



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

PRO-DIALOG +

AQUASNAP™



Quality
Management
Systems



30RBY/RQY 017-033

Nominal cooling capacity 15-33 kW

Nominal heating capacity 17-31 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, of the water supply and return piping and of the air distribution ducting.

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
 - 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).

Access panels, sizes 017-021



- Easy duct connection
 - Rectangular discharge air connection.
 - Fan with 80 Pa available pressure. Centrifugal fan for sizes 017 and 021, and axial fan for sizes 026 and 033.
 - Rectangular suction and filter connection option (sizes 017 and 021 only).

Inlet filters, sizes 017-021



- Simplified electrical connections
 - A single power supply point
 - 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

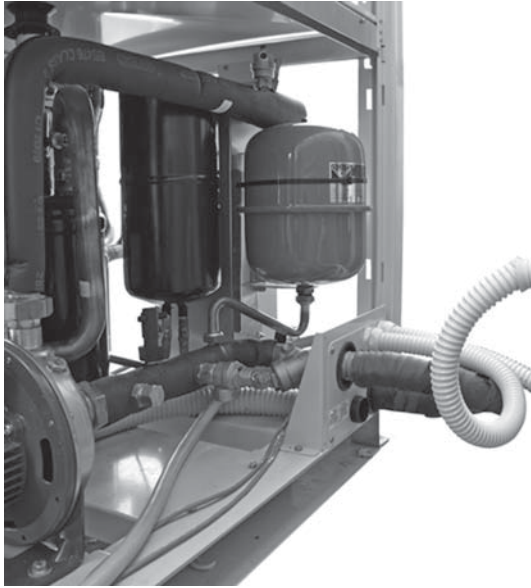
Economical operation

- 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 cooling mode (EER) and B in heating mode (COP) - in accordance with the Eurovent certification programmes for air conditioning and heating/cooling floors (see table on page 6).
- 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



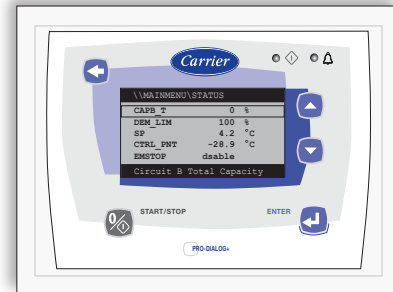
Superior reliability

- 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)
- 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
- 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.



Options and accessories

Options	Description	Advantages	Use
Hydronic module	The hydronic module is factory-installed. As it contains most of the required hydronic components, the unit is more compact and easier to install.	Simply plug in and the unit is ready, making installation quick and easy.	30RBY/RQY 017-033
Integrated water fill system	This option is offered for units with hydronic module. It allows the user to automatically fill water into the system.	Water is added automatically into the unit system circuit.	30RBY/RQY 017-033
Inlet duct frame	Inlet air duct connection frame	Easy connection of the inlet air duct	30RBY/RQY 017-021
Inlet filter frame	Inlet duct connection frame with washable G8 filters	Easy connection of the inlet air duct, protection of the coil against clogging	30RBY/RQY 017-021
Accessories	Description	Advantages	Use
Integrated water fill system	This option is offered for units with hydronic module. It allows the user to automatically fill water into the system.	Water is added automatically into the unit system circuit.	30RBY/RQY 017-033
JBus gateway	Two-directional communications board, complies with JBus protocol	Easy connection by communication bus to a building management system	30RBY/RQY 017-033
BacNet gateway	Two-directional communications board, complies with BacNet protocol	Easy connection by communication bus to a building management system	30RBY/RQY 017-033
LonTalk gateway	Two-directional communications board, complies with LonTalk protocol	Easy connection by communication bus to a building management system	30RBY/RQY 017-033
Remote interface	Remotely installed user interface (via communication bus)	Remote unit control up to 300 m	30RBY/RQY 017-033
Condensate drain pan	To be installed below the unit and connected to the water drain	Easy water drainage (maintenance and defrost)	30RBY/RQY 017-033

Physical data, 30RBY units

30RBY		017	021	026	033
 Data at Eurovent LCP/A/AC conditions*					
Nominal cooling capacity, standard unit	kW	15.8	20.5	27.3	32.7
Power input	kW	5.77	7.57	9.02	10.22
EER	kW/kW	2.74	2.71	3.03	3.20
Eurovent class, cooling		A	A	A	A
ESEER part-load performance	kW/kW	3.05	2.99	3.36	3.53
Operating weight**					
Standard unit (with hydronic module)	kg	209	228	255	280
Standard unit (without hydronic module)	kg	193	213	237	262
Refrigerant charge R-410A	kg	5.5	6.4	5.8	8.6
Compressor		One scroll compressor			
Control		Pro-Dialog+			
Fans		Two 2-speed centrifugal fans, backward-curved blades		One 2-speed axial fan	
Diameter	mm	454	454	630	630
Number of blades		5	5	7	7
Available static pressure	Pa	80	80	80	80
Air flow	l/s	1640	1640	3472	3472
Speed	r/s	20.5	20.5	21.5	21.5
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
Water heat exchanger		One plate heat exchanger			
Water volume	l	1.52	1.90	2.28	2.85
Maximum operating pressure	kPa	1000	1000	1000	1000
Standard unit					
Water connections (MPT gas)	in	1	1	1-1/4	1-1/4
Unit with hydronic module*		Safety valve, screen filter, expansion tank, automatic air purge valve, water circuit drain valve, pressure gauge, flow switch			
Pump		One single-speed pump			
Maximum water-side operating pressure	kPa	400	400	400	400
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
Expansion tank capacity	l	5	5	8	8
Water fill system					
Inlet/outlet diameter	in	1/2	1/2	1/2	1/2
Sound pressure level***	dB(A)	50	50	53	53
Sound power level radiated from the unit****	dB(A)	82	82	85	85
Sound power level at unit discharge****	dB(A)	80	80	91	91

* Standard Eurovent LCP/A/AC conditions in cooling mode: water heat exchanger entering/leaving water temp. 12°C/7°C.

