

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 aluminium 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:

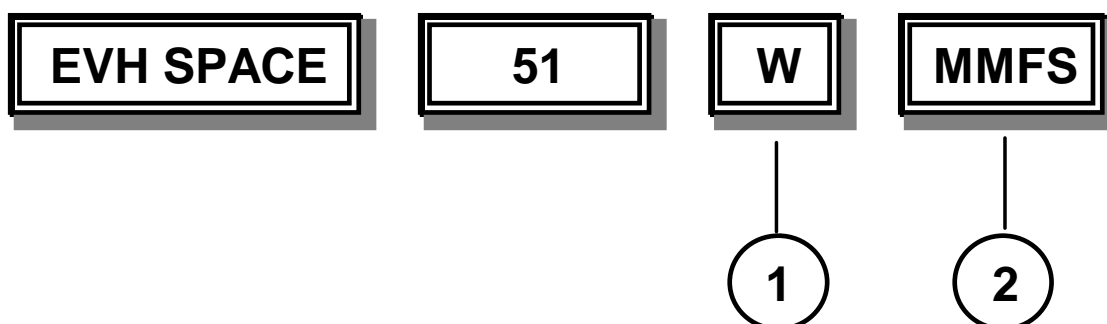
- On/Off button
- buttons for selecting cooling/heating operation
- UP and DOWN buttons to increase and decrease the values
- ECO operation selection (cooling and heating)
- LCD display
- centralised alarms with remote signalling
- Ambient temperature display

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)
- 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

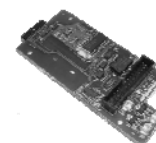
Modulating valve, typically used in installation with groundwater. It is used to keep unit operating valves within max. unit limits and works modulating its opening (and in consequence the condensig temperature in summer and the evaporating temperature in winter)through a signal 0-10V. When unit is off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



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



((MMRI)supply eletrcric 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
------	----	----	----	----	----	----	----	----	----	-----

COOLING

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

HEATING

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

COMPRESSOR

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

INTERNAL EXCHANGER

Front surface		m ²	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

AIR HANDLING SECTION FANS (SUPPLY)

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

EXTERNAL EXCHANGER

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

CONNECTIONS

Water fittings			1"	1"	1"	1"	1"	1"	1"	1"	1"	1"
Condensate drain			20	20	20	20	20	20	20	20	20	20

POWER SUPPLY

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
-----------------------	--	---	-----------	-----------	-----------	-----------	-----------	-----------	-----------	----------	----------	----------

DIMENSIONS

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

STANDARD UNIT WEIGHTS

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

(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

PERFORMANCES OF SUPPLY AIR FANS

Size	Q (l/s)	L	M	H	DP (Pa)							
					60	80	100	120	140	160	180	
21		L	583	555	514	-	-	-	-	-	-	-
		M	-	-	597	555	528	500	-	-	-	-
		H	-	-	-	-	583	555	514	-	-	-
25		L	675	653	625	592	556	-	-	-	-	-
		M	-	-	-	666	639	608	575	-	-	-
		H	-	-	-	-	678	653	625	-	-	-
31		L	764	744	722	700	678	-	-	-	-	-
		M	786	767	750	728	708	683	-	-	-	-
		H	-	-	-	-	-	-	-	-	-	-
41		L	799	781	758	742	-	-	-	-	-	-
		M	808	790	777	753	733	711	-	-	-	-
		H	-	-	-	-	-	-	-	-	-	-
51		L	1,208	1,139	1,056	986	-	-	-	-	-	-
		M	-	-	-	1,236	1,166	1,097	1,028	-	-	-
		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	-	-	-	-	1,303	1,250	1,189	-	-	-
71		L	-	1,278	1,250	1,222	1,194	1,139	1,111	-	-	-
		M	-	-	-	-	1,286	1,231	1,167	-	-	-
		H	-	-	-	-	-	-	-	-	-	-
81		M	1,583	1,556	1,527	1,472	1,444	1,417	1,361	-	-	-
		H	-	-	-	-	-	-	-	-	-	-
91		M	1,833	1,778	1,722	1,639	1,583	1,514	-	-	-	-
		H	-	-	-	-	-	-	-	-	-	-
101		M	1,917	1,861	1,806	1,750	1,667	-	-	-	-	-

