400kW	kWh/ kWh	3,80	4,10
SEER for comfort Chillers > 400kW	kWh/ kWh	4,10	4,55

(*) Minimum Efficiency Performance Standards set by EU member states to comply with EU Ecodesign directive.

SEPR for process chillers (in accordance with EU ECODESIGN)

The SEPR (Seasonal energy performance ratio) permits the evaluation of the average energy efficiency of process chillers, based on multiple operating conditions (load variation from 80% to 100%). From 1st January 2018, Tier 1 and from 1st January 2021, Tier 2, European member states will impose minimum SEPR values for process chillers to meet the requirements of Eco-design directive for ENER Lot 21 for high temperature process chillers (7°C to 12°C) and for ENTR Lot 1 for low temperature process chillers (-25°C to -8°C) and medium temperature process chillers (-8°C to 7°C). The Ecodesign Directive aims to minimize the environmental impact of energy-related products through consideration of their full lifecycle. All process chillers marked with a CE label must meet the required SEPR (Seasonal Energy Performance Ratio) value stipulated in EU Directive.

SEPR is the new metric forchillers in industrial process cooling applications.



EU ECODESIGN MEPS(*) for air-cooled chillers		Tier 1 (from 01/07/2016)	Tier 2 (from 01/07/2018)
SEPR for medium temperature Process Chillers < 300 kW	kWh/ kWh	2,24	2,58
SEPR for medium temperature Process Chillers > 300 kW	kWh/ kWh	2,80	3,22

EU ECODESIGN MEPS(*) for air-cooled chillers		Tier 1 (from 01/01/2018)	Tier 2 (from 01/01/2021)
SEPR for high temperature Process Chillers < 400 kW	kWh/ kWh	4,50	5,00
SEPR for high temperature Process Chillers > 400 kW	kWh/ kWh	5,00	5,50

(*) Minimum Efficiency Performance Standards set by EU member states to comply with EU Ecodesign directive.

SOUND SPECTRUM 30XB UNITS

30XB - Standard unit

		Octave bands, Hz (1)						Sound power level (2)	
		125	250	500	1k	2k	4k		
250	dB	96	95	92	98	86	81	dB(A)	99
300	dB	96	95	92	98	86	81	dB(A)	99
350	dB	97	95	92	98	86	81	dB(A)	99
400	dB	97	96	94	98	88	83	dB(A)	99
450	dB	104	106	95	96	88	84	dB(A)	101
500	dB	96	95	95	96	91	86	dB(A)	99
600	dB	103	105	96	95	90	86	dB(A)	101
700	dB	97	95	95	96	91	86	dB(A)	99
750	dB	104	107	97	99	90	86	dB(A)	103
800	dB	100	101	98	100	92	88	dB(A)	103
850	dB	99	98	97	97	91	88	dB(A)	101
900	dB	100	103	98	102	91	87	dB(A)	104
1000	dB	101	101	98	99	90	90	dB(A)	102
1100	dB	101	103	100	99	94	88	dB(A)	103
1200	dB	101	103	99	98	94	88	dB(A)	102
1300	dB	102	103	102	101	94	88	dB(A)	104
1400	dB	101	103	102	101	94	88	dB(A)	104
1500	dB	101	103	102	101	94	88	dB(A)	104
1550	dB	103	103	100	102	92	91	dB(A)	104
1700	dB	102	101	100	100	94	91	dB(A)	104

(1) In dB ref=10^{-12} W, as a guideline. Measured in accordance with ISO 9614-1.
(2) In dB ref=10^{-12} W, weighting (A), with uncertainty +/-3 dB. Measured in accordance with ISO 9614-1 and certified by Eurovent.

30XB - Unit with Option 15

		Octave bands, Hz (1)						Sound power level (2)	
		125	250	500	1k	2k	4k		
250	dB	95	94	90	90	83	78	dB(A)	93
300	dB	95	94	90	90	83	78	dB(A)	93
350	dB	95	94	91	90	83	78	dB(A)	94
400	dB	96	95	92	91	85	80	dB(A)	95
450	dB	96	94	92	91	86	80	dB(A)	95
500	dB	96	94	93	91	86	81	dB(A)	95
600	dB	96	97	94	93	89	82	dB(A)	97
700	dB	97	95	94	92	86	81	dB(A)	96
750	dB	101	99	94	94	86	81	dB(A)	97
800	dB	98	96	95	95	87	82	dB(A)	98
850	dB	99	96	95	94	87	83	dB(A)	97
900	dB	99	97	95	96	87	82	dB(A)	99
1000	dB	99	96	95	94	87	83	dB(A)	98
1100	dB	101	98	95	91	90	87	dB(A)	98
1200	dB	101	98	95	91	90	87	dB(A)	98
1300	dB	102	99	99	95	92	88	dB(A)	100
1400	dB	101	99	96	93	90	87	dB(A)	99
1500	dB	101	99	96	93	90	87	dB(A)	99
1550	dB	101	98	97	97	89	85	dB(A)	100
1700	dB	102	99	98	97	90	86	dB(A)	100

(1) In dB ref=10^{-12} W, as a guideline. Measured in accordance with ISO 9614-1.
(2) In dB ref=10^{-12} W, weighting (A), with uncertainty +/-3 dB. Measured in accordance with ISO 9614-1 and certified by Eurovent.

30XB - Unit with Option 15LS

		Octave bands, Hz (1)						Sound power level (2)	
		125	250	500	1k	2k	4k		
250	dB	88	89	83	84	76	68	dB(A)	87
300	dB	88	89	83	84	76	68	dB(A)	87
350	dB	88	89	83	84	76	68	dB(A)	87
400	dB	89	92	87	86	80	71	dB(A)	90
450	dB	90	96	87	86	80	69	dB(A)	91
500	dB	92	94	89	87	81	72	dB(A)	91
600	dB	90	96	91	88	81	77	dB(A)	93
700	dB	92	94	90	87	82	73	dB(A)	92
750	dB	91	97	91	89	80	70	dB(A)	94
800	dB	92	94	92	90	81	72	dB(A)	94
850	dB	96	96	92	89	81	74	dB(A)	94
900	dB	93	94	94	92	80	71	dB(A)	95
1000	dB	97	96	93	89	79	75	dB(A)	94
1100	dB	97	95	91	88	86	85	dB(A)	94
1200	dB	97	95	91	88	86	85	dB(A)	94
1300	dB	97	98	99	93	90	87	dB(A)	99
1400	dB	97	95	92	90	88	86	dB(A)	95
1500	dB	98	96	93	91	89	87	dB(A)	96
1550	dB	100	97	95	91	81	77	dB(A)	96
1700	dB	98	98	94	91	83	76	dB(A)	96

(1) In dB ref=10^{-12} W, as a guideline. Measured in accordance with ISO 9614-1.
(2) In dB ref=10^{-12} W, weighting (A), with uncertainty +/-3 dB. Measured in accordance with ISO 9614-1 and certified by Eurovent.

30XB - Unit with Option 15LS+

		Octave bands, Hz (1)						Sound power level (2)	
		125	250	500	1k	2k	4k		
450	dB	89	93	84	85	76	67	dB(A)	89
500	dB	90	92	85	85	77	70	dB(A)	89
600	dB	91	93	88	87	79	77	dB(A)	91
700	dB	92	92	87	85	79	73	dB(A)	90
750	dB	92	94	89	87	79	73	dB(A)	91
800	dB	93	92	90	88	80	75	dB(A)	92
850	dB	93	92	90	87	79	74	dB(A)	91
900	dB	94	92	91	89	80	76	dB(A)	93
1000	dB	94	91	91	87	79	75	dB(A)	92
1100	dB	97	93	90	87	85	84	dB(A)	93
1200	dB	97	93	90	87	85	84	dB(A)	93
1300	dB	95	96	97	91	88	85	dB(A)	97
1400	dB	97	95	91	88	86	85	dB(A)	94
1500	dB	98	96	92	89	87	86	dB(A)	95
1550	dB	95	93	93	89	80	76	dB(A)	93
1700	dB	95	94	92	89	81	76	dB(A)	93

(1) In dB ref=10^{-12} W, as a guideline. Measured in accordance with ISO 9614-1.
(2) In dB ref=10^{-12} W, weighting (A), with uncertainty +/-3 dB. Measured in accordance with ISO 9614-1 and certified by Eurovent.

