



## Air-to-Water Heat Pumps with Integrated Hydronic Module

# AQUASNAP™

with PURON® refrigerant



Carrier is participating in the Eurovent Certification Programme. Products are as listed in the Eurovent Directory of Certified Products.



Model shown is with Euro Pack option



## 30RQ 262-522

**Nominal cooling capacity 249-465 kW**

**Nominal heating capacity 276-552 kW**

The new generation of Aquasnap Puron heat pumps features the latest technological innovations: ozone-friendly refrigerant R410A, scroll compressors, low-noise fans made of a composite material, auto-adaptive microprocessor control. The Aquasnap can be equipped with an integrated hydronic module (option), 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 (Euro Pack option)
- Air heat exchanger
  - Heat exchanger 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 preventing start-up noise (Carrier patent)

#### Easy and fast installation

- Integrated hydronic module (option)
  - Centrifugal low or high-pressure water pump (as required), based on the pressure loss of the hydronic installation
  - Single or dual pump (as required) with operating time balancing and automatic changeover to the back-up pump if a fault develops
  - Water filter protecting the water pump against circulating debris
  - High-capacity membrane expansion tank ensures pressurisation of the water circuit
  - Thermal insulation and frost protection down to -20°C, using an electric resistance heater
  - Pressure gauge to check filter pollution and measure the system water flow rate
  - Water flow control valve with long stroke
- Simplified electrical connections
  - A single power supply point without neutral
  - Main disconnect switch with high trip capacity (Euro Pack option)
  - 24 V control circuit without risk from a transformer included
- Fast commissioning
  - Systematic factory operation test before shipment
  - Quick-test function for step-by-step verification of the instruments, electrical components and motors

## Economical operation

- Increased energy efficiency at part load
  - The refrigerant circuit includes two to four 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 air heat exchanger and water heat exchanger capacity.
  - The electronic expansion device (EXV) allows operation at a lower condensing pressure (EER and COP optimisation).
  - Dynamic superheat management for better utilisation of the heat exchange surface of the water heat exchanger and optimised compressor protection.
- Reduced maintenance costs
  - Maintenance-free scroll compressors
  - Fast diagnosis of possible incidents and their history via the Pro-Dialog Plus control
  - R410A refrigerant is easier to use than other refrigerant blends

## Environmental care

- Refrigerant R410A
  - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
  - High-density refrigerant, therefore less refrigerant required
  - Very efficient – offers a very high coefficient of performance (COP)
- Leak-tight refrigerant circuit
  - Brazed refrigerant connections for increased leak-tightness
  - Reduction of leaks as no capillary tubes and flare connections are used
  - Verification of pressure transducers and temperature sensors without transferring refrigerant charge
  - Discharge shut-off valve allows storage of the refrigerant charge in the air heat exchanger for simplified maintenance.

## 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)

- Refrigerant circuit
  - Two independent refrigerant circuits
  - Filter/refrigerant storage tank (Carrier patent) for guaranteed compressor protection against liquid slugging.
- 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 air heat exchanger coil, fan failure) Aquasnap continues to operate, but at reduced capacity.
- Exceptional endurance tests
  - Corrosion resistance tests in salt mist in the laboratory
  - Accelerated aging 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 control

Pro-Dialog combines intelligence with operating simplicity. The control constantly monitors all machine parameters and precisely manages the operation of compressors, expansion devices, fans and of the water heat exchanger water pump for optimum energy efficiency.

- Energy management
  - Internal time schedule clock: permits heat pump on/off control and operation at a second set-point
  - Automatic heating/cooling change-over based on the air temperature
  - Set-point reset based on the outside air temperature or the return water temperature
  - Master/slave control of two heat pumps operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.
- 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 heat pump diagnostics



Pro-Dialog Plus operator interface

### **Pro-Dialog Plus operator interface**

- RS 485 serial port  
Heat pump control by communication bus offers multiple remote control, monitoring and diagnostic possibilities. Carrier offers a vast choice of control products, specially designed to control, optimise and supervise the operation of an air conditioning system. Please consult your Carrier representative for more information on these products.
- Control terminal block
  - Start/stop: opening of this contact will shut down the unit
  - Operating mode control: heating or cooling
  - Dual set-point: closing of this contact activates a second set-point (example: unoccupied mode)
  - Demand limit: closing of this contact limits the maximum heat pump 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
  - Water pump 1 and 2 control\*: these outputs control the contactors of one or two water heat exchanger 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 heat pump is operating (heating or cooling load) or that it is ready to start
  - 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 heat pump demand based on a 4-20 mA or 0-5 V signal
- Demand limit 1 and 2: closing of these contacts limits the maximum heat pump 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
- Time schedule override: closing of this contact cancels the time schedule effects
- Out of service: this signal indicates that the heat pump is completely out of service
- Heat pump capacity: this analogue output (0-10 V) gives an immediate indication of the heat pump capacity
- Compressor operation: this contact signals that one or several compressors are in operation

# Options and accessories

Options	Description	Advantages	Use
Euro Pack	This option contains the options enclosure panels, water heat exchanger frost protection, main disconnect switch and low noise level	Aesthetics, ease-of-installation and low operating noise	30RQ 262-522
Air heat exchanger with pretreated fins	Fins made of pre-treated aluminium (polyurethane and epoxy)	Improved corrosion resistance, recommended for marine environments	30RQ 262-522
Suction valve	Shut-off valves on the compressor suction piping	Simplified maintenance	30RQ 262-522
Enclosure panels	Side panels on each end of the coils	Improved aesthetics	30RQ 262-522
Enclosure panels and grilles	Metallic grilles on all four unit faces (requires the enclosure panel option)	Improved aesthetics	30RQ 262-522
Water heat exchanger with aluminium jacket	Water heat exchanger thermal insulation protection by aluminium sheets	Improved resistance to climatic aggression	30RQ 262-522
Water heat exchanger and hydronic module with aluminium jacket	Water heat exchanger and water piping thermal insulation protection by aluminium sheets	Improved resistance to climatic aggression	30RQ 262-522
Low-pressure single-pump hydronic module	See hydronic module chapter	Easy and fast installation	30RQ 262-522
Low-pressure dual-pump hydronic module	See hydronic module chapter	Easy and fast installation, operating safety	30RQ 262-522
High-pressure single-pump hydronic module	See hydronic module chapter	Easy and fast installation	30RQ 262-522
High-pressure dual-pump hydronic module	See hydronic module chapter	Easy and fast installation, operating safety	30RQ 262-522
Water heat exchanger frost protection	Resistance heater on the water heat exchanger	Water heat exchanger frost protection at low outside temperatures	30RQ 262-522
Low noise level	Acoustic compressor enclosure	Noise emission reduction	30RQ 262-522
Twinning	Unit supplied with an additional field-installed leaving water temperature sensor	Master/slave operation of two heat pumps connected in parallel with operating time equalisation	30RQ 262-522
Main disconnect switch without fuse	Factory-installed main electric disconnect switch in the control box	Ease-of-installation and compliance with local electrical regulations	30RQ 262-522
Main disconnect switch with fuse	Factory-installed main electric disconnect switch with fuse in the control box	Same advantage as main disconnect switch and reinforced anti-short circuit protection	30RQ 262-522
JBus gateway	Two-directional communications board, complies with JBus protocol	Easy connection by communication bus to a building management system	30RQ 262-522
BACnet gateway	Two-directional communications board, complies with BACnet protocol	Easy connection by communication bus to a building management system	30RQ 262-522
LON gateway	Two-directional communications board, complies with LON protocol	Easy connection by communication bus to a building management system	30RQ 262-522
Energy Management module EMM	See controls manual	Easy connection by wired connection to a building management system	30RQ 262-522
Winter operation in cooling mode	Fan speed control via frequency converter	Stable unit operation in cooling mode, when the air temperature is between 0 and -20°C	30RQ 262-522
Coil defrost resistance heaters	Electric heaters under the coils and the condensate pans	Prevents frost formation on the coils; compulsory in the heating mode, if the outdoor temperature is below 0°C	30RQ 262-522
Accessories	Description	Advantages	Use
Connection sleeve	Piping to be welded with Victaulic connection	Ease-of-installation	30RQ 262-522
Energy Management Module EMM	See controls manual	Easy connection by wired connection to a building management system	30RQ 262-522
Scrolling Marquee Interface	Remotely installed user interface (communication bus)	Remote heat pump control up to 300 m	30RQ 262-522
Power cable connection side extension	Side extension on the power control to allow a reduced cable bend radius	Use of thicker power cables	30RQ 262-522

