

PRODUCT SELECTION DATA



- exchanger technology
 - Fully equipped hydronic module
 - Partial heat reclaim
 - Total heat reclaim
- Direct expansion free-cooling



Air-Cooled Liquid Chillers with Integrated Hydronic Module

30RB 162-802



30RB 162-802

Nominal cooling capacity 162-774 kW

The Aquasnap liquid chiller range features the latest technological innovations:

- ozone-friendly refrigerant R-410A
- scroll compressors
- low-noise fans made of a composite material
- auto-adaptive microprocessor control
- aluminium micro-channel heat exchangers (MCHE)

The Aquasnap can be equipped with an integrated hydronic module, limiting the installation to straightforward 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 and supported by flexible anti-vibration mountings
 - Dynamic suction and discharge piping support, minimising vibration transmission (Carrier patent)
 - Acoustic compressor enclosure, reducing radiated noise emissions (option)
- 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
 - 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 (option)
 - Water flow control valve (option)

- Simplified electrical connections
 - A single power supply point without neutral (30RB 162-522)
 - 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
 - Eurovent energy efficiency class (in accordance with EN14511-3:2011) B to D
 - 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 (MCHE), 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
 - R-410A refrigerant is easier to use than other refrigerant blends

Environmental care

- Ozone-friendly R-410A refrigerant
 - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
 - Very efficient gives an increased energy efficiency ratio (EER)
 - 40% reduction in the refrigerant charge through use of the micro-channel heat exchangers (MCHE)
- Leak-tight refrigerant circuit
 - Brazed refrigerant connections for increased leaktightness
 - 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 (MCHE) 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 operator interface



Pro-Dialog Plus control

Pro-Dialog Plus combines intelligence with operating simpli-city. The control constantly monitors all machine para-meters 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

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

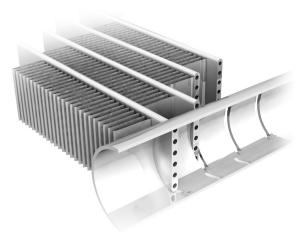
^{*} contacts already supplied with the hydronic module option



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

All aluminium micro-channel heat exchanger (MCHE)



Already utilised in the automobile and aeronautical industries for many years, the MCHE 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 MCHE heat exchanger can be used in moderate marine and urban environments.

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

Options

Options Unit for low leaving water temperature	No. 6B	Description Leaving water temperature of +3°C to -10°C.	Advantages All low-temperature applications: ice storage, cold	For 30F
Link for in the entire talletine with	12	Face with a willable average.	stores, process cooling etc.	100.000
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	162-802
Low noise level	15	Sound absorbing compressor enclosure	Noise emission reduction	162-802
Very low noise level	15LS	Sound absorbing compressor enclosure and low-speed fans	Noise emission reduction	162-80
Grilles	23	Metallic grilles on all four unit faces (this option includes the supply of enclosure panels)	Improved aesthetics	162-80
Enclosure panels	23A	Side panels on each end of the coils	Improved aesthetics	162-80
Electronic starter	25 28	Electronic starter on each compressor	Reduced start-up current	162-52
Winter operation down to -20°C		Fan speed control via frequency converter	Stable unit operation when the air temperature is between 0°C and -20°C	162-80
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	162-80
Winter operation down to -10°C and very low noise level (options 28B + 15LS)	28C	Sound absorbing compressor enclosure and low-speed fans + twin-speed lead fan for each circuit	Noise emission reduction and stable unit operation when the air temperature is between 0°C and -10°C	162-80
Evaporator and water piping frost protection	41	Electric heater on the evaporator and the water inlet/outlet piping	Evaporator frost protection for air temperatures between 0°C and -20°C	162-80
	42A	Electric heaters on the evaporator, the water inlet/outlet piping	Evaporator and hydronic module frost protection for air	162-52
module frost protection Partial heat reclaim	49	and hydronic module Partial heat reclaim by desuperheating of the compressor	temperatures between 0°C and -20°C Free high-temperature hot-water production	162-80
		discharge gas	simultaneously with chilled water production	
Total heat reclaim	50	See heat reclaim option.	Free hot water production simultaneously with chilled water production	262-52
Master/slave operation	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	162-80
Main disconnect switch without fuse (standard for sizes 162-262)	70	Factory-installed main electric disconnect switch in the control box	Ease-of-installation and compliance with local electrical regulations	302-80
Main disconnect switch with fuse	70D	Factory-installed main electric disconnect switch with fuse in	Same advantage as main disconnect switch and	302-80
		the control box	reinforced anti-short circuit protection	
Evaporator with aluminium jacket	88	Evaporator thermal insulation protection by aluminium sheets	Improved resistance to climatic aggression	162-80
Evaporator and hydronic module with aluminium jacket	88A	Evaporator and water piping thermal insulation protection by aluminium sheets	Improved resistance to climatic aggression	302-52
Suction valve	92	Shut-off valve on the compressor suction piping (discharge valve as standard)	Simplified maintenance	302-80
Compressor suction and discharge valves	92A	Shut-off valves on the common compressor suction and discharge piping	Simplified maintenance	162-26
High-pressure single-pump hydronic module	116B	Single high-pressure water pump, water filter, expansion tank, pressure gauge, water flow control valve. See hydronic module option.	Easy and fast installation	162-52
High-pressure dual-pump hydronic module	116C	Dual high-pressure water pump, water filter, expansion tank, pressure gauge, water flow control valve. See hydronic module option.	Easy and fast installation, operating safety	162-52
Low-pressure single-pump hydronic module	116F	Single low-pressure water pump, water filter, expansion tank, pressure gauge, water flow control valve. See hydronic module option.	Easy and fast installation	162-52
Low-pressure dual-pump hydronic module	116G	Dual low-pressure water pump, water filter, expansion tank, pressure gauge, water flow control valve. See hydronic module option.	Easy and fast installation, operating safety	162-52
High-pressure single-pump hydronic module	116M	Single high-pressure water pump, water filter, expansion tank, pressure ports. See hydronic module option.	Easy and fast installation	162-52
High-pressure dual-pump hydronic module	116N	Dual high-pressure water pump, water filter, expansion tank, pressure ports. See hydronic module option.	Easy and fast installation, operating safety	162-52
Low-pressure single-pump hydronic module	116P	Single low-pressure water pump, water filter, expansion tank, pressure ports. See hydronic module option.	Easy and fast installation	162-52
Low-pressure dual-pump hydronic	116Q	Dual low-pressure water pump, water filter, expansion tank,	Easy and fast installation, operating safety	162-52
module Direct-expansion free-cooling system	118A	pressure ports. See hydronic module option. See free-cooling option.	Economic chilled-water production at low outside temperature	232-52
JBus gateway	148B	Two-directional communications board, complies with JBus protocol	Easy connection by communication bus to a building management system	162-80
Bacnet gateway	148C	Two-directional communications board, complies with Bacnet protocol	Easy connection by communication bus to a building	162-8
LonTalk gateway	148D	Two-directional communications board, complies with LonTalk protocol	management system Easy connection by communication bus to a building management system	162-80
Energy Management Module EMM	156	See controls manual	Easy wired connection to a building management system	162-80
Safety valve with three-way valve fitted	194	Three-way valve upstream of the safety valves (not compatible with BPHE version)	Safety valve inspection and replacement facilitated without refrigerant loss	162-80
Conformance with Australian regulations	200	Heat exchanger approved to Australian code	-	162-80
Unit storage above 48°C	241	Refrigerant charge stored in the condenser. Option not compatible with MCHE coils; Cu/Al coils are required to store the charge.	Unit transport by container only possible with this option	162-8
Anti-corrosion protection Enviro- Shield for microchannel MCHE coils Anti-corrosion protection Super Enviro-Shield for microchannel MCHE	262 263	Microchannel MCHE protection by the Carrier factory for applications in standard and moderate corrosive environments. Microchannel MCHE protection by the Carrier factory for applications in corrosive and aggressive environments	Better corrosion resistance, recommended for marine or moderately corrosive industrial environments The Super Enviro-Shield option was developed to increase the microchannel MCHE coil application range to	30RB 162-86 30RB 162-86
coils		and aggreeous officialities	extremely corrosive environmental conditions.	
Connection sleeve	266	Piping to be welded with Victaulic connection	Ease-of-installation	162-80
	280	Different heat exchanger type	Ensures compatibility with other options than those	162-26
Shell-and- tube evaporator			available with the standard unit (see Electronic Catalogue)	
Shell-and- tube evaporator Power cable connection side extension	283	Side extension on the power control to allow a reduced cable bend radius	available with the standard unit (see Electronic Catalogue) Use of thicker power cables	302-80

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.

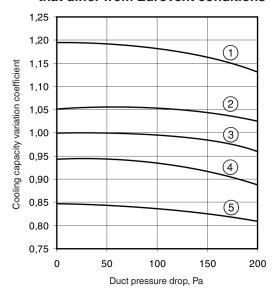
30RB units equipped with fans with available pressure are designed to operate with air discharge ducts with maximum pressure drops of 200 Pa.

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.

Cooling capacity variations for operating conditions that differ from Eurovent conditions



Operating conditions

Curve No.	Outside temperature, °C	Entering 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

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.

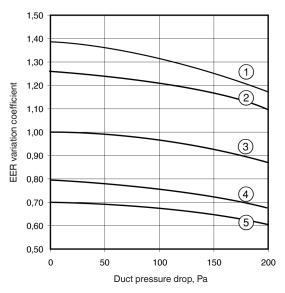
In 30RB units with option 12 each fan is equipped with a factory-installed connection interface, allowing the connection to the ducting system for the specific circuit (A, B and C) for each fan. Please refer to the unit dimensional drawings for the exact dimensions of the connection interface.

The unit cooling capacity and energy efficiency ratio (EER) vary 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.

EER variations for operating conditions that differ from Eurovent conditions



Nominal and maximum air flows per circuit

30RB	Nominal/maximu	ım air flow, I/s	
	Circuit A	Circuit B	Circuit C
162-262	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		162	182	202	232	262	302	342	372	402	432	462	522	602	672	732	802
Sound power level 10 ⁻¹² V	/ dB(A)	93	93	93	93	93	94	94	95	95	95.5	95.5	96	96.5	97	97.5	98

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		162	182	202	232	262	302	342	372	402	432	462	522	602	672	732	802
Cooling capacity*	kW	163	181	197	227	271	298	332	367	397	424	454	506	609	660	714	778
Heating capacity*	kW	42	44	61	57	90	103	110	113	129	126	152	159	197	206	243	241
Unit power input*	kW	54	60	71	74	100	106	122	130	150	154	173	192	222	243	272	297
Energy efficiency ratio*	kW/kW	3.01	3.01	2.77	3.07	2.72	2.81	2.72	2.83	2.64	2.75	2.62	2.63	3	3	3	2.62
Operating weight**																-	
Standard unit***	kg	1882	1974	2074	2092	2260	2853	3049	3092	3218	3755	3895	4063	5285	5484	6145	6315
Unit with options****	kg	2052	2154	2244	2282	2450	3083	3279	3342	3478	4045	4185	4373	5645	5833	6555	6745
Unit with options†	kg	2302	2404	2484	2522	2690	3393	3589	3692	3818	4395	4585	4795	-	-	-	-
Desuperheater in circuits A/B/C		Plate I	neat exc	changer													
Water volume circuit A	1	1.75	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	1	3.5	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	1	-	-	-	-	-	-	-	-	-	-	-	-	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	1000
Water connections		Cylind	rical ma	ale gas	thread												
Connection	in	2	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	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. Gross performances, not in accordance with EN14511-3:2011. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

Operating limits

Desuperheater		Minimum	Maximum
Entering water temperature at start-up	°C	25*	75
Leaving water temperature during operation	°C	30	80
Air condenser		Minimum	Maximum
Outside operating temperature	°C	0**	46

^{*} The entering water temperature at start-up must not be lower than 25°C. For installations

Weights shown are a guideline only
Standard unit (with MCHE coils) and desuperheater option + option 280 (shell-and-tube heat exchanger)

Unit with option 15 (desuperheater)

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

with a lower temperature a three-way valve is necessary.

