



## TECHNICAL BULLETIN

BT05L002GB-07

# EVH SPACE 21 - 101

WATER TO AIR DUCTABLE INDOOR HORIZONTAL HEAT PUMP



The EVH SPACE single-compressor units are available in 10 sizes, with a complete series of accessories and feature very high efficiency and low noise. They are designed for the air-conditioning of shops, commercial areas in general, open space offices, etc.

They can be applied in loop systems (WLHP) or, more in general, with once-through water systems. They can be installed on the ceiling, in view, or inside false-ceilings. Installation is simplified by the compact dimensions of the unit, and maintenance operations are made easy by the complete accessibility of all the components.

The air outlet is ducted, while the intake can come directly from the room or through ducting. Operation, both cooling and heating, ensures comfort in all seasons of the year automatically, without switching between operating modes.

The microprocessor control also provides other important control functions, all of which can be activated remotely and by BMS across a serial communication line.

## STANDARD UNIT SPECIFICATIONS

### COMPRESSOR

Scroll compressor complete with: overload thermal protection, high refrigerant discharge temperature, rubber antivibration mounts, oil charge, acoustic and weather proof cabinet.

### STRUCTURE

Structure made entirely from "aluzink" plate that guarantees excellent mechanical characteristics and high corrosion strength over time. The compressor area is made from thick metal plate and is completely insulated with soundproofing material to minimise noise output. The ventilating section is completely lined with anti-condensate and soundproofing material.

### AIR EXCHANGER

Direct expansion finned exchanger, made from copper pipes in staggered rows and mechanically expanded to the fin collars. The fins are made from aluminum with a corrugated surface and adequately distanced to ensure the maximum heat exchange efficiency.

### WATER EXCHANGER

Direct expansion heat exchanger, braze-welded AISI 316 stainless steel plates with large exchange surface and complete with external heat/anti-condensate insulation, differential pressure switch on the water side and antifreeze thermostat.

### FAN

Dual intake centrifugal electric fan with forward blades for maximum efficiency and low noise. Statically- and dynamically-balanced according to the ISO 1940 standards, section 6.3. The scroll, the rotor and the frame are made from galvanized steel plate (semdzimir). Directly coupled to the electric motor.

### REFRIGERANT CIRCUIT

The refrigeration circuit is complete with:

- thermostatic expansion valve with equalizer
- 4-way reverse cycle valve
- high pressure safety
- high pressure safety pressure switch
- liquid receiver
- liquid flow and moisture indicator

### FILTRATION

Flat filter, made up of a galvanized plate frame with galvanized and electric-welded protective mesh and 100% regenerable polyester filtering media with PVC resin. G2 efficiency according to CEN-EN 779 standard (Eurovent class EU4/5 - average efficiency 79% ASHRAE 52-76 Atm). Self-extinguishing (resistance to fire class 1 - DIN 53438).

### TRAY

Tray made from AISI 304 stainless steel and fitted with drain pipe. Insulated by closed cell polyethylene foam.

### ELECTRICAL PANEL

The Capacity Section includes:

- main line isolator switch
- isolating transformer for auxiliary circuit power supply
- compressor power supply remote control switch
- centrifugal fan motor power supply remote control switch
- overload cutout for centrifugal fan (for three-phase motors)

The electrical panel, including the microprocessor controller, is positioned inside the units, with access through an easy-to-remove panel.

Microprocessor control section:

- treated air temperature control
- compressor overload protection and timer
- centralised alarms with remote signalling
- self-diagnosis system with immediate display of the fault code

Control keypad, including:

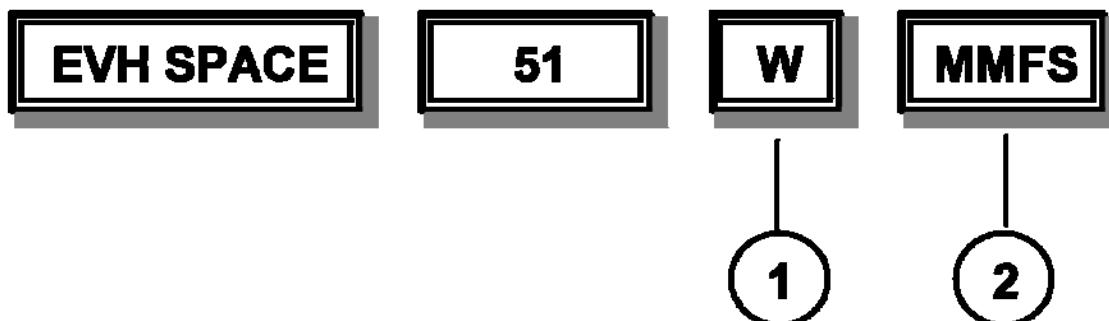
- On/Off button
- buttons for selecting cooling/heating operation
- UP and DOWN buttons to increase and decrease the values
- ECO operation selection (cooling and heating)
- LCD display
- centralised alarms with remote signalling
- Ambient temperature display

Please note that the cable to link the unit with the thermostat must be provided by the customer

### ACCESSORIES

- Steel mesh strainer on the water side
- Manual shut-off valves, water side
- Shut-off valve for by-pass (water side)
- ON/OFF 2-ways motorized shut-off valve
- Modulating 2-ways motorized shut-off valve
- Serial communication module to supervisor (BMS)
- BACnet serial communication module
- Supply electric fan controlled by inverter
- Differential pressure switch for dirty air filters
- Return air temperature probe

## CONFIGURATION CODE



### (1) APPLICATION

Once-through water application (PW)  
Water Loop Heat Pump application (W)

### (2) ELECTRIC FAN MOTORS

Standard outlet electric fan motor (MMFS)  
Supply electric fan controlled by inverter (MMRI)  
only sizes 81-91-101

## ACCESSORIES SEPARATELY SUPPLIED

### (IFWX) stainless steel mesh mechanical filter.

Steel mesh mechanical filter positioned at the exchanger inlet. Suitable for filtering water and trapping the impurities present in the water circuit.



### (IHMAX) Manual shut-off valves, water side

Manual two-way valve at the inlet and outlet of each exchanger on the water side. Used to isolate the unit from the water circuit to allow any maintenance operations.



### (BPH2O) Shut-off valve for by-pass (water side)

Manual operating two ways-valve, to be positioned on the water ducts above the manual interception valves (system side). It allows to wash the ducts saving the unit exchangers from dirtiness.



### (IVWX) ON/OFF 2-ways motorized shut-off valve

Motorised two-way valve at the exchanger outlet on the water side. The operation of the valve is linked to the operation of the refrigerant circuit, that is, when the compressor is off the valve is closed, and when the compressor is on the valve is open.



### (WMVX)modulating 2-ways motorized shut-off valve

Modulating valve, typically used in installation with groundwater. It is used to keep unit operating valves within max. unit limits and works modulating its opening (and in consequence the condensig temperature in summer and the evaporating temperature in winter)through a signal 0-10V. When unit is off the valve is completely closed, allowing water saving.



### (BACNX) BACnet communication serial module

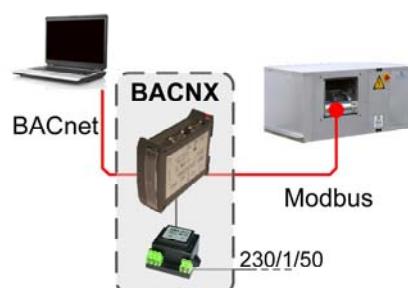
Allows to perform the serial connection to supervision systems by using BACnet as a communication protocol by TCP-IP or MSTP communication ports. It allows the access to the entire list of operating variables, controls and alarms.



The package includes the Modbus module to install built-in the unit, electrical box and connection cable to be placed outside the unit. The electrical box contains the transformer to be powered with 230/1/50 voltage and BACnet module. The configuration and conduction of the BACnet network must be provided by the Customer.



Accessory to be provided for each single unit.



### Main variables of supervision by serial (Modbus / LonWorks / BACnet)

- Current room temperature
- Ideal temperature Set-Point
- Maximum correction of the set-point temperature set by the user via electronic room control
- Fan speed (Extraquiet, Quiet, Powerful, AUTO)
- Operating mode (Heating, Cooling, AUTO)
- Alarm reset
- ECONOMIC operating mode (using a pre-set ECO set point)
- Remote ON-OFF
- Heating temperature hysteresis
- Cooling temperature hysteresis
- Deadband

## CONFIGURATION DETAIL - INSTALLED ON THE UNIT

### (SP1)serial communication module to supervisor (BMS)

It allows the remote connection to supervisor or BMS to visualize the alarms and the operation variables control. The used protocol is Modbus



### ((MMR1)supply electric fan controlled by inverter

Outlet fan driven by inverter (available only for sizes 81-91-101)

Device fixed inside the unit, that allow to set the working point of the fan simply pressing the dedicated keys. It allows in this way - depending from the effective requests of the duct work - to select the right air flow and available head inside the working field of the unit. The device has also electronic filters for the inlet and outlet currents, which allow to gain the conformity to the international norms EN 55011 gr.1 cl.B, EN 55022 cl.B, VDE 0875 G.



### (PSAF)differential pressure switch for dirty filter alarm

Differential pressure switch to measure the pressure difference between the air intake and outlet in the filter section. In the event where the differential pressure is greater than the set value, a remotable alarm is activated.



### (PTAI)Return air temperature probe

Temperature probe built-in the unit located on the intake. The presence of this option automatically disables the temperature probe in the room thermostat which is provided standard.