SOUND SPECTRUM 30XBP UNITS

30XBP - Standard unit

		Octave bands, Hz (1)						Sound power level (2)	
		125	250	500	1k	2k	4k		
250	dB	96	95	92	98	86	81	dB(A)	99
300	dB	96	95	92	98	86	81	dB(A)	99
350	dB	97	95	92	98	86	81	dB(A)	99
400	dB	97	96	94	98	88	83	dB(A)	99
450	dB	104	106	95	96	88	84	dB(A)	101
500	dB	96	95	95	96	91	86	dB(A)	99
600	dB	103	105	96	95	90	86	dB(A)	101
700	dB	97	95	95	96	91	86	dB(A)	99
750	dB	104	107	97	99	90	86	dB(A)	103
800	dB	100	101	98	100	92	88	dB(A)	103
850	dB	99	98	97	97	91	88	dB(A)	101
900	dB	100	103	98	102	91	87	dB(A)	104
1000	dB	101	101	98	99	90	90	dB(A)	102
1100	dB	101	103	100	99	94	88	dB(A)	103
1200	dB	101	103	99	98	94	88	dB(A)	102
1300	dB	102	103	102	101	94	88	dB(A)	104
1400	dB	101	103	102	101	94	88	dB(A)	104
1500	dB	101	103	102	101	94	88	dB(A)	104

(1) In dB ref=10^{-12} W, as a guideline. Measured in accordance with ISO 9614-1.
(2) In dB ref=10^{-12} W, weighting (A), with uncertainty +/-3 dB. Measured in accordance with ISO 9614-1 and certified by Eurovent.

30XBP - Unit with Option 15

		Octave bands, Hz (1)						Sound power level (2)	
		125	250	500	1k	2k	4k		
250	dB	95	94	90	90	83	78	dB(A)	93
300	dB	95	94	90	90	83	78	dB(A)	93
350	dB	95	94	91	90	83	78	dB(A)	94
400	dB	96	95	92	91	85	80	dB(A)	95
450	dB	96	94	92	91	86	80	dB(A)	95
500	dB	96	94	93	91	86	81	dB(A)	95
600	dB	96	97	94	93	89	82	dB(A)	97
700	dB	97	95	94	92	86	81	dB(A)	96
750	dB	101	99	94	94	86	81	dB(A)	97
800	dB	98	96	95	95	87	82	dB(A)	98
850	dB	99	96	95	94	87	83	dB(A)	97
900	dB	99	97	95	96	87	82	dB(A)	99
1000	dB	99	96	95	94	87	83	dB(A)	98
1100	dB	101	98	95	91	90	87	dB(A)	98
1200	dB	101	98	95	91	90	87	dB(A)	98
1300	dB	102	99	99	95	92	88	dB(A)	100
1400	dB	101	99	96	93	90	87	dB(A)	99
1500	dB	101	99	96	93	90	87	dB(A)	99

(1) In dB ref=10^{-12} W, as a guideline. Measured in accordance with ISO 9614-1.
(2) In dB ref=10^{-12} W, weighting (A), with uncertainty +/-3 dB. Measured in accordance with ISO 9614-1 and certified by Eurovent.

30XBP - Unit with Option 15LS

		Octave bands, Hz (1)						Sound power level (2)	
		125	250	500	1k	2k	4k		
250	dB	88	89	83	84	76	68	dB(A)	87
300	dB	88	89	83	84	76	68	dB(A)	87
350	dB	88	89	83	84	76	68	dB(A)	87
400	dB	89	92	87	86	80	71	dB(A)	90
450	dB	90	96	87	86	80	69	dB(A)	91
500	dB	92	94	89	87	81	72	dB(A)	91
600	dB	90	96	91	88	81	77	dB(A)	93
700	dB	92	94	90	87	82	73	dB(A)	92
750	dB	91	97	91	89	80	70	dB(A)	94
800	dB	92	94	92	90	81	72	dB(A)	94
850	dB	96	96	92	89	81	74	dB(A)	94
900	dB	93	94	94	92	80	71	dB(A)	95
1000	dB	97	96	93	89	79	75	dB(A)	94
1100	dB	97	95	91	88	86	85	dB(A)	94
1200	dB	97	95	91	88	86	85	dB(A)	94
1300	dB	97	98	99	93	90	87	dB(A)	99
1400	dB	97	95	92	90	88	86	dB(A)	95
1500	dB	98	96	93	91	89	87	dB(A)	96

(1) In dB ref=10^{-12} W, as a guideline. Measured in accordance with ISO 9614-1.
(2) In dB ref=10^{-12} W, weighting (A), with uncertainty +/-3 dB. Measured in accordance with ISO 9614-1 and certified by Eurovent.

Acoustic spectrum and power of the unit + option 15LS+

		Octave bands, Hz (1)						Sound power level (2)	
		125	250	500	1k	2k	4k		
250	dB							dB(A)	-
300	dB							dB(A)	-
350	dB							dB(A)	-
400	dB							dB(A)	-
450	dB	89	93	84	85	76	67	dB(A)	89
500	dB	90	92	85	85	77	70	dB(A)	89
600	dB	91	93	88	87	79	77	dB(A)	91
700	dB	92	92	87	85	79	73	dB(A)	90
750	dB	92	94	89	87	79	73	dB(A)	91
800	dB	93	92	90	88	80	75	dB(A)	92
850	dB	93	92	90	87	79	74	dB(A)	91
900	dB	94	92	91	89	80	76	dB(A)	93
1000	dB	94	91	91	87	79	75	dB(A)	92
1100	dB	97	93	90	87	85	84	dB(A)	93
1200	dB	97	93	90	87	85	84	dB(A)	93
1300	dB	95	93	89	86	84	83	dB(A)	97
1400	dB	97	95	91	88	86	85	dB(A)	94
1500	dB	98	96	92	89	87	86	dB(A)	95

(1) In dB ref=10^{-12} W, as a guideline. Measured in accordance with ISO 9614-1.
(2) In dB ref=10^{-12} W, weighting (A), with uncertainty +/-3 dB. Measured in accordance with ISO 9614-1 and certified by Eurovent.

OPERATING LIMITS

Water heat exchanger		Minimum	Maximum
Entering temperature at start-up	°C	-	45(1)
Leaving temperature during operation	°C	3,3	15
Entering/leaving water temperature difference	K	2,8	10
Condenser air temperature		**Minimum**	**Maximum**
Storage		-20	68
Operation, standard unit		-10	55(2)
With winter operation option (option 28)		-20	55(2)
With Low noise option (option 15LS)		-10	55(2)

Note: If the air temperature is below 0°C, a glycol/water solution or the frost protection option must be used.

Note: If the leaving water temperature is below 4°C, a glycol/water solution or the frost protection option must be used.

(1) Based on the installation type and the air temperature

(2) Part load, depended of sizes & leaving water temperature

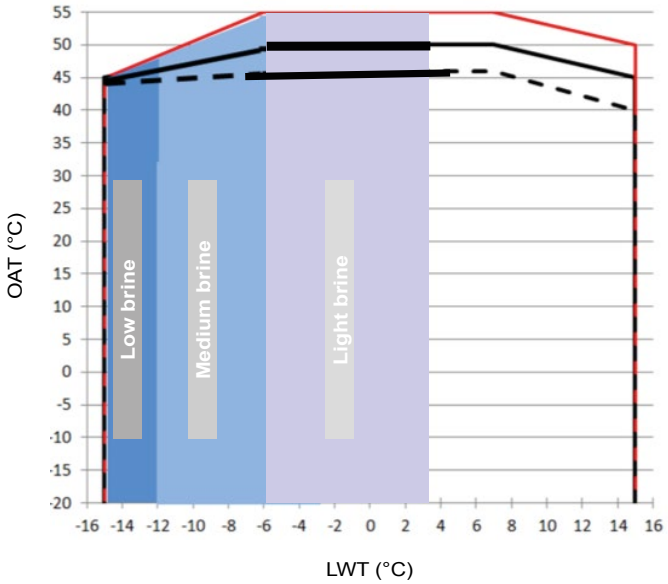
Units without hydraulic module

30XB & 30XBP	Minimum flow rate(1) (l/s)	Maximum flow rate(2) (l/s)
250	3,6	37,5
300	4,0	40,5
350	4,3	40,5
400	5,3	34,1
450	6,0	36,9
500	6,7	42,0
600	8,1	45,0
700	8,9	56,1
750	9,6	59,1
800	10,4	67,1
850	11,0	67,1
900	11,8	73,9
1000	13,1	83,9
1100	15,1	87,8
1200	16,4	126,5
1300	17,5	92,9
1400	16,4	132,1
1500	18,8	107,4
1550	19,9	109,4
1700	22,0	107,4

(1) Minimum flow rate for maximum allowable water temperature difference conditions (10K) under Eurovent conditions

(2) Maximum flow rate for a pressure drop of 100 kPa in the exchanger

OPERATING RANGE



NOTE

Ranges given as a guide using ethylene glycol for an evaporator ΔT = 3K. Refer to the electronic catalogue.