** The minimum outside temperature is 0°C. With the winter operation option it is -20°C.

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	232	250	296	323	345	363	398	441
Heating capacity in heat reclaim mode*	kW	315	345	407	443	480	498	555	626
Total power input (unit)*	kW	87	99	117	125	142	142	164	194
Total energy efficiency ratio (EER/COP)*	kW/kW	2.66/3.61	2.52/3.47	2.54/3.49	2.58/3.53	2.43/3.38	2.57/3.52	2.43/3.38	2.27/3.2
Cooling capacity**	kW	233	251	297	324	346	364	400	443
Heating capacity in heat reclaim mode**	kW	315	345	407	443	480	498	555	626
Total power input (unit)**	kW	87	98	116	124	141	140	162	192
Total energy efficiency ratio (EER/COP)**	kW/kW	2.69/3.64	2.55/3.50	2.57/3.52	2.61/3.56	2.46/3.41	2.60/3.55	2.46/3.41	2.30/3.2
Operating weight***									
Unit with heat reclaim option	kg	2317	2772	2980	3080	3180	3651	3858	4027
Unit with option 15	kg	2507	3012	3220	3340	3440	3951	4158	4337
Refrigerant charge									
Circuit A	kg	14.8	20.4	21.7	21.7	21.2	27	27.2	27.2
Circuit B	kg	15.2	15.4	16.4	23.2	23.7	25.5	25.5	30.4
Heat reclaim condenser		Twin-circui	t shell-and-tu	ibe condense	er with finned	copper tube	s		
Water volume	1	22	22	22	22	22	46	46	46
Maximum water-side operating pressure	kPa	1000	1000	1000	1000	1000	1000	1000	1000
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

Operating limits

Heat reclaim condenser		Minimum	Maximum
Entering water temperature at start-up	°C	15*	55
Leaving water temperature during operation	°C	20	55
Condenser (air)		Minimum	Maximum
Outdoor ambient operating temperature	°C	0	46

The water entering temperature at start-up must not fall below 15°C. For installations with a lower temperature an accessory 3-way valve must be installed.

^{*} Nominal conditions: Entering and leaving water temperature: Evaporator 12°C/7°C; heat reclaim condenser: 40°C/45°C.

Performances in accordance with EN14511-3:2011. These performances take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

Svaporator and heat reclaim condenser fouling factor = 0 m²k/kW.

Nominal conditions: Entering and leaving water temperature: Evaporator 12°C/7°C; heat reclaim condenser: 40°C/45°C.

Gross performances, not in accordance with EN14511-3:2011. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

Evaporator and heat reclaim condenser fouling factor = $0 \text{ m}^2\text{K/kW}$. *** Weights are for guidance only.

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 (option).

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 162-522).

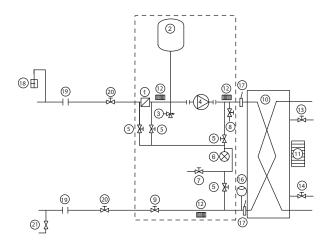
An automatic pump start-up algorithm protects the heat exchanger and the hydronic module piping against frost down to -10°C outside temperature, if the evaporator frost protection option is installed. If necessary increased frost protection down to -20°C is possible by adding the heater option to the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

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



Typical hydronic circuit diagram



Legend

Components of unit and hydronic module

- Victaulic screen filter
- Expansion tank
- Safety valve
- Available pressure pump
- Pressure tap valve
- Pressure gauge to measure the component pressure loss (option)
- System vent valve, pressure gauge
- Drain valve
- Water flow control valve (option)
- 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

Electrical data, units with hydronic modules

The pumps that are factory-installed in these units have motors with efficiency class IE2. The additional electrical data required by regulation 640/2009 is given in the installation, operation and maintenance manual.

This regulation concerns the application of directive 2005/32/EC on the eco-design requirements for electric motors.

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	227	271	298	332	367	397	424	454	506
Unit power input*	kW	74	100	106	122	130	150	154	173	192
Operating weight**										
Unit with option 15	kg	1997	2171	2680	2871	2993	3093	3458	3664	3850
Unit with option 15 + dual pump hydronic module	kg	2181	2355	2985	3176	3338	3438	3803	4059	4265
Standard unit	kg	1902	2076	2563	2754	2859	2959	3307	3513	3682
Refrigerant charge		R410A								
Circuit A	kg	16.3	16.3	22.4	23.4	23.4	22.9	29.3	29.5	29.5
Circuit B	kg	15	15	15.6	16.6	23.2	23.7	25.2	25.2	30.3

^{*} Nominal conditions: evaporator leaving water temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor = 0 m² K/kW.

Gross performances, not in accordance with EN14511-3:2011. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

Cooling capacities

30RI	B 232-52	2 (fre	e-cool	ing mod	e)					
		Con	dense	r enterin	g air	tempe	erature, °	С		
		0			-5			-10		
30RI	B LWT	Qc	Unit	EER	Qc	Unit	EER	Qc	Unit	EER
	°C	kW	kW	kW/kW	kW	kW	kW/kW	kW	kW	kW/kW
232	10	118	8	14.7	122	8	15	122	4	29.9
262		120	8	14.8	124	8	15.2	124	4	30.2
302		146	10	14.8	164	10	16.4	188	8	23.4
342		146	10	15	164	10	16.6	188	8	23.7
372		176	12	15.2	207	12	17.7	255	12	21.5
402		174	12	14.9	205	12	17.4	252	12	21.1
432		213	14	15.7	248	14	18.1	280	14	20.2
462		213	14	15.7	248	14	18.1	280	14	20.2
522		246	15	16.4	273	15	18	291	15	19

LWT - Leaving water temperature, °C
Qc - Cooling capacity, kW
- Unit kW - Unit power input (compressors

Unit power input (compressors, fans, control)
 Energy efficiency, kW/kW

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

^{**} Weights are for guidance only

Physical data

30RB 162-262 "B" standard units (with plate heat exchanger)

30RB		162	182	202	232	262
Air conditioning application as per EN14	511-3:2011*					
Nominal cooling capacity	kW	170	184	208	222	265
EER	kW/kW	2.95	2.96	2.86	3.00	2.67
Eurovent class, cooling		В	В	С	В	D
ESEER	kW/kW	3.71	3.53	3.82	3.87	3.69
Air conditioning application**	10071000	0.7 1	0.00	0.02	0.07	0.00
Nominal cooling capacity	kW	171	185	209	223	266
EER	kW/kW	3.00	3.02	2.92	3.05	2.71
ESEER Operating weight***	kW/kW	3.87	3.70	4.00	4.06	3.90
Standard unit with option 15 and high-	kg	1561	1671	1770	1818	1993
pressure dual-pump hydronic module option						
Unit with option 15	kg	1385	1495	1594	1634	1809
Standard unit****	kg	1310	1420	1519	1539	1714
Sound levels						
Unit with option 15LS (very low noise lev	el)					
Sound power level 10 ⁻¹² W†	dB(A)	84	84	84	85	85
Sound pressure level at 10 m‡	dB(A)	52	52	52	53	53
Unit with option 15 (low noise level)	` '					
Sound power level 10 ⁻¹² W†	dB(A)	89	89	89	89	89
Sound pressure level at 10 m‡	dB(A)	57	57	57	57	57
•	. ,	31	31	31	31	31
Unit without option 15 and without hydro		04	0.4	04	04	04
Sound power level 10 ⁻¹² W†	dB(A)	91	91	91	91	91
Sound pressure level at 10 m‡	dB(A)	59	59	59	59	59
Dimensions						
Length x depth x height	mm	2457 x 2253 x 2297	2457 x 2253 x 2297	2457 x 2253 x 2297	2457 x 2253 x 2297	2457 x 2253 x 2
Compressors		Hermetic scroll, 48.3	3 r/s			
Circuit A		1	1	1	2	2
Circuit B		2	2	2	2	2
No. of control stages		-	-	-	-	4
Refrigerant		R-410A				
Circuit A	kg	8.8	11.6	11.6	14	13.2
Circuit B	kg	13	13	12.9	13.5	12.9
Capacity control	Ny .	Pro-Dialog Plus	10	12.3	10.0	12.5
	0/		00	00	0.5	0.5
Minimum capacity	%	33	28	33	25	25
Condensers			channel heat exchang	ger (MCHE)		
Fans		Axial Flying Bird 4 w	•			
Quantity		3	4	4	4	4
Total air flow	l/s	13542	18056	18056	18056	18056
Speed	r/s	16	16	16	16	16
Evaporator		Twin-circuit plate he	at exchanger			
Water volume	I	10.76	10.76	12.64	16.38	16.69
Max. water-side operating pressure without	kPa	1000	1000	1000	1000	1000
hydronic module		***	*==			
Hydronic module (option)		Pump, Victaulic scre	en filter, safety valve,	expansion tank, press	ure gauge, water + air	purge valves, flo
Pump			ell, low or high pressure	e (as required), 48.3 r/	s, single or twinned d	ual pump (as
Quantity		1	1	1	1	1
Expansion tank volume	1	50	50	50	50	50
Max. water-side operating pressure with	kPa	400	400	400	400	
hydronic module			400	400	400	400
Water connections without hydronic mod		Victaulic				
Diameter	inch	2-1/2	2-1/2	2-1/2	2-1/2	2-1/2
		76	76	76	76	76
Outside tube diameter	mm					
		Victaulic				
Outside tube diameter			3	3	3	3
Outside tube diameter Water connections with hydronic module	!	Victaulic	3 88.9	3 88.9	3 88.9	3 88.9

^{*} Eurovent-certified performances in accordance with standard EN14511-3:2011.

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

** Gross performances, not in accordance with EN14511-3:2011. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

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

^{***} Weight shown is a guideline only. To find out the unit refrigerant charge, please refer to the unit nameplate.

*** Standard unit: base unit without option 15 and hydronic module.

† In accordance with ISO 9614-1 and certified by Eurovent.

‡ For information, calculated from the sound power level Lw(A).