## GENERAL TECHNICAL SPECIFICATIONS

Size		21	25	31	41	51	61	71	81	91	101																																																																																																																																																																																																																																																																																																								
<b>COOLING</b>																																																																																																																																																																																																																																																																																																																			
Cooling capacity	1 kW	8,04	8,49	9,31	13,3	17,2	19,5	21,6	23,5	27,8	31,5																																																																																																																																																																																																																																																																																																								
Sensible capacity	1 kW	6,36	7,22	7,76	10,1	13,8	14,1	17,4	17,9	22,9	23,7																																																																																																																																																																																																																																																																																																								
Compressor power input	1 kW	1,59	2,13	2,4	2,68	3,42	4,1	4,59	5,32	6,81	7,32																																																																																																																																																																																																																																																																																																								
EER	1	5,06	3,99	3,88	4,96	5,03	4,76	4,71	4,42	4,08	4,3																																																																																																																																																																																																																																																																																																								
<b>HEATING</b>																																																																																																																																																																																																																																																																																																																			
Heating capacity	2 kW	8,17	10,1	11,9	14,3	17	20	22,9	25,3	31,9	37,3																																																																																																																																																																																																																																																																																																								
Compressor power input	2 kW	1,8	2,29	2,72	3,15	3,57	4,37	4,99	5,6	7,53	8,48																																																																																																																																																																																																																																																																																																								
COP	2	4,54	4,41	4,38	4,54	4,76	4,58	4,59	4,52	4,24	4,4																																																																																																																																																																																																																																																																																																								
<b>COMPRESSOR</b>																																																																																																																																																																																																																																																																																																																			
Type of compressors		SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL	SCROLL																																																																																																																																																																																																																																																																																																								
No. of compressors	Nr	1	1	1	1	1	1	1	1	1	1																																																																																																																																																																																																																																																																																																								
Std Capacity control steps	Nr	1	1	1	1	1	1	1	1	1	1																																																																																																																																																																																																																																																																																																								
Refrigerant charge (C1)	kg	3,9	3,9	3	4,1	4,5	6,4	6,4	8	8	7,6																																																																																																																																																																																																																																																																																																								
Refrigeration circuits	Nr	1	1	1	1	1	1	1	1	1	1																																																																																																																																																																																																																																																																																																								
<b>INTERNAL EXCHANGER</b>																																																																																																																																																																																																																																																																																																																			
Front surface	m <sup>2</sup>	0,3	0,3	0,3	0,3	0,6	0,6	0,6	0,8	0,8	0,8																																																																																																																																																																																																																																																																																																								
Number of rows	Nr	3	3	3	3	4	4	4	4	4	4																																																																																																																																																																																																																																																																																																								
Fin spacing	mm	1,8	1,8	1,8	1,8	1,8	1,8	1,8	2,1	2,1	2,1																																																																																																																																																																																																																																																																																																								
<b>AIR HANDLING SECTION FANS (SUPPLY)</b>																																																																																																																																																																																																																																																																																																																			
Type of supply fan	3	ELV	ELV	ELV	ELV	ELV	ELV	ELV	ELV	ELV	ELV																																																																																																																																																																																																																																																																																																								
Number of supply fans	Nr	1	1	1	1	1	1	1	1	1	1																																																																																																																																																																																																																																																																																																								
Supply airflow	l/s	555	666	750	777	1166	1222	1286	1527	1722	1861																																																																																																																																																																																																																																																																																																								
Installed unit power	kW	0,373	0,373	0,373	0,373	0,736	0,736	0,736	1,1	1,1	1,1																																																																																																																																																																																																																																																																																																								
Max. static pressure supply fan	4 Pa	120	120	100	100	140	140	140	100	100	100																																																																																																																																																																																																																																																																																																								
<b>EXTERNAL EXCHANGER</b>																																																																																																																																																																																																																																																																																																																			
Type of external exchanger	5	PHE	PHE	PHE	PHE	PHE	PHE	PHE	PHE	PHE	PHE																																																																																																																																																																																																																																																																																																								
Water flow rate (Source Side)	l/s	0,4	0,5	0,5	0,7	0,8	0,9	1	1,2	1,4	1,6																																																																																																																																																																																																																																																																																																								
External exchanger pressure drop	kPa	26	32	42	35	34	43	52	48	43	53																																																																																																																																																																																																																																																																																																								
<b>CONNECTIONS</b>																																																																																																																																																																																																																																																																																																																			
Water fittings		1"	1"	1"	1"	1"	1"	1"	1"	1"	1"																																																																																																																																																																																																																																																																																																								
Condensate drain		20	20	20	20	20	20	20	20	20	20																																																																																																																																																																																																																																																																																																								
<b>POWER SUPPLY</b>																																																																																																																																																																																																																																																																																																																			
Standard power supply	V	400/3/50+400/3/50+400/3/50+400/3/50+400/3/50+400/3/50+400/3/50+400/3/50+400/3/50+400/3/50+400/3/50+400/3/50+400/3/50																																																																																																																																																																																																																																																																																																																	
<b>DIMENSIONS</b>																																																																																																																																																																																																																																																																																																																			
A - Length	mm	1100	1100	1100	1100	1375	1375	1375	1730	1730	1730																																																																																																																																																																																																																																																																																																								
B - Width	mm	710	710	710	710	750	750	750	810	810	810																																																																																																																																																																																																																																																																																																								
C - Height	mm	500	500	500	500	600	600	600	700	700	700																																																																																																																																																																																																																																																																																																								
<b>STANDARD UNIT WEIGHTS</b>																																																																																																																																																																																																																																																																																																																			
Shipping weight	kg	140	150	165	180	223	230	238	308	315	325																																																																																																																																																																																																																																																																																																								
Operating weight	kg	130	140	155	170	210	217	225	295	302	310																																																																																																																																																																																																																																																																																																								
The Product is compliant with the Erp (Energy Related Products) European Directive. It includes the Commission delegated Regulation (EU) No 2016/2281, also known as Ecodesign Lot21.																																																																																																																																																																																																																																																																																																																			
(1) ambient air 26°C DB / 19,5°C WB exchanger inlet water 29°C exchanger water outlet 35°C																																																																																																																																																																																																																																																																																																																			
(2) ambient temperature 20°C exchanger water outlet 10°C (3) ELV=electric fan (4) max available static pressure with standard electrofan at min speed and nominal air flow According to the variability of the voltage also the value of capacity and head pressure (5) PHE = plates																																																																																																																																																																																																																																																																																																																			
<b>PERFORMANCES OF SUPPLY AIR FANS</b>																																																																																																																																																																																																																																																																																																																			
<table border="1"> <thead> <tr> <th colspan="2"></th> <th colspan="6">DP [Pa]</th> <th colspan="4"></th> </tr> <tr> <th colspan="2"></th> <th>60</th> <th>80</th> <th>100</th> <th>120</th> <th>140</th> <th>160</th> <th>180</th> <th>210</th> <th>250</th> <th>310</th> </tr> </thead> <tbody> <tr> <td rowspan="3">21</td><td>L</td><td>583</td><td>556</td><td>514</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>M</td><td>-</td><td>-</td><td>587</td><td>585</td><td>628</td><td>500</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>H</td><td>-</td><td>-</td><td>-</td><td>-</td><td>583</td><td>525</td><td>514</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td rowspan="3">25</td><td>L</td><td>675</td><td>653</td><td>625</td><td>582</td><td>556</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>M</td><td>-</td><td>-</td><td>-</td><td>686</td><td>639</td><td>608</td><td>575</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>H</td><td>-</td><td>-</td><td>-</td><td>-</td><td>676</td><td>623</td><td>623</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td rowspan="3">31</td><td>L</td><td>764</td><td>744</td><td>722</td><td>700</td><td>676</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>M</td><td>786</td><td>767</td><td>738</td><td>725</td><td>708</td><td>693</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>H</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td rowspan="3">41</td><td>L</td><td>799</td><td>761</td><td>738</td><td>742</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>M</td><td>808</td><td>780</td><td>777</td><td>753</td><td>733</td><td>711</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>H</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td rowspan="3">51</td><td>L</td><td>1,208</td><td>1,139</td><td>1,056</td><td>986</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>M</td><td>-</td><td>-</td><td>-</td><td>1,296</td><td>1,168</td><td>1,047</td><td>1,026</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>H</td><td>-</td><td>-</td><td>-</td><td>1,333</td><td>1,278</td><td>1,194</td><td>1,139</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td rowspan="3">61</td><td>L</td><td>-</td><td>1,277</td><td>1,222</td><td>1,153</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>M</td><td>-</td><td>-</td><td>1,328</td><td>1,277</td><td>1,222</td><td>1,153</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>H</td><td>-</td><td>-</td><td>-</td><td>-</td><td>1,305</td><td>1,290</td><td>1,169</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td rowspan="3">71</td><td>L</td><td>-</td><td>1,278</td><td>1,250</td><td>1,222</td><td>1,194</td><td>1,138</td><td>1,111</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>M</td><td>-</td><td>-</td><td>-</td><td>-</td><td>1,298</td><td>1,231</td><td>1,167</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>H</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td rowspan="3">81</td><td>M</td><td>1,583</td><td>1,556</td><td>1,627</td><td>1,472</td><td>1,444</td><td>1,417</td><td>1,381</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>M</td><td>1,633</td><td>1,778</td><td>1,722</td><td>1,638</td><td>1,583</td><td>1,514</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>M</td><td>1,917</td><td>1,891</td><td>1,805</td><td>1,750</td><td>1,867</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>														DP [Pa]												60	80	100	120	140	160	180	210	250	310	21	L	583	556	514	-	-	-	-	-	-	-	M	-	-	587	585	628	500	-	-	-	-	H	-	-	-	-	583	525	514	-	-	-	25	L	675	653	625	582	556	-	-	-	-	-	M	-	-	-	686	639	608	575	-	-	-	H	-	-	-	-	676	623	623	-	-	-	31	L	764	744	722	700	676	-	-	-	-	-	M	786	767	738	725	708	693	-	-	-	-	H	-	-	-	-	-	-	-	-	-	-	41	L	799	761	738	742	-	-	-	-	-	-	M	808	780	777	753	733	711	-	-	-	-	H	-	-	-	-	-	-	-	-	-	-	51	L	1,208	1,139	1,056	986	-	-	-	-	-	-	M	-	-	-	1,296	1,168	1,047	1,026	-	-	-	H	-	-	-	1,333	1,278	1,194	1,139	-	-	-	61	L	-	1,277	1,222	1,153	-	-	-	-	-	-	M	-	-	1,328	1,277	1,222	1,153	-	-	-	-	H	-	-	-	-	1,305	1,290	1,169	-	-	-	71	L	-	1,278	1,250	1,222	1,194	1,138	1,111	-	-	-	M	-	-	-	-	1,298	1,231	1,167	-	-	-	H	-	-	-	-	-	-	-	-	-	-	81	M	1,583	1,556	1,627	1,472	1,444	1,417	1,381	-	-	-	M	1,633	1,778	1,722	1,638	1,583	1,514	-	-	-	-	M	1,917	1,891	1,805	1,750	1,867	-	-	-	-	-
		DP [Pa]																																																																																																																																																																																																																																																																																																																	
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	M	-	-	587	585	628	500	-	-	-	-																																																																																																																																																																																																																																																																																																								
	H	-	-	-	-	583	525	514	-	-	-																																																																																																																																																																																																																																																																																																								
25	L	675	653	625	582	556	-	-	-	-	-																																																																																																																																																																																																																																																																																																								
	M	-	-	-	686	639	608	575	-	-	-																																																																																																																																																																																																																																																																																																								
	H	-	-	-	-	676	623	623	-	-	-																																																																																																																																																																																																																																																																																																								
31	L	764	744	722	700	676	-	-	-	-	-																																																																																																																																																																																																																																																																																																								
	M	786	767	738	725	708	693	-	-	-	-																																																																																																																																																																																																																																																																																																								
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41	L	799	761	738	742	-	-	-	-	-	-																																																																																																																																																																																																																																																																																																								
	M	808	780	777	753	733	711	-	-	-	-																																																																																																																																																																																																																																																																																																								
	H	-	-	-	-	-	-	-	-	-	-																																																																																																																																																																																																																																																																																																								
51	L	1,208	1,139	1,056	986	-	-	-	-	-	-																																																																																																																																																																																																																																																																																																								
	M	-	-	-	1,296	1,168	1,047	1,026	-	-	-																																																																																																																																																																																																																																																																																																								
	H	-	-	-	1,333	1,278	1,194	1,139	-	-	-																																																																																																																																																																																																																																																																																																								
61	L	-	1,277	1,222	1,153	-	-	-	-	-	-																																																																																																																																																																																																																																																																																																								
	M	-	-	1,328	1,277	1,222	1,153	-	-	-	-																																																																																																																																																																																																																																																																																																								
	H	-	-	-	-	1,305	1,290	1,169	-	-	-																																																																																																																																																																																																																																																																																																								
71	L	-	1,278	1,250	1,222	1,194	1,138	1,111	-	-	-																																																																																																																																																																																																																																																																																																								
	M	-	-	-	-	1,298	1,231	1,167	-	-	-																																																																																																																																																																																																																																																																																																								
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81	M	1,583	1,556	1,627	1,472	1,444	1,417	1,381	-	-	-																																																																																																																																																																																																																																																																																																								
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Q = AIR FLOW