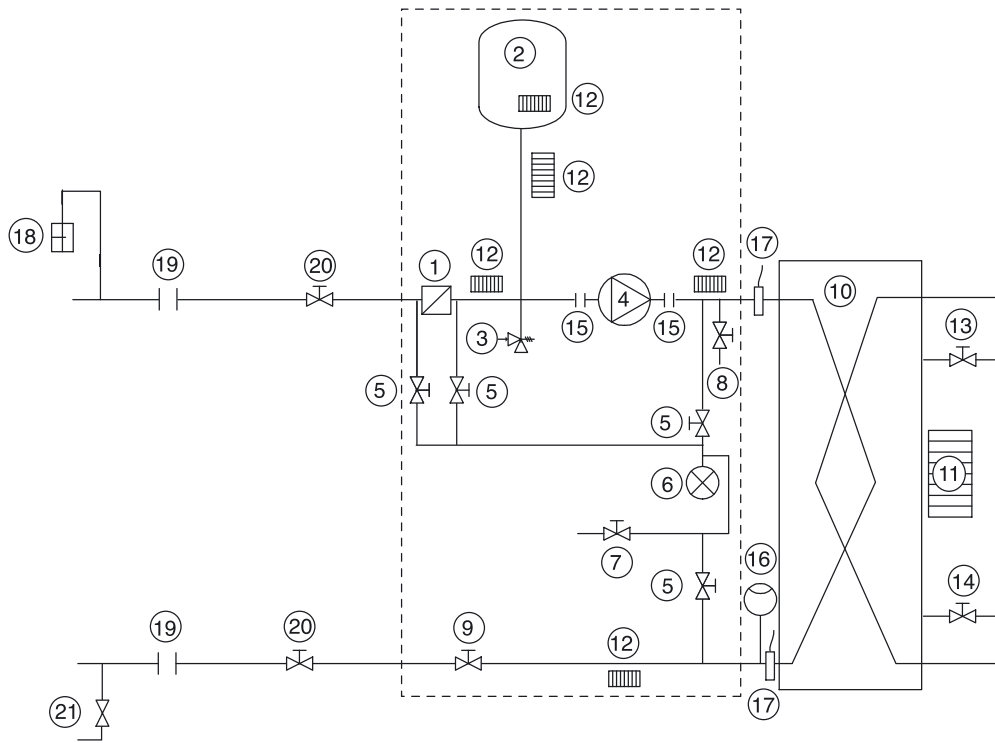
## Sound levels

30RQ		262	302	342	372	402	432	462	522
<b>Euro Pack option</b>									
Sound power level*	dB(A) 10 <sup>-12</sup> W	89	90	90	91	91	92	92	92
Sound pressure level**	dB(A) at 10 m	57	58	58	59	59	60	60	60
<b>Standard unit</b>									
Sound power level*	dB(A) 10 <sup>-12</sup> W	91	92	92	93	93	94	94	94
Sound pressure level**	dB(A) at 10 m	59	60	60	61	61	62	62	62

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

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

# Hydronic module (option)



Typical hydronic circuit diagram



Hydronic module

## Legend

### Components of unit and hydronic module

- 1 Victaulic screen filter
- 2 Expansion tank
- 3 Safety valve
- 4 Available pressure pump
- 5 Pressure tap valve (see Installation Manual)
- 6 Pressure gauge to measure the component pressure loss (see Installation Manual)
- 7 System vent valve, pressure gauge
- 8 Drain valve
- 9 Water flow control valve
- 10 Heat exchanger
- 11 Water heat exchanger defrost heater (option)
- 12 Hydronic module defrost heater
- 13 Air vent (water heat exchanger)
- 14 Water purge (water heat exchanger)
- 15 Expansion compensator (flexible connections)
- 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:

The system includes frost protection (anti-freeze solution or electric heater).  
 The hydronic module includes frost protection via electric heaters.  
 The unit water heat exchanger includes frost protection via a factory-installed optional electric heater (water heat exchanger frost protection option)

# Physical data

<b>30RQ</b>		<b>262</b>	<b>302</b>	<b>342</b>	<b>372</b>	<b>402</b>	<b>432</b>	<b>462</b>	<b>522</b>
<b>Nominal cooling capacity*</b>	kW	249	275	307	326	366	389	430	465
Total power input, cooling mode	kW	100	106	124	128	146	150	165	192
<b>Nominal heating capacity**</b>	kW	276	302	335	366	407	445	505	552
Total power input, heating mode	kW	96	110	119	128	148	158	180	201
<b>Operating weight***</b>									
Standard unit with Euro Pack option	kg	2619	3285	3481	3544	3718	4328	4530	4704
Standard unit with Euro Pack option and high-pressure dual-pump hydronic module option	kg	2864	3590	3786	3889	4063	4673	4945	5119
Unit without options****	kg	2429	3045	3241	3284	3458	4028	4210	4384
<b>Refrigerant</b>		R410A							
Circuit A	kg	27	41	40	54	54	54	54	54
Circuit B	kg	27	27	27	32	32	47	53	53
<b>Compressors</b>		Hermetic scroll, 48,3 r/s							
Circuit A		2	3	3	4	4	4	4	4
Circuit B		2	2	2	2	2	3	4	4
No. of control stages		4	5	5	6	6	7	8	8
Minimum capacity	%	25	18	20	15	17	13	11	13
<b>Control</b>		Pro-Dialog							
<b>Air heat exchangers</b>		Grooved copper tubes and aluminium fins							
<b>Fans</b>		Axial FLYING BIRD 4 with rotating shroud							
Quantity		4	5	5	6	6	7	8	8
Total air flow	l/s	18056	22569	22569	27083	27083	31597	36111	36111
Speed	r/s	15.7	15.7	15.7	15.7	15.7	15.7	15.7	15.7
<b>Water heat exchangers</b>		Direct expansion, two-circuits, shell-and-tube							
Water volume	l	110	110	125	113	113	113	113	113 Max.
water-side operating pressure without hydronic module	kPa	1000	1000	1000	1000	1000	1000	1000	1000
<b>Hydronic module (option)</b>		Pump, Victaulic screen filter, safety valve, expansion tank, pressure gauge, purge valves (water and air) and water flow control valves							
Water pump		One, centrifugal, monocell, 48.3 r/s, low or high pressure (as required, single or twinned dual pump (as required))							
Expansion tank volume	l	50	80	80	80	80	80	80	80
Max. water-side operating pressure with hydronic module	kPa	400	400	400	400	400	400	400	400
<b>Water connections without hydronic module</b>		Victaulic							
Connections	in	4	4	4	6	6	6	6	6
Outside tube diameter	mm	114.3	114.3	114.3	168.3	168.3	168.3	168.3	168.3
<b>Water connections with hydronic module</b>		Victaulic							
Connections	in	4	4	4	5	5	5	5	5
Outside tube diameter	mm	114.3	114.3	114.3	139.7	139.7	139.7	139.7	139.7

\* Standardised Eurovent conditions: water heat exchanger entering/leaving water temperature 12°C/7°C, outside air temperature 35°C, water heat exchanger fouling factor 0.000018 m<sup>2</sup> K/W

\*\* Standardised Eurovent conditions: water heat exchanger entering/leaving water temperature 40°C/45°C, outside air temperature 7°C, 87% rh

\*\*\* Weights are for guidance only. To find out the unit refrigerant charge, please refer to the unit name plate.

