PRODUCT SELECTION DATA

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

Low environmental impact

High full and part load efficiency

Compact and simple to install

Low refrigerant charge

Superior reliability

30RB/30RQ 040R-160R

Cooling capacity 40-160 kW
Heating capacity 40-160 kW

Aquasnap® heat pumps and liquid chillers 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.

- AquaSnap® (30RB-30RQ) is a compact all-in-one package optimised for applications which require reduced investment and installation costs (low CapEx).
- The large options panel allows for configurations that suit user requirements.
- Optional variable-speed fans and pumps with Carrier Greenspeed® intelligence control logic make this a product which is optimised for part load applications where a high SEER, SEPR, SCOP or IPLV value is required.

In this configuration, AquaSnap® provides 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 +46 °C as standard.

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

CARRIER participates in the ECP programme for LCP/HP
To check the validity of the certificate, visit:
www.eurovent-certification.com

Translation of the original document

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.

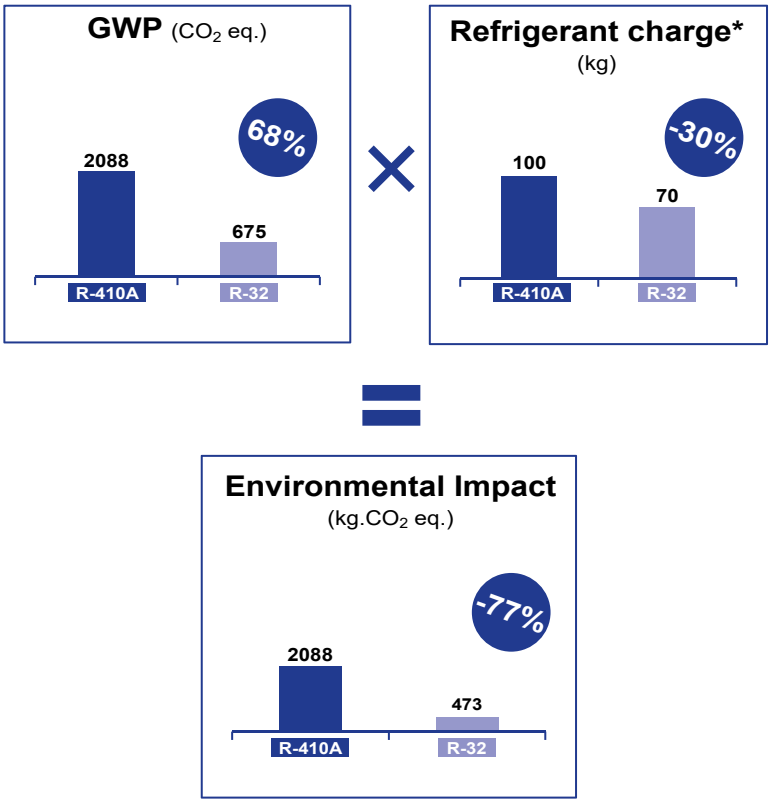
R-32 is currently the ideal refrigeration solution for units equipped with Scroll compressors. By using R-32 refrigerants, Carrier has reduced the carbon footprint of its AquaSnap® range of liquid chillers and heat pumps by 77%. This is the result of a much lower GWP and a significant reduction in the 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 CO_2 impact.

CO_2 FOOTPRINT REDUCED BY UP TO 77%

Lower environmental impact (77% 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. 77% 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.

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

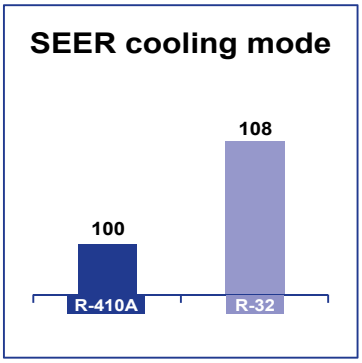
R-32: THE BEST SOLUTION FOR SCROLL LIQUID CHILLERS AND HEAT PUMPS

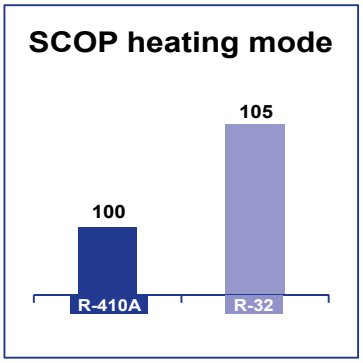
SEER up to +8%
SCOP up to +5%

High energy efficiency

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

- +8% on average in cooling mode
- +5% on average in heating mode



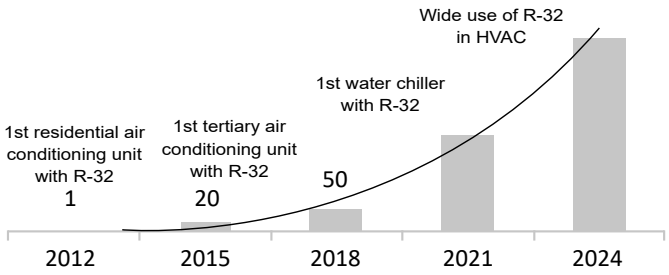


SIMPLICITY

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.

Millions of R-32 units



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.

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

AQUASNAP® - CUSTOMER BENEFITS

■ Outstanding performance

Equipped with variable-speed fans (VSD or EC optional) and optional variable-speed pumps, Carrier's AquaSnap® 30RB/RQ 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 optimum operation at both full load and part load. The 30RB/RQ 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 current Ecodesign regulations.

SEER up to 4.62
SCOP up to 3.84

■ Extensive field of application

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 +44 °C (Optional 46 °C) and with negative water temperatures (-8 °C). From high-end office buildings and hotels to healthcare facilities, data centers and industrial projects, AquaSnap® 30RB/RQ units meets the most demanding expectations in terms of energy efficiency and savings, whatever the climate or application.

■ Easy installation & maintenance

Thanks to the variable-speed pumps, automatic adjustment of the nominal water flow rate via electronic control and automatic measurement of the unit's energy performance under real conditions, 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.

BETWEEN
-20 °C
and **46 °C**

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

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

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 CO_2 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 option,
- NOVATION™ micro-channel heat exchangers with a new aluminium alloy (30RB),
- Brazed-plate heat exchangers with reduced pressure drops,
- Self-regulating microprocessor control with Greenspeed® intelligence,
- Colour touch screen with web connectivity options.

AquaSnap®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 4.6 in line with the new Ecodesign 2016/2281 regulation.
  - $SCOP_{35\ °C}$ up to 3.84
  - 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 transfer area (superheat control)
  - Condenser with high-efficiency NOVATION™ (30RB) aluminium micro-channel heat exchangers and Greenspeed® variable-speed fans (optional)
  - 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 chapter 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 chapter 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 and variable-speed fans (700 rpm) and compressor enclosure to reduce full-load noise level by up to -9 dB(A)
  - 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 (optional) 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 up to -9 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 (optional).

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.

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

AQUASNAP® - CUSTOMER BENEFITS

Environmentally responsible

AquaSnap® liquid chillers with Greenspeed® intelligence (With optional variable-speed fans and pumps) are a boost for green cities and contribute to a sustainable future. Combining a refrigerant charge up to 30% lower, 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 throughout its life cycle.