Winter operation option (included in standard for 30XBP range)

Very low temperature brine, (-15°C ethylene glycol / -10°C propylene glycol)

Low temperature brine, (-12°C ethylene glycol / -8°C propylene glycol)

Medium temperature brine, (-3°C ethylene glycol / 0°C propylene glycol)

Full load operation

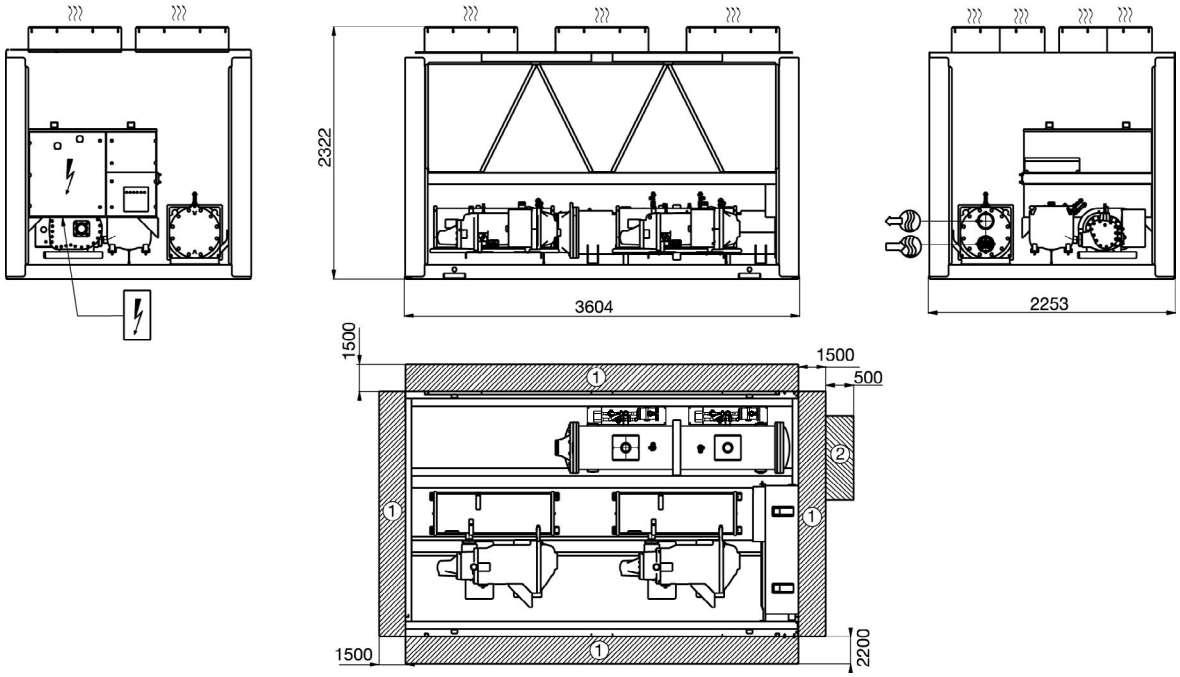
Part load operation

Operating limit for units equipped with the Ultra & Very low noise options

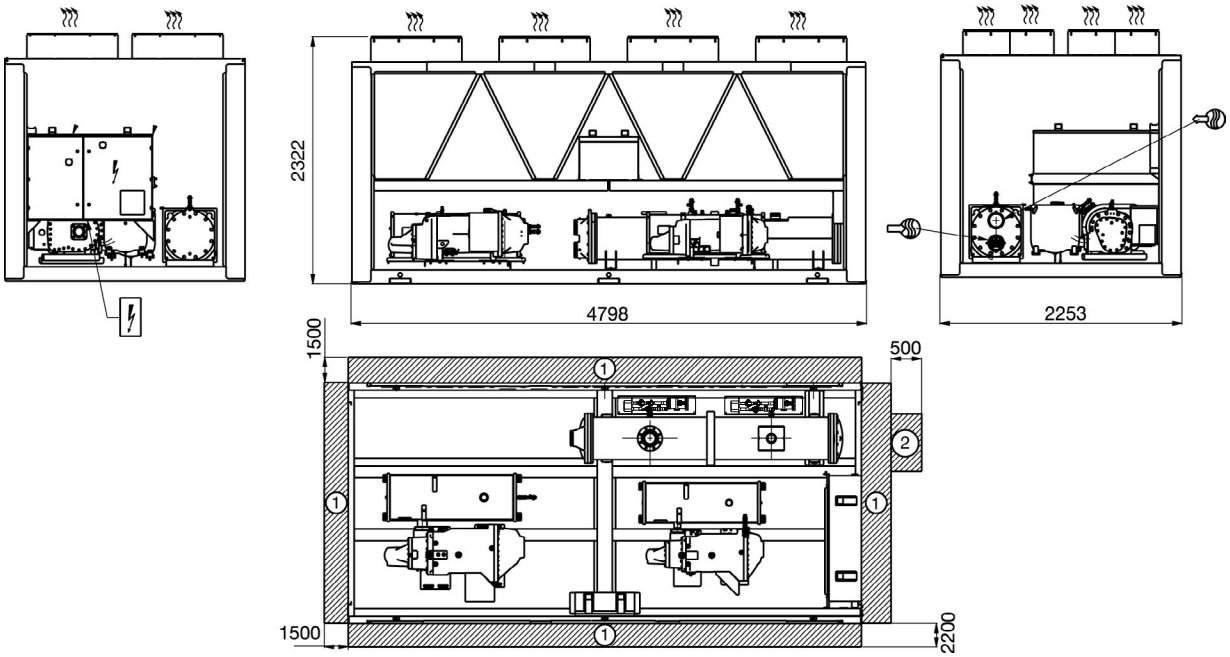
Power factor correction option (Option 231) available for an inlet air temperature up to +40°C
For operation in pure water at an inlet air temperature below 0°C, the frost protection (option_41A or 41B) must be provided

DIMENSIONS / CLEARANCES

30XB250 to 350, 30XBP250 to 350
30XB250 to 300 with option 254/255



30XB400 to 450, 30XBP400 to 500
30XB350 to 400 with option 254/255



Legend
All dimensions are given in mm.

(1) Required clearances for maintenance (see note)

(2) Recommended space for evaporator tube removal

Water inlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.

Water outlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.

Air outlet – do not obstruct

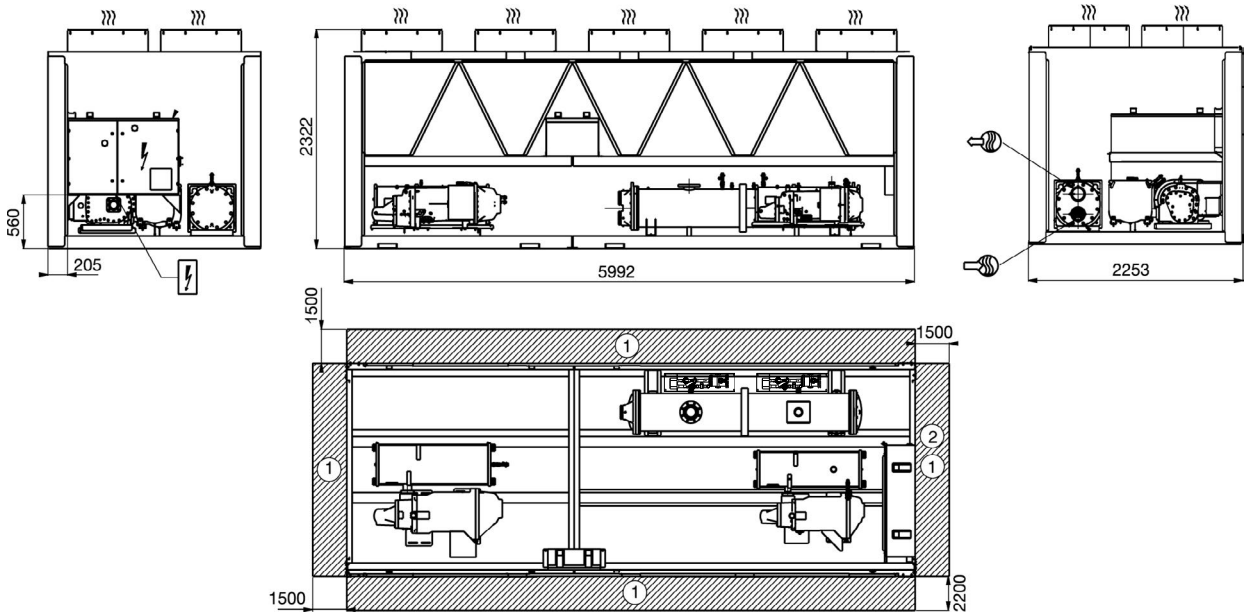
Power supply and control connection

NOTES:

