

## ► Air-to-Water Reverse Cycle Heat Pumps

# VLH 504 to 1204



126 to 294 kW



133 to 307 kW



Technical Brochure  
TM VLH-W.3GB  
Date : June 2005  
Supersedes : TM VLH-W.2GB/07.04

**Wesper**®

# Specifications

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## Advantages

- ✓ Range extension with **two additional sizes** (1104 & 1204) available in STD, LN and ELN versions. Performance and sizes segmentation improved.
- ✓ Evaporators with welded plates of a **"True Dual"** type.
- ✓ Microprocessor with a **BMS** interface.
- ✓ Outlet water temperature control.
- ✓ **Internal hydro kits**.
- ✓ High Efficiency version that can operate at high temperatures with **COP values higher than 3**.
- ✓ Minimum system water volume of **3 litres/kW**.

## General characteristics

The VLH air-to-water reverse cycle heat pumps have been designed to operate with **HFC 407C** refrigerant.

Based on a compact design using a V-shape condenser coils, the VLH units have a rigid structure conceived in such a way that their "footprint" is optimised.

They are complete with **two independent reversible refrigerant circuits**, a tandem high efficiency and low vibration level Scroll compressors for each circuit, a "True Dual" two-circuit plate heat exchanger and a ventilating unit comprising finned coils and quiet fans.

The VLH range, composed of **9 sizes**, is available in **4 versions** : **Standard (STD)**, **Low Noise (LN)**, **Extra Low Noise (ELN)** and **High Efficiency (HE)**.

**VLH STD** : These units are designed to be located outside on the roof of a building or at ground level. They are equipped with fans located in high efficiency and low noise housing. Units are supplied without any fan speed controller, nor soundproof jacket on compressors. The 9 sizes of the STD units are covering a nominal cooling capacity range from 126 to 294 kW and a nominal heating capacity range from 133 to 307 kW.

**VLH LN** : These units have the same equipment as the STD units, except that they are equipped with low speed fans and soundproof jackets on all compressors. The 9 sizes of the LN units are covering a nominal cooling capacity range from 120 to 280 kW and a nominal heating capacity range from 131 to 299 kW.

**VLH ELN** : These units are equipped with more fans (on sizes 604 to 804) than the STD units. They are complete with a stepless fan speed controller, very low speed fans, greater surface area condenser coils and soundproof boxes on all compressors. The 7 sizes of the ELN units are covering a nominal cooling capacity range from 145 to 274 kW and a nominal heating capacity range from 157 to 295 kW. VLH 504 ELN and 554 ELN are not available.

**VLH HE** : These units have the same equipments as the ELN units; except that the fans are operating at full speed and that the fan speed controller and compressors soundproof equipment are not supplied. They are suitable for operation in cooling mode at high ambient temperatures (up to +49 °C). The 7 sizes of the HE units are covering a nominal cooling capacity range from 132 to 254 kW and a nominal heating capacity range from 134 to 275 kW. VLH 1104 HE and 1204 HE are not available.

## Reference standards

The following applies to all the sizes and versions belonging to the VLH units :

- Machine Directive EEC 98/37 (EN 292/1, EN 292/2)
- Low Voltage Directive EEC 73/23 (EN 60204-1, EN 60439-1)
- Electromagnetic Compatibility Directive EEC 89/336 as modified by Directive EEC 92/31 (EN 50081-1, EN 50082-2)
- Pressure Equipment Directive 97/23/CE

## Cabinet and structure

The unit cabinet and structure are made of heavy gauge galvanized steel coated with polyester powder based painting (RAL 9001). All parts of the structure are fastened totally with non-corrosive screws and bolts.

## Compressors

Each unit is equipped with four compressors arranged in two tandems to suit the two refrigerant circuits.

The compressors are of hermetic scroll type and fitted with an electronic control system ensuring :

- protection against high temperature and excessive load,
- correct direction of rotation for greater power only compressors of VLH 704, 804 & 904 and for all compressors of VLH 1004, 1104 & 1204.

All compressors have direct-on-line starting and are mounted on rubber vibration isolators in order to minimize noise and vibration transmission.

