



Air-Cooled Liquid Chillers/Air-to-Water Heat Pumps

PRO-DIALOG +

AQUASNAP™



Quality
Management
Systems



30RB/RQ 017-033

Nominal cooling capacity 17-33 kW

Nominal heating capacity 17-33 kW

The new generation of Aquasnap liquid chillers/heat pumps was designed for commercial applications such as the air conditioning of offices and hotels etc.

The new Aquasnap units integrate the latest technological innovations:

- ozone-friendly refrigerant R410A
- scroll compressors
- low-noise fans
- auto-adaptive microprocessor control

The standard Aquasnap units are equipped with a hydronic module integrated into the unit chassis, limiting the installation to straightforward operations like connection of the power supply and the water supply and return piping.

Features

Quiet operation

- Compressors
 - Low-noise scroll compressors with low vibration levels
 - The compressor assembly is installed on an independent chassis and supported by anti-vibration mountings
- Air heat exchanger section
 - Vertical air heat exchanger coils
 - Anti-vibration protection grilles protect the heat exchanger against possible shocks.
 - The latest-generation low-noise fans are now even quieter and do not generate intrusive low-frequency noise
 - Rigid fan installation for reduced start-up noise

Easy and fast installation

- Integrated hydronic module
 - High-pressure centrifugal water pump

Access panels, sizes 017-021



- Water filter protecting the water pump against circulating debris
- High-capacity membrane expansion tank ensures pressurisation of the water circuit
- Overpressure valve, set to 4 bar
- Pressure gauge to measure the system pressure.
- Automatic purge valve positioned at the highest point of the hydronic module to remove air from the system.
- Thermal insulation and frost protection down to -10°C, using an electric resistance heater and pump cycling.
- Integrated water fill system to ensure correct water pressure (option/accessory)
- Physical features
 - With its small footprint the unit blends in with any architectural styles.
 - The unit is enclosed by easily removable panels, covering all components (except air heat exchanger and fans).
- Simplified electrical connections
 - A single power supply point (power supply without neutral available as an option)
 - Main disconnect switch with high trip capacity
 - Transformer for safe 24 V control circuit supply 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 exceptionally high energy efficiency of the Aquasnap unit is the result of a long qualification and optimisation process. The whole range is rated class A in both cooling mode (EER) and heating mode (COP) - in accordance with the Eurovent certification programmes for air conditioning and heating/cooling floors (see table on page 4).
- Reduced maintenance costs
 - Maintenance-free scroll compressors
 - Fast diagnosis of possible incidents and their history via the Pro-Dialog+ control
 - R410A refrigerant is easier to use than other refrigerant blends

Environmental care

- Ozone-friendly R410A refrigerant
 - Chlorine-free refrigerant of the HFC group with zero ozone depletion potential
 - High-density refrigerant, therefore less refrigerant required
 - Very efficient - gives an increased energy efficiency ratio (EER)
- Leak-tight refrigerant circuit
 - Brazed refrigerant connections for increased leak-tightness
 - Verification of pressure transducers and temperature sensors without transferring refrigerant charge

Hydronic module, sizes 026-033



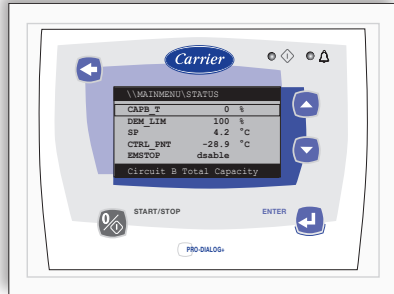
Superior reliability

- 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 etc.
- Auto-adaptive control
 - Control algorithm prevents excessive compressor cycling and permits reduction of the water quantity in the hydronic circuit (Carrier patent)
- 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.

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.

Pro-Dialog+ interface



- **Energy management**
 - Seven-day internal time schedule clock: permits unit on/off control and operation at a second set point
 - Set point reset based on the outside air temperature or the return water temperature or on the water heat exchanger delta T
 - Master/slave control of two units operating in parallel with operating time equalisation and automatic change-over in case of a unit fault.
 - Change-over based on the outside air temperature
- **Integrated features**
 - Night mode: capacity and fan speed limitation for reduced noise level
- **Ease-of-use**
 - The new backlit LCD interface includes a manual control potentiometer to ensure legibility under any lighting conditions.
 - The information is displayed clearly in English, French, German, Italian and Spanish (for other languages please consult Carrier)
 - The Pro-Dialog+ navigation uses intuitive tree-structure menus, similar to the Internet navigators. They are user-friendly and permit quick access to the principal operating parameters: number of compressors operating, suction/discharge pressure, compressor operating hours, set point, air temperature, entering/leaving water temperature.

Remote operating mode with volt-free contacts (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)
- 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 the unit
- User safety: this contact can be used for any customer safety loop, closing of the contact generates a specific alarm
- Out of service: this signal indicates that the unit is completely out of service
- Unit capacity: this analogue output (0-10 V) gives an immediate indication of the unit capacity
- Compressor operation: this contact signals that the compressor is in operation

Remote interface (accessory)

This interface allows access to the same menus as the unit interface and can be installed up to 300 m away. It includes a box that can be mounted inside the building. The power supply is provided via a 220 V/24V transformer supplied.

Interface access, sizes 026-033



Eurovent qualification programmes

30RB/RQ 017-033

Programme	Operating mode	Operating conditions		Class A criteria	30RB	30RQ
		Outside air temperature, °C	Water temperature, °C			
Air conditioning	Cooling mode	35	12/7	3.1	X	X
	Heating mode	7/6	40/45	3.2	-	X
Heating/cooling floors	Cooling mode	35	23/18	3.8	-	X
	Heating mode	7/6	30/35	4.05	-	X

X Unit class A
- Not applicable

Options and accessories

Options	Description	Advantages	Use
Unit without hydronic module	Unit without hydronic module	The pump can be remote from the unit	30RB/RQ 017-033
Integrated water fill system	Designed for units with hydronic module	Unit adds the water into the circuit	30RB/RQ 017-033
Power supply without neutral	The control box does not include the neutral connection (400 V- 3 ph - 50 Hz)	Used, if neutral is not required	30RB/RQ 017-033
Accessories	Description	Advantages	Use
JBus gateway	Two-directional communications board, complies with JBus protocol	Easy connection by communication bus to a building management system	30RB/RQ 017-033
BacNet gateway	Two-directional communications board, complies with BacNet protocol	Easy connection by communication bus to a building management system	30RB/RQ 017-033
LonTalk gateway	Two-directional communications board, complies with LonTalk protocol	Easy connection by communication bus to a building management system	30RB/RQ 017-033
Remote interface	Remotely installed user interface	Remote unit control up to 300 m	30RB/RQ 017-033
Integrated water fill system	Designed for units with hydronic module	Unit adds the water into the circuit	30RB/RQ 017-033