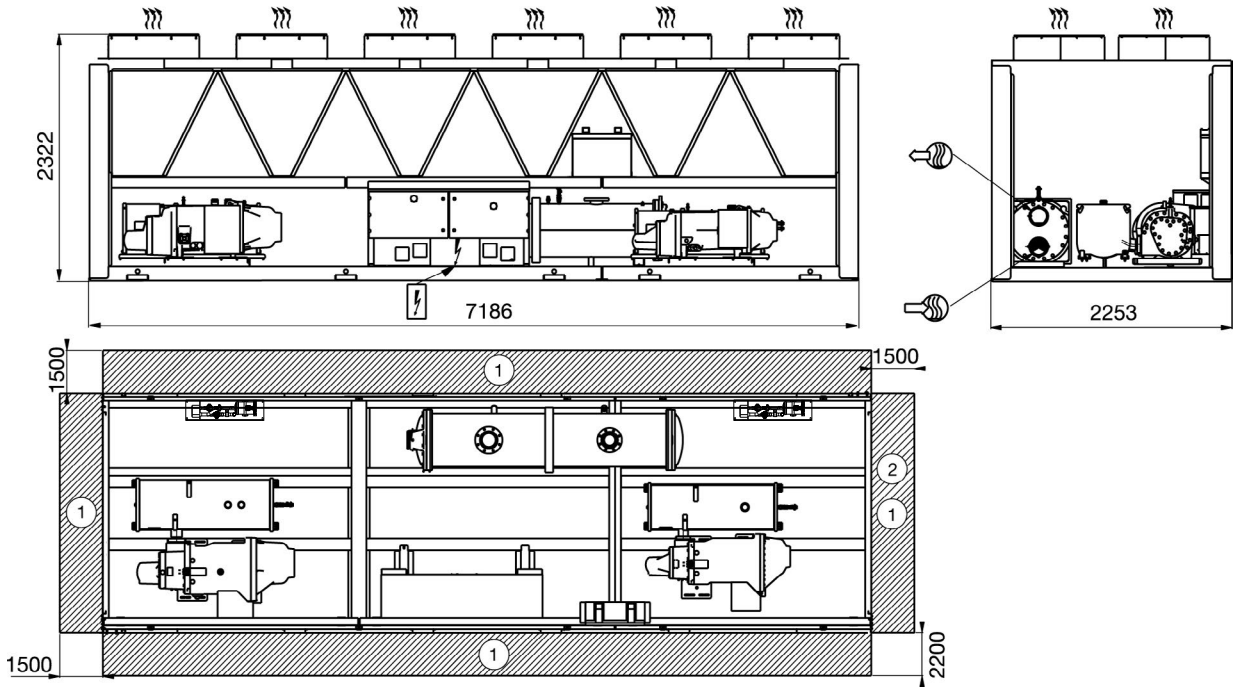
- **Drawings are not contractually binding.**
- **Before designing an installation, consult the certified dimensional drawings, available on request.**
- **If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required**

DIMENSIONS / CLEARANCES

30XBP500, 30XB500 with options 254/255, 50 (heat recovery) or 118A (free cooling)



30XB600 to 900, 30XBP600 to 800, 30XB600 to 700 with option 254/255



Legend

All dimensions are given in mm.

(1) Required clearances for maintenance (see note)

(2) Recommended space for evaporator tube removal

Water inlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.

Water outlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.

Air outlet – do not obstruct

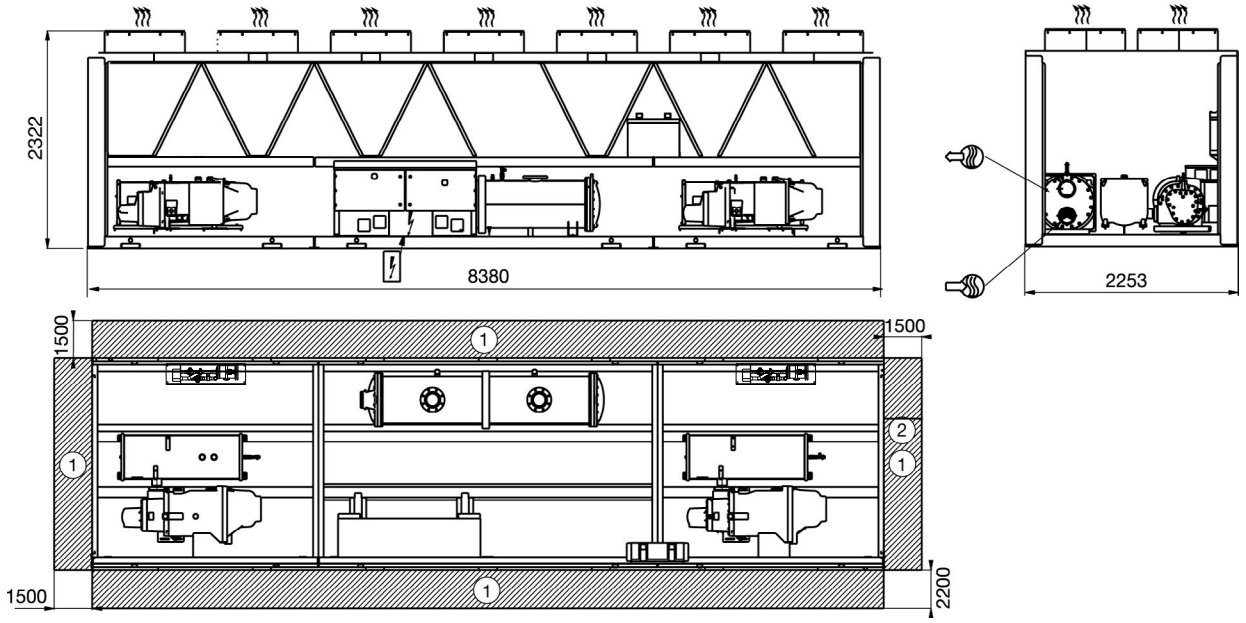
Power supply and control connection

NOTES:

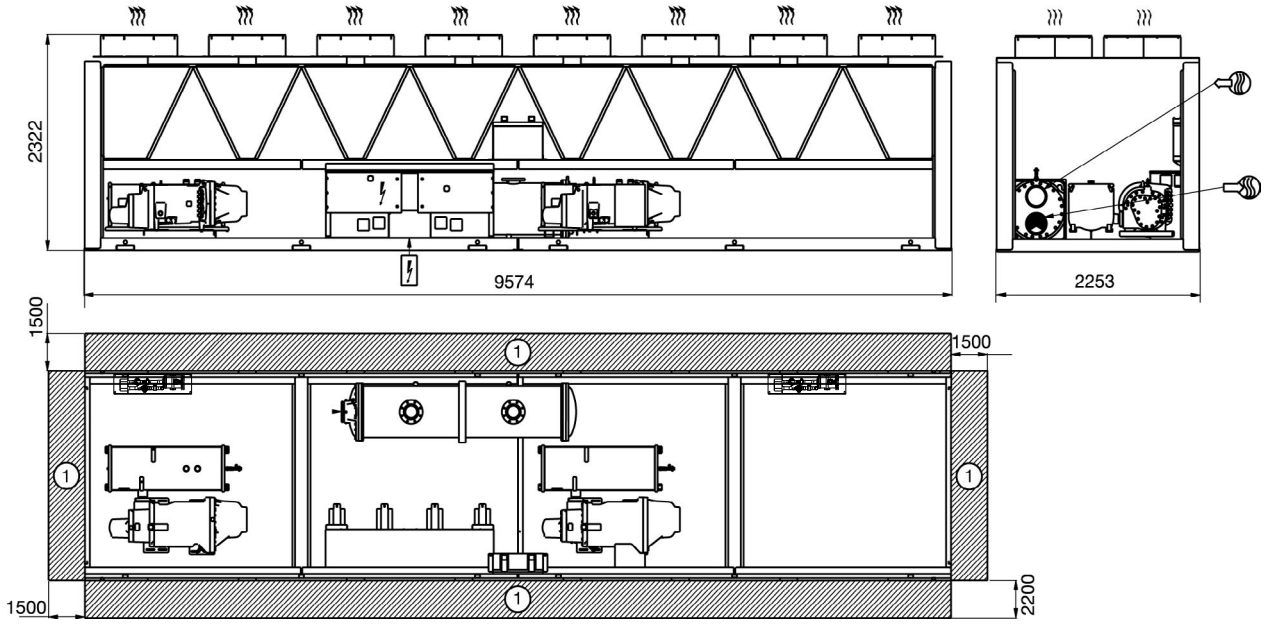
- **Drawings are not contractually binding.**
- **Before designing an installation, consult the certified dimensional drawings, available on request.**
- **If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required**

DIMENSIONS / CLEARANCES

30XB1000, 30XBP850 to 900, 30XB750 to 850 with option 254/255, 30XB 850 & 900 with option 50



30XBP1000, 30XB900 option 254/255,
30XB1000 with options 50 (heat recovery) & 118 (free cooling) & Option 119 (high efficiency)



Legend
All dimensions are given in mm.

(1) Required clearances for maintenance (see note)

(2) Recommended space for evaporator tube removal

Water inlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.

Water outlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.

