



AIR-COOLED SCROLL CHILLERS AND HEAT PUMPS WITH GREENSPEED® INTELLIGENCE



Unit with low noise level option

Low environmental impact

High full and part load efficiency

Compact and simple to install

Low refrigerant charge

Superior reliability

30RB/30RBP 170R-950R

Rated cooling capacity 170-940 kW



30RQ/30RQP 165R-520R

Heating capacity 170-530 kW

Cooling capacity 160-500 kW



Aquasnap® heat pumps are the best solution for commercial and industrial applications where installers, engineering and design departments and building owners require reduced installation costs, optimal performances and maximum quality.

The latest generation AquaSnap® is available in two versions:

- The AquaSnap® (30RB-30RQ) version is a compact all-in-one package optimised for full-load applications where reduced investment cost (low CapEx) is required.
- The premium AquaSnap® version with Greenspeed® intelligence (30RBP-30RQP) is optimised for part load applications where a high SEER, SEPR, SCOP or IPLV value is required. This version is equipped with a variable speed pump and fans, providing premium part load efficiency to reduce maintenance costs over the lifespan of the chiller. In addition, the sound levels achieved under the part load conditions are particularly low. Besides operating efficiently and quietly, the AquaSnap® range with Greenspeed® intelligence operates from -20 °C up to +48 °C as standard.



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

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

R-32: THE BEST SOLUTION FOR SCROLL LIQUID CHILLERS AND HEAT PUMPS



Carrier was the first to introduce the R-1234ze HFO with ultra-low GWP in screw chillers, as far back as early 2016. Today, having examined its main properties, Carrier has chosen R-32 refrigerant to replace high-GWP R-410A refrigerant in its Scroll liquid chillers and heat pumps, for its lower environmental impact, high energy efficiency, good availability and ease of use.

R-32 is currently the ideal refrigeration solution for units equipped with Scroll compressors. By using R-32 refrigerants, Carrier has reduced the carbon footprint of its AquaSnap® range of liquid chillers and heat pumps by 80%. This is the result of a much lower GWP and a significant reduction in the system's cooling charge compared to the previous generation that used R-410A.

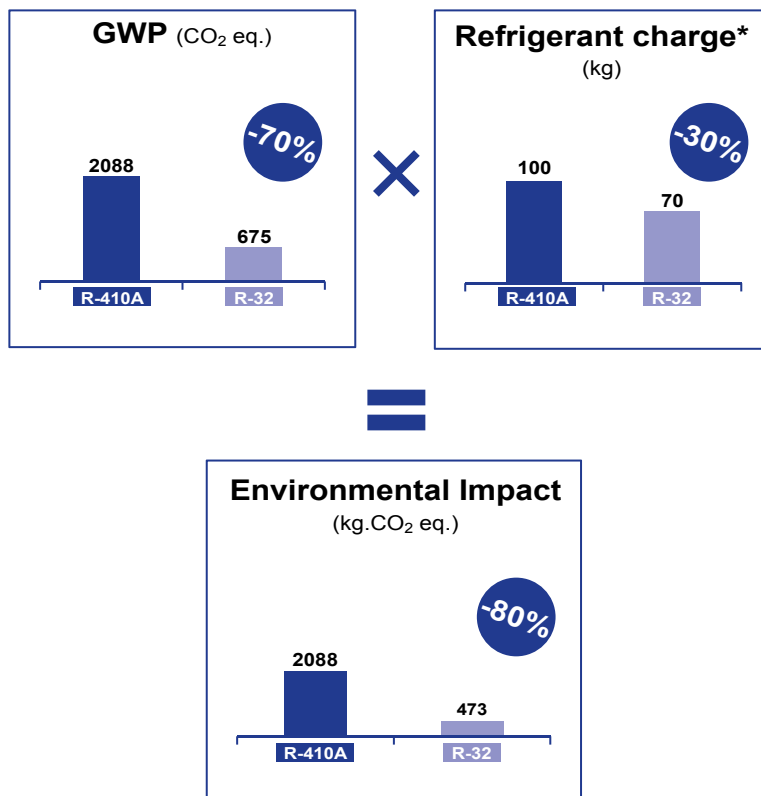
R-32 is also the right choice economically, reducing the locally imposed tax burden on HFCs based on the CO₂ impact.



CO₂ FOOTPRINT
REDUCED BY UP TO **80%**

Lower environmental impact (-80% compared to R410A)

- R-32 has zero ozone depletion potential (ODP)
- The Global Warming Potential (GWP) of R-32 is 675, i.e. approximately one third of that of R-410A (PRP 2088)
- The AquaSnap® R-32 cooling charge is reduced by 30% compared to the previous version using R-410A*
- The carbon footprint of AquaSnap® R-32 is therefore 473 (675 x 0.7), i.e. 80 % lower than the version using R-410A (2088 x 1)



* Reduced refrigerant charge in Carrier heat pumps thanks to the use of R-32 and a new coil design.

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R-32: THE BEST SOLUTION FOR SCROLL LIQUID CHILLERS AND HEAT PUMPS

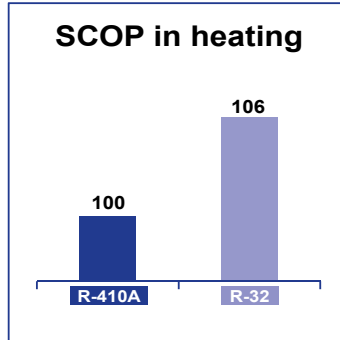
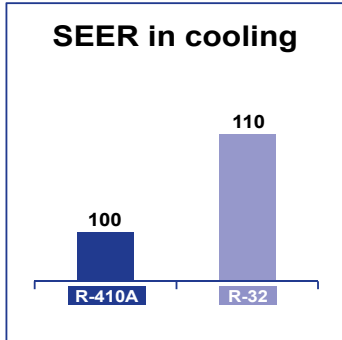


SEER up to **+10%**
SCOP up to **+6%**

High energy efficiency

The seasonal efficiency of AquaSnap® R-32 is higher than that of the previous R-410A version by:

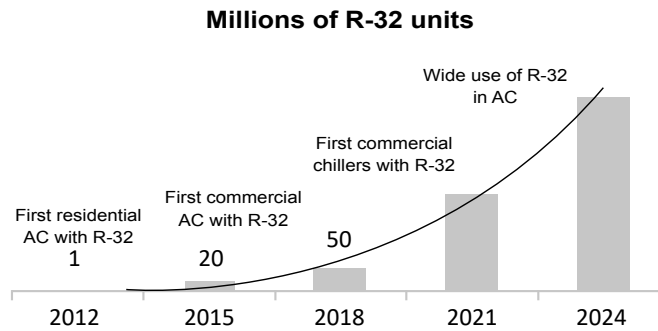
- approximately 10% in cooling mode
- approximately 6% in heating mode



SIMPLICITY

Widely available and easy to use

More than 50 million R-32 air conditioning units are in circulation on the global market. While R-32 has been used for some time in residential and commercial air conditioning units, most manufacturers now use R-32 in VRF systems, liquid chillers and heat pumps, which means R-32 is widely available around the world.



R-32 has been widely available for over 15 years, as it comprises 50% of the composition of R-410A.

R-32 is easy to use: it is a pure refrigerant, therefore it is not necessary to drain the entire circuit in the event of a leak.



SAFETY

R-32 is an A2L classified refrigerant thanks to its low flammability.

- **No specific safety requirements** for transporting chillers by road or for outdoor installation.
- The service tools must be **certified** for **A2L** refrigerants in accordance with standard ISO 817 or EN378.
- Service technicians **must be qualified for brazing components** on PED 2 fluid units.

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AQUASNAP® - CUSTOMER BENEFITS

■ Outstanding performance

Equipped with variable-speed fans (VSD as standard and EC optional) and optional variable-speed pumps, Carrier's AquaSnap® 30RBP/RQP range with Greenspeed® intelligence automatically adjusts the cooling capacity and water flow to perfectly adapt to the building's requirements or load variations. The result is optimal operation at both full load and part load (up to 5.4 SEER 3.7 SCOP). The 30RBP/RQP offers energy efficiency up to 10% higher than the previous range with the same or a smaller footprint.

The range is already fully compliant with the 2021 Ecodesign regulations.



SEER up to **5.4**
SCOP up to **3.7**

■ Intelligence and connectivity

The advanced SmartVu™ control system displays operating parameters in real time, making it intuitive and particularly user-friendly. The AquaSnap® 30RBP/RQP range is also characterised by a brand new smart energy monitoring function which provides users with smart data such as electrical energy consumption in real time, supplied cooling and heating energy and instantaneous and average seasonal energy efficiency values. For even greater energy savings, the AquaSnap® 30RBP/RQP can be monitored remotely by Carrier experts to further optimise the energy consumption level.



SMART ENERGY
MONITORING

■ Extensive scope

The AquaSnap® range is suitable for a very wide range of applications from tertiary to industrial processes. The range can operate at outdoor temperatures from -20 °C to +48 °C and with negative water temperatures (-8 °C). From high-end office buildings and hotels to healthcare facilities, data centers and industrial projects, AquaSnap® 30RBP/RQP units meets the most demanding expectations in terms of energy efficiency and savings, whatever the climate or application.



BETWEEN
-20 °C
and **48 °C**

■ Easy installation & maintenance

Thanks to the variable-speed pumps up to 950 kW, automatic adjustment of the nominal water flow rate via electronic control and automatic measurement of the unit's energy performance under real conditions, the pumping energy consumption is reduced by almost two thirds: these new features guarantee peace of mind for installers and maintenance companies and lower energy bills for users.



Pumping energy
reduced by
up to **66%**

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AQUASNAP® - CUSTOMER BENEFITS

AquaSnap® liquid chillers and heat pumps are designed to meet current and future Ecodesign and F-Gas European regulation requirements in terms of energy efficiency and reduced CO₂ emissions. They use the best technologies available today:

- Reduced refrigerant charge of non-ozone depleting R-32A refrigerant with low GWP
- Scroll compressors
- Greenspeed® variable-speed fans (30RBP-30RQP models)
- NOVATION™ micro-channel heat exchangers with a new aluminium alloy (30RB/RBP)
- Brazed-plate heat exchangers with reduced pressure drops
- Self-regulating microprocessor control with Greenspeed® intelligence
- Colour touch screen with web connectivity options

Both AquaSnap® versions can be equipped with a built-in hydraulic module, limiting the installation to conventional operations such as connection of the power supply and the supply and return piping (plug & play), according to the dimensions of the standard unit.

Recommended by Carrier, the AquaSnap® can be equipped with one or two Greenspeed® variable-speed pumps to significantly reduce energy costs linked to pumping (reduction of more than two-thirds), ensure optimum water flow rate control, and improve overall system reliability.