- Pumping energy consumption can be reduced by up to 2/3 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:
  - Leaks are eliminated 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.

Superior reliability

- State-of-the-art concept
  - Two self-contained 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) 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. Coating applied through 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.
- Self-regulating 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 (30RB models),
  - Smooth fan start to increase unit lifetime (optionals include variable-speed fans).
- 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.

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® 30RB/30RQ unit offers a solution to this important challenge.

A number of green building certification programmes 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.

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

AQUASNAP® - CUSTOMER BENEFITS

Energy saving certificate

The AquaSnap® 30RB/RQ 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 (optional)
- Variable speed on asynchronous pump motor (optional)
- Partial heat recovery (option)

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 major initiative set up to assess the design, construction and operation of green buildings with points assigned in seven credit categories:

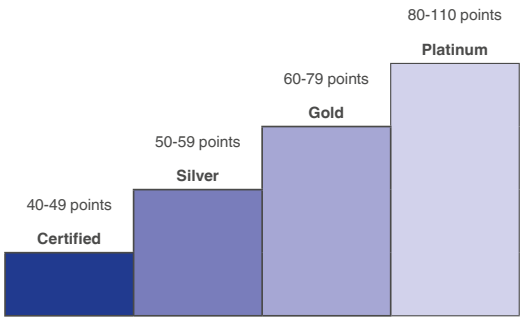
- Sustainable Sites (SS),
- Water efficiency (WE),
- Energy and atmosphere (EA),
- Materials and resources (MR),
- Indoor environmental quality (IEQ),
- Innovation in design (ID),
- Regional Priority (RP).

There are a number of different LEED® products.

While the strategies and categories assessed remain the same, the distribution of points varies depending on the type of building and the requirements of the application, based on whether it is a new construction, school, core & shell, retail or healthcare.

All programmes now use the same point scale:

110 LEED® points available



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 programmes do not certify products or services, choosing the right products, systems or service programmes is critical to obtaining 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, ventilation 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.

EcoPassport®

The PEP ecopassport® programme provides an international reference framework for procedures enabling manufacturers to report the environmental specifications of their products in the form of an environmental claim known as a Product Environmental Profile (PEP).

The PEP ecopassport® programme guarantees that PEPs are correctly drawn up, verified and reported in line with the requirements of the ISO 14025 and IEC/PAS 62545 standards.

The Life Cycle Analysis (LCA) PEP is the environmental identity card for an item of equipment which details the environmental impacts of the product during its life cycle according to eight mandatory indicators:

1. Global Warming Potential,
2. Impact on the ozone layer,
3. Acidification of soil and water,
4. Eutrophication of water,
5. Photochemical ozone creation,
6. Abiotic resource depletion,
7. Fresh water consumption,
8. Total use of primary energy during the life cycle.

Products with certified environmental profiles are used to support methods to assess building sustainability such as BREEAM, LEED. BREEAM, LEED gives additional recognition for materials with robust environmental product declaration types using manufacturer data.

Carrier is the first HVAC manufacturer to provide PEPs for liquid chillers and heat pumps with, not only the 8 mandatory indicators, but all 27 indicators.

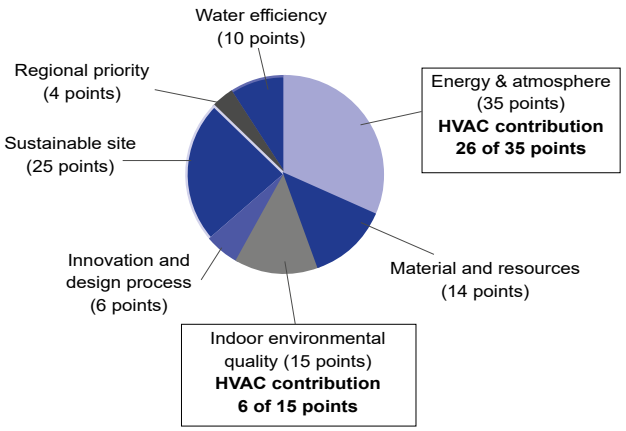
The AquaSnap® PEP can be downloaded from the PEP ecopassport® website: http://www.pep-ecopassport.org/fr/

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

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
- 30RB/RQ units exceed the energy efficiency requirements of ASHRAE 90,1-2007; therefore they satisfy the prerequisites.
- EA prerequisite 3: Fundamental refrigerant management

  30RB/RQ 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. 30RB/RQ 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). 30RB/30RQ 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 the 30RB/30RQ 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).

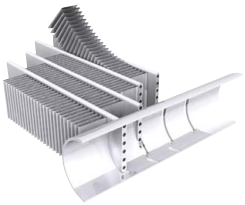
NOTE: Products are not reviewed or certified under LEED®. LEED® credit requirements cover the performance of materials in aggregate, not the performance of individual products or brands. For more information on LEED®, visit www.usgbc.org.

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

30RB - 30RQ TECHNICAL OVERVIEW

SIXTH GENERATION FLYING BIRD™ FIXED-SPEED FANS

- Exclusive Carrier design
- Fan blade design inspired by nature
- High efficiency version with AC motor technology
- Variable speed option:
  - Patented algorithm to control the fan speed.
  - Dedicated variator or EC type motor.
  - Night mode operation.



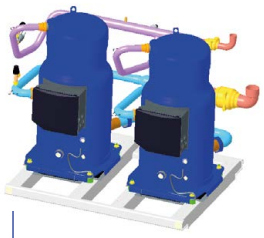
NOVATION™ SECOND GENERATION MICRO CHANNEL HEAT EXCHANGERS (30RB)

- Increased reliability with new aluminium 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

SmartVu™ control

- 6 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

SCROLL COMPRESSORS



REDUCED REFRIGERANT CHARGE

R-32

HIGH-EFFICIENCY BRAZED PLATE HEAT EXCHANGER

- Latest generation asymmetrical type (unit with 2 circuits)
- Low pressure drop

VARIABLE-SPEED PUMP

- Water flow electronic control and reading
- Automatic protection of the pump against low pressure
- Multiple control options:
  - Constant flow with low speed mode on standby
  - Variable flow based on pressure difference or constant temperature

PUMP SPEED REGULATOR

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

TECHNICAL INSIGHTS

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,
  - 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, 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,
  - Storage of maintenance manual, wiring diagram and spare parts list,
  - 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,
- Setpoint adjustable via 4-20 mA signal.

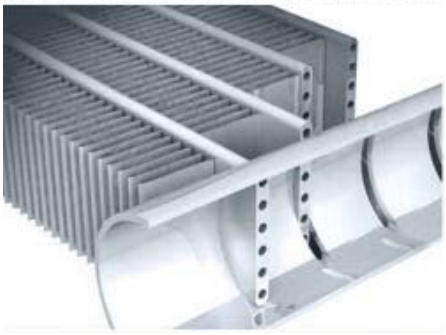
* The availability of sizes and options depends on the country. Please contact your local commercial dealer for more information.

TECHNICAL INSIGHTS

Novation™ heat exchangers with micro-channel coil technology (30RB)

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 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.

- 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 INSIGHTS

New generation of Flying Bird VI^{TM} fans with AC or EC motors (optional)

The 30RB/30RQ unit uses Carrier's sixth generation Flying Bird^{TM} 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.