Physical data, 30RB units

30RB		017	021	026	033
	Data at Eurovent LCP/A/AC conditions*				
Nominal cooling capacity, standard unit	kW	16.5	21.6	27.6	33.6
Power input	kW	5.25	6.64	8.52	9.74
EER	kW/kW	3.15	3.25	3.24	3.45
Eurovent class, cooling	-	A	A	A	A
ESEER part-load performance	kW/kW	3.61	3.64	3.64	3.84
Operating weight**					
Standard unit (with hydronic module)	kg	189	208	255	280
Standard unit (without hydronic module)	kg	173	193	237	262
Refrigerant charge R-410A	kg	5.5	6.4	5.8	8.6
Compressor		One hermetic scroll compressor			
Control		Pro-Dialog+			
Fans		Two twin-speed axial fans		One twin-speed axial fan	
Diameter	mm	495	495	710	710
Number of blades		3	3	7	7
Air flow	l/s	2212	2212	3530	3530
Speed	r/s	14.5	14.5	15	15
Water heat exchanger		Plate heat exchanger			
Water volume	l	1.52	1.9	2.28	2.85
Maximum operating pressure	kPa	1000	1000	1000	1000
Air heat exchanger		Copper tubes and aluminium fins			
Pipe diameter	in	3/8	3/8	3/8	3/8
Number of rows		2	2	2	3
Number of pipes per row		60	60	60	60
Fin spacing	mm	1.69	1.69	1.69	1.69
Standard unit					
Water connections (MPT gas)	in	1	1	1-1/4	1-1/4
Unit with hydronic module*		Pump, screen filter, expansion tank, flow switch, pressure gauge, automatic air purge valve, safety valve			
Pump		One single-speed pump			
Expansion tank capacity	l	5	5	8	8
Entering water connection	in	1-1/4	1-1/4	1-1/4	1-1/4
Leaving water connection	in	1	1	1-1/4	1-1/4
Maximum water-side operating pressure	kPa	400	400	400	400
Power input*	kW	0.54	0.59	0.99	1.10
Nominal operating current*	A	1.30	1.40	2.40	2.60
Sound power level***	dB(A)	72	74	78	78
Sound pressure level****	dB(A)	40	42	46	46

* Standard Eurovent LCP/A/AC conditions in cooling mode: water heat exchanger entering/leaving water temp. 12°C/7°C, outside air temp. 35°C, water heat exchanger fouling factor 0.18×10^{-4} (m² K)/W.

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

*** In accordance with ISO 3741 (10⁻¹² W)

**** For information, calculated from the sound power level L_w(A)

Physical data, 30RQ units

30RQ		017	021	026	033
 Data at Eurovent LCP/A/AC conditions*					
Nominal cooling capacity, standard unit	kW	16.1	20.4	27	33
Power input	kW	4.92	6.3	8.62	9.84
EER	kW/kW	3.28	3.24	3.13	3.36
Eurovent class, cooling	-	A	A	A	A
ESEER part-load performance	kW/kW	3.76	3.60	3.51	3.76
Nominal heating capacity, standard unit	kW	16.8	21.4	29.6	33
Power input	kW	5.2	6.41	9.04	10.13
COP	kW/kW	3.24	3.35	3.27	3.26
Eurovent class, heating	A	A	A	A	A
 Data at Eurovent LCP/A/CHF conditions**					
Nominal cooling capacity, standard unit	kW	22.5	27.7	34.7	44.1
Power input	kW	5.28	6.92	9.04	10.4
EER	kW/kW	4.27	4	3.84	4.25
Nominal heating capacity, standard unit	kW	17.4	22	30.7	34.3
Power input	kW	4.25	5.36	7.5	8.38
COP	kW/kW	4.1	4.1	4.1	4.1
Operating weight***					
Standard unit (with hydronic module)	kg	206	223	280	295
Standard unit (without hydronic module)	kg	191	208	262	277
Refrigerant charge R-410A	kg	6.4	7.7	7.6	9.5
Compressor	One hermetic Scroll compressor				
Control	Pro-Dialog+				
Fans		Two twin-speed axial fans		One twin-speed axial fan	
Diameter	mm	495	495	710	710
Number of blades		3	3	7	7
Air flow	l/s	2217	1978	3530	3530
Speed	r/s	14.5	14.5	15	15
Water heat exchanger		Plate heat exchanger			
Water volume	l	1.52	1.9	2.28	2.85
Maximum operating pressure	kPa	1000	1000	1000	1000
Air heat exchanger		Copper tubes and aluminium fins			
Pipe diameter	in	3/8	3/8	3/8	3/8
Number of rows		2.5	3	2.5	3
Number of pipes per row		60	60	60	60
Fin spacing	mm	1.69	1.69	1.69	1.69
Standard unit					
Water connections (MPT gas)	in	1	1	1-1/4	1-1/4
Unit with hydronic module*		Pump, screen filter, expansion tank, flow switch, pressure gauge, automatic air purge valve, safety valve			
Pump		One single-speed pump			
Expansion tank capacity	l	5	5	8	8
Entering water connection	in	1-1/4	1-1/4	1-1/4	1-1/4
Leaving water connection	in	1	1	1-1/4	1-1/4
Maximum water-side operating pressure	kPa	400	400	400	400
Power input*	kW	0.54	0.59	0.99	1.10
Nominal operating current*	A	1.30	1.40	2.40	2.60
Sound power level****	dB(A)	72	74	78	78
Sound pressure level†	dB(A)	40	42	46	46

* Standard Eurovent LCP/A/AC conditions in cooling mode: water heat exchanger entering/leaving water temp. 12°C/7°C, outside air temp. 35°C, water heat exchanger fouling factor 0.18×10^{-4} (m² K)/W. Standard Eurovent LCP/A/AC conditions in heating mode: water heat exchanger entering/leaving water temp. 40°C/45°C, outside air temp. 7°C db/6°C wb, water heat exchanger fouling factor 0.18×10^{-4} (m² K)/W.

** Standard Eurovent LCP/A/CHF conditions in cooling mode: water heat exchanger entering/leaving water temp. 23°C/18°C, outside air temp. 35°C, water heat exchanger fouling factor 0.18×10^{-4} (m² K)/W. Standard Eurovent LCP/A/CHF conditions in heating mode: water heat exchanger entering/leaving water temp. 30°C/35°C, outside air temp. 7°C db/6°C wb, water heat exchanger fouling factor 0.18×10^{-4} (m² K)/W.

