



Air-Cooled Liquid Chillers with Integrated Hydronic Module

AQUASNAP™
with PURON® refrigerant



Puron™
the environmentally sound refrigerant

Model shown is with
low-noise option



30RB 182-802

Nominal cooling capacity 175-760 kW

The new generation of Aquasnap Puron liquid chillers features the latest technological innovations:

- ozone-friendly refrigerant R410A
- scroll compressors
- low-noise fans made of a composite material
- auto-adaptive microprocessor control.
- aluminium micro-channel heat exchangers (MCHX)

The Aquasnap can be equipped with an integrated hydronic module, limiting the installation to straight-forward operations like connection of the power supply and the chilled water supply and return piping.

Features

Quiet operation

- Compressors
 - Low-noise scroll compressors with low vibration level
 - The compressor assembly is installed on an independent chassis 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)

- Condenser section
 - Condenser coils in V-shape with an open angle, allowing quieter air flow across the coil
 - Low-noise 4th generation Flying Bird fans, made of a composite material (Carrier patent) are now even quieter and do not generate intrusive low-frequency noise
 - Rigid fan installation for reduced noise (Carrier patent)

Easy and fast installation

- Integrated hydronic module (option)
 - Centrifugal low or high-pressure water pump (as required), based on the pressure loss of the hydronic installation
 - Single or dual pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops
 - Water filter protecting the water pump against circulating debris
 - High-capacity membrane expansion tank ensures pressurisation of the water circuit
 - Thermal insulation and frost protection down to -20°C, using an electric resistance heater (see table of options)
 - Pressure gauge to check filter pollution and measure the system water flow rate
 - Water flow control valve

- Simplified electrical connections
 - A single power supply point without neutral (30RB 182-522)
 - Main disconnect switch with high trip capacity (see table of options)
 - 24 V control circuit without risk from a transformer included
- Fast commissioning
 - Systematic factory operation test before shipment
 - Quick-test function for step-by-step verification of the instruments, electrical components and motors

Economical operation

- Increased energy efficiency at part load
 - The refrigerant circuit includes several compressors connected in parallel. At part load, around 99% of the operating time, only the compressors that are absolutely necessary operate. At these conditions the compressors operating are even more energy efficient, as they use the total condenser and evaporator capacity.
 - The electronic expansion device (EXV) allows operation at a lower condensing pressure (EER optimisation).
 - Dynamic superheat management for better utilisation of the evaporator heat exchange surface.
 - All aluminium micro-channel condenser (MCHX), more efficient than a copper/aluminium coil
- Reduced maintenance costs
 - Maintenance-free scroll compressors
 - Fast diagnosis of possible incidents and their history via the Pro-Dialog Plus control
 - R410A refrigerant is easier to use than other refrigerant blends

Environmental care

- Ozone-friendly R410A refrigerant
 - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
 - High-density refrigerant, therefore less refrigerant required
 - Very efficient - gives an increased energy efficiency ratio (EER)
 - 40% reduction in the refrigerant charge through use of the micro-channel heat exchangers (MCHX)
- Leak-tight refrigerant circuit
 - Brazed refrigerant connections for increased leak-tightness
 - Reduction of leaks as no capillary tubes and flare connections are used
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

Superior reliability

- State-of-the-art concept
 - Cooperation with specialist laboratories and use of limit simulation tools (finite element calculations) for the design of the critical components, e.g. motor supports, suction/discharge piping
 - Compressor control box installed on the cold side of the compressor (Carrier patent)
 - All-aluminium micro-channel heat exchanger (MCHX) offers 3.5 times higher corrosion resistance than a conventional coil. The all-aluminium construction eliminates the formation of galvanic currents between aluminium and copper that are responsible for the coil corrosion in saline or corrosive atmospheres.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydronic circuit (Carrier patent)
 - Automatic compressor unloading in case of abnormally high condensing pressure. If an anomaly occurs (e.g. fouled condenser coil, fan failure) Aquasnap continues to operate, but at reduced capacity.
- Exceptional endurance tests
 - Corrosion resistance tests in salt mist in the laboratory
 - Accelerated ageing test on components that are submitted to continuous operation: compressor piping, fan supports
 - Transport simulation test in the laboratory on a vibrating table. The test is based on a military standard and equivalent to 4000 km by truck.

Pro-Dialog Plus control

- Pro-Dialog Plus combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and of the evaporator water pump for optimum energy efficiency.
- Energy management
 - Internal time schedule clock: permits chiller on/off control and operation at a second set-point
 - Set-point reset based on the outside air temperature or the return water temperature
 - Master/slave control of two chillers operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.
 - Start/stop control based on the air temperature
 - Ease-of-use
 - User interface with synoptic diagram for intuitive display of the principal operating parameters: number of compressors operating, suction/discharge pressure, compressor operating hours, set-point, air temperature, entering/leaving water temperature
 - Ten menus for direct access to all machine commands, including fault history, allowing fast and complete chiller diagnostics



Pro-Dialog Plus operator interface

Remote management (standard)

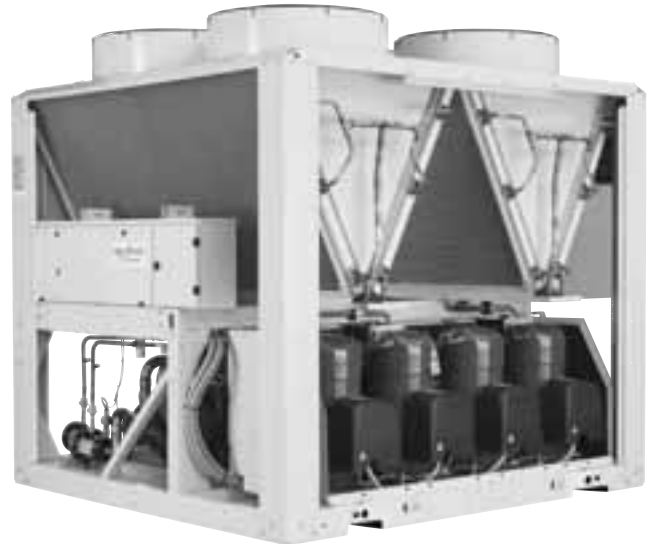
A simple two-wire communication bus between the RS485 port of the Aquasnap and the Carrier Comfort Network offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, manage and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information on these products.

- Start/stop: opening of this contact will shut down the unit
- Dual set-point: closing of this contact activates a second set-point (example: unoccupied mode)
- Demand limit: closing of this contact limits the maximum chiller capacity to a predefined value
- User safety: this contact is connected in series with the water flow switch and can be used for any customer safety loop
- Heat reclaim (option): closing of this contact allows heat reclaim mode operation
- Water pump 1 and 2 control*: these outputs control the contactors of one or two evaporator water pumps
- Water pump on reversal*: these contacts are used to detect a water pump operation fault and automatically change over to the other pump
- Operation indication: this volt-free contact indicates that the chiller is operating (cooling load) or that it is ready to operate (no cooling load)
- Alert indication: this volt-free contact indicates the presence of a minor fault
- Alarm indication: this volt-free contact indicates the presence of a major fault that has led to the shut-down of one or two refrigerant circuits

* contacts already supplied with the hydronic module option

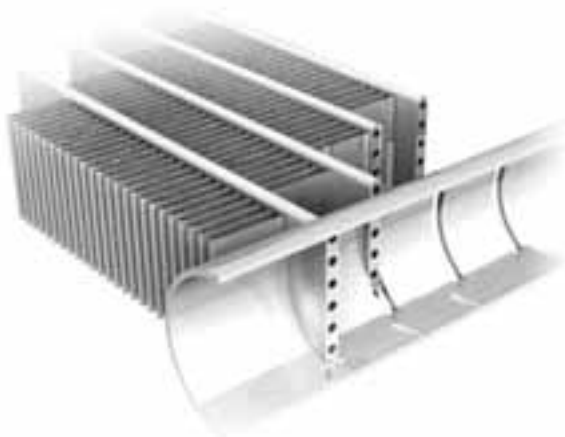
Remote management (EMM option)

- Room temperature: permits set-point reset based on the building indoor air temperature (with Carrier thermostat)
- Set point reset: ensures reset of the cooling set-point based on a 4-20 mA or 0-5 V signal
- Demand limit: permits limitation of the maximum chiller demand based on a 4-20 mA or 0-5 V signal
- Demand limit 1 and 2: closing of these contacts limits the maximum chiller capacity to three predefined values
- User safety: this contact can be used for any customer safety loop, closing of the contact generates a specific alarm
- Ice storage end: when ice storage has finished, this input permits return to the second set-point (unoccupied mode)
- Time schedule override: closing of this contact cancels the time schedule effects
- 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
- Compressor operation: this contact signals that one or several compressors are in operation



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

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



All aluminium micro-channel heat exchanger (MCHX)

Part load performances

With the rapid increase in energy costs and the care about environmental impacts of electricity production, the power consumption of air conditioning equipment has become an important topic. The energy efficiency of a liquid chiller at full load is rarely representative of the actual performance of the units, as on average a chiller works less than 5% of the time at full load.

The heat load of a building depends on many factors, such as the outside air temperature, the exposure to the sun and its occupation.

Consequently it is preferable to use the seasonal energy efficiency, calculated at several operating points that are representative for the unit utilisation.

ESEER (EUROVENT)

The ESEER (European seasonal energy efficiency ratio) permits evaluation of the average energy efficiency at part load, based on four operating conditions defined by Eurovent. The ESEER is the average value of energy efficiency ratios (EER) at different operating conditions, weighted by the operating time.

ESEER (European seasonal energy efficiency ratio)

| Load (%) | Air temperature (°C) | Energy efficiency | Operating time, % |
|----------|----------------------|-------------------|-------------------|
| 100 | 35 | EER ₁ | 3 |
| 75 | 30 | EER ₂ | 33 |
| 50 | 25 | EER ₃ | 41 |
| 25 | 20 | EER ₄ | 23 |

$$\text{ESEER} = \text{EER}_1 \times 3\% + \text{EER}_2 \times 33\% + \text{EER}_3 \times 41\% + \text{EER}_4 \times 23\%$$

Note: Constant leaving water temperature = 7°C

30RB 182 - 802

Part load performances in accordance with Eurovent

| 30RB | LOAD % | CAP kW | UNIT kW | EER kW/kW | ESEER kW/kW |
|------|--------|--------|---------|-----------|-------------|
| 182 | 100 | 173.3 | 59.3 | 2.92 | 3.71 |
| | 75 | 130 | 37.6 | 3.45 | |
| | 50 | 86.7 | 23.1 | 3.75 | |
| | 25 | 43.3 | 10.6 | 4.10 | |
| 202 | 100 | 192.8 | 70.1 | 2.75 | 3.74 |
| | 75 | 144.6 | 42.2 | 3.43 | |
| | 50 | 96.4 | 25.2 | 3.82 | |
| | 25 | 48.2 | 11.5 | 4.19 | |
| 232 | 100 | 227.3 | 72.8 | 3.12 | 4.30 |
| | 75 | 170.4 | 45.4 | 3.76 | |
| | 50 | 113.6 | 25.5 | 4.45 | |
| | 25 | 56.8 | 11.4 | 4.98 | |
| 262 | 100 | 263.4 | 97.5 | 2.70 | 3.86 |
| | 75 | 197.5 | 59.8 | 3.31 | |
| | 50 | 131.7 | 32.6 | 4.04 | |
| | 25 | 65.8 | 14.7 | 4.49 | |
| 302 | 100 | 293.3 | 104.5 | 2.81 | 3.96 |
| | 75 | 220 | 62.3 | 3.53 | |
| | 50 | 146.6 | 36.1 | 4.06 | |
| | 25 | 73.3 | 16.2 | 4.54 | |
| 342 | 100 | 327.5 | 120.9 | 2.71 | 3.94 |
| | 75 | 245.6 | 71.5 | 3.44 | |
| | 50 | 163.7 | 40 | 4.09 | |
| | 25 | 81.9 | 18.1 | 4.53 | |
| 372 | 100 | 358.5 | 127.5 | 2.81 | 4.08 |
| | 75 | 268.9 | 73.7 | 3.65 | |
| | 50 | 179.3 | 42.4 | 4.22 | |
| | 25 | 89.6 | 19.4 | 4.62 | |
| 402 | 100 | 391 | 146.6 | 2.67 | 3.93 |
| | 75 | 293.2 | 83.9 | 3.50 | |
| | 50 | 195.5 | 48.3 | 4.05 | |
| | 25 | 97.7 | 21.7 | 4.50 | |
| 432 | 100 | 417.6 | 150.6 | 2.77 | 3.92 |
| | 75 | 313.2 | 86.7 | 3.61 | |
| | 50 | 208.8 | 51.4 | 4.06 | |
| | 25 | 104.4 | 24.6 | 4.24 | |
| 462 | 100 | 446.8 | 168.5 | 2.65 | 3.86 |
| | 75 | 335.1 | 93.3 | 3.59 | |
| | 50 | 223.4 | 55.5 | 4.03 | |
| | 25 | 111.7 | 27.2 | 4.11 | |
| 522 | 100 | 506.3 | 191.4 | 2.65 | 3.77 |
| | 75 | 379.7 | 109.5 | 3.47 | |
| | 50 | 253.1 | 63.7 | 3.97 | |
| | 25 | 126.6 | 31.6 | 4.01 | |
| 602 | 100 | 596.2 | 218.1 | 2.73 | 4.09 |
| | 75 | 447.1 | 121.9 | 3.67 | |
| | 50 | 298.1 | 70.8 | 4.21 | |
| | 25 | 149 | 31.9 | 4.66 | |
| 672 | 100 | 651.8 | 240.6 | 2.71 | 4 |
| | 75 | 488.8 | 137 | 3.57 | |
| | 50 | 325.9 | 78.8 | 4.14 | |
| | 25 | 163 | 36.1 | 4.52 | |
| 732 | 100 | 704.2 | 265.1 | 2.66 | 3.96 |
| | 75 | 528.2 | 148.2 | 3.56 | |
| | 50 | 352.1 | 84.3 | 4.15 | |
| | 25 | 176.1 | 40.6 | 4.33 | |
| 802 | 100 | 757.7 | 288.1 | 2.63 | 3.91 |
| | 75 | 568.3 | 162.6 | 3.50 | |
| | 50 | 378.8 | 92.4 | 4.10 | |
| | 25 | 189.4 | 43.9 | 4.31 | |