It was designed and optimised for the 30RB/30RQ air management system configuration and heat exchanger technology.

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

On the 30RB/30RQ 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	AquaSnap 30RB	Aquasnap 30RQ
Corrosion protection, traditional coils	3A	Fins made of pre-treated aluminium (polyurethane and epoxy)	Improved corrosion resistance, recommended for moderate marine and urban environments	-	040-160
Low-temperature brine solution	6B	Low temperature chilled water production down to -8 °C with ethylene glycol and propylene glycol.	Covers specific applications such as ice storage and industrial processes	040-160	040-160
High static fans	12	Unit equipped with high-pressure static variable-speed fans (maximum 200 Pa), each fan being equipped with a connection flange for connection to the ducting system.	Ducted fan discharge, optimised temperature control, based on the operating conditions and system characteristics	040-160	040-160
Return air connection frame	12A	Unit equipped with a connection frame at the heat exchange coil inlet	Facilitates channelling of the air at the unit inlet.	040-080	040-080
Very low noise level	15LS	Acoustic compressor enclosure and low-speed fans	Noise level reduction for sensitive sites	040-160	040-160
High ambient temperature	16	Unit equipped with a higher speed fan	Unit operating range extended to higher ambient temperatures	040-160	040-160
EC fans	17	Unit equipped with EC fans	Improves the unit's energy efficiency	040-160	040-160
Protection grilles	23	Metallic protection grilles	Coil protection against possible impact	040-160	040-160
Air filter and return air connection frame	23B	Unit equipped with a connection frame at the heat exchange coil inlet and washable G2 efficiency filter in accordance with EN 779	Facilitates channelling of the air at the unit inlet and protects the air exchanger against pollution	040-080	040-080
Soft starter per compressor	25	Electronic starter on each compressor	Reduced start-up current	040-160	040-160
Winter operation down to -20 °C	28	Fan speed control via frequency converter	Stable unit operation when the outdoor air temperature is between -10 °C and -20 °C	040-160	040-160
Water exchanger frost protection	41	Electric heater on the water type heat exchanger and the water duct	Water type heat exchanger module frost protection for an outdoor air temperature between 0 °C and -20 °C	040-160	040-160
Hydronic module antifreeze protection	42	Electric heater on the hydronic module	Antifreeze protection of the hydronic module for outdoor temperatures down to -20 °C	040-160	040-160
Exchanger and hydronic module antifreeze protection	42B	Electric heaters on the water heat exchanger, water pipes, hydronic module, optional expansion tank and buffer tank	Water type heat exchanger and hydronic module frost protection down to an outdoor air temperature of -20 °C	040-160	040-160
Partial heat recovery	49	Unit equipped with one desuperheater on each refrigerant circuit	Simultaneous production of free high-temperature hot water and chilled water production (or hot water for the heat pump)	040-160	040-160
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 runtime balancing	040-160	040-160
Evaporator single HP pump	116R	High-pressure fixed-speed water pump, drain valve, air vent and pressure sensors. (optional expansion vessel and built-in safety hydraulic components available)	Quick and easy installation (plug & play)	040-160	040-160
Evaporator dual HP pump	116S	Dual high-pressure fixed-speed water pump, electronic water flow control, pressure sensors.(optional expansion tank and built-in hydraulic safety components available)	Quick and easy installation (plug & play)	040-160	040-160
Variable-speed single HP pump	116V	Single low-pressure water pump, water filter, electronic water flow control, pressure sensors.Multiple variable water flow control options (optional expansion tank and built-in hydraulic safety components available)	Quick and easy installation (plug & play), significant pumping energy cost savings (up to 2/3), tighter water flow control.	040-160	040-160
Variable-speed dual high-pressure pump	116W	Dual high-pressure water pump with speed regulator, pressure sensors. Multiple water flow rate control options. For more details, refer to the dedicated chapter.	Quick and easy installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved system reliability	040-160	040-160
Variable-speed single LP pump	116X	Single low-pressure water pump with speed regulator, pressure sensors. Multiple water flow rate control options. (optional expansion vessel and built-in hydraulic safety components available)	Quick and easy installation (plug & play), significant pumping energy cost savings (up to 2/3), tighter water flow control.	040-160	040-160

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

OPTIONS

Options	No.	Description	Advantages	AquaSnap 30RB	Aquasnap 30RQ
Variable-speed dual LP pump	116Y	Evaporator hydronic module equipped with a variable-speed low-pressure pump, a drain valve, an air vent and pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included; option with built-in hydraulic safety components available)	Quick and easy installation (plug & play), significant pumping energy cost savings (more than two-thirds), tighter water flow control, improved system reliability	040-160	040-160
Evaporator single LP pump	116T	Single low-pressure fixed-speed water pump, electronic water flow control, pressure sensors. (optional expansion tank and built-in hydraulic safety components available)	Quick and easy installation (plug & play)	040-160	040-160
LP dual-pump hydronic module	116U	Dual low pressure water pump, water filter, electronic water flow control, pressure sensors. For more details, refer to the dedicated chapter (expansion tank not included; option with built-in hydraulic safety components)	Quick and easy installation (plug & play)	040-160	040-160
Lon gateway	148D	Two-directional communication board complying with Lon Talk protocol	Connects the unit by communication bus to a building management system	040-160	040-160
Bacnet over IP	149	Two-directional high-speed communication using BACnet protocol over Ethernet network (IP)	Easy and high-speed connection by Ethernet line to a BMS. Allows access to multiple unit parameters	040-160	040-160
ModBus over IP and RS485 communication gateway	149B	Two-directional high-speed communication using the ModBus over Ethernet network (IP) protocol	Easy, quick connection via Ethernet line to a building technical management system. Allows access to several unit parameters.	040-160	040-160
Refrigerant leak detector	159C	Unit equipped with refrigerant leak detector	Immediate customer notification of refrigerant losses to the atmosphere, allowing timely corrective actions	040-160	040-160
Compliance with Russian regulations	199	EAC certification	Compliance with Russian regulations	040-160	040-160
Insulation of the evaporator inlet/outlet refrigerant lines	256	Thermal insulation of the evaporator inlet/ outlet refrigerant lines, with flexible and UV-resistant insulation	Prevents condensation on the evaporator inlet/outlet refrigerant lines	040-160	040-160
Enviro-Shield anti-corrosion protection	262	Coating applied using a conversion process which modifies the surface of the aluminium producing a coating that is integral to the coil. Complete immersion in a bath to ensure 100% coverage. No heat transfer variation, tested to withstand more than 4000 hours of salt spray as per ASTM B117	Improved corrosion resistance, recommended for use in moderately corrosive environments	040-160	-
Super Enviro-Shield anti-corrosion protection	263	Extremely durable and flexible epoxy polymer coating applied by electro coating process, final UV protective topcoat. Minimal heat transfer variation, tested to withstand 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	040-160	-
Evaporator screw connection sleeves kit	264	Evaporator inlet/outlet screw connection sleeves	Allows unit connection to a screw connector	040-160	040-160
Evaporator sleeve kit (to be welded)	266	Victaulic piping connections with welded joints	Easy installation	040-160	040-160
Reinforced ECM filtration for fan VFD	282A	Fan variable frequency drive compliant with IEC 61800-3 class C1	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	040-160	040-160
Reinforced ECM filtration for pump VFD	282B	Pump variable frequency drive compliant with IEC 61800-3 class C1	Allows unit installation in domestic residential environment by reducing electromagnetic interferences	040-160	040-160
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	040-160	040-160
Water buffer tank module	307	Built-in water buffer tank module	Avoid short cycle on compressors and ensure a stable water in the loop	040-160	040-160