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

**** In accordance with ISO 3741 (10⁻¹² W)

† For information, calculated from the sound power level L_w(A)

Sound spectrum, 30RB/RQ units

30RB/RQ		Octave bands, Hz							Sound power levels	
		125	250	500	1000	2000	4000	8000		
017	dB	75	72	70	67	61	60	54	dB(A)	72
021	dB	80	75	70	69	63	60	56	dB(A)	74
026	dB	79	76	76	74	67	60	55	dB(A)	78
033	dB	79	76	76	74	67	60	55	dB(A)	78

Electrical data, 30RB/RQ units

30RB/RQ		017	021	026	033
Power circuit					
Nominal power supply	V-ph-Hz	400-3-50			
Voltage range	V	340-440			
Control circuit supply		24 V via internal transformer			
Maximum start-up current (Un)*	A	75	95	118	118
Unit power factor at nominal capacity**		0.84	0.79	0.77	0.81
Maximum operating power input**	kW	7.8	9.1	11	13.8
Nominal unit operating current draw***	A	8	12	16	17
Maximum operating current draw (Un)****	A	13	16	20	24
Maximum operating current draw (Un-15%)†	A	15	18	23	27

* Maximum instantaneous start-up current (locked rotor current of the compressor).

** 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 nameplate).

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

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

† Maximum unit operating current at maximum unit power input and 340-460 V.

Operating limits

Water heat exchanger water flow rate

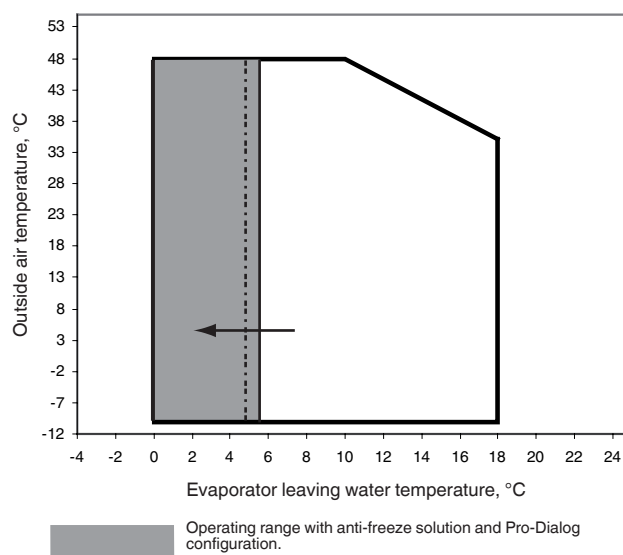
30RB	Flow rate, l/s		
	Minimum	Maximum*	Maximum**
017	0.45	1.39	1.26
021	0.57	1.52	1.42
026	0.67	1.96	1.43
033	0.87	2.18	1.72

30RQ	Flow rate, l/s		
	Minimum	Maximum*	Maximum**
017	0.45	1.39	1.26
021	0.57	1.52	1.42
026	0.67	2.18	1.72
033	0.87	2.29	1.85

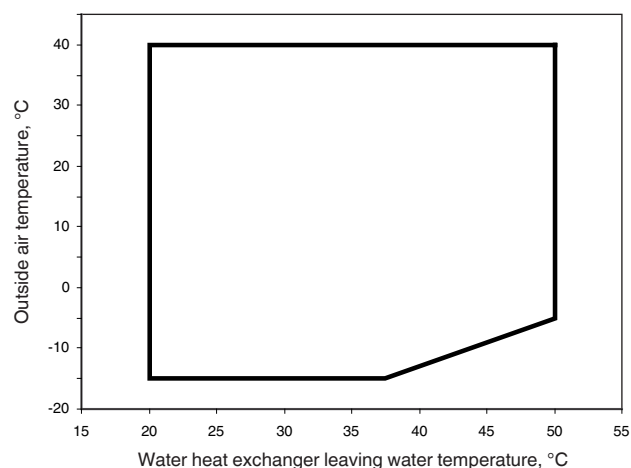
* Maximum flow rate at an available pressure of 50 kPa (unit with hydronic module)

** Maximum flow rate at pressure drop of 100 kPa in the plate heat exchanger (unit without hydronic module).

30RB/RQ (cooling mode)

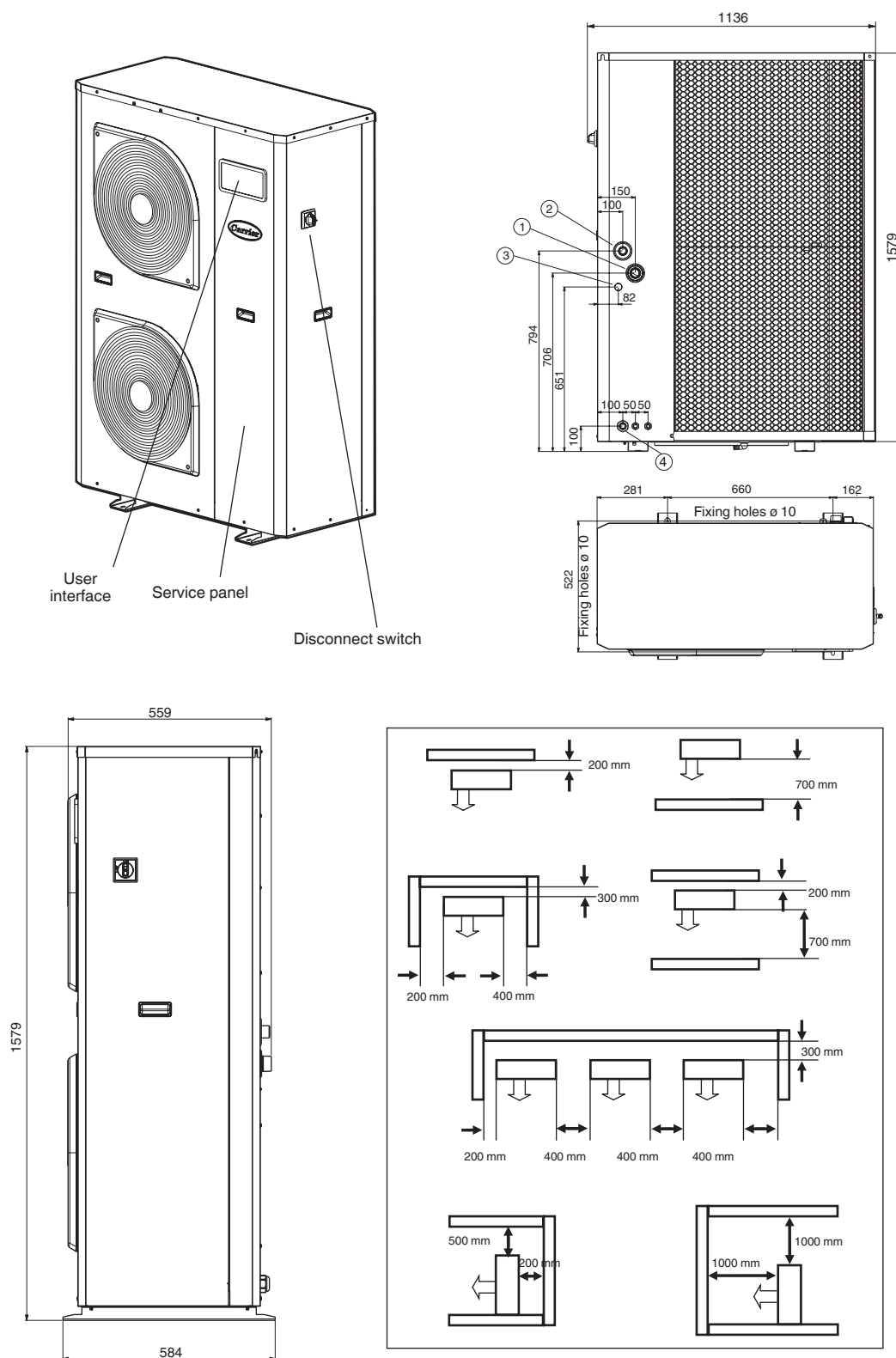


30RQ (heating mode)