DP = AVAILABLE HEAD

LOW SPEED (L)

MEDIUM SPEED (M)

HIGH SPEED (H)

ACCORDING TO THE VARIABILITY OF THE VOLTAGE ALSO THE VALUE OF CAPACITY AND HEAD PRESSURE

VOLTAGE: 400/3/50+N

**ELECTRICAL DATA**

Size		21	25	31	41	51	61	71
<b>F.L.A. - FULL LOAD CURRENT AT MAX ADMISSIBLE CONDITIONS</b>								
F.L.A. - Compressor + Auxiliary	A	5,7	6,7	7,5	8,6	10,8	12,3	14,6
F.L.A. - Single supply fan	A	3,9	3,9	3,9	3,9	6,6	6,6	6,6
F.L.A. - Total	A	9,6	10,6	11,4	12,5	17,4	18,9	21,2
<b>L.R.A. - LOCKED ROTOR AMPERES</b>								
L.R.A. - Compressor 1	A	32	40	46	50	66	74	101
<b>F.L.I. - FULL LOAD POWER INPUT AT MAX ADMISSIBLE CONDITIONS</b>								
F.L.I. - Compressor + Auxiliary	kW	3	3,6	4	4,8	5,8	6,8	9
F.L.I. - Single supply fan	kW	0,4	0,4	0,4	0,4	0,7	0,7	0,7
F.L.I. - Total	kW	3,4	4	4,4	5,2	6,5	7,5	9,7
<b>M.I.C. MAXIMUM INRUSH CURRENT</b>								
M.I.C. - Value	A	33	41	47	51	67	75	102

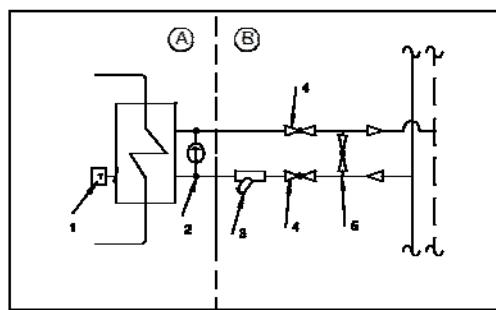
VOLTAGE: 400/3/50

**ELECTRICAL DATA**

Size		81	91	101
<b>F.L.A. - FULL LOAD CURRENT AT MAX ADMISSIBLE CONDITIONS</b>				
F.L.A. - Compressor + Auxiliary	A	16,6	17,6	20,6
F.L.A. - Single supply fan	A	2,7	3,7	3,7
F.L.A. - Total	A	19,3	21,3	24,3
<b>L.R.A. - LOCKED ROTOR AMPERES</b>				
L.R.A. - Compressor 1	A	95	111	118
<b>F.L.I. - FULL LOAD POWER INPUT AT MAX ADMISSIBLE CONDITIONS</b>				
F.L.I. - Compressor + Auxiliary	kW	9,3	9,8	11,8
F.L.I. - Single supply fan	kW	0,8	1,1	1,1
F.L.I. - Total	kW	10,1	10,9	12,9
<b>M.I.C. MAXIMUM INRUSH CURRENT</b>				
M.I.C. - Value	A	97,7	114,7	122,5

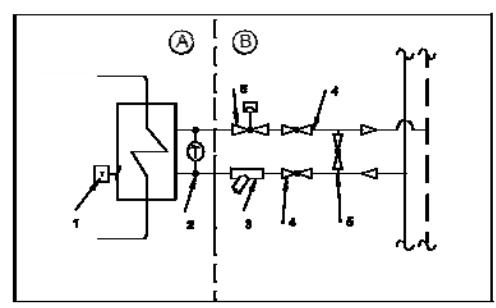
**WATER CONNECTION DIAGRAMS**

A: WATER LOOP WITH CONSTANT WATER FLOW



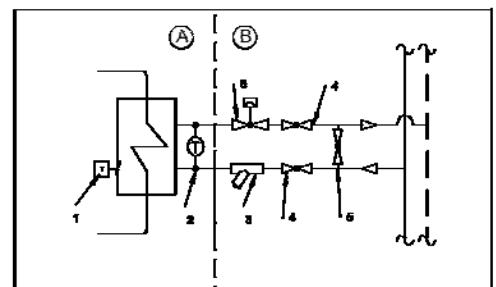
- (1) Antifreeze protection
  - (2) Differential pressure switch, water side
  - (3) Steel mesh strainer on the water side
  - (4) Shut-off valve on the system water connections
  - (5) By-pass cleaning valve (opt)
- The dotted line indicates the supply limit of the standard unit (field A)

B: WATER LOOP WITH VARIABLE WATER FLOW



- (1) Antifreeze protection
  - (2) Differential pressure switch, water side
  - (3) Steel mesh strainer on the water side
  - (4) Shut-off valve on the system water connections
  - (5) By-pass cleaning valve (opt)
  - (6) ON/OFF solenoid valve water side (provided by the customer)
- The dotted line indicates the supply limit of the standard unit (field A)

C: WATER SOURCE



- (1) Antifreeze protection
  - (2) Differential pressure switch, water side
  - (3) Steel mesh strainer on the water side
  - (4) Shut-off valve on the system water connections
  - (5) By-pass cleaning valve (opt)
  - (6) Water side modulating valve (optional)
- The dotted line indicates the supply limit of the standard unit (field A)