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

OPTIONS

Options	No.	Description	Advantages	AquaSnap 30RB	Aquasnap 30RQ
Free cooling mode drycooler management	313	Control and connections to a free cooling drycooler 09PE or 09VE fitted with option FC control box	Easy system management, control capacity extended to a drycooler used in free cooling mode	040-160	-
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.	040-160	-
Compliance with Qatar regulations	319	Specific name plate on the unit with 415 V +/-6% power supply	Compliance with KAHRAMAA regulations in Qatar	040-160	-
Installation or application process outside Europe	326	Specific management of option compatibility	Permits non-standard option compatibility for HVAC application in the EU	040-160	040-160
Compliance with Moroccan regulations	327	Specific regulatory documentation	Compliance with Moroccan regulations	040-160	040-160
Plastic cover	331	Unit wrapped in a plastic cover and strapped onto a wooden pallet.	Protects against dust and external soiling of the unit during storage and transport.	040-160	040-160

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

PHYSICAL DATA, SIZES 040R TO 160R

30RB				040R	045R	050R	055R	060R	070R	080R	090R	100R	120R	140R	160R
Cooling															
Standard unit Full load performances*	CA1	Nominal capacity	kW	41,7	47,3	52,9	56,1	63,6	71,2	81,1	93,4	107	124	140	160
		EER	kW/kW	2,95	2,94	2,93	2,97	2,89	2,90	2,78	2,97	2,83	2,85	2,87	2,76
	CA2	Nominal capacity	kW	54,6	62,7	69,4	74,3	84,6	93,0	103	126	142	162	183	203
		EER	kW/kW	3,60	3,60	3,51	3,61	3,63	3,49	3,22	3,72	3,48	3,40	3,48	3,21
Seasonal energy efficiency**		**SEER $_{12/7\ °C}$ Comfort low temp.**	**kWh/kWh**	**4,41**	**4,47**	**4,50**	**4,62**	**4,41**	**4,31**	**4,24**	**4,38**	**4,51**	**4,57**	**4,46**	**4,37**
		ηs cool $_{12/7°C}$	**%**	**173**	**176**	**177**	**182**	**174**	**169**	**167**	**172**	**177**	**180**	**176**	**172**
		SEER $_{23/18°C}$ Comfort medium temp.	**kWh/kWh**	**6,10**	**6,11**	**6,06**	**6,17**	**5,61**	**5,72**	**5,46**	**5,54**	**5,78**	**5,73**	**5,61**	**5,34**
		SEPR $_{12/7\ °C}$ Process high temp.	**kWh/kWh**	**6,30**	**6,23**	**6,23**	**6,21**	**5,92**	**5,46**	**5,21**	**5,45**	**5,19**	**5,24**	**5,37**	**5,15**
		SEPR $_{-2/-8°C}$ Process medium temp.	**kWh/kWh**	**3,59**	**3,65**	**3,79**	**3,89**	**3,65**	**3,61**	**3,67**	**3,54**	**3,54**	**3,74**	**3,61**	**3,68**
Part Load integrated values		IPLV.SI	kW/kW	4,945	5,025	5,182	5,270	5,369	4,630	4,630	4,904	4,953	4,997	4,707	4,680
Sound levels															
Standard unit															
Sound power(1)			dB(A)	81,5	82,0	83,5	83,5	89,0	89,0	89,0	91,5	91,5	92,0	92,0	92,0
Sound pressure at 10 m(2)			dB(A)	50,0	50,5	52,0	52,0	57,0	57,5	57,0	60,0	59,5	60,0	60,0	60,0
Unit + option 15LS															
Sound power(1)			dB(A)	78,5	79,0	80,0	80,0	80,0	80,0	80,0	83,0	83,0	83,0	83,0	83,0
Sound pressure at 10 m(2)			dB(A)	47,0	47,5	48,5	48,5	48,0	48,5	48,0	51,0	51,0	51,5	51,0	51,0
Dimensions															
Standard unit															
Length			mm	1090	1090	1090	1090	1090	1090	1090	2125	2125	2125	2125	2125
Width			mm	2109	2109	2109	2109	2109	2109	2109	2275	2275	2275	2275	2275
Height			mm	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330
Unit height (option 12)			mm	1372	1372	1372	1372	1372	1372	1372	1372	1372	1372	1372	1372
Unit height (option 307)			mm	1931	1931	1931	1931	1931	1931	1931	1931	1931	1931	1931	1931
Unit height (option 12 + 307)			mm	1973	1973	1973	1973	1973	1973	1973	1973	1973	1973	1973	1973

* In accordance with standard EN14511-3:2018.

** In accordance with EN14825:2018, average climatic conditions.

CA1 Cooling mode conditions: evaporator water inlet/outlet temperature 12 °C/7 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m^2. k/W

CA2 Cooling mode conditions: evaporator water inlet/outlet temperature 23 °C/18 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m^2. k/W

ηs cool$_{12/7°C}$ & SEER $_{12/7°C}$ **Values in bold comply with Ecodesign Regulation (EU) No. 2016/2281 for Comfort applications**

SEER $_{23/18\ °C}$ **Values in bold comply with Ecodesign Regulation (EU) No. 2016/2281 for Comfort applications**

SEPR $_{-2/-8°C}$ **Values in bold comply with Ecodesign Regulation (EU) No. 2015/1095 for HT applications**

IPLV.SI Calculated as per AHRI standard 551-591.

(1) In dB ref=10^{-12} W, (A) weighting. Declared dual-number noise emission value in accordance with ISO 4871 with an uncertainty of +/-3 dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.

