

DUCTABLE AIR-COOLED LIQUID CHILLERS



Easy and fast installation
Hydraulic module available
Economical operation
Superior reliability

30RBY 017-033 A

AQUASNAP®

Nominal cooling capacity 30RBY: 16-32 kW

The Aquasnap liquid chiller/heat pump range 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 Aquasnap units are equipped with a hydraulic 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.



CARRIER participates in the ECP programme for LCP/HP
Check ongoing validity of certificate:
www.eurovent-certification.com

FEATURES

Quiet operation

- Compressors
 - Low-noise scroll compressors with low vibration levels
 - The compressor assembly is supported by anti-vibration mountings
- Air heat exchanger section
 - Vertical air heat exchanger coils
 - 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.

Access panels, 30RBY 017-021



Easy and fast installation

- Integrated hydraulic module
 - Fixed speed circulator
 - 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
 - Automatic purge valve positioned at the highest point of the hydraulic 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)
- 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 and in standard for units size 40kW)
 - 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.
- Easy duct connection (30RBY version only)
 - 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, RBY 017-021



FEATURES

Economical operation

- Increased energy efficiency at part load
 - Specific Free Defrost algorithm is present to optimise performance and comfort even during defrost period.
- 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
 - 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

Hydraulic module, sizes 026-040



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 hydraulic circuit (Carrier patent)

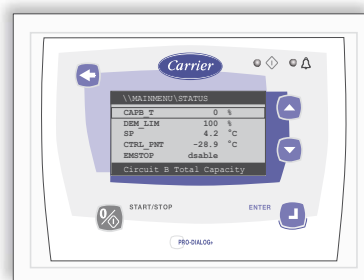
■ Exceptional endurance tests

- 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.

FEATURES

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 (option)

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 026-040



TYPE KEY

30R	B	Y	021	C	H	E	-	B	A	--	-
Range											Revision status
B - Cooling											Not used
Q - Heat pump											
- - Standard											- - Standard
Y - High static fan											A - Remote user Interface HMI (As accessory)
017 - nominal size 17 kW											- - Without gateway
021 - nominal size 21 kW											B - CCN JBus gateway
026 - nominal size 26 kW											C - CCN Bacnet gateway
033 - nominal size 33 kW											D - CCN LONtalk gateway
040 - nominal size 40 kW											- - Standard
C - Power supply with neutral cable (only sizes 017-033)											- - Without coil protection
D - Power supply without neutral											E - Epoxy coil protection (Gold-fin)
X - Without hydraulic module											
H - With hydraulic module with expansion tank											
F - With hydraulic module with expansion tank and water filling system											
R - With hydraulic and without expansion tank											
Z - With hydraulic, w/o expansion tank and with water filling system											

PHYSICAL DATA, 30RBY UNITS

30RBY				017	021	026	033
Cooling							
Standard unit		Nominal capacity	kW	15,7	20,3	27,0	32,3
Full load performances*	CA1	EER	kW/kW	2,65	2,60	2,88	3,05
		Eurovent class		B	B	A	A
		Nominal capacity	kW	19,9	24,8	36,1	42,3
	CA2	EER	kW/kW	3,07	2,85	3,49	3,67
		Eurovent class		E	E	D	B
		Standard unit	SEPR -2/-8°C Process medium temp.***	kWh/kWh	2,61	2,64	2,62
Seasonal energy efficiency**		SEPR 12/7°C Process high temp.	kWh/kWh	4,17	4,03	4,29	4,06
		SEER 12/7°C Comfort low temp.	kWh/kWh	2,76	2,72	2,86	3,08
		SEER 23/18°C Comfort medium temp.	kWh/kWh	3,10	3,05	3,28	3,52
Integrated Part Load Value		IPLV.SI	kW/kW	3,340	3,300	3,490	3,690
Operating weight ⁽¹⁾							
Standard unit, with hydraulic module			kg	209	228	255	280
Standard unit, without hydraulic module			kg	193	213	237	262
Sound pressure level ⁽²⁾			dB(A)	50	50	53	53
Sound power level radiated from the unit ⁽³⁾			dB(A)	82	82	85	85
Sound power level at unit discharge ⁽³⁾			dB(A)	80	80	91	91
Dimensions							
Length			mm	1135	1135	1002	1002
Depth			mm	584	584	824	824
Height			mm	1608	1608	1829	1829
Compressor				One hermetic scroll compressor			
Refrigerant charge R-410A			kg	5,5	6,4	5,8	8,6
			teqCO ₂	11,5	13,4	12,1	18,0
Control				Pro-Dialog+			
Fans				Two 2-speed centrifugal fans, 5 backward-curved		One 2-speed axial fan, 7 blades	
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
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