Air outlet – do not obstruct

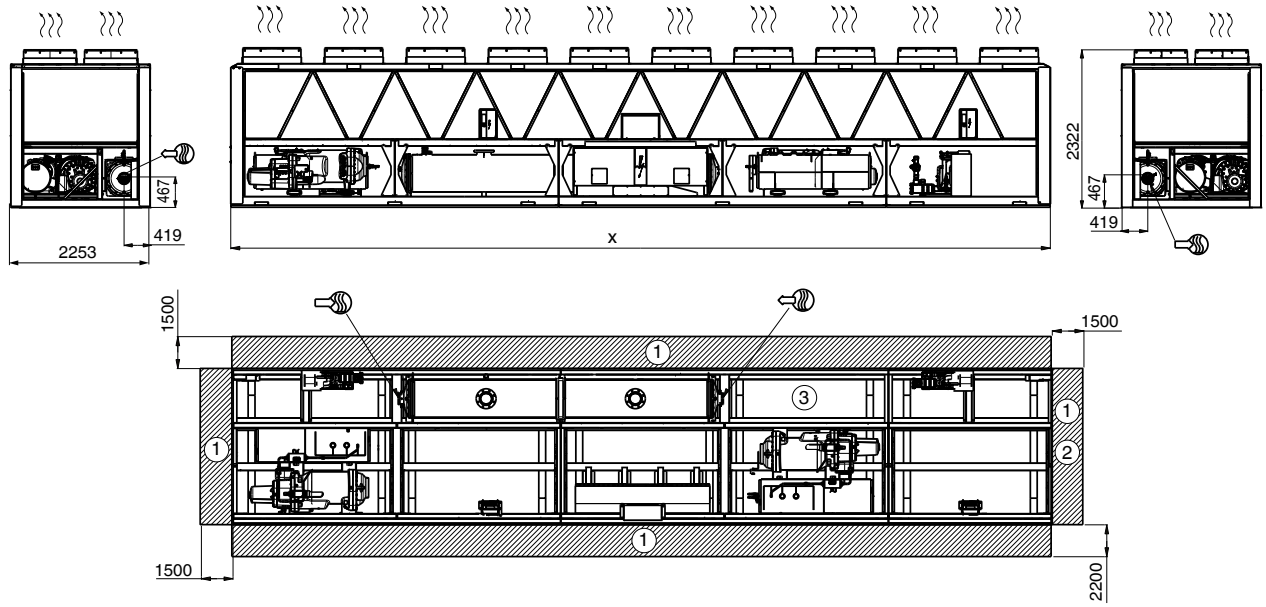
Power supply and control connection

NOTES:

- **Drawings are not contractually binding.**
- **Before designing an installation, consult the certified dimensional drawings, available on request.**
- **If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required**

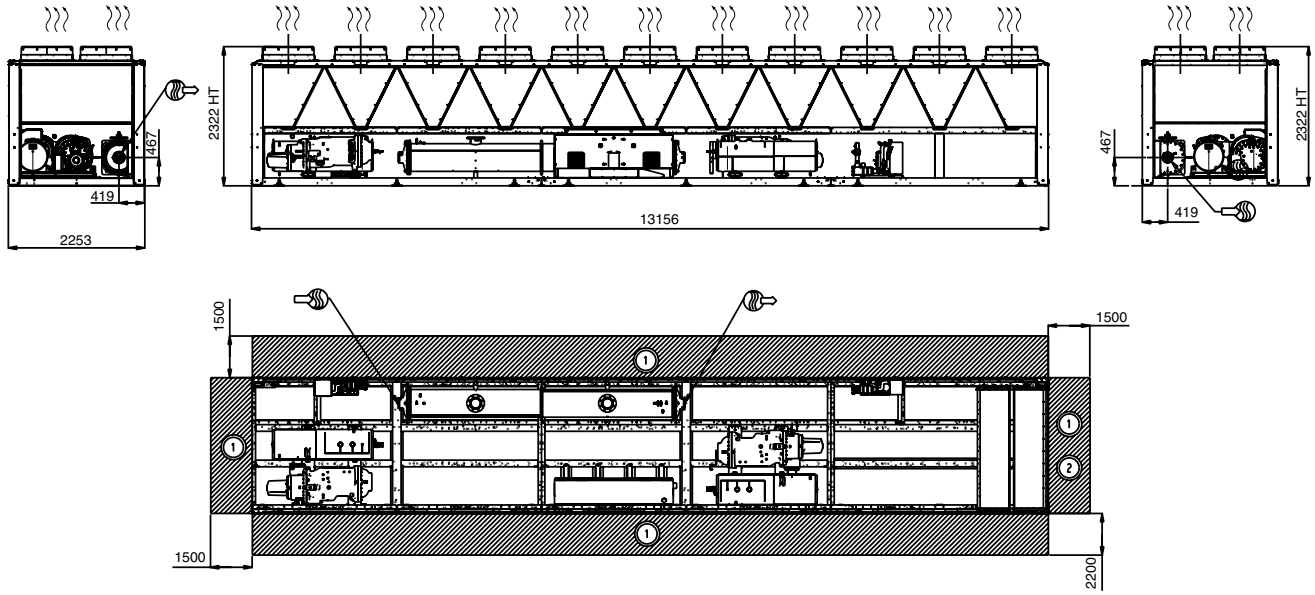
DIMENSIONS / CLEARANCES

30XB1100 to 1400,
30XBP1100 to 1400



30XB1100 : X = 9574
30XB1200 : X = 10770
30XB1100 option 119 or 254/255, 30XB1200 option 254/255, 30XB1300, 30XB1400 : X = 11962

30XB1500, 30XBP1500



Legend
All dimensions are given in mm.

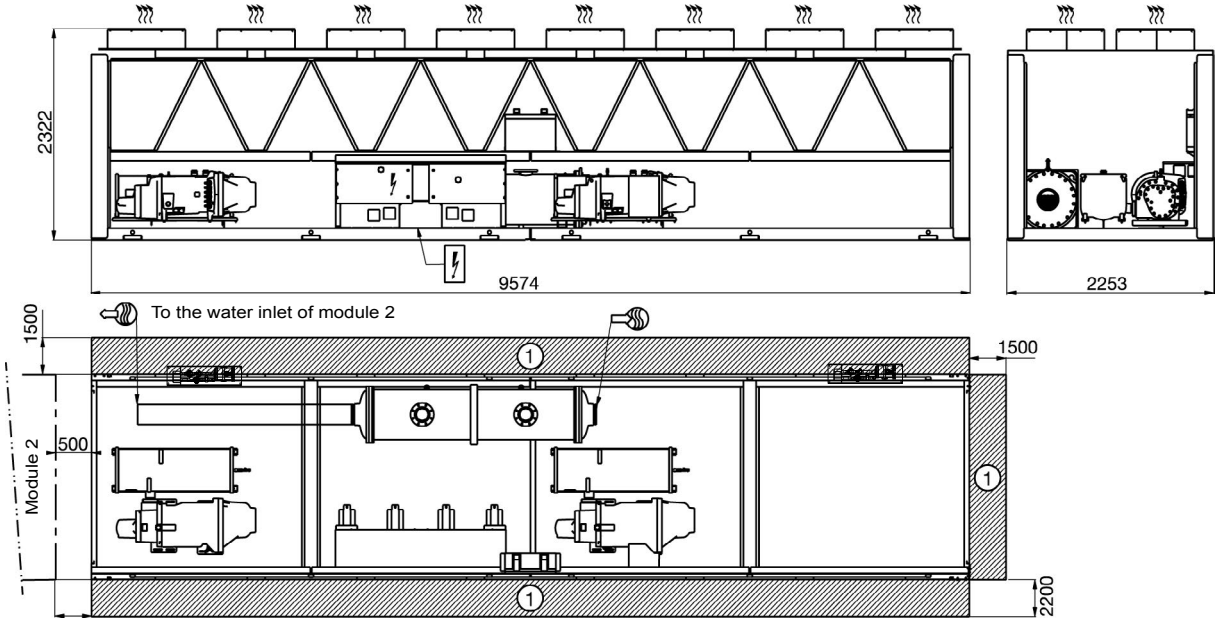
1. Required clearances for maintenance (see note)
2. Recommended space for evaporator tube removal
3. Water inlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
4. Water outlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.
5. Air outlet – do not obstruct
6. Power supply and control connection

NOTES:

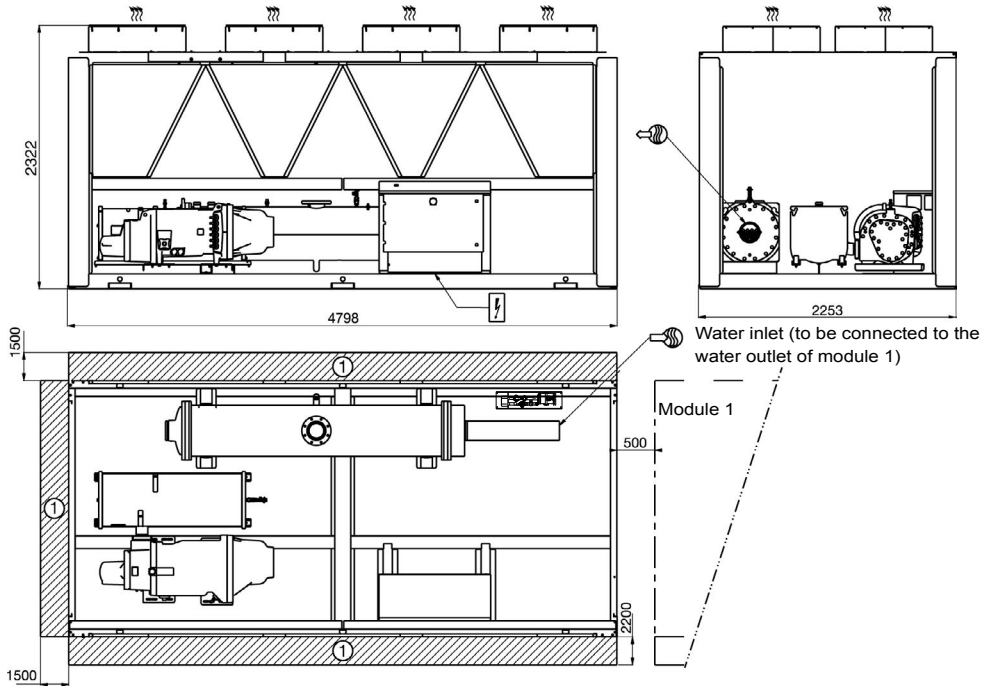
- **Drawings are not contractually binding.**
- **Before designing an installation, consult the certified dimensional drawings, available on request.**
- **If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required**

DIMENSIONS / CLEARANCES

30XB1550 module 1/2



30XB1550 module 2/2



Legend

All dimensions are given in mm.

① Required clearances for maintenance (see note)

② Recommended space for evaporator tube removal

Water inlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.

Water outlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.

Air outlet – do not obstruct

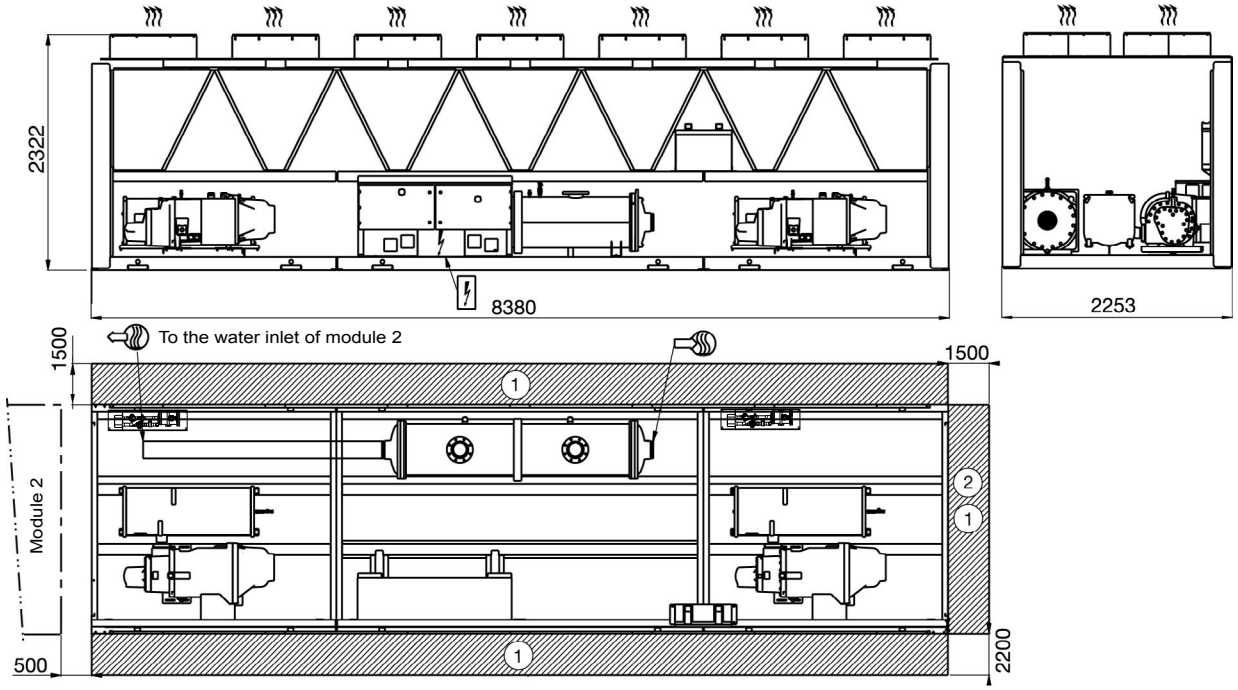
Power supply and control connection

NOTES:

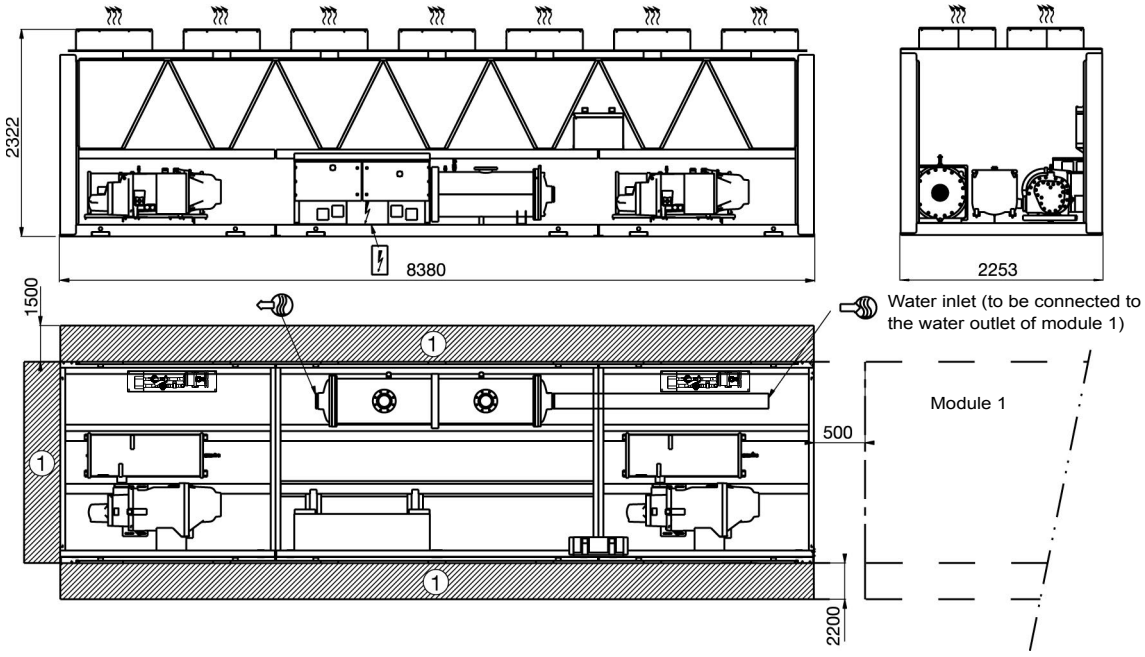
- **Drawings are not contractually binding.**
- **Before designing an installation, consult the certified dimensional drawings, available on request.**
- **If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required**

DIMENSIONS / CLEARANCES

30XB1700 module 1/2



30XB1700 module 2/2



Legend
All dimensions are given in mm.

(1) Required clearances for maintenance (see note)

(2) Recommended space for evaporator tube removal

Water inlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.

Water outlet for standard unit - for options 100A, 100C, 107 refer to the certified drawing.

Air outlet – do not obstruct

Power supply and control connection

NOTES:

- **Drawings are not contractually binding.**
- **Before designing an installation, consult the certified dimensional drawings, available on request.**
- **If the installation includes several units or if this (these) is (are) close to walls, please refer to chapters 3.13 - "Multiple chiller installation" and 3.14 - "Distance to the wall" of the installation manual to determine the space required**

SPECIFICATION GUIDE

General description

Factory assembled single piece air-cooled chiller, shall include all factory wiring, piping, controls, refrigerant charge (R134a), completely independent refrigerant circuits, screw compressors, electronic expansion valves and equipment required prior to field start-up.

The unit performance shall be certified by Eurovent or AHRI independent testing laboratory.

The unit shall operate at full load up with ambient temperatures ranging from -20°C to 48°C without tripping and without the use of additional adiabatic systems.

Quality assurance

Unit shall be rated in accordance with EN14511, EN14825 and AHRI 550/590 standards, latest revisions, and unit performance shall be certified by independent certification body.