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

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

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 040R TO 160R

30RB		040R	045R	050R	055R	060R	070R	080R	090R	100R	120R	140R	160R
Operating weight [3]													
Standard unit	kg	408	409	428	428	435	446	454	672	734	743	861	877
Unit + single high-pressure pump option	kg	428	429	448	448	455	466	474	692	754	768	886	902
Unit + dual high-pressure pump option	kg	455	456	475	475	482	493	501	719	781	790	908	924
Unit + single high-pressure pump and buffer tank options	kg	780	781	800	800	807	818	826	1110	1172	1186	1304	1320
Unit + dual high-pressure pump and buffer tank options	kg	807	808	827	827	834	845	853	1137	1199	1208	1326	1342
Compressors		Hermetic Scroll 48,3 r/s											
Circuit A		2	2	2	2	2	2	2	2	3	3	2	2
Circuit B												2	2
No. of power stages		2	2	2	2	2	2	2	2	3	3	4	4
Refrigerant[3]		R-32 / A2L/ PRP= 675 in accordance with AR4											
Circuit A	kg	3,72	3,92	4,43	4,90	4,70	4,87	4,84	7,75	8,40	9,00	5,00	5,07
	tCO_2e	2,5	2,6	3,0	3,3	3,2	3,3	3,3	5,2	5,7	6,1	3,4	3,4
Circuit B	kg											5,00	5,07
	tCO_2e											3,4	3,4
Oil		POE											
Circuit A	l	6,00	6,00	6,60	6,60	6,60	7,20	7,20	7,20	10,80	10,80	7,20	7,20
Circuit B	l											7,20	7,20
Capacity control		SmartVu™											
Minimum capacity	%	50	50	50	50	50	50	50	50	33	33	25	25
PED category		III											
Condenser		All-aluminium micro-channel coils (MCHE)											
Fans		Axial Flying Bird 6 with rotating shroud											
Standard unit													
Quantity		1	1	1	1	1	1	1	2	2	2	2	2
Maximum total air flow	l/s	3882	3802	4058	3900	5484	5452	5414	10568	10512	10974	10904	10827
Maximum rotation speed	r/s	12	12	12	12	16	16	16	16	16	16	16	16
Evaporator		Direct expansion brazed-plate heat exchanger											
Water volume	l	3,55	4	4,44	4,44	5,18	6,07	6,96	7,4	8,44	9,92	12,69	14,31
Max. water-side operating pressure without hydronic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydronic module (option)		Pump, Victaulic screen filter, relief valve, water and air vent valve, pressure sensors											
Pump		Centrifugal pump, monocell, 48,3 r/s, low- or high-pressure (as required), single or dual (as required)											
Expansion tank volume (Option 293)	l	12	12	12	12	12	12	12	35	35	35	35	35
Buffer tank volume (Option 307)	l	208	208	208	208	208	208	208	208	208	208	208	208
Max. water-side operating pressure with hydronic module	kPa	400	400	400	400	400	400	400	400	400	400	400	400
Water connections with or without hydronic module		Victaulic® type											
Connections	inches	2	2	2	2	2	2	2	2	2	2	2	2
External diameter	mm	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3
Casing paint colour		Colour code RAL 7035											

(3) 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 040R TO 160R

30RQ				040R	045R	050R	060R	070R	080R	090R	100R	120R	140R	160R
Heating														
Standard unit Full load performances*	HA1	**Nominal capacity**	**kW**	**44,1**	**47,9**	**54,3**	**61,6**	**68,2**	**61,8**	**93,3**	**106,6**	**119,1**	**136,8**	**123,0**
		COP	**kW/kW**	**3,91**	**3,97**	**3,89**	**3,80**	**3,80**	**3,03**	**3,80**	**3,75**	**3,74**	**3,80**	**3,03**
	HA2	**Nominal capacity**	**kW**	**42,7**	**47,0**	**53,5**	**59,5**	**67,2**	**75,7**	**91,7**	**104,5**	**117,6**	**134,9**	**150,2**
		COP	**kW/kW**	**3,07**	**3,16**	**3,12**	**3,01**	**3,08**	**3,01**	**3,10**	**3,09**	**3,09**	**3,08**	**3,00**
Seasonal energy efficiency**		**$SCOP_{30/35°C}$**	**kWh/kWh**	**3,82**	**3,85**	**3,81**	**3,57**	**3,67**	**3,64**	**3,60**	**3,55**	**3,79**	**3,76**	**3,78**
		$\eta s\ heat_{30/35°C}$	**%**	**150**	**151**	**149**	**140**	**144**	**143**	**141**	**139**	**149**	**147**	**148**
	HA1	P_{rated}	kW	31,6	33,5	36,4	42,7	49,8	55,0	59,9	68,4	87,0	99,6	109,3
Cooling														
Standard unit Full load performances*	CA1	Nominal capacity	kW	41,0	43,1	50,3	60,2	65,2	74,3	87,0	99,9	114,2	131,6	147,2
		EER	kW/kW	2,89	2,69	2,66	2,97	2,90	2,66	2,88	2,84	2,93	2,85	2,66
Seasonal energy efficiency**		$SEER_{12/7\ °C}$ Comfort low temp.	kWh/kWh	4,19	4,23	4,18	4,34	4,25	4,03	4,48	4,86	4,88	4,20	4,09
		$SEPR_{12/7\ °C}$ Process high temp.	kWh/kWh	6,01	5,85	5,62	6,06	5,81	5,34	5,74	5,71	5,76	5,41	5,15
Sound levels														
Unit + option 16														
Sound power(1)			dB(A)	82	83	84	89	89,5	89,5	92	92	92	92,5	92
Sound pressure at 10 m(2)			dB(A)	50	52	53	58	58	58	60	61	60	61	60,0
Standard unit														
Sound power(1)			dB(A)	82	83	84	89	89,5	89,5	92	92	92	92,5	92
Sound pressure at 10 m(2)			dB(A)	50	52	53	58	58	58	60	61	60	61	60,0
Unit + option 15LS(3)														
Sound power(1)			dB(A)	78,5	79	80,5	80,5	80,5	80,5	83,5	83,5	83,5	83,5	83,5
Sound pressure at 10 m(2)			dB(A)	47	48	49	49	49	49	52	52	52	52	52

* In accordance with standard EN14511-3:2018.

** In accordance with EN14825:2018, average climatic conditions.

HA1 Heating mode conditions: Water type heat exchanger water inlet/outlet temperature 30 °C/35 °C, outdoor air temperature tdb/twb = 7 °C db/6 °C wb, evaporator fouling factor 0 m^2. k/W

HA2 Heating mode conditions: Water type heat exchanger water inlet/outlet temperature 40 °C/45 °C, outdoor air temperature tdb/twb = 7 °C db/6 °C wb, evaporator fouling factor 0 m^2. k/W

CA1 Cooling mode conditions: evaporator water inlet/outlet temperature 12 °C/7 °C, outdoor air temperature 35 °C, evaporator fouling factor 0 m^2. k/W

$\eta s\ heat_{30/35°C}$ & $SCOP_{30/35°C}$ **Values in bold comply with Ecodesign Regulation (EU) No. 813/2013 for Heating applications**

$SEER_{12/7\ °C}$ & $SEPR_{12/7\ °C}$ Applicable Ecodesign regulation (EU) No. 2016/2281

(1) In dB ref=10^{-12} W, (A) weighting. Declared dual-number noise emission value in accordance with ISO 4871 with an uncertainty of +/-3 dB(A). Measured in accordance with ISO 9614-1 and certified by Eurovent.