## COOLING PERFORMANCE

Size	Ta (°C) DB/WB	EXTERNAL EXCHANGER WATER OUTLET TEMPERATURE (°C) - DT 5°C																	
		25			30			35			40			45			50		
		kWf	kWe	kWs	kWf	kWe	kWs	kWf	kWe	kWs	kWf	kWe	kWs	kWf	kWe	kWs	kWf	kWe	kWs
21	22 / 16	7,70	1,34	6,05	7,44	1,47	5,95	7,15	1,63	5,85	6,82	1,82	5,75	6,45	2,03	5,65	6,05	2,28	5,54
	24 / 17	7,95	1,33	6,53	7,69	1,46	6,42	7,39	1,62	6,31	7,05	1,81	6,20	6,67	2,02	6,09	6,25	2,26	5,98
	26 / 19	8,49	1,31	6,46	8,22	1,44	6,33	7,91	1,60	6,20	7,54	1,78	6,07	7,13	1,98	5,94	6,67	2,21	5,81
	27 / 19,5	8,64	1,30	6,64	8,36	1,44	6,50	8,04	1,59	6,36	7,66	1,77	6,22	7,24	1,97	6,09	6,77	2,20	5,95
	28 / 21	9,08	1,29	6,20	8,78	1,42	6,04	8,44	1,57	5,88	8,05	1,74	5,72	7,60	1,94	5,56	7,10	2,16	5,40
	30 / 22	9,38	1,27	6,34	9,08	1,40	6,17	8,72	1,55	5,99	8,31	1,72	5,81	7,84	1,92	5,64	7,33	2,13	5,46
25	22 / 16	8,00	1,72	6,82	7,83	1,91	6,72	7,59	2,14	6,62	7,26	2,42	6,53	6,85	2,74	6,43	6,36	3,11	6,33
	24 / 17	8,29	1,72	7,29	8,08	1,91	7,19	7,82	2,14	7,09	7,49	2,41	6,99	7,10	2,73	6,89	6,64	3,09	6,64
	26 / 19	8,88	1,72	7,27	8,64	1,91	7,15	8,35	2,14	7,02	8,01	2,41	6,90	7,62	2,72	6,78	7,17	3,08	6,65
	27 / 19,5	9,03	1,72	7,49	8,79	1,91	7,36	8,49	2,13	7,22	8,15	2,40	7,09	7,75	2,72	6,96	7,30	3,08	6,82
	28 / 21	9,49	1,72	7,21	9,26	1,90	7,04	8,97	2,13	6,86	8,60	2,40	6,69	8,17	2,71	6,51	7,67	3,07	6,34
	30 / 22	9,80	1,71	7,61	9,60	1,90	7,40	9,31	2,13	7,19	8,93	2,40	6,98	8,46	2,71	6,77	7,90	3,07	6,55
31	22 / 16	8,73	1,95	7,42	8,52	2,16	7,29	8,24	2,41	7,16	7,89	2,72	7,02	7,48	3,07	6,89	7,00	3,48	6,76
	24 / 17	9,05	1,95	7,92	8,82	2,16	7,78	8,53	2,41	7,65	8,18	2,71	7,51	7,76	3,07	7,38	7,27	3,47	7,24
	26 / 19	9,70	1,95	7,85	9,46	2,15	7,71	9,15	2,41	7,56	8,77	2,71	7,42	8,33	3,06	7,28	7,83	3,47	7,13
	27 / 19,5	9,87	1,95	8,05	9,62	2,15	7,90	9,31	2,40	7,76	8,93	2,71	7,61	8,48	3,06	7,47	7,97	3,46	7,32
	28 / 21	10,4	1,95	7,69	10,1	2,15	7,54	9,79	2,40	7,38	9,39	2,70	7,22	8,93	3,05	7,07	8,39	3,45	6,91
	30 / 22	10,7	1,95	7,97	10,5	2,15	7,81	10,1	2,39	7,65	9,71	2,69	7,48	9,23	3,05	7,32	8,68	3,45	7,15
41	22 / 16	12,6	2,11	9,51	12,2	2,40	9,35	11,8	2,71	9,19	11,3	3,05	9,03	10,7	3,41	8,87	10,1	3,80	8,71
	24 / 17	12,9	2,10	10,1	12,6	2,39	9,97	12,2	2,70	9,81	11,7	3,04	9,66	11,1	3,41	9,50	10,4	3,80	9,35
	26 / 19	13,7	2,07	10,0	13,4	2,37	9,90	13,1	2,69	9,77	12,5	3,03	9,64	11,9	3,39	9,51	11,2	3,78	9,38
	27 / 19,5	13,9	2,07	10,3	13,7	2,36	10,2	13,3	2,68	10,1	12,8	3,02	9,97	12,1	3,39	9,85	11,4	3,77	9,73
	28 / 21	14,7	2,04	10,0	14,4	2,34	9,92	13,9	2,66	9,83	13,4	3,01	9,74	12,7	3,37	9,65	11,9	3,76	9,56
	30 / 22	15,3	2,02	10,7	14,9	2,33	10,6	14,4	2,65	10,5	13,8	2,99	10,5	13,1	3,36	10,4	12,4	3,75	10,3
51	22 / 16	16,5	2,77	13,0	15,9	3,05	12,7	15,3	3,39	12,5	14,6	3,79	12,2	13,8	4,25	12,0	12,9	4,77	11,7
	24 / 17	17,1	2,79	14,1	16,5	3,06	13,8	15,8	3,40	13,6	15,1	3,80	13,3	14,3	4,26	13,0	13,4	4,78	12,8
	26 / 19	18,2	2,82	13,9	17,6	3,09	13,7	17,0	3,42	13,4	16,2	3,81	13,1	15,3	4,28	12,8	14,4	4,81	12,6
	27 / 19,5	18,5	2,83	14,4	17,9	3,09	14,1	17,2	3,42	13,8	16,5	3,82	13,5	15,6	4,28	13,2	14,6	4,81	12,9
	28 / 21	19,5	2,86	13,4	18,8	3,11	13,1	18,1	3,43	12,8	17,3	3,83	12,5	16,4	4,29	12,2	15,4	4,83	11,9
	30 / 22	20,1	2,88	13,8	19,5	3,12	13,5	18,7	3,44	13,1	17,8	3,84	12,8	16,9	4,30	12,5	15,9	4,84	12,2
61	22 / 16	18,7	3,32	13,6	18,0	3,64	13,3	17,3	4,04	13,1	16,5	4,52	12,8	15,6	5,08	12,5	14,6	5,73	12,2
	24 / 17	19,3	3,34	14,7	18,7	3,66	14,4	17,9	4,06	14,1	17,1	4,54	13,8	16,1	5,10	13,6	15,1	5,74	13,3
	26 / 19	20,6	3,37	14,4	20,0	3,69	14,1	19,2	4,09	13,8	18,3	4,57	13,5	17,3	5,13	13,2	16,1	5,77	12,8
	27 / 19,5	21,0	3,38	14,7	20,3	3,70	14,4	19,5	4,10	14,1	18,6	4,58	13,7	17,5	5,13	13,4	16,4	5,77	13,1
	28 / 21	22,0	3,40	13,4	21,3	3,72	13,0	20,4	4,12	12,6	19,5	4,60	12,3	18,4	5,16	11,9	17,3	5,79	11,5
	30 / 22	22,8	3,42	13,1	22,0	3,73	12,7	21,1	4,13	12,3	20,1	4,61	11,9	19,0	5,17	11,5	17,8	5,81	11,1
71	22 / 16	20,6	3,66	16,9	19,9	4,03	16,6	19,2	4,49	16,3	18,3	5,03	16,0	17,3	5,65	15,7	16,2	6,36	15,4
	24 / 17	21,3	3,68	18,3	20,6	4,06	17,9	19,8	4,52	17,6	18,9	5,06	17,3	17,9	5,68	16,9	16,7	6,38	16,6
	26 / 19	22,7	3,73	17,9	22,1	4,11	17,5	21,2	4,57	17,2	20,3	5,11	16,8	19,2	5,73	16,4	17,9	6,42	16,0
	27 / 19,5	23,1	3,74	18,2	22,4	4,13	17,8	21,6	4,59	17,4	20,6	5,13	17,0	19,5	5,74	16,7	18,2	6,43	16,3
	28 / 21	24,3	3,78	16,3	23,6	4,17	15,9	22,8	4,64	15,5	21,8	5,17	15,1	20,6	5,78	14,7	19,3	6,46	14,2
	30 / 22	25,1	3,81	15,7	24,4	4,20	15,2	23,6	4,67	14,8	22,6	5,21	14,4	21,4	5,81	13,9	20,0	6,49	13,5

Ta = internal exchanger inlet air temperature

kWf = Cooling capacity in kW

kWs = sensible cooling capacity (kW)

kWe = Compressor power input in kW

DB = dry bulb

WB = wet bulb

## COOLING PERFORMANCE

Size	Ta (°C) DB/WB	EXTERNAL EXCHANGER WATER OUTLET TEMPERATURE (°C) - DT 5°C																	
		25			30			35			40			45			50		
		kWf	kWe	kWs	kWf	kWe	kWs	kWf	kWe	kWs	kWf	kWe	kWs	kWf	kWe	kWs	kWf	kWe	
81	22 / 16	22,5	4,46	16,7	21,8	4,77	16,5	21,0	5,22	16,2	20,0	5,83	15,9	18,8	6,59	15,7	17,5	7,51	15,4
	24 / 17	23,2	4,48	17,9	22,5	4,79	17,6	21,7	5,25	17,4	20,6	5,86	17,1	19,4	6,63	16,8	18,1	7,56	16,5
	26 / 19	24,8	4,51	17,9	24,1	4,83	17,6	23,1	5,30	17,3	22,0	5,93	17,0	20,8	6,72	16,7	19,4	7,66	16,5
	27 / 19,5	25,2	4,52	18,4	24,5	4,84	18,1	23,5	5,32	17,9	22,4	5,95	17,6	21,1	6,74	17,3	19,7	7,68	17,0
	28 / 21	26,5	4,55	17,8	25,7	4,88	17,5	24,7	5,37	17,2	23,5	6,01	16,9	22,2	6,81	16,6	20,8	7,77	16,4
	30 / 22	27,4	4,57	18,9	26,5	4,91	18,6	25,5	5,40	18,3	24,3	6,05	18,1	23,0	6,86	17,8	21,5	7,83	17,5
91	22 / 16	26,4	5,70	21,0	25,7	6,16	20,7	24,7	6,76	20,4	23,6	7,50	20,1	22,4	8,37	19,8	21,0	9,39	19,6
	24 / 17	27,4	5,70	22,3	26,5	6,17	22,0	25,5	6,77	21,7	24,4	7,52	21,4	23,1	8,40	21,1	21,7	9,41	20,8
	26 / 19	29,3	5,71	22,7	28,4	6,19	22,3	27,3	6,80	21,9	26,1	7,55	21,5	24,7	8,44	21,1	23,2	9,46	20,7
	27 / 19,5	29,8	5,71	23,8	28,8	6,19	23,4	27,8	6,81	22,9	26,5	7,56	22,5	25,1	8,45	22,1	23,6	9,47	21,7
	28 / 21	31,3	5,72	24,5	30,3	6,21	24,0	29,2	6,83	23,5	27,9	7,59	22,9	26,5	8,48	22,4	24,8	9,50	21,9
	30 / 22	32,4	5,72	28,2	31,4	6,22	27,6	30,2	6,85	27,0	28,9	7,61	26,4	27,4	8,50	25,7	25,7	9,52	25,1
101	22 / 16	30,0	6,09	22,6	29,1	6,62	22,3	28,1	7,27	22,0	26,9	8,04	21,7	25,5	8,95	21,3	24,0	9,98	21,0
	24 / 17	31,0	6,10	24,2	30,1	6,63	23,9	29,0	7,28	23,6	27,8	8,06	23,3	26,4	8,97	22,9	24,9	10,0	22,6
	26 / 19	33,2	6,11	23,9	32,2	6,65	23,5	31,0	7,31	23,1	29,7	8,10	22,7	28,3	9,02	22,4	26,7	10,1	22,0
	27 / 19,5	33,8	6,12	24,5	32,7	6,66	24,1	31,5	7,32	23,7	30,2	8,11	23,3	28,7	9,03	22,9	27,1	10,1	22,4
	28 / 21	35,5	6,13	23,1	34,4	6,67	22,6	33,2	7,34	22,1	31,8	8,14	21,6	30,2	9,06	21,1	28,6	10,1	20,6
	30 / 22	36,7	6,13	23,6	35,6	6,68	23,0	34,3	7,36	22,4	32,9	8,15	21,8	31,3	9,07	21,3	29,5	10,1	20,7