Very economical operation

- High unit full- and part-load energy efficiency and efficient design of the water side:
 - SEER_{12/7°C} up to 5.4 (30RBP version) in accordance with the new Ecodesign 2016/2281 regulations and SCOP 35°C up to 3.5 (30RQP version).
 - Multiple scroll compressors equipped with a high-efficiency motor which can exactly match the cooling capacity to the load required
 - Electronic expansion valve enabling operation at a lower condensing pressure and improved use of the evaporator heat exchange surface (superheat control)
 - Condenser with high-efficiency NOVATION™ (30RB/RBP) aluminium micro-channel heat exchangers and Greenspeed® variable-speed fans (30RBP-30RQP version)
 - Low pressure drop brazed plate heat exchangers (< 45 kPa under Eurovent conditions).

- Specific control functions to reduce unit cooling energy use during occupied and unoccupied periods:
 - Internal timer: switches the chiller on/off and controls operation at a second setpoint
 - Setpoint automatically offset based on the outdoor air temperature or room air temperature (via an option)
 - Floating high pressure (HP) management
 - Variable-speed fan control
 - Cooling demand limitation.

Refer to the control section for more information.

- Greenspeed® variable-speed pump to reduce pumping energy consumption by up to two-thirds (option recommended by Carrier):
 - Eliminate energy losses through the water flow rate control valve by electronically setting the nominal water flow rate
 - Save energy during stand-by periods or part-load operation by automatically reducing the water pump speed. The energy consumption of the pump motor varies according to the cube of the speed, so that a reduction in speed of just 40% can reduce energy consumption by 80%
 - Improved unit part-load performance (increased SEER/SCOP value with variable water flow according to standard EN14825).

Refer to the hydraulic option section for more information.



- Extra energy savings through multiple options:
 - Carrier drycooler Free cooling mode management
 - Partial heat recovery.
- Reduced maintenance costs:
 - Fast diagnosis of possible incidents and their history via the control
 - Programmable maintenance alert
 - Programmable F-Gas leak monitoring alert

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

AQUASNAP® - CUSTOMER BENEFITS

Low noise level

- Condenser with fixed-speed fans (30RB-30RQ):
 - Optional low-speed fans (700 rpm) and compressor enclosure to reduce full-load noise level by 6 to 7 dB(A)
 - Condenser coils in V-shape with an open angle, allowing quieter air flow across the coil
 - Low noise 6th generation Flying Bird™ fans, made of a composite material (Carrier patent)
 - Rigid fan installation for reduced noise (Carrier patent).
- Condenser with Greenspeed® variable-speed fans (30RBP-30RQP) recommended by Carrier for even quieter operation):
 - Optional factory setting of the fan at low speed, with compressor enclosure to reduce full-load noise level by 6 to 7 dB(A)
 - Exceptional acoustic signature during part-load operation through smooth fan speed variation.
- Specific control functions or features to reduce noise level during the night or unoccupied periods:
 - Night-time sound control with cooling capacity and fan speed limitation
 - Low-noise scroll compressors with low vibration level
 - The compressor assembly is installed on an independent chassis and supported by flexible anti-vibration mountings
 - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent)
 - Acoustic compressor enclosure, reducing radiated noise emissions (option).



Quick and easy installation

- Compact design:
 - AquaSnap® units are designed with compact dimensions for easy installation.
 - With a length of approximately 4.8 m for 550 kW and a width of 2.25 m, the units require minimal floor space.
- Integrated hydraulic module (option):
 - Low or high-pressure water pump (as required)
 - Single or dual pump (as required) with runtime balancing and automatic changeover to the back-up pump if a fault develops

- Built-in variable-speed pumps with automatic nominal water flow adjustment via electronic control on the user display.
- Water filter protects the water pump against circulating debris
- Pressure sensors for direct numerical display of the water flow rate and water pressures
- Thermal insulation and frost protection down to -20 °C, using a heater (option)
- High-capacity membrane expansion tank (option).
- Built-in hydraulic module with Greenspeed® variable-speed pump (option recommended by Carrier):
 - Quick and easy electronic setting of the nominal water flow rate when the unit is commissioned, thus eliminating the need to adjust the water flow rate control valve
 - Automatic control of the pump speed based on constant speed, constant pressure difference or constant temperature difference.
- Simplified electrical connections
 - A single power supply point without neutral
 - Main disconnect switch with high trip capacity
 - 24 V control circuit using an integrated transformer.
- Simplified hydraulic connections:
 - Victaulic type couplings on the exchanger;
 - clearly identified and practical reference marks for entering and leaving water connections;
- Fast unit commissioning
 - Systematic factory test before shipment
 - Quick-test function for step-by-step verification of the sensors, electrical components and motors.

Reduced installation costs

- Optional Greenspeed® variable-speed pump with hydraulic module (option recommended by Carrier)
 - Cut costs relating to the water flow control valve
 - The design of the water system with variable primary flow (VPF) can provide significant installation cost savings compared with traditional constant primary systems with variable secondary circuits; elimination of the secondary distribution pump, etc.
 - Water system design with fan coils fitted with 2-way valves instead of 3-way valves.
- No buffer tank required thanks to Carrier's advanced control algorithm
 - Minimum water loop volume reduced to 2.5 l/kW.

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AQUASNAP® - CUSTOMER BENEFITS

Environmental responsibility

AquaSnap® liquid chillers with Greenspeed® intelligence are a boost for green cities and contribute to a sustainable future. Combining a refrigerant charge up to 30% lower, along with R-32 refrigerant with a GWP 70% lower than that of the previous version using R410A, and exceptional energy efficiency, this chiller significantly reduces energy consumption while reducing carbon dioxide emissions by throughout its life cycle.

- The AquaSnap® liquid chiller is equipped with an automatic energy meter that indicates the instantaneous and overall cooling energy at the outlet, the instantaneous and overall electrical energy consumption, the instantaneous and average seasonal energy efficiency for monitoring and a unit performance check.
- Pumping energy consumption can be reduced by up to two thirds using Greenspeed® variable-speed pumps
- 40% lower refrigerant charge: the micro-channel technology used for condenser coils optimises heat transfer while minimising the refrigerant volume.
- Sealed refrigerant circuits:
 - reduction of leaks thanks to the absence of capillary tubes and the use of flare connections
 - verification of pressure transducers and temperature sensors without transferring refrigerant charge
 - discharge line shut-off valve and liquid line service valve for simplified maintenance
 - qualified Carrier maintenance personnel to provide refrigerant servicing
 - ISO 14001 production plant
- Refrigerant leak detection: available as an option, this additional dry contact allows reporting of possible leaks. The leak detector (supplied externally) should be mounted in the most likely leak location.

Superior reliability

- State-of-the-art concept
 - Two independent refrigerant circuits; the second one automatically takes over if the first one develops a fault, maintaining partial cooling in all circumstances
 - All compressor components are easily accessible on site, minimising downtime
 - All-aluminium Novation™ micro-channel heat exchanger (MCHE) (30RB-30RBP) with higher corrosion resistance than a conventional coil. The all-aluminium construction eliminates the formation of galvanic currents between aluminium and copper which can corrode the coil in saline or corrosive atmospheres
 - V-coil design to protect the coils against hail impact

- Optional Enviro-shield® anti-corrosion coil coating for use in moderately corrosive environments. The coating is applied using an electroless conversion process which modifies the surface of the aluminium producing a coating that is integral to the coil. Immersion in a bath to ensure 100% coverage. No heat transfer variation, tested for 4000 hours in salt spray per ASTM B117
- Optional Super Enviro-shield® anti-corrosion coil coating for use in extremely corrosive environments. Extremely durable and flexible epoxy polymer coating applied on micro-channel heat exchangers by electro coating process with a final UV protective topcoat. Minimal heat transfer variation, tested for 6000 hours in salt spray per ASTM B117, superior impact resistance per ASTM D2794
- Electronic flow switch. Auto-setting according to cooler size and fluid type.
- Auto-adaptive control
 - The control algorithm prevents excessive compressor cycling and reduces the quantity of water in the water loop (Carrier patent)
 - Automatic compressor unloading in case of abnormally high condensing pressure
 - Automatic fan speed adjustment in case of coil fouling (30RBP-30RQP models)
 - Soft fan start to increase unit lifetime (30RBP-30RQP models).
- Exceptional endurance tests:
 - To design critical components and sub-assemblies to minimise the risk of failure on site, Carrier uses specialised laboratories and advanced dynamic simulation tools.
 - To ensure that the units reach customer sites in the same condition as they are when tested in the factory, Carrier tests the machine behaviour during transportation over 250 km. The road test is based on a military standard and is the equivalent to 5000 km by truck on a normal road.
 - To guarantee the coil corrosion resistance, salt spray corrosion resistance tests are performed in the group's laboratory.
 - In addition, to maintain the unit's performance throughout its operating life whilst minimising maintenance costs, end users can access the "Connected Services" remote monitoring service.

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AQUASNAP® - CUSTOMER BENEFITS

Designed to support Green Building Design

A green building is a building that is environmentally sustainable and is designed, constructed and operated to minimise the total impact on the environment.

The resulting building will be economical to operate, offer increased comfort and create a healthier environment for the people who live and work there, increasing productivity.

The air conditioning system can use between 30 and 40% of the annual building energy consumption. Choosing the right air conditioning system is one of the main considerations when designing a green building. For buildings with a load that varies throughout the year, the AquaSnap® 30RBP/RQP unit offers a solution to this important challenge.

A number of green building certification programs exist in the market and offer third-party assessment of green building measures for a wide variety of building types.

The following example looks at how Carrier's new AquaSnap® range helps customers affected by LEED® building certification.

Energy saving certificate

The AquaSnap® 30RBP/RQP unit is eligible for energy saving certificates in France (CEE) in comfort, industrial and agriculture applications:

- Floating High pressure control (by modulating the air flow through fan activation and speed)
- Floating Low pressure control
- Variable speed on asynchronous fan motor
- Variable speed on asynchronous pump motor

For more details about financial incentives in France, please refer to the "CEE product sheet".

The AquaSnap® range and LEED® certification

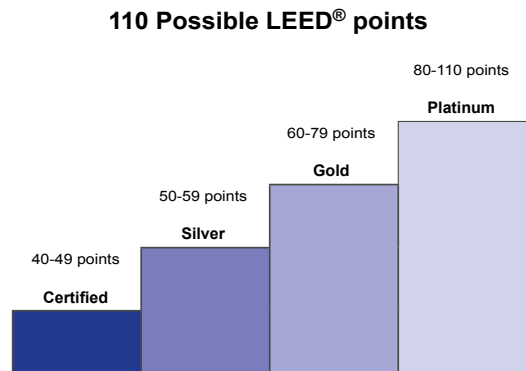
The LEED® (Leadership in Energy and Environmental Design) green building certification programme is a pre-eminent programme to rate the design, construction and operation of green buildings with points assigned in seven credit categories:

- sustainable Sites (SS)
- water efficiency (WE)
- energy and atmosphere (EA)
- materials and resources (MR)
- indoor environmental quality (IEQ)
- innovation in design (ID)
- Regional Priority (RP).

There are a number of different LEED® products.

While the strategies and categories assessed remain the same, the point distribution varies to address different building types and application needs, for example according to New Construction, Schools, Core & Shell, Retail and Healthcare.