\*\*\*\* Standard unit: Base unit without Euro Pack Option and hydronic module.

# Electrical data

<b>30RQ</b>		<b>262</b>	<b>302</b>	<b>342</b>	<b>372</b>	<b>402</b>	<b>432</b>	<b>462</b>	<b>522</b>
<b>Power circuit</b>									
Nominal power supply	V-ph-Hz	400-3-50							
Voltage range	V	360-440							
<b>Control circuit supply</b>									
24 V, via internal transformer									
<b>Nominal unit current draw*</b>									
Circuits A + B (one power supply)	A	167	185	209	219	251	269	302	334
<b>Maximum unit power input**</b>									
Circuits A + B (one power supply)	kW	127	140	159	166	191	204	229	255
<b>Unit power factor at max. capacity**</b>									
		0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
<b>Maximum unit current draw (Un-10%)*</b>									
Circuits A + B (one power supply)	A	239	263	299	311	359	383	430	478
<b>Max. operating current (Un)****</b>									
Circuits A + B (one power supply)	A	219	241	274	285	329	351	394	438
<b>Max. start-up current, standard unit (Un)†</b>									
Circuits A + B	A	426	448	481	492	536	558	601	645

\* Standardised Eurovent conditions: water heat exchanger entering/leaving water temperature 12°C/7°C, outside air temperature 35°C

\*\* Power input of the compressor(s) + fan(s) at maximum unit operating conditions saturated suction temperature 10°C, saturated condensing temperature 65°C at 400 V nominal voltage (values given on the unit name plate).

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

\*\*\* Maximum unit operating current at maximum unit power input and 380 V.

\*\*\*\* Maximum unit operating current at maximum unit power input and 400 V (values given on the unit name plate).

† Maximum instantaneous starting current (maximum operating current of the smallest compressor(s) + fan current + locked rotor current of the largest compressor).

Fan motor electrical data: current draw used in the tables above – units at Eurovent conditions and 50°C ambient air temperature around the motor at 400 V: 3.8 A, start-up current 20 A, power input 1.75 kW. These values are indicated on the motor name plate.

<b>Electrical data of the hydronic module (option)</b>									
<b>30RQ</b>		<b>262</b>	<b>302</b>	<b>342</b>	<b>372</b>	<b>402</b>	<b>432</b>	<b>462</b>	<b>522</b>
<b>Single and dual low-pressure pump</b>									
Motor power	kW	2.2	3.0	3.0	4.0	4.0	4.0	5.5	5.5
Power input*	kW	2.7	3.6	3.6	4.6	4.6	4.6	6.3	6.3
Nominal operating current	A	4.5	6.0	6.0	7.6	7.6	7.6	10.3	10.3
Maximum current draw at 400 V**	A	4.7	6.4	6.4	8.2	8.2	8.2	11.2	11.2
<b>Single and dual high-pressure pump</b>									
Motor power	kW	4.0	5.5	5.5	7.5	7.5	7.5	11.0	11.0
Power input*	kW	4.7	6.4	6.4	8.5	8.5	8.5	12.2	12.2
Nominal operating current	A	7.6	10.3	10.3	13.9	13.9	13.9	19.5	19.5
Maximum current draw at 400 V**	A	8.2	11.2	11.2	15.4	15.4	15.4	21.2	21.2

The water pump power input values are given for guidance only.

\* To obtain the maximum power input for a unit with hydronic module add the maximum unit power input from the top table to the pump power input (\*) from the table above.

\*\* To obtain the maximum unit operating current draw for a unit with hydronic module add the maximum unit current draw from the top table to the pump current draw (\*\*) from the table above.



## Electrical data notes

- 30RQ 262-522 units have a single power connection point.
- The control box includes:  
A main disconnect switch (option), starter and motor protection devices for each compressor, the fan(s) and the pump, control devices
- Field connections:  
All connections to the system and the electrical installations must be in full accordance with all applicable local codes.
- The Carrier 30RQ units are designed and built to ensure conformance with these codes. The recommendations of European standard EN 60204-1 (corresponds to IEC 60204-1) (machine safety - electrical machine components - part 1: general regulations) are specifically taken into account, when designing the electrical equipment.

### IMPORTANT:

- Generally the recommendations of IEC 60364 are accepted as compliance with the requirements of the installation directives. Conformance with EN 60204 is the best means of ensuring compliance with the Machines Directive § 1.5.1.
  - Annex B of EN 60204-1 describes the electrical characteristics used for the operation of the machines.
1. The operating environment for the 30RQ units is specified below:
- Environment\* - Environment as classified in EN 60721 (corresponds to IEC 60721) :
    - outdoor installation\*
    - ambient temperature range:  $20^{\circ}\text{C}$  to  $+48^{\circ}\text{C} \pm 1\text{ K}$ , class 4K3\*
    - altitude:  $\leq 2000\text{ m}$
    - presence of hard solids, class 4S2 (no significant dust present)
    - presence of corrosive and polluting substances, class 4C2 (negligible)

2. Power supply frequency variation:  $\pm 2\text{ Hz}$ .
3. The neutral (N) line must not be connected directly to the unit (if necessary use a transformer).
4. Overcurrent protection of the power supply conductors is not provided with the unit.
5. The factory-installed disconnect switch/circuit breaker is of a type suitable for power interruption in accordance with EN 60947-3 (corresponds to IEC 60947-3).
6. The units are designed for simplified connection on TN(s) networks (IEC 60364). For IT networks derived currents may interfere with network monitoring elements, and it is recommended to create an IT type divider for the system units that require this and/or a TN type divider for Carrier units. Please consult the appropriate local organisations to define the monitoring and protection elements and carry out the electrical installation.
7. 30RQ units comply with the requirements of general standard EN 61000-6-3 (residential, commercial and light industrial applications).