Dimensions/clearances

30RB/RQ 017-021



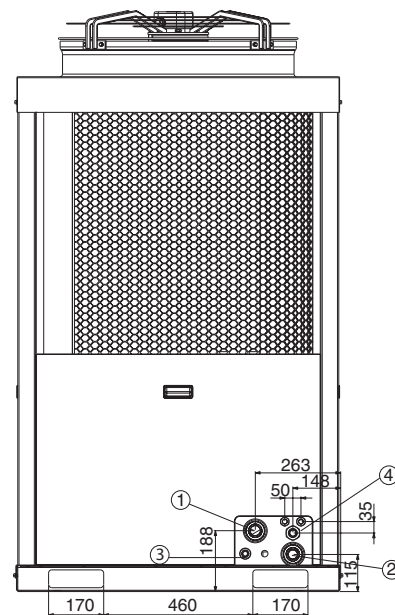
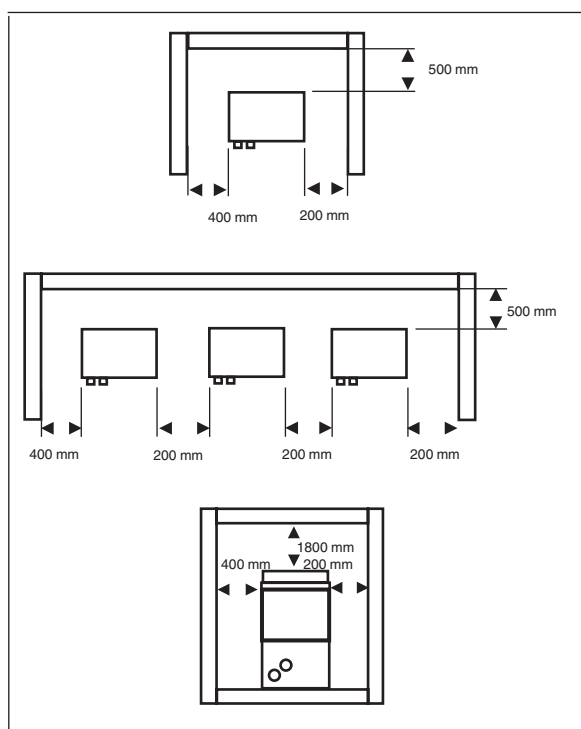
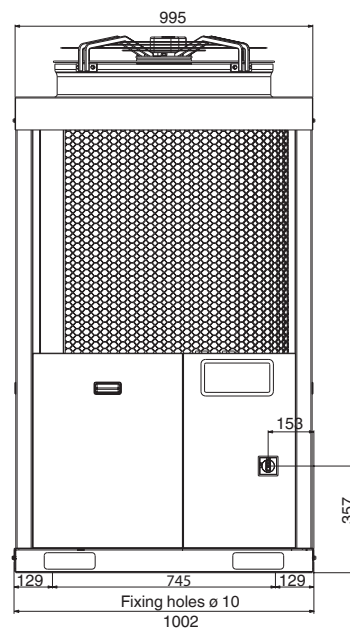
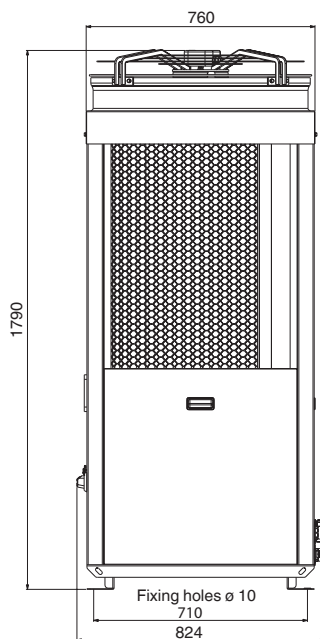
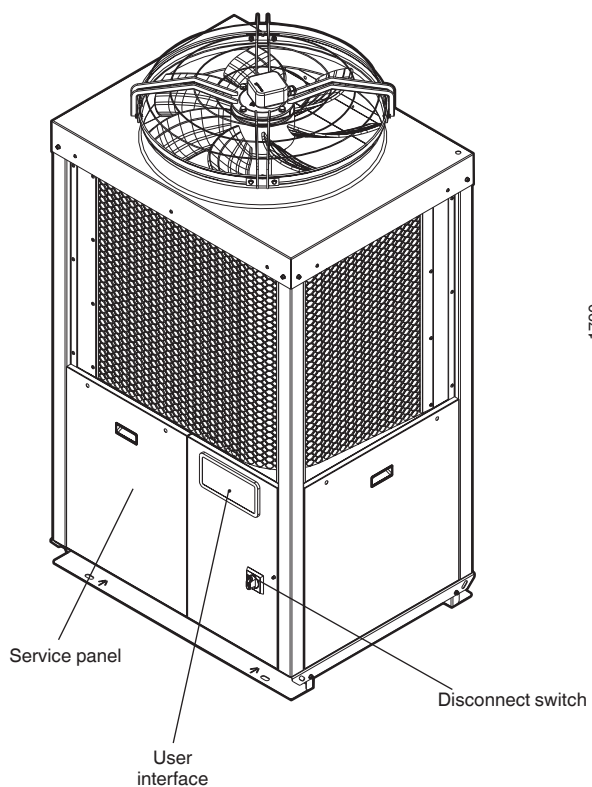
Legend

All dimensions are in mm

- 1 Water inlet
- 2 Water outlet
- 3 Water fill kit connection (option)
- 4 Power connections

Dimensions/clearances

30RB/RQ 026-033



Legend

All dimensions are in mm

- 1 Water inlet
- 2 Water outlet
- 3 Water fill kit connection (option)
- 4 Power connections

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 unit at full load is rarely representative of the actual performance of the units, as on average a unit works less than 5% of the time at full load.