Legend

- Load % - Unit heat load
- Cap kW - Cooling capacity
- Unit kW - Unit power input
- EER - Cooling capacity kW/unit power input kW

Options and accessories

| Options | No. | Description | Advantages | Use |
|--|------|--|--|--------------|
| Condenser with anti-corrosion post-treatment | 2B | Coils with copper tubes and aluminium fins with Blygold Polual treatment | Improved corrosion resistance, recommended for marine, industrial and rural environments | 30RB 182-802 |
| Corrosion protection, traditional coils | 3A | Fins made of pre-treated aluminium (polyurethane or epoxy) | Improved corrosion resistance, recommended for marine, moderate or urban environments | 30RB 182-802 |
| Unit for low leaving water temperature | 6 | Leaving water temperature from +3°C to -10°C | All low-temperature applications: ice storage, cooling and process cooling applications | 30RB 182-402 |
| Unit for indoor installation with discharge ducts | 12 | Fans with available pressure | Ducted condenser air discharge, optimised condensing temperature control, based on the operating conditions and system characteristics | 30RB 182-802 |
| Low noise level | 15 | Acoustic compressor enclosure | Noise emission reduction | 30RB 182-802 |
| Very low noise level | 15LS | Acoustic compressor enclosure and low-speed fans | Noise emission reduction | 30RB 182-802 |
| Grilles | 23 | Metallic grilles on all four unit faces (this option includes the supply of enclosure panels) | Improved aesthetics | 30RB 182-802 |
| Enclosure panels (for units with copper/aluminium coils only) | 23A | Side panels on each end of the coils | Improved aesthetics | 30RB 182-802 |
| Electronic starter | 25 | Electronic starter on each compressor | Reduced start-up current | 30RB 182-522 |
| Winter operation down to -20°C | 28 | Fan speed control via frequency converter | Stable unit operation when the air temperature is between 0°C and -20°C | 30RB 182-802 |
| Winter operation down to -10°C | 28B | Twin-speed lead fan for each circuit | Stable unit operation when the air temperature is between 0°C and -10°C | 30RB 182-802 |
| Evaporator frost protection | 41 | Electric heater on the evaporator | Evaporator frost protection down to -20°C outside temperature | 30RB 182-802 |
| Evaporator and hydronic module frost protection | 42A | Electric heaters on the evaporator and hydronic module | Evaporator and hydronic module frost protection down to -20°C outside temperature | 30RB 182-522 |
| Partial heat reclaim | 49 | Partial heat reclaim by desuperheating the compressor discharge gas | Free high-temperature hot-water production simultaneously with chilled water production | 30RB 182-802 |
| Total heat reclaim | 50 | See heat reclaim option. Note: Unit equipped with coils with copper tubes and aluminium fins | Free hot water production simultaneously with chilled water production | 30RB 262-522 |
| Twinning | 58 | Unit equipped with an additional field-installed leaving water temperature sensor, allowing master/slave operation of two chillers connected in parallel | Optimised operation of two chillers connected in parallel with operating time equalisation | 30RB 182-802 |
| Main disconnect switch without fuse (standard for sizes 182-262) | 70 | Factory-installed main electric disconnect switch in the control box | Ease-of-installation and compliance with local electrical regulations | 30RB 302-802 |
| Main disconnect switch with fuse | 70D | Factory-installed main electric disconnect switch with fuse in the control box | Same advantage as main disconnect switch and reinforced anti-short circuit protection | 30RB 302-802 |
| Evaporator with aluminium jacket | 88 | Evaporator thermal insulation protection by aluminium sheets | Improved resistance to climatic aggression | 30RB 182-802 |
| Evaporator and hydronic module with aluminium jacket | 88A | Evaporator and water piping thermal insulation protection by aluminium sheets | Improved resistance to climatic aggression | 30RB 302-522 |
| Suction valve | 92 | Shut-off valves on the compressor suction piping (discharge valve as standard) | Simplified maintenance | 30RB 302-802 |
| Compressor suction and discharge valves | 92A | Shut-off valves on the common compressor suction and discharge piping | Simplified maintenance | 30RB 182-262 |
| High-pressure single-pump hydronic module | 116B | See hydronic module option | Easy and fast installation | 30RB 182-522 |
| High-pressure dual-pump hydronic module | 116C | See hydronic module option | Easy and fast installation, operating safety | 30RB 182-522 |
| Low-pressure single-pump hydronic module | 116F | See hydronic module option | Easy and fast installation | 30RB 182-522 |
| Low-pressure dual-pump hydronic module | 116G | See hydronic module option | Easy and fast installation, operating safety | 30RB 182-522 |
| Direct-expansion free cooling system | 118A | See free cooling option. Note: Unit equipped with coils with copper tubes and aluminium fins | Economic chilled-water production at low outside temperature | 30RB 232-522 |
| JBus gateway | 148B | Two-directional communications board, complies with JBus protocol | Easy connection by communication bus to a building management system | 30RB 182-802 |
| Bacnet gateway | 148C | Two-directional communications board, complies with Bacnet protocol | Easy connection by communication bus to a building management system | 30RB 182-802 |
| LonTalk gateway | 148D | Two-directional communications board, complies with LonTalk protocol | Easy connection by communication bus to a building management system | 30RB 182-802 |
| Energy Management module EMM | 156 | See controls manual | Easy connection by wired connection to a building management system | 30RB 182-802 |
| Fitted safety valves with sealed ball valve | 196 | Valve with sealed ball upstream of the safety valves | Safety valve inspection and replacement facilitated without refrigerant loss | 30RB 182-802 |
| Conformance with Australian regulations | 200 | Heat exchanger approved to Australian code | - | 30RB 182-802 |
| Storage unit above 48°C | 241 | Refrigerant charge stored in the condenser. Option not compatible with MCHX coils; Cu/Al coils are required to store the charge. | Unit transport by container only possible with this option | 30RB 182-802 |

Options and accessories

| Options | Description | Advantages | Use |
|---------------------------------------|--|---|--------------|
| Connection sleeve | Piping to be welded with Victaulic connection | Ease-of-installation | 30RB 182-802 |
| Energy Management Module EMM | See controls manual | Easy connection by wired connection to a building management system | 30RB 182-802 |
| Scrolling Marquee Interface | Remotely installed user interface (communication bus) | Remote chiller control up to 300 m | 30RB 182-802 |
| Power cable connection side extension | Side extension on the power control to allow a reduced cable bend radius | Use of thicker power cables | 30RB 302-802 |

Physical data

| 30RB | | 182 | 202 | 232 | 262 | 302 | 342 | 372 | 402 | 432 | 462 | 522 | 602 | 672 | 732 | 802 |
|--|-------|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Nominal cooling capacity* | kW | 173 | 193 | 227 | 263 | 293 | 328 | 359 | 391 | 418 | 447 | 506 | 596 | 652 | 704 | 758 |
| Seasonal energy efficiency ratio (ESEER) | kW/kW | 3.71 | 3.74 | 4.30 | 3.86 | 3.96 | 3.94 | 4.08 | 3.93 | 3.92 | 3.86 | 3.77 | 4.09 | 4.00 | 3.96 | 3.91 |
| Operating weight** | | | | | | | | | | | | | | | | |
| Unit with option 15 | kg | 2082 | 2172 | 2202 | 2370 | 2990 | 3186 | 3234 | 3370 | 3922 | 4062 | 4240 | 5480 | 5658 | 6370 | 6550 |
| Standard unit | kg | 1902 | 2002 | 2012 | 2180 | 2760 | 2956 | 2984 | 3110 | 3632 | 3772 | 3930 | 5120 | 5289 | 5960 | 6120 |
| Refrigerant | | R410A | | | | | | | | | | | | | | |
| Circuit A | kg | 11.4 | 11.4 | 14.5 | 14.5 | 20 | 21 | 21 | 20.5 | 26 | 26.5 | 26.5 | 23 | 23 | 28 | 28 |
| Circuit B | kg | 13.5 | 13.5 | 14 | 14 | 14 | 14 | 21 | 21.5 | 22 | 21.5 | 27.5 | 23 | 22.5 | 30 | 30 |
| Circuit C | kg | - | - | - | - | - | - | - | - | - | - | - | 24 | 28 | 25 | 33 |
| Compressors | | Hermetic scroll, 48.3 r/s | | | | | | | | | | | | | | |
| Circuit A | | 1 | 1 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 3 | 3 | 4 | 4 |
| Circuit B | | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 4 | 4 |
| Circuit C | | - | - | - | - | - | - | - | - | - | - | - | 3 | 4 | 3 | 4 |
| No. of control stages | | 3 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 7 | 8 | 9 | 10 | 11 | 12 |
| Minimum capacity | % | 28 | 33 | 25 | 25 | 18 | 20 | 15 | 17 | 13 | 14 | 13 | 11 | 10 | 9 | 8 |
| Control | | Pro-Dialog Plus | | | | | | | | | | | | | | |
| Condensers | | Grooved copper tubes and aluminium fins | | | | | | | | | | | | | | |
| Fans | | Axial FLYING BIRD IV with rotating shroud | | | | | | | | | | | | | | |
| Quantity | | 4 | 4 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | 7 | 8 | 9 | 10 | 11 | 12 |
| Total air flow | l/s | 18056 | 18056 | 18056 | 18056 | 22569 | 22569 | 27083 | 27083 | 31597 | 31597 | 36111 | 40625 | 45139 | 49653 | 54167 |
| Speed | r/s | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Evaporator | | Direct expansion, shell-and-tube | | | | | | | | | | | | | | |
| Water volume | l | 120 | 120 | 110 | 110 | 110 | 125 | 125 | 125 | 113 | 113 | 113 | 284 | 284 | 284 | 284 |
| Max. water-side operating pressure without hydronic module | kPa | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| Water connections (without hydronic module) | | Victaulic | | | | | | | | | | | | | | |
| Diameter | in | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Outside tube diameter | mm | 88.9 | 88.9 | 88.9 | 88.9 | 114.3 | 114.3 | 114.3 | 114.3 | 168.3 | 168.3 | 168.3 | 168.3 | 168.3 | 168.3 | 168.3 |

* Nominal conditions: evaporator entering/leaving water temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0.18 x 10⁻⁴ (m² K)/W

** Weights are for guidance only

Sound levels

| 30RB | | 182 | 202 | 232 | 262 | 302 | 342 | 372 | 402 | 432 | 462 | 522 | 602 | 672 | 732 | 802 |
|--|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Unit with very low noise level option | | | | | | | | | | | | | | | | |
| Sound power level 10 ⁻¹² W* | dB(A) | 84 | 84 | 85 | 85 | 86 | 86 | 87 | 87 | 88 | 88 | 88 | 89 | 89 | 89 | 90 |
| Sound pressure level at 10 m** | dB(A) | 52 | 52 | 53 | 53 | 54 | 54 | 55 | 55 | 55 | 55 | 56 | 56 | 57 | 57 | 57 |
| Unit with low noise level option | | | | | | | | | | | | | | | | |
| Sound power level 10 ⁻¹² W* | dB(A) | 89 | 89 | 89 | 89 | 90 | 90 | 91 | 91 | 92 | 92 | 92 | 93 | 94 | 93 | 94 |
| Sound pressure level at 10 m** | dB(A) | 57 | 57 | 57 | 57 | 58 | 58 | 59 | 59 | 60 | 60 | 60 | 61 | 61 | 61 | 62 |
| Standard unit | | | | | | | | | | | | | | | | |
| Sound power level 10 ⁻¹² W* | dB(A) | 91 | 91 | 91 | 91 | 92 | 92 | 93 | 93 | 94 | 94 | 94 | 95 | 95 | 96 | 96 |
| Sound pressure level at 10 m** | dB(A) | 59 | 59 | 59 | 59 | 60 | 60 | 61 | 61 | 62 | 62 | 62 | 62 | 63 | 63 | 64 |