- Unit without independent Eurovent or AHRI certification shall be excluded.
- Unit construction shall comply with European directives:
- From 1st January 2018, commission regulation (EU) N°2016/2281 implementing Directive 2009/125/EC with regards to Eco-design requirements for comfort cooling chillers and process chillers.
- Commission regulation (EU) N°640/2009 implementing Directive 2009/125/EC with regards to Eco-design requirements for electrical motors
- From 1st January 2015, commission regulation (EU) N°547/2012 implementing Directive 2009/125/EC with regards to Eco-design requirements for water pumps (unit equipped with hydraulic module option)
- Pressurised equipment directive (PED) 2014/68/UE
- Machinery directive 2006/42/EC, modified
- Low voltage directive 2014/35/UE
- Electromagnetic compatibility directive 2014/30/UE, modified, and the applicable recommendations of European standards
- Machine safety: electrical equipment in machines, general requirements, EN 60204-1
- Electromagnetic compatibility emission EN61000-6-4
- Electromagnetic compatibility immunity EN61000-6-2
- Directive 2009/125/EC with regard to ecodesign requirements for fans driven by motors with an electric input power between 125 W and 500 kW
- Directive 2005/32/EC with regard to ecodesign requirements for electric motors
- (if pumps on board) Directive 2009/125/EC with regard to ecodesign requirements for water pumps

Unit shall be designed, manufactured and tested in a facility with a quality management system certified ISO 9001 and environmental management system ISO 14001.

Unit shall be run tested at the factory.

Design performance data following European EN14825 & EN14511 standards

- Cooling capacity (kW): ……
- Unit power input (kW): ……
- Part load energy efficiency, SEER (kW/kW): ……
- Part-load energy efficiency, SEPR (kW/kW): .....
- Full load energy efficiency, EER (kW/kW): ……
- Eurovent Class ……
- Evaporator entering/leaving water temperature (°C): … /
- Fluid type: …….
- Fluid flow rate (l/s): ……
- Evaporator pressure drops (kPa): ……
- Outdoor air temperature (°C): ……
- Sound power level at full load (dB(A)): ……
- Dimensions, length x depth x height (mm): … x … x

Performance shall be declared in accordance either with EN14511-3:2013 and certified by Eurovent or with AHRI 550/590 standard and certified by AHRI.

The unit shall operate at full load with ambient temperatures ranging from -10°C to 48°C without use of additional adiabatic cooler systems, with evaporator leaving liquid temperature between 3.3°C and 7°C. When evaporator leaving water temperature is higher than 7°C, up to 15°C, the maximum outdoor air temperature may be lower to secure machine safe operation. The machine shall continue to operate (at reduced capacity) in ambient temperatures of up to 55°C, with evaporator leaving liquid temperature between 3.3°C and 10°C.

- (Carrier option 5) Chilled brine solution production down to -10°C when ethylene glycol is used, or down to -6°C when propylene glycol is used.
- (Carrier option 6) Chilled brine solution production down to -15°C when ethylene glycol is used, or down to -10°C when propylene glycol is used.
- (Carrier option 28 or 17) The unit shall operate at full load down to -20°C ambient air temperature.

Frame

- Machine frame and enclosure shall be made of galvanised sheet steel
- Frame and enclosure shall be painted in oven-baked polyester powder paint in light grey colour (RAL 7035)
- Removable panels and electrical panel doors shall be accessible by 1/4-turn screws
- (Carrier option 23) Machine shall be protected from foreign bodies through the use of metal grilles factory-mounted on the four vertical faces. Coils refrigerant connections shall be covered by side panels of galvanised sheet steel, for enhanced aesthetic and safety during transportation.
- (Carrier option 23A) Coils refrigerant connections shall be covered by side panels of galvanised sheet steel, for enhancead aesthetic and safety during transportation.

SPECIFICATION GUIDE

Compressor

- Unit shall have semi-hermetic twin-screw compressors with internal relief valve and check valve to avoid reverse rotation on shut down
- Unit shall be equipped with a muffler to reduce discharge gas pulsations
- Compressor bearings shall be designed for minimum 73000 hours at maximum operating conditions
- Capacity control shall be provided by a slide valve
- Compressor capacity control shall be stepless from 100% to 30% load
- Compressor shall start in unloaded condition
- Motor shall be cooled by suction gas and protected by a dedicated electronic board against:
- Thermal overload by internal winding temperature sensors
- Electrical overload and short circuit by dedicated fuses (one per phase)
- Reverse rotation
- Loss of phase
- Undervoltage and power supply failure.
- Lubrication oil system shall include pre-filter and external filter capable of filtration to 5 microns
- The oil filter line shall be equipped with service shut off valves for easy filter replacement
- The oil separator, separate from the compressor, shall not require oil pump and shall include an internal muffler to reduce discharge gas pulsations
- The oil separator shall be designed for 2100 kPa working pressure
- The oil separator shall include a temperature actuated heater and an oil level safety switch
- Compressors shall be installed on flexible anti-vibration mounts and isolated from the main unit chassis
- (Carrier opton 93A) Each compressor shall be equipped with a discharge shut-off valve
- (Carrier option 279A) Each compressor and oil separator shall be installed within an enclosure with removable panels to facilitate service access
- (Carrier option 15 or 15LS) Each compressor shall be installed within an insulated acoustic enclosure with removable panels to facilitate service access.

Evaporator

- Unit shall be equipped with a single flooded evaporator
- Evaporator shall be manufactured by the chiller manufacturer
- Evaporator shall be tested and stamped in accordance with the European directive for pressurised equipment 2014/68/UE
- The maximum refrigerant-side operating pressure will be 2100 kPa, and the maximum waterside pressure will be 1000 kPa (2100kPa as an option)
- The evaporator shall be mechanically cleanable, shell-and-tube type with removable heads
- Tubes shall be internally and externally grooved, seamless-copper, and shall be rolled into tube sheets
- Shell shall be insulated with 19 mm closed-cell foam with a maximum K factor of 0.28. Evaporator thermal insulation shall be factory fitted
- The evaporator shall have a drain and vent in each head
- Chiller shall have only one water inlet & outlet connection with Victaulic couplings to avoid vibrations transmission and to accommodate minor pipework misalignment (Victaulic adapter kit shall be available on demand)
- Design shall incorporate 2 independent refrigerant circuits
- Evaporator shall be fitted with electronic auto setting water flow switch. Paddle switches or differential pressure switches shall not be acceptable
- (Carrier option 281) Unit shall be fitted with a cooler jacket to protect the insulation from the long-term effects of UV radiation.

Condenser

- Condenser coils shall be designed to ensure sub-cooling of the liquid refrigerant
- Condenser coils shall be V-shaped with a minimum open angle of 50° to ensure optimum air distribution
- Coils shall be entirely made of aluminium alloy, micro-channels type.
- Coils shall consist of a two-pass arrangement
- Coils shall be leak-tested at 15.5 bar with 100% He
- (Carrier options 254/255) Coils shall use copper tubes and aluminium fins
- (Carrier option 262) Coils shall be suitable for installations in moderately corrosive environment. The protection shall consist on a nano-scale conversion coating, 100 to 200 nm thick, which uniformly covers the entire surface of the coil. Non conversion coating shall not be accepted. The coating process shall include immersion in a coating bath. The coating shall be applied by an autocatalytic conversion process which shall modify the surface of the aluminum producing a coating that is integral to the coil. Complete immersion shall ensure that 100% of the surface is coated, forming a continuous and even film. Spray coating process shall not be accepted. The coating shall be integral to the Novation™ MCHE and shall not flake or loose adhesion with cross hatch adhesion of 5B per ASTM D3359. The thin coating shall have no effect on heat transfer or air flow per ARI 410. The coating shall utilise corrosion inhibitors which actively arrest damage due to environmental or mechanical damage. Corrosion durability of coated microchannel coils shall be confirmed through testing to no less than 5000 hours constant neutral salt spray per ASTM B117.
- (Carrier option 263) Coils shall be suitable for installations in the most severe environments. The protection shall consist of a flexible epoxy polymer coating uniformly applied to all coil external surface areas without material bridging between fins. The coating shall be applied by an electrocoating process with immersion in a coating bath and a final UV protective topcoat to shield the fins from ultraviolet degradation and to ensure coating durability and long life. Spray coating and non-electrocoating shall not be accepted. Coating process shall ensure complete coil encapsulation, including all exposed fin edges. The coating shall have a uniform thickness of 20 to 40 µm on all external coil surface areas including fin edges. The coating shall have minimal effect (<1%) on heat transfer or air flow per ARI 410. The coating shall have superior hardness characteristics of 2H per ASTM D3363 and cross hatch adhesion of 4B-5B per ASTM D3359. Impact resistance shall be up to 100 in/lb (ASTM D2794). Corrosion durability of coated microchannel coils shall be confirmed through testing to no less than 5000 hours constant neutral salt spray per ASTM B117.