* In accordance with standard EN14511-3:2013
** In accordance with standard EN14825:2016, average climate
*** With EG 30%
CA1 Cooling mode conditions: Evaporator water entering/leaving temperature 12°C/7°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
CA2 Cooling mode conditions: Evaporator water entering/leaving temperature 23°C/18°C, outside air temperature 35°C, evaporator fouling factor 0 m².K/W
SEPR $-2/-8^{\circ}\text{C}$ **Bold values compliant to Ecodesign regulation: (EU) No 2015/1095 for Process application**
SEER $12/7^{\circ}\text{C}$ & SEPR $12/7^{\circ}\text{C}$ Values calculated in accordance with EN14825:2016
SEER $23/18^{\circ}\text{C}$ Values calculated in accordance with EN14825:2016
IPLV.SI Calculations according to standard performances AHRI 551-591 (SI)
(1) Weight shown is a guideline only. Please refer to the unit nameplate
(2) For information, calculated from the sound power level Lw(A)
(3) In accordance with ISO 9614 (10⁻¹² W)



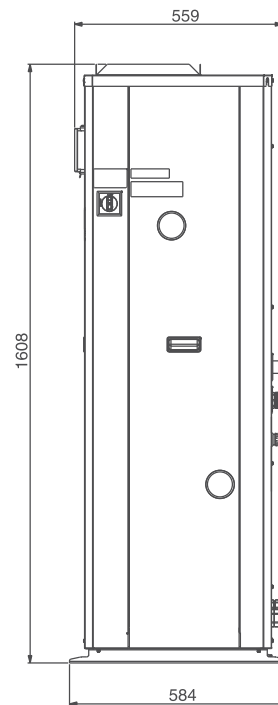
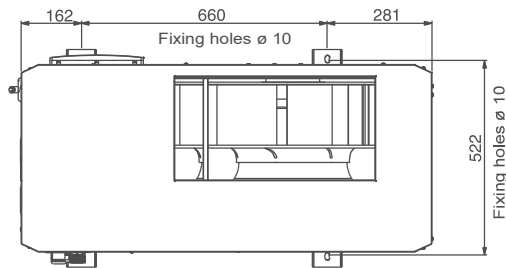
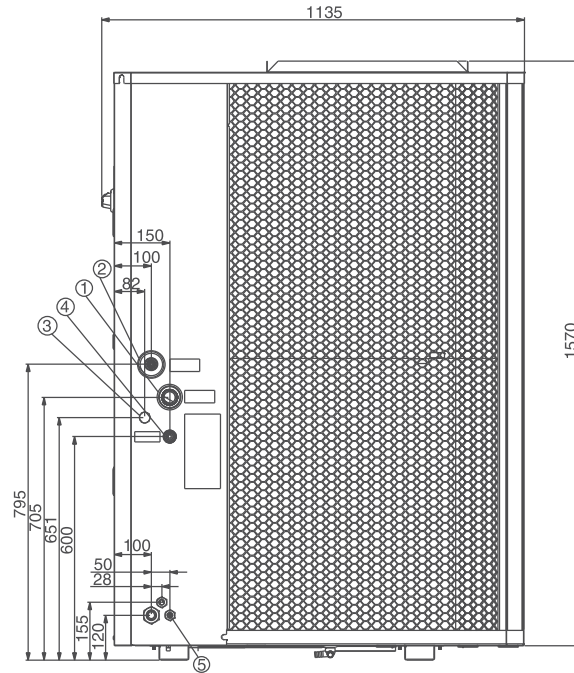
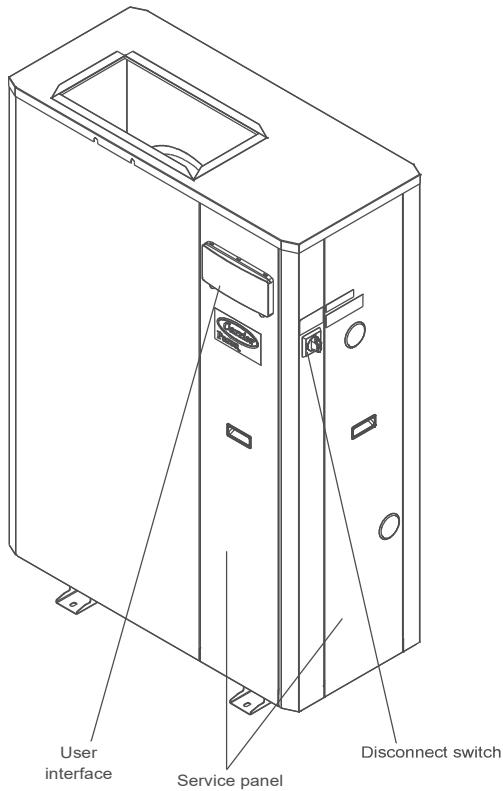
Eurovent certified values