* In accordance with ISO 9614-1 and certified by Eurovent

** Average sound pressure level, unit in a free field on a reflective surface

Electrical data

| 30RB (without hydronic module) | | 182 | 202 | 232 | 262 | 302 | 342 | 372 | 402 | 432 | 462 | 522 | 602 | 672 | 732 | 802 |
|---|-----------------|----------------|----------------|----------------|----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Power circuit | | | | | | | | | | | | | | | | |
| Nominal power supply | V-ph-Hz | 400-3-50 | | | | | | | | | | | | | | |
| Voltage range | V | 360-440 | | | | | | | | | | | | | | |
| Max. connectable power cable section | | | | | | | | | | | | | | | | |
| Circuit A+B or Circuit C | mm ² | 1x240 2x150 | 1x240 2x150 | 1x240 2x150 | 1x240 2x150 | 2x240 | 2x240 | 2x240 | 2x240 | 3x240 | 3x240 | 3x240 | 2x240 | 2x240 | 3x240 | 3x240 |
| Circuit C | mm ² | - | - | - | - | - | - | - | - | - | - | - | 2x185 | 2x185 | 2x185 | 2x185 |
| Control circuit supply | | | | | | | | | | | | | | | | |
| 24 V, via internal transformer | | | | | | | | | | | | | | | | |
| Maximum unit power input* | | | | | | | | | | | | | | | | |
| Circuit A+B | kW | 85 | 98 | 102 | 127 | 140 | 159 | 172 | 191 | 204 | 223 | 255 | 191 | 191 | 255 | 255 |
| Circuit C | kW | - | - | - | - | - | - | - | - | - | - | - | 96 | 127 | 96 | 127 |
| Nominal unit current draw** | | | | | | | | | | | | | | | | |
| Circuit A+B | A | 113 | 129 | 135 | 167 | 185 | 209 | 226 | 251 | 269 | 293 | 334 | 251 | 251 | 334 | 334 |
| Circuit C | A | - | - | - | - | - | - | - | - | - | - | - | 125 | 167 | 125 | 167 |
| Maximum unit current draw*** | | | | | | | | | | | | | | | | |
| Circuit A+B | A | 146 | 168 | 175 | 219 | 241 | 274 | 296 | 329 | 351 | 384 | 438 | 329 | 329 | 439 | 438 |
| Circuit C | A | - | - | - | - | - | - | - | - | - | - | - | 164 | 219 | 164 | 219 |
| Maximum start-up current, standard unit† | | | | | | | | | | | | | | | | |
| Circuit A+B | A | 353 | 375 | 348 | 426 | 448 | 481 | 502 | 535 | 557 | 590 | 645 | 535 | 535 | 645 | 645 |
| Circuit C | A | - | - | - | - | - | - | - | - | - | - | - | 371 | 426 | 371 | 426 |
| Cosine phi, unit at nom. capacity | | | | | | | | | | | | | | | | |
| 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 0.84 | | | | | | | | | | | | | | | | |
| Max. start-up current, unit with soft starter (UN)†† | | | | | | | | | | | | | | | | |
| Circuit A+B | A | 283 | 305 | 277 | 356 | 378 | 411 | 433 | 466 | 489 | 521 | 575 | - | - | - | - |
| Circuit C | A | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Stability for three-phase short circuits (TN system) | | | | | | | | | | | | | | | | |
| Unit with main disconnect without fuse††† | | | | | | | | | | | | | | | | |
| Short-time current (1 s) - rms/peak value | | | | | | | | | | | | | | | | |
| Circuit A+B | kA/kA | 13/26 | 13/26 | 13/26 | 13/26 | 13/26 | 13/26 | 13/26 | 13/26 | 15/30 | 15/30 | 15/30 | 13/26 | 13/26 | 15/30 | 15/30 |
| Circuit C | kA/kA | - | - | - | - | - | - | - | - | - | - | - | 13/26 | 13/26 | 13/26 | 13/26 |
| Unit with main disconnect with fuse‡ | | | | | | | | | | | | | | | | |
| Current value, rms, circuit A+B | | | | | | | | | | | | | | | | |
| kA NA NA NA NA 50 50 50 50 50 50 50 50 50 50 50 50 | | | | | | | | | | | | | | | | |
| Current value, rms, circuit C | | | | | | | | | | | | | | | | |
| kA - - - - - - - - - - - - 50 50 50 50 | | | | | | | | | | | | | | | | |

* Power input of the compressor(s) + fan(s) at maximum unit operating conditions. Values given on the unit name plate.

** Nominal unit current draw at nominal conditions: evaporator entering/leaving water temperature 12°C/7°C, outdoor air temperature 35°C. The current values are given at 400 V nominal voltage.

*** Maximum unit operating current at maximum unit power input and 400 V.

† Maximum instantaneous starting current at 400 V nominal voltage and operating limit values with compressor in across-the-line start (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).

†† Standard for 30RB 182 to 262 and option for 30RB 302 to 802

‡ Not available for 30RB 182 to 262 and option for 30RB 302 to 802

Note: Units 30RB 602-802 have two electrical connection points.

Operating limits

Evaporator water flow rate

| 30RB | Min. water flow (l/s) | Max. water flow* (l/s) |
|------|-----------------------|------------------------|
| 182 | 2.8 | 28.1 |
| 202 | 2.8 | 28.1 |
| 232 | 3 | 26.7 |
| 262 | 3.5 | 26.7 |
| 302 | 3.9 | 26.7 |
| 342 | 4.4 | 29.4 |
| 372 | 4.9 | 29.4 |
| 402 | 5.2 | 29.4 |
| 432 | 5.8 | 31.1 |
| 462 | 6.1 | 31.1 |
| 522 | 6.9 | 31.1 |
| 602 | 7.9 | 50.6 |
| 672 | 8.7 | 50.6 |
| 732 | 9.6 | 50.6 |
| 802 | 10.3 | 50.6 |

* Maximum flow rate for an evaporator pressure drop of 100 kPa (unit without hydronic module)

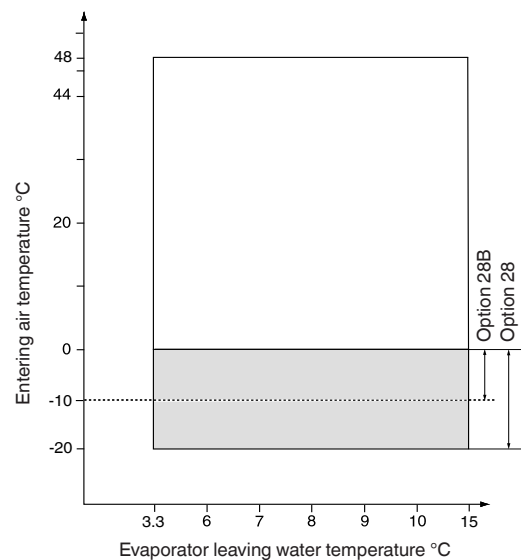
Evaporator water temperature

| | °C | Minimum | Maximum |
|---|----|---------|---------|
| Entering water temperature at shut-down | - | - | 48 |
| Entering water temperature at start-up | - | 6.8 | 40 |
| Entering water temperature during operation | - | 6.8 | 25 |
| Leaving water temperature during operation | - | 3.3 | 15 |

Condenser air temperature

| | °C | Minimum | Maximum |
|--|----|---------|---------|
| Standard unit | - | 0 | 48 |
| With winter operation option (No. 28) | - | -20 | 48 |
| With winter operation option (No. 28B) | - | -10 | 48 |

Operating range

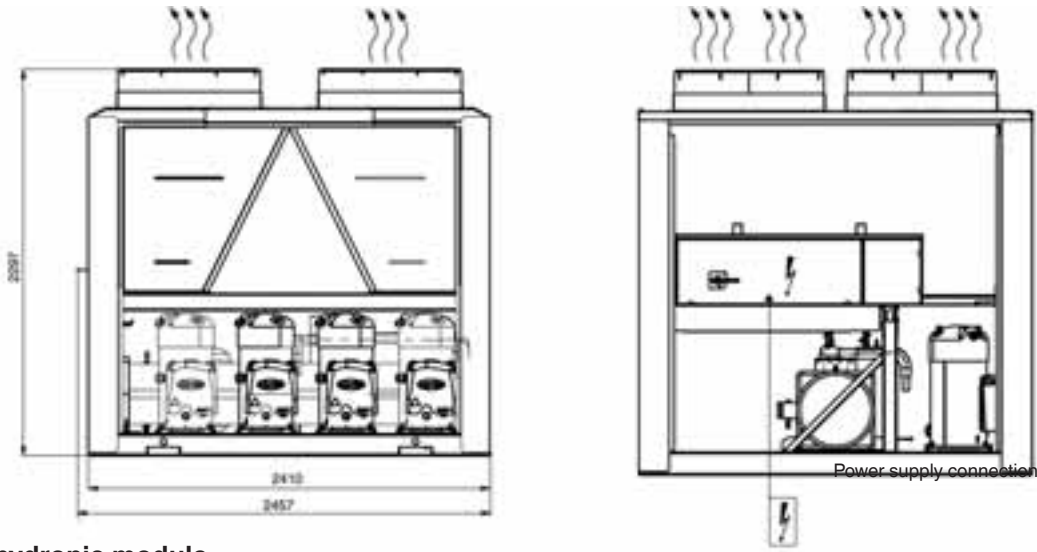


Note: Evaporator and condenser $\Delta t = 5$ K

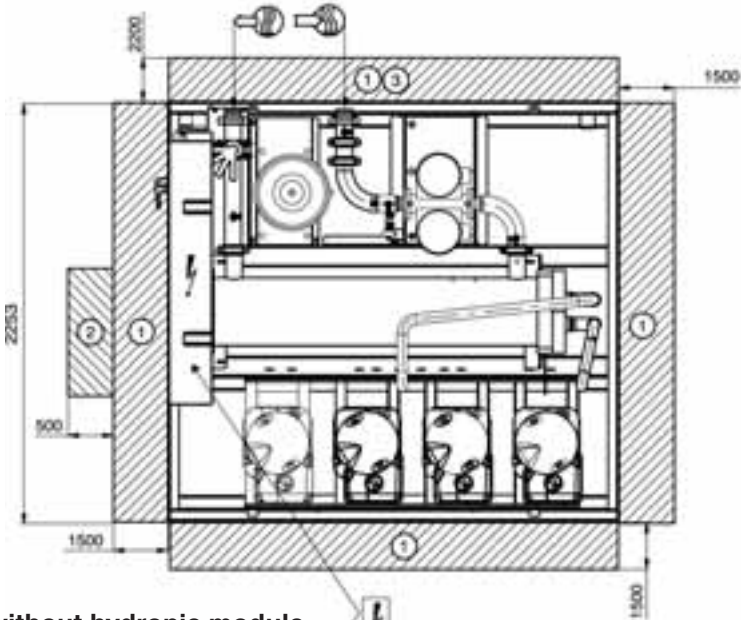
□ Standard unit operating range.
 ■ Operating range, unit equipped with options 28 or 28B "Winter operation". In addition the unit must either be equipped with the frost protection option for the evaporator and the hydronic module (if used), or the water loop must be protected against frost by the installer, using an anti-freeze solution.

Dimensions/clearances

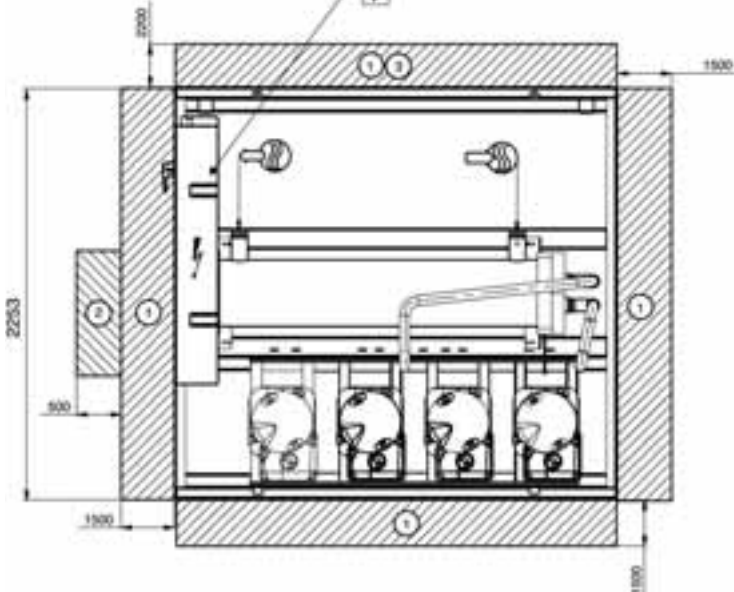
30RB 182-262



Unit with hydronic module

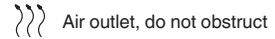


Unit without hydronic module



Legend:
All dimensions are given in mm.