Physical data (continued)

30RB 162-262 "B" units with option 280 (shell-and-tube heat exchanger) and 30RB 302-802 units

30RB		162	182	202	232	262	302	342	372	402	432	462	522	602	672	732	802
Air conditioning application as	per EN14	1511-3:	2011*														
Nominal cooling capacity	kW	162	181	197	227	270	297	331	366	395	422	452	503	607	657	712	774
EER	kW/kW	2.98	2.98	2.74	3.04	2.68	2.77	2.69	2.80	2.60	2.71	2.59	2.58	2.72	2.68	2.59	2.5
Eurovent class, cooling		В	В	С	В	D	С	D	С	D	С	D	D	С	D	D	D
ESEER	kW/kW	3.89	3.81	3.64	4.07	3.74	3.80	3.81	3.95	3.72	3.71	3.65	3.56	3.97	3.88	3.75	3.7
Air conditioning application**																	
Nominal cooling capacity	kW	163	181	197	227	271	298	332	367	397	424	454	506	609	660	714	77
EER	kW/kW		3.01	2.77	3.07	2.72	2.81	2.72	2.83	2.64	2.75	2.62	2.63	2.75	2.72	2.63	2.6
ESEER																	
	kW/kW	3.99	3.91	3.74	4.22	3.87	3.96	3.95	4.11	3.89	3.86	3.81	3.74	4.11	4.03	3.91	3.8
Operating weight**											.=						
Standard unit with option 15 and	kg	1896	2006	2093	2118	2292	2911	3102	3258	3358	3720	3977	4183	-	-	-	-
high-pressure dual-pump																	
hydronic module option		4700	1000	4047	1001	0400	0000	0707	0010	0010	0075	0500	0700	4000	5004		
Unit with option 15	kg	1720	1830	1917	1934	2108	2606	2797	2913	3013	3375	3582	3768	4828	5091	5597	586
Standard unit***	kg	1645	1755	1842	1839	2013	2489	2680	2779	2879	3224	3431	3600	4627	4873	5362	560
Sound levels																	
Unit with option 15LS (very low	noise le	vel)															
Sound power level 10 ⁻¹² W†	dB(A)	84	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	52	53	53	54	54	55	55	55	55	56	56	57	57	57
Unit with option 15 (low noise l	evel)																
Sound power level 10 ⁻¹² W†	dB(A)	89	89	89	89	89	90	90	91	91	92	92	92	93	93	94	94
Sound pressure level at 10 m‡	dB(A)	57	57	57	57	57	58	58	59	59	60	60	60	61	61	61	62
Unit without option 15 and with	` '			01	01	01	00	00	00	00	00	00	00	01	01	01	0.
Sound power level 10 ⁻¹² W†	dB(A)	91	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	59	60	60	61	61	62	62	62	62	63	63	64
Dimensions																	
Length x depth	mm	2457 >	2253				3604	3353			4798 >	2253		5992)	(2253	7186	(22
Height	mm	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297	2297	22
Compressors		Herme	etic scro	II, 48.3 r	/s												
Circuit A		1	1	1	2	2	3	3	3	3	4	4	4	3	3	4	4
Circuit B		2	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		_	_	_	_	4	5	5	6	6	7	7	8	9	10	11	12
Refrigerant		R-410	Δ								· · · · · ·	•					
Circuit A	kg	9.2	11	11	13.5	13.5	18.5	19.5	19.5	19	24.3	24.5	24.5	21.5	21.5	26	26
Circuit B	-	12.8	12.8	12.8	13.3	13.3	13	14	19.5	20	21.5	21.5	25.5	22	21.5	28	28
			12.0	12.0	10	10	10	17	13.5	-	-	-	25.5	~~	21.5		
	kg													22 5	20		
Circuit C	kg	- D D:	- -lDi-	-	-	-	-	-					-	23.5	28	24	31
Circuit C Capacity control	kg		- alog Plu														
Circuit C Capacity control Minimum capacity	-	33	28	33	25	25	18	20	15	17	13	14	13	23.5	10	9	31 8
Circuit C Capacity control Minimum capacity Condensers	kg	33 All alu	28 minium	33 micro-c	25 hannel h	25 neat exc	18 changer	20		17	13						
Circuit C Capacity control Minimum capacity	kg	33 All alu	28 minium	33	25 hannel h	25 neat exc	18 changer d	20	E)	17	13						
Circuit C Capacity control Minimum capacity Condensers	kg	33 All alu	28 minium	33 micro-c	25 hannel h	25 neat exc	18 changer	20		17	13						8
Circuit C Capacity control Minimum capacity Condensers Fans	kg	All alu Axial F	28 minium Tying Bi	33 micro-cl ird 4 witl	25 hannel h n rotatin 4	25 neat exc g shrou 4	18 changer d 5	20 (MCHE	6		7	7	13	11	10	9	8
Circuit C Capacity control Minimum capacity Condensers Fans Quantity	kg %	All alu Axial F	28 minium Tying Bi	33 micro-clird 4 with 4	25 hannel h n rotatin 4	25 neat exc g shrou 4	18 changer d 5	20 (MCHE	6	6	7	7	13	11	10	9	8 12 54
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow	kg %	33 All alu Axial F 3 13542 16	28 minium Flying Bi 4 18056 16	33 micro-clord 4 with 4 18056	25 hannel h rotatin 4 18056 16	25 neat exc g shrou 4 18056 16	18 changer d 5 22569	20 (MCHE 5 22569	6 27083	6 27083	7 31597	7 31597	13 8 36111	11 9 40623	10 10 45139	9 11 49653	8 12 54
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator	kg %	33 All alu Axial F 3 13542 16	28 minium Flying Bi 4 18056 16 expans	micro-cl ird 4 with 4 18056 16 ion, dua	25 hannel h rotatin 4 18056 16	25 neat exc g shrou 4 18056 16 shell-ar	18 changer d 5 22569 16 nd-tube	20 (MCHE 5 22569	6 27083 16	6 27083 16	7 31597 16	7 31597	13 8 36111 16	11 9 40623	10 10 45139	9 11 49653	12 54 16
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator Water volume	kg % I/s r/s	AXIAI F 3 13542 16 Direct-	28 minium Flying Bi 4 18056 16 expans 110	33 micro-cl rd 4 with 4 18056 16 ion, dua 110	25 hannel h rotatin 4 18056 16 Il-circuit 110	25 neat exc g shrou 4 18056 16 shell-ar	18 changer d 5 22569 16 nd-tube 110	20 (MCHE 5 22569 16	6 27083 16	6 27083 16	7 31597 16	14 7 31597 16 113	13 8 36111 16 113	9 40623 16 284	10 10 45139 16 284	9 11 49653 16 284	12 54 16
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator Water volume Max. water-side operating	kg % I/s r/s I kPa	AXIAI F 3 13542 16 Direct-	28 minium Flying Bi 4 18056 16 expans 110	micro-cl ird 4 with 4 18056 16 ion, dua	25 hannel h rotatin 4 18056 16 Il-circuit 110	25 neat exc g shrou 4 18056 16 shell-ar	18 changer d 5 22569 16 nd-tube 110	20 (MCHE 5 22569 16	6 27083 16	6 27083 16	7 31597 16	14 7 31597 16 113	13 8 36111 16 113	9 40623 16 284	10 10 45139 16 284	9 11 49653 16	12 54 16
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator Water volume Max. water-side operating pressure without hydronic module	kg % I/s r/s I kPa	33 All alu Axial F 3 13542 16 Direct 110 1000	28 minium Flying Bi 4 18056 16 expans 110 1000	33 micro-cl ird 4 with 4 18056 16 ion, dua 110 1000	25 hannel h n rotatin 4 18056 16 al-circuit 110 1000	25 neat exc g shrou 4 18056 16 shell-ar 110 1000	18 changer d 5 22569 16 nd-tube 110 1000	20 (MCHE 5 22569 16 125 1000	6 27083 16 125 1000	6 27083 16 125 1000	7 31597 16 113 1000	7 31597 16 113 1000	8 36111 16 113 1000	9 40623 16 284 1000	10 10 45139 16 284 1000	9 11 49653 16 284 1000	12 54 16 28
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator Water volume Max. water-side operating pressure without hydronic module Hydronic module (option)	kg % I/s r/s I kPa	33 All alui Axial F 3 13542 16 Direct- 110 1000 Pump,	28 minium Flying Bi 4 18056 16 -expans 110 1000	micro-cl ird 4 with 4 18056 16 ion, dua 110 1000	25 hannel h n rotatin 4 18056 16 ul-circuit 110 1000	25 neat exc g shrou 4 18056 16 shell-ar 110 1000	18 changer d 5 22569 16 nd-tube 110 1000	20 (MCHE 5 22569 16 125 1000	6 27083 16 125 1000	6 27083 16 125 1000	7 31597 16 113 1000 gauge, v	7 31597 16 113 1000	8 36111 16 113 1000	9 40623 16 284 1000	10 10 45139 16 284 1000	9 11 49653 16 284 1000	12 54 16 28
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator Water volume Max. water-side operating pressure without hydronic module Hydronic module (option) Pump	kg % I/s r/s I kPa	Axial F 3 13542 16 Direct- 110 1000	28 minium Flying Bi 4 18056 16 expans 110 1000 Victaul fugal, m	micro-cl rd 4 with 4 18056 16 ion, dua 110 1000	25 hannel h n rotatin 4 18056 16 ul-circuit 110 1000 n filter, s	25 neat exc g shrou 4 18056 16 shell-ar 110 1000 safety vanigh pre	18 changer d 5 22569 16 nd-tube 110 1000 alive, expessure (a	20 (MCHE 5 22569 16 125 1000 pansion	6 27083 16 125 1000 tank, pi	6 27083 16 125 1000 ressure (7 31597 16 113 1000 gauge, v	7 31597 16 113 1000 water + a	8 36111 16 113 1000 air purge dual pu	9 40623 16 284 1000	10 10 45139 16 284 1000	9 11 49653 16 284 1000	12 54 16 28
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator Water volume Max. water-side operating pressure without hydronic module Hydronic module (option) Pump Quantity	kg % I/s r/s I kPa	Axial F 3 13542 16 Direct- 110 1000 Pump, Centrii	28 minium Flying Bi 4 18056 16 expans 110 1000 Victaul fugal, m 1	micro-clird 4 with 4 18056 16 ion, dua 110 1000 ic scree onocell, 1	25 hannel h n rotatin 4 18056 16 ul-circuit 110 1000 n filter, s low or l	25 neat exc g shrou 4 18056 16 shell-ar 110 1000 safety vanigh pre	18 changer d 5 22569 16 nd-tube 110 1000 alive, expessure (a)	20 (MCHE 5 22569 16 125 1000 pansion as requi	6 27083 16 125 1000 tank, pi	6 3 27083 16 125 1000 ressure 9	7 31597 16 113 1000 gauge, v	7 31597 16 113 1000 water + atwinned 1	8 36111 16 113 1000 air purge dual pu	9 40623 16 284 1000	10 10 45139 16 284 1000	9 11 49653 16 284 1000	12 54 16 28
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator Water volume Max. water-side operating pressure without hydronic module Hydronic module (option) Pump Quantity Expansion tank volume	kg % //s r/s I kPa	33 All alu Axial F 3 13542 16 Direct- 110 1000 Pump, Centrif 1 50	28 minium Flying Bi 4 18056 16 expans 110 1000 Victaul fugal, m 1 50	micro-clird 4 with 4 18056 16 ion, dua 110 1000 ic scree onocell, 1 50	25 hannel h rotatin 4 18056 16 d-circuit 110 1000 n filter, s low or l 50	25 neat exc g shrou 4 18056 16 shell-ar 110 1000 safety vanigh pre	18 changer d 5 22569 16 nd-tube 110 1000 alive, expessure (i 1 80	20 (MCHE 5 22569 16 125 1000 pansion as requi 1 80	6 27083 16 125 1000 tank, pired), 48	6 27083 16 125 1000 ressure 9 .3 r/s, si 1	7 31597 16 113 1000 gauge, v	7 31597 16 113 1000 water + atwinned 1 80	8 36111 16 113 1000 air purge dual pur 1 80	9 40623 16 284 1000	10 10 45139 16 284 1000	9 11 49653 16 284 1000	12 54 16 28
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator Water volume Max. water-side operating pressure without hydronic module Hydronic module (option) Pump Quantity Expansion tank volume Max. water-side operating	kg % I/s r/s I kPa	Axial F 3 13542 16 Direct- 110 1000 Pump, Centrii	28 minium Flying Bi 4 18056 16 expans 110 1000 Victaul fugal, m 1	micro-clird 4 with 4 18056 16 ion, dua 110 1000 ic scree onocell, 1	25 hannel h n rotatin 4 18056 16 ul-circuit 110 1000 n filter, s low or l	25 neat exc g shrou 4 18056 16 shell-ar 110 1000 safety vanigh pre	18 changer d 5 22569 16 nd-tube 110 1000 alive, expessure (a)	20 (MCHE 5 22569 16 125 1000 pansion as requi	6 27083 16 125 1000 tank, pi	6 3 27083 16 125 1000 ressure 9	7 31597 16 113 1000 gauge, v	7 31597 16 113 1000 water + atwinned 1	8 36111 16 113 1000 air purge dual pu	9 40623 16 284 1000	10 10 45139 16 284 1000	9 11 49653 16 284 1000	12 54 16 28