** Weight shown is a guideline only.

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

**** In accordance with ISO 9614 (10⁻¹² W)

Physical data, 30RQY units

30RQY		017	021	026	033
 Data at Eurovent LCP/A/AC conditions*					
Nominal cooling capacity, standard unit	kW	15.0	19.2	27.3	32.6
Power input	kW	5.52	7.06	9.03	10.22
EER	kW/kW	2.72	2.72	3.03	3.19
Eurovent class, cooling	-	A	A	A	A
ESEER part-load performance	kW/kW	3.04	2.98	3.35	3.52
Nominal heating capacity, standard unit	kW	16.9	20.3	28.5	31.1
Power input	kW	6.01	7.22	10.15	11.08
COP	kW/kW	2.81	2.81	2.81	2.81
Eurovent class, heating		B	B	B	B
 Data at Eurovent LCP/A/CHF conditions**					
Nominal cooling capacity, standard unit	kW	18.6	24.1	36.1	41.9
Power input	kW	6.08	7.66	9.52	10.76
EER	kW/kW	3.06	3.15	3.79	3.89
Nominal heating capacity, standard unit	kW	17.3	20.6	29.6	32.0
Power input	kW	5.03	6.14	8.52	9.28
COP	kW/kW	3.45	3.36	3.47	3.45
Operating weight***					
Standard unit (with hydronic module)	kg	226	243	280	295
Standard unit (without hydronic module)	kg	211	228	262	277
Refrigerant charge R-410A	kg	6.4	7.7	7.6	9.5
Compressor		One scroll compressor			
Control		Pro-Dialog+			
Fans		Two 2-speed centrifugal fans, backward-curved blades		One 2-speed axial fan	
Diameter	mm	454	454	630	630
Number of blades		5	5	7	7
Available static pressure	Pa	80	80	80	80
Air flow	l/s	1640	1640	3472	3472
Speed	r/s	20.5	20.5	21.5	21.5
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
Water heat exchanger		One plate heat exchanger			
Water volume	l	1.52	1.90	2.28	2.85
Maximum operating pressure	kPa	1000	1000	1000	1000
Standard unit					
Water connections (MPT gas)	in	1	1	1-1/4	1-1/4
Unit with hydronic module*		Safety valve, screen filter, expansion tank, automatic air purge valve, water circuit drain valve, pressure gauge, flow switch			
Pump		One single-speed pump			
Maximum water-side operating pressure	kPa	400	400	400	400
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
Expansion tank capacity	l	5	5	8	8
Water fill system					
Inlet/outlet diameter	in	1/2	1/2	1/2	1/2
Sound pressure level****	dB(A)	50	50	53	53
Sound power level radiated from the unit†	dB(A)	82	82	85	85
Sound power level at unit discharge†	dB(A)	80	80	91	91

* 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.

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.

** 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.

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.

*** Weight shown is a guideline only.

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

† In accordance with ISO 9614 (10⁻¹² W)

Sound spectrum, 30RBY/RQY units

30RBY/RQY		Octave bands, Hz								Sound power levels	
			125	250	500	1000	2000	4000	8000		
Radiated	017	dB	95	80	78	73	71	69	65	dB(A)	82
	021	dB	95	80	78	73	71	69	65	dB(A)	82
	026	dB	95	84	80	79	78	72	68	dB(A)	85
	033	dB	95	84	80	79	78	72	68	dB(A)	85
Fan outlet	017	dB	88	79	77	74	71	68	65	dB(A)	80
	021	dB	88	79	77	74	71	68	65	dB(A)	80
	026	dB	91	85	84	87	86	78	71	dB(A)	91
	033	dB	91	85	84	87	86	78	71	dB(A)	91

Electrical data, 30RBY/RQY units

30RBY/RQY		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	8.0	9.3	11.2	14.0
Nominal unit operating current draw***	A	8	12	20	21
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

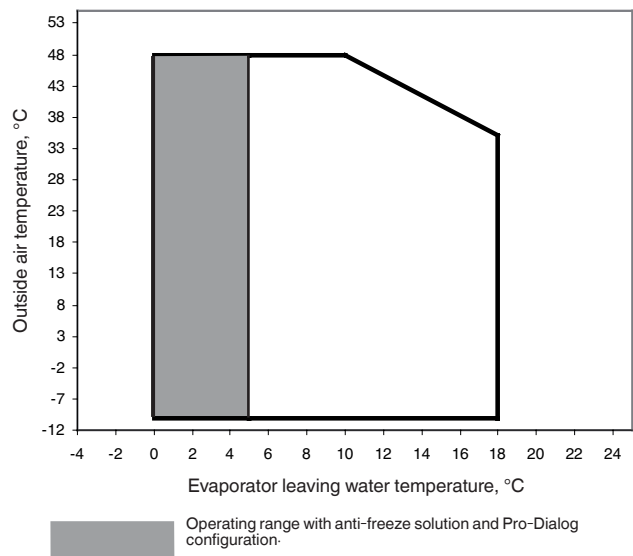
Water heat exchanger water flow rate

30RBY	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

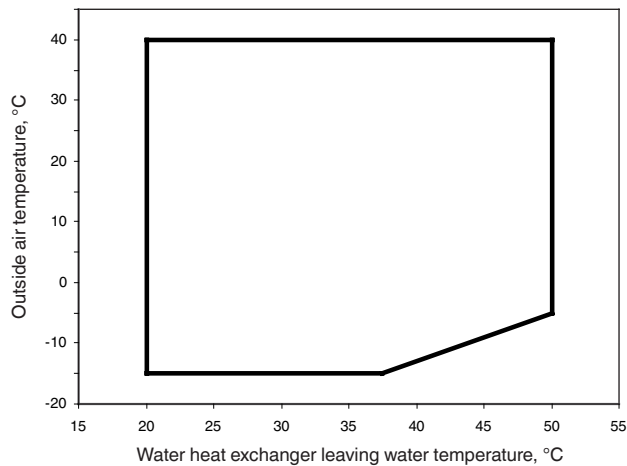
30RQY	Flow rate, l/s		
	Minimum	Maximum*	Maximum**
017	0.45	1.39	1.26
021	0.57	1.52	1.42
026	0.67	2.18	1.72
033	0.87	2.29	1.85

* 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).

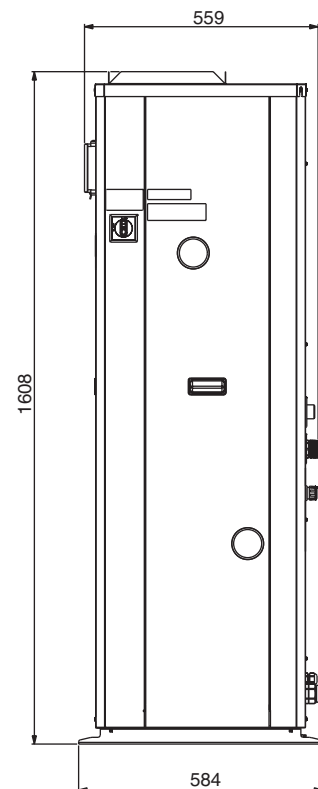
30RBY/RQY (cooling mode)



30RQY (heating mode)