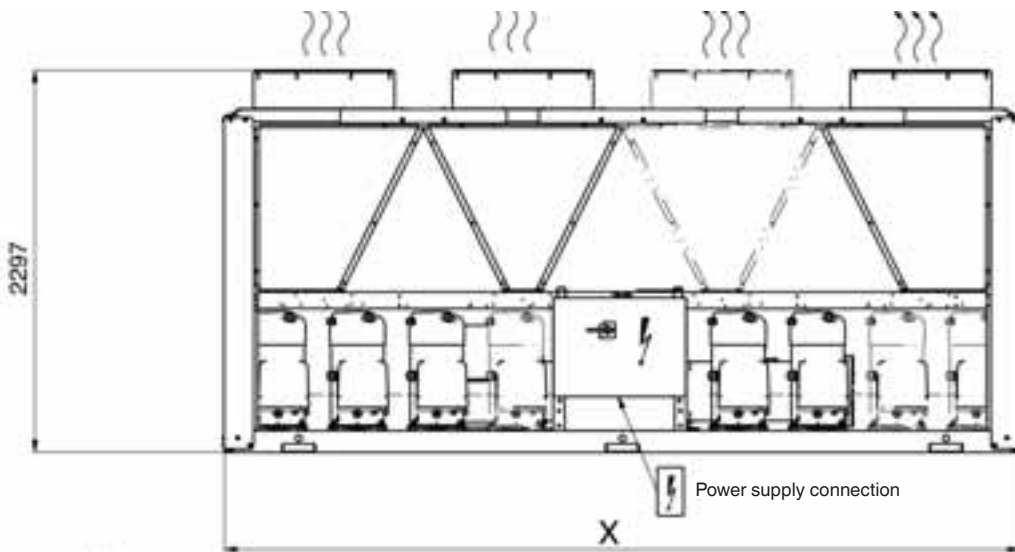
- ① Required clearances for maintenance and air flow
- ② Recommended space for evaporator tube removal
- ③ Recommended space for coil removal



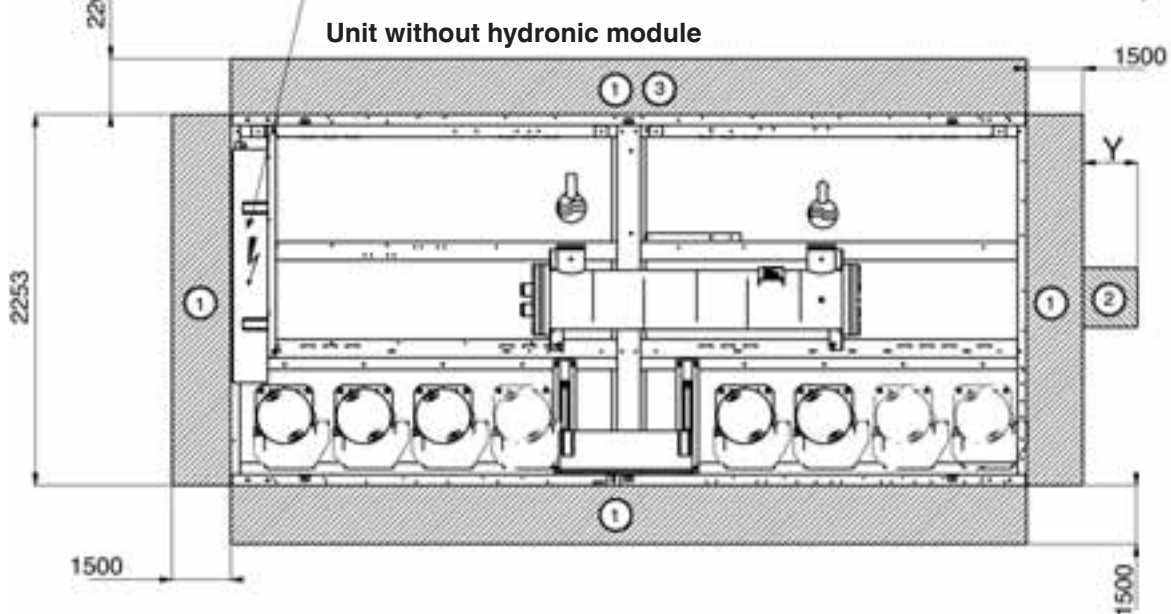
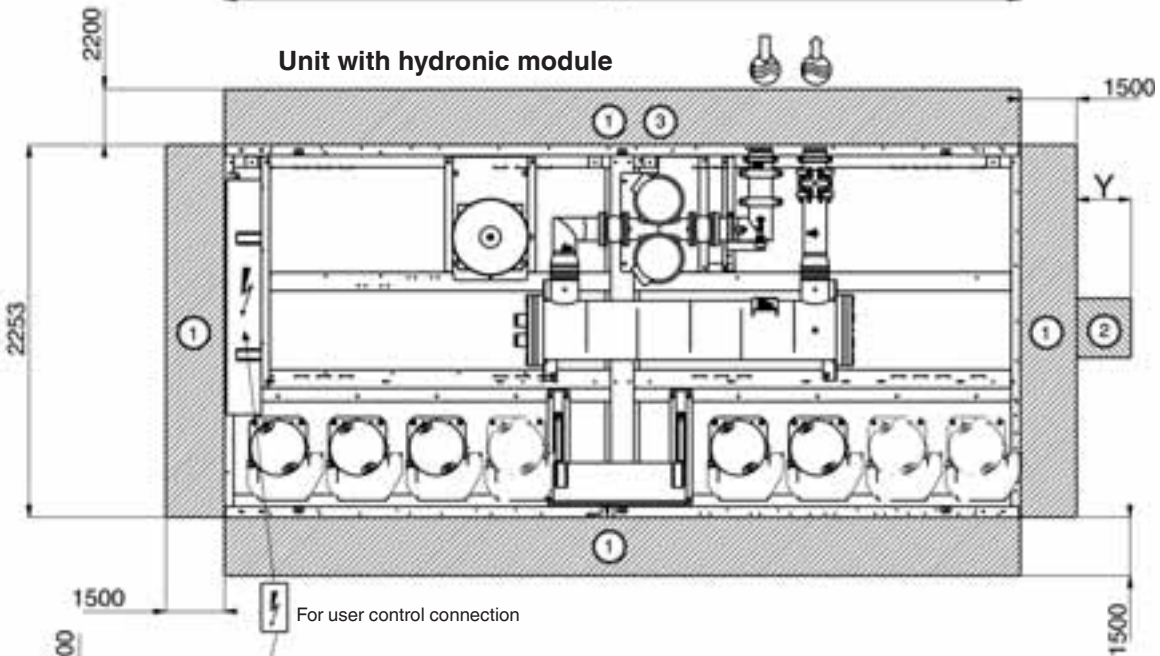
NOTE:
Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

Dimensions/clearances

30RB 302-522

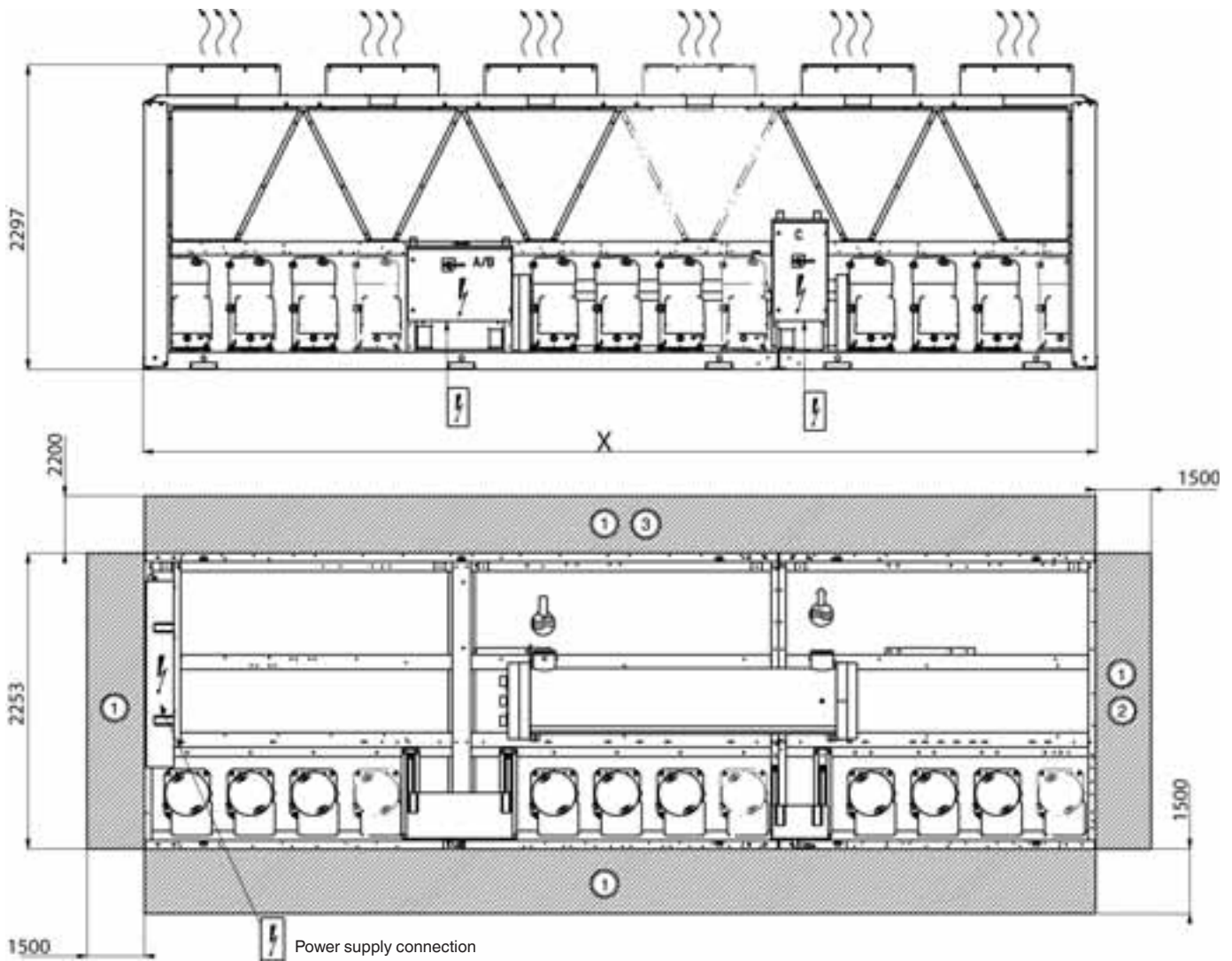


| 30RB | X | Y |
|---------|------|-----|
| 302-402 | 3604 | 200 |
| 432-522 | 4798 | 0 |



Dimensions/clearances




30RB 602-802



| 30RB | X |
|---------|------|
| 602-672 | 5992 |
| 732-802 | 7186 |

Legend:

All dimensions are given in mm.

- ① Required clearances for maintenance and air flow
- ② Recommended space for evaporator tube removal
- ③ Recommended space for coil removal
-  Water inlet
-  Water outlet
-  Air outlet, do not obstruct

NOTE:

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

Cooling capacities

30RB 182-802

Condenser entering air temperature, °C

| LM °C | 30 | | | | | | | | | | | | 35 | | | | | | | | | | | | 40 | | | | | | | | | | | | 45 | | | | | | | | | | | |
|----------|-----------|------------|------------|-------------|-------------|-----------|------------|------------|-------------|-------------|-----------|------------|------------|-------------|-------------|-----------|------------|------------|-------------|-------------|-----------|------------|------------|-------------|-------------|-----------|------------|------------|-------------|-------------|-----------|------------|------------|-------------|-------------|-----------|------------|------------|-------------|-------------|--|--|----|--|--|--|--|--|
| | 25 | | | 30 | | | 35 | | | 40 | | | 45 | | | 25 | | | 30 | | | 35 | | | 40 | | | 45 | | | 25 | | | 30 | | | 35 | | | 40 | | | 45 | | | | | |
| | CAP kW | COMP kW | UNIT kW | COOL l/s | COOL kPa | CAP kW | COMP kW | UNIT kW | COOL l/s | COOL kPa | CAP kW | COMP kW | UNIT kW | COOL l/s | COOL kPa | CAP kW | COMP kW | UNIT kW | COOL l/s | COOL kPa | CAP kW | COMP kW | UNIT kW | COOL l/s | COOL kPa | CAP kW | COMP kW | UNIT kW | COOL l/s | COOL kPa | CAP kW | COMP kW | UNIT kW | COOL l/s | COOL kPa | CAP kW | COMP kW | UNIT kW | COOL l/s | COOL kPa | | | | | | | | |
| 182 | 5 | 180 | 42 | 49 | 9 | 18 | 53 | 8 | 16 | 170 | 47 | 53 | 8 | 16 | 161 | 52 | 58 | 8 | 15 | 150 | 58 | 64 | 7 | 13 | 138 | 64 | 70 | 7 | 11 | 150 | 58 | 64 | 7 | 13 | 138 | 64 | 70 | 7 | 11 | | | | | | | | | |
| 202 | 5 | 201 | 51 | 58 | 10 | 22 | 63 | 9 | 20 | 180 | 57 | 63 | 9 | 18 | 180 | 62 | 69 | 9 | 18 | 168 | 69 | 75 | 8 | 16 | 155 | 75 | 82 | 7 | 14 | 168 | 69 | 75 | 8 | 16 | 155 | 75 | 82 | 7 | 14 | | | | | | | | | |
| 232 | 5 | 242 | 53 | 60 | 12 | 32 | 66 | 11 | 30 | 230 | 59 | 66 | 11 | 30 | 217 | 66 | 72 | 10 | 27 | 201 | 73 | 79 | 10 | 25 | 184 | 81 | 87 | 9 | 22 | 201 | 73 | 79 | 10 | 25 | 184 | 81 | 87 | 9 | 22 | | | | | | | | | |
| 262 | 5 | 278 | 74 | 80 | 13 | 40 | 88 | 13 | 37 | 264 | 81 | 88 | 13 | 37 | 248 | 89 | 95 | 12 | 34 | 231 | 97 | 104 | 11 | 30 | 213 | 107 | 113 | 10 | 27 | 231 | 97 | 104 | 11 | 30 | 213 | 107 | 113 | 10 | 27 | | | | | | | | | |
| 302 | 5 | 309 | 78 | 86 | 15 | 46 | 94 | 14 | 43 | 294 | 85 | 94 | 14 | 43 | 276 | 94 | 102 | 13 | 39 | 257 | 104 | 112 | 12 | 35 | 237 | 115 | 123 | 11 | 31 | 257 | 104 | 112 | 12 | 35 | 237 | 115 | 123 | 11 | 31 | | | | | | | | | |
| 342 | 5 | 345 | 91 | 99 | 16 | 39 | 109 | 16 | 35 | 327 | 100 | 109 | 16 | 35 | 308 | 110 | 118 | 15 | 32 | 286 | 121 | 129 | 14 | 28 | 264 | 133 | 140 | 13 | 25 | 286 | 121 | 129 | 14 | 28 | 264 | 133 | 140 | 13 | 25 | | | | | | | | | |
| 372 | 5 | 376 | 95 | 105 | 18 | 45 | 114 | 17 | 41 | 357 | 105 | 114 | 17 | 41 | 336 | 115 | 125 | 16 | 37 | 312 | 127 | 136 | 15 | 33 | 286 | 139 | 149 | 14 | 28 | 312 | 127 | 136 | 15 | 33 | 286 | 139 | 149 | 14 | 28 | | | | | | | | | |
| 402 | 5 | 412 | 111 | 121 | 20 | 52 | 132 | 19 | 48 | 391 | 122 | 132 | 19 | 48 | 368 | 134 | 143 | 18 | 43 | 342 | 147 | 156 | 16 | 38 | 316 | 161 | 171 | 15 | 33 | 342 | 147 | 156 | 16 | 38 | 316 | 161 | 171 | 15 | 33 | | | | | | | | | |
| 432 | 5 | 439 | 113 | 124 | 21 | 50 | 135 | 20 | 45 | 418 | 124 | 135 | 20 | 45 | 394 | 136 | 147 | 19 | 41 | 368 | 150 | 161 | 17 | 36 | 339 | 165 | 176 | 16 | 31 | 368 | 150 | 161 | 17 | 36 | 339 | 165 | 176 | 16 | 31 | | | | | | | | | |
| 462 | 5 | 468 | 127 | 138 | 22 | 56 | 145 | 21 | 51 | 445 | 140 | 151 | 21 | 51 | 419 | 153 | 164 | 20 | 46 | 391 | 168 | 179 | 19 | 40 | 361 | 184 | 195 | 17 | 35 | 391 | 168 | 179 | 19 | 40 | 361 | 184 | 195 | 17 | 35 | | | | | | | | | |
| 522 | 5 | 532 | 144 | 158 | 25 | 71 | 172 | 24 | 65 | 507 | 159 | 172 | 24 | 65 | 477 | 174 | 187 | 23 | 58 | 445 | 191 | 203 | 21 | 51 | 412 | 209 | 222 | 20 | 44 | 445 | 191 | 203 | 21 | 51 | 412 | 209 | 222 | 20 | 44 | | | | | | | | | |
| 602 | 5 | 629 | 165 | 180 | 30 | 41 | 196 | 28 | 38 | 562 | 199 | 213 | 27 | 34 | 524 | 218 | 232 | 25 | 30 | 484 | 238 | 253 | 23 | 26 | 484 | 238 | 253 | 23 | 26 | 484 | 238 | 253 | 23 | 26 | 484 | 238 | 253 | 23 | 26 | | | | | | | | | |
| 672 | 5 | 687 | 182 | 198 | 33 | 48 | 200 | 31 | 44 | 615 | 220 | 235 | 29 | 39 | 573 | 241 | 256 | 27 | 35 | 573 | 241 | 256 | 27 | 35 | 573 | 241 | 256 | 27 | 35 | 573 | 241 | 256 | 27 | 35 | 573 | 241 | 256 | 27 | 35 | | | | | | | | | |
| 732 | 5 | 743 | 200 | 218 | 35 | 56 | 220 | 34 | 51 | 664 | 241 | 258 | 32 | 46 | 619 | 264 | 281 | 29 | 40 | 619 | 264 | 281 | 29 | 40 | 619 | 264 | 281 | 29 | 40 | 619 | 264 | 281 | 29 | 40 | 619 | 264 | 281 | 29 | 40 | | | | | | | | | |
| 802 | 5 | 799 | 218 | 237 | 38 | 64 | 239 | 36 | 58 | 714 | 262 | 281 | 34 | 52 | 665 | 286 | 305 | 32 | 46 | 665 | 286 | 305 | 32 | 46 | 665 | 286 | 305 | 32 | 46 | 665 | 286 | 305 | 32 | 46 | 665 | 286 | 305 | 32 | 46 | | | | | | | | | |
| 182 | 6 | 186 | 43 | 49 | 9 | 19 | 54 | 8 | 17 | 167 | 52 | 59 | 8 | 16 | 155 | 58 | 64 | 7 | 14 | 155 | 58 | 64 | 7 | 14 | 143 | 64 | 71 | 7 | 12 | 155 | 58 | 64 | 7 | 14 | 143 | 64 | 71 | 7 | 12 | | | | | | | | | |
| 202 | 6 | 208 | 52 | 59 | 10 | 23 | 64 | 9 | 21 | 186 | 63 | 69 | 9 | 19 | 174 | 69 | 76 | 8 | 17 | 174 | 69 | 76 | 8 | 17 | 160 | 76 | 82 | 8 | 15 | 174 | 69 | 76 | 8 | 17 | 160 | 76 | 82 | 8 | 15 | | | | | | | | | |
| 232 | 6 | 248 | 54 | 60 | 12 | 33 | 66 | 11 | 31 | 222 | 66 | 72 | 11 | 28 | 207 | 73 | 79 | 10 | 25 | 207 | 73 | 79 | 10 | 25 | 190 | 81 | 87 | 9 | 23 | 207 | 73 | 79 | 10 | 25 | 190 | 81 | 87 | 9 | 23 | | | | | | | | | |
| 262 | 6 | 287 | 75 | 81 | 14 | 41 | 89 | 13 | 38 | 256 | 90 | 96 | 12 | 35 | 238 | 99 | 105 | 11 | 32 | 238 | 99 | 105 | 11 | 32 | 220 | 108 | 114 | 10 | 28 | 238 | 99 | 105 | 11 | 32 | 220 | 108 | 114 | 10 | 28 | | | | | | | | | |
| 302 | 6 | 318 | 79 | 87 | 15 | 47 | 95 | 14 | 44 | 285 | 95 | 103 | 14 | 41 | 265 | 105 | 113 | 13 | 37 | 265 | 105 | 113 | 13 | 37 | 245 | 116 | 124 | 12 | 33 | 265 | 105 | 113 | 13 | 37 | 245 | 116 | 124 | 12 | 33 | | | | | | | | | |
| 342 | 6 | 356 | 93 | 101 | 17 | 40 | 110 | 16 | 37 | 318 | 112 | 120 | 15 | 33 | 296 | 122 | 130 | 14 | 30 | 296 | 122 | 130 | 14 | 30 | 273 | 134 | 142 | 13 | 26 | 296 | 122 | 130 | 14 | 30 | 273 | 134 | 142 | 13 | 26 | | | | | | | | | |
| 372 | 6 | 389 | 96 | 106 | 19 | 47 | 116 | 18 | 43 | 347 | 117 | 126 | 17 | 39 | 322 | 128 | 138 | 15 | 34 | 322 | 128 | 138 | 15 | 34 | 297 | 141 | 150 | 14 | 30 | 322 | 128 | 138 | 15 | 34 | 297 | 141 | 150 | 14 | 30 | | | | | | | | | |
| 402 | 6 | 425 | 112 | 122 | 20 | 55 | 133 | 19 | 50 | 379 | 135 | 145 | 18 | 45 | 353 | 149 | 158 | 17 | 40 | 353 | 149 | 158 | 17 | 40 | 327 | 163 | 173 | 16 | 35 | 353 | 149 | 158 | 17 | 40 | 327 | 163 | 173 | 16 | 35 | | | | | | | | | |
| 432 | 6 | 449 | 114 | 125 | 21 | 52 | 136 | 20 | 47 | 405 | 138 | 149 | 19 | 43 | 379 | 151 | 163 | 18 | 38 | 379 | 151 | 163 | 18 | 38 | 351 | 167 | 178 | 17 | 33 | 379 | 151 | 163 | 18 | 38 | 351 | 167 | 178 | 17 | 33 | | | | | | | | | |
| 462 | 6 | 484 | 129 | 140 | 23 | 59 | 153 | 22 | 54 | 460 | 142 | 153 | 22 | 54 | 434 | 155 | 167 | 21 | 48 | 434 | 155 | 167 | 21 | 48 | 404 | 170 | 186 | 19 | 37 | 434 | 155 | 167 | 21 | 48 | 404 | 170 | 186 | 19 | 37 | | | | | | | | | |
| 522 | 6 | 549 | 147 | 160 | 26 | 75 | 174 | 25 | 68 | 523 | 161 | 174 | 25 | 68 | 493 | 177 | 189 | 23 | 61 | 493 | 177 | 189 | 23 | 61 | 461 | 193 | 212 | 20 | 47 | 493 | 177 | 189 | 23 | 61 | 461 | 193 | 212 | 20 | 47 | | | | | | | | | |
| 602 | 6 | 649 | 167 | 182 | 31 | 44 | 198 | 29 | 40 | 616 | 184 | 198 | 29 | 40 | 579 | 201 | 216 | 28 | 35 | 579 | 201 | 216 | 28 | 35 | 540 | 220 | 234 | 26 | 27 | 579 | 201 | 216 | 28 | 35 | 540 | 220 | 234 | 26 | 27 | | | | | | | | | |
| 672 | 6 | 707 | 184 | 201 | 34 | 51 | 219 | 32 | 46 | 672 | 203 | 219 | 32 | 46 | 633 | 222 | 238 | 30 | 41 | 633 | 222 | 238 | 30 | 41 | 591 | 243 | 259 | 28 | 32 | 633 | 222 | 238 | 30 | 41 | 591 | 243 | 259 | 28 | 32 | | | | | | | | | |
| 732 | 6 | 766 | 203 | 221 | 36 | 59 | 241 | 35 | 53 | 727 | 223 | 241 | 35 | 53 | 684 | 244 | 262 | 33 | 48 | 684 | 244 | 262 | 33 | 48 | 638 | 267 | 283 | 30 | 37 | 684 | 244 | 262 | 33 | 48 | 638 | 267 | 283 | 30 | 37 | | | | | | | | | |
| 802 | 6 | 823 | 221 | 241 | 39 | 67 | 262 | 37 | 61 | 782 | 243 | 262 | 37 | 61 | 736 | 265 | 284 | 35 | 55 | 736 | 265 | 284 | 35 | 55 | 686 | 290 | 310 | 28 | 37 | 736 | 265 | 284 | 35 | 55 | 686 | 290 | 310 | 28 | 37 | | | | | | | | | |
| 182 | 7 | 194 | 43 | 50 | 9 | 20 | 54 | 9 | 19 | 184 | 48 | 54 | 9 | 19 | 173 | 53 | 59 | 8 | 17 | 161 | 59 | 65 | 8 | 15 | 148 | 65 | 71 | 7 | 13 | 161 | 59 | 65 | 8 | 15 | 148 | 65 | 71 | 7 | 13 | | | | | | | | | |
| 202 | 7 | 216 | 53 | 59 | 10 | 25 | 64 | 10 | 23 | 205 | 58 | 64 | 10 | 23 | 193 | 64 | 70 | 9 | 20 | 180 | 70 | 76 | 9 | 18 | 166 | 77 | 83 | 8 | 15 | 180 | 70 | 76 | 9 | 18 | 166 | 77 | 83 | 8 | 15 | | | | | | | | | |
| 232 | 7 | 253 | 54 | 61 | 12 | 34 | 67 | 11 | 31 | 241 | 60 | 67 | 11 | 31 | 227 | 66 | 73 | 11 | 29 | 212 | 73 | 80 | 10 | 26 | 195 | 81 | 88 | 9 | 23 | 212 | 73 | 80 | 10 | 26 | 195 | 81 | 88 | 9 | 23 | | | | | | | | | |
| 262 | 7 | 295 | 76 | 82 | 14 | 42 | 83 | 13 | 39 | 280 | 83 | 90 | 13 | 39 | 263 | 91 | 98 | 13 | 36 | 245 | 100 | 106 | 12 | 33 | 227 | 109 | 116 | 11 | 29 | 245 | 100 | 106 | 12 | 33 | 227 | 109 | 116 | 11 | 29 | | | | | | | | | |
| 302 | 7 | 328 | 80 | 88 | 16 | 49 | 96 | 15 | 46 | 311 | 88 | 96 | 15 | 46 | 293 | 96 | 104 | 14 | 42 | 274 | 106 | 114 | 13 | 38 | 252 | 117 | 125 | 12 | 34 | 274 | 106 | 114 | 13 | 38 | 252 | 117 | 125 | 12 | 34 | | | | | | | | | |
| 342 | 7 | 367 | 94 | 102 | 17 | 42 | 103 | 17 | 42 | 348 | 103 | 111 | 17 | 39 | 328 | 113 | 121 | 16 | 35 | 305 | 124 | 132 | 15 | 31 | 282 | 136 | 143 | 13 | 27 | 305 | 124 | 132 | 15 | 31 | 282 | 136 | 143 | 13 | 27 | | | | | | | | | |
| 372 | 7 | 402 | 97 | 107 | 19 | 49 | 107 | 18 | 45 | 381 | 107 | 117 | 18 | 45 | 359 | 118 | 128 | 17 | 41 | 333 | 130 | 139 | 16 | 36 | 307 | 142 | 152 | 15 | 31 | 333 | 130 | 139 | 16 | 36 | 307 | 142 | 152 | 15 | 31 | | | | | | | | | |
| 402 | 7 | 438 | 114 | 123 | 21 | 57 | 125 | 20 | 52 | 416 | 125 | 135 | 20 | 52 | 391 | 137 | 147 | 19 | 47 | 364 | 150 | 160 | 17 | 42 | 337 | 165 | 174 | 16 | 37 | 364 | 150 | 160 | 17 | 42 | 337 | 165 | 174 | 16 | 37 | | | | | | | | | |
| 432 | 7 | 463 | 115 | 126 | 22 | 54 | 127 | 21 | 50 | 442 | 127 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Cooling capacities (cont.)