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

(3) Options: 15LS = Very low noise level, 116W = Variable-speed high pressure dual-pump hydraulic module, 307 = Water buffer tank module

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

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 040R TO 160R

30RQ		040R	045R	050R	060R	070R	080R	090R	100R	120R	140R	160R
Dimensions												
Standard unit												
Length	mm	1090	1090	1090	1090	1090	1090	2125	2125	2125	2125	2125
Width	mm	2109	2109	2109	2109	2109	2109	2275	2275	2275	2275	2275
Height	mm	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330	1330
Unit height (option 12)	mm	1372	1372	1372	1372	1372	1372	1372	1372	1372	1372	1372
Unit height (option 307)	mm	1931	1931	1931	1931	1931	1931	1931	1931	1931	1931	1931
Unit height (option 12 +307)	mm	1973	1973	1973	1973	1973	1973	1973	1973	1973	1973	1973
Operating weight(4)												
Standard unit	kg	444	446	469	496	506	515	759	818	866	996	1000
Unit + single high-pressure pump option	kg	464	466	489	516	526	535	779	838	891	1021	1025
Unit + dual high-pressure pump option	kg	491	493	516	543	553	562	805	864	923	1054	1058
Unit + single high-pressure pump and buffer tank options	kg	816	818	841	868	878	887	1197	1256	1309	1439	1443
Unit + dual high-pressure pump and buffer tank options	kg	843	845	868	895	905	914	1223	1282	1341	1472	1476
Compressors		Hermetic Scroll 48,3 r/s										
Circuit A		2	2	2	2	2	2	2	3	3	2	2
Circuit B											2	2
No. of power stages		2	2	2	2	2	2	2	3	3	4	4
Refrigerant(4)		R-32 / A2L/ PRP= 675 in accordance with AR4										
Circuit A	kg	7,30	7,30	7,80	8,70	8,95	9,20	15,20	15,70	19,60	8,95	9,15
	tCO_2e	4,9	4,9	5,3	5,9	6,0	6,2	10,3	10,6	13,3	6,0	6,2
Circuit B	kg										8,95	9,15
	tCO_2e										6,0	6,2
Oil		Oil type										
Circuit A	l	6,0	6,0	6,6	6,6	7,2	7,2	7,2	10,8	10,8	7,2	7,2
Circuit B	l										7,2	7,2
Capacity control		SmartVu™										
Minimum capacity	%	50	50	50	50	50	50	50	33	33	25	25
PED category		III										
Condenser		Grooved copper tubes and aluminium fins										
Fans		Axial Flying Bird 6 with rotating shroud										
Standard unit												
Quantity		1	1	1	1	1	1	2	2	2	2	2
Maximum total air flow	l/s	4034	4034	4034	5613	5613	5613	10904	10904	10904	11226	11226
Maximum rotation speed	r/s	12	12	12	16	16	16	16	16	16	16	16
Evaporator		Dual-circuit plate heat exchanger										
Water volume	l	3,55	4	4,44	5,18	6,07	6,96	7,4	8,44	9,92	12,69	14,31
Max. water-side operating pressure without hydronic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
Hydronic module (option)		Pump, Victaulic screen filter, relief valve, water and air vent valve, pressure sensors										
Pump		Centrifugal pump, monocell, 48,3 r/s, low- or high-pressure (as required), single or dual (as required)										
Expansion tank volume (Option 293)	l	12	12	12	12	12	12	35	35	35	35	35
Buffer tank volume (Option 307)	l	208	208	208	208	208	208	208	208	208	208	208
Max. water-side operating pressure with hydronic module	kPa	400	400	400	400	400	400	400	400	400	400	400
Water connections with or without hydronic module		Victaulic® type										
Connections	inches	2	2	2	2	2	2	2	2	2	2	2
External diameter	mm	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3	60,3
Casing paint colour		Colour code RAL 7035 & 7024										

(3) Options: 15LS = Very low noise level, 116W = Variable-speed high pressure dual-pump hydraulic module, 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 SPECIFICATIONS

30RB/30RQ		040R	045R	050R	055R	060R	070R	080R	090R	100R	120R	140R	160R
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	19	21	24	24	28	31	36	41	48	55	63	71
Power factor at maximum power(1) or (2)													
Displacement Power Factor (Cos Phi), standard unit		0,81	0,82	0,82	0,82	0,84	0,84	0,85	0,82	0,84	0,85	0,84	0,85
Nominal unit current draw(4)													
Standard unit	A	26	29	35	35	36	46	52	59	71	81	91	104
Maximum operating current draw (Un)(1) or (2)													
Standard unit	A	34	37	42	42	48	54	60	72	84	93	108	121
Maximum current (Un-10%)(1) or (2)													
Standard unit	A	37	39	44	44	51	58	65	77	89	99	115	129
Maximum start-up current (Un)(2) + (3)													
Standard unit	A	116	118	165	165	169	177	191	238	206	223	231	251

(1) Values at the unit's permanent maximum operating condition (as shown on the unit's nameplate).
(2) Values at the unit's maximum operating condition (as shown on the unit's nameplate).
(3) Maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor.
(4) Standardised EUROVENT conditions, water-cooled exchanger inlet/outlet = 12 °C/7 °C, outdoor air temperature = 35 °C.

Short-circuit withstand current (TN system)(1)

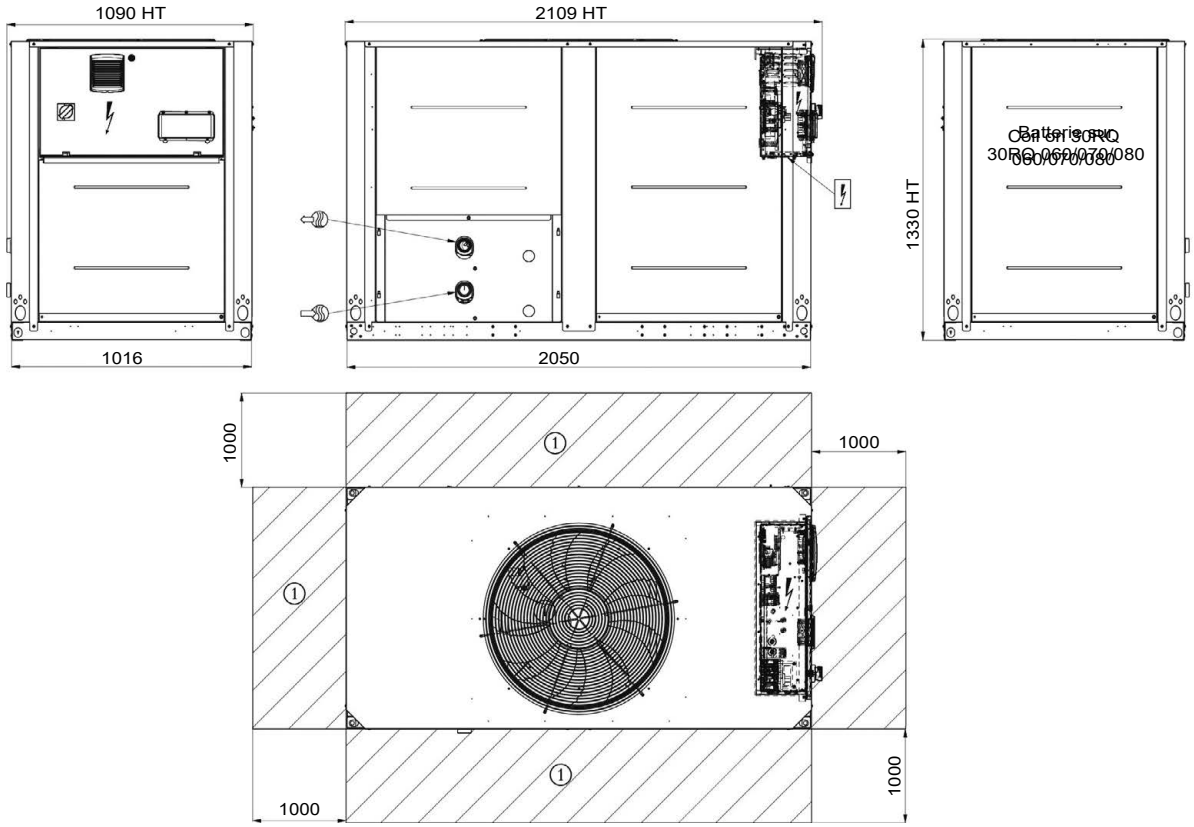
30RB/30RQ		040R	045R	050R	055R	060R	070R	080R	090R	100R	120R	140R	160R
Rated short-circuit withstand currents													
Rated short time (1s) current - Icw	kA eff	3,36	3,36	3,36	3,36	3,36	3,36	5,62	5,62	5,62	5,62	5,62	5,62
Rated peak current - Ipk	kA pk	20	20	20	20	20	20	15	20	20	15	20	15
Value with upstream electrical protection (1)													
Rated conditional short circuit current Icc	kA eff	40	40	40	40	40	40	40	40	40	40	30	30
Associated protection - type/supplier		Circuit breaker/Schneider											
Associated protection - rating/reference		NS100H	NS100H	NS100H	NS100H	NS100H	NS100H	NS100H	NS100H	NS160H	NS160H	NS250H	NS250H