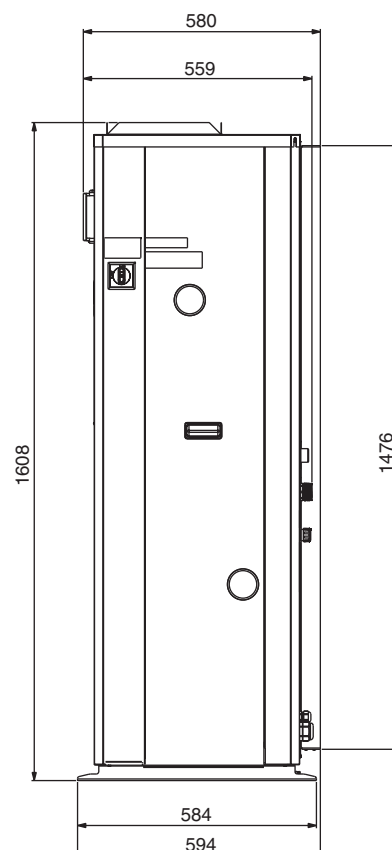
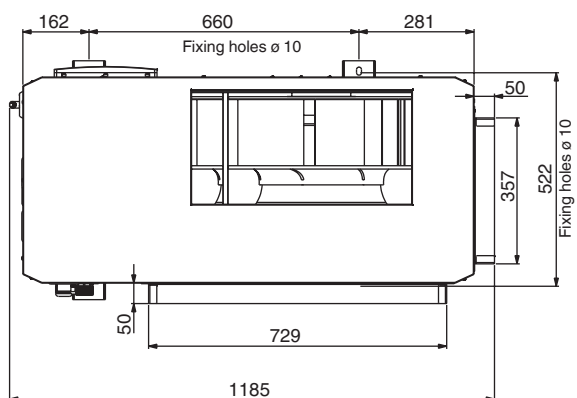
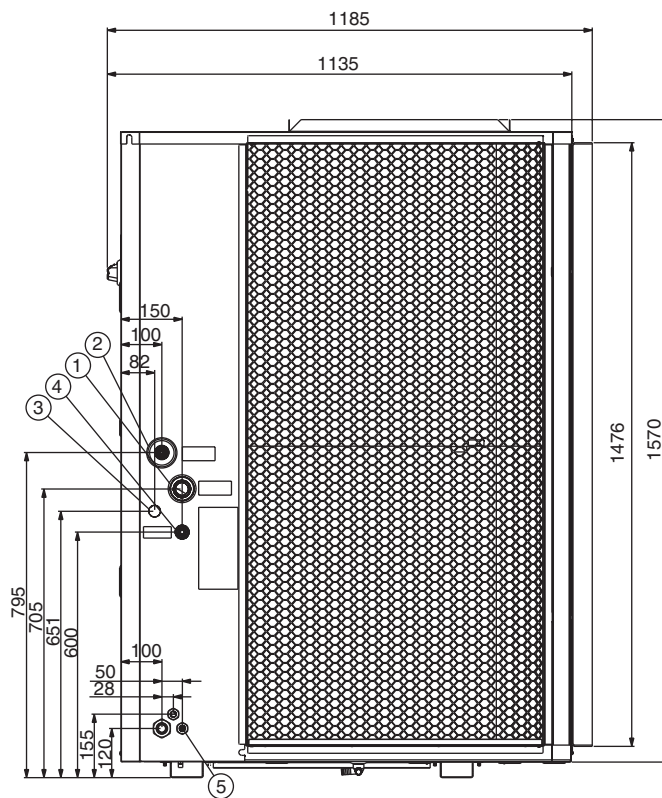
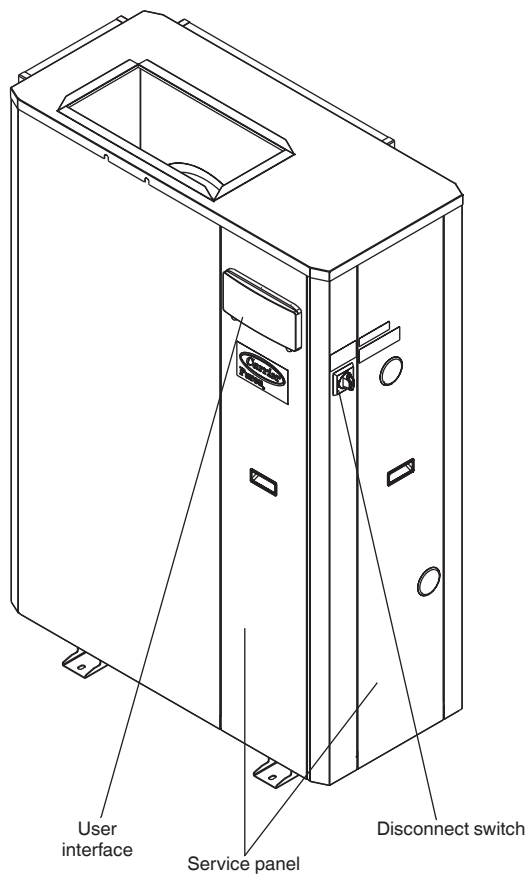
30RBY/RQY 017-021 - standard units