## Evaporator

Evaporator is of a "Dual Circuit" brazed stainless steel plate type heat exchanger. It is insulated with a 19 mm thick closed cell polyethylene foam material and are fitted with a film type electric heater on the external surface to prevent the unit from freezing at a low temperature (down to -18 °C) when the unit is off.

Water connections are of a Victaulic type : 2"1/2 on sizes 504 to 804 and 3" on sizes 904 to 1204.

## Condenser coils

The condenser coils shall be seamless copper tubes, arranged in staggered rows, mechanically expanded into corrugated aluminum fins.

Design working pressure of the coils shall be 28 bar.

## Condenser coil fans

Fans are of a direct drive axial type. Each of them is fitted with a painted galvanized steel fan guard.

Fans are equipped with externally mounted nozzle profile housing which generates low sound levels.

## Fan controls

Each unit can be equipped with an optional stepless fan speed controller, operating on the basis of condensing pressure, to keep fan rpm under control in order to operate in cooling mode at a low ambient temperature (-18 °C).

This fan speed controller is supplied as standard on the ELN units.

## Refrigerant circuits

All the units are composed of two independent and separate refrigerant circuits.

Each refrigerant circuit is equipped with liquid line and discharge line shut-off valves, liquid line solenoid valve (which allows a pump-down function at start-up and stop of the compressors), filter-drier with replaceable core, sight glass and externally equalized thermostatic expansion valve.

The functional diagram of each circuit is shown in the section "Refrigerant flow diagram".

## Power and control panel

All operating and safety controls as well as the motor starting equipment, necessary for full unit operation, are centrally located in a metal box having IP 54 weather protection.

# Specifications (continued)

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## Control and safety devices

Each VLH unit is fitted with the following devices :

### Safety :

- Power disconnect switch with an emergency stop function.
- Double HP switches, set to 28 bar : automatic reset and manual reset from the control panel.
- LP switches (one for each circuit), set to 0.5 bar : automatic reset and manual reset from the control panel.
- Water differential pressure switch on the evaporator, set to 105 mbar (corresponding to about 50 % of the nominal capacity).
- Antifreeze temperature sensor (set to +4 °C).
- Safety valve on discharge piping , set to 30 bar.

### Control :

- HP transducers (one for each circuit).
- Evaporator water inlet temperature sensor.
- Evaporator water outlet temperature sensor (with an antifreeze function).
- Ambient air temperature sensor.

## Controls

The VLH units are supplied with a microprocessor-based electronic control and management system ensuring the following functions :

- Management of the operation of compressors :
  - a) Power on/off
  - b) Anticycle management
  - c) Management of delays at start-up
  - d) Tandem unloading for high pressure ( $P_c > 26$  bar)
- Temperature control of chilled and hot water (temperature control option at the evaporator inlet or outlet).
- Evaporator antifreeze protection.
- Heat pump defrost control for automatic operation.
- Management of high and low pressure alarms.
- Management of external interlocks.
- Management of remote control :
  - e) Unit power on/off
  - f) Summary alarm signals
- Remote signalling of unit information, by dry contacts :
  - g) Voltage presence
  - h) Compressors in operation
  - i) Alarm, circuit 1
  - j) Alarm, circuit 2
- Management of the hydro kit : start-up of pump, antifreeze heater of the external tank.

The unit controller can also clearly show all control parameters of the machine on a liquid crystal display, such as :

- Display of the temperature at the evaporator inlet and outlet.
- Display of the ambient air temperature.