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

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

ESEER (EUROVENT)

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

ESEER (European seasonal energy efficiency ratio)

Load %	Air heat exchanger entering water temperature, °C	Energy efficiency	Operating time, %
100	35	EER ₁	3
75	30	EER ₂	33
50	25	EER ₃	41
25	20	EER ₄	23
ESEER = EER ₁ x 3% + EER ₂ x 33% + EER ₃ x 41% + EER ₄ x 23%			

Note: Constant leaving water temperature = 7°C

Part-load performances in accordance with Eurovent

30RB	LOAD %	CAP kW	UNIT kW	EER kW/kW	ESEER kW/kW
017	100	16.5	5.25	3.15	3.61
	75	17.4	4.76	3.66	
	50	18.3	4.33	4.22	
	25	19	3.98	4.78	
021	100	21.6	6.64	3.25	3.64
	75	22.8	6.09	3.74	
	50	23.7	5.6	4.23	
	25	24.6	5.19	4.75	
026	100	27.6	8.52	3.24	3.64
	75	29	7.77	3.73	
	50	30.2	7.13	4.23	
	25	31.1	6.51	4.78	
033	100	33.6	9.74	3.45	3.84
	75	35.1	8.9	3.95	
	50	36.4	8.21	4.44	
	25	37.4	7.5	4.99	

30RQ	LOAD %	CAP kW	UNIT kW	EER kW/kW	ESEER kW/kW
017	100	16.1	4.92	3.28	3.76
	75	17	4.46	3.82	
	50	17.9	4.06	4.41	
	25	18.6	3.74	4.98	
021	100	20.4	6.3	3.24	3.60
	75	21.4	5.78	3.7	
	50	22.4	5.36	4.17	
	25	23.2	4.93	4.7	
026	100	27	8.62	3.13	3.51
	75	28.3	7.87	3.59	
	50	29.4	7.23	4.07	
	25	30.4	6.6	4.6	
033	100	33	9.84	3.36	3.76
	75	34.6	8.95	3.87	
	50	36	8.26	4.36	
	25	37.2	7.57	4.91	

Legend

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

Cooling capacities, 30RB units

30RB 017-033																										
		Condenser entering air temperature, °C																								
		25					30					35					40					45				
LWT °C		CAP kW	COMP kW	UNIT kW	COOL l/s	COOL kPa	CAP kW	COMP kW	UNIT kW	COOL l/s	COOL kPa	CAP kW	COMP kW	UNIT kW	COOL l/s	COOL kPa	CAP kW	COMP kW	UNIT kW	COOL l/s	COOL kPa					
017	5	17.2	3.96	4.27	0.82	44	16.4	4.40	4.70	0.78	41	15.6	4.89	5.19	0.74	37	14.7	5.42	5.72	0.70	33	13.8	6.00	6.30	0.66	30
021		22.3	5.20	5.51	1.06	62	21.4	5.68	5.98	1.02	58	20.4	6.24	6.54	0.97	54	19.1	6.93	7.23	0.91	48	17.6	7.74	8.03	0.84	42
026		28.0	6.22	7.05	1.33	90	26.9	6.88	7.71	1.28	84	25.6	7.64	8.46	1.22	77	24.0	8.51	9.32	1.14	69	22.1	9.51	10.30	1.05	60
033		34.1	7.15	8.11	1.62	89	33.0	7.82	8.79	1.57	84	31.6	8.67	9.64	1.50	77	29.6	9.61	10.59	1.41	68	27.3	10.63	11.61	1.30	59
017	7	18.2	4.02	4.32	0.87	49	17.4	4.46	4.76	0.83	45	16.5	4.95	5.25	0.79	41	15.6	5.49	5.78	0.74	37	14.6	6.07	6.37	0.70	33
021		23.7	5.30	5.60	1.13	68	22.7	5.78	6.08	1.08	64	21.6	6.34	6.64	1.03	58	20.2	7.03	7.33	0.97	53	18.7	7.83	8.13	0.89	46
026		30.1	6.29	7.13	1.44	101	28.9	6.94	7.77	1.38	94	27.6	7.70	8.52	1.32	87	25.9	8.56	9.37	1.23	78	23.9	9.56	10.35	1.14	68
033		36.4	7.24	8.21	1.73	99	35.1	7.92	8.89	1.67	93	33.6	8.76	9.74	1.60	86	31.6	9.72	10.70	1.51	76	29.2	10.77	11.75	1.39	66
017	10	19.9	4.11	4.42	0.95	57	19.0	4.55	4.86	0.91	52	18.1	5.06	5.36	0.86	47	17.1	5.59	5.89	0.81	48	16.0	6.19	6.48	0.76	38
021		25.9	5.44	5.74	1.24	78	24.8	5.92	6.22	1.19	73	23.6	6.48	6.79	1.13	67	22.1	7.18	7.48	1.06	60	20.4	8.00	8.29	0.98	52
026		33.3	6.42	7.25	1.59	118	32.1	7.06	7.89	1.53	110	30.6	7.81	8.62	1.46	102	28.7	8.65	9.46	1.37	91	26.6	9.65	10.43	1.27	80
033		39.8	7.39	8.36	1.90	116	38.4	8.09	9.06	1.83	109	36.8	8.91	9.89	1.76	100	34.7	9.88	10.86	1.66	90	32.2	10.94	11.92	1.54	78
017	15	23.1	4.30	4.60	1.10	73	22.1	4.75	5.05	1.06	67	21.0	5.26	5.56	1.01	61	19.9	5.81	6.11	0.95	55	18.6	6.41	6.70	0.89	49
021		30.0	5.73	6.03	1.44	97	28.8	6.20	6.51	1.38	91	27.4	6.76	7.07	1.31	84	25.8	7.45	7.75	1.23	75	23.8	8.25	8.55	1.14	66
026		39.2	6.67	7.50	1.88	152	37.8	7.30	8.13	1.81	142	36.1	8.02	8.84	1.73	135	34.0	8.85	9.65	1.63	119	31.5	9.82	10.61	1.51	105
033		46.0	7.70	8.67	2.20	149	44.5	8.41	9.39	2.13	139	42.7	9.22	10.20	2.04	129	40.4	10.19	11.18	1.93	116	37.6	11.26	12.24	1.80	101
017	18	25.2	4.43	4.73	1.21	85	24.1	4.87	5.18	1.16	78	22.9	5.39	5.69	1.10	71	21.7	5.95	6.24	1.04	64	20.3	6.55	6.85	0.97	57
021		32.7	5.92	6.23	1.57	111	31.4	6.40	6.70	1.51	103	29.9	6.96	7.26	1.43	95	28.1	7.64	7.94	1.35	86	26.0	8.43	8.73	1.25	76
026		42.5	6.82	7.65	2.04	172	41.0	7.46	8.29	1.96	161	39.2	8.16	8.98	1.88	149	37.0	9.98	9.78	1.77	135	34.4	9.94	10.72	1.65	119
033		50.0	7.91	8.88	2.40	171	48.4	8.64	9.62	2.32	161	46.4	9.42	10.41	2.22	149	44.1	10.41	11.40	2.11	135	41.0	11.47	12.46	1.96	118
Legend:	LWT	Application data:																								
	COMP kW	Standard units, refrigerant: R410A																								
	UNIT kW	Evaporator temperature rise: 5 K																								
	COOL kPa	Evaporator fluid: chilled water																								
		Fouling factor: 0.18 x 10 ⁻⁴ (m² K)/W																								
		Performances in accordance with EN 14511																								