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Dimensions/clearances

30RBY/RQY 017-021 - units with return air ducts



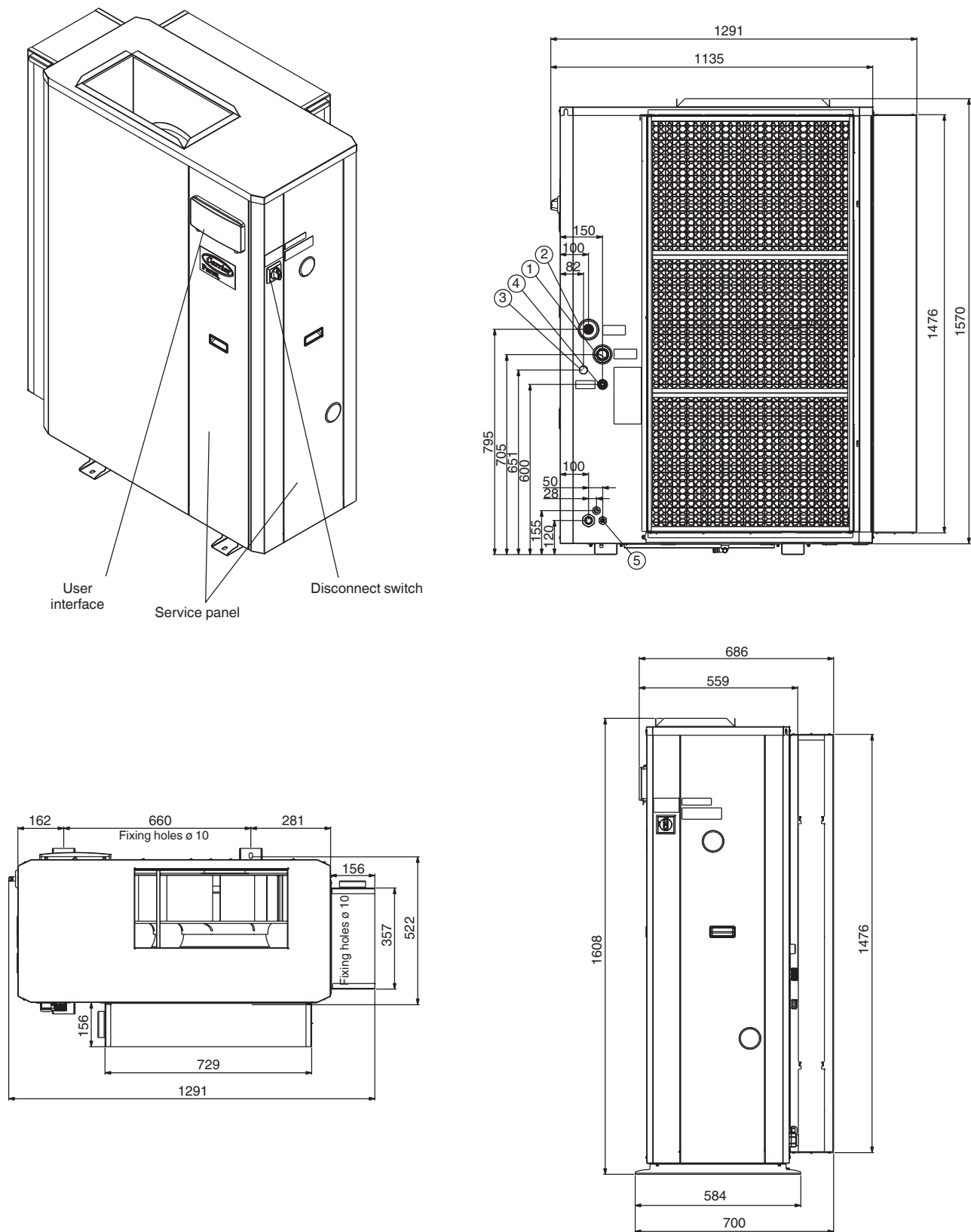
Legend

All dimensions are in mm

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

Dimensions/clearances

30RBY/RQY 017-021 - units with filter frame on the return air side



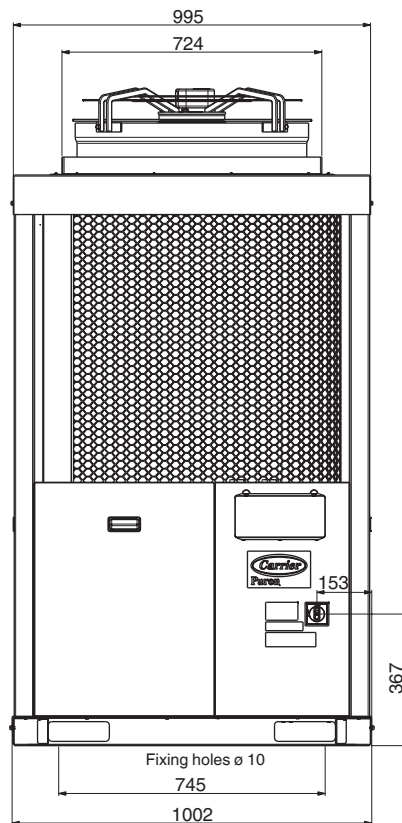
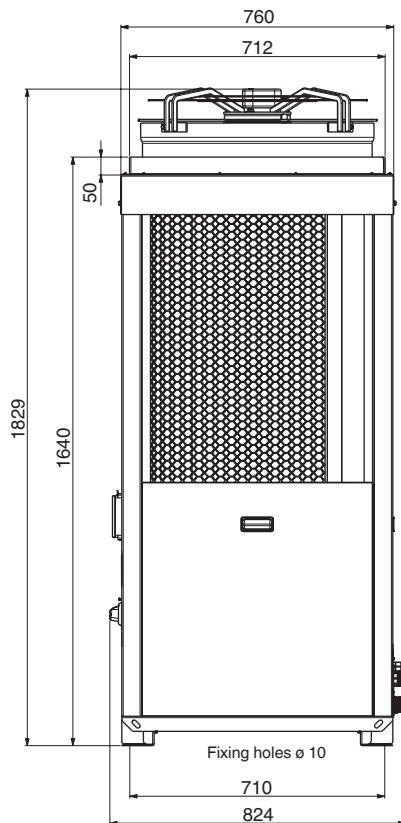
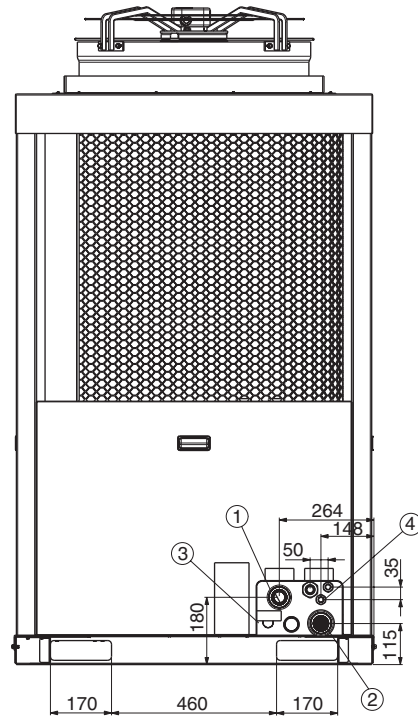
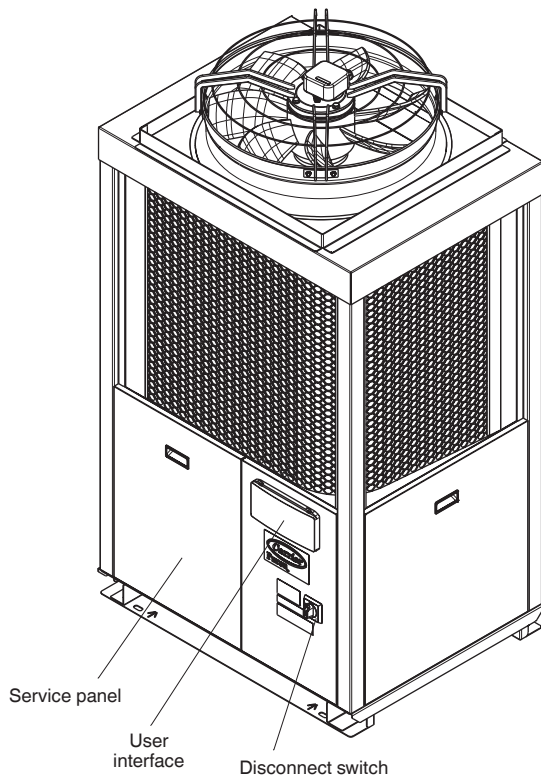
Legend

All dimensions are in mm

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

Dimensions/clearances

30RBY/RQY 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

30RBY	LOAD %	CAP kW	UNIT kW	EER kW/kW	ESEER kW/kW
17	100	15.8	5.77	2.74	3.05
	75	11.9	3.98	2.98	
	50	7.91	2.49	3.17	
	25	3.95	1.33	2.96	
21	100	20.5	7.57	2.71	2.99
	75	15.4	5.17	2.98	
	50	10.3	3.30	3.11	
	25	5.13	1.80	2.85	
26	100	27.3	8.95	3.06	3.36
	75	20.5	6.16	3.33	
	50	13.7	3.92	3.48	
	25	6.84	2.11	3.23	
33	100	32.7	10.15	3.22	3.53
	75	24.5	6.99	3.51	
	50	16.4	4.48	3.65	
	25	8.18	2.42	3.38	