Ta = internal exchanger inlet air temperature

kWf = Cooling capacity in kW

kWs = sensible cooling capacity (kW)

kWe = Compressor power input in kW

DB = dry bulb

WB = wet bulb

**HEATING PERFORMANCE**

Size	Ta (°C)	EXTERNAL EXCHANGER WATER OUTLET TEMPERATURE (°C) - DT 5°C											
		6		8		10		12		14		16	
		kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe
21	10	7,99	1,40	8,47	1,41	8,96	1,43	9,46	1,44	9,98	1,44	10,5	1,44
	15	7,82	1,57	8,28	1,59	8,75	1,60	9,23	1,61	9,71	1,62	10,2	1,61
	18	7,73	1,69	8,18	1,71	8,63	1,72	9,08	1,72	9,54	1,73	10,0	1,72
	19	7,71	1,73	8,14	1,75	8,58	1,76	9,03	1,76	9,48	1,76	9,94	1,76
	20	7,68	1,77	8,11	1,79	8,54	1,80	8,98	1,80	9,42	1,80	9,87	1,79
	21	7,66	1,81	8,07	1,83	8,50	1,84	8,93	1,84	9,36	1,84	9,80	1,83
	25	7,58	1,98	7,94	2,00	8,32	2,00	8,71	2,00	9,12	2,00	9,54	1,98
25	10	9,22	1,60	9,79	1,63	10,4	1,66	11,0	1,69	11,6	1,72	12,3	1,75
	15	9,07	1,82	9,63	1,85	10,2	1,88	10,8	1,91	11,4	1,94	12,0	1,97
	18	8,98	1,96	9,52	1,99	10,1	2,02	10,6	2,05	11,2	2,08	11,8	2,11
	19	8,96	2,01	9,49	2,04	10,0	2,07	10,6	2,10	11,2	2,13	11,8	2,16
	20	8,93	2,06	9,45	2,09	9,99	2,12	10,5	2,15	11,1	2,18	11,7	2,21
	21	8,90	2,11	9,42	2,14	9,95	2,18	10,5	2,21	11,1	2,24	11,6	2,26
	25	8,80	2,32	9,27	2,36	9,76	2,39	10,3	2,42	10,8	2,45	11,4	2,48
31	10	10,7	1,98	11,3	2,02	12,0	2,06	12,7	2,11	13,4	2,15	14,2	2,19
	15	10,5	2,24	11,1	2,29	11,8	2,33	12,4	2,37	13,1	2,41	13,8	2,45
	18	10,4	2,41	11,0	2,46	11,6	2,50	12,3	2,54	12,9	2,59	13,6	2,63
	19	10,4	2,47	11,0	2,52	11,6	2,56	12,2	2,60	12,9	2,64	13,5	2,69
	20	10,3	2,53	10,9	2,58	11,5	2,62	12,2	2,66	12,8	2,71	13,5	2,75
	21	10,3	2,59	10,9	2,64	11,5	2,68	12,1	2,72	12,7	2,77	13,4	2,81
	25	10,1	2,84	10,7	2,89	11,3	2,94	11,9	2,98	12,5	3,02	13,1	3,06
41	10	13,4	2,33	14,2	2,37	15,0	2,41	15,9	2,44	16,7	2,48	17,5	2,52
	15	13,2	2,62	14,0	2,66	14,8	2,71	15,6	2,75	16,4	2,79	17,2	2,83
	18	13,1	2,81	13,8	2,85	14,6	2,89	15,3	2,94	16,1	2,98	16,9	3,03
	19	13,0	2,87	13,8	2,91	14,5	2,96	15,3	3,00	16,0	3,05	16,8	3,09
	20	13,0	2,93	13,7	2,98	14,4	3,02	15,2	3,07	16,0	3,11	16,7	3,15
	21	12,9	3,00	13,6	3,04	14,4	3,09	15,1	3,13	15,9	3,18	16,6	3,22
	25	12,7	3,26	13,4	3,30	14,1	3,35	14,8	3,40	15,5	3,44	16,2	3,48
51	10	16,7	2,64	17,7	2,71	18,6	2,78	19,7	2,86	20,8	2,93	22,0	3,01
	15	16,4	2,93	17,3	3,00	18,3	3,07	19,3	3,14	20,3	3,22	21,5	3,30
	18	16,2	3,13	17,1	3,19	18,0	3,26	19,0	3,34	20,1	3,42	21,2	3,50
	19	16,1	3,19	17,0	3,26	17,9	3,33	18,9	3,41	20,0	3,49	21,1	3,57
	20	16,1	3,26	16,9	3,33	17,9	3,40	18,8	3,48	19,9	3,56	21,0	3,64
	21	16,0	3,33	16,9	3,40	17,8	3,47	18,8	3,55	19,8	3,63	20,9	3,71
	25	15,9	3,64	16,6	3,71	17,5	3,78	18,4	3,86	19,4	3,94	20,5	4,03
61	10	18,7	3,34	19,8	3,43	20,9	3,52	22,1	3,62	23,4	3,73	24,7	3,83
	15	18,4	3,74	19,4	3,83	20,5	3,92	21,6	4,03	22,8	4,13	24,0	4,24
	18	18,2	3,99	19,2	4,09	20,2	4,19	21,3	4,29	22,5	4,40	23,7	4,51
	19	18,1	4,08	19,1	4,18	20,1	4,28	21,2	4,38	22,3	4,49	23,5	4,61
	20	18,0	4,17	19,0	4,27	20,0	4,37	21,1	4,48	22,2	4,59	23,4	4,70
	21	18,0	4,27	18,9	4,37	20,0	4,47	21,0	4,58	22,1	4,69	23,3	4,80
	25	17,7	4,65	18,6	4,76	19,6	4,87	20,7	4,98	21,7	5,10	22,8	5,21

Ta = internal exchanger inlet air temperature

kWt = Heating capacity (kW)

kWe = Compressor power input in kW

**HEATING PERFORMANCE**

Size	Ta (°C)	EXTERNAL EXCHANGER WATER OUTLET TEMPERATURE (°C) - DT 5°C											
		6		8		10		12		14		16	
		kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe	kWt	kWe
71	10	21,2	3,74	22,4	3,86	23,8	3,99	25,1	4,14	26,6	4,29	28,1	4,45
	15	20,8	4,19	22,0	4,32	23,2	4,45	24,5	4,60	25,9	4,75	27,3	4,92
	18	20,6	4,49	21,8	4,62	23,0	4,76	24,3	4,91	25,6	5,07	26,9	5,23
	19	20,5	4,59	21,7	4,73	22,9	4,87	24,2	5,02	25,5	5,18	26,8	5,34
	20	20,4	4,70	21,7	4,84	22,9	4,99	24,2	5,14	25,4	5,29	26,7	5,44
	21	20,3	4,80	21,6	4,95	22,9	5,10	24,1	5,25	25,3	5,40	26,6	5,55
	25	20,0	5,25	21,5	5,43	22,8	5,60	24,0	5,75	25,1	5,89	26,1	6,01
81	10	24,9	4,03	26,5	4,13	28,1	4,23	29,7	4,34	31,3	4,45	32,8	4,56
	15	24,7	4,49	26,1	4,58	27,5	4,68	28,9	4,79	30,4	4,91	31,9	5,04
	18	24,6	4,78	25,8	4,88	27,2	4,98	28,5	5,10	29,9	5,22	31,4	5,36
	19	24,5	4,89	25,7	4,98	27,1	5,09	28,4	5,21	29,8	5,33	31,2	5,47
	20	24,4	4,99	25,7	5,09	26,9	5,20	28,3	5,32	29,7	5,45	31,1	5,59
	21	24,3	5,10	25,6	5,20	26,8	5,31	28,2	5,43	29,5	5,56	30,9	5,70
	25	23,9	5,54	25,2	5,66	26,4	5,78	27,8	5,92	29,1	6,06	30,4	6,21
91	10	30,0	5,07	31,7	5,17	33,4	5,28	35,2	5,38	36,9	5,49	38,7	5,60
	15	29,5	5,65	31,1	5,76	32,8	5,88	34,5	5,99	36,3	6,12	38,1	6,25
	18	29,2	6,04	30,8	6,15	32,4	6,27	34,1	6,39	35,9	6,52	37,7	6,66
	19	29,1	6,17	30,7	6,28	32,3	6,40	34,0	6,53	35,7	6,66	37,5	6,80
	20	29,0	6,30	30,6	6,42	32,2	6,54	33,8	6,67	35,6	6,81	37,4	6,95
	21	28,9	6,44	30,5	6,56	32,1	6,69	33,7	6,82	35,4	6,95	37,2	7,09
	25	28,6	7,02	30,1	7,15	31,6	7,28	33,1	7,42	34,8	7,56	36,4	7,71
101	10	34,0	5,92	35,9	6,04	37,9	6,17	39,8	6,30	41,8	6,43	43,8	6,57
	15	33,4	6,60	35,3	6,73	37,1	6,87	39,0	7,01	40,9	7,15	42,8	7,30
	18	33,1	7,05	34,9	7,19	36,7	7,33	38,6	7,48	40,4	7,63	42,3	7,78
	19	33,0	7,20	34,8	7,34	36,6	7,49	38,4	7,64	40,3	7,79	42,1	7,94
	20	32,9	7,36	34,7	7,51	36,5	7,65	38,3	7,80	40,1	7,96	41,9	8,11
	21	32,8	7,52	34,6	7,67	36,4	7,82	38,2	7,97	40,0	8,13	41,7	8,28
	25	32,4	8,20	34,2	8,36	35,9	8,52	37,7	8,68	39,4	8,84	41,0	9,00