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

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



# Operating limits

## Water heat exchanger water flow rate

30RQ	Min. water flow, l/s	Max. water flow*, l/s
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

\* Maximum flow rate for a heat exchanger pressure drop of 100 kPa

## Maximum and minimum temperatures

### Cooling mode

Water heat exchanger (evaporator)	Minimum	Maximum
Entering water temperature at start-up	°C 6.8	30
Leaving water temperature during operation	°C 5	15
Entering water temperature at shut-down	°C -	60
Air heat exchanger (condenser)**		
Air entering temperature	°C 0	46

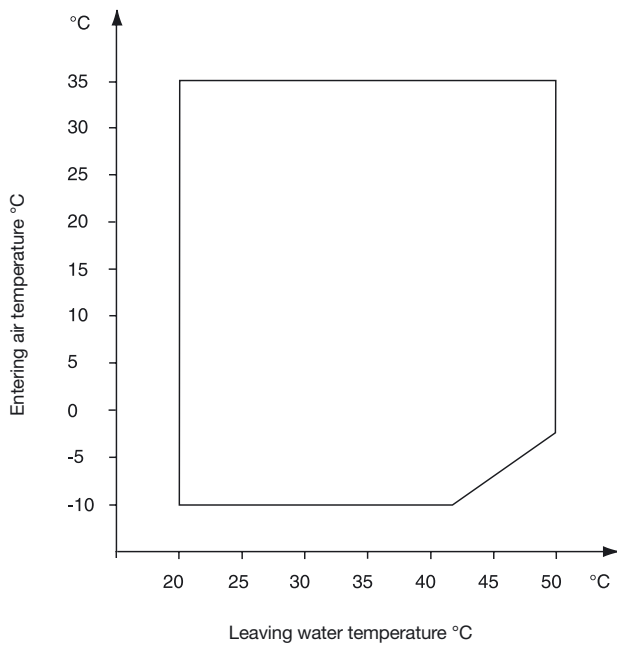
### Heating mode

Water heat exchanger (condenser)	Minimum	Maximum
Entering water temperature at start-up	°C 8*	45
Leaving water temperature during operation	°C 20	50
Entering water temperature at shut-down	°C 3	60
Air heat exchanger (evaporator)		
Air entering temperature**	°C -10	35

\* Below this temperature please install an electric resistance heater or a three-way valve on the water circuit.

\*\* If the air temperature can be lower than 3°C the unit must be equipped with the water heat exchanger frost protection option or a frost protection solution must be used.

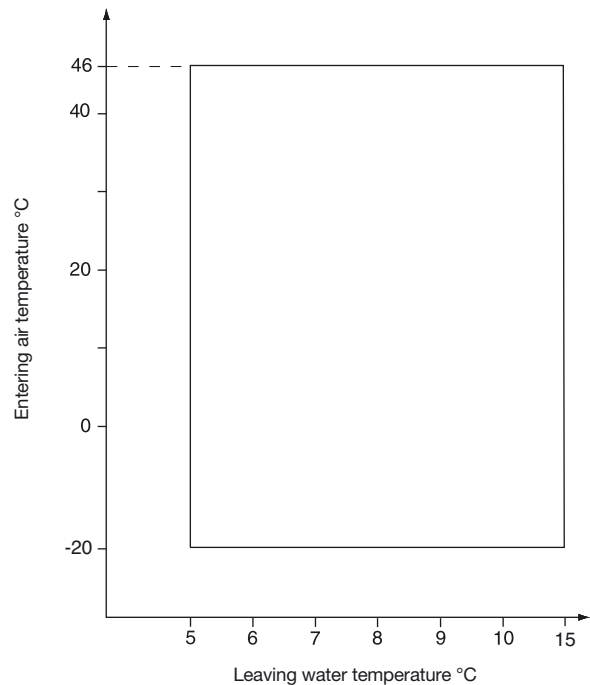
## Operating range – heating mode



Notes:

Part load operation is possible down to -14°C.

## Operating range – cooling mode



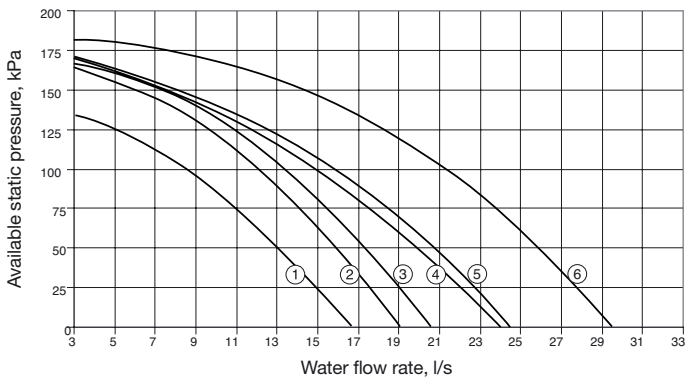
Notes:

1 Water heat exchanger  $\Delta T = 5K$

2 With the water heat exchanger frost protection option the water heat exchanger is protected against frost down to -20°C.

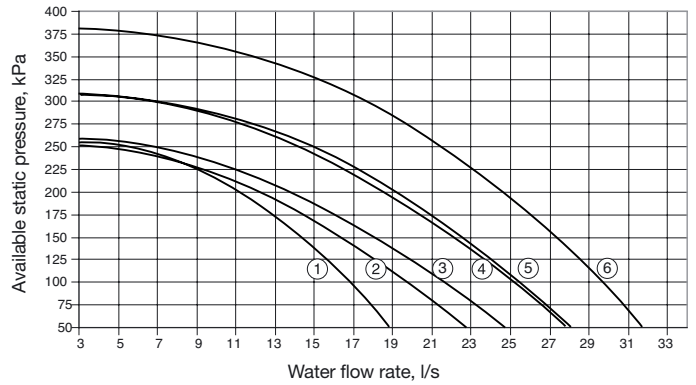
# Available static system pressure

## Low-pressure pump (hydraulic module option)



Legend  
 130RQ 262  
 230RQ 302  
 330RQ 342  
 430RQ 372-402  
 530RQ 432  
 630RQ 462-522

## High-pressure pump (hydraulic module option)



Legend  
 130RQ 262  
 230RQ 302  
 330RQ 342  
 430RQ 372-402  
 530RQ 432  
 630RQ 462-522

# Water loop water volume

## Volume minimum

The minimum water loop volume for air conditioning applications can be determined using the following formula:  
 Volume (l) = CAP (kW) x 2.5.

Volume = Water loop volume with closed water control valves  
 CAP = Cooling capacity at the selection conditions

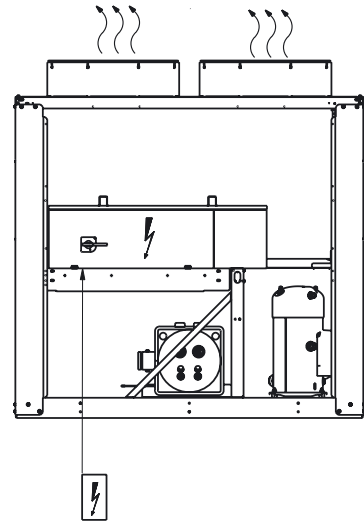
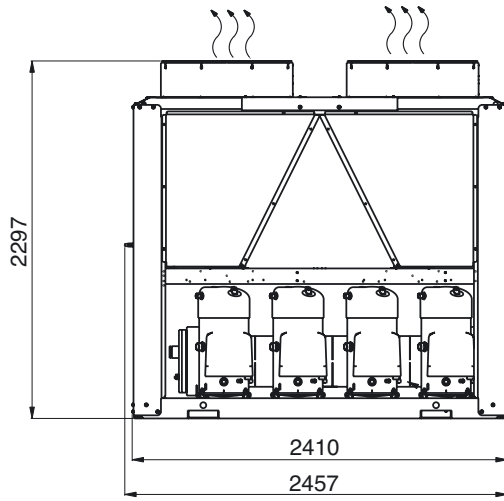
## Maximum volume

Units with hydronic option are equipped with an expansion tank. The expansion tank is sized for the maximum water volume below.