30RQY	LOAD %	CAP kW	UNIT kW	EER kW/kW	ESEER kW/kW
17	100	15.0	5.52	2.72	3.04
	75	11.3	3.76	3.00	
	50	7.51	2.37	3.16	
	25	3.75	1.29	2.91	
21	100	19.2	7.06	2.72	2.98
	75	14.4	4.86	2.97	
	50	9.6	3.12	3.08	
	25	4.80	1.69	2.85	
26	100	27.3	8.96	3.05	3.35
	75	20.5	6.17	3.33	
	50	13.7	3.94	3.47	
	25	6.84	2.12	3.22	
33	100	32.6	10.15	3.22	3.52
	75	24.5	6.99	3.50	
	50	16.3	4.48	3.64	
	25	8.16	2.42	3.37	

Legend

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

Cooling capacities, 30RBY units

30RBY 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	16.7	3.95	5.25	0.80	148.1	16.0	4.31	5.61	0.76	153.0	15.2	4.72	6.01	0.72	158.1	14.4	5.14	6.41	0.68	163.2	13.5	5.59	6.85	0.64	168.4
021	21.5	5.49	6.79	1.02	120.7	20.6	5.98	7.28	0.98	126.6	19.5	6.55	7.85	0.93	133.6	18.2	7.25	8.53	0.87	141.6	16.8	8.06	9.31	0.80	150.5
026	28.1	5.96	8.56	1.34	163.9	27.0	6.58	9.18	1.29	172.9	25.7	7.27	9.85	1.22	183.1	24.3	8.05	10.6	1.16	194.3	22.5	8.95	11.5	1.07	207.2
033	33.4	7.00	9.60	1.59	158.6	32.2	7.66	10.3	1.53	167.8	30.8	8.46	11.0	1.47	178.2	29.0	9.39	11.9	1.38	191.1	26.7	10.4	12.9	1.27	206.1
017	17.5	4.07	5.37	0.84	143.2	16.6	4.51	5.81	0.79	149.2	15.8	4.91	6.20	0.75	154.6	14.9	5.34	6.62	0.71	160.1	14.0	5.80	7.05	0.67	165.8
021	22.6	5.63	6.93	1.08	113.5	21.7	6.14	7.43	1.03	120.1	20.5	6.71	8.00	0.98	127.6	19.2	7.42	8.69	0.91	136.1	17.7	8.22	9.47	0.84	145.5
026	29.7	6.05	8.65	1.42	150.8	28.6	6.67	9.27	1.36	160.3	27.3	7.36	9.94	1.30	171.2	25.8	8.14	10.7	1.23	183.4	23.9	9.04	11.6	1.14	197.4
033	35.4	7.10	9.70	1.69	144.2	34.1	7.77	10.40	1.63	154.1	32.7	8.56	11.1	1.56	165.3	30.8	9.49	12.0	1.47	179.1	28.4	10.5	13.0	1.36	195.5
017	19.1	4.18	5.48	0.91	133.2	18.1	4.63	5.92	0.86	140.0	17.1	5.11	6.40	0.81	147.0	15.9	5.64	6.91	0.76	154.3	14.8	6.17	7.43	0.70	161.6
021	24.4	5.87	7.18	1.16	101.9	23.4	6.39	7.69	1.12	109.2	22.1	6.98	8.27	1.06	118.0	20.7	7.69	8.97	0.99	127.4	19.0	8.49	9.74	0.91	137.8
026	32.3	6.20	8.80	1.54	129.8	31.1	6.82	9.42	1.49	140.1	29.7	7.50	10.1	1.42	152.2	28.1	8.28	10.8	1.34	165.8	26.2	9.17	11.7	1.25	181.6
033	38.4	7.26	9.87	1.84	120.7	37.1	7.94	10.5	1.77	131.8	35.5	8.74	11.3	1.70	144.3	33.6	9.67	12.2	1.60	159.5	31.1	10.7	13.2	1.49	177.5
017	21.7	4.46	5.76	1.04	114.9	20.7	4.86	6.16	0.99	122.3	19.6	5.33	6.62	0.94	130.6	18.3	5.87	7.14	0.88	139.7	-	-	-	-	-
021	27.7	6.36	7.66	1.33	79.1	26.5	6.89	8.19	1.27	88.5	25.0	7.50	8.79	1.20	99.3	23.3	8.21	9.48	1.12	111.1	-	-	-	-	-
026	37.0	6.57	9.18	1.77	89.0	35.7	7.19	9.79	1.71	101.4	34.2	7.86	10.4	1.64	115.5	32.4	8.62	11.2	1.55	131.3	-	-	-	-	-
033	44.2	7.61	10.2	2.12	71.7	42.7	8.31	10.9	2.05	85.6	41.0	9.09	11.7	1.96	101.2	38.8	10.0	12.6	1.86	119.6	-	-	-	-	-
017	22.2	4.58	5.88	1.07	111.3	21.2	4.98	6.28	1.02	119.4	20.1	5.41	6.69	0.96	127.6	-	-	-	-	-	-	-	-	-	-
021	28.0	6.41	7.72	1.34	78.0	26.7	6.93	8.23	1.28	88.1	25.1	7.52	8.81	1.20	99.7	-	-	-	-	-	-	-	-	-	-
026	40.0	6.83	9.43	1.91	61.2	38.5	7.45	10.1	1.85	75.6	36.7	8.09	10.7	1.76	93.5	-	-	-	-	-	-	-	-	-	-
033	46.6	7.76	10.4	2.23	51.4	44.9	8.46	11.1	2.15	67.5	42.9	9.23	11.8	2.06	85.8	-	-	-	-	-	-	-	-	-	-
Legend:					Application data:																				
LWT					Standard units, refrigerant: R410A																				
CAP kW					Evaporator temperature rise: 5 K																				
COMP kW					Evaporator fluid: chilled water																				
UNIT kW					Fouling factor: 0.18 x 10 ⁻⁴ (m ² K)/W																				
COOL l/s					Performances in accordance with EN 14511																				
COOL kPa																									