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
F.L.A. - FULL LOAD CURRENT AT MAX ADMISSIBLE CONDITIONS								
F.L.A. - Compressor 1	A	4,7	5,7	6,5	7,6	9,8	11,3	13,6
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	5,7	6,7	7,5	8,6	10,8	12,3	14,6
L.R.A. - LOCKED ROTOR AMPERES								
L.R.A. - Compressor 1	A	32	40	46	50	66	74	101
F.L.I. - FULL LOAD POWER INPUT AT MAX ADMISSIBLE CONDITIONS								
F.L.I. - Compressor 1	kW	2,8	3,4	3,8	4,6	5,7	6,6	7,6
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	3,6	4	4,8	5,8	6,8	9
M.I.C. MAXIMUM INRUSH CURRENT								
M.I.C. - Value	A	33	41	47	51	67	75	102

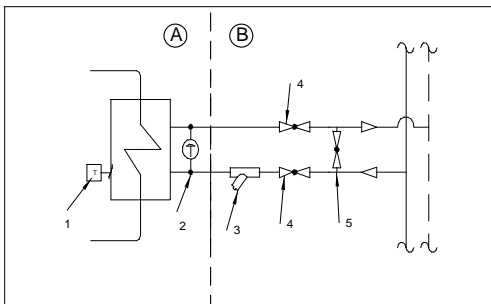
VOLTAGE: 400/3/50

ELECTRICAL DATA

Size		81	91	101
F.L.A. - FULL LOAD CURRENT AT MAX ADMISSIBLE CONDITIONS				
F.L.A. - Compressor 1	A	15,6	16,6	19,6
F.L.A. - Single supply fan	A	2,7	3,7	3,7
F.L.A. - Total	A	16,6	17,6	20,6
L.R.A. - LOCKED ROTOR AMPERES				
L.R.A. - Compressor 1	A	95	111	118
F.L.I. - FULL LOAD POWER INPUT AT MAX ADMISSIBLE CONDITIONS				
F.L.I. - Compressor 1	kW	9,1	9,6	11,6
F.L.I. - Single supply fan	kW	0,8	1,1	1,1
F.L.I. - Total	kW	9,3	9,8	11,8
M.I.C. MAXIMUM INRUSH CURRENT				
M.I.C. - Value	A	97,7	114,7	122,5

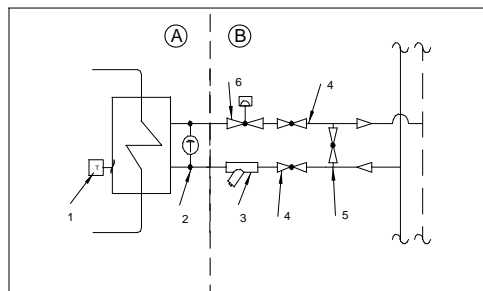
WATER CONNECTION DIAGRAMS

A: WATER LOOP WITH CONSTANT WATER FLOW



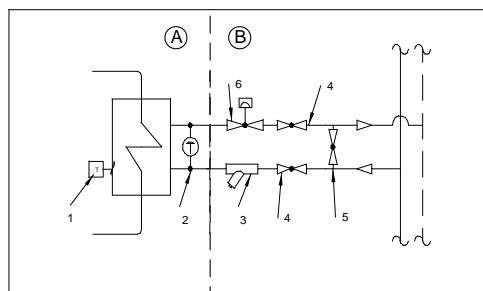
- (1) Antifreeze protection
 - (2) Differential pressure switch, water side
 - (3) Steel mesh strainer on the water side
 - (4) Shut-off valve on the system water connections
 - (5) By-pass cleaning valve (opt)
- The dotted line indicates the supply limit of the standard unit (field A)

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	kWs
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

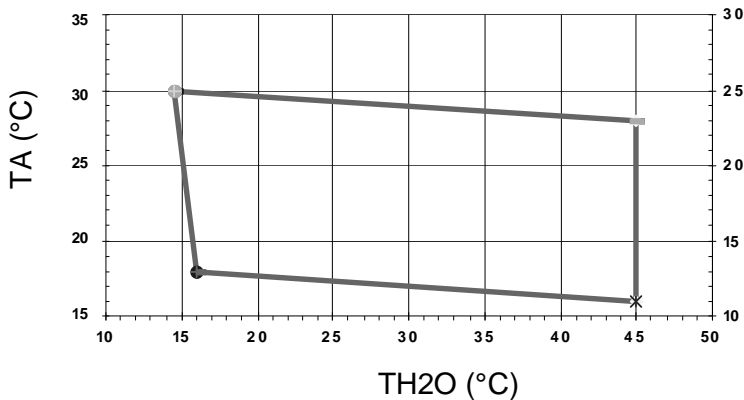
Ta = internal exchanger inlet air temperature
kWt = Heating capacity (kW)
kWe = Compressor power input in kW