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator Water volume Max. water-side operating pressure without hydronic module Hydronic module (option) Pump Quantity Expansion tank volume Max. water-side operating pressure without hydronic module	kg % //s r/s I kPa	All alu Axial F 3 13542 16 Direct- 110 1000 Pump, Centrii 1 50 400	28 minium Flying Bi 4 18056 16 expans 110 1000 Victaul fugal, m 1 50 400	micro-clird 4 with 4 18056 16 ion, dua 110 1000 ic scree onocell, 1 50	25 hannel h rotatin 4 18056 16 d-circuit 110 1000 n filter, s low or l 50	25 neat exc g shrou 4 18056 16 shell-ar 110 1000 safety vanigh pre	18 changer d 5 22569 16 nd-tube 110 1000 alive, expessure (i 1 80	20 (MCHE 5 22569 16 125 1000 pansion as requi 1 80	6 27083 16 125 1000 tank, pired), 48	6 27083 16 125 1000 ressure 9 .3 r/s, si 1	7 31597 16 113 1000 gauge, v	7 31597 16 113 1000 water + atwinned 1 80	8 36111 16 113 1000 air purge dual pur 1 80	9 40623 16 284 1000	10 10 45139 16 284 1000	9 11 49653 16 284 1000	12 54 16 28
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator Water volume Max. water-side operating pressure without hydronic module Hydronic module (option) Pump Quantity Expansion tank volume Max. water-side operating pressure without module Water connections without	kg % //s r/s I kPa	33 All alu Axial F 3 13542 16 Direct- 110 1000 Pump, Centrif 1 50	28 minium Flying Bi 4 18056 16 expans 110 1000 Victaul fugal, m 1 50 400	micro-clird 4 with 4 18056 16 ion, dua 110 1000 ic scree onocell, 1 50	25 hannel h rotatin 4 18056 16 d-circuit 110 1000 n filter, s low or l 50	25 neat exc g shrou 4 18056 16 shell-ar 110 1000 safety vanigh pre	18 changer d 5 22569 16 nd-tube 110 1000 alive, expessure (i 1 80	20 (MCHE 5 22569 16 125 1000 pansion as requi 1 80	6 27083 16 125 1000 tank, pired), 48	6 27083 16 125 1000 ressure 9 .3 r/s, si 1	7 31597 16 113 1000 gauge, v	7 31597 16 113 1000 water + atwinned 1 80	8 36111 16 113 1000 air purge dual pur 1 80	9 40623 16 284 1000	10 10 45139 16 284 1000	9 11 49653 16 284 1000	12 54 16 28
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator Water volume Max. water-side operating pressure without hydronic module Hydronic module (option) Pump Quantity Expansion tank volume Max. water-side operating pressure with hydronic module Water connections without hydronic module	kg % l/s r/s l kPa	33 All alui Axial F 3 13542 16 Direct- 110 1000 Pump, Centrii 1 50 400 Victau	28 minium Flying Bi 4 18056 16 -expans 110 1000 Victaul fugal, m 1 50 400	33 micro-cl ord 4 with 4 18056 16 ion, dua 110 1000 ic scree onocell, 1 50 400	25 hannel h rotatin 4 18056 16 il-circuit 110 1000 n filter, s low or l 50 400	25 neat exc g shrou 4 18056 16 shell-ar 110 1000 safety vanigh pre 1 50 400	18 changer d 5 22569 16 nd-tube 110 1000 calve, expessure (a 80 400	20 (MCHE 5 22569 16 125 1000 pansion as requi 1 80 400	6 27083 16 125 1000 tank, pi red), 48 1 80 400	6 27083 16 125 1000 ressure 9 .3 r/s, si 1 80 400	7 31597 16 113 1000 gauge, v ngle or t 1 80 400	7 31597 16 113 1000 water + a twinned 1 80 400	8 36111 16 113 1000 air purge dual pu 1 80 400	9 40623 16 284 1000 e valves mp (as	10 45139 16 284 1000 5, flow or required	9 11 49653 16 284 1000 ontrol vad) -	8 12 54 10 28 10 alve
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator Water volume Max. water-side operating pressure without hydronic module Hydronic module (option) Pump Quantity Expansion tank volume Max. water-side operating pressure without hydronic module Usamp Cuantity Expansion tank volume Max. water-side operating pressure with hydronic module Water connections without hydronic module Diameter	kg % I/s r/s I kPa	33 All alui Axial F 3 13542 16 Direct- 110 1000 Pump, Centrii 1 50 400 Victau 3	28 minium Flying Bi 4 18056 16 -expans 110 1000 Victaul fugal, m 1 50 400 lic	33 micro-cl ord 4 with 4 18056 16 ion, dua 110 1000 ic scree onocell, 1 50 400	25 hannel h n rotatin 4 18056 16 il-circuit 110 1000 n filter, s low or l 50 400	25 neat exc g shrou 4 18056 16 shell-ar 110 1000 safety vanigh pre 1 50 400	18 changer d 5 22569 16 nd-tube 110 1000 calve, expessure (a 400	20 (MCHE 5 22569 16 125 1000 pansion as requi 1 80 400	6 27083 16 125 1000 tank, pi red), 48 1 80 400	6 27083 16 125 1000 ressure 9 .3 r/s, si 1 80 400	7 31597 16 113 1000 gauge, v ngle or t 1 80 400	7 31597 16 113 1000 water + : twinned 1 80 400	8 36111 16 113 1000 air purge dual pu 1 80 400	9 40623 16 284 1000 e valves mp (as -	10 45139 16 284 1000 s, flow or required	9 11 49653 16 284 1000 ontrol va d) -	8 12 52 10 28 10
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator Water volume Max. water-side operating pressure without hydronic module Hydronic module (option) Pump Quantity Expansion tank volume Max. water-side operating pressure without hydronic module Water connections without hydronic module Diameter Outside tube diameter	kg % I/s r/s I kPa I kPa	33 All alu Axial F 3 13542 16 Direct- 110 1000 Pump, Centrii 1 50 400 Victau 3 88.9	28 minium Flying Bi 4 18056 16 -expans 110 1000 Victaul fugal, m 1 50 400 lic 3 88.9	33 micro-cl ord 4 with 4 18056 16 ion, dua 110 1000 ic scree onocell, 1 50 400	25 hannel h rotatin 4 18056 16 il-circuit 110 1000 n filter, s low or l 50 400	25 neat exc g shrou 4 18056 16 shell-ar 110 1000 safety vanigh pre 1 50 400	18 changer d 5 22569 16 nd-tube 110 1000 calve, expessure (a 400	20 (MCHE 5 22569 16 125 1000 pansion as requi 1 80 400	6 27083 16 125 1000 tank, pi red), 48 1 80 400	6 27083 16 125 1000 ressure 9 .3 r/s, si 1 80 400	7 31597 16 113 1000 gauge, v ngle or t 1 80 400	7 31597 16 113 1000 water + : twinned 1 80 400	8 36111 16 113 1000 air purge dual pu 1 80 400	9 40623 16 284 1000 e valves mp (as -	10 45139 16 284 1000 s, flow or required	9 11 49653 16 284 1000 ontrol va d) -	8 12 52 10 28 10
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator Water volume Max. water-side operating pressure without hydronic module Hydronic module (option) Pump Quantity Expansion tank volume Max. water-side operating pressure with hydronic module Water connections without hydronic module Uater connections without hydronic module Diameter	kg % I/s r/s I kPa I kPa	33 All alui Axial F 3 13542 16 Direct- 110 1000 Pump, Centrii 1 50 400 Victau 3	28 minium Flying Bi 4 18056 16 -expans 110 1000 Victaul fugal, m 1 50 400 lic 3 88.9	33 micro-cl ord 4 with 4 18056 16 ion, dua 110 1000 ic scree onocell, 1 50 400	25 hannel h n rotatin 4 18056 16 il-circuit 110 1000 n filter, s low or l 50 400	25 neat exc g shrou 4 18056 16 shell-ar 110 1000 safety vanigh pre 1 50 400	18 changer d 5 22569 16 nd-tube 110 1000 calve, expessure (a 400	20 (MCHE 5 22569 16 125 1000 pansion as requi 1 80 400	6 27083 16 125 1000 tank, pi red), 48 1 80 400	6 27083 16 125 1000 ressure 9 .3 r/s, si 1 80 400	7 31597 16 113 1000 gauge, v ngle or t 1 80 400	7 31597 16 113 1000 water + : twinned 1 80 400	8 36111 16 113 1000 air purge dual pu 1 80 400	9 40623 16 284 1000 e valves mp (as -	10 45139 16 284 1000 s, flow or required	9 11 49653 16 284 1000 ontrol va d) -	8 12 54 10 28 10
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator Water volume Max. water-side operating pressure without hydronic module Hydronic module (option) Pump Quantity Expansion tank volume Max. water-side operating pressure without hydronic module Water connections without hydronic module Diameter Outside tube diameter Water connections with hydronic	kg % I/s r/s I kPa I kPa	33 All alu Axial F 3 13542 16 Direct- 110 1000 Pump, Centrii 1 50 400 Victau 3 88.9	28 minium Flying Bi 4 18056 16 -expans 110 1000 Victaul fugal, m 1 50 400 lic 3 88.9	33 micro-cl ord 4 with 4 18056 16 ion, dua 110 1000 ic scree onocell, 1 50 400	25 hannel h n rotatin 4 18056 16 il-circuit 110 1000 n filter, s low or l 50 400	25 neat exc g shrou 4 18056 16 shell-ar 110 1000 safety vanigh pre 1 50 400	18 changer d 5 22569 16 nd-tube 110 1000 calve, expessure (a 400	20 (MCHE 5 22569 16 125 1000 pansion as requi 1 80 400	6 27083 16 125 1000 tank, pi red), 48 1 80 400	6 27083 16 125 1000 ressure 9 .3 r/s, si 1 80 400	7 31597 16 113 1000 gauge, v ngle or t 1 80 400	7 31597 16 113 1000 water + : twinned 1 80 400	8 36111 16 113 1000 air purge dual pu 1 80 400	9 40623 16 284 1000 e valves mp (as -	10 45139 16 284 1000 s, flow or required	9 11 49653 16 284 1000 ontrol va d) -	8 12 54 16 28 10
Circuit C Capacity control Minimum capacity Condensers Fans Quantity Total air flow Speed Evaporator Water volume Max. water-side operating pressure without hydronic module Hydronic module (option) Pump Quantity Expansion tank volume Max. water-side operating pressure with hydronic module Water connections without hydronic module Diameter Outside tube diameter Water connections with hydron module	kg % //s r/s I kPa I kPa inch mm	33 All alui Axial F 3 13542 16 Direct- 110 1000 Pump, Centrii 1 50 400 Victau 3 88.9 Victau	28 minium Flying Bi 4 18056 16 -expans 110 1000 Victaul fugal, m 1 50 400 lic 3 88.9	33 micro-cl ord 4 with 4 18056 16 ion, dua 110 1000 ic scree onocell, 1 50 400 3 88.9	25 hannel han rotatin 4 18056 16 Il-circuit 110 1000 n filter, s low or l 50 400	25 neat exc g shrou 4 18056 16 shell-ar 110 1000 safety vanigh pre 1 50 400	18 changer d 5 22569 16 nd-tube 110 1000 alve, expessure (control of the first state of t	20 (MCHE 5 22569 16 125 1000 pansion as requi 1 80 400	6 27083 16 125 1000 tank, pired), 48 1 80 400	6 27083 16 125 1000 ressure 9 .3 r/s, si 1 80 400	7 31597 16 113 1000 gauge, v ngle or 1 1 80 400	7 31597 16 113 1000 water + : twinned 1 80 400 6 168.3	8 36111 16 113 1000 air purge dual pu 1 80 400 6 168.3	9 40623 16 284 1000 e valves imp (as	10 45139 16 284 1000 s, flow or required	9 11 49653 16 284 1000 ontrol va d) -	8 12 54 16 28 10