Cooling capacities, 30RQY units

30RQY 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	CAP kW	COMP kW	UNIT kW	COOL l/s	COOL kPa				
017	5	15.8	3.73	5.05	0.75	153.4	15.1	4.12	5.44	0.72	158.2	14.3	4.56	5.86	0.68	163.2	13.4	5.03	6.33	0.64	168.5	12.4	5.55	6.83	0.59	174.0					
021		20.0	5.08	6.47	0.95	136.3	19.1	5.51	6.90	0.91	141.3	18.2	6.03	7.41	0.87	146.7	17.0	6.63	7.99	0.81	153.2	15.7	7.37	8.71	0.75	160.5					
026		28.0	5.98	8.58	1.33	191.6	27.0	6.60	9.19	1.28	199.2	25.7	7.28	9.87	1.22	207.6	24.3	8.06	10.6	1.16	217.7	22.6	8.97	11.5	1.07	227.7					
033		33.5	6.97	9.62	1.60	166.7	32.2	7.63	10.3	1.54	175.8	30.8	8.42	11.0	1.46	186.2	28.9	9.33	11.9	1.38	198.8	26.5	10.3	12.9	1.26	213.5					
017	7	16.7	3.82	5.14	0.79	148.5	15.9	4.21	5.52	0.76	153.7	15.0	4.65	5.95	0.72	159.1	14.1	5.12	6.42	0.67	164.7	13.1	5.64	6.91	0.62	170.6					
021		21.1	5.17	6.56	1.00	130.0	20.2	5.60	6.99	0.96	135.4	19.2	6.12	7.50	0.92	141.3	18.0	6.72	8.08	0.86	148.3	16.6	7.45	8.79	0.79	156.1					
026		29.7	6.07	8.67	1.42	180.1	28.6	6.69	9.29	1.36	188.3	27.3	7.37	9.96	1.30	197.3	25.8	8.15	10.7	1.23	207.5	24.0	9.06	11.6	1.14	219.3					
033		35.5	7.07	9.72	1.69	152.8	34.1	7.74	10.4	1.63	163.0	32.6	8.52	11.1	1.55	174.0	30.6	9.43	12.0	1.46	187.6	28.2	10.4	13.0	1.34	203.7					
017	10	18.0	3.96	5.28	0.86	139.8	17.2	4.36	5.67	0.82	145.7	16.2	4.80	6.11	0.78	151.9	15.2	5.28	6.58	0.73	158.2	14.2	5.80	7.08	0.68	164.7					
021		22.9	5.32	6.71	1.09	119.5	21.9	5.76	7.15	1.05	125.6	20.9	6.27	7.65	1.00	132.1	19.6	6.86	8.23	0.93	139.8	18.0	7.59	8.93	0.86	148.6					
026		32.3	6.21	8.81	1.54	161.9	31.1	6.84	9.43	1.49	170.7	29.8	7.52	10.1	1.42	180.8	28.2	8.30	10.9	1.35	192.1	26.2	9.20	11.7	1.25	205.3					
033		38.6	7.25	9.90	1.84	130.0	37.1	7.92	10.6	1.77	141.1	35.5	8.70	11.3	1.70	153.8	33.5	9.62	12.2	1.60	168.8	30.9	10.6	13.2	1.48	186.6					
017	15	20.3	4.32	5.64	0.97	124.8	19.3	4.71	6.03	0.93	131.7	18.3	5.15	6.46	0.88	138.7	17.3	5.60	6.90	0.83	145.9	-	-	-	-	-					
021		26.0	5.80	7.19	1.24	100.3	25.0	6.19	7.58	1.20	107.2	23.9	6.66	8.03	1.14	114.4	22.5	7.17	8.53	1.08	122.9	-	-	-	-	-					
026		37.2	6.52	9.12	1.78	123.5	36.0	7.15	9.75	1.72	134.0	34.5	7.82	10.4	1.65	146.3	32.7	8.60	11.2	1.57	160.0	-	-	-	-	-					
033		44.3	7.59	10.2	2.12	83.7	42.7	8.29	10.9	2.04	97.7	40.8	9.05	11.7	1.95	113.6	38.6	9.98	12.6	1.85	131.8	-	-	-	-	-					
017	18	20.6	4.39	5.71	0.99	122.8	19.7	4.78	6.10	0.94	130.1	18.6	5.21	6.52	0.89	137.5	-	-	-	-	-	-	-	-	-	-					
021		26.4	5.89	7.28	1.27	98.4	25.3	6.27	7.66	1.21	105.8	24.1	6.72	8.10	1.16	113.7	-	-	-	-	-	-	-	-	-	-					
026		39.3	6.66	9.26	1.88	106.9	37.9	7.28	9.88	1.81	119.3	36.1	7.93	10.5	1.73	134.1	-	-	-	-	-	-	-	-	-	-					
033		45.7	7.69	10.3	2.19	73.1	43.9	8.38	11.0	2.10	88.6	41.9	9.13	11.8	2.01	106.1	-	-	-	-	-	-	-	-	-	-					
Legend:		Application data:																													
LWT		Standard units, refrigerant: R410A																													
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																													
		Fouling factor: 0.18 x 10 ⁻⁴ (m ² K)/W																													
		Performances in accordance with EN 14511																													

Heating capacities, 30RQY units

30RQY 017-033

LWT °C		Outdoor temperature, °C db/wb																													
		-15/-16						-7/-8						0/-1						7/6						15/12.5					
		CAP* kW	CAP** kW	COMP kW	UNIT I/s	COND kPa	CAP* kW	CAP** kW	COMP kW	UNIT I/s	COND kPa	CAP* kW	CAP** kW	COMP kW	UNIT I/s	COND kPa	CAP* kW	CAP** kW	COMP kW	UNIT I/s	COND kPa	CAP* kW	CAP** kW	COMP kW	UNIT I/s	COND kPa					
017	30	8.87	9.83	3.47	5.33	0.47 190	10.1	12.1	3.50	5.29	0.58 179	11.6	14.6	3.58	5.10	0.70 166	17.6	17.6	3.73	5.09	0.84 149	20.8	20.8	3.83	5.15	1.00 128					
021		10.8	12.0	4.52	6.39	0.58 181	12.1	14.5	4.53	6.32	0.70 169	13.8	17.4	4.62	6.22	0.84 155	20.8	20.8	4.78	6.14	1.00 137	24.5	24.5	4.94	6.26	1.18 114					
026		14.9	16.5	5.74	9.35	0.79 262	17.2	20.6	5.85	9.32	0.99 242	19.7	24.9	6.02	8.87	1.20 217	29.9	29.9	6.23	8.86	1.44 185	35.4	35.4	6.34	8.89	1.70 144					
033		16.3	18.1	6.46	10.0	0.87 259	18.6	22.3	6.55	10.0	1.07 239	21.3	27.0	6.67	9.52	1.30 213	32.2	32.2	7.00	9.58	1.55 179	38.0	38.0	7.10	9.61	1.83 137					
017	35	8.84	9.86	3.87	5.73	0.47 189	10.0	12.0	3.91	5.70	2.11 180	11.3	14.5	3.99	5.50	0.70 167	17.3	17.3	4.11	5.47	0.83 151	20.5	20.5	4.20	5.51	0.99 131					
021		10.8	12.1	4.98	6.84	0.58 180	12.0	14.5	4.98	6.77	2.14 170	13.6	17.3	5.05	6.63	0.83 156	20.6	20.6	5.22	6.57	0.99 138	24.3	24.3	5.40	6.72	1.17 116					
026		14.6	16.3	6.40	10.0	0.79 263	16.8	20.3	6.51	9.98	2.04 244	19.2	24.6	6.67	9.50	1.18 220	29.6	29.6	6.89	9.52	1.42 188	35.0	35.0	6.99	9.54	1.69 149					
033		16.1	17.9	7.14	10.7	0.86 260	18.3	22.2	7.21	10.6	2.09 240	20.9	26.8	7.34	10.2	1.29 214	32.0	32.0	7.69	10.3	1.54 182	37.8	37.8	7.80	10.3	1.82 140					
017	40	-	-	-	-	-	9.70	12.0	4.36	6.15	1.95 180	11.0	14.4	4.45	5.94	0.69 168	17.1	17.1	4.58	5.93	0.82 153	20.2	20.2	4.66	5.98	0.97 134					
021		-	-	-	-	-	11.7	14.5	5.52	7.31	1.99 170	13.2	17.3	5.56	7.13	0.83 156	20.5	20.5	5.72	7.07	0.99 140	24.1	24.1	5.86	7.18	1.16 119					
026		-	-	-	-	-	16.3	20.1	7.27	10.7	1.88 245	18.5	24.3	7.43	10.2	1.17 222	29.1	29.1	7.62	10.2	1.40 192	34.4	34.4	7.66	10.2	1.66 154					
033		-	-	-	-	-	17.8	22.0	8.02	11.4	1.93 240	20.2	26.5	8.14	10.9	1.28 216	31.6	31.6	8.48	11.1	1.52 185	37.2	37.2	8.49	11.0	1.79 145					
017	45	-	-	-	-	-	9.44	12.0	4.85	6.64	1.81 180	10.6	14.2	4.95	6.43	0.69 169	16.9	16.9	5.10	6.45	0.81 155	19.8	19.8	5.18	6.50	0.96 137					
021		-	-	-	-	-	11.5	14.6	6.19	7.98	1.83 170	12.8	17.2	6.17	7.72	0.83 157	20.3	20.3	6.31	7.66	0.98 141	23.8	23.8	6.42	7.74	1.15 121					
026		-	-	-	-	-	15.7	19.9	8.13	11.6	1.71 246	17.7	23.8	8.27	11.0	1.15 225	28.5	28.5	8.46	11.1	1.38 197	33.8	33.8	8.45	11.0	1.63 160					
033		-	-	-	-	-	17.1	21.7	8.93	12.3	1.76 242	19.4	26.1	9.07	11.8	1.26 219	31.1	31.1	9.42	12.0	1.50 189	36.7	36.7	9.38	11.9	1.77 150					
017	50	-	-	-	-	-	-	-	-	-	-	10.4	14.1	5.50	7.0	0.68 170	16.6	16.6	5.66	7.01	0.80 156	19.4	19.4	5.75	7.06	0.94 140					
021		-	-	-	-	-	-	-	-	-	-	12.6	17.1	6.95	8.5	0.83 158	20.1	20.1	7.05	8.41	0.97 143	23.4	23.4	7.11	8.42	1.13 125					
026		-	-	-	-	-	-	-	-	-	-	17.2	23.4	9.27	12.0	1.13 228	27.8	27.8	9.44	12.1	1.34 202	32.8	32.8	9.38	11.9	1.58 168					
033		-	-	-	-	-	-	-	-	-	-	18.7	25.5	10.1	12.8	1.23 222	30.3	30.3	10.4	13.0	1.46 194	35.8	35.8	10.4	12.9	1.73 158					