SPECIFICATION GUIDE

Fans

- (30XB standard unit) Fans shall be fixed-speed AC fans
- (30XB with option 17) Fans shall be variable-speed AC fans with one or more variable-speed drives per refrigerant circuit.
- (30XBP premium unit) Fans shall be EC fans.
- Fans shall be direct-drive, equipped with an impeller with 9 aerodynamic blades and a rotating shroud to ensure optimal leak-tightness between the blades and the fan housing
- Fans impellers shall be of one-piece and made of a corrosion-resistant composite material, and statically and dynamically balanced
- The fans discharges shall be protected by polyethylene-coated steel wire grilles
- The three-phase electric motors shall have isolation class F, IP 55 protection and a minimum efficiency of 80%. They shall have individual overload protection via a disconnect switch
- (Carrier option 10) Fans shall be equipped with discharge connection flanges increasing available discharge pressure up to 60 kPa
- Noise levels shall be adjustable electronically per time band on user display to guarantee a quiet operation during night or building unoccupied periods.

Refrigerant circuit

- Refrigerant circuit components shall include: compressor, oil separator, high and low side pressure relief devices, economiser, filter driers, moisture indicating sight glasses, long stroke electronic expansion device, and complete operating charge of both refrigerant R134a and compressor oil
- (Carrier option 92) For each refrigerant circuit, a compressor suction and discharge line shut off valve, an evaporator inlet valve and economiser line valve, shall be mounted to isolate all main components (filter drier, oil filter, expansion device and compressor) and allow refrigerant to be safely stored during service operation
- (Carrier opton 93A) Each compressor shall be equipped with a discharge shut-off valve
- (Carrier option 257) Compressor and oil separator sub-assembly and refrigerant gas suction line shall be acoustically insulated
- (Carrier option 258) Compressor and oil separator sub-assembly, refrigerant gas suction line and the economiser subassembly (if needed) shall be acoustically insulated.

Power control boxes

- Unit shall operate at 400 Volts (+/- 10%), 3-phases, 50 Hertz power supply without neutral
- Unit shall be designed for simplified connection on TN(s) networks
- Unit shall have maximum holding short circuit current of 38000 Amps up to 500 kW, of 50000 Amps up to 1000 kW and 100000 Amps up to 1700 kW nominal cooling capacity
- Control circuit voltage shall be 24 V maximum, supplied by a factory-installed transformer
- Unit shall be supplied with factory-installed main circuit breaker/isolator
- Unit shall have a factory installed star/delta starter as standard to limit electrical inrush current
- Power control box is powder painted with hinged and gasket sealed doors and is protected to IP44CW
- (Carrier option 20A) The power control box shall be protected to IP54 to permit safe operation for installations in polluted environment
- (Carrier option 70D) The main electrical disconnect switch shall integrate fuses for protection against over current flow
- (Carrier option 81 for sizes 1102/1502, standard for all other sizes)Unit shall have single point power connection
- (Carrier option QM231) The unit shall include capacitors to ensure a power factor of 0.95 at full load.

Controls

- Unit control shall include as a minimum: microprocessor with non-volatile memory, picture guided unit/operator interface, the LOCAL/OFF/REMOTE/CCN selector and a 5 inch coloured touch-screen display with 10 languages capability: German, English, Spanish, French, Italian, Dutch, Portuguese, Turkish, Russian and one additional language on customer choice (downloadable on job site)
- (Carrier option 158A) Unit control shall include as a minimum: microprocessor with non-volatile memory, picture guided unit/operator interface, the LOCAL/OFF/REMOTE/CCN selector and a 7 inch coloured touch-screen display with multiple language capability
- Pressure sensors shall be installed to measure suction, discharge, and oil pressure
- Temperature probes shall be installed to read cooler entering and leaving temperatures and outdoor air temperature
- Unit control shall have an IP port to permit user connection via web browser, allowing same level of access to control menus as unit mounted interface (excluding start/stop and alarm reset capabilities)
- Control shall store technical documentation, drawings and spare parts list specific to each particular unit
- (Carrier option 148B) A bi-directional communication board shall allows plug and play interfacing of the machine with any BMS using the J-Bus protocol
- (Carrier option 148D) A bi-directional communication board shall allows plug and play interfacing of the machine with any BMS using the LonTalk protocol
- (Carrier option 149) Machine shall be supplied with factory installed bi-directional high-speed communication using BACnet protocol over Ethernet network (IP-connection). The BACnet over-IP communication shall have no limitation in reading/writing controller points and shall use standardised alarm codes as defined with BACnet protocol. Field programming shall be required
- (Carrier option 298) Machine shall be accessible via wireless connection for remote monitoring to facilitate to preventive maintenance.

Unit shall be capable of performing the following functions:

- Electronic expansion valve control optimising evaporator refrigerant charge while ensuring minimum refrigerant supeheat and optimum subcooling at condenser outlet
- Capacity control based on leaving chilled fluid temperature
- Limitation of the chilled fluid-temperature pull-down rate at start-up to an adjustable range of 0.1°C to 1.1°C per minute to prevent excessive demand spikes at start-up
- Automatic change-over and cycling of compressors to equalise running hours and number of starts
- Reset enable of leaving chilled-water temperature based on the outdoor air temperature or via 0-10 V signal (as option)
- Dual set point management for the leaving chilled water temperature activated by a remote contact closure signal or by the built in time clock
- 2-level demand limit control (between 0 and 100%) activated by remote contact closure or by the built in time clock

- Time schedule management to enable unit start-up control, demand limit and set-point changes
- Trending of main variables (accessible by web browser only)
- (Carrier option 58) lead/lag type control of two chillers running in series or parallel
- (Carrier option 116) Evaporator pump control, including additional standby pump (if installed)
- (Carrier opton 156) The following inputs contacts shall be available on the unit control board:
- Setpoint reset by indoor air temperature sensor
- Cooling setpoint reset by 4-20 mA
- Time schedule override
- Ice storage input
- Demand limit
- Unit shut down

The following outputs contacts shall be available on the unit control board:

- Instantaneous chiller capacity by 0-10 V signal
- Complete shut-down due to a chiller fault
- Compressor operation indication.

Diagnosis

- Control interface shall be capable of displaying set points, system status including temperatures, pressures, current for each compressor, run time and percent loading
- Control interface shall perform trending of up to 10 preselected variables
- Control system shall allow a quick test of all machine elements to verify the correct operation of every switch, circuit breaker, contactor etc. before the chiller is started
- In case of alarm, control system shall send an email to specific mail box set by user during machine commissioning
- Control shall have a black box function capable of storing a data set of 20 variables, at intervals of 5 seconds, for 14 minutes preceding the alarm and 1 minute after the alarm. The black box shall be able to record 20 events. Once this threshold is reached, new data shall over-write the oldest record.

Refrigerant leak alert:

The liquid chiller shall be equipped as standard with an automatic refrigerant leak detection algorithm:

- Indicates serious refrigerant loss from any point in the system.
- Sensitivity: 25% refrigerant charge loss per circuit (depending on the conditions).
- Refrigerant leak detection (option 159):
- Available as an option, an additional dry-contact shall allow reporting of possible leaks. The leak detector (by others) should be mounted in the most likely leak location.

Safeties

Control system shall provide the unit with protection against the following:

- Reverse rotation
- Low chilled water temperature
- Low oil pressure (per compressor)
- Current imbalance
- Compressor thermal overload
- High pressure (with automatic compressor unloading in case of excessive condensing temperature)
- Electrical overload and short circuit
- Loss of phase, undervoltage and power supply failure
- Control shall provide separate general alert (minor incident) and alarm (circuit down) remote indication.

Hydraulic module (optional)

(Carrier 30XB and 30XBP 250 to 500 option 116B/C/F/G) A choice of different pump types and configurations shall be available:

- Single high-pressure pump
- Dual high-pressure pumps
- Single low-pressure pump
- Dual low-pressure pumps
- If dual pumps are fitted, the unit control shall automatically manage the change-over and cycling of pumps to equalise running hours and number of starts

The hydraulic module shall be integrated in the chiller chassis without increasing its dimensions

The hydraulic module shall include the following elements:

- Removable screen filter
- Centrifugal monocell water pump with three-phase motor equipped with internal over-temperature protection
- Electronic water flow switch without paddle
- Relief valve calibrated to 4 bar
- Long stroke flow control valve
- Pressure gauge and valve set for differential pressure measurement
- The water pump shall be isolated from the chiller structure and water piping by anti-vibration mountings and expansion compensators, in order to limit vibration and noise trasmission
- The water piping shall be protected against corrosion and equipped with drain and purge plugs
- The hydraulic connections shall be Victaulic type
- Both pump and piping shall be fully insulated with polyurethane foam clad with aluminum to prevent condensation
- (Carrier option 41B) Pump frost protection shall be guaranteed down to -20°C by electric resistance heaters
- Piping frost protection shall be guaranteed down to -20°C by automatic pump activation when liquid temperature falls below a safety limit

Total heat recovery (optional)

(Carrier option 50) The unit shall include an additional heat exchanger in parallel with the condenser coils to recover 100% of condenser heat

Dx Free-cooling (optional)

(Carrier option 118A) The unit shall include one additional refrigerant pump on each refrigerant circuit to provide partial free-cooling during the cold season. The free-cooling option shall not require the addition of glycol to the water loop.

Quality and Environment
Management Systems
Approval

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