PHYSICAL DATA, 30RBY UNITS

30RBY		017	021	026	033
Air heat exchanger		Copper tubes and aluminum 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 hydraulic module		Pump, screen filter, expansion tank, flow switch, pressure gauge, automatic air purge valve, relief valve, water circuit drain valve			
Pump		One single-speed pump, maximum water-side operating pressure 400 kPa			
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
Chassis paint colour		Colour code: RAL 7035			

DIMENSIONS/CLEARANCES

30RBY 017-021 - standard units



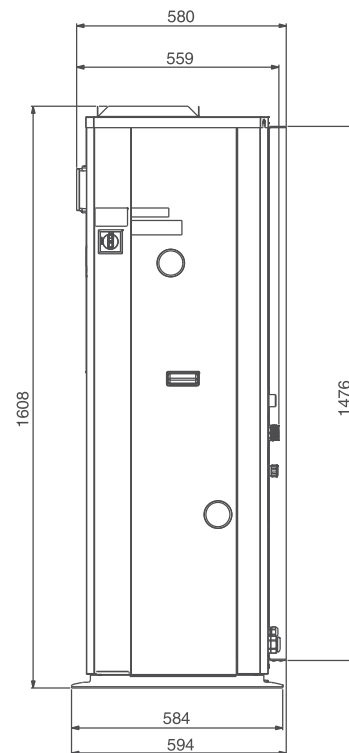
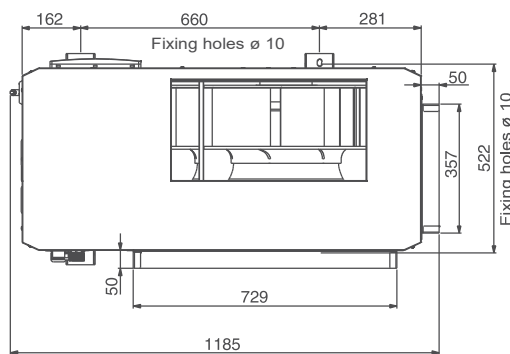
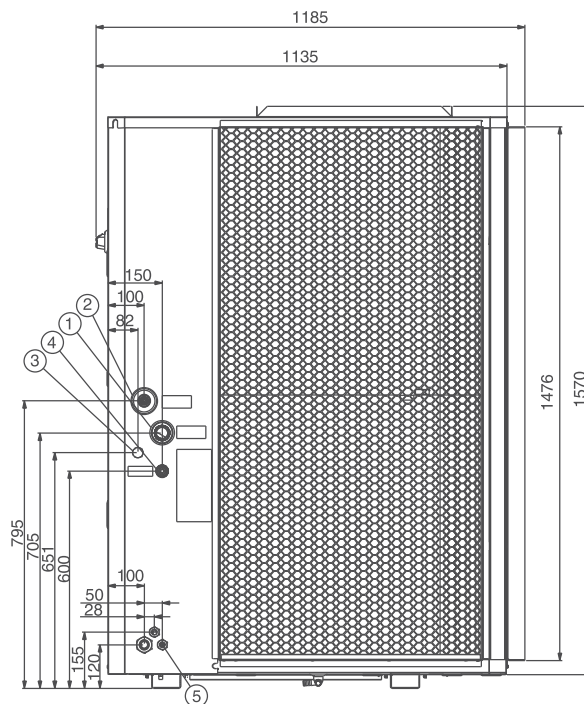
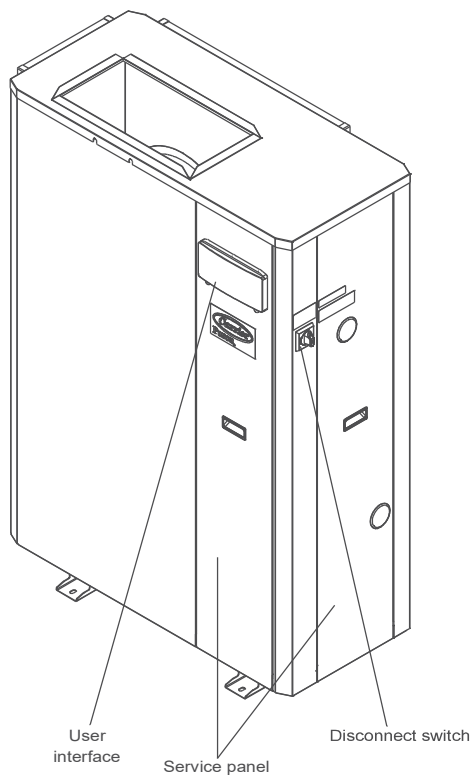
Legend