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

Air pressure drop

Ducted unit selection

The selection is based on the pressure drop:
The cooling and heating capacities are given for an available pressure of 80 Pa and for a unit without filter.

To calculate the performances at lower pressure drops please use the correction factors below.

Example 30RQY 021 without filter:

Duct pressure drop: 40 Pa
Performance at Eurovent conditions:
Cooling capacity: $20.3 \times 1.034 = 21.0 \text{ kW}$
Power input: $7.06 \times 0.979 = 6.91 \text{ kW}$
Air flow = $1640 \times 1.064 = 1745 \text{ l/s}$

Cooling mode

Air duct conditions, 30RBY/RQY 017-021				
Duct pressure drop, Pa	Air flow factor	Cooling capacity factor	EER factor	Power input factor
0	1.129	1.053	1.087	0.962
20	1.097	1.047	1.076	0.966
40	1.064	1.034	1.050	0.979
60	1.032	1.021	1.022	0.990
80	1.000	1.000	1.000	1.000

Air duct conditions, 30RBY/RQY 026-033				
Duct pressure drop, Pa	Air flow factor	Cooling capacity factor	EER factor	Power input factor
0	1.200	1.042	1.075	0.971
20	1.150	1.033	1.065	0.974
40	1.100	1.021	1.043	0.981
60	1.049	1.010	1.022	0.990
80	1.000	1.000	1.000	1.000

Heating mode

Air duct conditions, 30RQY 017-021				
Duct pressure drop, Pa	Air flow factor	Heating capacity factor	COP factor	Power input factor
0	1.129	1.020	1.020	1.000
20	1.097	1.018	1.018	1.000
40	1.064	1.015	1.015	1.000
60	1.032	1.008	1.008	1.000
80	1.000	1.000	1.000	1.000

Air duct conditions, 30RQY 026-033				
Duct pressure drop, Pa	Air flow factor	Heating capacity factor	COP factor	Power input factor
0	1.200	1.015	1.015	1.000
20	1.150	1.012	1.012	1.000
40	1.100	1.009	1.009	1.000
60	1.049	1.005	1.005	1.000
80	1.000	1.000	1.000	1.000

Filter option

30RBY/RQY		017	021
Filter pressure drop			
Clean filter	Pa	10	10
Clogged filter	Pa	20	20

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

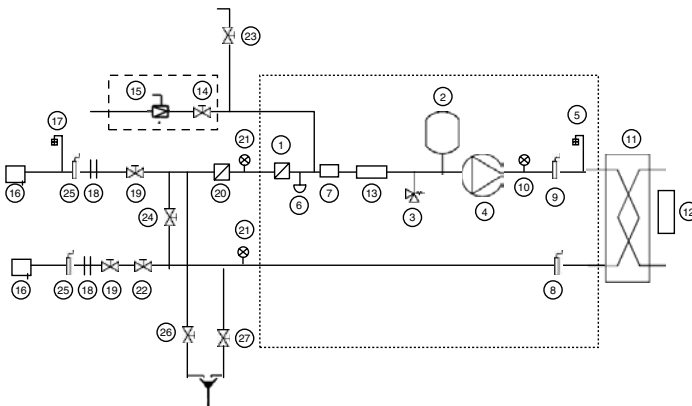
These are the same as for the standard unit except:

30RBY/RQY - 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

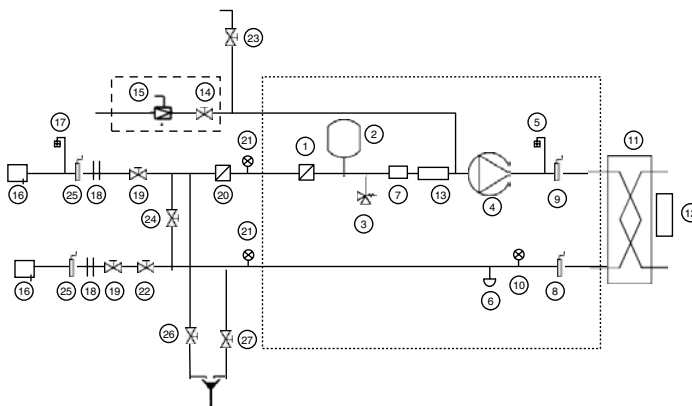
* Standard Eurovent conditions: water heat exchanger entering/leaving water temperature 12°C/7°C, outside air temperature 35°C.