30RB 182-802

Condenser entering air temperature, °C

| LM | 30 | | | | | | | | | | | | 35 | | | | | | | | | | | | 40 | | | | | | | | | | | | 45 | | | | | | | | | | | |
|-----|--------|---------|---------|----------|----------|--------|---------|---------|----------|----------|--------|---------|---------|----------|----------|--------|---------|---------|----------|----------|--------|---------|---------|----------|----------|--------|---------|---------|----------|----------|--------|---------|---------|----------|----------|--|----|--|--|----|--|--|----|--|--|--|--|--|
| | 25 | | | 30 | | | 35 | | | 40 | | | 45 | | | 25 | | | 30 | | | 35 | | | 40 | | | 45 | | | 25 | | | 30 | | | 35 | | | 40 | | | 45 | | | | | |
| °C | CAP kW | COMP kW | UNIT kW | COOL l/s | COOL kPa | CAP kW | COMP kW | UNIT kW | COOL l/s | COOL kPa | CAP kW | COMP kW | UNIT kW | COOL l/s | COOL kPa | CAP kW | COMP kW | UNIT kW | COOL l/s | COOL kPa | CAP kW | COMP kW | UNIT kW | COOL l/s | COOL kPa | CAP kW | COMP kW | UNIT kW | COOL l/s | COOL kPa | CAP kW | COMP kW | UNIT kW | COOL l/s | COOL kPa | | | | | | | | | | | | | |
| 182 | 201 | 44 | 50 | 10 | 22 | 191 | 48 | 55 | 9 | 20 | 180 | 53 | 60 | 9 | 18 | 168 | 59 | 65 | 8 | 16 | 154 | 65 | 71 | 7 | 13 | 142 | 71 | 77 | 8 | 15 | 130 | 77 | 84 | 8 | 16 | | | | | | | | | | | | | |
| 202 | 224 | 54 | 60 | 11 | 27 | 212 | 59 | 65 | 10 | 24 | 200 | 65 | 71 | 10 | 22 | 186 | 71 | 77 | 9 | 19 | 172 | 78 | 84 | 8 | 16 | 154 | 84 | 90 | 9 | 21 | 148 | 90 | 97 | 9 | 19 | | | | | | | | | | | | | |
| 232 | 258 | 55 | 61 | 12 | 35 | 246 | 61 | 67 | 12 | 32 | 232 | 67 | 73 | 11 | 30 | 217 | 74 | 80 | 10 | 27 | 200 | 82 | 88 | 10 | 24 | 172 | 88 | 94 | 10 | 29 | 164 | 94 | 101 | 10 | 27 | | | | | | | | | | | | | |
| 262 | 304 | 77 | 84 | 14 | 44 | 288 | 85 | 91 | 14 | 41 | 271 | 92 | 99 | 13 | 37 | 253 | 101 | 107 | 12 | 34 | 234 | 111 | 117 | 11 | 30 | 186 | 117 | 123 | 12 | 38 | 198 | 123 | 130 | 11 | 34 | | | | | | | | | | | | | |
| 302 | 339 | 81 | 89 | 16 | 51 | 322 | 89 | 97 | 15 | 48 | 303 | 98 | 106 | 14 | 44 | 282 | 107 | 115 | 13 | 40 | 261 | 118 | 126 | 12 | 35 | 200 | 126 | 132 | 13 | 44 | 214 | 132 | 139 | 12 | 38 | | | | | | | | | | | | | |
| 342 | 379 | 96 | 104 | 18 | 44 | 359 | 105 | 113 | 17 | 41 | 338 | 115 | 123 | 16 | 37 | 315 | 125 | 133 | 15 | 32 | 291 | 137 | 145 | 14 | 28 | 214 | 145 | 151 | 15 | 36 | 228 | 151 | 158 | 14 | 32 | | | | | | | | | | | | | |
| 372 | 415 | 99 | 108 | 20 | 52 | 394 | 109 | 118 | 19 | 47 | 370 | 119 | 129 | 18 | 43 | 344 | 131 | 140 | 16 | 38 | 317 | 144 | 153 | 15 | 33 | 234 | 153 | 160 | 16 | 40 | 252 | 160 | 167 | 15 | 38 | | | | | | | | | | | | | |
| 402 | 452 | 115 | 125 | 22 | 60 | 429 | 127 | 136 | 20 | 55 | 403 | 139 | 148 | 19 | 49 | 375 | 152 | 161 | 18 | 44 | 348 | 167 | 176 | 17 | 39 | 252 | 176 | 183 | 18 | 46 | 290 | 183 | 190 | 17 | 42 | | | | | | | | | | | | | |
| 432 | 477 | 116 | 128 | 23 | 57 | 455 | 128 | 140 | 22 | 52 | 430 | 141 | 152 | 21 | 47 | 402 | 155 | 166 | 19 | 42 | 373 | 170 | 181 | 18 | 36 | 272 | 181 | 188 | 19 | 44 | 318 | 188 | 195 | 18 | 42 | | | | | | | | | | | | | |
| 462 | 515 | 133 | 144 | 25 | 66 | 489 | 146 | 157 | 23 | 60 | 460 | 160 | 171 | 22 | 53 | 429 | 174 | 186 | 20 | 47 | 398 | 191 | 202 | 19 | 41 | 292 | 202 | 209 | 20 | 48 | 340 | 209 | 216 | 19 | 44 | | | | | | | | | | | | | |
| 522 | 581 | 151 | 164 | 28 | 82 | 552 | 165 | 178 | 26 | 75 | 520 | 181 | 194 | 25 | 67 | 486 | 198 | 211 | 23 | 59 | 451 | 217 | 229 | 22 | 52 | 318 | 229 | 236 | 22 | 54 | 372 | 236 | 243 | 22 | 52 | | | | | | | | | | | | | |
| 602 | 691 | 173 | 187 | 33 | 48 | 655 | 189 | 204 | 31 | 44 | 615 | 207 | 221 | 29 | 39 | 572 | 226 | 240 | 27 | 34 | 530 | 247 | 261 | 25 | 30 | 352 | 261 | 268 | 25 | 32 | 414 | 268 | 275 | 25 | 32 | | | | | | | | | | | | | |
| 672 | 749 | 189 | 206 | 36 | 56 | 712 | 208 | 224 | 34 | 51 | 671 | 228 | 243 | 32 | 46 | 626 | 249 | 265 | 30 | 40 | 581 | 273 | 289 | 28 | 35 | 392 | 289 | 296 | 28 | 36 | 446 | 296 | 303 | 28 | 36 | | | | | | | | | | | | | |
| 732 | 816 | 210 | 228 | 39 | 65 | 773 | 230 | 248 | 37 | 59 | 726 | 251 | 269 | 35 | 53 | 676 | 274 | 292 | 32 | 46 | 626 | 300 | 317 | 30 | 40 | 414 | 317 | 324 | 30 | 42 | 478 | 324 | 331 | 30 | 42 | | | | | | | | | | | | | |
| 802 | 878 | 228 | 247 | 42 | 75 | 832 | 250 | 269 | 40 | 68 | 780 | 273 | 292 | 37 | 60 | 728 | 298 | 317 | 35 | 53 | 674 | 326 | 345 | 32 | 46 | 446 | 345 | 352 | 32 | 48 | 506 | 352 | 359 | 32 | 48 | | | | | | | | | | | | | |
| 182 | 217 | 45 | 52 | 10 | 25 | 206 | 50 | 56 | 10 | 22 | 194 | 55 | 61 | 9 | 20 | 181 | 60 | 67 | 9 | 18 | 166 | 66 | 72 | 8 | 15 | 142 | 72 | 78 | 9 | 16 | 128 | 78 | 84 | 8 | 15 | | | | | | | | | | | | | |
| 202 | 239 | 55 | 62 | 11 | 30 | 227 | 60 | 67 | 11 | 27 | 214 | 66 | 73 | 10 | 24 | 199 | 72 | 79 | 10 | 21 | 184 | 79 | 86 | 9 | 18 | 152 | 86 | 92 | 10 | 21 | 148 | 92 | 98 | 9 | 18 | | | | | | | | | | | | | |
| 232 | 272 | 56 | 63 | 13 | 37 | 259 | 62 | 68 | 12 | 34 | 244 | 68 | 75 | 12 | 32 | 228 | 75 | 81 | 11 | 29 | 210 | 83 | 89 | 10 | 25 | 172 | 89 | 95 | 11 | 26 | 134 | 95 | 101 | 10 | 25 | | | | | | | | | | | | | |
| 262 | 321 | 79 | 86 | 15 | 47 | 305 | 87 | 93 | 15 | 44 | 286 | 95 | 101 | 14 | 40 | 267 | 104 | 110 | 13 | 36 | 248 | 113 | 120 | 12 | 33 | 186 | 120 | 126 | 13 | 34 | 148 | 126 | 132 | 12 | 33 | | | | | | | | | | | | | |
| 302 | 361 | 83 | 91 | 17 | 55 | 343 | 92 | 100 | 16 | 52 | 323 | 101 | 109 | 15 | 47 | 301 | 110 | 118 | 14 | 43 | 278 | 121 | 129 | 13 | 38 | 200 | 129 | 135 | 14 | 40 | 164 | 135 | 141 | 13 | 38 | | | | | | | | | | | | | |
| 342 | 403 | 99 | 107 | 19 | 49 | 382 | 109 | 117 | 18 | 45 | 359 | 118 | 126 | 17 | 40 | 334 | 129 | 137 | 16 | 36 | 309 | 141 | 149 | 15 | 31 | 220 | 149 | 155 | 16 | 38 | 180 | 155 | 161 | 15 | 31 | | | | | | | | | | | | | |
| 372 | 444 | 102 | 111 | 21 | 57 | 421 | 112 | 121 | 20 | 52 | 395 | 122 | 132 | 19 | 47 | 367 | 134 | 144 | 18 | 42 | 338 | 147 | 156 | 16 | 36 | 240 | 156 | 162 | 18 | 42 | 200 | 162 | 168 | 16 | 36 | | | | | | | | | | | | | |
| 402 | 479 | 119 | 129 | 23 | 65 | 455 | 131 | 140 | 22 | 60 | 428 | 142 | 152 | 20 | 54 | 398 | 155 | 165 | 19 | 48 | 369 | 170 | 180 | 18 | 42 | 260 | 180 | 186 | 19 | 44 | 220 | 186 | 192 | 18 | 42 | | | | | | | | | | | | | |
| 432 | 506 | 120 | 131 | 24 | 63 | 482 | 132 | 143 | 23 | 58 | 456 | 145 | 156 | 22 | 52 | 426 | 159 | 170 | 20 | 46 | 396 | 174 | 185 | 19 | 40 | 280 | 185 | 191 | 20 | 46 | 240 | 191 | 197 | 19 | 40 | | | | | | | | | | | | | |
| 462 | 548 | 137 | 149 | 26 | 73 | 521 | 151 | 162 | 25 | 67 | 489 | 164 | 175 | 23 | 59 | 455 | 179 | 190 | 22 | 52 | 422 | 196 | 207 | 20 | 45 | 300 | 207 | 213 | 21 | 48 | 260 | 213 | 219 | 20 | 45 | | | | | | | | | | | | | |
| 522 | 617 | 155 | 168 | 29 | 91 | 587 | 170 | 183 | 28 | 83 | 552 | 186 | 199 | 26 | 74 | 513 | 203 | 215 | 25 | 65 | 476 | 222 | 234 | 23 | 56 | 320 | 234 | 240 | 23 | 56 | 280 | 240 | 246 | 23 | 56 | | | | | | | | | | | | | |
| 602 | 734 | 179 | 193 | 35 | 53 | 696 | 196 | 210 | 33 | 48 | 653 | 213 | 227 | 31 | 43 | 608 | 232 | 246 | 29 | 38 | 561 | 253 | 267 | 27 | 33 | 380 | 267 | 273 | 27 | 33 | 340 | 273 | 279 | 27 | 33 | | | | | | | | | | | | | |
| 672 | 791 | 195 | 211 | 38 | 61 | 753 | 214 | 230 | 36 | 56 | 709 | 233 | 249 | 34 | 50 | 662 | 255 | 271 | 32 | 44 | 614 | 279 | 295 | 29 | 38 | 400 | 295 | 301 | 29 | 38 | 360 | 301 | 307 | 29 | 38 | | | | | | | | | | | | | |
| 732 | 869 | 216 | 234 | 41 | 73 | 824 | 237 | 255 | 39 | 66 | 773 | 258 | 276 | 37 | 59 | 718 | 282 | 299 | 34 | 51 | 664 | 308 | 325 | 32 | 44 | 420 | 325 | 331 | 32 | 44 | 380 | 331 | 337 | 32 | 44 | | | | | | | | | | | | | |
| 802 | 935 | 235 | 254 | 45 | 83 | 887 | 257 | 277 | 42 | 75 | 832 | 281 | 300 | 40 | 67 | 773 | 306 | 325 | 37 | 59 | 715 | 335 | 354 | 34 | 51 | 440 | 354 | 360 | 34 | 51 | 400 | 360 | 366 | 34 | 51 | | | | | | | | | | | | | |

Legend:

- LWT Leaving water temperature
- CAP kW Cooling capacity
- COMP kW Compressor power input
- UNIT kW Unit power input (compressors, fans and control circuit)
- COOL l/s Evaporator water flow rate
- COOL kPa Evaporator pressure drop

Application data:

- Standard units, refrigerant: R410A
 - Evaporator temperature rise: 5 K
 - Evaporator fluid: chilled water
 - Fouling factor: 0.18 x 10⁻⁴ (m²·K)/W
- Performances in accordance with EN 14511.