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

Cooling capacities, 30RQ units

30RQ 017-033																									
Condenser entering air temperature, °C																									
LWT °C	25					30					35					40					45				
	CAP kW	COMP kW	UNIT kW	COOL l/s	COOL kPa	CAP kW	COMP kW	UNIT kW	COOL l/s	COOL kPa	CAP kW	COMP kW	UNIT kW	COOL l/s	COOL kPa	CAP kW	COMP kW	UNIT kW	COOL l/s	COOL kPa	CAP kW	COMP kW	UNIT kW	COOL l/s	COOL kPa
017 5	16.8	3.71	4.00	0.80	43	16.0	4.12	4.41	0.76	40	15.2	4.58	4.86	0.73	36	14.3	5.08	5.36	0.68	32	13.4	5.63	5.90	0.64	28
021	21.0	5.06	5.26	1.00	57	20.2	5.50	5.70	0.96	53	19.2	6.03	6.22	0.92	49	18.0	6.66	6.83	0.86	44	16.7	7.43	7.59	0.79	39
026	27.6	6.34	7.14	1.32	63	26.5	6.99	7.79	1.26	58	25.3	7.75	8.54	1.21	54	23.8	8.62	9.38	1.13	48	22.1	9.62	10.37	1.05	41
033	34.2	7.27	8.18	1.63	79	32.9	7.98	8.88	1.57	73	31.4	8.87	9.77	1.49	67	29.3	9.84	10.73	1.40	59	27.0	10.91	11.80	1.29	50
017 7	17.8	3.76	4.05	0.85	48	17.0	4.17	4.46	0.81	44	16.1	4.63	4.92	0.77	40	15.2	5.13	5.42	0.73	36	14.2	5.68	5.96	0.68	31
021	22.3	5.14	5.35	1.06	62	21.4	5.58	5.78	1.02	58	20.4	6.11	6.30	0.97	54	19.1	6.74	6.91	0.91	48	17.7	7.50	7.66	0.84	42
026	29.4	6.42	7.23	1.40	70	28.2	7.07	7.87	1.35	65	27.0	7.83	8.62	1.28	60	25.4	8.69	9.46	1.21	53	23.5	9.69	10.44	1.12	46
033	36.0	7.35	8.25	1.71	86	34.6	8.05	8.95	1.65	80	33.0	8.94	9.84	1.58	73	30.9	9.91	10.81	1.47	64	28.6	11.00	11.89	1.36	55
017 10	19.5	3.85	4.15	0.93	56	18.6	4.25	4.54	0.89	51	17.7	4.71	5.00	0.84	46	16.6	5.22	5.51	0.79	42	15.5	5.78	6.05	0.74	37
021	24.3	5.29	5.50	1.16	71	23.3	5.73	5.93	1.11	66	22.2	6.26	6.44	1.06	61	20.9	6.88	7.05	1.00	55	19.3	7.64	7.79	0.92	48
026	32.1	6.57	7.37	1.53	81	30.9	7.21	8.01	1.47	76	29.5	7.96	8.74	1.41	69	27.8	8.81	9.58	1.33	62	25.8	9.81	10.55	1.23	54
033	38.7	7.48	8.38	1.85	98	37.2	8.16	9.07	1.78	91	35.6	9.06	9.96	1.70	83	33.4	10.04	10.94	1.60	74	31.0	11.13	12.02	1.48	64
017 15	22.7	4.03	4.32	1.08	72	21.7	4.41	4.70	1.04	66	20.6	4.88	5.17	0.99	60	19.4	5.40	5.68	0.93	54	18.2	5.96	6.24	0.87	48
021	28.0	5.59	5.79	1.34	87	26.8	6.02	6.21	1.28	81	25.6	6.54	6.72	1.22	75	24.0	7.15	7.32	1.15	68	22.3	7.89	8.04	1.07	60
026	35.8	6.78	7.58	1.71	97	34.4	7.42	8.21	1.65	90	32.8	8.15	8.93	1.57	83	31.0	8.99	9.75	1.49	74	29.0	9.98	10.72	1.39	65
033	44.0	7.75	8.65	2.11	122	42.5	8.43	9.34	2.03	114	40.7	9.31	10.21	1.95	105	38.4	10.30	11.19	1.84	94	35.6	11.39	12.28	1.70	81
017 18	24.7	4.14	4.43	1.19	84	23.7	4.52	4.80	1.13	77	22.5	4.99	5.28	1.08	70	21.2	5.52	5.80	1.02	63	19.9	6.08	6.35	0.95	55
021	30.3	5.80	6.00	1.45	99	29.1	6.23	6.42	1.39	92	27.7	6.75	6.92	1.33	85	26.0	7.34	7.51	1.25	76	24.1	8.07	8.21	1.15	67
026	37.8	6.90	7.70	1.81	106	36.3	7.54	8.33	1.74	99	34.7	8.26	9.04	1.66	90	32.8	9.09	9.85	1.57	81	30.7	10.08	10.82	1.47	72
033	47.6	7.93	8.83	2.28	140	46.0	8.63	9.54	2.20	131	44.1	9.48	10.39	2.11	121	41.7	10.48	11.38	2.00	108	38.7	11.58	12.47	1.86	94

Legend:

LWT
CAP kW
COMP kW
UNIT kW
COOL l/s
COOL kPa

Leaving water temperature
Cooling capacity
Compressor power input
Unit power input (compressors, fans and control circuit)
Evaporator water flow rate
Evaporator pressure drop

Application data:

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

Heating capacities, 30RQ units

30RQ 017-033																										
Outdoor temperature, °C																										
	LWT °C	-15				-7				0				7				15								
		CAP* kW	CAP** kW	COMP kW	UNIT COND I/s	COND kPa	CAP* kW	CAP** kW	COMP kW	UNIT COND I/s	COND kPa	CAP* kW	CAP** kW	COMP kW	UNIT COND I/s	COND kPa	CAP* kW	CAP** kW	COMP kW	UNIT COND I/s	COND kPa					
017	30	8.4	9.9	3.33	3.62	0.47 15	10.1	12.1	3.40	3.68	0.58 22	12.3	14.7	3.47	3.76	0.71 32	17.7	17.7	3.58	3.87	0.85 44	21.8	21.8	3.70	3.99	1.05 66
021		10.8	12.6	4.42	4.71	0.61 22	12.8	15.4	4.46	4.75	0.74 30	15.5	18.5	4.54	4.83	0.89 41	22.2	22.2	4.63	4.92	1.06 55	27.3	27.3	4.81	5.10	1.31 78
026		14.6	17.0	5.65	6.49	0.82 22	17.6	21.2	5.77	6.61	1.02 33	21.7	25.9	5.88	6.72	1.25 48	31.1	31.1	6.01	6.85	1.49 67	38.1	38.1	6.21	7.06	1.83 98
033		16.5	19.3	6.39	7.22	0.93 29	19.8	23.8	6.55	7.38	1.15 34	24.3	29.0	6.70	7.53	1.39 50	34.8	34.8	6.86	7.70	1.67 71	42.7	42.7	7.07	7.92	2.05 105
017	35	8.3	9.9	3.72	4.00	0.47 15	9.9	12.1	3.79	4.07	0.58 21	12.0	14.5	3.87	4.15	0.70 30	17.4	17.4	3.96	4.25	0.84 42	21.3	21.3	4.05	4.35	1.03 62
021		10.7	12.6	4.86	5.15	0.61 21	12.5	15.3	4.88	5.17	0.74 29	15.1	18.4	4.95	5.24	0.89 40	22.0	22.0	5.07	5.36	1.06 53	27.0	27.0	5.28	5.58	1.30 75
026		14.3	16.9	6.31	7.14	0.81 21	17.2	21.0	6.43	7.26	1.01 31	21.0	25.6	6.53	7.36	1.23 45	30.7	30.7	6.66	7.50	1.48 64	37.7	37.7	6.88	7.73	1.81 94
033		16.1	19.1	7.06	7.89	0.92 22	19.4	23.7	7.23	8.06	1.14 33	23.5	28.6	7.36	8.19	1.38 48	34.3	34.3	7.54	8.38	1.65 67	42.1	42.1	7.80	8.65	2.03 100
017	40	-	-	-	-	-	9.6	12.1	4.23	4.51	0.58 21	11.5	14.4	4.32	4.60	0.69 29	17.1	17.1	4.41	4.70	0.83 40	20.9	20.9	4.51	4.80	1.01 58
021		-	-	-	-	-	12.2	15.3	5.39	5.68	0.74 29	14.7	18.3	5.45	5.74	0.88 38	21.7	21.7	5.54	5.83	1.05 51	26.5	26.5	5.74	6.03	1.28 71
026		-	-	-	-	-	16.6	20.8	7.18	8.01	1.00 30	20.2	25.2	7.27	8.11	1.21 43	30.2	30.2	7.38	8.22	1.46 61	37.0	37.0	7.56	8.41	1.78 89
033		-	-	-	-	-	18.8	23.5	8.04	8.87	1.13 32	22.7	28.3	8.20	9.03	1.36 46	33.8	33.8	8.35	9.18	1.63 64	41.3	41.3	8.53	9.38	1.99 94
017	45	-	-	-	-	-	9.3	12.0	4.70	4.98	0.58 20	11.1	14.2	4.80	5.09	0.69 28	16.8	16.8	4.91	5.20	0.81 38	20.5	20.5	5.02	5.31	0.99 55
021		-	-	-	-	-	11.9	15.2	6.02	6.31	0.74 28	14.2	18.1	6.04	6.33	0.88 37	21.4	21.4	6.11	6.41	1.03 49	26.1	26.1	6.28	6.57	1.26 68
026		-	-	-	-	-	15.9	20.5	8.03	8.87	0.99 29	19.4	24.8	8.11	8.95	1.20 41	29.6	29.6	8.21	9.04	1.43 57	36.3	36.3	8.36	9.22	1.75 84
033		-	-	-	-	-	17.9	23.0	8.93	9.76	1.11 30	21.7	27.8	9.12	9.95	1.34 43	33.0	33.0	9.29	10.13	1.59 60	40.4	40.4	9.48	10.33	1.95 89
017	50	-	-	-	-	-	-	-	-	-	-	10.7	14.1	5.34	5.62	0.68 27	16.5	16.5	5.46	5.74	0.80 36	19.9	19.9	5.57	5.86	0.96 51
021		-	-	-	-	-	-	-	-	-	-	13.7	18.0	6.80	7.09	0.87 36	21.1	21.1	6.82	7.11	1.02 47	25.5	25.5	6.92	7.22	1.23 64
026		-	-	-	-	-	-	-	-	-	-	18.6	24.3	9.10	9.94	1.18 39	28.8	28.8	9.17	10.01	1.39 54	35.2	35.2	9.29	10.14	1.70 78
033		-	-	-	-	-	-	-	-	-	-	20.7	27.1	10.15	10.98	1.31 40	32.0	32.0	10.33	11.17	1.54 55	38.9	38.9	10.53	11.38	1.88 81

Legend:
LWT Leaving water temperature
CAP* kW Heating capacity with defrost cycle
CAP** kW Heating capacity without defrost cycle
COMP kW Compressor power input
UNIT kW Unit power input (compressors, fans and control circuit)
COND I/s Condenser water flow rate
COND kPa Condenser pressure drop

Application data:
Standard units, refrigerant: R410A
Condenser temperature rise: 5 K
Condenser fluid: water
Fouling factor: 0.18 x 10⁻⁴ (m² K)/W
Performances in accordance with EN 14511

Hydronic module

The hydronic module reduces the installation time. The unit is factory-equipped with the main hydronic components required for the installation: screen filter, water pump, expansion tank, safety valve and pressure gauge.

The water heat exchanger and the hydronic module are protected against frost down to -10°C, using an electric resistance heater (standard) and pump cycling.