All dimensions are in mm

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

DIMENSIONS/CLEARANCES

30RBY 017-021 - units with return air ducts



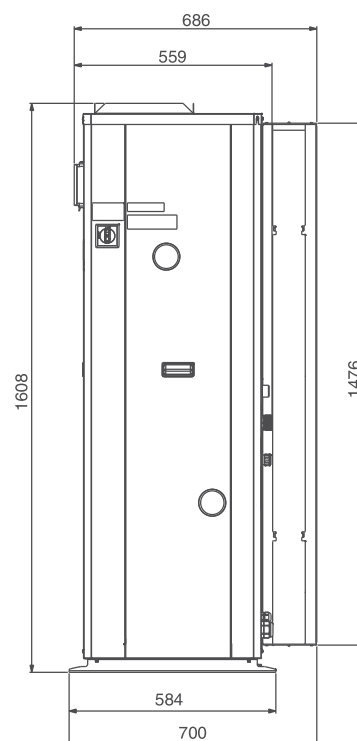
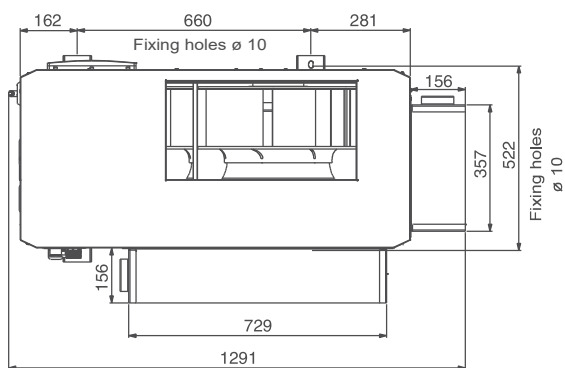
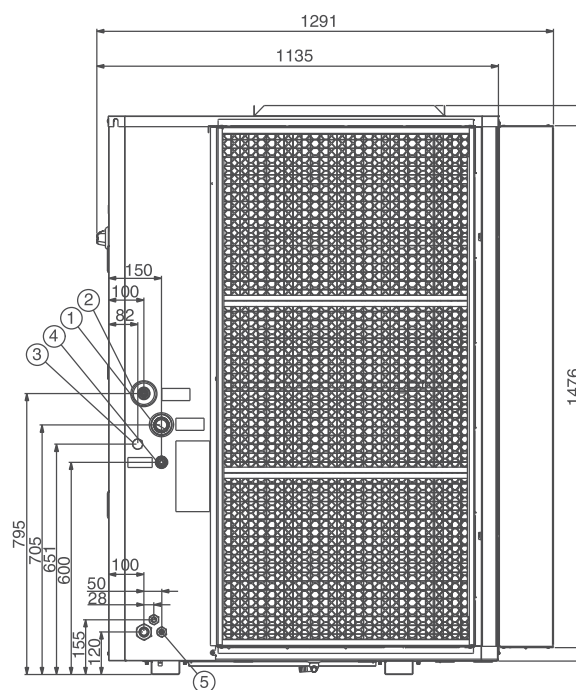
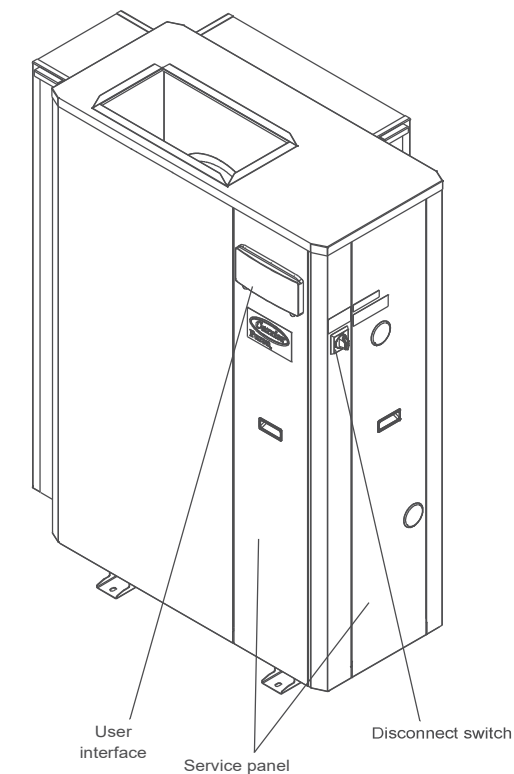
Legend