Hydronic module (option 116)

The hydronic module option saves a lot of installation time. The chiller is factory-equipped with the main components for the hydronic system: screen filter, water pump, expansion tank, safety valve and water flow control valve.

Several water pump types are available to suit any application: primary single or dual low-pressure pump or single or dual high-pressure pump (30RB 182-522).

An automatic pump start-up algorithm protects the heat exchanger and the hydronic module piping against frost down to -10°C outside temperature, if the evaporator frost protection option is installed. If necessary increased frost protection down to -20°C is possible by adding the heater option to the hydronic module piping (see options 41 and 42A).

The hydronic module option is integrated into the chiller without increasing its dimensions and saves the space normally used for the water pump.



Hydronic module

Physical and electrical data

These are the same as for the standard unit except:

| 30RB | | 182 | 202 | 232 | 262 | 302 | 342 | 372 | 402 | 432 | 462 | 522 |
|---|-----|--|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| Operating weight* | | | | | | | | | | | | |
| Unit with option 15 and dual-pump hydronic module | kg | 2332 | 2412 | 2442 | 2610 | 3300 | 3496 | 3584 | 3710 | 4272 | 4462 | 4662 |
| Hydronic module | | | | | | | | | | | | |
| Expansion tank volume | l | 50 | 50 | 50 | 50 | 80 | 80 | 80 | 80 | 80 | 80 | 80 |
| Maximum operating pressure | kPa | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 | 400 |
| Water filter | | Screen filter (Victaulic) | | | | | | | | | | |
| Low-pressure pump | | | | | | | | | | | | |
| Water pump | | Single or dual monocell centrifugal pump | | | | | | | | | | |
| Pump capacity | kW | 2 | 2 | 2 | 2 | 3 | 3 | 4 | 4 | 4 | 6 | 6 |
| Pump power input | kW | 2.7 | 2.7 | 2.7 | 2.7 | 3.6 | 3.6 | 4.6 | 4.6 | 4.6 | 6.3 | 6.3 |
| Maximum pump current drawn | A | 4.7 | 4.7 | 4.7 | 4.7 | 6.4 | 6.4 | 8.2 | 8.2 | 8.2 | 11.2 | 11.2 |
| High-pressure pump | | | | | | | | | | | | |
| Water pump | | Single or dual monocell centrifugal pump | | | | | | | | | | |
| Pump capacity | kW | 4 | 4 | 4 | 4 | 6 | 6 | 8 | 8 | 8 | 11 | 11 |
| Pump power input | kW | 4.7 | 4.7 | 4.7 | 4.7 | 6.4 | 6.4 | 8.5 | 8.5 | 8.5 | 12.2 | 12.2 |
| Maximum pump current drawn | A | 8.2 | 8.2 | 8.2 | 8.2 | 11.2 | 11.2 | 15.4 | 15.4 | 15.4 | 21.2 | 21.2 |
| Water connections (with hydronic module) | | | | | | | | | | | | |
| | | Victaulic type | | | | | | | | | | |
| Diameter | in | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 5 | 5 | 5 |
| Outside pipe diameter | mm | 88.9 | 88.9 | 88.9 | 88.9 | 114.3 | 114.3 | 114.3 | 114.3 | 139.7 | 139.7 | 139.7 |

* Weights are for guidance only

Legend

Components of unit and hydronic module

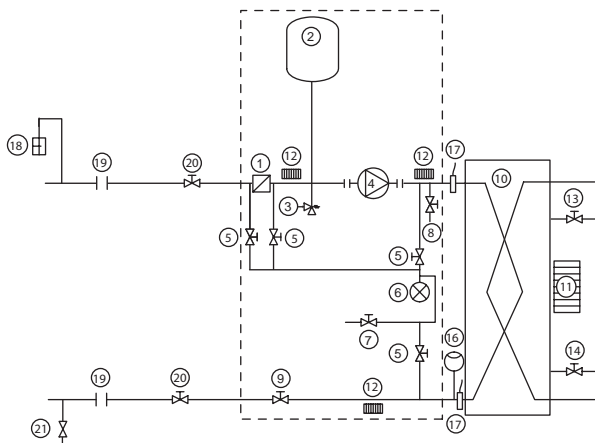
- 1 Victaulic screen filter
- 2 Expansion tank
- 3 Safety valve
- 4 Available pressure pump
- 5 Pressure tap valve (see Installation Manual)
- 6 Pressure gauge to measure the component pressure loss (see Installation Manual)
- 7 System vent valve, pressure gauge
- 8 Drain valve
- 9 Water flow control valve
- 10 Heat exchanger
- 11 Evaporator heater (option)
- 12 Hydronic module heater (option)
- 13 Air vent (evaporator)
- 14 Water purge (evaporator)
- 16 Flow switch
- 17 Water temperature sensor

System components

- 18 Air vent
- 19 Flexible connection
- 20 Shut-down valves
- 21 Charge valve
- Hydronic module (units with hydronic module)

Notes:

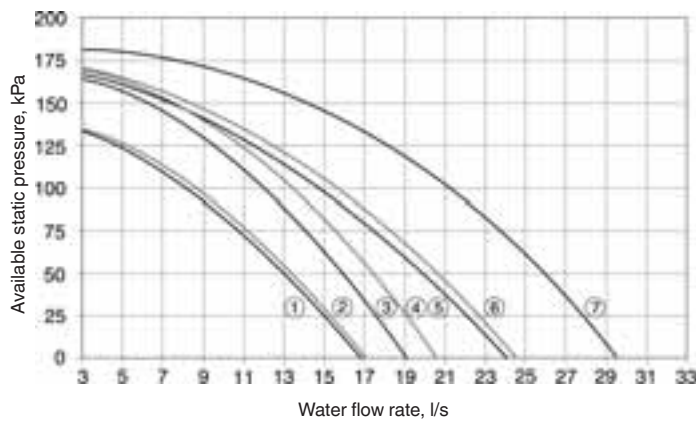
- With option 42A the unit hydronic module is protected against frost by electric heaters.
- The unit evaporator must be protected against frost (anti-freeze solution or optional electric heater)



Typical hydronic circuit diagram

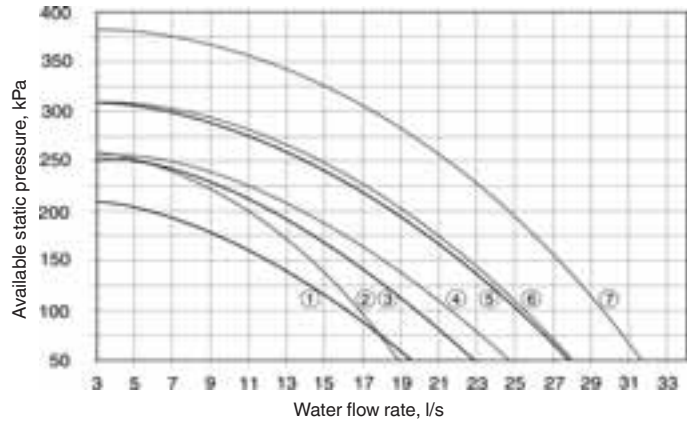
Available static system pressure

Low-pressure pump (hydraulic module option)



- Legend**
- 1 30RB 232-262
 - 2 30RB 182-202
 - 3 30RB 302
 - 4 30RB 342
 - 5 30RB 372-402
 - 6 30RB 432
 - 7 30RB 462-522

High-pressure pump (hydraulic module option)



- Legend**
- 1 30RB 182-202
 - 2 30RB 232-262
 - 3 30RB 302
 - 4 30RB 342
 - 5 30RB 372-402
 - 6 30RB 432
 - 7 30RB 462-522

Partial heat reclaim using desuperheaters (option 49)

This option permits the production of free hot water using heat reclaim by desuperheating the compressor discharge gases. The option is available for the whole 30RB range.

A plate heat exchanger is installed in series with the air condenser coils on the compressor discharge line of each circuit.

Physical data, 30RB units with partial heat reclaim

| 30RB - partial heat reclaim mode | | 182 | 202 | 232 | 262 | 302 | 342 | 372 | 402 | 432 | 462 | 522 | 602 | 672 | 732 | 802 |
|--|-------|-----------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Cooling capacity* | kW | 173 | 193 | 227 | 263 | 293 | 328 | 359 | 391 | 418 | 447 | 506 | 596 | 652 | 704 | 758 |
| Heating capacity* | kW | 42 | 58 | 56 | 87 | 99 | 106 | 110 | 124 | 122 | 146 | 155 | 191 | 203 | 235 | 236 |
| Unit power input* | kW | 59 | 70 | 73 | 98 | 105 | 121 | 128 | 147 | 151 | 169 | 191 | 218 | 241 | 265 | 288 |
| Energy efficiency ratio* | kW/kW | 2.92 | 2.75 | 3.12 | 2.70 | 2.81 | 2.71 | 2.81 | 2.67 | 2.77 | 2.65 | 2.65 | 2.73 | 2.71 | 2.66 | 2.63 |
| Operating weight** | | | | | | | | | | | | | | | | |
| Standard unit*** | kg | 1974 | 2074 | 2092 | 2260 | 2853 | 3049 | 3092 | 3218 | 3755 | 3895 | 4063 | 5285 | 5484 | 6145 | 6315 |
| Unit with options**** | kg | 2154 | 2244 | 2282 | 2450 | 3083 | 3279 | 3342 | 3478 | 4045 | 4185 | 4373 | 5645 | 5833 | 6555 | 6745 |
| Unit with options† | kg | 2404 | 2484 | 2522 | 2690 | 3393 | 3589 | 3692 | 3818 | 4395 | 4585 | 4795 | - | - | - | - |
| Desuperheater in circuits A/B/C | | Plate heat exchanger | | | | | | | | | | | | | | |
| Water volume circuit A | l | 1.75 | 1.75 | 3.75 | 3.75 | 5.5 | 5.5 | 5.5 | 5.5 | 7.5 | 7.5 | 7.5 | 5.5 | 5.5 | 7.5 | 7.5 |
| Water volume circuit B | l | 3.5 | 3.5 | 3.75 | 3.75 | 3.75 | 3.75 | 5.5 | 5.5 | 5.5 | 5.5 | 7.5 | 5.5 | 5.5 | 7.5 | 7.5 |
| Water volume circuit C | l | - | - | - | - | - | - | - | - | - | - | - | 5.5 | 5.7 | 5.5 | 7.5 |
| Max. water-side operating pressure | kPa | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| Water connections | | Cylindrical male gas thread | | | | | | | | | | | | | | |
| Connection | in | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Outside 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 | 60.3 | 60.3 | 60.3 |

* Nominal conditions:
 Evaporator entering and leaving water temperature = 12°C/7°C
 Desuperheater entering and leaving water temperature = 50°C/60°C
 Outside air temperature = 35°C

** Weights shown are a guideline only

*** Standard unit (with MCHX coils) and desuperheater option

**** Unit with option 15 (desuperheater)

† Unit with option 15 and desuperheater and hydraulic module with high-pressure dual pump

Total heat reclaim (option 50)

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

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

Operating principle

If hot water production is required, the compressor discharge gases are directed towards the heat reclaim condenser. The refrigerant releases its heat to the hot water that leaves the condenser at a temperature of up to 55°C. In this way 100% of the heat rejected by the liquid chiller can be used to produce hot water. When the demand for heat is satisfied, the hot gas is again directed towards the air condenser where the heat is rejected to the outside air by the fans. Hot water temperature control is ensured by the chiller Pro-Dialog control that independently controls the reclaim operation of each refrigerant circuit.

Physical data, 30RB units with total heat reclaim

| 30RB – total heat reclaim mode | | 262 | 302 | 342 | 372 | 402 | 432 | 462 | 522 |
|--|-----------|------------|------------|------------|------------|------------|------------|------------|------------|
| Cooling capacity* | kW | 242 | 263 | 311 | 335 | 361 | 388 | 421 | 467 |
| Heating capacity in heat reclaim mode* | kW | 328 | 358 | 422 | 453 | 496 | 531 | 578 | 653 |
| Total power input (unit)* | kW | 91 | 100 | 117 | 125 | 142 | 150 | 166 | 195 |
| Total energy efficiency ratio (EER/COP) | kW/kW | 2.65/3.60 | 2.64/3.59 | 2.66/3.61 | 2.68/3.63 | 2.54/3.49 | 2.58/3.53 | 2.54/3.49 | 2.39/3.34 |
| Operating weight** | | | | | | | | | |
| Standard unit | kg | 2610 | 3200 | 3420 | 3480 | 3610 | 4290 | 4430 | 4620 |
| Unit with option 15 | kg | 2800 | 3440 | 3660 | 3470 | 3870 | 4590 | 4730 | 4930 |
| Refrigerant charge | | | | | | | | | |
| Circuit A | kg | 27 | 40 | 41 | 41.5 | 42 | 50 | 51.5 | 51.5 |
| Circuit B | kg | 27 | 29 | 29 | 41.5 | 42 | 46 | 46 | 51.5 |
| Heat reclaim condenser | | | | | | | | | |
| Twin-circuit shell-and-tube condenser with finned copper tubes | | | | | | | | | |
| Water volume | l | 22 | 22 | 22 | 22 | 22 | 46 | 46 | 46 |
| Water connections | Victaulic | | | | | | | | |
| Diameter | in | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 |
| Outside diameter | mm | 88.9 | 88.9 | 88.9 | 88.9 | 88.9 | 114.3 | 114.3 | 114.3 |

* Entering and leaving water temperature: evaporator 12°C/7°C; heat reclaim condenser: 40°C/45°C

** Weights are for guidance only

DX free cooling system (option 118A)

The DX free cooling option permits significant energy savings for all applications that require cooling in winter. In the free cooling mode the compressors are stopped and only the fan and cooling micro-pump are running. The changeover from compressor cooling mode to free cooling mode is automatically controlled by the Pro-Dialog control, based on the chiller heat load and the temperature difference between chilled water and ambient air. Important: In order to optimise chiller performances, it is recommended to use the leaving water set point reset function.