Ta = internal exchanger inlet air temperature  
kWt = Heating capacity (kW)  
kWe = Compressor power input in kW

## PERFORMANCE CORRECTION COEFFICIENTS (AIR STANDARD FLOW-RATE ASSUMED AS 1)

Q	-10%					-5%					1					5%					10%					
	k <sub>d</sub>	k <sub>s</sub>	k <sub>t</sub>	k <sub>of</sub>	k <sub>et</sub>	k <sub>d</sub>	k <sub>s</sub>	k <sub>t</sub>	k <sub>of</sub>	k <sub>et</sub>	k <sub>d</sub>	k <sub>s</sub>	k <sub>t</sub>	k <sub>of</sub>	k <sub>et</sub>	k <sub>d</sub>	k <sub>s</sub>	k <sub>t</sub>	k <sub>of</sub>	k <sub>et</sub>	k <sub>d</sub>	k <sub>s</sub>	k <sub>t</sub>	k <sub>of</sub>	k <sub>et</sub>	
EVH SPACE 21	0.98	0.95	0.99	1.00	1.03	0.98	0.95	1.00	1.00	1.01	1.00	1.00	1.00	1.00	1.00	1.01	1.02	1.00	1.00	0.99	1.01	1.05	1.01	1.00	0.99	1.01
EVH SPACE 25	0.98	0.95	0.99	1.00	1.04	0.98	0.95	1.00	1.00	1.01	1.00	1.00	1.00	1.00	1.00	1.01	1.02	1.00	1.00	0.99	1.01	1.04	1.00	1.00	0.98	1.01
EVH SPACE 31	0.98	0.95	0.99	1.00	1.03	0.99	0.95	0.99	1.00	1.01	1.00	1.00	1.00	1.00	1.00	1.01	1.02	1.00	1.00	0.99	1.01	1.05	1.01	1.00	0.97	1.01
EVH SPACE 41	0.98	0.95	0.99	1.00	1.03	0.98	0.95	1.00	1.00	1.02	1.00	1.00	1.00	1.00	1.00	1.01	1.02	1.00	1.00	0.99	1.02	1.05	1.01	1.00	0.97	1.01
EVH SPACE 51	0.98	0.95	0.99	1.00	1.03	0.98	0.95	1.00	1.00	1.01	1.00	1.00	1.00	1.00	1.00	1.01	1.02	1.00	1.00	0.99	1.01	1.05	1.00	1.00	0.98	1.01
EVH SPACE 61	0.99	0.95	0.99	1.00	1.03	0.99	0.95	0.99	1.00	1.01	1.00	1.00	1.00	1.00	1.00	1.01	1.02	1.00	1.00	0.99	1.01	1.05	1.01	1.00	0.98	1.01
EVH SPACE 71	0.99	0.95	0.99	1.00	1.03	0.99	0.95	0.99	1.00	1.01	1.00	1.00	1.00	1.00	1.00	1.01	1.03	1.00	1.00	0.99	1.01	1.05	1.01	1.00	0.97	1.01
EVH SPACE 81	0.98	0.95	0.99	1.00	1.03	0.98	0.95	0.99	1.00	1.01	1.00	1.00	1.00	1.00	1.00	1.02	1.02	1.00	1.00	0.99	1.02	1.05	1.01	1.00	0.97	1.01
EVH SPACE 91	0.98	0.95	0.99	1.00	1.03	0.99	0.97	1.00	1.00	1.02	1.00	1.00	1.00	1.00	1.00	1.01	1.02	1.00	1.00	0.99	1.01	1.05	1.01	1.00	0.97	1.01
EVH SPACE 101	0.98	0.95	0.99	0.98	1.04	0.98	0.95	1.00	1.00	1.02	1.00	1.00	1.00	1.00	1.00	1.01	1.05	1.00	1.00	0.98	-	-	-	-	-	-

Q = AIR FLOW

KF = COOLING PERFORMANCE MULTIPLICATION COEFFICIENT

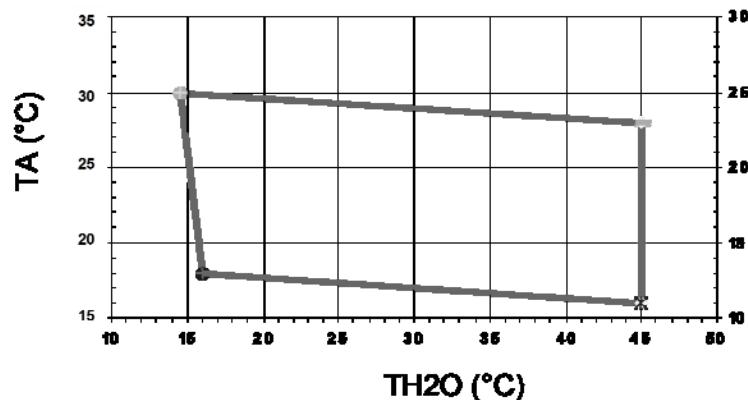
KS = SENSIBLE OUTPUT MULTIPLICATION COEFFICIENT

KT = HEATING PERFORMANCE MULTIPLICATION COEFFICIENT

KEF = COMPRESSOR POWER INPUT MULTIPLICATION COEFFICIENT IN COOLING OPERATION

KET = COMPRESSOR POWER INPUT MULTIPLICATION COEFFICIENT IN HEATING OPERATION

## OPERATING RANGE (COOLING)



TH<sub>20</sub> = WATER LOOP TEMPERATURE (°C)

TA = INTERNAL EXCHANGER INLET AIR TEMPERATURE W.B. (°C)

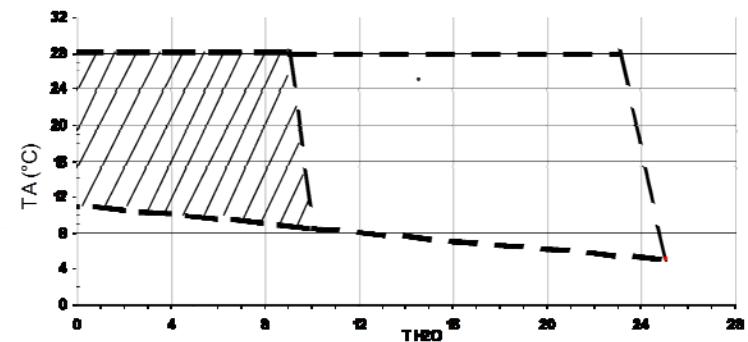
WB = WET BULB

MAXIMUM WATER LOOP TEMPERATURE WHEN NO UNIT WORKS = 60 °C

DATA REFERS TO NOMINAL AIR AND WATER FLOW RATE

ONCE-THROUGH WATER SYSTEM  
IN COOLING OPERATION WITH MODULATING VALVE, INLET WATER TEMPERATURE CAN REACH LOWER VALUES.  
FOR FURTHER INFORMATION CONTACT OUR TECHNICAL DEPARTMENT

## OPERATING RANGE (HEATING)



TH<sub>20</sub> = WATER LOOP TEMPERATURE (°C)

TA = INTERNAL EXCHANGER INLET AIR TEMPERATURE W.B. (°C)

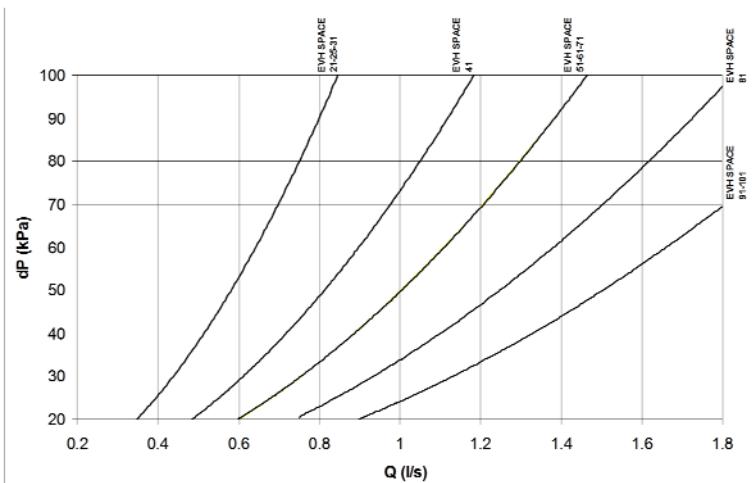
WB = WET BULB

MAXIMUM WATER LOOP TEMPERATURE WHEN NO UNIT WORKS = 60 °C

DATA REFERS TO NOMINAL AIR AND WATER FLOW RATE  
HATCHED AREA = FIELD VALID ONLY WITH WATER AND GLYCOL MIX (TO AVOID THE RISK OF FREEZING)