Eurovent-certified performances in accordance with standard EN14511-3:2011.

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

Gross performances, not in accordance with EN14511-3:2011. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

Cooling mode conditions: evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C.

evaporator fouling factor 0 m² K/W

*** Weight shown is a guideline only. To find out the unit refrigerant charge, please refer to the unit nameplate.

**** Standard unit: base unit without option 15 and hydronic module.

† In accordance with ISO 9614-1 and certified by Eurovent.

‡ For information, calculated from the sound power level Lw(A).

Electrical data

30RB 162-262 "B" standard units and units with option 280 and 30RB 302-802 units

30RB (without hydronic me	odule)	162	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	360-4	40														
Control circuit supply		24 V, v	/ia interr	nal trans	former												
Nominal unit current draw	k																
Circuits A + B (one supply)	Α	101	113	129	135	167	185	209	227	251	269	293	334	251	251	334	33
Circuit C (separate supply)	Α	-	-	-	-	-	-	-	-	-	-	-	-	125	167	125	16
Maximum unit power input	**																
Circuits A + B (one supply)	kW	76	85	98	102	127	140	159	172	191	204	223	255	191	191	255	25
Circuit C (separate supply)	kW	-	-	-	-	-	-	-	-	-	-	-	-	96	127	96	12
Cosine phi, unit at max. 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	0.8
Maximum unit current drav	v (Un-10%)***															
Circuits A + B (one supply)	Α	143	159	183	191	239	263	299	323	359	383	419	478	359	359	478	47
Circuit C (separate supply)	Α	-	-	-	-	-	-	-	-	-	-	-	-	179	239	179	23
Maximum unit current drav	v (Un)****																
Circuits A + B (one supply)	Α	131	146	168	175	219	241	274	296	329	351	384	438	329	329	439	43
Circuit C (separate supply)	Α	-	-	-	-	-	-	-	-	-	-	-	-	164	219	164	21
Maximum start-up current	standard	unit (U	ln)†														
Circuits A + B	Α	304	353	375	348	426	448	481	502	535	557	590	645	535	535	645	64
Circuit C	Α	-	-	-	-	-	-	-	-	-	-	-	-	371	426	371	42
Max. start-up current, unit	with soft s	starter	(Un)†														
Circuits A + B	Α	259	283	305	323	356	378	411	433	466	489	521	575	-	-	-	-
Circuit C	Α	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Fan motor electrical data: current used in the tables below: Units at Eurovent conditions and motor ambient air temperature of 50°C at 400 V: 3.8 A, start-up current 20 A, power input 1.75 kW. These values are those given on the motor nameplate.

Short-circuit stability current (TN system)*

		-		•	-	•											
30RB		162	182	202	232	262	302	342	372	402	432	462	522	602	672	732	802
Unit without ma	ain dis	conne	ect (ex	cept for i	units 30RB	162 to 262	, that a	re sup	plied w	ith the	disconne	ct switch	installed	d as stan	dard)		
With fuses ups	tream ·	- maxi	imum	fuse valu	es assigne	ed (gL/gG)											
Circuits A and B	Α	-	-	-	-	-	500	500	500	500	630/500	630/500	630/500	630/500	630/500	630/500	630/500
Circuit C	Α	-	-	-	-	-	-	-	-	-	-	-	-	400	400	400	400
With fuses ups	tream ·	- admi	issibl	e rms cur	rent value	(gL/gG)											
Circuits A and B	kA	-	-	-	-	-	70	70	70	70	60/70	60/70	60/70	70	70	60/70	60/70
Circuit C	kA	-	-	-	-	-	-	-	-	-	-	-	-	60	60	60	60
Unit with option	nal mai	in disc	conne	ect withou	ıt fuse (sta	ndard for u	inits 30	RB 162	2 to 262	and o	ption for	units 30	RB 302 to	802)			
Short-time ass	igned o	curren	t Icw	** (1s) rm	s value/pea	ak lpk***											
Circuits A and B	kA/kA	9/26	9/26	9/26	9/26	9/26	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
With fuses ups	tream ·	- maxi	imum	fuse valu	es assigne	ed (gL/gG)											
Circuits A and B	Α	200	200	200/250	250/315†	250/315†	400	400	400	400	500	630	630	400	400	630	630
Circuit C	Α	-	-	-	-	-	-	-	-	-	-	-	-	400	400	400	400
With fuses ups	tream ·	- cond	lition	al short-c	ircuit assig	ned currer	nt Icc/Ic	f††									
Circuits A and B	kA	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
Circuit C	kA	-	-	-	-	-	-	-	-	-	-	-	-	50	50	50	50
Unit with option	nal mai	in disc	conne	ect with fu	ises (not a	vailable for	units :	30RB 1	62 to 2	62, and	option fo	or units 3	0RB 302	to 802)			
Short-circuit st	ability	curre	nt Icc	/lcf†† inc	reased with	h fuses - m	aximur	n fuse	values	assign	ed (gL/g(a)					
Circuits A and B	kA	-	-	-	-	-	315	315	400	400	400	630	630	400	400	630	630
Circuit C	kA	-	-	-	-	-	-	-	-	-	-	-	-	250	250	250	250
Short-circuit st	ability	curre	nt Icc	/lcf†† inc	reased with	h fuses - ac	dmissib	le rms	curren	t value	(gL/gG)						
Circuits A and B	kA	-	-	-	-	-	50	50	50	50	50	50	50	50	50	50	50
Circuit C	kA	-	-	-	-	-	-	-	-	-	-	-	-	50	50	50	50

^{*} Type of system earthing

IT system: The short circuit current stability values given above for the TN system are also valid for IT for units 30RB 302 to 522. For units 30RB 162 to 262 and 30RB 602 to 802 modifications are required.

^{*} Standardised Eurovent conditions: evaporator entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.

** Power input, compressors and fans, at the unit operating limits (saturated suction temperature 10°C, saturated condensing temperature 65°C) and nominal voltage of 400 V (data given on the unit

^{***} Maximum unit operating current at maximum unit power input and 360 V.
**** Maximum unit operating current at maximum unit power input and 400 V (values given on the unit nameplate).

[†] Maximum instantaneous start-up current at operating limit values (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).

^{**} Icw: assigned short-time current

tow. assigned current, admissible peak
 For units with options 12 and 116 use the higher value.

^{††} Icc/Icf: assigned conditional short-circuit current

Electrical data notes for 30RB units:

- 30RB 162-522 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:
- one main disconnect switch
- 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.
- 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 \pm 1 K, class 4K3* altitude: \leq 2000 m (for hydronic kit see chapter 5.3 of the installation manual)

 - 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.
- The neutral (N) line must not be connected directly to the unit (if necessary use a transformer).
- Overcurrent protection of the power supply conductors is not provided with the unit.
- 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).
- 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. Units delivered with speed drive (options 12 and 28) are not compatible with IT network.

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 IP44CW and fulfil this protection condition.

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.

IPLV (in accordance with AHRI 550/590)

The IPLV (integrated part load value) allows evaluation of the average energy efficiency based on four operating conditions defined by the AHRI (Air Conditioning, Heating and Refrigeration Institute). The IPLV is the average weighted value of the energy efficiency ratios (EER) at different operating conditions, weighted by the operating time.

IPLV (integrated part load value)

Load %	Air temperature °C	Energy efficiency	Operating time %
100	35	EER,	1
75	26.7	EER,	42
50	18.3	EER ₃	45
25	12.8	EER4	12
ESEER =	EER, x 1% + EER, x 42	% + EER ₃ x 45% + EEF	R ₄ x 12%

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

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

ESEER (in accordance with 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,	3
75	30	EER,	33
50	25	EER3	41
25	20	EER ₄	23
ESEER =	EER, x 3% + EER, x 33	% + EER ₃ x 41% + EEF	R ₄ x 23%

Part load performances

30RB 162-262 "B" standard units (with plate heat exchanger)									
30RB		162	182	202	232	262			
IPLV	kW/kW	4.33	4.16	4.50	4.47	4.27			
ESEER	kW/kW	3.71	3.53	3.82	3.87	3.69			

30RB 162	2-262 "B" unit	s with o	ption 28	0 (shell-	and-tube	e heat ex	change) and 30	RB 302-	802 units	S						
30RB		162	182	202	232	262	302	342	372	402	432	462	522	602	672	732	802
IPLV	kW/kW	4.42	4.31	4.13	4.69	4.26	4.40	4.25	4.63	4.32	4.33	4.27	4.19	4.56	4.49	4.39	4.34
ESEER	kW/kW	3.89	3.81	3.64	4.07	3.74	3.80	3.81	3.95	3.72	3.71	3.65	3.56	3.97	3.88	3.75	3.71

ESEER Calculations according to standard performances (in accordance with EN14511-3:2011) and certified by Eurovent. IPLV Calculations according to standard performances (in accordance with AHRI 550-590).

Sound spectrum

		Octav	re band	s, Hz				Sound p	owe
		125	250	500	1k	2k	4k	levels	
162	dB	92	90	89	86	81	75	dB(A)	9
182	dB	92	90	89	86	81	75	dB(A)	9
202	dB	92	90	89	86	81	75	dB(A)	9
232	dB	93	90	90	86	82	75	dB(A)	9
262	dB	93	90	90	86	82	75	dB(A)	9

30RB	162-2	62 "B" (units wi	th optic	on 280	and 30F	RB 302-	802 units	
		Octav	e band	s, Hz				Sound p	ower
		125	250	500	1k	2k	4k	levels	
162	dB	92	90	89	86	81	75	dB(A)	91
182	dB	92	90	89	86	81	75	dB(A)	91
202	dB	92	90	89	86	81	75	dB(A)	91
232	dB	93	90	90	86	82	75	dB(A)	91
262	dB	93	90	90	86	82	75	dB(A)	91
302	dB	94	91	91	87	83	76	dB(A)	92
342	dB	94	91	91	87	83	76	dB(A)	92
372	dB	94	92	92	88	83	77	dB(A)	93
402	dB	94	92	92	88	83	77	dB(A)	93
432	dB	95	92	93	88	84	78	dB(A)	94
462	dB	96	93	93	89	85	78	dB(A)	94
522	dB	96	93	93	89	85	78	dB(A)	94
602	dB	96	94	94	90	85	79	dB(A)	95
672	dB	97	94	94	90	86	79	dB(A)	95
732	dB	97	94	95	90	86	80	dB(A)	96
802	dB	97	95	95	91	86	80	dB(A)	96

Operating limits

Evaporator water flow rate

30RB 162-262 "B" standard units (with plate heat exchanger)							
30RB	Minimum flow rate, I/s	Maximum flow rate, I/s*					
162	2.8	13.9					
182	2.8	13.9					
202	2.8	14.3					
232	3.0	14.3					
262	3.5	14.3					

30RB 162-262 "B" with option 280 (shell-and-tube heat exchanger) and 30RB 302-802

30RB	Minimum flow rate, I/s	Maximum flow rate, I/s*
162		
	2.8	28.1
182	2.8	28.1
202	2.8	28.1
232	3.0	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

The maximum flow rate corresponds to a pressure loss of 100 kPa (heat exchanger without

Unit operating limits

Evaporator		Minimum	Maximum
Entering water temperature at start-up	°C	8*	40
Leaving water temperature during operation	°C	5	15**
Condenser		Minimum	Maximum
Outdoor ambient operating temperature			
Standard unit	°C	0***/10†	48
Unit with options 28B, 28C (winter operation)	°C	-10	48
Unit with option 28 (winter operation)	°C	-20	48
Available static pressure			
Standard unit (outdoor installation)	Pa	0	0
Unit with option 12 (indoor installation)	Pa	0****	200

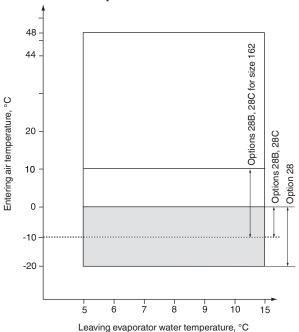
Evaporator		Minimum	Maximum
Entering water temperature at start-up	°C	6,8*	40
Leaving water temperature during operation	°C	3,3	15**
Condenser		Minimum	Maximum
Outdoor ambient operating temperature			
Standard unit	°C	0***	48
Unit with options 28B, 28C (winter operation)	°C	-10	48
Unit with option 28 (winter operation)	°C	-20	48
Available static pressure			
Standard unit (outdoor installation)	Pa	0	0
Unit with option 12 (indoor installation)	Pa	0****	200

- For application requiring operation at less than 8 or 6.8°C respectively, contact Carrier for
- unit selection using the Carrier electronic catalog.