All programmes now use the same point scale:



The majority of credits in LEED® rating systems are performance-based and achieving them is dependent on the impact of each component or sub-system on the building as a whole.

While the LEED® green building certification programs do not certify products or services, choosing the right products, systems or service programs is critical to obtain LEED® certification for a registered project, because the right products or service programmes can help meet the goals of green construction and ongoing operation and maintenance.

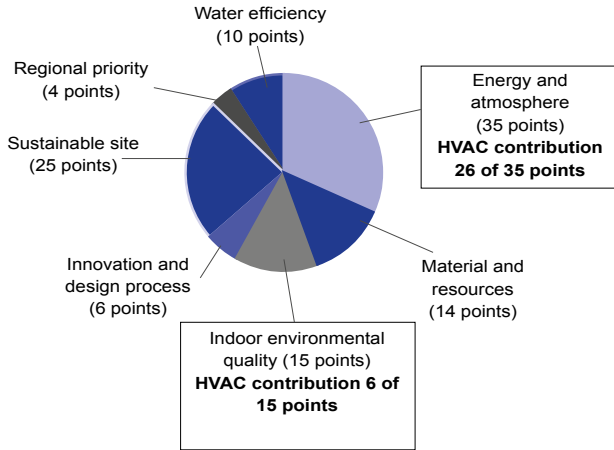
The choice of heating, ventilating and air conditioning (HVAC) products in particular can have a significant impact on LEED® certification, as the HVAC system directly impacts two categories that together influence 40% of the available points

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AQUASNAP® - CUSTOMER BENEFITS

Designed to support Green Building Design

Overview of LEED® for new construction and major renovations



The new AquaSnap® units from Carrier can help building owners to earn LEED® points in particular in the Energy & Atmosphere (EA) credit category and help address the following prerequisites and credit requirements:

- EA prerequisite 2: minimum energy performance
- 30RBP/RQP units exceed the energy efficiency requirements of ASHRAE 90.1-2007; therefore they satisfy the prerequisites.
- EA prerequisite 3: fundamental refrigerant management
30RBP/RQP units do not use chlorofluorocarbon (CFC) refrigerants, thus satisfying the prerequisites.
- EA credit 1: Optimise energy performance (1 to 19 points):
Points for this credit are assigned depending on the energy cost reduction virtually achievable by the new building, compared to ASHRAE 90.1-2007 reference. 30RBP/RQP units, which are designed for high performance especially during part load operation, help to reduce the building's energy consumption and therefore to gain points for this credit. In addition, the Carrier HAP (Hourly Analyses Program) can be used to analyse energy. It meets the modelling requirements for this credit and produces reports which can be easily transferred to LEED® charts.
- EA credit 4: enhanced refrigerant management (2 points)
With this credit, LEED® awards systems that minimise the installed system's Ozone Depletion Potential (ODP) and Global Warming Potential (GWP). 30RBP/RQP units use a reduced R-32 charge and therefore help satisfy the requirements of this LEED® credit.

NOTE: This section describes the prerequisites and credit requirements in LEED® for new construction and is directly related to 30RBP/RQP units. Other prerequisites and credit requirements are not directly and purely related to the air-conditioning unit itself, but more to the control of the HVAC system as a whole.

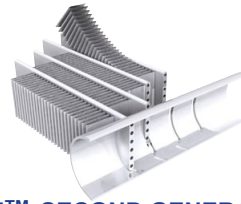
i-Vu®, Carrier's open control system, has features that can be valuable for:

- EA prerequisite 1: fundamental commissioning of energy management systems;
- EA credit 3: enhanced commissioning (2 points);
- EA credit 5: measurements and verification (3 points).

NOTE: Products are not reviewed or certified under LEED®. LEED® credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED®, visit www.usgbc.org.

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30RB - 30RQ TECHNICAL OVERVIEW



COPPER/ALUMINIUM COILS (30RQ)

- Protective heat shrink sleeves around the distribution sections
- Coil heaters to prevent frost formation and help drain condensate during defrosting



SIXTH GENERATION FLYING BIRD™ FIXED-SPEED FANS

- Exclusive Carrier design
- Fan blade design inspired by nature
- High efficiency version with AC motor technology



SmartVu™ control

- 9 languages available
- 4.3" user-friendly touch screen
- All main parameters displayed on one screen
- Direct access to the unit's technical drawings and the main service documents
- Very easy online monitoring
- Easy and secure access to unit parameters
- Optional BACnet, J-Bus or LON communication interfaces

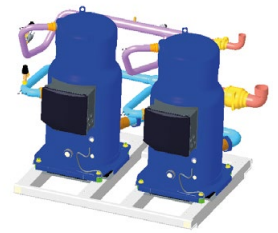
SMART ENERGY CONSUMPTION MONITORING

- Real time energy consumption estimation (kWh)
- Estimation of the supplied cooling/heating energy (kWh)
- Instantaneous and average energy efficiency values under real operating conditions
- Remote monitoring with "Connected service"

NOVATION™ SECOND GENERATION MICRO CHANNEL HEAT EXCHANGERS (30RB)

- Increased reliability with new aluminum alloy
- Significantly reduces the refrigerant charge (-40% compared to Cu/Al coils)
- Improved thermal performance, improved efficiency and lower pressure drops compared to Cu/Al coils
- Enviro-Shield® coating for mildly corrosive environments
- Super Enviro-shield® coating for highly corrosive environments (industrial or marine applications)
- Easy cleaning with high pressure air or water washer

SCROLL COMPRESSORS



REDUCED REFRIGERANT CHARGE



HIGH-EFFICIENCY BRAZED PLATE HEAT EXCHANGER

- Latest generation asymmetrical type
- Low pressure drop

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30RBP - 30RQP TECHNICAL OVERVIEW



* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

TECHNICAL INNOVATIONS

SmartVu™ control

The SmartVu™ control combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and the evaporator water pump for optimum energy efficiency.

The SmartVu™ control features advanced communication technology over Ethernet (IP) and a user-friendly and intuitive user interface with 4.3-inch colour touch screen.

- Energy management configuration
 - Internal timer: controls chiller on/off times and operation at a second setpoint
 - Setpoint offset based on the outdoor air temperature
 - Master/slave control of two chillers operating in parallel with runtime balancing and automatic changeover in case of a unit fault.
 - Innovative smart energy monitoring, providing users with smart data such as real-time electrical energy consumption and cooling capacity, and instantaneous and average energy efficiency values.
 - For further energy savings, the AquaSnap® can be monitored remotely by Carrier experts for energy consumption diagnosis and optimisation.
- Integrated features
 - Night mode: Capacity and fan speed limitation for reduced noise level
 - With hydraulic module: Water pressure display and water flow rate calculation.
- Advanced communication features
 - Easy and high-speed communication technology over Ethernet (IP) to a centralised building management system
 - Access to multiple unit parameters.
- Maintenance functions
 - F-Gas regulation leak check reminder alert
 - Maintenance alert can be configured to days, months or hours of operation
 - Display of trend curves for the main values
 - Management of a fault memory allowing a log of the last 50 incidents to be accessed, with operating readings taken when the fault occurs
 - Blackbox memory

■ 4"3 SmartVu™ user interface



- Intuitive and user-friendly 4"3 inch touch screen interface
- Concise and clear information is available in local languages
- Complete menu, customised for different users (end user, service personnel or Carrier engineers).

Remote management (standard)

Units with SmartVu™ 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.

The AquaSnap® is equipped with an RS485 serial port that offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information.

The AquaSnap® also communicates with other centralised building management systems via optional communication gateways.

A connection terminal allows the AquaSnap® unit to be remotely controlled by wire:

- Start/stop: Opening of this contact will shut down the unit
- Dual setpoint: closing of this contact activates a second setpoint (e.g.: unoccupied mode).
- Demand limit: Closing of this contact limits the maximum chiller capacity to a predefined value.
- Operation indication: This volt-free contact indicates that the chiller is operating (cooling load).
- Alarm indication: this volt-free contact indicates the presence of a major fault that has led to the shut-down of one or several refrigerant circuits.

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TECHNICAL INNOVATIONS

Energy management module (option)

The Energy Management Module offers extended remote control possibilities:

- Room temperature: enables the setpoint to be reset based on the indoor air temperature of the building (with Carrier thermostat).
- Setpoint reset: the cooling setpoint is reset based on a 4-20 mA signal.
- Demand limit: Enables the maximum chiller power to be limited based on a 4-20 mA signal.
- Demand limit 1 and 2: Closing of these contacts limits the maximum chiller power or current 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 is used to return to the second setpoint (unoccupied mode).
- Time schedule override: closing of this contact cancels the effects of the 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 need to carry out a maintenance operation or the presence of a minor fault.
- Boiler control: this on/off output controls an independent boiler to provide hot water.

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TECHNICAL INNOVATIONS

Novation™ heat exchangers with microchannel coil technology

Already used in the automotive and aeronautical industries for many years, the Novation™ micro-channel heat exchanger (MCHE) used in the AquaSnap® 30RB-30RBP liquid chillers is made entirely of aluminum. This one-piece concept significantly increases its corrosion resistance by eliminating the galvanic currents that are created when two different metals (copper and aluminum) come into contact in traditional heat exchangers.

- From an energy efficiency point of view, Novation™ heat exchangers are approximately 10% more efficient than traditional coils and micro-channel coil technology enables a 40% reduction in the amount of refrigerant used in the chiller.
- The reduced depth of the Novation™ MCHE reduces air pressure losses by 50% and makes it much less susceptible to fouling (e.g. by sand). The Novation™ MCHE heat exchanger can be cleaned quickly using a high-pressure washer.
- To further enhance long-term performance and protect coils against premature deterioration, Carrier offers (as options) dedicated treatments for installations in corrosive environments.
 - The Novation™ MCHE with Enviro-Shield® protection (option 262) is recommended for installations in moderately corrosive environments. The Enviro-Shield® protection uses corrosion inhibitors which actively arrest oxidation in case of mechanical damage.
 - The Novation™ MCHE with exclusive Super Enviro-Shield® protection (option 263) is recommended for installations in corrosive environments. Super Enviro-Shield® protection comprises an extremely durable and flexible epoxy coating uniformly applied over all coil surfaces for complete isolation from the contaminated environment.
- After more than 7000 hours of testing based on various standards in Carrier group laboratories, the Novation™ MCHE with Super Enviro-shield® coating emerged as the best customer choice to minimise the harmful effects of corrosive atmospheres and ensure a long equipment life:
 - best corrosion resistance per the ASTM B117/D610 test;
 - best heat transfer performance per the Carrier Marine 1 test;
 - proven reliability per the 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	Good	No coil leak	Best
Super Enviro-shield® Cu/Al coil	Very good	Very 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	Very 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

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

TECHNICAL INNOVATIONS

New generation of Flying Bird™ VI fans with AC or EC motors (option)



The 30RB-RBP/30RQ-RQP unit uses Carrier's sixth generation Flying Bird™ fan technology, engineered for maximum efficiency, super low noise, and a wide operating range. The fans use Carrier patented rotating shroud technology and back-swept blades with a wave-serration trailing edge inspired by nature.