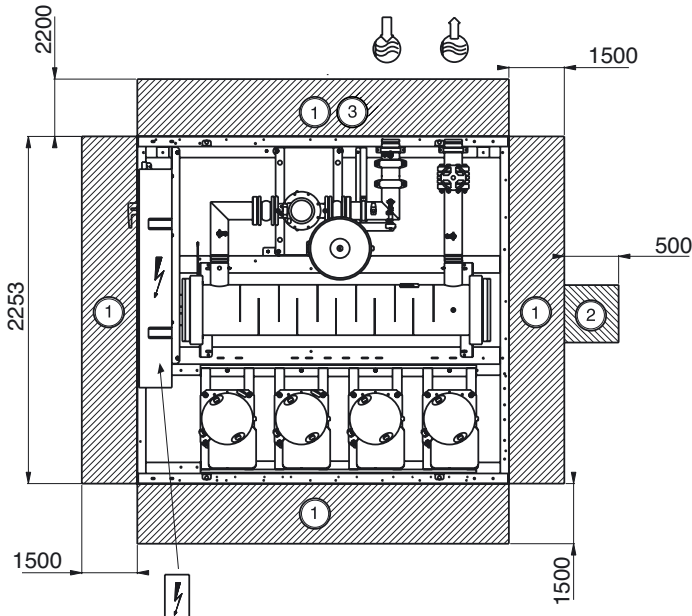
30RQ	262			302 - 522				
	Static pressure	bar	1	2	2,5	1	2	2,5
Max. water loop volume	l							
Pure water			2400	1600	1200	3960	2640	1980
10% ethylene glycol			1800	1200	900	2940	1960	1470
20% ethylene glycol			1320	880	660	2100	1400	1050
30% ethylene glycol			1080	720	540	1740	1160	870
40% ethylene glycol			900	600	450	1500	1000	750

# Dimensions/clearances

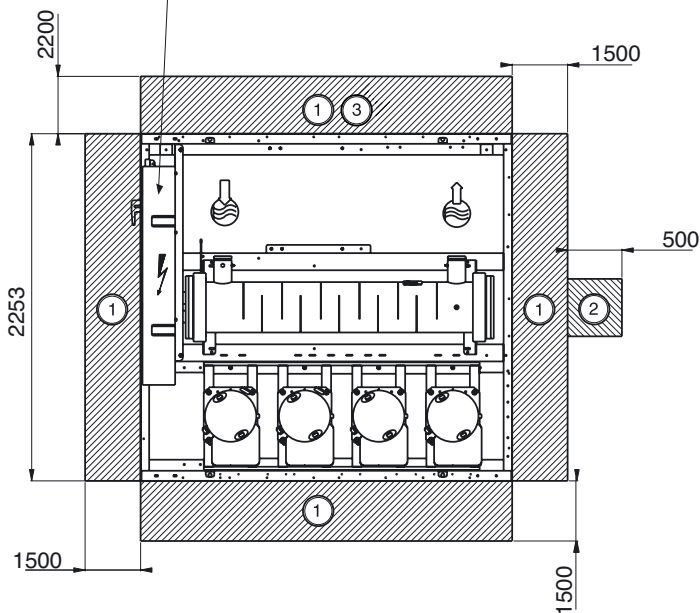
30RQ 262



Unit with hydronic module



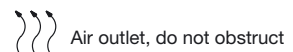
Unit without hydronic module



Legend:

All dimensions are given in mm.

- ① Required clearances for maintenance and air flow
- ② Recommended space for water heat exchanger tube removal
- ③ Recommended space for heat exchanger removal

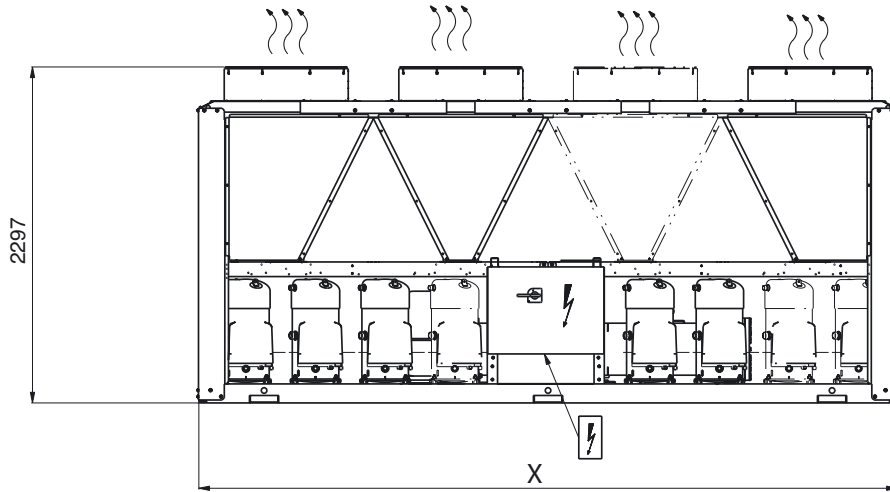


NOTE: Drawings are not contractually binding. Before designing an installation, consult the certified dimensional drawings, available on request.