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

Q	-10%					-5%					1					5%					10%				
	kf	ks	kt	kef	ket	kf	ks	kt	kef	ket	kf	ks	kt	kef	ket	kf	ks	kt	kef	ket	kf	ks	kt	kef	ket
EVH SPACE 21	0.98	0.95	0.99	1.00	1.03	0.99	0.98	1.00	1.00	1.01	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	
EVH SPACE 25	0.98	0.95	0.99	1.00	1.04	0.99	0.98	1.00	1.00	1.01	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	
EVH SPACE 31	0.99	0.95	0.99	1.00	1.03	0.99	0.98	0.99	1.00	1.01	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	
EVH SPACE 41	0.98	0.95	0.99	1.00	1.03	0.99	0.98	1.00	1.00	1.02	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	
EVH SPACE 51	0.99	0.95	0.99	1.00	1.03	0.99	0.97	1.00	1.00	1.01	1.00	1.00	1.00	1.00	1.01	1.03	1.00	1.00	0.99	1.01	1.05	1.00	1.00	0.98	
EVH SPACE 61	0.99	0.95	0.98	1.00	1.03	0.99	0.97	0.99	1.00	1.01	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	
EVH SPACE 71	0.99	0.95	0.99	1.00	1.03	0.99	0.98	0.99	1.00	1.01	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	
EVH SPACE 81	0.99	0.96	0.98	1.00	1.03	0.99	0.98	0.99	1.00	1.01	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	
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	1.01	1.02	1.00	1.00	0.99	1.01	1.05	1.01	1.00	0.97	
EVH SPACE 101	0.99	0.98	0.99	0.96	1.04	0.99	0.98	1.00	1.00	1.02	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

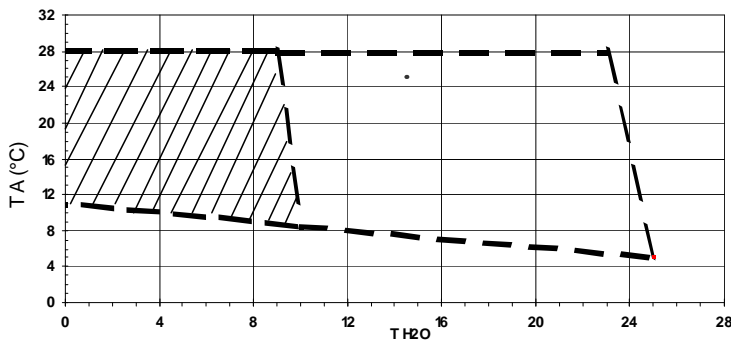
OPERATING RANGE (COOLING)



TH2O = 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

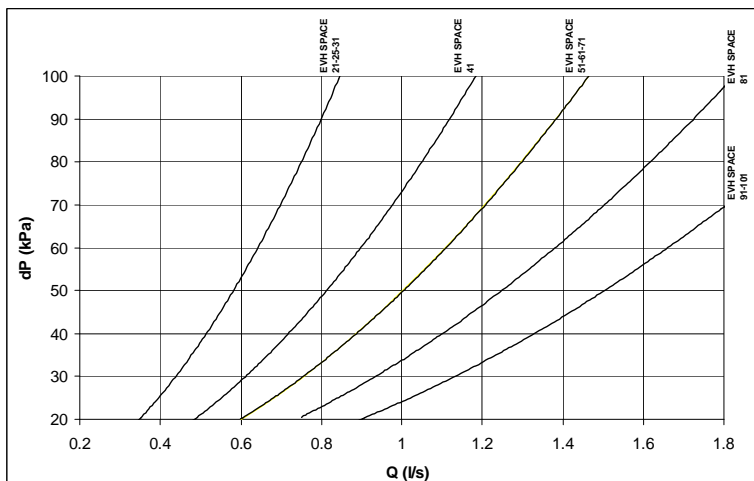
OPERATING RANGE (HEATING)