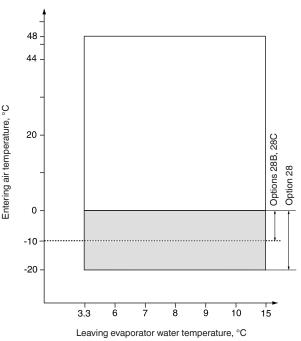
 For an application, requiring operation up to +15°C leaving water temperature, contact Carrier for the selection of the unit.
- For operation from 0°C to -10°C the units must be equipped with options 28B, 28C "Winter operation". For operation from 0°C to -20°C the units must be equipped with option 28 "Winter operation". For both options the unit must either be equipped with the evaporator frost protection option (for units without hydronic module option) or the evaporator and hydronic module frost protection option (for units with hydronic module option) or the water loop must be protected against frost by the installer, using an anti-freeze solution.

 Maximum outside temperature: For transport and storage of the 30RB units the minimum and maximum allowable temperatures are -20°C and +48°C. It is recommended that these temperatures are used for transport by container.
- ** Unit with fans with available pressure up to 200 Pa.
 † 30RB 162 units use options 28B, 28C for outside temperatures below 10°C.

Operating range - 30RB 162-262 "B" standard units and units with option 280



Operating range - 30RB 302-802



Evaporator $\Delta T = 5 \text{ K}$

The evaporator is protected against frost down to -20°C.

Standard unit operating at full load.

Operating range, units equipped with options 28, 28B, 28C "Winter operation". Option 28 (with variable-speed lead fan for each circuit) allows operation down to -20°C outside temperature.

Options 28B, 28C (with two-speed lead fan for each circuit) allows operation down to -10°C outside temperature. In addition to options 28, 28B, 28C the unit must either be equipped with the evaporator frost protection option (for units without hydronic module option) or the evaporator and hydronic module frost protection option (for units with hydronic module option) or the water loop must be protected by the installer by adding a frost protection

Available static system pressure

Data applicable for:

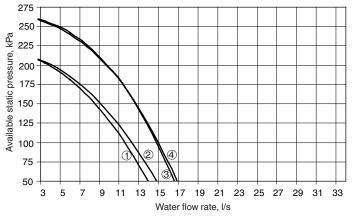
- Fresh water 20°C
- In case of use of the glycol, the maximum water flow is reduced.

30RB 162-262 "B" standard units (with plate heat exchanger)

Low-pressure pump (hydronic module option)

175 Я 150 Available static pressure, 125 100 75 50 25 0 9 13 15 21 27 29 11 17 19 Water flow rate, I/s

High-pressure pump (hydronic module option)



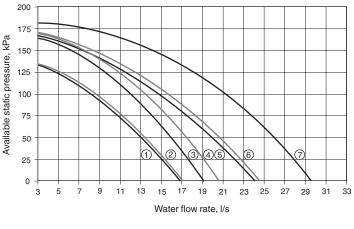
Legend

- 30RB 162-182 "B"
- 30RB 202 "B"
- 30RB 262 "B"

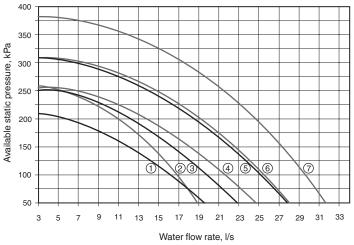
- **Legend** 1 30RB 162-182 "B"
- 30RB 202 "B"
- 30RB 232 "B"
- 30RB 262 "B"

30RB 162-262 "B" units with option 280 (shell-and-tube heat exchanger) and 30RB 302-522 units

Low-pressure pump (hydronic module option)



High-pressure pump (hydronic module option)



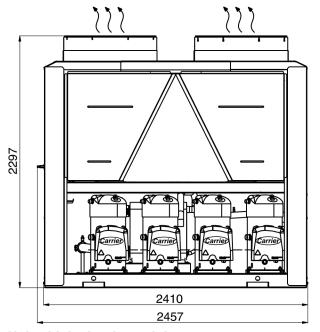
Legend

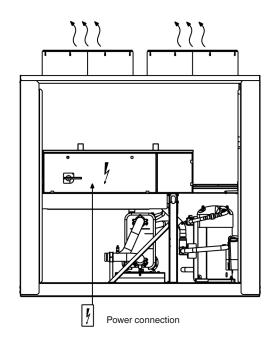
- 30RB 162-202 "B'
- 30RB 232-262 "B"
- 30RB 302 30RB 342
- 30RB 372-402
- 30RB 462-522

Legend

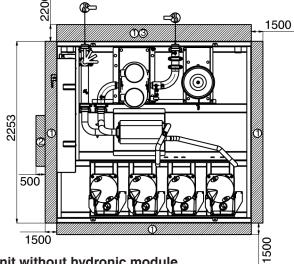
- 30RB 162-202 "B" 2 30RB 202-232 "B'
- 30RB 302
- 30RB 342
- 30RB 372-402
- 30RB 462-522

30RB 162-262 "B", standard units (with plate heat exchanger)

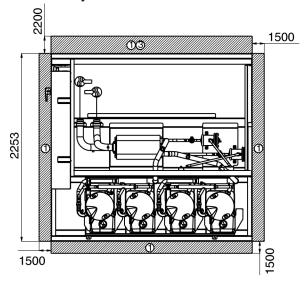




Unit with hydronic module



Unit without hydronic module



Legend: All dimensions are in mm.

- Clearances required for maintenance and air flow
- 2 Clearances recommended for evaporator tube removal
- Clearances recommended for heat exchanger removal



Water inlet



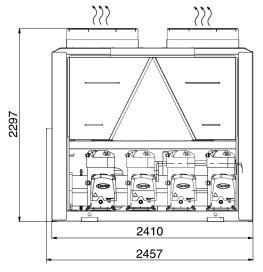
Water outlet

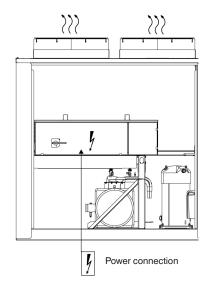
Air outlet, do not obstruct

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

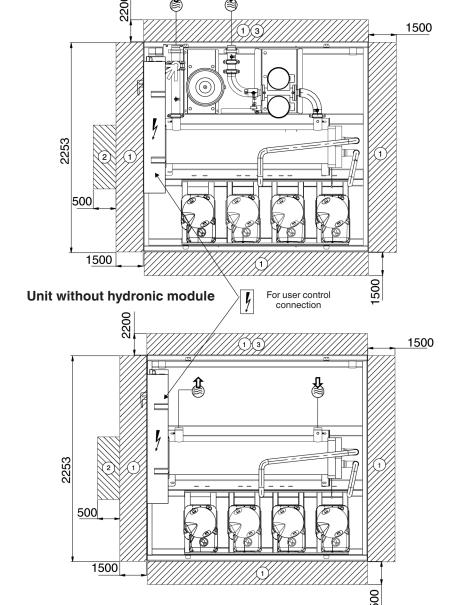
For the positioning of the fixing points, weight distribution points and centre of gravity coordinates please refer to the dimensional drawings.

30RB 162-262 "B" with option 280 (shell-and-tube heat exchanger)





Unit with hydronic module



Legend: All dimensions are in mm.

- Clearances required for maintenance and air flow
- 2 Clearances recommended for evaporator tube removal
- Glearances recommended for heat exchanger removal



Water inlet



Water outlet



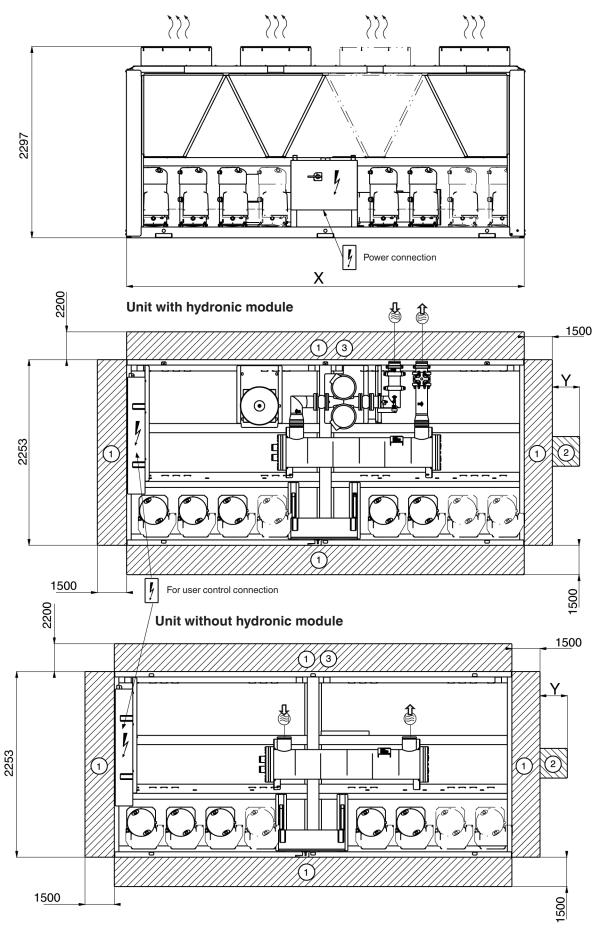
Air outlet, do not obstruct

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

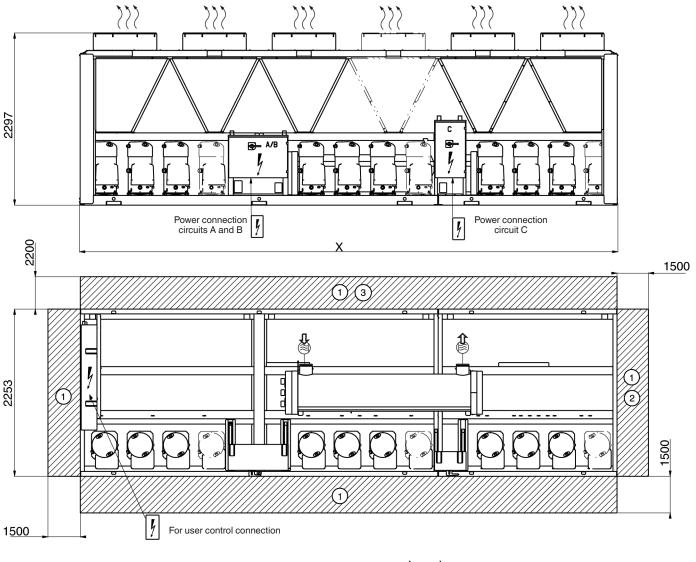
For the positioning of the fixing points, weight distribution points and centre of gravity coordinates please refer to the dimensional drawings.

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

30RB 302-522



30RB 602-802



30RB	X
602-672	5992
732-802	7186

Legend: All dimensions are in mm.