ONCE-THROUGH WATER SYSTEM  
THE OPERATING RANGE IS VALID  
FOR FURTHER INFORMATION CONTACT OUR TECHNICAL DEPARTMENT

## EXTERNAL EXCHANGER PRESSURE DROP



Q = WATER FLOW

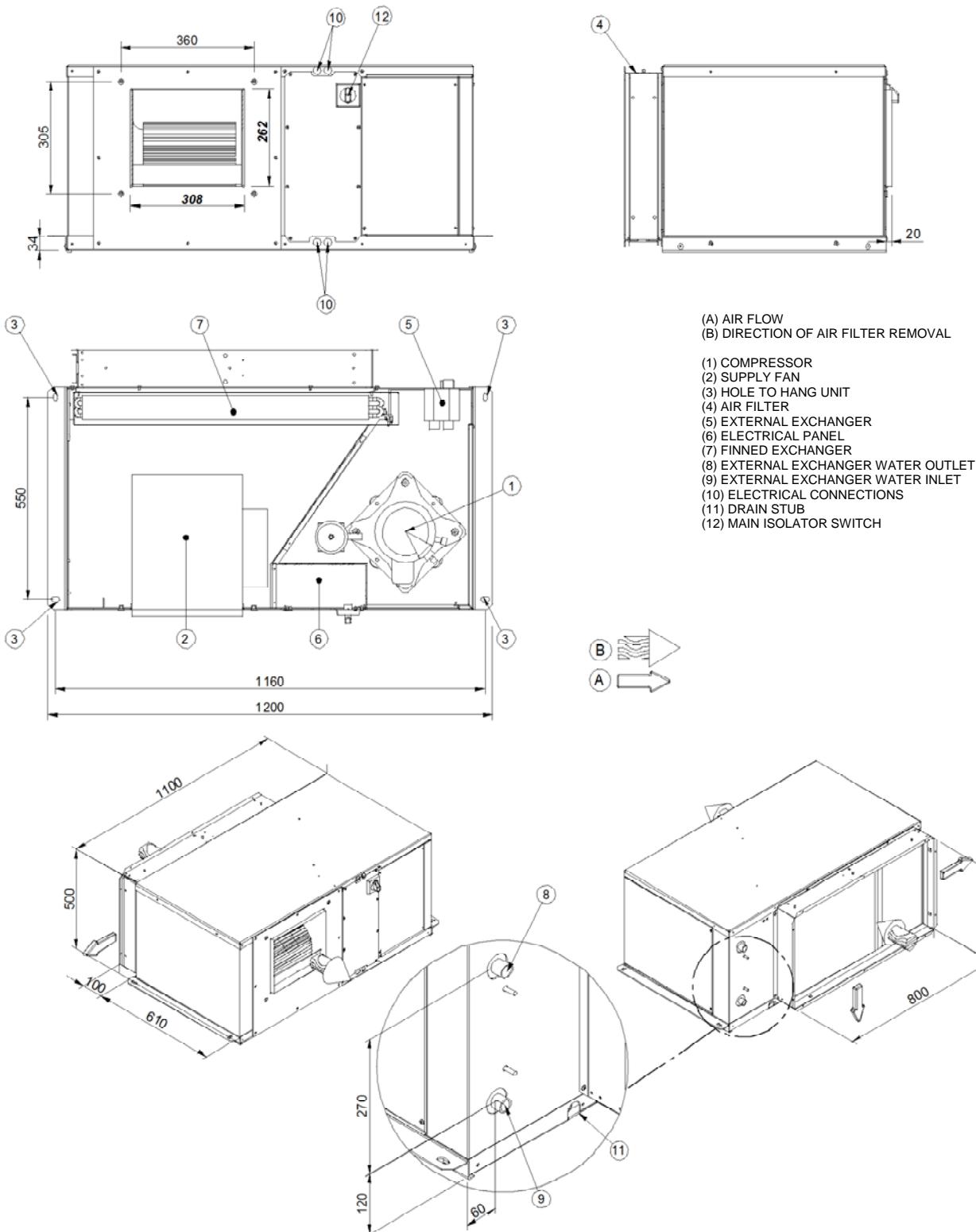
DP = PRESSURE DROP

## DIMENSIONAL DRAWING

Size		21	25	31	41	51	61	71	81	91	101
Dimensional dwg. no.		1	1	1	1	2	2	2	3	3	3
Length	mm	1100	1100	1100	1100	1375	1375	1375	1730	1730	1730
Depth	mm	710	710	710	710	750	750	750	810	810	810
Height	mm	500	500	500	500	600	600	600	700	700	700
A - Length	mm	1100	1100	1100	1100	1375	1375	1375	1730	1730	1730
B - Width	mm	710	710	710	710	750	750	750	810	810	810
C - Height	mm	500	500	500	500	600	600	600	700	700	700

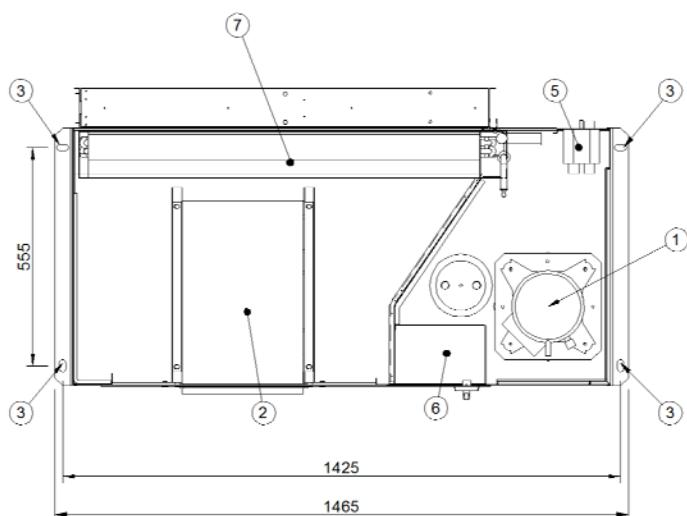
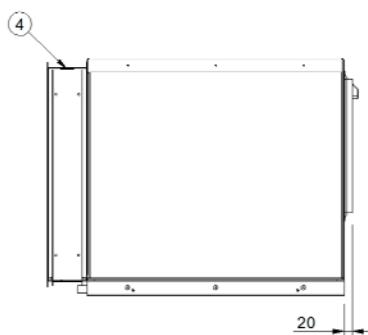
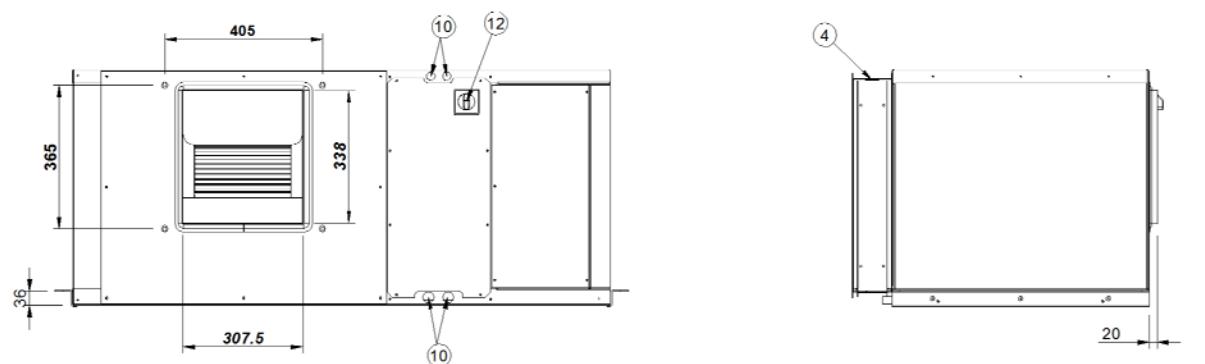
## DIMENSIONAL DRAWING

### DIMENSIONAL DRAWING 1



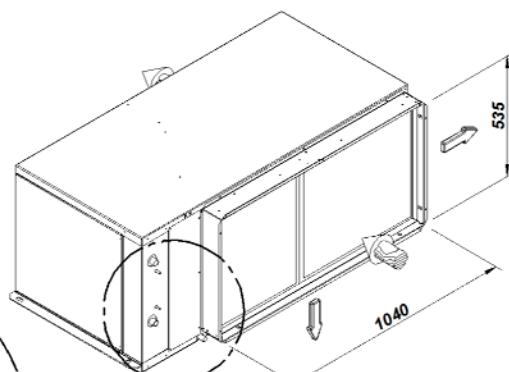
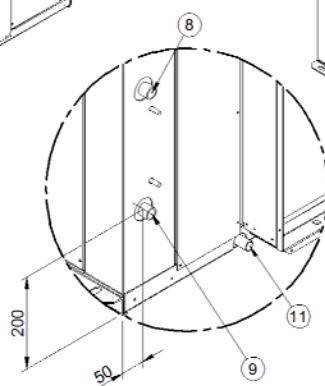
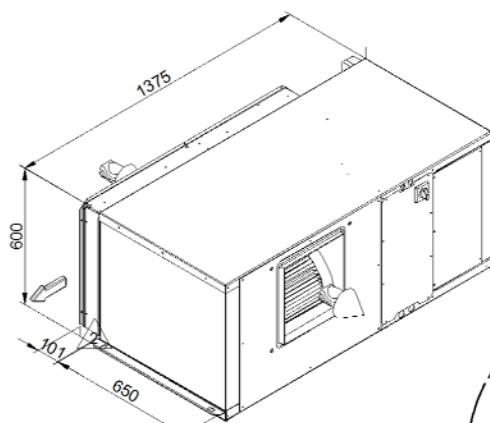
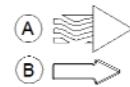
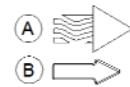
## DIMENSIONAL DRAWING