TH2O = 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



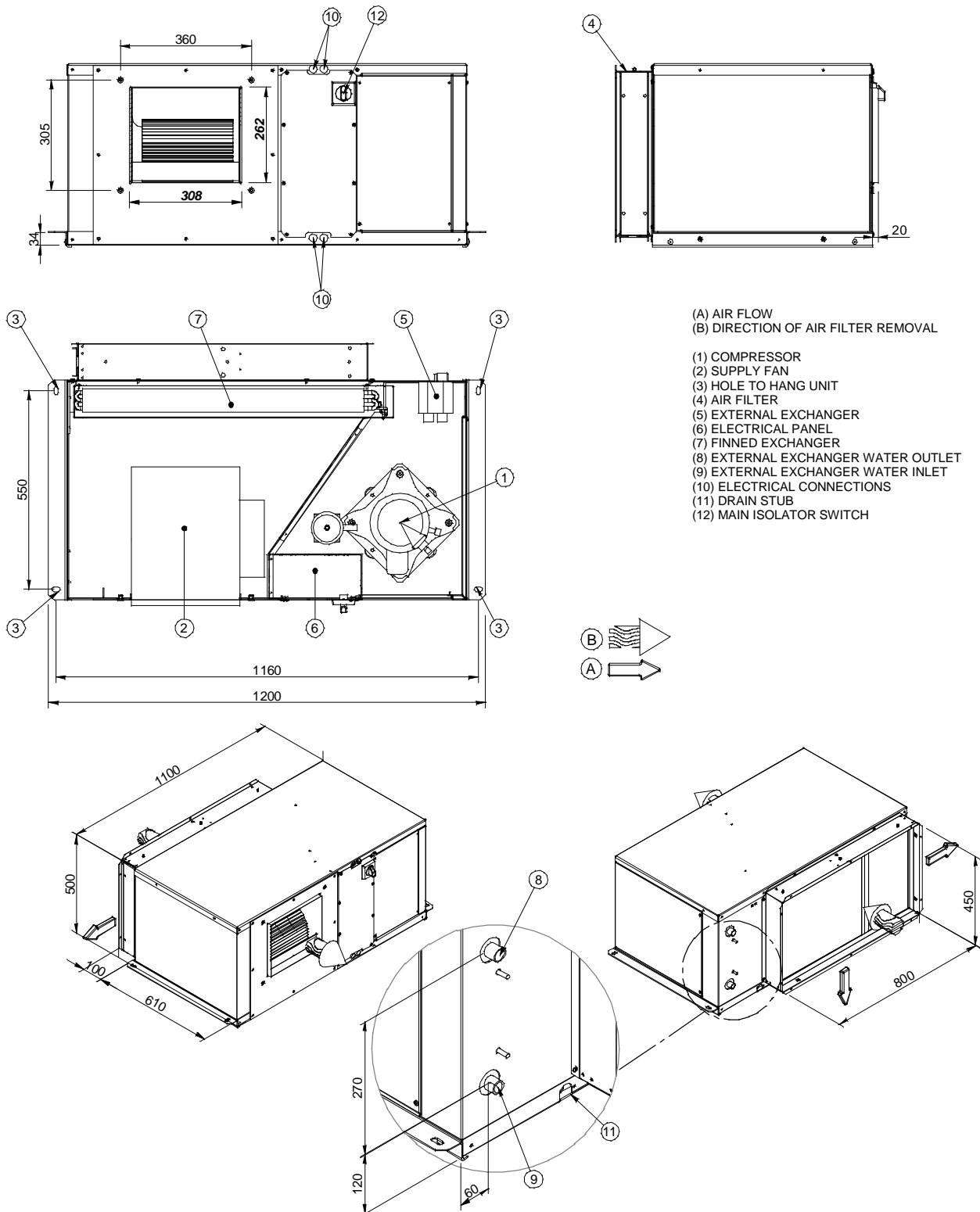
Q = WATER FLOW
 DP = PRESSURE DROP

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