(1) If another current limitation protection device is used, its time-current and thermal constraint (I^2t) trip characteristics must be at least equivalent to those of the recommended protection.
Note: The short circuit current withstand capability values above have been established for the TN system.

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

DIMENSIONS/CLEARANCES

30RB/30RQ 040R-080R, units without water buffer tank 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

Control box

NOTE: Non-contractual drawings.

When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

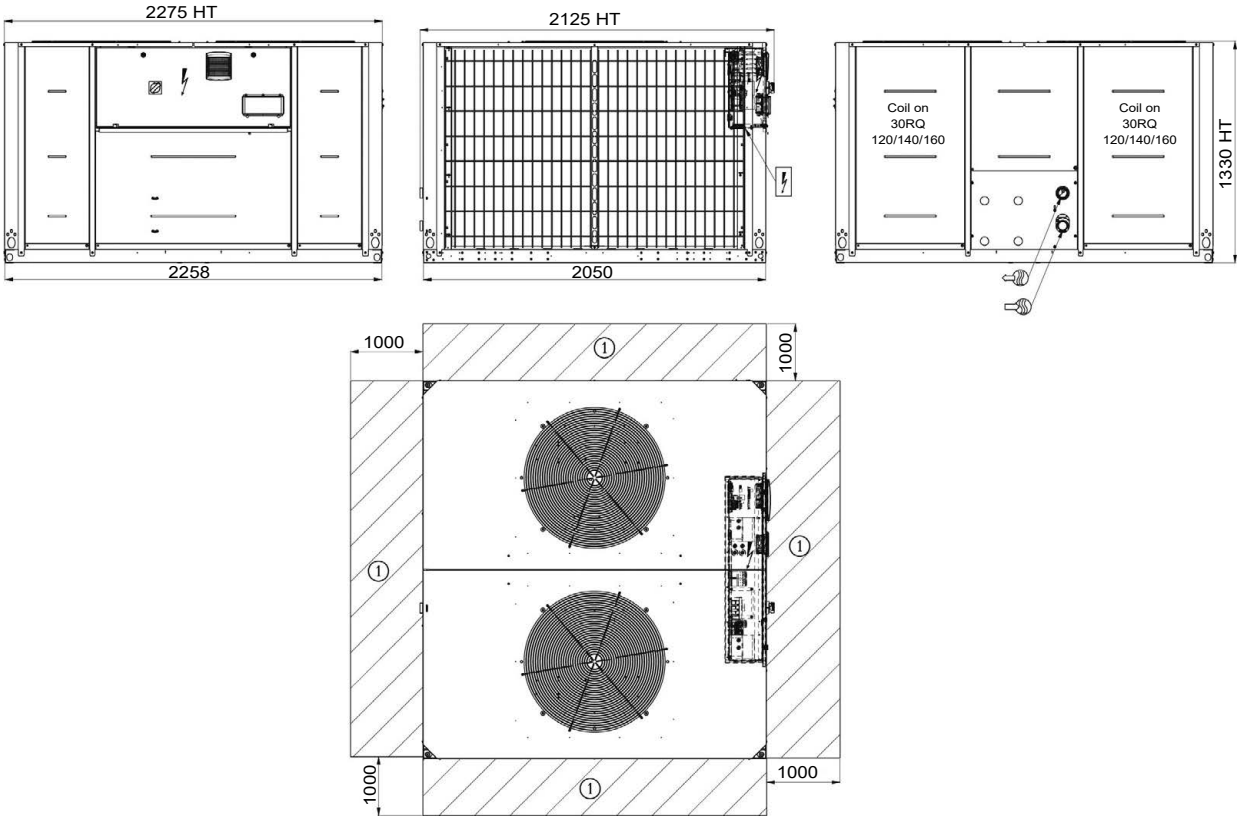
Refer to the certified dimensional drawings for:

- **The location of the fixing points,**
- **The weight distribution,**
- **The coordinates of the centre of gravity, hydraulic and electrical connections,**
- **Details of the 12/12A/23B option connections.**

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

DIMENSIONS/CLEARANCES

30RB/30RQ 090R-160R, units without water buffer tank module



Key:
All dimensions are given in mm.

1. Clearances required for maintenance and air flow
2. Clearance recommended for coil removal
3. Water inlet
4. Water outlet
5. Air outlet, do not obstruct
6. Control box

NOTE: Non-contractual drawings.