They were designed and optimised for the 30RB-RBP/30RQ-RQP unit's air management system configuration and heat exchanger technology.

The fans and their shrouds use Carrier's robust and proven injection moulded composite thermoplastic construction.

On the 30RBP/30RQP with option 17, the fans are driven by an EC motor, also known as brushless DC, with dedicated electronics to manage commutation. This offers high precision for fans that require higher efficiency and variable speed. The fans meet the latest European Ecodesign requirements for fan efficiency.

EC motor (option 17)



* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

OPTIONS

Options	No.	Description	Advantages	30RB/RBP 170R-950	30RQ/RQP 165R-520
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminum (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	No	165R-520R
Low-temperature brine solution	6B	Low temperature chilled water production down to -8 °C with ethylene or propylene glycol	Covers specific applications such as ice storage and industrial processes	170R-950R	165R-520R
High static fans	12	Unit equipped with high static variable-speed fans (maximum 200Pa), each fan being equipped with a connection flange allowing the connection to the ducting system.	Ducted fan discharge, optimised temperature control, based on the operating conditions and system characteristics	30RBP 170R-950R	30RQP 165R-520R
Very low noise level	15LS	Aesthetic and sound absorbing compressor enclosure associated with low-speed fans	Noise level reduction in sensitive environments	170R-950R	165R-520R
EC fans	17	Unit equipped with EC fans	Enhances the unit energy efficiency	30RBP 170R-950R	30RQP 165R-520R
Protection grilles	23	Metallic protection grilles	Coil protection against possible impact	170R-950R	165R-520R
Circuit Soft Starter	25E	Electronic starter on each circuit	Cost effective reduction of start-up current	170R-950R	165R-520R
Compressor Soft Starter	25	Electronic starter on each compressor	Reduced start-up current	170R-410R	165R-520R
Water exchanger frost protection	41	Electric heater on the water exchanger and the water piping	Water exchanger module frost protection between 0°C and -20°C outside air temperature	170R-950R	165R-520R
Exchanger & hydraulic frost protection	42A	Electrical heaters on the water type heat exchanger, water pipes, hydraulic module and expansion tank	Water type heat exchanger and hydraulic module frost protection down to an outdoor air temperature of -20 °C	170R-950R	165R-520R
Exchanger & hydraulic frost protection	42B	Electric heater on the water exchanger hydraulic module and optional expansion tank & water buffer tank	Water type heat exchanger and hydraulic module frost protection down to an outdoor air temperature of -20 °C	170R-950R	165R-520R
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit	Production of free high-temperature hot water simultaneously with chilled water production (or hot water for heat pump)	170R-950R	165R-520R
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 parallel operation with operating time equalisation	170R-950R	165R-520R
Compressor suction and discharge valves	92A	Shut-off valves on the compressor suction and discharge piping	Simplified maintenance. Possibility to store the refrigerant charge in the cooler or condenser side during servicing	170R-950R	165R-520R
HP single-pump hydraulic module	116R	Single high-pressure water pump, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included. Option with built-in safety hydraulic components available.)	Easy and fast installation (plug & play)	30RB 170R-380R 30RBP 170R-550R	165R-520R
HP dual-pump hydraulic module	116S	Dual high-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included) Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RB 170R-380R 30RBP 170R-550R	165R-520R

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

OPTIONS

Options	No.	Description	Advantages	30RB/RBP 170R-950	30RQ/RQP 165R-520
LP single-pump hydraulic module	116T	Single low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RB 170R-380R 30RBP 170R-550R	165R-520R
LP dual-pump hydraulic module	116U	Dual low-pressure water pump, water filter, electronic water flow control, pressure transducers. For more details, refer to the dedicated chapter (expansion tank not included Option with built-in safety hydraulic components available)	Easy and fast installation (plug & play)	30RB 170R-380R 30RBP 170R-550R	165R-520R
Variable-speed single HP pump	116V	Single high pressure water pump with variable speed drive, water filter, electronic water flow control, pressure sensors. Multiple variable water flow control options. For more details, refer to the dedicated section (expansion tank not included; option with built-in hydraulic safety components available)	Easy and fast installation (plug & play), significant pumping energy savings (more than two-thirds), tighter water flow control, improved sytem reliability	170R-550R	165R-520R
HP VSD dual-pump hydraulic mod.	116W	Dual high-pressure water pump with variable speed drive, pressure sensors. Multiple variable water flow control options. For more details, refer to the dedicated section (expansion tank not included; option with built-in hydraulic safety components available)	Easy and fast installation (plug & play), significant pumping energy savings (more than two-thirds), tighter water flow control, improved sytem reliability	170R-950R	165R-520R
Lon gateway	148D	Bi-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	170R-950R	165R-520R
ModBus over IP and RS485	149B	Bi-directional high-speed communication using Modbus protocol over Ethernet network (IP)	Easy and high-speed connection by ethernet line to a building management system. Allows access to multiple unit parameters	170R-950R	165R-520R
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	170R-950R	165R-520R
Energy management module	156	Control board with additional inputs/ outputs. See Contacts available in option on control description.	Extended remote control capabilities (setpoint reset, ice storage end, demand limits, boiler on/off command, etc.)	170R-950R	165R-520R
Input contact for refrigerant leak detection	159	0-10 V signal to report any refrigerant leakage in the unit directly (the leak detector itself must be supplied by the customer)	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	170R-950R	165R-520R
Compliance with Swiss regulations	197	Additional tests on the water type heat exchangers: supply (additional linked to PED documents) supplementary certificates and test certifications	Compliance with Swiss regulations	170R-950R	165R-520R
Compliance with Russian regulations	199	EAC certification	Compliance with Russian regulations	170R-950R	165R-520R
Compliance with Australian regulations	200	Unit approved to Australian code	Compliance with Australian regulations	170R-950R	165R-520R

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

OPTIONS

Options	No.	Description	Advantages	30RB/RBP 170R-950	30RQ/RQP 165R-520
Coil defrost resistance heaters	252	Electric heaters under the coils and the condensate pans	Prevents frost formation on the coils; compulsory in heating mode, if the outdoor temperature is below 0 °C	No	165R-520R
Insulation of the evaporator entering/leaving refrigerant 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	170R-950R	165R-520R
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	170R-950R	No
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 thermal transfer variation, tested to withstand more than 6000 hours of constant neutral salt spray as per ASTM B117, improved impact resistance as per ASTM D2794	Improved corrosion resistance, recommended for use in extremely corrosive environments	170R-950R	No
Welded evaporator connection kit	266	Victaulic piping connections with welded joints	Easy installation	170R-950R	165R-520R
Flanged evaporator water connection kit	268	Victaulic piping connections with flanged joints	Easy installation	170R-950R	165R-520R
Compressor enclosure	279a	Compressor enclosure	Improved aesthetics, compressor protection against external elements (dust, sand, water, etc.)	170R-950R	165R-520R
230 V electrical plug	284	230 VAC 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	170R-950R	165R-520R
Expansion tank	293	6 bar expansion tank integrated in the hydraulic module (requires hydraulic module option)	Easy and fast installation (plug & play) and Protection of closed water systems from excessive pressure	170R-950R	165R-520R
Screwed water connection kit for DSH	303	DSH connections with screw connection sleeves	Easy installation. Allows unit connection to a screw connector	170R-950R	165R-520R
Welded water connection kit for DSH	304	DSH inlet/outlet welded connection sleeves	Easy installation	170R-950R	165R-520R
Water buffer tank module	307	Built-in water buffer tank	Avoids short cycle on compressors and ensures stable water in the loop	170R-950R	165R-520R
Free Cooling dry cooler management	313	Control & connections to a Free Cooling Drycooler 09PE or 09VE fitted with option FC control box	Easy system management, control capabilities extended to a drycooler used in Free Cooling mode	170R-950R	165R-520R
Compliance with UAE regulations	318	Additional label on the unit with rated power input, rated current and EER in accordance with AHRI 550/590	Compliance with ESMA standard UAE 5010-5:2016.	170R-950R	165R-520R
Compliance with Qatar regulations	319	Specific name plate on the unit with 415 V+/-6% power supply	Compliance with KAHRAMAA regulations in Qatar.	170R-950R	165R-520R
Process application or Out Europe installation	326	Specific option compatibility management	Allow options compatibility not available in standard due to Ecodesign compliance	30RB 170R-380R 30RBP 170R-950R	No
Compliance with Moroccan regulations	327	Specific regulatory documentation	Compliance with Moroccan regulations	170R-950R	165R-520R

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

PHYSICAL DATA, SIZES 170R TO 380R

30RB		170R	190R	210R	230R	270R	310R	340R	380R			
Cooling												
Standard unit Full load performances*	CA1	Nominal capacity	kW		172	188	207	227	270	311	346	380
		EER	kW/kW		3,20	3,31	3,17	3,17	3,03	3,15	3,09	3,14
Seasonal energy efficiency**		SEER_{12/7°C} Comfort low temp.	kWh/kWh		4,22	4,37	4,35	4,24	4,25	4,42	4,44	4,27
		$\eta_s \text{ cool}_{12/7°C}$	%		166	172	171	166	167	174	175	168
		SEER_{23/18°C} Comfort medium temp.	kWh/kWh		5,00	5,29	5,14	5,07	4,98	5,31	5,29	5,12
		SEPR _{12/7°C} Process high temp.	kWh/kWh		5,21	5,25	5,19	5,10	5,10	5,31	5,37	5,39
		SEPR _{-2/-8°C} Process medium temp.	kWh/kWh		Data coming soon							
Unit + option 15LS Full load performance*	CA1	Nominal capacity	kW		164	180	198	217	256	296	328	361
		EER	kW/kW		3,05	3,24	3,04	3,02	2,81	2,96	2,86	2,94
Seasonal energy efficiency**		SEER_{12/7°C} Comfort low temp.	kWh/kWh		4,29	4,61	4,52	4,47	4,35	4,69	4,66	4,65
		$\eta_s \text{ cool}_{12/7°C}$	%		169	181	178	176	171	185	183	183
		SEER_{23/18°C} Comfort medium temp.	kWh/kWh		4,93	5,41	5,23	5,26	4,99	5,66	5,45	5,48
		SEPR _{12/7°C} Process high temp.	kWh/kWh		5,27	5,42	5,34	5,19	5,14	5,44	5,47	5,60
		SEPR _{-2/-8°C} Process medium temp.	kWh/kWh		Data coming soon							
Part Load integrated values		IPLV.SI	kW/kW		4,83	4,95	4,82	4,84	4,81	4,97	4,98	4,89
Sound levels												
Standard unit												
Sound power ⁽¹⁾		dB(A)		91,0	91,5	91,5	92,0	92,0	93,0	93,0	93,5	
Sound pressure at 10 m ⁽²⁾		dB(A)		58,5	59,5	59,5	60,0	60,0	60,5	60,5	61,0	
Unit + option 15LS⁽³⁾												
Sound power ⁽¹⁾		dB(A)		85,5	85,5	85,5	86,5	86,5	87,5	87,5	88,0	
Sound pressure at 10 m ⁽²⁾		dB(A)		53,0	53,5	53,5	54,5	54,5	55,5	55,5	55,5	
Dimensions - standard unit												
Standard unit												
Length		mm		2410	2410	2410	2410	2410	3604	3604	3604	
Width		mm		2253	2253	2253	2253	2253	2253	2253	2253	
Height		mm		2324	2324	2324	2324	2324	2324	2324	2324	
Unit + option 307⁽³⁾												
Length		mm		3604	3604	3604	3604	3604	4798	4798	4798	

* In accordance with standard EN14511-3:2013. *

* In accordance with standard EN14825:2013, average climate

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W

$\eta_s \text{ cool}_{12/7°C}$ & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEER_{23/18°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEPR_{12/7°C} Values calculated in accordance with EN14825:2016

SEPR_{-2/-8°C} Values calculated in accordance with EN14825:2016

IPLV.SI Calculations according to standard performances AHRI 551-591.