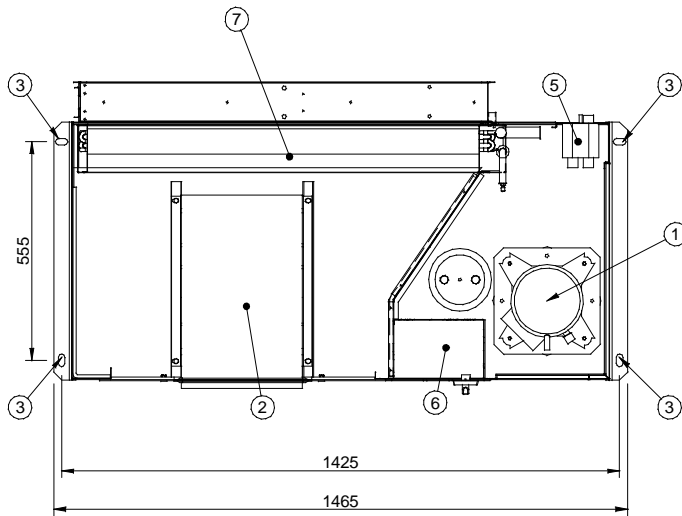
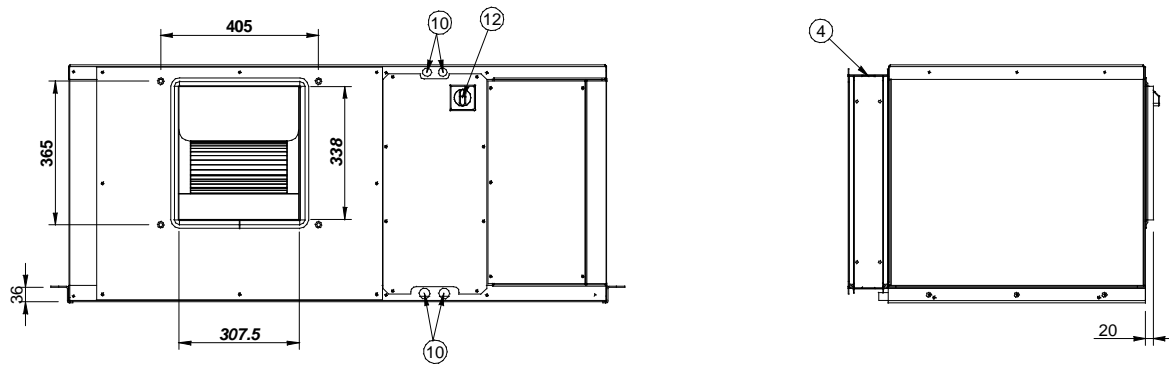
DIMENSIONAL DRAWING

DIMENSIONAL DRAWING 1



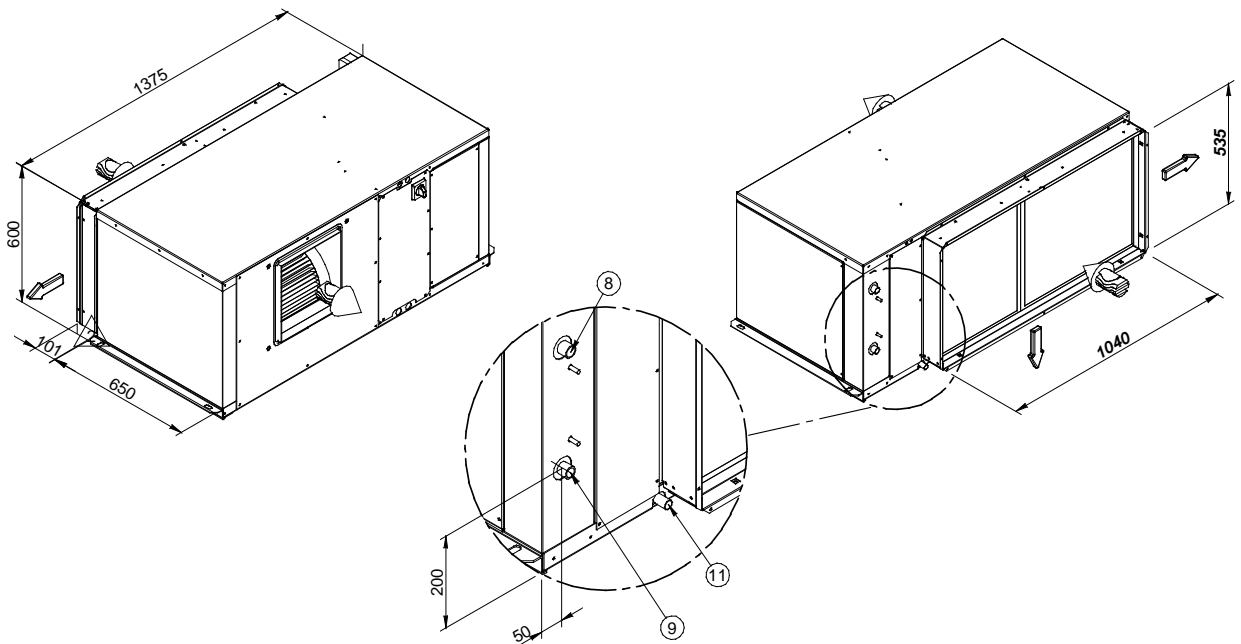
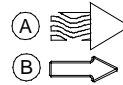
DIMENSIONAL DRAWING