Operating principle

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

Advantages of the DX free cooling system

- Operation without glycol
 - Unlike traditional hydronic free-cooling systems that require the use of a glycol solution, the Aquasnap DX free cooling chiller works with pure water. The evaporator is protected against frost down to -20°C by an electric resistance heater (option).
- Low water pressure losses
 - The Aquasnap DX free cooling chiller does not include a three-way valve nor free cooling coils connected in series with the evaporator. The Aquasnap free cooling chiller has the same water pressure losses as a standard chiller.
- Weight and dimensions gain
 - The DX free cooling option has little impact on the weight of the liquid chiller.
 - The Aquasnap free cooling chiller has the same dimensions as a standard chiller.
- Increased energy efficiency
 - In free cooling mode only the fans and the cooling micro-pump run. At an air-water temperature difference of 10 K for example the average chiller energy efficiency (EER) is 15 (kW/kW).
 - In the mechanical cooling mode chiller thermal and energy performances are not reduced by the use of a water-glycol solution.
 - As the pressure losses of the water circuit are low, the water pumps use less energy.

Physical data, 30RB units free-cooling system

| 30RB (compressor cooling mode) | | 232 | 262 | 302 | 342 | 372 | 402 | 432 | 462 | 522 |
|--------------------------------|----|-------|------|------|------|------|------|------|------|------|
| Nominal cooling capacity* | kW | 220 | 249 | 283 | 320 | 354 | 377 | 413 | 437 | 488 |
| Unit power input* | kW | 76 | 101 | 108 | 125 | 132 | 151 | 156 | 175 | 198 |
| Operating weight** | | | | | | | | | | |
| Unit with option 15 | kg | 2398 | 2580 | 3229 | 3429 | 3518 | 3658 | 4241 | 4381 | 4591 |
| Standard unit | kg | 2208 | 2390 | 2999 | 3199 | 3268 | 3398 | 3951 | 4091 | 4281 |
| Refrigerant charge | | | | | | | | | | |
| | | R410A | | | | | | | | |
| Circuit A | kg | 29 | 29 | 42.5 | 44 | 45.5 | 46 | 55 | 57 | 57 |
| Circuit B | kg | 29 | 29 | 31 | 31 | 45.5 | 46 | 47 | 47 | 57 |

* Nominal conditions: evaporator leaving water temperature 12°C/7°C, outside air temperature 35°C.
 ** Weights are for guidance only

Cooling capacities

| 30RB 232-522 (free cooling mode) | | | | | | | | | | |
|----------------------------------|-----------|--|------|-------|-----|------|-------|-----|------|-------|
| | | Condenser entering air temperature, °C | | | | | | | | |
| | | 0 | | | -5 | | | -10 | | |
| LWT | 30RB (°C) | Cap | Unit | EER | Cap | Unit | EER | Cap | Unit | EER |
| | | kW | kW | kW/kW | kW | kW | kW/kW | kW | kW | kW/kW |
| 10 | 232 | 117 | 8 | 14.6 | 121 | 8 | 15.1 | 121 | 4 | 30.2 |
| | 262 | 117 | 8 | 14.6 | 121 | 8 | 15.1 | 121 | 4 | 30.2 |
| | 302 | 145 | 10 | 14.5 | 162 | 10 | 16.2 | 186 | 8 | 23.2 |
| | 342 | 145 | 10 | 14.5 | 162 | 10 | 16.2 | 186 | 8 | 23.2 |
| | 372 | 173 | 11 | 15.7 | 203 | 12 | 16.9 | 250 | 12 | 20.8 |
| | 402 | 173 | 11 | 15.7 | 203 | 12 | 16.9 | 250 | 12 | 20.8 |
| | 432 | 211 | 13 | 16.2 | 246 | 13 | 18.9 | 277 | 13 | 21.3 |
| | 462 | 211 | 13 | 16.2 | 246 | 13 | 18.9 | 277 | 13 | 21.3 |
| | 522 | 248 | 15 | 16.5 | 275 | 15 | 18.3 | 293 | 15 | 19.5 |

Legend
 LWT - Leaving water temperature
 Cap kW - Cooling capacity
 Unit kW - Unit power input (compressors, fans, control)
 EER kW/kW - Energy efficiency

Operating limits

| 30RB - compressor cooling mode | | | |
|---------------------------------------|----|---------|---------|
| Evaporator water temperature | °C | Minimum | Maximum |
| Entering water at start-up | | 6.8 | 40 |
| Entering water during operation | | 8.5 | 25 |
| Leaving water during operation | | 5 | 15 |
| Condenser air temperature | °C | Minimum | Maximum |
| Standard free cooling unit | | 0 | 48 |
| With winter operation option (No. 28) | | -20 | 48 |
| 30RB - free cooling mode | | | |
| Evaporator water temperature | °C | Minimum | Maximum |
| Entering water at start-up | | 6.8 | 40 |
| Leaving water during operation | | 5 | 26 |
| Condenser air temperature | °C | Minimum | Maximum |
| | | -25 | 20 |

Units with fans with available pressure for indoor installation (option 12)

This option applies to 30RB units installed inside the building in a plant room. For this type of installation the hot air leaving the air-cooled condensers is discharged by the fans to the outside of the building, using a duct system.

30RB units equipped with fans with available pressure are designed to operate with air discharge ducts with maximum pressure drops of 200 Pa.

To compensate for these pressure drops 30RB units with option 12 are equipped with variable-speed fans with a maximum speed of 19 r/s, instead of 15.8 r/s and fixed-speed fans as for the standard units.

All fans in the same refrigerant circuit are controlled by a single speed variator and therefore all run at the same speed.

The full-load or part-load speed is controlled by a patented algorithm that permanently optimises the condensing temperature to ensure the best unit energy efficiency (EER) whatever the operating conditions and pressure drops of the system ductwork.

Each refrigerant circuit (A, B and C) must have a separate ducting system to prevent any air recycling between the condensers of the different refrigerant circuits.

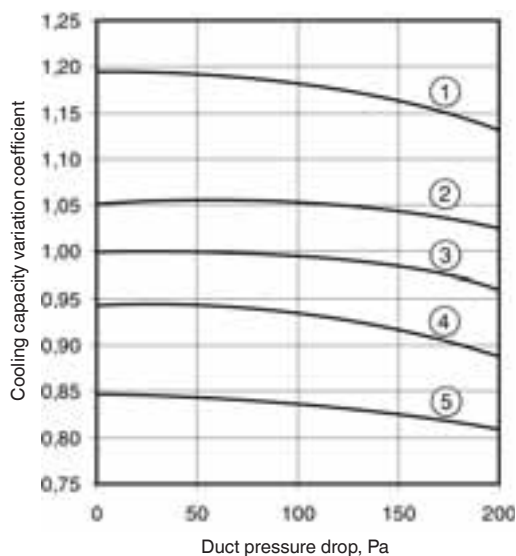
In 30RB units with option 12 each fan is equipped with a factory-installed connection interface, allowing the connection to the ducting system for the specific circuit (A, B and C) for each fan. Please refer to the unit dimensional drawings for the exact dimensions of the connection interface.

The unit cooling capacity and energy efficiency ratio (EER) varies depending on the duct pressure drops:

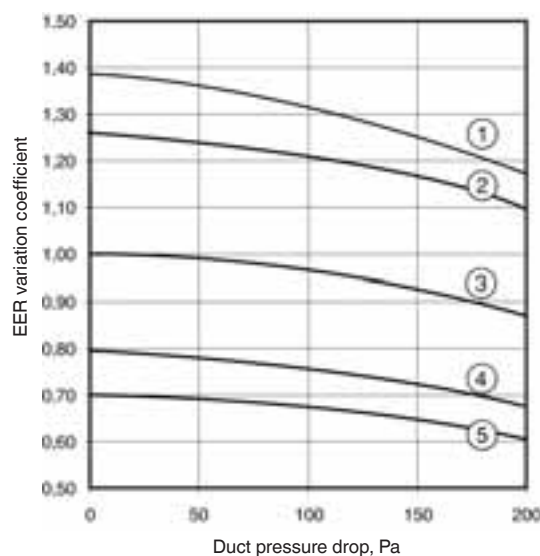
- between 0 and 100 Pa the unit cooling capacity is only slightly affected,
- between 100 and 200 Pa the unit cooling capacity falls considerably depending on the operating conditions (outdoor air temperature and water conditions).

Please refer to the curves below to evaluate the impact of the estimated duct system pressure drop for the installation and the impact of different full load operating conditions on the 30RB unit cooling capacity and EER.

Cooling capacity variations for operating conditions that differ from Eurovent conditions



EER variations for operating conditions that differ from Eurovent conditions



Operating conditions

| Curve No. | Outside temperature, °C | Entering water temperature, °C | Leaving water temperature, °C | Load % |
|------------|-------------------------|--------------------------------|-------------------------------|--------|
| 1 | 25 | 15 | 10 | 100 |
| 2 | 25 | 10 | 5 | 100 |
| 3 Eurovent | 35 | 12 | 7 | 100 |
| 4 | 45 | 15 | 10 | 100 |
| 5 | 45 | 10 | 5 | 100 |

Nominal and maximum air flows per circuit

| 30RB | Nominal/maximum air flow, l/s | | |
|-----------|-------------------------------|-------------|-------------|
| | Circuit A | Circuit B | Circuit C |
| 182 - 262 | 9030/11110 | 9030/11110 | - |
| 302 - 342 | 13540/16670 | 9030/11110 | - |
| 372 - 402 | 13540/16670 | 13540/16670 | - |
| 432 - 462 | 18060/22220 | 13540/16670 | - |
| 522 | 18060/22220 | 18060/22220 | - |
| 602 | 13540/16670 | 13540/16670 | 13540/16670 |
| 672 | 13540/16670 | 13540/16670 | 18060/22220 |
| 732 | 18060/22220 | 18060/22220 | 13540/16670 |
| 802 | 18060/22220 | 18060/22220 | 18060/22220 |

Sound power level at the discharge duct outlet for all circuits

| 30RB | 182 | 202 | 232 | 262 | 302 | 342 | 372 | 402 | 432 | 462 | 522 | 602 | 672 | 732 | 802 | | |
|---------------------------------------|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|-----|------|-----|------|----|
| Sound power level 10 ⁻¹² W | dB(A) | | 93 | 93 | 93 | 93 | 94 | 94 | 95 | 95 | 95.5 | 95.5 | 96 | 96.5 | 97 | 97.5 | 98 |

Electrical data notes for 30RB units:

- 30RB 182-522 units have a single power connection point at the main disconnect switch; 30RB 602-802 units have two connection points at the main disconnect switch.
- The control box includes the following standard features:
 - Starter and motor protection devices for each compressor and the fan(s)
 - Control devices
- Field connections:
All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 30RB units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60 204-1 (corresponds to IEC 60204-1) (machine safety - electrical machine components - part 1: general regulations) are specifically taken into account, when designing the electrical equipment.
- **Electrical reserves:**
Circuit A has disconnect switches and branch sections, designed to supply the evaporator pump power input.

IMPORTANT:

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

1. The operating environment for the 30RB units is specified below:
 - a. Environment* - Environment as classified in EN 60721 (corresponds to IEC 60721) :
 - outdoor installation*
 - ambient temperature range: -20°C to +48°C, class 4K3*
 - altitude: ≤ 2000 m
 - presence of hard solids, class 4S2 (no significant dust present)
 - presence of corrosive and polluting substances, class 4C2 (negligible)
 - vibration and shock, class 4M2
 - b. Competence of personnel, class BA4* (trained personnel - IEC 60364)

2. Power supply frequency variation: ± 2 Hz.
3. The neutral (N) line must not be connected directly to the unit (if necessary use a transformer).
4. Overcurrent protection of the power supply conductors is not provided with the unit.
5. The factory-installed disconnect switch(es)/circuit breaker(s) is (are) of a type suitable for power interruption in accordance with EN 60947-3 (corresponds to IEC 60947-3).
6. The units are designed for simplified connection on TN(s) networks (IEC 60364). For IT networks derived currents may interfere with network monitoring elements, and it is recommended to create an IT type divider for the system units that require this and/or a TN type divider for Carrier units. Please consult the appropriate local organisations to define the monitoring and protection elements and carry out the electrical installation.

If short circuit currents above those given in the electrical data table are likely, modifications are required. Please contact your local Carrier representative.

NOTE:

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

- * The required protection level for this class is IP43B (according to reference document IEC 60529). All 30RB units are protected to IP44C_W and fulfil this protection condition.

Carrier is participating in the Eurovent Certification Programme for liquid chilling packages. Products are as listed in the Eurovent Directory of Certified Products or on the Internet site www.eurovent-certification.com.

This programme covers air-cooled chillers up to 600 kW and water-cooled chillers up to 1500 kW.



Environmental Management System Approval



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Manufacturer reserves the right to change any product specifications without notice.

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