- Display of the circuit 1 and circuit 2 discharge pressure.
- Display of the set point.
- Display of the various alarm and operation status :
  - k) Compressor start-up alarm (discharge pressure check)
  - l) Low / High pressure
  - m) Evaporator antifreeze
  - n) Flow switch signal for lack of water
  - o) Control of the compressor operating hours
  - p) Compressors in operation
  - q) Pump in operation and operating hours
  - r) Thermal protection of compressors
  - s) Thermal protection of fans
  - t) Faulty sensor

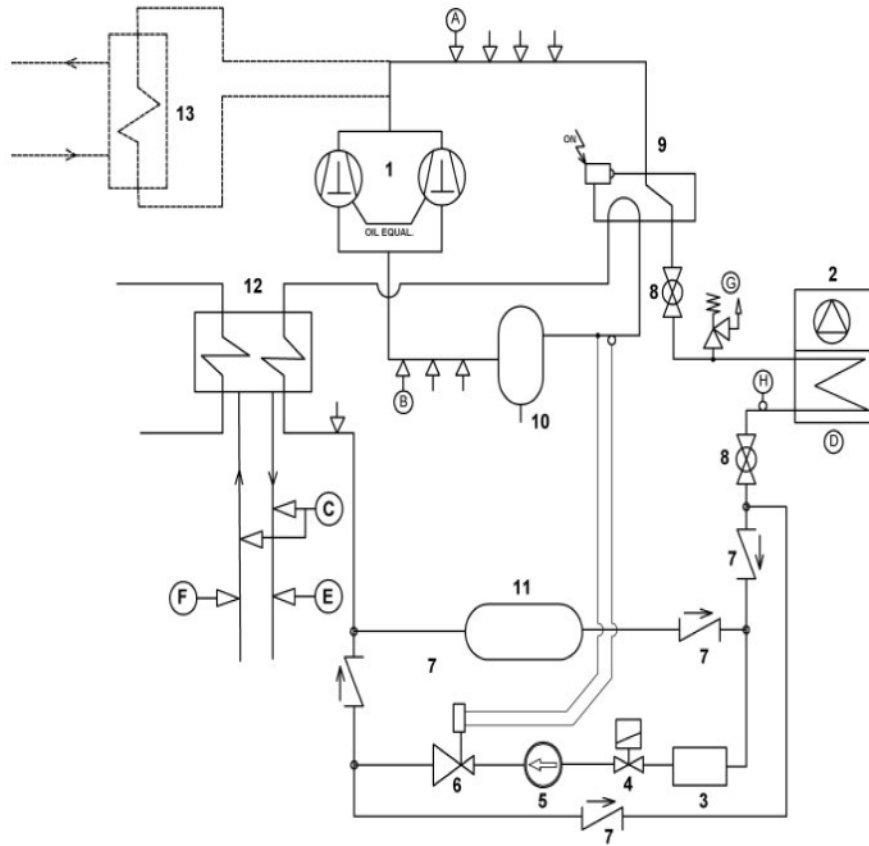
## Factory-installed accessories and options

- ✓ Coils with blue fins.
- ✓ Copper / Copper coils.
- ✓ Coils with "Silverguard" (polyurethane) coated fins.
- ✓ Coils with pre-painted (vinyl) fins.
- ✓ Stepless fan speed controller (STD, LN & HE versions).
- ✓ LP and HP manometers.
- ✓ Condenser coil guards.
- ✓ Chiller grilles.
- ✓ High pressure fans (up to size 1004).
- ✓ Compressor thermal protection.
- ✓ Phase monitor.
- ✓ Power factor correction capacitors.
- ✓ Internal hydro kit (without tank) consisting of 1 or 2 pumps with low or high pressure, expansion tank, water filter, shut-off valves, safety valve, air vent valve and thermal insulation on piping and hydronic components.

## Field-installed accessories

- ✓ Water filter.
- ✓ Flow switch.
- ✓ External hydro kit, same as internal hydro kit, but with tank :
  - 500/750 litres : VLH 504, 554 & 604,
  - 750/1000 litres : VLH 704,
  - 750/1000/1500 litres : VLH 804 & 904,
  - 1000/1500 litres : VLH 1004, 1104 & 1204.
- ✓ Remote wire control (max. 50 m).
- ✓ Spring anti-vibration mounts.
- ✓ Clock/Memory board (STD & LN versions only).
- ✓ Wall remote terminal (max. 400 m).
- ✓ RS485 serial board (max. 16 units).
- ✓ Chiller-Net control.
- ✓ ModBus interface.