DIMENSIONAL DRAWING 2



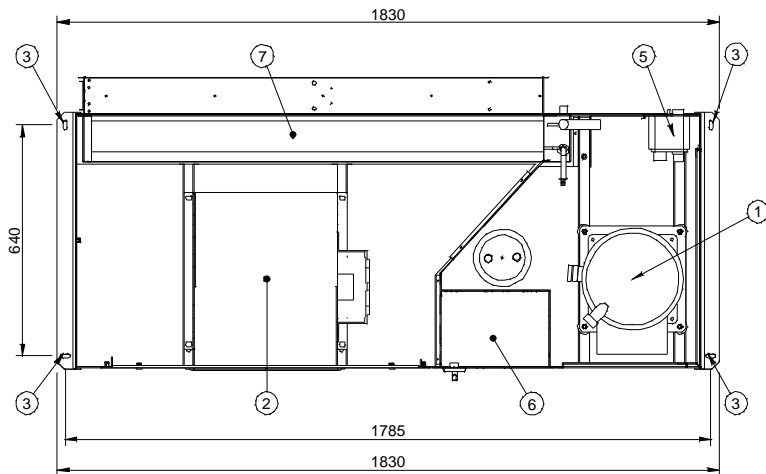
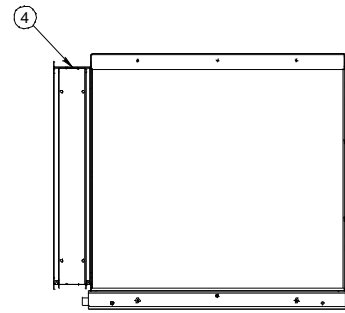
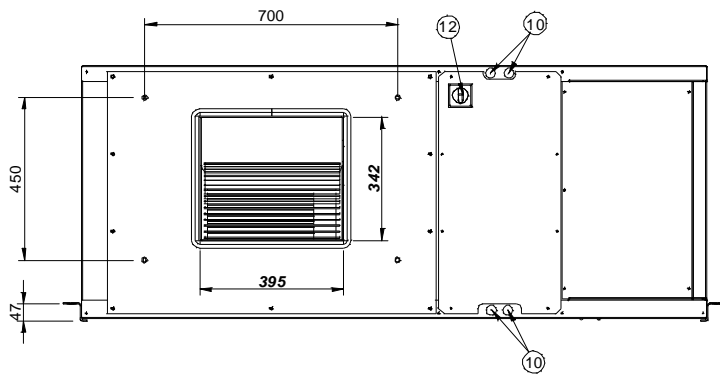
(A) AIR FLOW
(B) DIRECTION OF AIR FILTER REMOVAL