(1) in dB ref=10⁻¹²W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).

(3) Options: 15LS = Very low noise level, 116W = HP VSD dual-pump hydraulic mod., 307=Water buffer tank module



Eurovent certified values

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

PHYSICAL DATA, SIZES 170R TO 380R

30RB		170R	190R	210R	230R	270R	310R	340R	380R
Operating weight⁽⁴⁾									
Standard unit	kg	1349	1397	1397	1521	1556	1995	2049	2211
Unit + option 15LS ⁽³⁾	kg	1432	1480	1480	1630	1665	2122	2176	2356
Unit + option 15LS + option 116W ⁽³⁾	kg	1567	1615	1615	1765	1811	2271	2371	2551
Unit + option 15LS + option 116W + option 307 ⁽³⁾	kg	2550	2598	2598	2748	2794	3258	3357	3537
Compressors									
Scroll hermetic 48,3 r/s									
Circuit A		1	1	1	2	2	2	2	3
Circuit B		2	2	2	2	2	3	3	3
Number of control stages		3	3	3	4	4	5	5	6
System PED Category									
III III III III III III III III III									
Refrigerant⁽⁴⁾									
R32/A2L									
Circuit A	kg	6,40	9,70	9,70	11,40	11,80	12,50	13,30	18,10
	teqCO ₂	4,3	6,5	6,5	7,7	8,0	8,4	9,0	12,2
Circuit B	kg	11,40	11,40	11,40	11,40	11,80	17,50	18,30	18,10
	teqCO ₂	7,7	7,7	7,7	7,7	8,0	11,8	12,4	12,2
Oil									
Circuit A	l	6,60	6,60	6,60	13,20	13,20	13,20	13,20	19,80
Circuit B	l	13,20	13,20	13,20	13,20	13,20	19,80	19,80	19,80
Capacity control									
SmartVu™									
Minimum capacity	%	33	33	25	25	25	20	20	17
Air heat exchanger									
Aluminum micro-channel coils (MCHE)									
Fans									
FLYING-BIRD 6, axial fan with rotating impeller									
Standard unit									
Quantity		3	4	4	4	4	5	5	6
Maximum total air flow	l/s	14460	19280	19280	19280	19280	24100	24100	28920
Maximum rotation speed	tr/s	16	16	16	16	16	16	16	16
Water heat exchanger									
Direct expansion brazed-plate heat exchanger									
Water volume	l	15	15	15	19	27	27	35	44
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)									
Centrifugal pump, monocell, 48.3 r/s, low or high pressure (as required), single or dual (as required)									
Expansion vessel volume	l	50	50	50	50	80	80	80	80
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400	400	400
Water connections with or without hydraulic module									
Victaulic® type									
Connections	inch	3	3	3	3	4	4	4	4
External parameter	mm	88,9	88,9	88,9	88,9	114,3	114,3	114,3	114,3
Casing paint									
Colour code RAL 7035									

(3) Options: 15LS = Very low noise level, 116W = HP VSD dual-pump hydraulic mod., 307=Water buffer tank module

(4) Values are guidelines only. Refer to the unit name plate.

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

PHYSICAL DATA, SIZES 170R TO 410R

30RBP		170R	190R	210R	230R	270R	310R	340R	380R	410R			
Cooling													
Standard unit Full load performances*	CA1	Nominal capacity	kW		172	187	206	227	270	311	346	380	416
		EER	kW/kW		3,20	3,36	3,21	3,16	3,03	3,15	3,09	3,14	3,09
Seasonal energy efficiency**		SEER_{12/7°C} Comfort low temp.	kWh/kWh		4,63	4,99	4,89	4,92	4,78	5,25	5,08	5,19	5,11
		η_{s cool}_{12/7°C}	%		182	196	193	194	188	207	200	205	201
		SEER_{23/18°C} Comfort medium temp.	kWh/kWh		5,63	6,17	5,95	5,98	5,69	6,35	6,06	6,13	6,06
		SEPR _{12/7°C} Process high temp.	kWh/kWh		6,30	6,62	6,43	6,13	5,97	6,30	6,24	6,36	6,31
		SEPR _{-2/-8°C} Process medium temp.	kWh/kWh		Data coming soon								
Unit + option 15LS Full load performance*	CA1	Nominal capacity	kW		164	180	198	217	256	296	328	361	394
		EER	kW/kW		3,05	3,24	3,04	3,02	2,81	2,96	2,85	2,94	2,86
Seasonal energy efficiency**		SEER_{12/7°C} Comfort low temp.	kWh/kWh		4,57	4,96	4,82	4,89	4,72	5,18	5,01	5,21	5,09
		η_{s cool}_{12/7°C}	%		180	195	190	193	186	204	198	205	201
		SEER_{23/18°C} Comfort medium temp.	kWh/kWh		5,43	6,10	5,85	5,98	5,58	6,36	6,00	6,15	5,95
		SEPR _{12/7°C} Process high temp.	kWh/kWh		6,24	6,67	6,49	6,12	5,88	6,34	6,25	6,42	6,34
		SEPR _{-2/-8°C} Process medium temp.	kWh/kWh		Data coming soon								
Part Load integrated values		IPLV.SI	kW/kW		5,37	5,73	5,31	5,51	5,37	5,61	5,56	5,50	5,47
Sound levels													
Standard unit													
		Sound power ⁽¹⁾	dB(A)		91,0	90,5	90,5	92,0	92,0	93,0	93,0	93,5	93,5
		Sound pressure at 10 m ⁽²⁾	dB(A)		58,5	58,5	58,5	60,0	60,0	60,5	60,5	61,0	61,5
Unit + option 15LS⁽³⁾													
		Sound power ⁽¹⁾	dB(A)		85,5	85,5	85,5	86,5	86,5	87,5	87,5	88,0	88,0
		Sound pressure at 10 m ⁽²⁾	dB(A)		53,0	53,5	53,5	54,5	54,5	55,5	55,5	55,5	56,0
Dimensions													
Standard unit													
		Length	mm		2410	2410	2410	2410	2410	3604	3604	3604	3604
		Width	mm		2253	2253	2253	2253	2253	2253	2253	2253	2253
		Height	mm		2324	2324	2324	2324	2324	2324	2324	2324	2324
Unit + option 307													
		Length	mm		3604	3604	3604	3604	3604	4798	4798	4798	4798

* In accordance with standard EN14511-3:2013.

* In accordance with standard EN14825:2013, average climate

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W

η_{s cool}_{12/7°C} & SEER_{12/7°C} Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application

SEER_{23/18°C} Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application

SEPR_{12/7°C} Values calculated in accordance with EN14825:2016

SEPR_{-2/-8°C} Values calculated in accordance with EN14825:2016

IPLV.SI Calculations according to standard performances AHRI 551-591.

(1) in dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20μPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).

(3) Options: 15LS = Very low noise level, 116W = HP VSD dual-pump hydraulic mod., 307=Water buffer tank module



Eurovent certified values

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

PHYSICAL DATA, SIZES 170R TO 410R

30RBP		170R	190R	210R	230R	270R	310R	340R	380R	410R
Operating weight⁽⁴⁾										
Unité standard	kg	1349	1397	1397	1521	1556	1995	2049	2211	2269
Unit + option 15LS ⁽³⁾	kg	1432	1480	1480	1630	1665	2122	2176	2356	2414
Unit + option 15LS + option 116W ⁽³⁾	kg	1567	1615	1615	1765	1811	2271	2371	2551	2609
Unit + option 15LS + option 116W + option 307 ⁽³⁾	kg	2550	2598	2598	2748	2794	3258	3357	3537	3594
Compressors		Scroll hermetic 48,3 r/s								
Circuit A		1	1	1	2	2	2	2	3	3
Circuit B		2	2	2	2	2	3	3	3	3
Number of control stages		3	3	3	4	4	5	5	6	6
System PED Category		III								
Refrigerant⁽⁴⁾		R32/A2L								
Circuit A	kg	6,40	9,70	9,70	11,40	11,80	12,50	13,30	18,10	18,90
	teqCO ₂	4,3	6,5	6,5	7,7	8,0	8,4	9,0	12,2	12,8
Circuit B	kg	11,40	11,40	11,40	11,40	11,80	17,50	18,30	18,10	18,90
	teqCO ₂	7,7	7,7	7,7	7,7	8,0	11,8	12,4	12,2	12,8
Oil										
Circuit A	l	6,6	6,6	6,6	13,2	13,2	13,2	13,2	19,8	19,8
Circuit B	l	13,2	13,2	13,2	13,2	13,2	19,8	19,8	19,8	19,8
Capacity control		SmartVu™								
Minimum capacity	%	33	33	25	25	25	20	20	17	17
Air heat exchanger		Aluminum micro-channel coils (MCHE)								
Fans		FLYING-BIRD 6, axial fan with rotating impeller								
Standard unit										
Quantity		3	4	4	4	4	5	5	6	6
Maximum total air flow	l/s	14460	19280	19280	19280	19280	24100	24100	28920	28920
Maximum rotation speed	tr/s	16	16	16	16	16	16	16	16	16
Water heat exchanger		Direct-expansion welded plate heat exchanger								
Water volume	l	15	15	15	19	27	27	35	44	44
Max. water-side operating pressure without hydraulic module	kPa	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	80	80	80
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400	400	400	400
Water connections with or without hydraulic module		Victaulic® type								
Connections	inch	3	3	3	3	4	4	4	4	4
External parameter	mm	88,9	88,9	88,9	88,9	114,3	114,3	114,3	114,3	114,3
Casing paint		Colour code RAL 7035								

(3) Options: 15LS = Very low noise level, 116W = HP VSD dual-pump hydraulic mod., 307=Water buffer tank module

(4) Values are guidelines only. Refer to the unit name plate.