# Refrigerant Flow Diagram



**Note :** One refrigerant circuit only is shown. The refrigerant flow diagram of the second circuit is identical to above.

## Components :

- 1 - Tandem Scroll type compressor
- 2 - Air cooled condenser
- 3 - Filter drier
- 4 - Solenoid valve
- 5 - Sight glass
- 6 - Expansion valve
- 7 - Check valve
- 8 - Globe valve
- 9 - Four-way valve
- 10 - Suction accumulator
- 11 - Liquid receiver
- 12 - Heat exchanger (Dual type)
- 13 - Desuperheater (optional)

## Safety / Control devices :

- A - High pressure switch
- B - Low pressure switch
- C - Differential pressure switch
- D - Air temperature sensor
- E - Outlet water temperature sensor
- F - Inlet water temperature sensor
- G - PED pressure relief valve
- H - Defrost temperature sensor
- ∇ Pipe connection with Shrader valve

# Operating Limits and Correction Factors

## Operating limits - VLH 504 to 804

VLH			504		554		604		704		804	
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Chiller	Liquid outlet temperature	Water outlet °C	+6 to +15									
		Brine outlet °C	-8 to +15									
		DT K	3 to 8									
	Flow rate (1) l/h	13502	36005	14878	39675	15727	41939	18307	48819	21210	56559	
	Pressure drop (1) kPa	10.1	71.9	12.3	87.3	11.6	82.3	15.7	111.5	15.8	112.6	
Max. operating pressure - water side bar			10									
Ambient air	Air entering temperature	Cooling - STD °C	0 to +47 °C (2) (3)		0 to +47 °C (2) (3)		0 to +45 °C (2) (3)		0 to +46 °C (2) (3)		0 to +46 °C (2) (3)	
		Cooling - LNN °C	0 to +44 °C (2) (3)		0 to +43 °C (2) (3)		0 to +45 °C (2) (3)		0 to +45 °C (2) (3)		0 to +44 °C (2) (3)	
		Cooling - ELN °C	-		-		-18 to +45 °C (3)		-18 to +45 °C (3)		-18 to +44 °C (3)	
		Cooling - HE °C	0 to +49 °C (2) (3)		0 to +49 °C (2) (3)		0 to +48 °C (2) (3)		0 to +49 °C (2) (3)		0 to +49 °C (2) (3)	
		Heating °C	-5 to +20									
	External static pressure	Standard fans Pa	0									
High pressure fans Pa		80										
Heat pump °C			+30 to +50									
Maximum operating pressure bar			28									
Recommended system chilled water volume (4) litres			380		420		450		550		620	
Power supply voltage (5) V			400 V / 3 Ph / 50 Hz (nominal)									

- (1) At nominal conditions for STD units.
- (2) Minimum ambient temperature : -18 °C with optional fan speed control.
- (3) High pressure switch at 28 bar.
- (4) Minimum water/brine volume of system (about 3 litres/kW).
- (5) Voltage : 400 V ± 10 %

## Operating limits - VLH 904 to 1204

VLH			904		1004		1104		1204			
			Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
Chiller	Liquid outlet temperature	Water outlet °C	+6 to +15									
		Brine outlet °C	-8 to +15									
		DT K	3 to 8									
	Flow rate (1) l/h	24252	64672	26778	71409	29874	79665	31551	84137			
	Pressure drop (1) kPa	8.7	62.2	10.6	75.8	13.3	94.4	14.8	105.3			
Max. operating pressure - water side bar			10									
Ambient air	Air entering temperature	Cooling - STD °C	0 to +46 °C (2) (3)		0 to +46 °C (2) (3)		0 to +46 °C (2) (3)		0 to +46 °C (2) (3)			
		Cooling - LNN °C	0 to +46 °C (2) (3)		0 to +46 °C (2) (3)		0 to +43 °C (3)		0 to +43 °C (3)			
		Cooling - ELN °C	-18 to +44 °C (3)		-18 to +44 °C (3)		-18 to +40 °C		-18 to +40 °C			
		Cooling - HE °C	0 to +49 °C (2) (3)		0 to +49 °C (2) (3)		-		-			
		Heating °C	-5 to +20									
	External static pressure	Standard fans Pa	0									
High pressure fans Pa		80		-		-						
Heat pump °C			+30 to +50									
Maximum operating pressure bar			28									
Recommended system chilled water volume (4) litres			700		790		870		940			
Power supply voltage (5) V			400 V / 3 Ph / 50 Hz (nominal)									