### DIMENSIONAL DRAWING 2



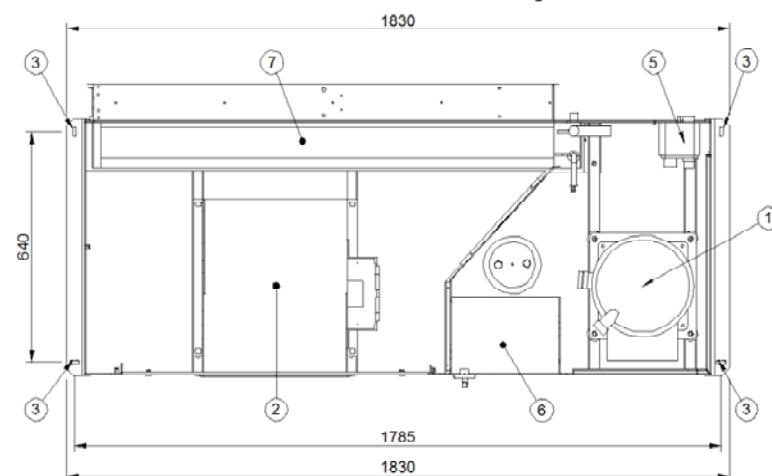
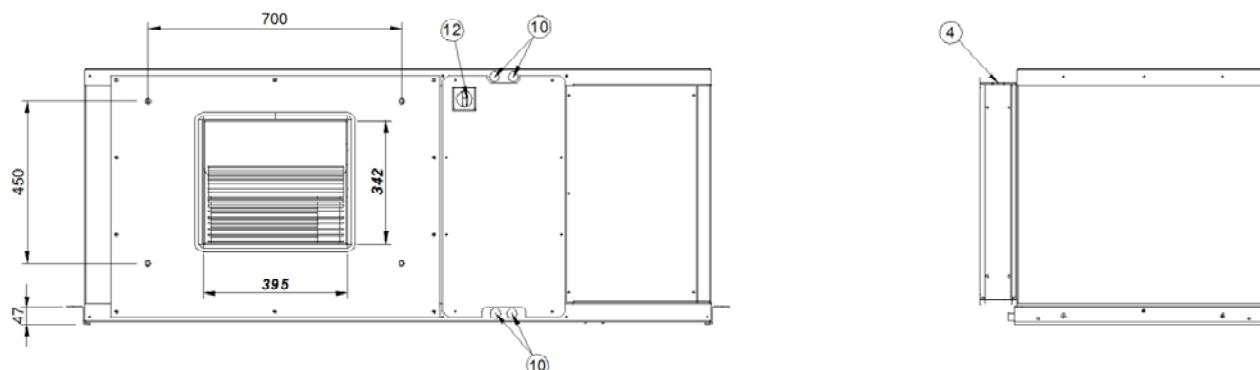
(A) AIR FLOW  
(B) DIRECTION OF AIR FILTER REMOVAL

- (1) COMPRESSOR
- (2) SUPPLY FAN
- (3) HOLE TO HANG UNIT
- (4) AIR FILTER
- (5) EXTERNAL EXCHANGER
- (6) ELECTRICAL PANEL
- (7) FINNED EXCHANGER
- (8) EXTERNAL EXCHANGER WATER OUTLET
- (9) EXTERNAL EXCHANGER WATER INLET
- (10) ELECTRICAL CONNECTIONS
- (11) DRAIN STUB
- (12) MAIN ISOLATOR SWITCH



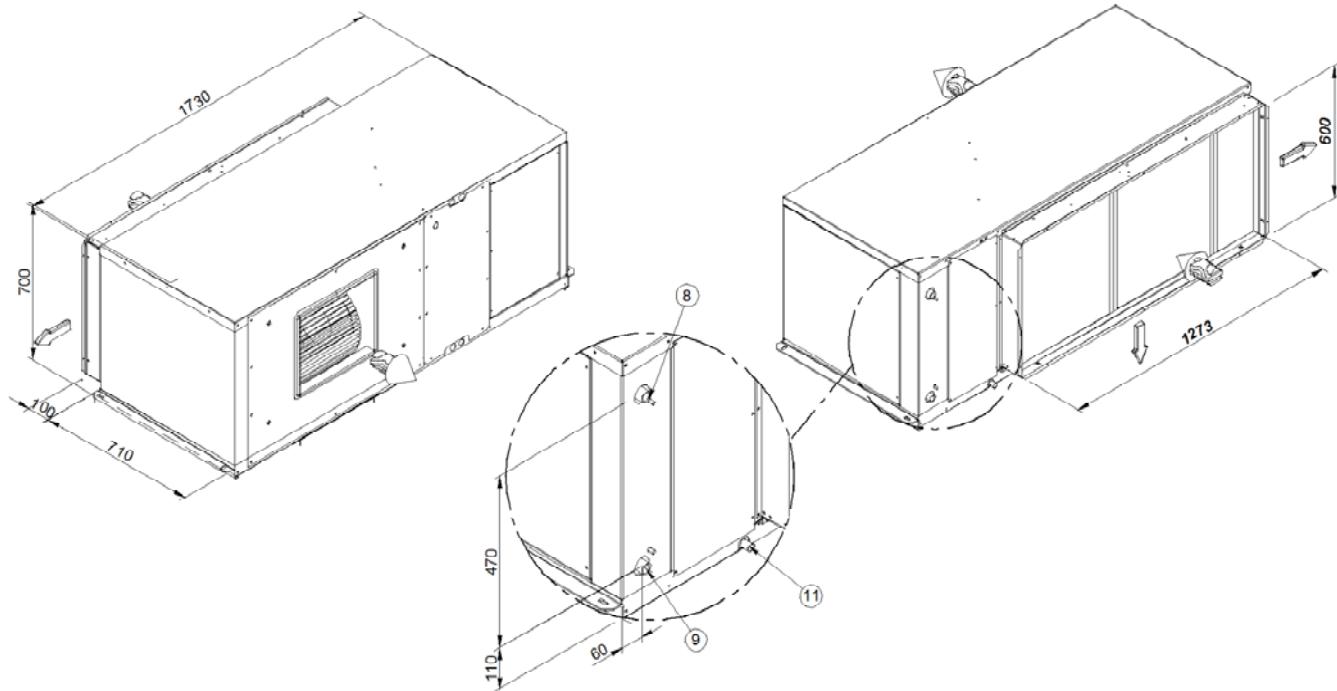
## DIMENSIONAL DRAWING

### DIMENSIONAL DRAWING 3

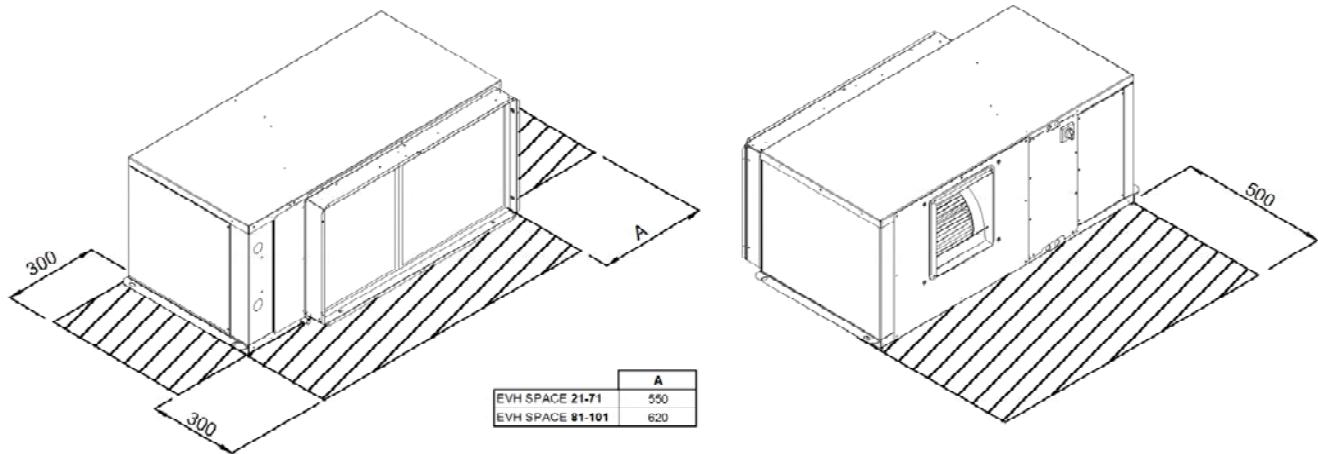


(A) AIR FLOW  
(B) DIRECTION OF AIR FILTER REMOVAL

- (1) COMPRESSOR
- (2) SUPPLY FAN
- (3) HOLE TO HANG UNIT
- (4) AIR FILTER
- (5) EXTERNAL EXCHANGER
- (6) ELECTRICAL PANEL
- (7) FINNED EXCHANGER
- (8) EXTERNAL EXCHANGER WATER OUTLET
- (9) EXTERNAL EXCHANGER WATER INLET
- (10) ELECTRICAL CONNECTIONS
- (11) DRAIN STUB
- (12) MAIN ISOLATOR SWITCH

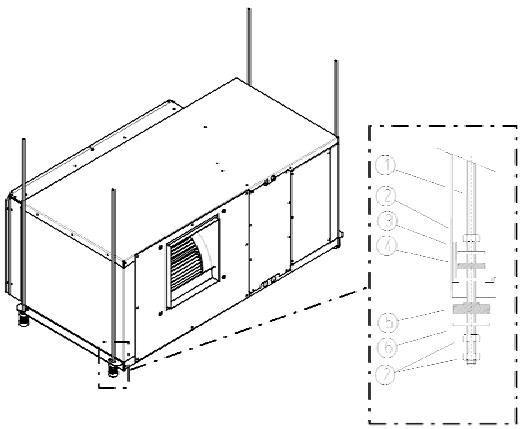


## FUNCTIONAL CLEARANCES

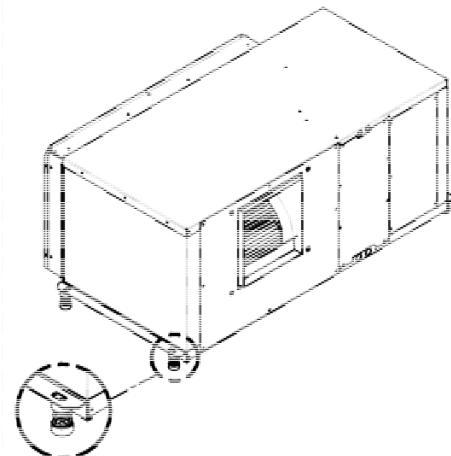


## TYPICAL INSTALLATION

### HANGING



### IN SUPPORT



- (1) Tapped bar M10 (M12 for sizes 81-91-101)
  - (2) Galvanized steel nuts
  - (3) Galvanized steel plain washer Ø external 30mm
  - (4) Rubber plain washer Ø external 30mm thickness 6mm
  - (5) Galvanized steel plain washer Ø external 40mm
  - (6) Rubber or spring antivibration mount correctly dimensioned
- Indicative examples for the unit positioning (Clivet doesn't supply the installation materials)

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