When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

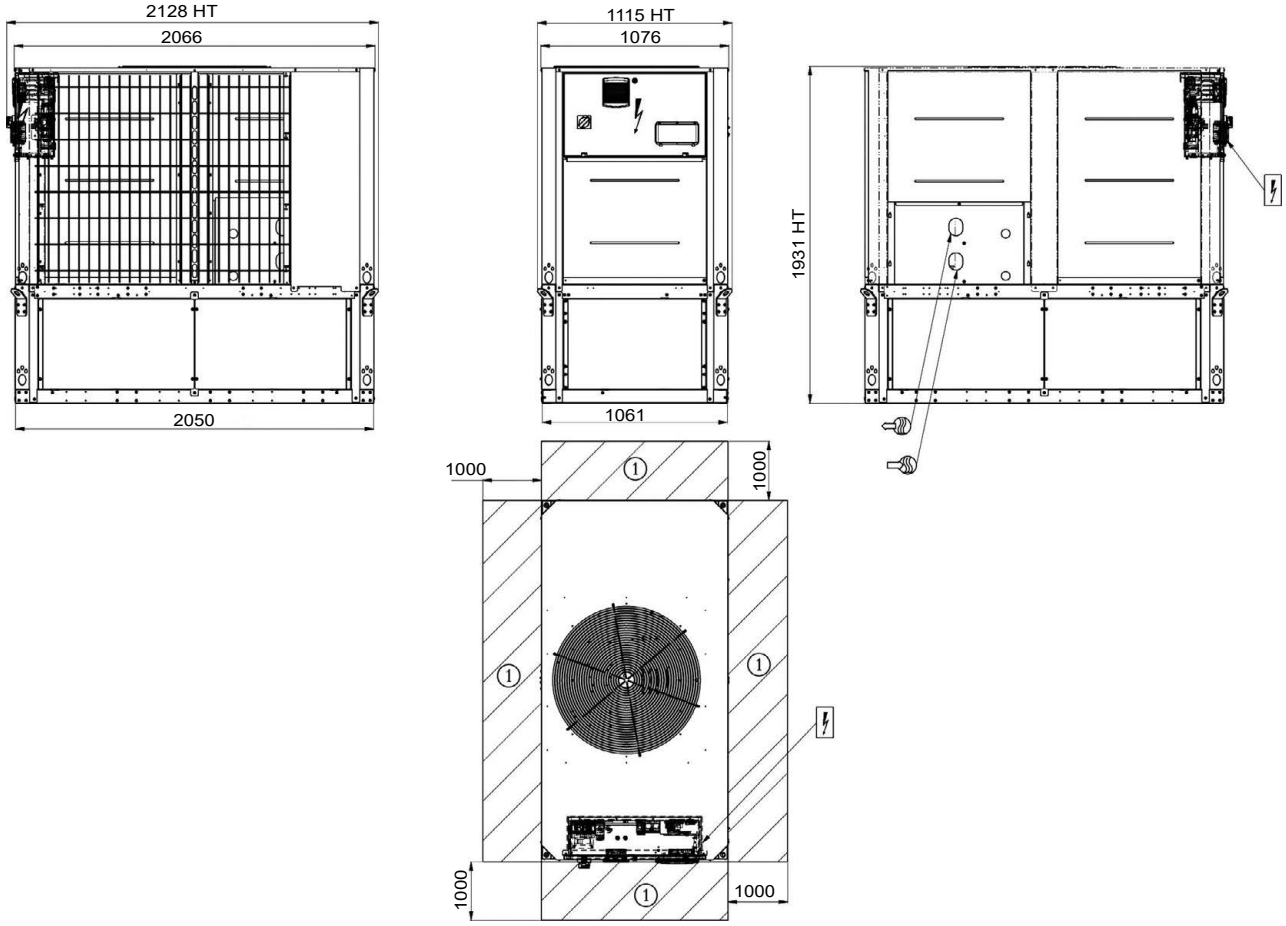
Refer to the certified dimensional drawings for:

- **The location of the fixing points,**
- **The weight distribution,**
- **The coordinates of the centre of gravity, hydraulic and electrical connections,**
- **Details of option 12 connections.**

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

DIMENSIONS/CLEARANCES

30RB/30RQ 040R-080R, units with water buffer tank 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

Control box

NOTE: Non-contractual drawings.

When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

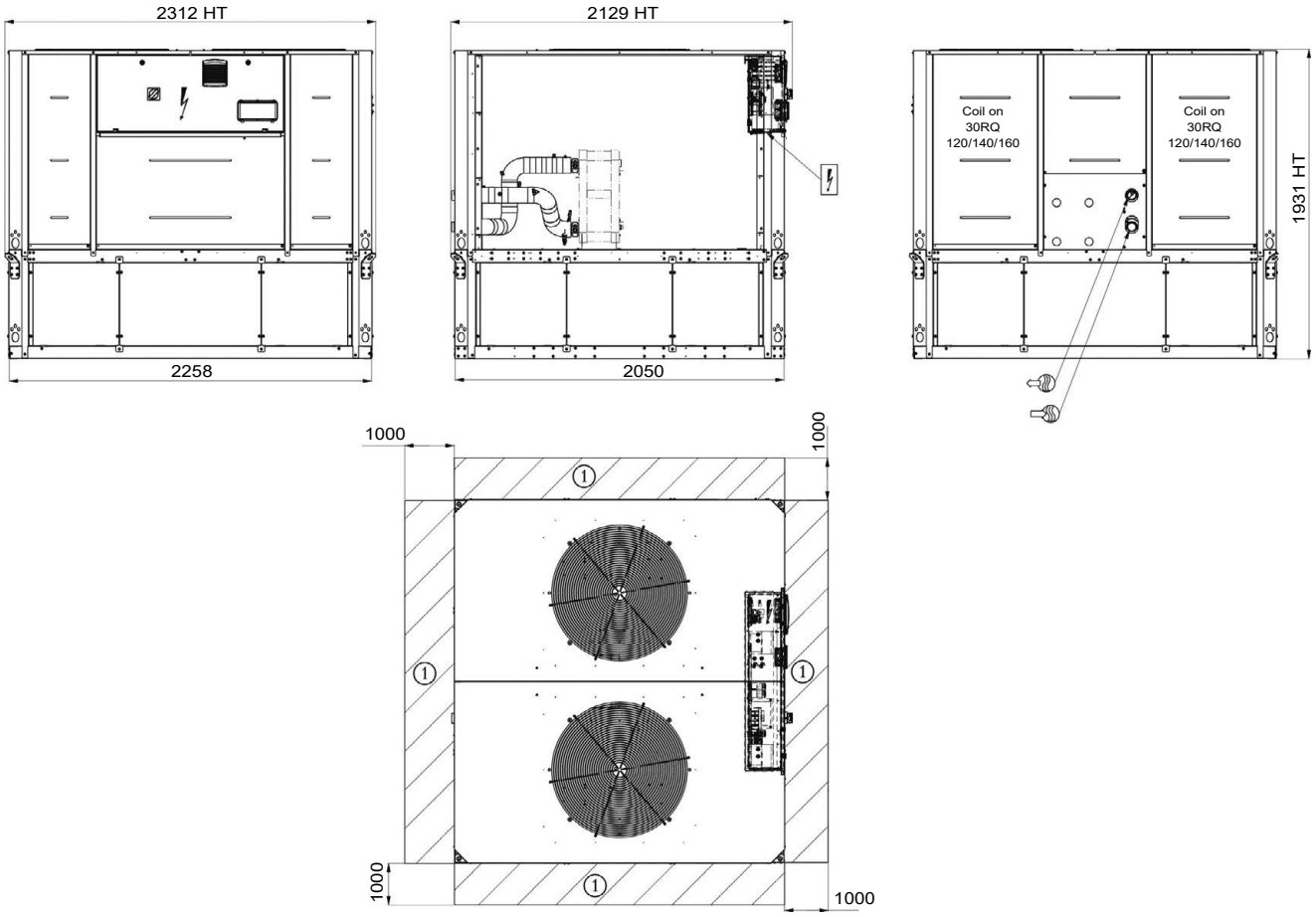
Refer to the certified dimensional drawings for:

- **The location of the fixing points,**
- **The weight distribution,**
- **The coordinates of the centre of gravity, hydraulic and electrical connections,**
- **Details of the 12/12A/23B option connections.**

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

DIMENSIONS/CLEARANCES

30RB/30RQ 090R-160R, units with water buffer tank 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

Control box

NOTE: Non-contractual drawings.

When designing a system, refer to the certified dimensional drawings provided with the unit or available on request.

Refer to the certified dimensional drawings for:

- **The location of the fixing points,**
- **The weight distribution,**
- **The coordinates of the centre of gravity, hydraulic and electrical connections,**
- **Details of option 12 connections.**

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