- (1) At nominal conditions for STD units.
- (2) Minimum ambient temperature : -18 °C with optional fan speed control.
- (3) High pressure switch at 28 bar.
- (4) Minimum water/brine volume of system (about 3 litres/kW).
- (5) Voltage : 400 V ± 10 %

## Operating Limits and Correction Factors (continued)

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### Evaporator fouling factors

Fouling factors (m <sup>2</sup> .°C/kW)	Cooling capacity correction factors	Power consumption correction factors
0.044	1.000	1.000
0.088	0.987	0.995
0.176	0.964	0.985
0.352	0.915	0.962

### Condenser fouling factors

Fouling factors (m <sup>2</sup> .°C/kW)	Cooling capacity correction factors	Power consumption correction factors
0.044	1.000	1.000
0.088	0.987	1.023
0.176	0.955	1.068
0.352	0.910	1.135

### Altitude correction factors

Altitude (m)	Cooling capacity correction factors	Power consumption correction factors
0	1.000	1.000
600	0.987	1.010
1200	0.973	1.020
1800	0.958	1.029
2400	0.943	1.038

## System Water Volume

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The minimum system water volume is calculated using the **minimum compressor running time** (1.5 minute for scroll compressor) and the **lower capacity step** (only one compressor running among the four compressors installed) :

$$V = \frac{P \times t}{n \times 25 \times DT}$$

Where V : Water volume (litre)  
 P : Unit total cooling capacity (W)  
 n : Number of compressor steps  
 t : Compressor minimum running time (minute)  
 DT : Evaporator temperature difference (°C)

With t = 1.5 min, DT = 5 °C and n = 4, the minimum system water volume is about **V = 3 litres/kW**.

# Physical Data - VLH STD

VLH models		504	554	604	704	804	904	1004	1104	1204
Nominal cooling capacity (1)	kW	125.6	138.4	146.3	170.3	197.3	225.6	249.1	277.9	293.5
Input cooling (3)	kW	46.0	51.9	57.5	62.7	71.8	81.1	87.9	98.7	111.8
EER		2.7	2.7	2.5	2.7	2.7	2.8	2.8	2.8	3.0
Nominal heating capacity (2)	kW	133.2	153.1	161.6	193.6	222.7	245.4	276.7	287.2	306.8
Input heating (3)	kW	44.5	50.1	53.5	64.0	71.7	81.9	91.3	95.1	105.7
COP		3.0	3.1	3.0	3.0	3.1	3.0	3.0	3.0	2.9
Number of refrigerant circuits		2	2	2	2	2	2	2	2	2
Total unit capacity steps	%	20 - 40 - 70 - 100	23 - 46 - 73 - 100	25 - 50 - 75 - 100	20 - 50 - 70 - 100	20 - 50 - 70 - 100	15 - 45 - 70 - 100	25 - 50 - 75 - 100	23 - 45 - 73 - 100	25 - 50 - 75 - 100
<b>Compressors</b>										
Number		4	4	4	4	4	4	4	4	4
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
<b>Evaporator</b>										
Number		1	1	1	1	1	1	1	1	1
Type		Plate	Plate	Plate	Plate	Plate	Plate	Plate	Plate	Plate
Water volume	litres	10.4	10.4	12.3	12.3	14.5	26	26	26	26
<b>Air cooled condensers</b>										
Number		2	2	2	2	2	2	2	2	2
Total coil face area per coil	m <sup>2</sup>	4.1	4.1	4.1	5.0	5.0	5.0	5.0	5.0	5.0
Number of rows		3	3	3	2	3	3	4	5	5
<b>Fans</b>										
Number		2	2	2	3	3	4	4	4	4
Nominal speed	rpm	900	900	900	900	900	900	900	900	900
Total air flow	m <sup>3</sup> /h	40000	40000	40000	72000	69000	86800	81700	77800	77800
Total power	kW	2.8	2.8	2.8	6.0	6.0	8.0	8.0	8.0	8.0
<b>Weight</b>										
Operating	kg	1249	1283	1304	1620	1745	1925	2025	2310	2335
Operating with 1 pump	kg	1309	1343	1364	1710	1835	2015	2115	2400	2425
Operating with 2 pumps	kg	1369	1403	1424	1800	1925	2105	2205	2490	2515
Shipping	kg	1238	1272	1291	1608	1731	1899	1999	2284	2309
<b>Sound levels</b>										
Sound power levels (4)	dB(A)	89	90	90	94	94	95	96	96	96
Sound pressure levels at 10 m (5)	dB(A)	57	58	58	62	62	63	64	64	64
<b>Dimensions</b>										
Length	mm	3300	3300	3300	4250	4250	4250	4250	4250	4250
Width	mm	1100	1100	1100	1100	1100	1100	1100	1100	1100
Height	mm	2254	2254	2254	2280	2280	2280	2280	2280	2280