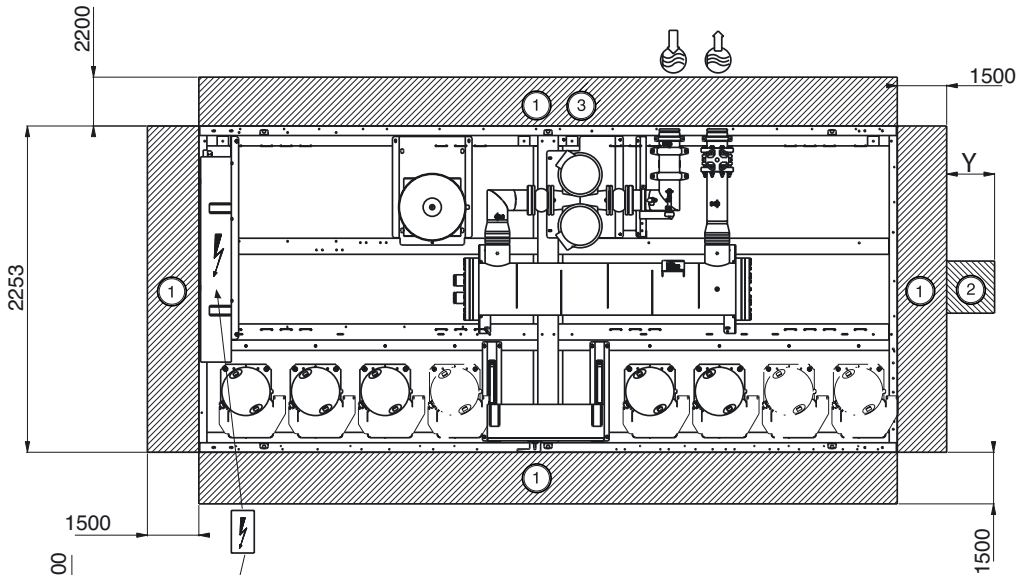
# Dimensions/clearances

30RQ 302-522

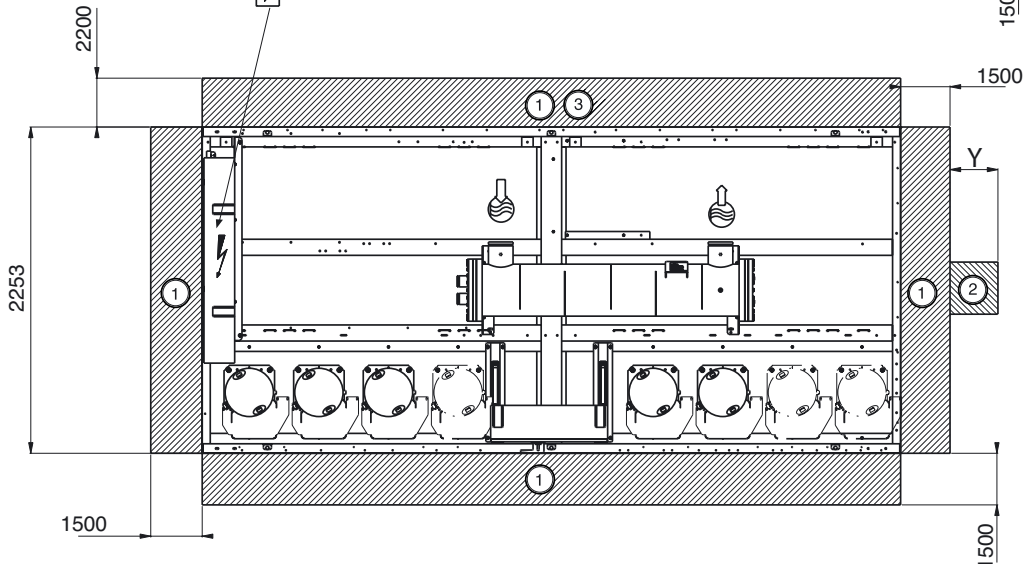
30RQ	X	Y
302-402	3604	200
432-522	4798	0



Unit with hydronic module






Unit without hydronic module



Legend:  
All dimensions are given in mm.

- ① Required clearances for maintenance and air flow
- ② Recommended space for water heat exchanger tube removal
- ③ Recommended space 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.

# Heating capacities

30RQ	Entering air temperature, °C																														
	-10				-5				0				7				10														
	LWT	CAP	COMP	UNIT	COOL	COOL	COOL	PRES	HP	PRES	LP	HP	PRES	HP	PRES	LP	HP	PRES	LP	HP	PRES	LP	HP								
°C	kW	kW	kW	l/s	kPa	l/s	kPa	kPa	kPa	kPa	kPa	kPa	kPa	kPa	kPa	kPa	kPa	kPa	kPa	kPa	kPa	kPa	kPa								
262	30	181.6	60.2	68.2	8.7	20.7	98.2	226.0	207.0	61.7	69.6	9.9	25.0	86.7	213.9	197.1	281.7	65.3	72.8	13.5	38.6	45.8	165.3	304.8	65.6	73.1	14.6	43.1	30.9	145.9	
302	30	200.2	66.0	76.0	9.6	23.8	124.8	224.1	230.0	68.0	77.9	11.0	29.0	111.2	212.0	197.9	307.3	72.9	82.3	14.8	43.6	67.5	172.4	331.8	72.0	81.3	15.9	48.6	51.0	157.5	
342	30	225.4	75.4	85.5	10.7	27.8	151.5	227.9	254.3	78.0	87.8	12.2	32.3	133.6	215.6	201.1	338.6	80.5	89.9	16.3	46.2	70.7	173.7	365.1	81.3	90.6	17.5	41.1	49.0	158.0	
372	30	242.3	78.2	90.2	11.6	30.6	166.6	227.3	275.9	80.0	91.8	13.2	34.2	148.4	263.8	217.2	371.3	84.9	96.2	17.8	35.4	79.5	173.2	401.1	86.1	97.3	19.3	40.8	65.0	199.3	
402	30	270.1	97.0	105.3	13.0	34.6	182.4	266.1	308.0	93.9	105.7	14.8	38.2	166.5	249.9	230.5	409.1	100.5	111.2	19.6	42.4	60.9	194.2	442.3	100.8	111.2	21.2	49.0	43.1	171.9	
432	30	297.1	97.0	111.0	14.3	38.4	201.4	255.6	337.7	99.5	113.3	16.2	42.7	182.2	236.5	213.5	445.7	106.1	119.3	21.4	49.7	40.6	169.0	482.0	105.8	118.9	23.1	57.4	18.5	141.5	
462	30	338.6	110.0	128.0	16.3	44.6	228.6	230.3	384.5	112.8	128.5	18.5	47.7	203.5	261.1	261.1	510.1	120.1	135.2	24.5	53.9	67.0	202.5	551.4	120.1	135.0	26.5	73.7	43.5	166.8	
522	30	367.0	123.6	139.7	17.6	49.6	259.6	269.7	418.6	127.4	143.2	20.1	53.1	228.6	269.7	269.7	551.0	136.9	152.0	26.5	57.7	73.6	167.0	596.0	136.1	150.1	28.6	85.2	14.7	123.7	
262	35	181.6	66.8	74.8	8.7	20.8	98.1	225.9	206.2	68.5	76.3	9.9	24.9	87.0	214.2	197.3	279.5	72.3	79.9	13.4	38.2	46.9	166.7	300.6	72.6	80.1	14.4	42.3	33.4	149.2	
302	35	200.4	73.5	83.4	9.6	23.9	124.6	223.9	230.0	75.9	85.7	11.1	29.0	111.1	211.9	197.4	305.0	81.2	90.6	14.7	43.2	68.7	173.5	328.1	79.9	89.2	15.8	47.9	53.2	159.5	
342	35	223.2	84.1	94.1	10.7	27.8	151.5	227.5	254.7	87.6	97.4	12.2	32.3	133.2	215.3	200.3	336.6	89.1	98.5	16.2	46.1	70.7	174.6	361.6	89.9	99.2	17.4	40.6	51.0	159.8	
372	35	242.2	87.1	99.1	11.6	30.6	166.6	227.6	276.2	89.2	101.0	13.3	34.2	148.3	263.9	217.2	367.2	94.3	105.6	17.6	34.7	81.2	174.5	395.7	95.6	106.7	19.0	39.9	67.5	202.3	
402	35	270.7	101.3	113.3	13.0	34.6	182.4	265.7	308.8	104.2	116.0	14.8	38.2	166.5	249.9	228.9	405.8	111.2	122.5	19.5	41.8	62.4	196.0	436.9	110.5	121.7	21.0	48.0	45.7	175.3	
432	35	297.4	107.8	121.8	14.3	38.4	201.4	255.2	340.0	111.0	124.8	16.3	42.7	182.2	236.5	210.7	441.2	117.7	130.9	21.2	48.9	42.9	171.8	475.7	117.2	130.3	22.9	56.2	22.0	145.9	
462	35	338.0	122.5	138.5	16.3	44.6	228.6	231.8	387.4	126.1	141.8	18.6	49.7	203.5	261.1	261.1	504.7	133.3	148.3	24.3	52.7	69.7	206.6	544.1	133.1	147.9	26.2	72.1	47.4	172.6	
522	35	368.1	137.3	153.3	17.7	49.6	259.6	269.1	421.1	141.9	157.7	20.2	53.1	228.6	269.7	269.7	546.3	151.6	166.7	26.3	57.7	73.6	167.0	589.0	149.3	164.3	28.3	83.6	18.8	129.9	