All dimensions are in mm

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

DIMENSIONS/CLEARANCES

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



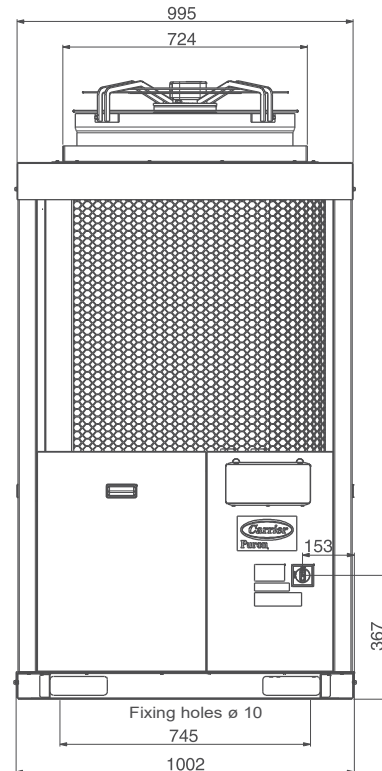
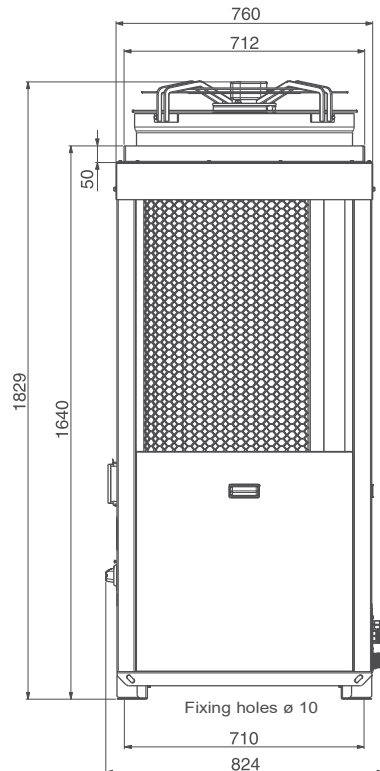
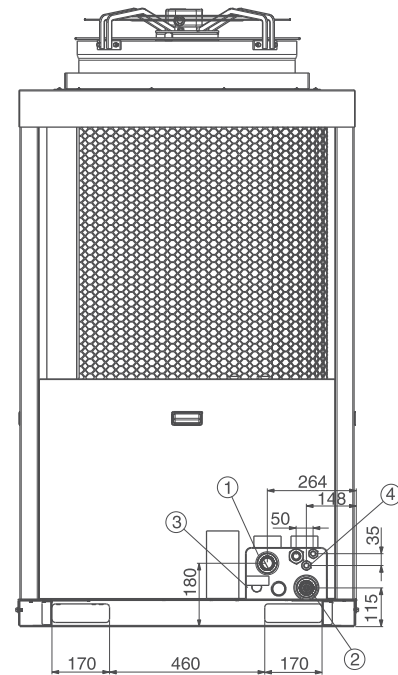
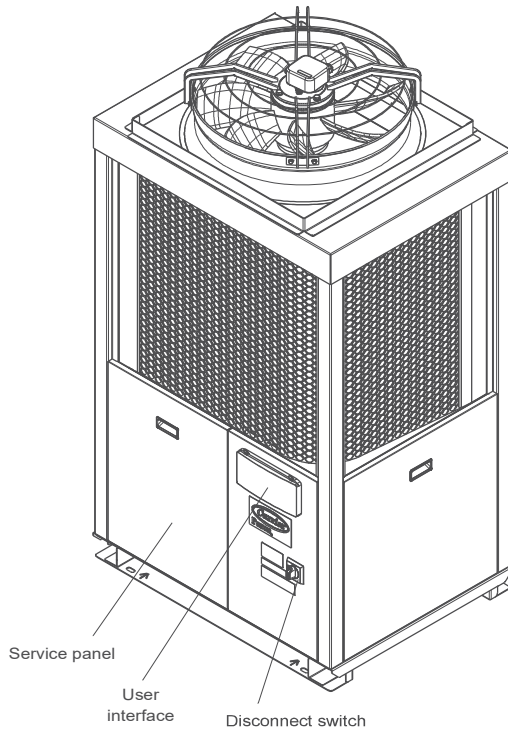
Legend

Legend
All dimensions are in mm

- All dimensions are in mm
1. Water inlet
 2. Water outlet
 3. Water fill kit connection (option)
 4. Relief valve
 5. Power connections

DIMENSIONS/CLEARANCES

30RBY 026-033



Legend

All dimensions are in mm

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