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

Physical and electrical data

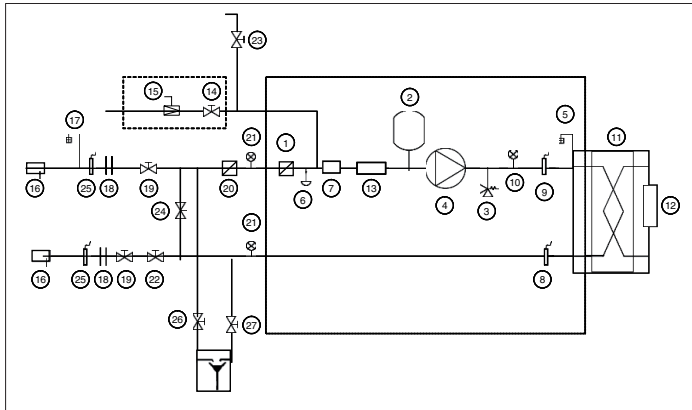
These are the same as for the standard unit except:

30RB/RQ - units with hydronic module		017	021	026	033
Hydronic module					
Expansion tank volume	l	5	5	8	8
Maximum water-side operating pressure	kPa	400	400	400	400
Pumps					
Water pump		Pump, screen filter, expansion tank, flow switch, pressure gauge, automatic purge valve, safety valve			
Power input*	kW	0.54	0.59	0.99	1.10
Nominal operating current draw*	A	1.30	1.40	2.40	2.60

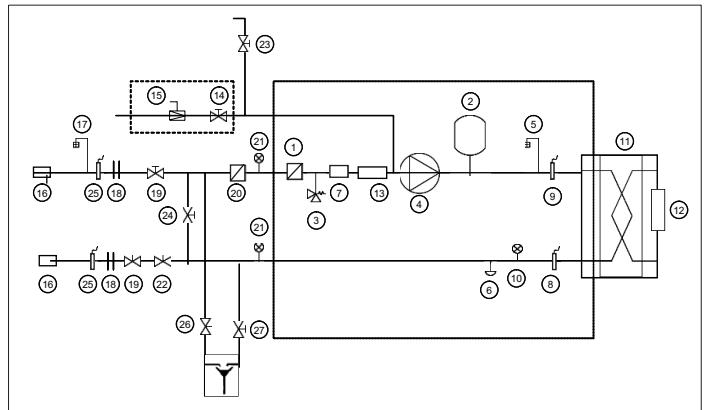
* Standard Eurovent conditions: water heat exchanger entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.

Typical hydronic circuit diagram

17-21 kW



26-33 kW



———— Hydronic module (unit with hydronic module)
 - - - - - Automatic water fill system option

Legend

Components of the unit and hydronic module

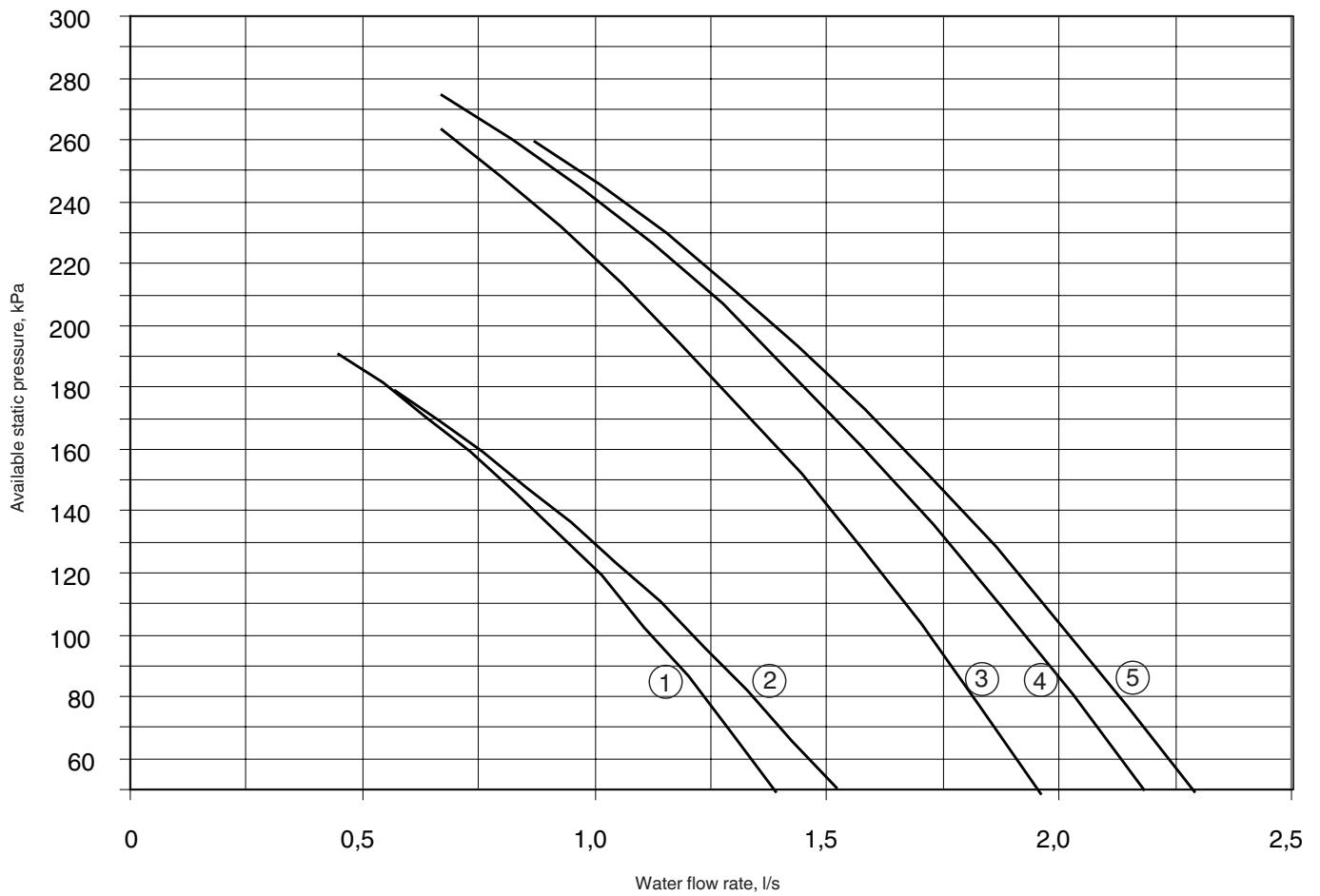
- 1 Screen filter
- 2 Expansion tank
- 3 Safety valve
- 4 High-pressure pump
- 5 Air purge
- 6 Water drain valve
- 7 Flow sensor
- 8 Plate heat exchanger leaving temperature sensor
- 9 Plate heat exchanger entering temperature sensor
- 10 Pressure gauge
- 11 Plate heat exchanger
- 12 Heat exchanger frost protection heater
- 13 Pipe frost protection heater
- 14 Shut-off valve (automatic water fill option)
- 15 Pressure reducer (automatic water fill option)

System components

- 16 Temperature sensor well
- 17 Air purge
- 18 Flexible connections
- 19 Shut-off valve
- 20 Screen filter (obligatory for a unit without hydronic module)
- 21 Pressure gauge
- 22 Flow control valve (factory-supplied for field installation)
- 23 Charge valve
- 24 Frost protection bypass (when shut-off valves are closed in winter)
- 25 Pressure sensor
- 26 System drain valves
- 27 Plate heat exchanger drain valve

Available static system pressure

30RB/RQ 017-033



Legend

1. 30RB/RQ 017
2. 30RB/RQ 021
3. 30RB 026
4. 30RB 033 - 30RQ 026
5. 30RQ 026

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

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



Environmental
Management
Systems



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