(1) Data based on 7 °C leaving chilled water temperature and 35 °C ambient air temperature.

(2) Data based on 45 °C leaving hot water temperature and 7 °C ambient air temperature with 88 % relative humidity.

(3) Compressors only.

(4) Sound levels are at fully loaded conditions. Sound power level values refer to ISO standard 3744 and Eurovent 8/1.

(5) Sound pressure level values refer to ISO standard 3744.

# Physical Data - VLH LN

VLH models		504	554	604	704	804	904	1004	1104	1204
Nominal cooling capacity (1)	kW	119.5	131.3	145.6	162.0	187.7	214.7	237.0	265.3	280.0
Input cooling (3)	kW	49.3	55.7	57.8	72.1	77.0	87.0	94.2	106.2	120.8
EER		2.4	2.4	2.5	2.2	2.4	2.5	2.5	2.5	2.3
Nominal heating capacity (2)	kW	130.6	149.1	161.3	189.8	218.4	240.6	271.3	279.4	298.5
Input heating (3)	kW	44.5	50.1	53.5	63.7	71.4	81.5	90.9	94.9	105.4
COP		2.9	3.0	3.0	3.0	3.1	3.0	3.0	2.9	2.8
Number of refrigerant circuits		2	2	2	2	2	2	2	2	2
Total unit capacity steps	%	20 - 40 - 70 - 100	23 - 46 - 73 - 100	25 - 50 - 75 - 100	20-50-70- 100	20-50-70- 100	15-45-70- 100	25-50-75- 100	23 - 45 - 73 - 100	25 - 50 - 75 - 100
<b>Compressors</b>										
Number		4	4	4	4	4	4	4	4	4
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
<b>Evaporator</b>										
Number		1	1	1	1	1	1	1	1	1
Type		Plate	Plate	Plate	Plate	Plate	Plate	Plate	Plate	Plate
Water volume	litres	10.4	10.4	12.3	12.3	14.5	26	26	26	26
<b>Air cooled condensers</b>										
Number		2	2	2	2	2	2	2	2	2
Total coil face area per coil	m <sup>2</sup>	4.1	4.1	4.1	5.0	5.0	5.0	5.0	5.0	5.0
Number of rows		3	3	3	2	3	3	4	5	5
<b>Fans</b>										
Number		2	2	3	3	3	4	4	4	4
Nominal speed	rpm	700	700	700	700	700	700	700	700	700
Total air flow	m <sup>3</sup> /h	29000	29000	39000	55400	52700	65000	60600	56550	56550
Total power	kW	1.9	1.9	2.9	3.8	3.8	5.0	5.0	5.0	5.0
<b>Weight</b>										
Operating	kg	1264	1298	1345	1660	1785	1965	2135	2325	2350
Operating with 1 pump	kg	1324	1358	1405	1750	1875	2055	2225	2415	2440
Operating with 2 pumps	kg	1384	1418	1465	1840	1965	2145	2315	2505	2530
Shipping	kg	1238	1272	1291	1648	1771	1939	2109	2299	2324
<b>Sound levels</b>										
Sound power levels (4)	dB(A)	85	85	86	90	90	91	92	92	92
Sound pressure levels at 10 m (5)	dB(A)	53	53	54	58	58	59	60	60	60
<b>Dimensions</b>										
Length	mm	3300	3300	3300	4250	4250	4250	4250	4250	4250
Width	mm	1100	1100	1100	1100	1100	1100	1100	1100	1100
Height	mm	2254	2254	2254	2280	2280	2280	2280	2280	2280