- 1 Clearances required for maintenance and air flow
- 2 Clearances recommended for evaporator tube removal
- 3 Clearances recommended for heat exchanger 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.

For the positioning of the fixing points, weight distribution points and centre of gravity coordinates please refer to the dimensional drawings.

Cooling capacities in accordance with EN14511-3:2011



30RB 162-262 "B" standard units (with plate heat exchanger)

		Cond	denser	enter	ing ai	r temp	eratu	re, °C																	
		20				25				30				35				40				46			
	LWT	Qc	EER	q	Δр	Qc	EER	q	Δр	Qc	EER	q	Δр	Qc	EER	q	Δр	Qc	EER	q	Δр	Qc	EER	q	Δр
	°C	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa
162	5	187	4.29	8.5	51	179	3.75	8.1	47	170	3.26	7.7	43	160	2.80	7.2	39	149	2.37	6.7	34	134	1.90	6.1	28
182		197	4.15	9.2	59	187	3.63	8.8	54	177	3.16	8.3	49	166	2.72	7.8	44	154	2.31	7.2	38	139	1.86	6.5	32
202		234	4.13	11.0	67	222	3.63	10.4	61	209	3.17	9.8	55	196	2.74	9.2	49	183	2.36	8.6	43	166	1.95	7.8	37
232		243	4.32	11.4	60	232	3.79	10.9	55	221	3.30	10.4	50	208	2.83	9.8	45	193	2.40	9.1	40	173	1.92	8.1	33
262		302	3.92	13.8	78	286	3.44	13.1	71	269	3.00	12.3	64	251	2.59	11.5	56	234	2.23	10.7	50	213	1.83	9.7	42
162	7	198	4.46	9.0	56	189	3.92	8.6	51	180	3.41	8.2	47	170	2.94	7.7	42	158	2.49	7.2	37	142	2.01	6.5	31
182		215	4.44	10.1	68	205	3.91	9.6	63	194	3.41	9.1	57	182	2.94	8.6	51	169	2.50	7.9	45	150	2.00	7.1	36
202		247	4.27	11.6	73	235	3.77	11.0	67	222	3.29	10.4	61	207	2.85	9.7	54	192	2.44	9.0	47	174	2.01	8.2	39
232		255	4.44	12.0	64	245	3.93	11.5	60	233	3.44	11.0	55	221	2.98	10.4	50	205	2.53	9.7	44	185	2.04	8.7	37
262		319	4.01	14.6	85	302	3.53	13.8	77	284	3.08	13.0	69	264	2.66	12.1	61	243	2.27	11.1	53	220	1.87	10.1	44
162	10	214	4.69	9.7	63	204	4.12	9.3	58	194	3.60	8.8	53	183	3.11	8.3	48	171	2.67	7.8	42	155	2.16	7.0	35
182		235	4.65	11.1	78	224	4.13	10.6	72	214	3.64	10.1	66	202	3.18	9.5	60	189	2.75	8.9	54	171	2.23	8.0	45
202		268	4.46	12.6	83	254	3.95	12.0	76	240	3.46	11.3	69	225	3.01	10.6	61	209	2.59	9.8	54	186	2.11	8.8	44
232		272	4.58	12.8	71	261	4.06	12.3	66	249	3.57	11.7	61	236	3.11	11.1	55	222	2.69	10.5	50	202	2.19	9.5	42
262		343	4.14	15.8	95	325	3.65	14.9	86	306	3.19	14.0	77	284	2.76	13.0	68	261	2.36	11.9	59	231	1.92	10.6	48

Legend

LWT Leaving water temperature, °C
Qc Cooling capacity, kW
EER Energy efficiency ratio, kW/kW Evaporator water flow rate, I/s Evaporator pressure drop, kPa

Application data

Standard units, refrigerant: R-410A Evaporator entering/leaving water temperature difference: 5 K Evaporator fluid: chilled water Fouling factor: $0.18 \times 10^{-4} \, (m^2 \, K)/W$

Performances in accordance with EN14511-3:2011.

Cooling capacities

30RB 162-262 "B" standard units (with plate heat exchanger)

		Conc	lenser	enter	ing ai	r temp	eratu	re, °C)																		
		20				25				30				35				40				46				
	LWT	Qc	EER	q	Δр	Qc	EER	q	Δр	Qc	EER	q	Δр	Qc	EER	q	Δр	Qc	EER	q	Δр	Qc	EER	q	Δр	
	°C	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	
162	5	188	4.40	8.5	51	180	3.84	8.1	47	171	3.32	7.7	43	161	2.84	7.2	39	149	2.40	6.7	34	135	1.92	6.07	28.2	
182		198	4.26	9.2	59	188	3.72	8.8	54	178	3.22	8.3	49	167	2.77	7.8	44	155	2.34	7.2	38	139	1.88	6.51	31.9	
202		235	4.25	11.0	67	223	3.72	10.4	61	210	3.23	9.8	55	197	2.79	9.2	49	183	2.40	8.6	43	166	1.97	7.77	36.6	
232		244	4.43	11.4	60	233	3.88	10.9	55	222	3.36	10.4	50	209	2.88	9.8	45	194	2.43	9.1	40	173	1.94	8.11	32.7	
262		304	4.03	13.8	78	288	3.53	13.1	71	271	3.06	12.3	64	252	2.63	11.5	56	235	2.26	10.7	50	214	1.86	9.74	42.5	
162	7	199	4.58	9.0	56	190	4.01	8.6	51	181	3.48	8.2	47	170	2.99	7.7	42	158	2.53	7.2	37	143	2.03	6.45	31.0	
182		216	4.58	10.1	68	206	4.02	9.6	63	195	3.49	9.1	57	183	3.00	8.6	51	170	2.54	7.9	45	151	2.02	7.06	36.4	
202		249	4.41	11.6	73	236	3.87	11.0	67	223	3.37	10.4	61	208	2.91	9.7	54	193	2.48	9.0	47	174	2.04	8.16	39.3	
232		256	4.58	12.0	64	246	4.03	11.5	60	235	3.52	11.0	55	222	3.03	10.4	50	206	2.57	9.7	44	186	2.06	8.71	36.5	
262		321	4.15	14.6	85	304	3.63	13.8	77	285	3.15	13.0	69	265	2.71	12.1	61	244	2.31	11.1	53	221	1.89	10.08	44.5	
162	10	215	4.83	9.7	63	205	4.23	9.3	58	195	3.68	8.8	53	184	3.17	8.3	48	172	2.71	7.8	42	155	2.18	7.03	35.4	
182		236	4.82	11.1	78	226	4.26	10.6	72	215	3.74	10.1	66	203	3.25	9.5	60	190	2.80	8.9	54	172	2.26	8.03	44.8	
202		270	4.63	12.6	83	256	4.07	12.0	76	242	3.55	11.3	69	226	3.08	10.6	61	210	2.63	9.8	54	187	2.14	8.77	43.9	
232		274	4.73	12.8	71	262	4.17	12.3	66	250	3.65	11.7	61	237	3.17	11.1	55	223	2.73	10.5	50	202	2.22	9.49	41.7	
262		346	4.30	15.8	95	327	3.76	14.9	86	307	3.27	14.0	77	285	2.82	13.0	68	262	2.40	11.9	59	232	1.94	10.59	47.6	

Legend LWT L Leaving water temperature, °C Cooling capacity, kW Energy efficiency ratio, kW/kW Qc EER Evaporator water flow rate, I/s Evaporator pressure drop, kPa

Application data

Standard units, refrigerant: R-410A Evaporator entering/leaving water temperature difference: 5 K Fouling factor: 0.18 x 10⁻⁴ (m² K)/W

Gross performances, not in accordance with EN14511-3:2011. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.

Cooling capacities in accordance with EN14511-3:2011



30RB 162-262 "B" units with option 280 (shell-and-tube heat exchanger) and 30RB 302-802 units

		Condenser entering air temperature, °C																							
		20				25				30				35				40				46			
	LWT	Qc	EER	q	Δр	Qc	EER	q	Δр	Qc	EER	q	Δр	Qc	EER	q	Δр	Qc	EER	q	Δр	Qc	EER	q	Δр
	°C	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	I/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	I/s	kPa
162	5	176	4.31	8.3	21	168	3.76	7.9	19	160	3.25	7.5	18	150	2.78	7.0	17	139	2.34	6.5	15	125	1.87	5.8	13
182		193	4.18	9.0	23	184	3.67	8.6	22	174	3.20	8.1	20	164	2.76	7.7	19	152	2.34	7.1	17	137	1.89	6.4	15
202		213	3.89	10.1	28	203	3.42		26	193	2.99	9.2	24	182		8.7	22	170	2.22	8.1	20	154			18
232		251		11.8	34	240	3.90	11.2	32	228		10.7	30	215		10.1	27	199	2.47		25	179	1.98	8.4	21
262		296		13.7	42	282		13.1	40	268		12.4	37	252		11.6	34	234		10.8	30	213	1.81	9.8	27
302		324		15.2		309		14.5	46	293		13.7		276		12.9	39	256		12.0	35	232			
342		361		16.9	42	344		16.1	39	327		15.3	35	307		14.4	32	286		13.4	28	259		12.1	24
372		397		18.4	48	379		17.6	45	360		16.7		338		15.7		314		14.6	33	283		13.2	
402		430		20.2		411		19.3		390		18.3	48	367			43	342		16.0	38	311		14.6	
432		459		21.5		439		20.6		417		19.6	45	394			41	367		17.2	36	334		15.6	
462		489		22.9	61	467		21.9		445		20.8	51	419			46	390		18.3	40	355		16.6	
522		546		26.1		522			71	497		23.7		468			58	437		20.8	51	398		19.0	43
602		665		30.9	45	635		29.5		603		28.0	38	568		26.4	34	529		24.6	30	481		22.4	
672		719		33.7		686		32.2		652		30.5		614			39	573		26.8	35	522		24.4	
732		778	3.73	36.5	61	743		34.8		706	2.88	33.1	51	664	2.50		46	620		29.0	40	564		26.4	34
802	_	846	3.70	39.2	70	807		37.4	64	767		35.6	58	722		33.5	52	673		31.2	46	613		28.4	38
162	7	189	4.57	8.9	23	180	3.98	8.5	21	171		8.0	20	161	2.96	7.6	18	149	2.50		16	134	2.00	6.3	14
182		210		9.8	26	200	3.91	9.4	24	190	3.42		23	179	2.96		21	166	2.51		19	149	2.03	7.0	16
202		228		10.8	30	217		10.4		207	3.13		26	195	2.72		24	181	2.33		22	165		7.8	19
232		262		12.3	36	251		11.8	34	238		11.2	31	225			29	210	2.58		26	190	2.08	8.9	23
262		314		14.5	45	299		13.8	42	284		13.1	39	267		12.4	36	249		11.5	33	227		10.5	29
302		342		16.0		327		15.3		311		14.6	46	293		13.7		273		12.8	38	248		11.6	
342		383		18.0	46	366		17.2		348		16.3	39 45	327 361		15.3	35 41	304	2.29	14.3	31 36	276 304	1.88	13.0 14.1	26 30
372 402		424 457		19.7 21.5	62	405 437		18.8 20.5		415		17.8 19.5	45 52	390			47	364		15.6 17.1	36 42	331		15.5	36
432		482		22.6		462		21.7		441		20.7	50	417			45	390		18.3	40	356		16.7	
462		521		24.5		498		23.4		474			57	446		21.0		417		19.5	45	380		17.8	38
522		579		27.7		553		26.4		527		25.2		497		23.7		465		22.2	57	424		20.3	48
602		708		33.0	50	676	3.57		46	641		29.8	42	602		28.0	37	562		26.1	33	511	1.91		27
672		760		35.7		727	3.51			691		32.4		651			43	608		28.5	38	555		26.0	
732		828		38.9	68	790		37.1		749	2.97		56	705		33.1	50	657		30.8	44	599		28.1	37
802		900		41.8	77	859		39.9		814		37.8	64	766			57	715		33.2	51	651		30.2	43
162	10	206		9.7	25	196	4.27	9.2	23	186		8.7	22	175	3.18	8.2	20	163	2.69	7.6	18	147	2.17	6.9	16
182		231		10.9	30	221		10.4		211	3.67		26	199	3.18		24	185	2.73		22	168			19
202		250		11.9	34	239		11.4		227			29	215		10.2		201	2.50		25	182	2.05		22
232		282		13.3	39	270		12.7		256		12.1	34	242		11.4	32	225		10.6	29	204	2.21	9.6	25
262		341		15.8	50	326		15.1		309		14.3	44	291			40	271		12.6	36	247		11.4	32
302		377		17.7		360		16.9		342		16.1	51	322		15.1	47	300		14.1	43	273		12.8	
342		421				402		18.9	49	381		17.9	45	358			40	333		15.7	36	303		14.2	
372		467		21.8	62	446		20.8		423		19.7		398			47	370		17.2	42	334		15.6	
402		500			71	478		22.5		454		21.4	60	427		20.1	54	398		18.7	48	362		17.0	41
432		526		24.7	68	505	3.71	23.7		482		22.7	58	455		21.4	52	426		20.0	46	389		18.3	
462		571				547		25.7		520		24.5	67	489			59	455		21.4	52	415		19.5	
522		632	3.97	30.3	99	605	3.51		91	575		27.6	83	541		25.9	74	504		24.1	65	460		22.0	55
602		776				740		34.5		703		32.7		659	2.84			613		28.6	38	557	2.01		32
672		826		38.8	66	790	3.66	37.1	61	751	3.21	35.3	56	708	2.79		50	661	2.41	31.1	44	604	1.99	28.4	37
732		909	4.04	42.8	79	868	3.57	40.8		824		38.7	66	773	2.71		59	719		33.8	51	654		30.7	43
802		989		46.1		944		44.0		896		41.7		841		39.1		782		36.3		711		33.0	