262	40	181.5	74.0	82.0	8.7	20.8	98.0	225.8	205.2	75.9	83.7	9.9	24.8	87.3	214.5	198.2	279.1	80.3	87.8	13.4	38.2	46.9	166.7	298.2	80.6	88.0	14.4	41.9	34.7	150.9	
302	40	200.6	81.8	91.8	9.7	24.0	124.4	223.7	229.0	84.5	94.3	11.0	28.9	111.4	212.2	198.4	302.5	100.8	110.1	14.6	42.9	69.7	174.4	322.1	99.4	108.6	15.5	46.9	56.7	162.7	
342	40	223.5	93.3	103.3	10.8	27.8	151.5	227.3	254.5	97.9	107.7	12.3	32.3	133.1	215.2	200.9	336.3	98.9	108.3	16.2	46.1	70.7	174.5	359.1	99.7	109.0	17.3	40.2	52.4	161.0	
372	40	242.1	97.1	109.1	11.7	30.6	166.6	227.1	274.9	99.3	111.1	13.2	34.2	148.3	263.9	217.2	363.3	110.0	119.4	16.2	35.8	68.1	174.9	386.8	110.3	119.6	17.2	39.8	53.6	162.1	
402	40	271.0	112.1	124.1	13.0	34.6	182.4	265.4	308.0	115.3	127.1	14.8	38.2	166.5	249.9	228.9	406.5	123.4	134.7	19.6	42.1	61.7	195.2	432.3	122.4	133.6	20.8	47.2	48.0	178.1	
432	40	297.4	119.7	133.7	14.3	38.4	201.4	255.0	338.6	123.5	137.2	16.3	42.7	182.2	236.5	210.7	441.8	130.8	144.0	21.3	49.9	39.9	168.2	468.5	144.4	157.4	22.6	54.9	25.7	150.5	
462	40	338.1	137.4	152.4	16.3	44.6	228.6	231.8	386.0	140.4	156.1	18.6	49.7	203.5	261.1	261.1	505.1	164.6	179.6	24.4	52.7	69.7	206.6	533.3	163.9	178.7	25.7	69.9	52.9	181.0	
522	40	368.6	152.2	168.2	17.7	49.6	259.6	269.1	420.2	157.4	173.1	20.2	53.1	228.6	269.7	269.7	548.0	188.0	193.1	26.4	57.7	73.6	167.0	582.2	188.0	193.1	28.0	82.0	22.9	135.9	
262	45	-	-	-	-	-	-	-	228.0	83.9	91.8	9.8	24.6	87.7	214.9	199.5	276.4	88.9	96.4	13.3	37.8	48.3	168.5	295.8	89.2	96.6	14.3	41.6	36.0	152.6	
302	45	-	-	-	-	-	-	-	228.0	94.1	103.9	11.0	28.8	111.7	212.5	198.4	302.5	100.8	110.1	14.6	42.9	69.7	174.4	322.1	99.4	108.6	15.5	46.9	56.7	162.7	
342	45	-	-	-	-	-	-	-	203.8	82.3	92.1	10.8	27.4	97.1	200.9	198.4	285.8	109.8	119.4	13.8	27.4	35.8	68.1	174.9	359.1	118.1	129.3	18.8	39.9	70.2	205.7
372	45	-	-	-	-	-	-	-	273.5	110.7	122.4	13.2	32.3	133.2	215.3	200.9	363.3	117.0	128.3	17.7	34.8	61.7	195.2	432.3	122.4	133.6	20.8	47.2	48.0	178.1	
402	45	-	-	-	-	-	-	-	307.1	127.6	139.4	14.8	38.2	166.5	249.9	228.9	407.1	136.7	148.0	19.6	42.3	61.1	194.4	430.9	136.1	147.2	20.8	47.0	48.4	178.6	
432	45	-	-	-	-	-	-	-	337.5	137.4	151.1	16.3	42.7	182.2	236.5	210.7	444.9	145.4	158.5	21.5	49.9	39.9	168.2	468.5	144.4	157.4	22.6	54.9	25.7	150.5	
462	45	-	-	-	-	-	-	-	384.7	156.4	172.1	18.5	49.7	203.5	261.1	261.1	505.1	164.6	179.6	24.4	52.7	69.7	206.6	533.3	163.9	178.7	25.7	69.9	52.9	181.0	
522	45	-	-	-	-	-	-	-	419.5	174.5	190.3	20.2	53.1	228.6	269.7	269.7	548.0	188.0	193.1	26.4	57.7	73.6	167.0	582.2	188.0	193.1	28.0	82.0	22.9	135.9	
262	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	229.3	95.3	103.0	11.1	29.1	75.0	200.7	299.3	98.5	106.0	13.1	37.1	50.6	171.4	
302	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	208.8	84.1	93.7	11.1	29.1	75.0	200.7	299.3	112.4	121.8	14.5	42.4	71.2	175.8	
342	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	230.8	94.2	103.8	12.1	30.1	75.0	200.7	332.7	123.2	132.6	16.1	35.5	69.3	176.0	
372	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	308.3	126.6	138.1	14.9	25.3	105.7	249.0	364.0	131.5	142.8	17.6	34.5	81.9	220.1	
402	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	346.3	145.6	157.1	16.7	31.4	89.9	229.9	404.3	151.4	162.7	19.5	41.9	62.2	195.8	
432	50	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	380.8	157.3	170.8	18.4	37.5	74.2	210.6	445.0	162.1	175.2	21.5	50.0	39.6	167.7	