- (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

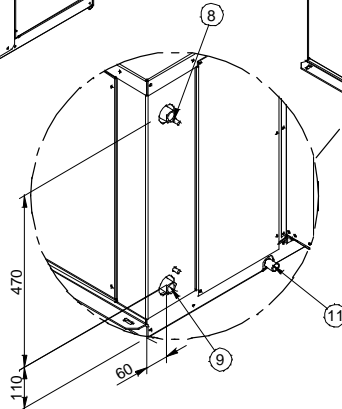
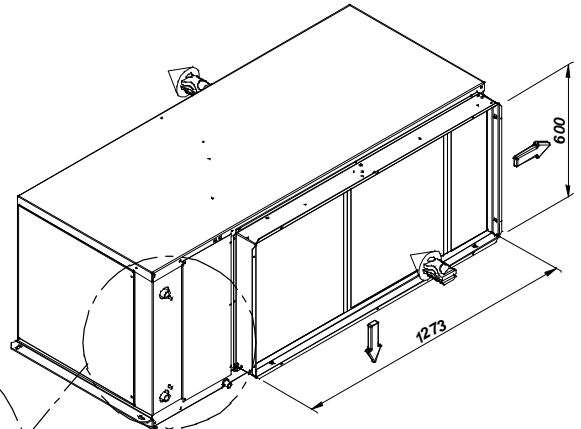
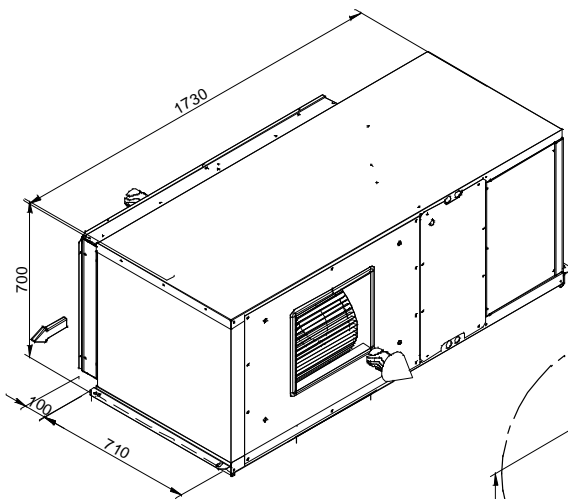
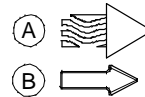


DIMENSIONAL DRAWING

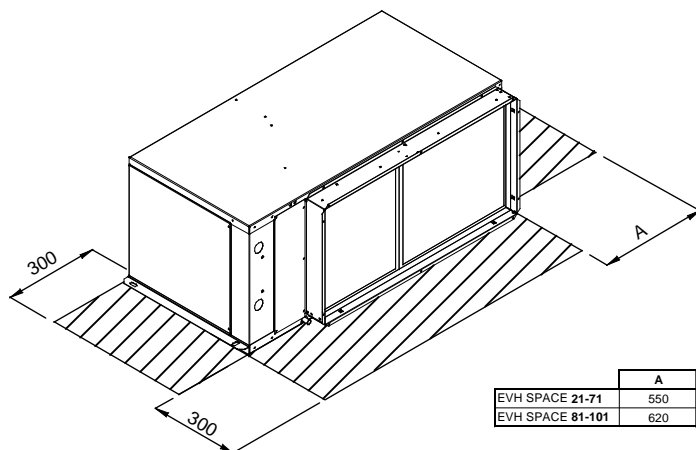
DIMENSIONAL DRAWING 3



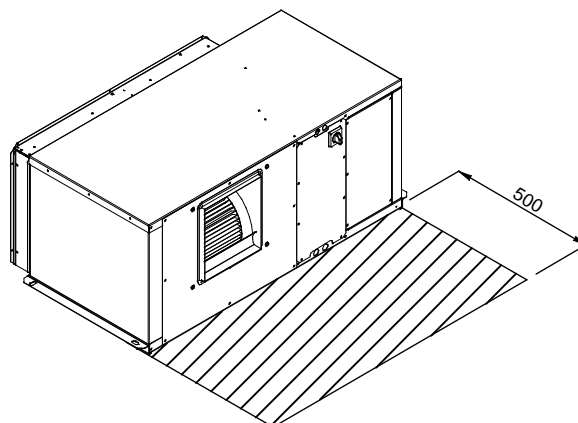
- (A) AIR FLOW
- (B) DIRECTION OF AIR FILTER REMOVAL
- (1) COMPRESSOR
- (2) SUPPLY FAN
- (3) HOLE TO HANG UNIT
- (4) AIR FILTER
- (5) EXTERNAL EXCHANGER
- (6) ELECTRICAL PANEL
- (7) FINNED EXCHANGER
- (8) EXTERNAL EXCHANGER WATER OUTLET
- (9) EXTERNAL EXCHANGER WATER INLET
- (10) ELECTRICAL CONNECTIONS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