(1) Data based on 7 °C leaving chilled water temperature and 35 °C ambient air temperature.

(2) Data based on 45 °C leaving hot water temperature and 7 °C ambient air temperature with 88 % relative humidity.

(3) Compressors only.

(4) Sound levels are at fully loaded conditions. Sound power level values refer to ISO standard 3744 and Eurovent 8/1.

(5) Sound pressure level values refer to ISO standard 3744.



# Physical Data - VLH ELN

VLH models		604	704	804	904	1004	1104	1204
Nominal cooling capacity (1)	kW	145.3	172.8	193.4	223.3	239.6	259.4	273.5
Input cooling (3)	kW	57.9	65.9	74.0	81.9	93.1	109.8	125.2
EER		2.5	2.6	2.6	2.7	2.6	2.4	2.2
Nominal heating capacity (2)	kW	156.5	194.5	216.1	240.5	263.3	275.9	294.9
Input heating (3)	kW	53.5	64.1	71.3	81.7	90.6	94.7	105.2
COP		2.9	3.0	3.0	2.9	2.9	2.9	2.8
Number of refrigerant circuits		2	2	2	2	2	2	2
Total unit capacity steps	%	25 - 50 - 75 - 100	20 - 50 - 70 - 100	20 - 50 - 70 - 100	15 - 45 - 70 - 100	25 - 50 - 75 - 100	23 - 45 - 73 - 100	25 - 50 - 75 - 100
<b>Compressors</b>								
Number		4	4	4	4	4	4	4
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
<b>Evaporator</b>								
Number		1	1	1	1	1	1	1
Type		Plate	Plate	Plate	Plate	Plate	Plate	Plate
Water volume	litres	12.3	12.3	14.5	26	26	26	26
<b>Air cooled condensers</b>								
Number		2	2	2	2	2	2	2
Total coil face area per coil	m <sup>2</sup>	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Number of rows		3	3	4	5	5	5	5
<b>Fans</b>								
Number		3	4	4	4	4	4	4
Nominal speed	rpm	550	550	550	650	650	650	650
Total air flow	m <sup>3</sup> /h	34800	47700	45000	50000	50000	50000	50000
Total power	kW	2.9	5.0	5.0	5.0	5.0	5.0	5.0
<b>Weight</b>								
Operating	kg	1650	1800	1920	2112	2220	2360	2385
Operating with 1 pump	kg	1740	1890	2010	2202	2310	2450	2475
Operating with 2 pumps	kg	1830	1980	2100	2292	2400	2540	2565
Shipping	kg	1638	1788	1906	2086	2194	2334	2359
<b>Sound levels</b>								
Sound power levels (4)	dB(A)	83	84	84	85	86	86	86
Sound pressure levels at 10 m (5)	dB(A)	51	52	52	53	54	54	54
<b>Dimensions</b>								
Length	mm	4250	4250	4250	4250	4250	4250	4250
Width	mm	1100	1100	1100	1100	1100	1100	1100
Height	mm	2280	2280	2280	2280	2280	2280	2280

(1) Data based on 7 °C leaving chilled water temperature and 35 °C ambient air temperature.

(2) Data based on 45 °C leaving hot water temperature and 7 °C ambient air temperature with 88 % relative humidity.

(3) Compressors only.

(4) Sound levels are at fully loaded conditions. Sound power level values refer to ISO standard 3744 and Eurovent 8/1.

(5) Sound pressure level values refer to ISO standard 3744.