PHYSICAL DATA, SIZES 450R TO 950R

30RBP		450R	480R	550R	610R	670R	720R	770R	800R	870R	950R			
Cooling														
Standard unit Full load performances*	CA1	Nominal capacity	kW		450	484	552	617	678	727	782	807	882	943
		EER	kW/kW		3,14	3,09	3,08	3,15	3,14	3,06	3,07	3,04	3,00	2,92
Seasonal energy efficiency**		SEER_{12/7°C} Comfort low temp.	kWh/kWh		5,28	5,24	5,30	5,23	5,32	5,20	5,33	5,23	5,31	5,18
		η_s cool _{12/7°C}	%		208	207	209	206	210	205	210	206	209	204
		SEER_{23/18°C} Comfort medium temp.	kWh/kWh		6,33	6,23	6,32	6,39	6,51	6,28	6,54	6,38	6,56	6,32
		SEPR _{12/7°C} Process high temp.	kWh/kWh		6,41	6,32	6,27	6,27	6,33	6,14	6,26	6,18	6,07	5,88
		SEPR _{-2/-8°C} Process medium temp.	kWh/kWh		Data coming soon									
Unit + option 15LS Full load performance*	CA1	Nominal capacity	kW		428	458	523	587	646	689	743	765	836	889
		EER	kW/kW		2,93	2,85	2,85	2,94	2,93	2,83	2,85	2,81	2,77	2,66
Seasonal energy efficiency**		SEER_{12/7°C} Comfort low temp.	kWh/kWh		5,37	5,30	5,21	5,13	5,35	5,20	5,43	5,30	5,22	5,07
		η_s cool _{12/7°C}	%		212	209	205	202	211	205	214	209	206	200
		SEER_{23/18°C} Comfort medium temp.	kWh/kWh		6,25	6,12	6,25	6,25	6,59	6,33	6,69	6,46	6,34	6,07
		SEPR _{12/7°C} Process high temp.	kWh/kWh		6,38	6,28	6,24	6,27	6,33	6,11	6,17	6,10	6,03	5,79
		SEPR _{-2/-8°C} Process medium temp.	kWh/kWh		Data coming soon									
Part Load integrated values		IPLV.SI	kW/kW		5,63	5,59	5,58	5,69	5,64	5,52	5,68	5,65	5,62	5,51
Sound levels														
Standard unit														
Sound power ⁽¹⁾			dB(A)		94,0	94,0	94,5	97,5	97,5	98,0	98,0	98,5	98,5	99,0
Sound pressure at 10 m ⁽²⁾			dB(A)		61,5	61,5	62,0	65,0	65,0	66,0	65,0	66,0	66,0	66,5
Unit + option 15LS⁽³⁾														
Sound power ⁽¹⁾			dB(A)		88,5	88,5	89,0	92,5	92,5	93,0	93,0	93,5	93,5	94,5
Sound pressure at 10 m ⁽²⁾			dB(A)		56,0	56,5	57,0	60,5	60,0	60,5	60,0	61,0	60,5	61,5
Dimensions														
Standard unit														
Length			mm		4798	4798	4798	5992	5992	5992	5992	7186	7186	7186
Width			mm		2253	2253	2253	2253	2253	2253	2253	2253	2253	2253
Height			mm		2324	2324	2324	2324	2324	2324	2324	2324	2324	2324
Unit + option 307														
Length			mm		5992	5992	5992	7186	7186	7186	7186	8380	8380	8380

* In accordance with standard EN14511-3:2013.

* In accordance with standard EN14825:2013, average climate

CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator frosting factor 0 m².K/W

η_s cool_{12/7°C} & SEER_{12/7°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEER_{23/18°C} **Bold values compliant to Ecodesign regulation: (EU) No 2016/2281 for Comfort application**

SEPR_{12/7°C} Values calculated in accordance with EN14825:2016

SEPR_{-2/-8°C} Values calculated in accordance with EN14825:2016

IPLV.SI Calculations according to standard performances AHRI 551-591.

(1) in dB ref=10⁻¹² W, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.

(2) In dB ref 20µPa, 'A' weighted. Declared dual-number noise emission values in accordance with ISO 4871 with an associated uncertainty of +/-3dB(A). For information, calculated from the sound power Lw(A).

(3) Options: 15LS = Very low noise level, 116W = HP VSD dual-pump hydraulic mod., 307=Water buffer tank module



Eurovent certified values

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

PHYSICAL DATA, SIZES 450R TO 950R

30RBP		450R	480R	550R	610R	670R	720R	770R	800R	870R	950R
Operating weight⁽⁴⁾											
Unité standard	kg	2697	2722	2927	3265	3511	3511	4042	4042	4291	4291
Unit + option 15LS ⁽³⁾	kg	2860	2885	3108	3398	3664	3664	4216	4216	4485	4485
Unit + option 15LS + option 116W ⁽³⁾	kg	3094	3119	3379	3708	3974	3974	4605	4605	4874	4874
Unit + option 15LS + option 116W + option 307 ⁽³⁾	kg	4086	4111	4371	4715	4981	4981	5626	5626	5895	5895
Compressors											
Scroll hermetic 48,3 r/s											
Circuit A		3	3	4	2	3	3	3	3	4	4
Circuit B		4	4	4	3	3	3	4	4	4	4
Number of control stages		7	7	8	5	6	6	7	7	8	8
System PED Category											
		IV	IV	IV	III	III	III	IV	IV	IV	IV
Refrigerant⁽⁴⁾											
R32/A2L											
Circuit A	kg	19,20	19,50	25,00	23,50	25,50	25,50	27,40	27,40	32,40	32,40
	teqCO ₂	13,0	13,2	16,9	15,9	17,2	17,2	18,5	18,5	21,9	21,9
Circuit B	kg	24,10	24,50	25,00	25,50	25,50	25,50	32,40	32,40	32,40	32,40
	teqCO ₂	16,3	16,5	16,9	17,2	17,2	17,2	21,9	21,9	21,9	21,9
Oil											
Circuit A	l	19,8	19,8	26,4	13,2	19,8	19,8	19,8	19,8	26,4	26,4
Circuit B	l	26,4	26,4	26,4	19,8	19,8	19,8	26,4	26,4	26,4	26,4
Capacity control											
SmartVu™											
Minimum capacity	%	14	14	13	20	17	17	14	14	13	13
Air heat exchanger											
Aluminum micro-channel coils (MCHE)											
Fans											
FLYING-BIRD 6, axial fan with rotating impeller											
Standard unit											
Quantity		7	7	8	9	10	10	11	11	12	12
Maximum total air flow	l/s	33740	33740	38560	43380	48200	48200	53020	53020	57840	57840
Maximum rotation speed	tr/s	16	16	16	16	16	16	16	16	16	16
Water heat exchanger											
Direct-expansion welded plate heat exchanger											
Water volume	l	44	47	53	73	73	73	84	84	84	84
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	80	80	80	80	80	80	80	80	80	80
Max. water-side operating pressure with hydraulic module	kPa	400	400	400	400	400	400	400	400	400	400
Water connections with or without hydraulic module											
Victaulic® type											
Connections	inch	4	4	4	5	5	5	5	5	5	5
External parameter	mm	114,3	114,3	114,3	139,7	139,7	139,7	139,7	139,7	139,7	139,7
Casing paint											
Colour code RAL 7035											

(3) Options: 15LS = Very low noise level, 116W = HP VSD dual-pump hydraulic mod., 307=Water buffer tank module

(4) Values are guidelines only. Refer to the unit name plate.

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

ELECTRICAL DATA

30RB		170R	190R	210R	230R	270R	310R	340R	380R
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) or (2)}									
Circuit A&B	kW	74,6	81,2	90,8	99,4	118,6	133,9	148,3	163,5
Power factor at maximum power ^{(1) or (2)}									
Cosine phi standard unit		0,83	0,83	0,83	0,83	0,83	0,83	0,83	0,83
Nominal operating current draw ⁽⁴⁾									
Standard unit	A	100,8	110,9	123,3	134,4	159,2	180,4	199	220,2
Maximum operating current draw (Un) ^{(1) or (2)}									
Standard unit	A	129,0	141,2	157,8	172,0	205,2	231,6	256,5	282,9
Maximum current (Un-10%) ^{(1) or (2)}									
Standard unit	A	137,7	150,6	168,6	183,6	219,6	247,5	274,5	302,4
Maximum start-up current(Un) ^{(2) + (3)}									
Standard unit	A	305	354	370	348	418	444	469	496
Unit + option 25/25E	A	262	302	318	305	366	392	417	444

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)

(2) Values obtained at operation with maximum operating power input (data given on the unit nameplate)

(3) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.

(4) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

ELECTRICAL DATA

30RBP		170R	190R	210R	230R	270R	310R	340R	380R	410R
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) or (2)}										
Circuit A&B	kW	74,8	81,5	91,1	99,8	118,9	134,3	148,7	164	178,4
Power factor at maximum power ^{(1) or (2)}										
Cosine phi standard unit		0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85	0,85
Nominal operating current draw ⁽⁴⁾										
Standard unit	A	98,1	107,73	119,7	130,8	155,6	175,9	194,5	214,8	233,4
Maximum operating current draw (Un) ^{(1) or (2)}										
Standard unit	A	126,3	137,6	154,2	168,4	201,6	227,1	252,0	277,5	302,4
Maximum current (Un-10%) ^{(1) or (2)}										
Standard unit	A	135	147	165	180	216	243	270	297	324
Maximum start-up current(Un) ^{(2) + (3)}										
Standard unit	A	302	350	367	344	414	440	465	490	515
Unit + option 25/25E	A	259	298	315	301	362	388	413	438	463

30RBP		450R	480R	550R	610R	670R	720R	770R	800R	870R	950R
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) or (2)}											
Circuit A&B	kW	193,7	208,1	237,8	256,4	282,7	306,1	328,5	340,2	374,4	405,6
Power factor at maximum power ^{(1) or (2)}											
Cosine phi standard unit		0,85	0,85	0,85	0,84	0,84	0,84	0,84	0,84	0,84	0,84
Nominal operating current draw ⁽⁴⁾											
Standard unit	A	253,7	272,3	311,2	332,5	371,4	396,6	431,3	443,9	491,2	524,8
Maximum operating current draw (Un) ^{(1) or (2)}											
Standard unit	A	327,9	352,8	403,2	439,5	486,0	525,0	565,0	584,5	644,0	696,0
Maximum current (Un-10%) ^{(1) or (2)}											
Standard unit	A	351	378	432	472	522	564	607	628	692	748
Maximum start-up current(Un) ^{(2) + (3)}											
Standard unit	A	541	565	616	770	823	856	902	915	981	1027
Unit + option 25/25E	A	489	513	564	687	740	773	819	832	898	944

(1) Values obtained at unit continuous maximum operating conditions (data given on the unit nameplate)

(2) Values obtained at operation with maximum operating power input (data given on the unit nameplate)