# Cooling capacities

30RQ	Entering air temperature, °C																		
	25			30			35			40			45						
	LWT	°C	°C	LWT	°C	°C	LWT	°C	°C	LWT	°C	°C	LWT	°C	°C				
	CAP	COMP	UNIT	COOL	COOL	PRES	CAP	COMP	UNIT	COOL	COOL	PRES	CAP	COMP	UNIT	COOL	COOL	PRES	
	kW	kW	kW	l/s	l/s	kPa	kW	kW	kW	l/s	l/s	kPa	kW	kW	kW	l/s	l/s	kPa	
<b>262</b>	261.4	75.5	82.0	12.4	34.3	59.2	182.0	247.8	83.0	89.4	11.8	31.8	66.8	191.2	232.4	90.8	97.2	29.1	75.0
<b>302</b>	290.0	79.5	86.8	13.8	39.7	79.8	183.6	276.1	86.5	94.6	13.1	37.0	87.9	191.0	260.6	95.2	103.2	34.1	96.6
<b>342</b>	326.3	94.4	104.6	15.5	45.2	94.3	182.1	309.3	103.9	111.9	14.7	40.7	96.2	191.1	290.1	113.9	121.8	37.8	106.6
<b>372</b>	340.9	94.6	104.5	16.2	46.1	94.3	182.1	309.3	103.9	111.9	14.7	40.7	96.2	191.1	290.1	113.9	121.8	37.8	106.6
<b>402</b>	390.0	111.0	120.8	18.6	52.9	106.6	208.1	370.4	122.0	131.7	17.6	48.7	110.1	243.4	306.2	115.7	125.4	41.6	125.4
<b>432</b>	415.3	112.2	123.6	19.8	56.1	110.1	208.1	370.4	122.0	131.7	17.6	48.7	110.1	243.4	306.2	115.7	125.4	41.6	125.4
<b>462</b>	464.0	123.8	136.8	22.1	62.7	123.8	241.3	438.8	136.6	149.4	20.9	47.5	103.5	258.8	411.0	150.4	163.0	46.2	148.8
<b>522</b>	498.8	146.1	159.1	23.7	69.3	159.1	215.2	472.2	165.2	173.4	22.5	54.4	118.8	276.5	380.1	165.5	178.1	48.3	165.5
<b>262</b>	270.1	76.7	83.2	12.9	35.9	54.1	175.8	256.4	84.2	90.6	12.2	33.4	61.9	185.4	240.4	92.0	98.4	11.5	30.5
<b>302</b>	298.2	79.7	87.9	14.2	41.3	74.7	179.0	283.8	87.7	95.9	13.5	38.5	83.4	186.9	268.0	96.4	104.4	12.8	36.6
<b>342</b>	335.8	95.5	103.6	16.0	46.3	80.2	176.7	318.3	105.0	113.0	15.2	42.2	90.2	196.4	293.6	116.0	123.0	14.2	39.6
<b>372</b>	351.7	95.6	105.5	16.8	47.1	80.2	176.7	318.3	105.0	113.0	15.2	42.2	90.2	196.4	293.6	116.0	123.0	14.2	39.6
<b>402</b>	396.9	112.0	121.7	18.9	53.5	88.6	203.8	377.8	123.2	132.8	18.0	48.5	106.6	238.1	316.2	126.5	145.1	25.9	104.2
<b>432</b>	422.2	113.0	124.4	20.1	56.6	106.6	187.6	401.8	124.5	135.8	19.1	48.4	106.6	238.1	316.2	126.5	145.1	25.9	104.2
<b>462</b>	468.1	124.3	137.2	22.3	62.7	124.3	210.6	443.5	137.2	149.9	21.1	48.5	106.6	238.1	316.2	126.5	145.1	25.9	104.2
<b>522</b>	504.2	146.8	159.8	24.0	70.3	146.8	210.6	478.9	161.6	174.5	22.8	56.0	118.8	276.5	380.1	165.5	178.1	48.3	165.5
<b>262</b>	278.2	77.8	84.3	13.3	37.5	49.2	169.6	264.3	85.3	91.8	12.6	34.9	57.4	179.8	248.6	93.2	99.6	11.8	32.0
<b>302</b>	306.8	81.2	89.3	14.6	43.1	69.2	174.0	291.5	89.0	97.1	13.9	40.1	78.7	182.6	275.2	97.7	105.7	13.1	37.0
<b>342</b>	345.4	96.5	104.6	16.5	49.0	80.2	176.7	318.3	105.0	113.0	15.2	42.2	90.2	196.4	293.6	116.0	123.0	14.2	39.6
<b>372</b>	363.1	96.5	106.4	17.3	50.5	84.4	223.3	345.9	106.8	116.5	16.5	43.6	92.0	232.4	326.4	118.0	127.6	15.6	40.7
<b>402</b>	408.4	113.3	123.1	19.5	56.1	106.6	187.6	401.8	124.5	135.8	19.1	48.4	106.6	238.1	316.2	126.5	145.1	25.9	104.2
<b>432</b>	430.6	113.9	125.3	20.5	58.0	106.6	187.6	401.8	124.5	135.8	19.1	48.4	106.6	238.1	316.2	126.5	145.1	25.9	104.2
<b>462</b>	475.9	125.1	138.1	22.7	64.3	125.1	210.6	453.8	138.4	151.2	21.6	50.7	118.8	276.5	380.1	165.5	178.1	48.3	165.5
<b>522</b>	515.9	148.4	161.4	24.6	71.9	148.4	210.6	492.0	163.7	176.6	23.5	58.9	130.0	306.2	396.2	163.7	176.6	23.5	58.9
<b>262</b>	285.5	78.8	85.3	13.6	38.9	44.5	163.7	271.3	86.4	92.8	12.9	36.2	53.2	174.7	255.4	94.4	100.7	12.2	33.3
<b>302</b>	316.6	83.3	91.6	15.1	45.1	62.6	168.0	299.9	90.7	98.9	14.3	41.7	73.4	177.8	282.3	98.9	106.9	13.5	38.3
<b>342</b>	354.7	97.8	106.0	16.9	50.7	77.7	165.7	336.7	107.2	115.2	16.1	43.5	82.1	187.4	293.6	128.5	136.4	14.0	40.7
<b>372</b>	374.5	97.6	107.5	17.9	53.5	79.1	166.7	357.0	107.8	117.6	17.0	44.5	87.1	206.5	315.8	117.3	125.3	15.1	41.8
<b>402</b>	419.3	114.8	124.6	20.0	59.8	106.6	187.6	401.8	124.5	135.8	19.1	48.4	106.6	238.1	316.2	126.5	145.1	25.9	104.2
<b>432</b>	442.5	115.0	126.4	21.1	62.7	106.6	187.6	401.8	124.5	135.8	19.1	48.4	106.6	238.1	316.2	126.5	145.1	25.9	104.2
<b>462</b>	490.8	126.4	139.3	23.4	68.7	126.4	210.6	469.0	139.9	152.7	22.4	53.9	118.8	276.5	380.1	165.5	178.1	48.3	165.5
<b>522</b>	530.7	149.9	163.0	25.3	75.9	149.9	210.6	505.7	165.6	178.5	24.1	62.0	130.0	306.2	396.2	163.7	176.6	23.5	58.9
<b>262</b>	303.2	81.4	88.0	14.5	42.4	33.1	148.7	287.4	89.0	95.4	13.7	39.4	43.2	161.9	269.6	96.9	103.2	12.9	36.0
<b>302</b>	335.7	85.7	93.9	16.0	49.0	49.5	156.2	318.4	94.1	102.3	15.2	45.5	61.4	166.9	298.9	103.2	111.2	14.3	41.6
<b>342</b>	375.9	102.1	110.2	17.9	54.8	62.6	152.5	356.8	111.3	119.3	17.0	49.2	56.0	164.2	335.4	120.6	128.6	16.0	43.3
<b>372</b>	398.0	99.9	109.8	19.0	59.8	67.7	202.6	379.5	110.3	120.0	18.1	49.5	76.6	183.7	358.3	121.5	131.1	17.1	43.3
<b>402</b>	441.4	117.8	127.6	21.1	65.1	84.9	174.2	420.9	129.5	139.2	20.1	44.2	56.0	188.1	397.5	141.8	151.3	19.0	44.7
<b>432</b>	469.2	117.7	129.1	22.4	68.1	84.9	174.2	420.9	129.5	139.2	20.1	44.2	56.0	188.1	397.5	141.8	151.3	19.0	44.7
<b>462</b>	524.6	129.0	141.9	25.0	75.9	106.6	210.6	501.3	142.7	155.5	23.9	61.1	73.3	212.2	474.0	157.6	170.2	22.6	55.1
<b>522</b>	562.9	153.3	166.3	26.9	83.3	159.0	210.6	536.3	169.1	182.0	25.6	69.3	54.1	182.9	505.7	185.9	198.6	24.1	62.1

## Full load correction factors for Eurovent laboratory test:

- Net cooling capacity 1,000
- Energy efficiency ratio 1,000
- Water heat exchanger pressure drop 1,000

## Application data:

- Standard units, refrigerant: R410A
- Water heat exchanger temperature rise: 5 K
- Water heat exchanger fluid: chilled water
- Fouling factor: 0.18 m<sup>2</sup> K/kW
- Performances in accordance with EN 12055.

## Legend:

- LWT Leaving water temperature
- CAP kW Cooling capacity
- COMP kW Compressor power input
- UNIT kW Unit power input (compressors, fans and control circuit)
- COOL l/s Water heat exchanger water flow rate
- COOL kPa Water heat exchanger pressure drop
- PRES kPa LP Available pressure at the unit outlet with hydronic module with low-pressure pump (option)
- PRES kPa HP Available pressure at the unit outlet with hydronic module with high-pressure pump (option)







Order No. 13445-20, 09.2005. Supersedes order No.: 13445-20, 05.2005.  
Manufacturer reserves the right to change any product specifications without notice.



Environmental Management System Approval

Manufactured by: Carrier SA, Montluel, France.  
Printed on Totally Chlorine Free Paper.  
Printed in the Netherlands.