Legend
LWT Leaving water temperature, °C
Qc Cooling capacity, kW
EER Energy efficiency ratio, kW/kW
q Evaporator water flow rate, l/s
Ap Evaporator pressure drop, kPa

Application data

Standard units, refrigerant: R-410A Evaporator entering/leaving water temperature difference: 5 K Evaporator fluid: chilled water Fouling factor: 0.18 x 10⁻⁴ (m² K)/W

Performances in accordance with EN14511-3:2011.

Cooling capacities

30RB 162-262 "B" units with option 280 (shell-and-tube heat exchanger) and 30RB 302-802 units

		_	denser	enter	ing ai		eratur	e, °C		30																
		20				25								35				40				46				
	LWT	Qc	EER	q	Δр	Qc	EER	q	Δр	Qc	EER	q	Δр	Qc	EER	q	Δр	Qc	EER	q	Δр	Qc	EER	q	Δр	
	°C	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	l/s	kPa	kW	kW/ kW	I/s	kPa	
162	5	177	4.37	8.3	21	169	3.81	7.9	19	160	3.29	7.5	18	150	2.81	7.0	17	139	2.36	6.5	15	125	1.88	5.8	13	
182		193	4.24	9.0	23	184	3.72	8.6	22	175	3.23	8.1	20	164	2.78	7.7	19	153	2.36	7.1	17	137	1.91	6.4	15	
202		214	3.95	10.1	28	204	3.47	9.7	26	194	3.02	9.2	24	182	2.62	8.7	22	170	2.24	8.1	20	155	1.84	7.3	18	
232		252	4.52	11.8	34	241	3.96	11.2	32	229	3.44	10.7	30	215	2.95	10.1	27	200	2.50	9.3	25	179	2.00	8.4	21	
262		297	3.95	13.7	42	283	3.46	13.1	40	269	3.01	12.4	37	253	2.60	11.6	34	235	2.23	10.8	30	214	1.82	9.8	27	
302		325		15.2	49	310	3.58	14.5	46	294	3.11	13.7	43	277		12.9	39	257		12.0	35	233		10.9	31	
342		362	3.94	16.9	42	345	3.46	16.1	39	328	3.01	15.3	35	308	2.60	14.4	32	287	2.22	13.4	28	260	1.81	12.1	24	
372		398	4.10	18.4	48	380	3.59	17.6	45	361	3.12	16.7	41	339	2.69	15.7	37	315	2.29	14.6	33	284		13.2		
402		432	3.83	20.2	56	413	3.36	19.3	52	392	2.92	18.3	48	369	2.52	17.2	43	343	2.15	16.0	38	312	1.76	14.6	32	
432		461	3.97	21.5	54	441	3.49	20.6	50	419	3.04	19.6	45	395	2.62	18.4	41	369	2.25	17.2	36	335	1.83	15.6	30	
462		491	3.79	22.9	61	469	3.32	21.9	56	446	2.90	20.8	51	420	2.51	19.6	46	392	2.15	18.3	40	356	1.76	16.6	33	
522		549	3.79	26.1	77	525	3.33	24.9	71	499	2.91	23.7	65	471	2.52	22.3	58	439	2.16	20.8	51	400	1.77	19.0	43	
602		667	3.99	30.9	45	637	3.50	29.5	41	605	3.05	28.0	38	570	2.64	26.4	34	531	2.26	24.6	30	483	1.85	22.4	25	
672		722	3.94	33.7	53	689	3.46	32.2	48	654	3.01	30.5	44	616	2.60	28.8	39	575	2.23	26.8	35	523	1.83	24.4	29	
732		781	3.81	36.5	61	746	3.35	34.8	56	708	2.92	33.1	51	666	2.53	31.1	46	621	2.17	29.0	40	566	1.78	26.4	34	
802		850	3.79	39.2	70	811	3.33	37.4	64	770	2.90	35.6	58	725	2.51	33.5	52	675	2.15	31.2	46	614	1.77	28.4	38	
162	7	190	4.64	8.9	23	181	4.04	8.5	21	172	3.49	8.0	20	162	2.99	7.6	18	150	2.52	7.0	16	134	2.01	6.3	14	
182		210	4.51	9.8	26	201	3.96	9.4	24	190	3.46	8.9	23	179	2.99	8.4	21	166	2.54	7.8	19	150	2.05	7.0	16	
202		228	4.12	10.8	30	218	3.63	10.4	28	207	3.17	9.8	26	195	2.75	9.3	24	182	2.35	8.6	22	165	1.93	7.8	19	
232		263	4.65	12.3	36	251	4.07	11.8	34	239	3.55	11.2	31	226	3.06	10.6	29	211	2.61	9.9	26	190	2.10	8.9	23	
262		315	4.08	14.5	45	300	3.58	13.8	42	285	3.12	13.1	39	268	2.70	12.4	36	250	2.31	11.5	33	227	1.90	10.5	29	
302		343	4.21	16.0	52	328	3.69	15.3	49	312	3.22	14.6	46	294	2.78	13.7	42	274	2.38	12.8	38	249	1.94	11.6	33	
342		385	4.07	18.0	46	367	3.57	17.2	42	349	3.12	16.3	39	328	2.70	15.3	35	305	2.31	14.3	31	277	1.89	13.0	26	
372		426	4.28	19.7	53	406	3.75	18.8	49	386	3.26	17.8	45	362	2.81	16.8	41	337	2.40	15.6	36	305	1.95	14.1	30	
402		460	3.97	21.5	62	439	3.49	20.5	57	417	3.03	19.5	52	392	2.62	18.3	47	365	2.24	17.1	42	332	1.84	15.5	36	
432		484	4.09	22.6	59	464	3.60	21.7	54	443	3.15	20.7	50	419	2.73	19.6	45	392	2.34	18.3	40	357	1.92	16.7	33	
462		523	3.92	24.5	68	500	3.45	23.4	62	476	3.01	22.2	57	448	2.61	21.0	51	418	2.24	19.5	45	381	1.84	17.8	38	
522		582	3.92	27.7	85	556	3.45	26.4	78	529	3.01	25.2	72	499	2.61	23.7	64	467	2.24	22.2	57	426	1.85	20.3	48	
602		711	4.13	33.0	50	678	3.62	31.5	46	643	3.16	29.8	42	604	2.73	28.0	37	563	2.34	26.1	33	512	1.93	23.8	27	
672		763	4.07	35.7	58	730	3.57	34.1	53	694	3.12	32.4	48	653	2.70	30.5	43	610	2.32	28.5	38	556	1.90	26.0	32	
732		832	3.95		68	793		37.1		752		35.2	56	707	2.61	33.1	50	660	2.24	30.8	44	601		28.1	37	
802		905	3.92		77	863	3.44	39.9	71	818		37.8	64	769	2.60	35.6	57	717	2.23	33.2	51	653	1.84	30.2	43	
162	10	206	4.94	9.7	25	197	4.34	9.2	23	187	3.75	8.7	22	176	3.22	8.2	20	163	2.72	7.6	18	147	2.18	6.9	16	
182		232	4.82	10.9	30	222	4.25	10.4	28	211	3.72	9.9	26	199	3.22	9.3	24	186	2.76	8.7	22	168	2.26	7.9	19	
202		250	4.36		34	239		11.4		228	3.37	10.8	29	215	2.93	10.2		201		9.6	25	183		8.7	22	
232		283		13.3	39	270		12.7		257		12.1	34	243		11.4		226		10.6	29	205		9.6	25	
262		343	4.25		50	327	3.74		47	310		14.3	44	292			40	272		12.6	36	248		11.4	32	
302		379		17.7	59	362	3.91	16.9	55	344	3.41	16.1	51	323	2.94	15.1	47	302	2.53	14.1	43	274	2.07		37	
342		423		19.8		403			49	383		17.9	45	359		16.8		334		15.7	36	304		14.2		
372		470	4.53		62	448		20.8	57	425		19.7	52	399	2.99	18.5	47	371		17.2	42	335		15.6	35	
402		503	4.15		71	480			65	456		21.4	60	429	2.76	20.1	54	399		18.7	48	364		17.0	41	
432		529		24.7	68	507		23.7		484		22.7	58	457				428		20.0	46	390	2.03		39	
462		575	4.12		79	550		25.7		523		24.5	67	491	2.74		59	457		21.4	52	416		19.5	44	
522		636	4.11		99	609		29.0		579		27.6	83	544	2.74	25.9		506		24.1	65	462	1.94	22.0	55	
602		779		36.2	99 58	743		29.0 34.5		705	3.31	32.7	63 48	661	2.74	30.7		615		28.6	38	559	2.03		32	
						1															36 44					
672		830	4.25	38.8	66	793	3.74	37.1	61	754	3.26	35.3	56 66	710	2.83	33.2		663	2.44	31.1		606	2.01	28.4	37	
732		914		42.8		872	3.65	40.8		827	3.18	38.7	66	776	2.76	36.3		721	2.36		51	656		30.7		
802		995	4.13	46.1	91	950	3.63	44.0	83	901	3.1/	41.7	/6	845	2.74	39.1	6/	785	2.35	36.3	59	714	1.93	33.0	49	

 Legend

 LWT
 Leaving water temperature, °C

 Qc
 Cooling capacity, kW

 EER
 Energy efficiency ratio, kW/kW

 q
 Evaporator water flow rate, l/s

 Δp
 Evaporator pressure drop, kPa

Application data

Standard units, refrigerant: R-410A Evaporator entering/leaving water temperature difference: 5 K Evaporator fluid: chilled water Fouling factor: 0.18×10^{-4} (m² K)/W

Gross performances, not in accordance with EN14511-3:2011. These performances do not take into account the correction for the proportional heating capacity and power input generated by the water pump to overcome the internal pressure drop in the heat exchanger.







Quality and Environment Management Systems Approval