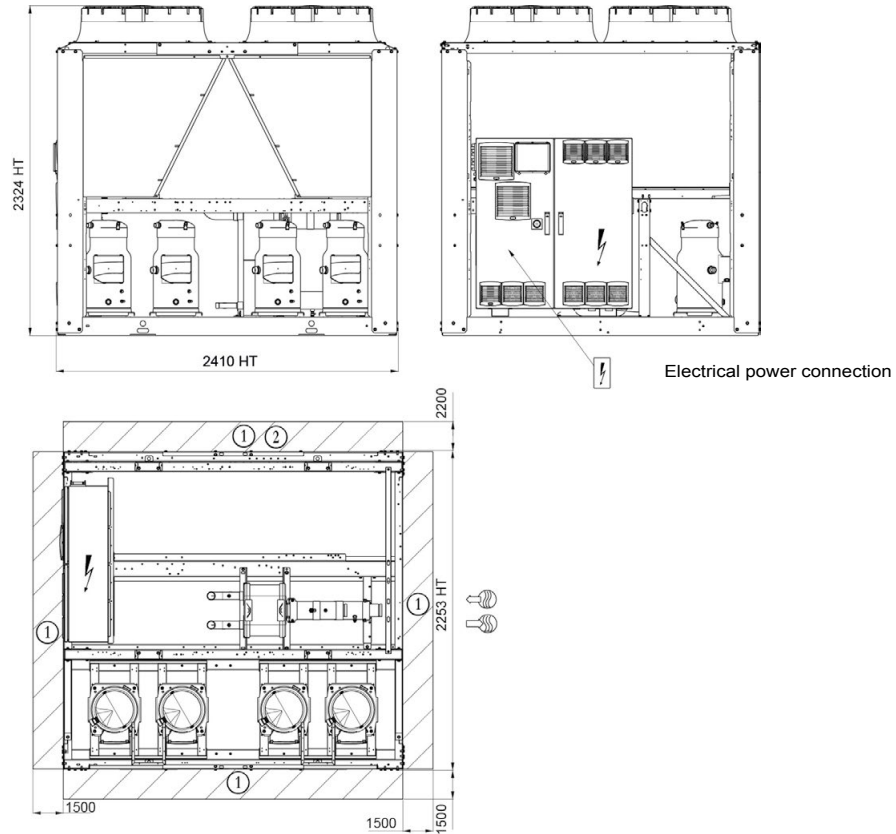
(3) Operating current of the smallest compressor(s) + fan current + locked rotor current or reduced start-up current of the largest compressor.

(4) Standardised EUROVENT conditions, water-cooled exchanger water inlet/outlet = 12°C/7°C, outdoor air temperature = 35°C.

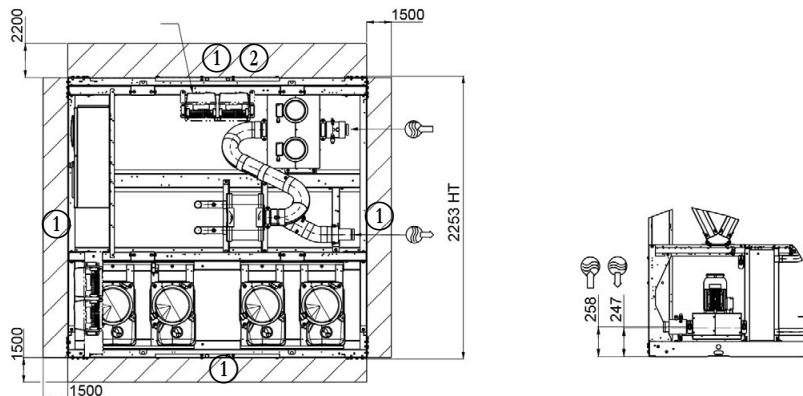
DIMENSIONS/CLEARANCES

30RB/30RBP 170R-270R, 30RQ/30RQP 165R-270R (with and without hydraulic module)

Without hydraulic module



With hydraulic module



Key::

All dimensions are given in mm.

① Clearances required for maintenance and air flow

② Clearance recommended for coil removal

☞ Water inlet

☜ Water outlet

☛ Air outlet, do not obstruct

⚡ Electrical cabinet

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

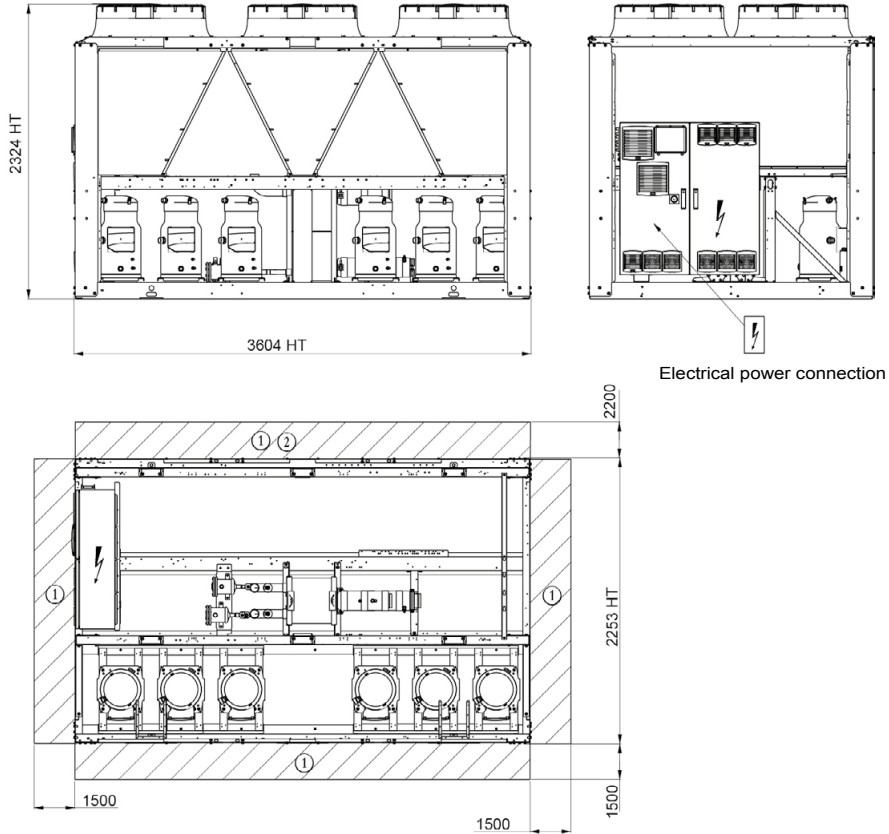
Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity.

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

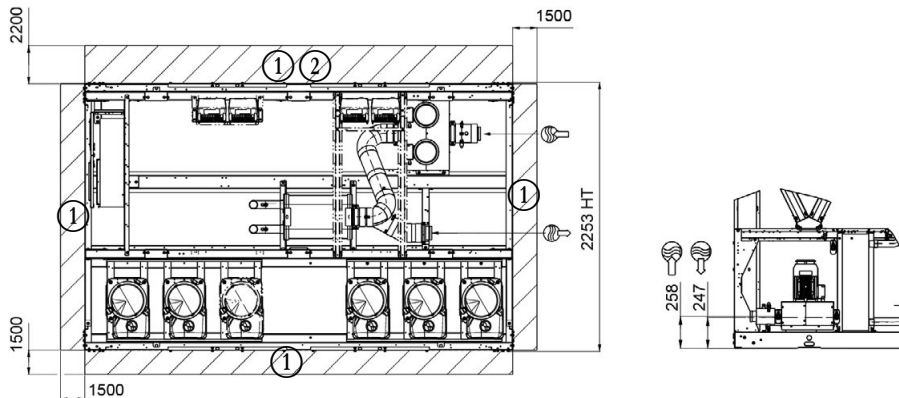
DIMENSIONS/CLEARANCES

30RB/30RBP 310R-410R, 30RQ/30RQP 310R-400R (with and without hydraulic module)

Without hydraulic module



With hydraulic module



Key::

All dimensions are given in mm.

- ① Clearances required for maintenance and air flow
- ② Clearance recommended for coil removal
- Water inlet
- Water outlet
- Air outlet, do not obstruct
- Electrical cabinet

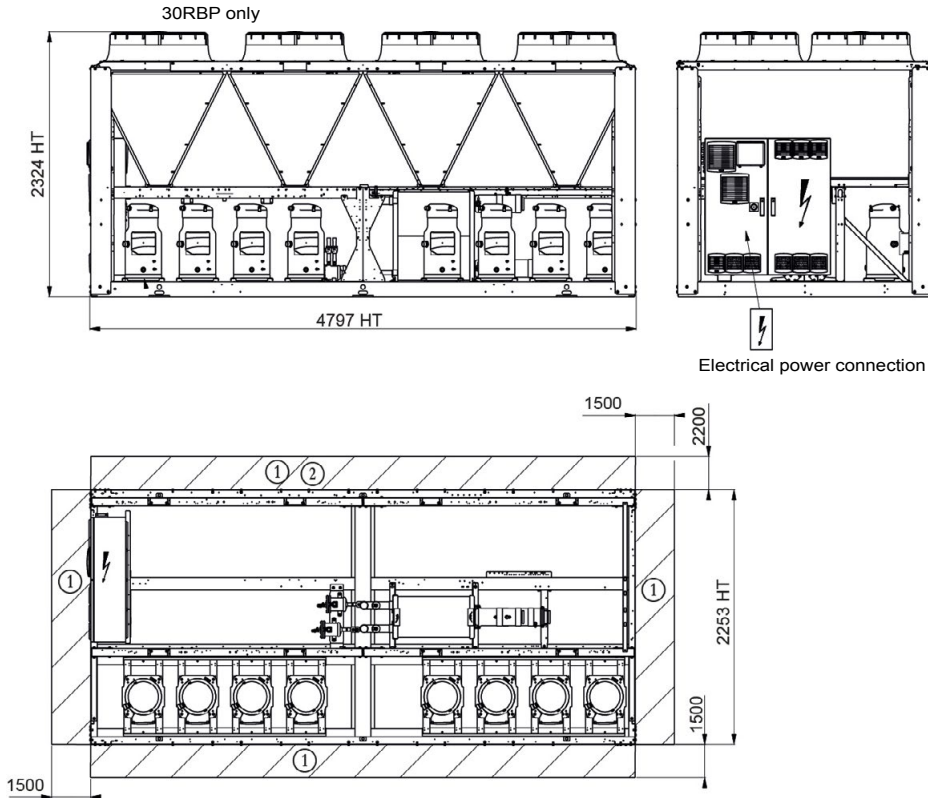
Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request. Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity.