Typical hydronic circuit diagram

Sizes 17-21 kW



Sizes 26-33 kW



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

Legend

Components of the unit and hydronic module

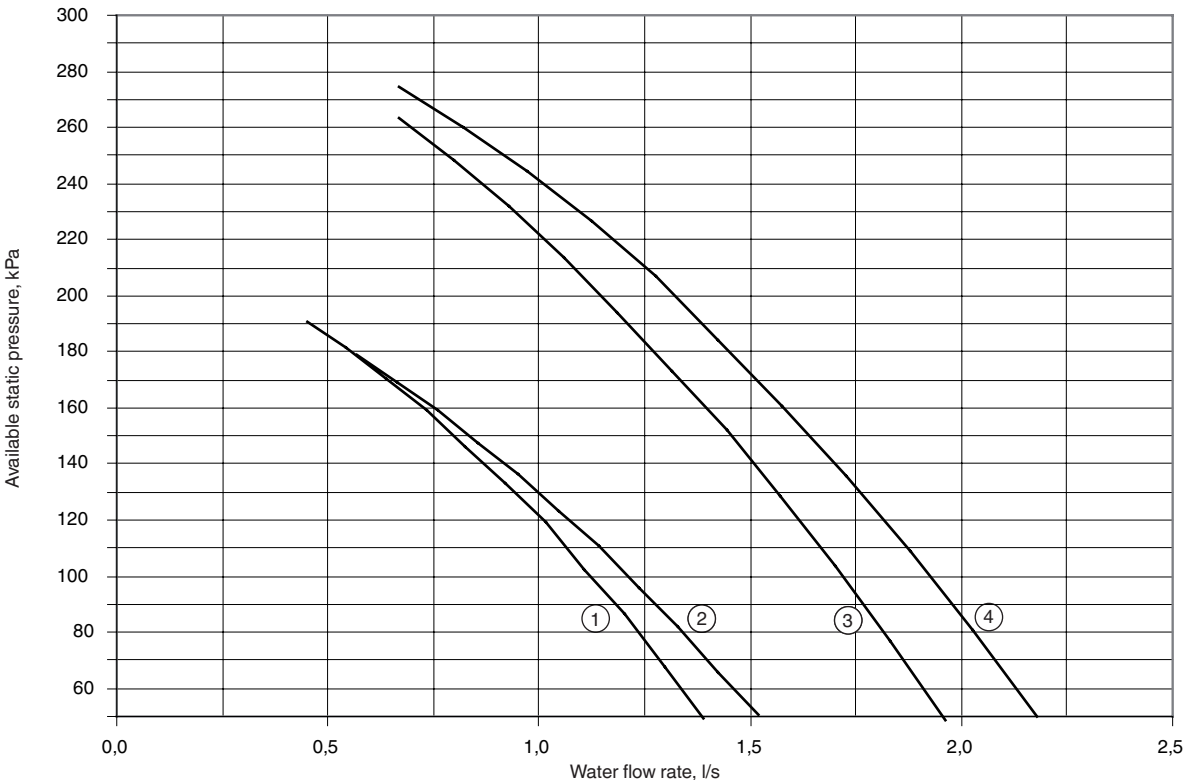
- 1 Screen filter
- 2 Expansion tank
- 3 Safety valve
- 4 High-pressure pump
- 5 Air purge
- 6 Water drain valve
- 7 Flow sensor
- 8 Plate heat exchanger leaving temperature sensor
- 9 Plate heat exchanger entering temperature sensor
- 10 Pressure gauge
- 11 Plate heat exchanger
- 12 Heat exchanger frost 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

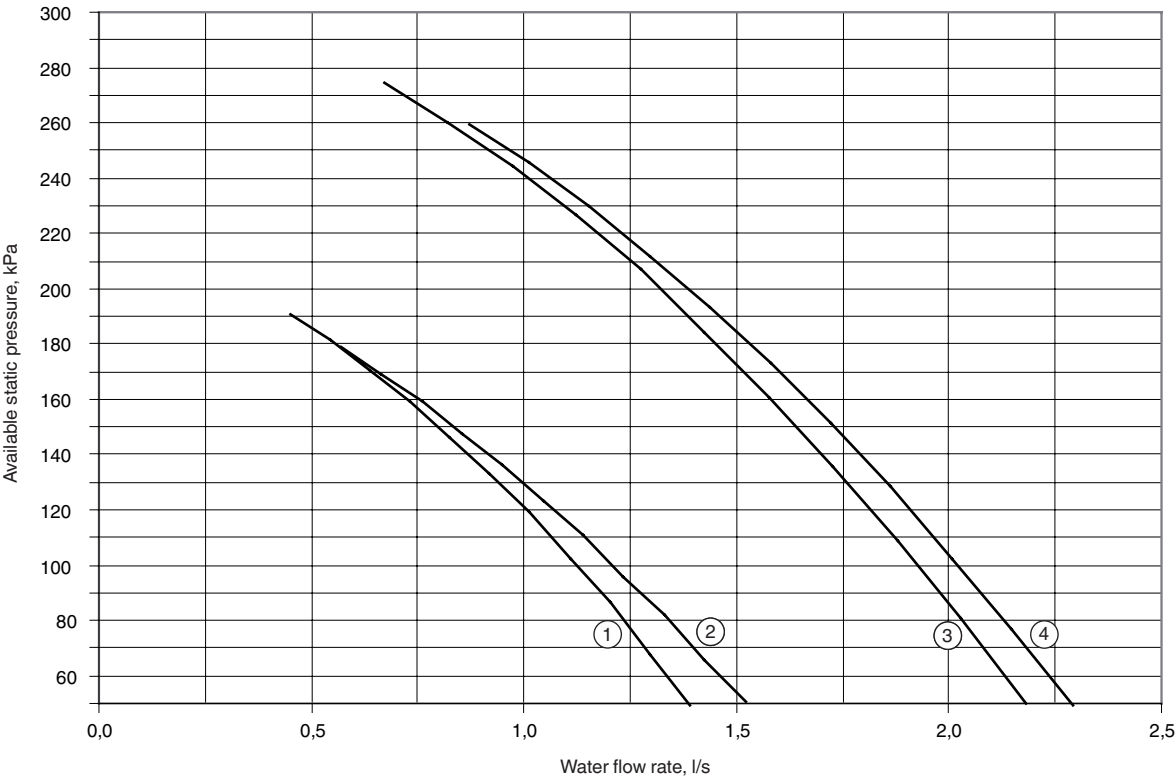
Available static system pressure

30RBY 017-033



- Legend**
- 1. 30RBY 017
 - 2. 30RBY 021
 - 3. 30RBY 026
 - 4. 30RBY 033

30RQY 017-033



- Legend**
- 1. 30RQY 017
 - 2. 30RQY 021
 - 3. 30RQY 026
 - 4. 30RQY 033