FUNCTIONAL CLEARANCES

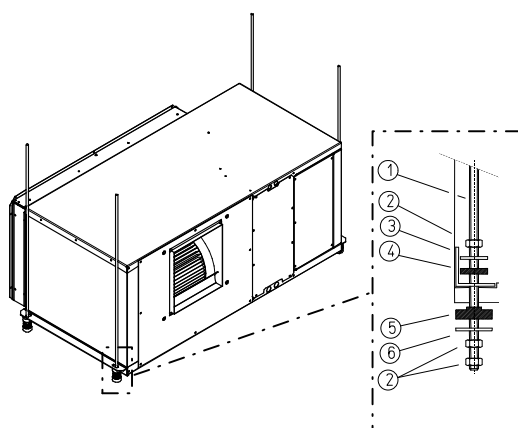


	A
EVH SPACE 21-71	550
EVH SPACE 81-101	620

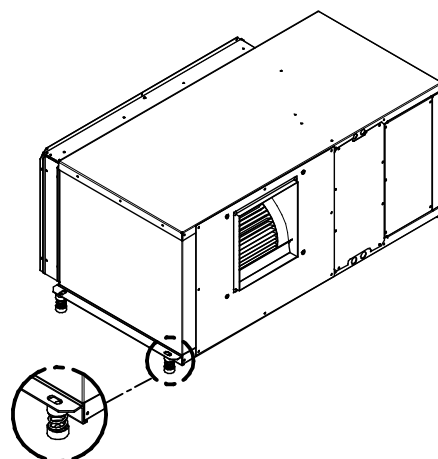


TYPICAL INSTALLATION

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)

PAGE LEFT INTENTIONALLY LEFT BLANK



CLIVET SPA

Via Camp Lonc 25, Z.I. Villapaiera - 32032 Feltre (BL) - Italy
Tel. + 39 0439 3131 - Fax + 39 0439 313300 - info@clivet.it

CLIVET UK LTD

4 Kingdom Close, Segensworth East - Fareham, Hampshire - PO15 5TJ - United Kingdom
Tel. + 44 (0) 1489 572238 - Fax + 44 (0) 1489 573033 - info@clivet-uk.co.uk

CLIVET AIRCON LTD (Service and Maintenance Division)

Units F5&F6 Railway Triangle Ind Est, Walton Road - Portsmouth, Hampshire - PO6 1TG - United Kingdom
Tel. + 44 (0) 2392 381235 - Fax + 44 (0) 2392 381243 - info@clivetaircon.co.uk

CLIVET ESPAÑA COMERCIAL S.L. (Sales)

Calle Gurb, 17 1º 1ª - 08500 Vic, Barcelona - España
Tel. + 34 93 8606248 - Fax + 34 93 8855392 - info@clivetcomercial.com

CLIVET ESPAÑA S.A.U.(Service and Maintenance Division)

Calle Real de Burgos Nº 12 - 28860, Paracuellos del Jarama, Madrid - España
Tel. + 34 91 6658280 - Fax + 34 91 6657806 - info@clivet.es

CLIVET GmbH

Hummelsbütteler Steindamm 84, 22851 Norderstedt - Germany
Tel. + 49 (0) 40 32 59 57-0 - Fax + 49 (0) 40 32 59 57-194 - info.de@clivet.com

CLIVET NEDERLAND B.V.

Siliciumweg 20a, 3812 SX Amersfoort - Netherlands
Tel. + 31 (0) 33 7503420 - Fax + 31 (0) 33 7503424 - info@clivet.nl

CLIVET RUSSIA

Elektrozavodskaya st. 24, office 509 - 107023, Moscow, Russia
Tel. + 74956462009 - Fax + 74956462009 - info.ru@clivet.com

CLIVET MIDEAST FZCO

Dubai Silicon Oasis (DSO), High Bay Complex, Ind Unit No. 3, PO BOX 28178 - Dubai, UAE
Tel. + 9714 3208499 - Fax + 9714 3208216 - info@clivet.ae

CLIVET AIRCONDITIONING SYSTEMS PRIVATE LIMITED

4BA, Gundecha Onclave - Kherani Road, Saki Naka, Andheri (East) - Mumbai 400 072 - India
Tel. + 91 22 6193 7000 - Fax + 91 22 6193 7001 - info.in@clivet.com