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

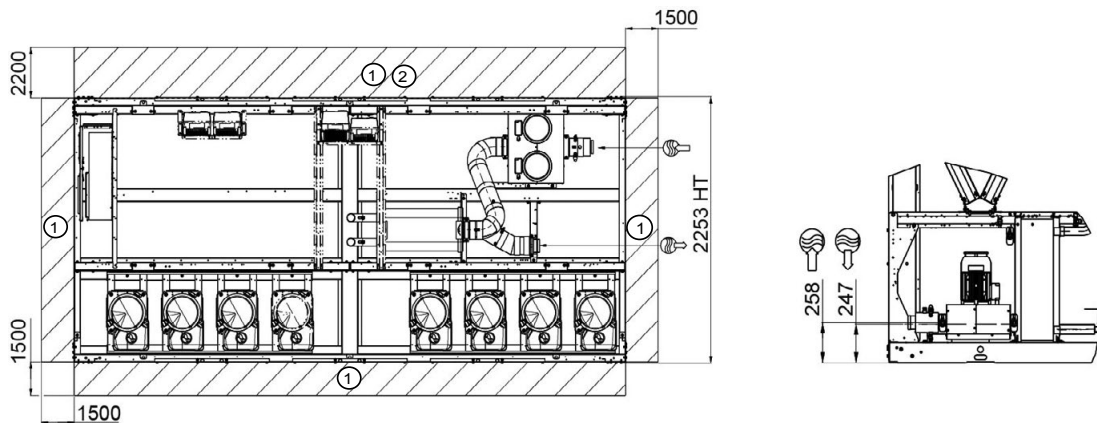
DIMENSIONS/CLEARANCES

30RB/30RBP 450R-550R, 30RQ/30RQP 430R-520R (with and without hydraulic module)

Without hydraulic module



With hydraulic module



Key::

All dimensions are given in mm.

① Clearances required for maintenance and air flow

② Clearance recommended for coil removal

☞ Water inlet

☜ Water outlet

☺ Air outlet, do not obstruct

⚡ Electrical cabinet

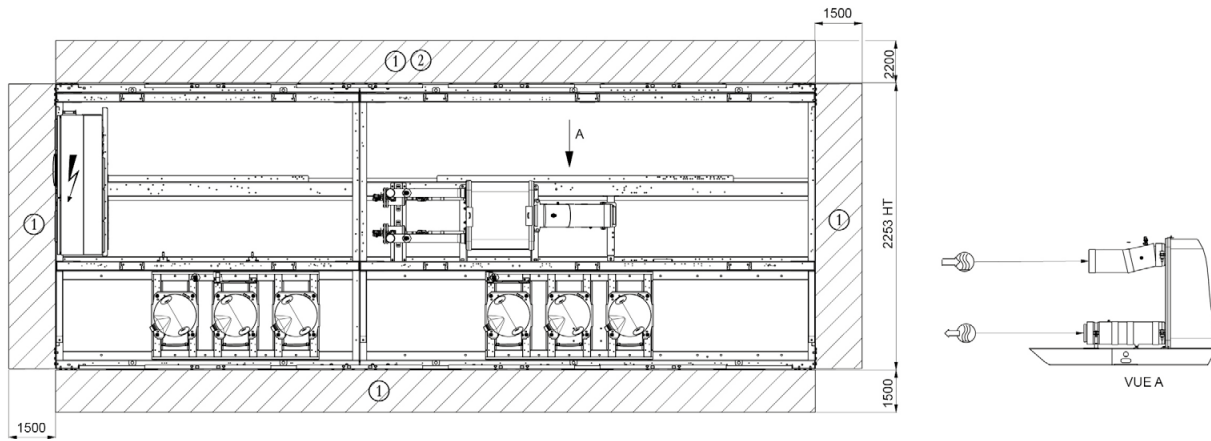
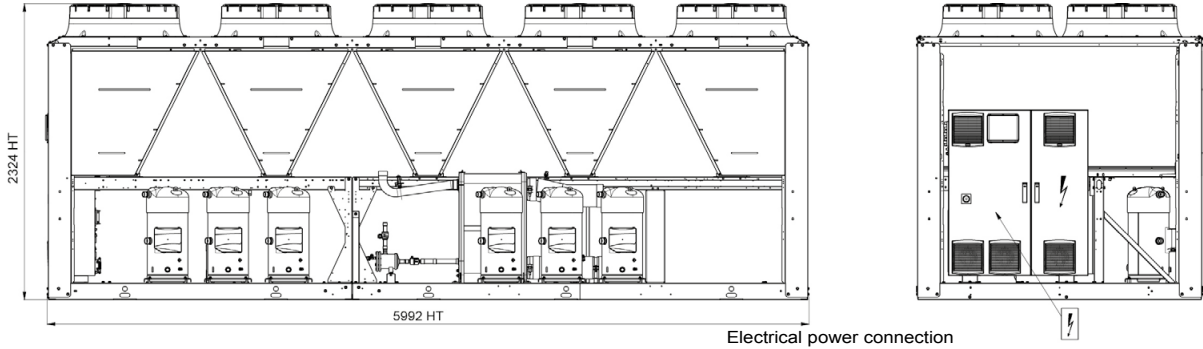
Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request. Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity.

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

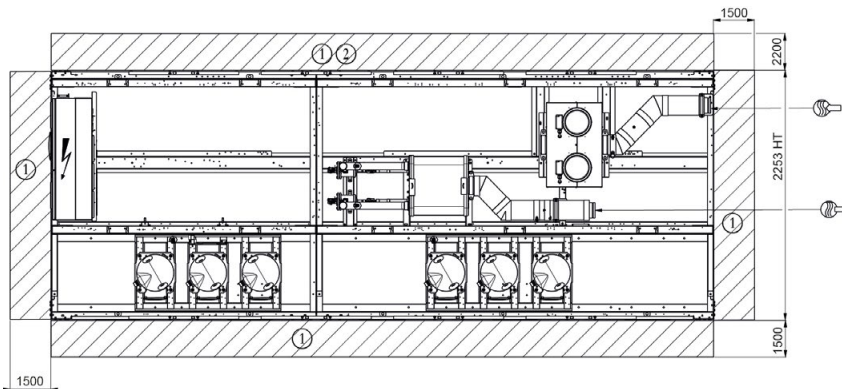
DIMENSIONS/CLEARANCES

30RBP 610R-720R (with and without hydraulic module)

Without hydraulic module



With hydraulic module



Key::

All dimensions are given in mm.

- ① Clearances required for maintenance and air flow
- ② Clearance recommended for coil removal
- Water inlet
- Water outlet
- Air outlet, do not obstruct
- Electrical cabinet

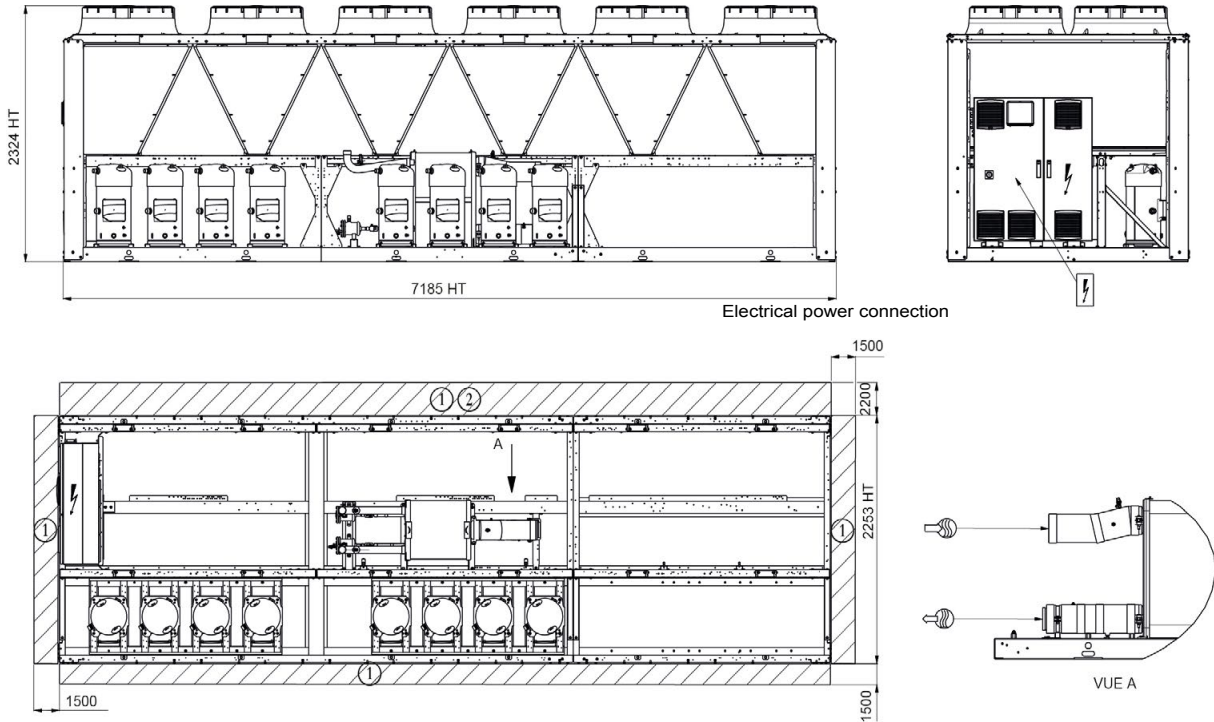
Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request. Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity.

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

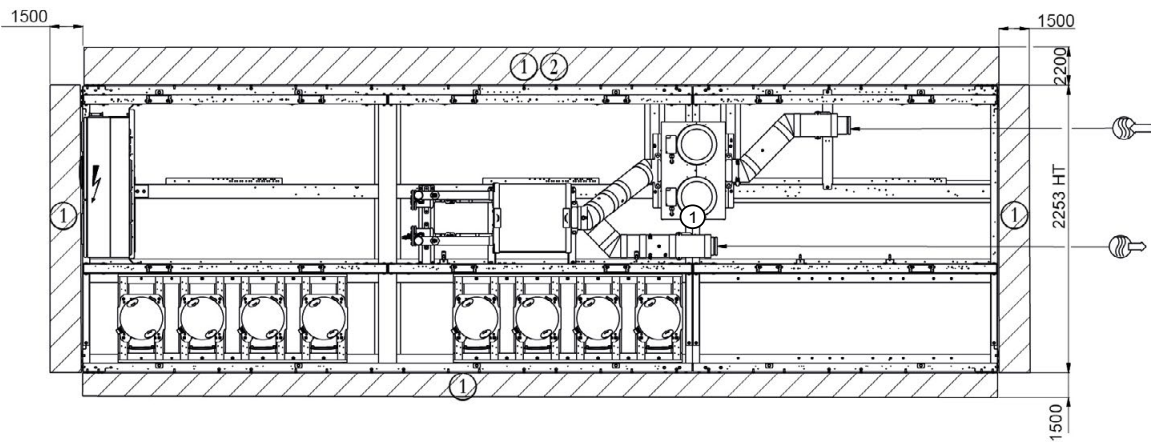
DIMENSIONS/CLEARANCES

30RBP 770R-950R (with and without hydraulic module)

Without hydraulic module



With hydraulic module



Key::

All dimensions are given in mm.

① Clearances required for maintenance and air flow

② Clearance recommended for coil removal

☞ Water inlet

☜ Water outlet

☛ Air outlet, do not obstruct

⚡ Electrical cabinet

Note: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request. Refer to the certified dimensional drawings for the location of fixing points, weight distribution and coordinates of the centre of gravity.

* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.