# Physical Data - VLH HE

VLH models		504	554	604	704	804	904	1004
Nominal cooling capacity (1)	kW	132.3	148.1	157.6	183.0	204.9	236.6	253.8
Input cooling (3)	kW	42.7	46.9	51.5	60.4	67.7	74.3	85.3
EER		3.1	3.2	3.1	3.0	3.0	3.2	3.0
Nominal heating capacity (2)	kW	133.7	151.5	160.5	202.9	225.4	250.9	274.6
Input heating (3)	kW	44.6	50.0	53.5	64.5	71.9	82.3	91.2
COP		3.0	3.0	3.0	3.1	3.1	3.0	3.0
Number of refrigerant circuits		2	2	2	2	2	2	2
Total unit capacity steps	%	20 - 40 - 70 - 100	23 - 46 - 73 - 100	25 - 50 - 75 - 100	20 - 50 - 70 - 100	20 - 50 - 70 - 100	15 - 45 - 70 - 100	25 - 50 - 75 - 100
<b>Compressors</b>								
Number		4	4	4	4	4	4	4
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
<b>Evaporator</b>								
Number		1	1	1	1	1	1	1
Type		Plate	Plate	Plate	Plate	Plate	Plate	Plate
Water volume	litres	10.4	10.4	12.3	12.3	14.5	26	26
<b>Air cooled condensers</b>								
Number		2	2	2	2	2	2	2
Total coil face area per coil	m <sup>2</sup>	4.1	4.1	4.1	5.0	5.0	5.0	5.0
Number of rows		3	4	4	3	4	5	5
<b>Fans</b>								
Number		3	3	3	4	4	4	4
Nominal speed	rpm	900	900	900	900	900	900	900
Total air flow	m <sup>3</sup> /h	57500	54000	54000	86800	81700	77800	77800
Total power	kW	4.2	4.2	4.2	8.0	8.0	8.0	8.0
<b>Weight</b>								
Operating	kg	1259	1385	1407	1750	1870	2062	2170
Operating with 1 pump	kg	1319	1445	1467	1840	1960	2152	2260
Operating with 2 pumps		1379	1505	1527	1930	2050	2242	2350
Shipping	kg	1249	1375	1395	1738	1856	2036	2144
<b>Sound levels</b>								
Sound power levels (4)	dB(A)	91	92	92	95	95	95	96
Sound pressure levels at 10 m (5)	dB(A)	59	60	60	63	63	63	64
<b>Dimensions</b>								
Length	mm	3300	3300	3300	4250	4250	4250	4250
Width	mm	1100	1100	1100	1100	1100	1100	1100
Height	mm	2254	2254	2254	2280	2280	2280	2280

(1) Data based on 7 °C leaving chilled water temperature and 35 °C ambient air temperature.

(2) Data based on 45 °C leaving hot water temperature and 7 °C ambient air temperature with 88 % relative humidity.

(3) Compressors only.

(4) Sound levels are at fully loaded conditions. Sound power level values refer to ISO standard 3744 and Eurovent 8/1.

(5) Sound pressure level values refer to ISO standard 3744.

# Electrical Data

## Compressors @ 400 V / 3 Ph / 50 Hz

VLH models		Power input at nominal conditions per compressor (kW)	Current at nominal conditions per compressor (A)	Power input at max. conditions per compressor (kW)	Current at max. conditions per compressor FLA (A)	Start up current LRA (A)	Power factor at nominal conditions	Unit fuse size (A)	Cable section (mm <sup>2</sup> )
504	Circuit 1	9.0	15.8	11.0	19.0	120.0	0.8	160	70
		13.7	24.3	17.3	29.2	175.0	0.8		
	Circuit 2	9.0	15.8	11.0	19.0	120.0	0.8		
		13.7	24.3	17.3	29.2	175.0	0.8		
554	Circuit 1	12.0	20.0	15.0	24.0	150.0	0.9	160	70
		13.7	24.3	17.3	29.2	175.0	0.8		
	Circuit 2	12.0	20.0	15.0	24.0	150.0	0.9		
		13.7	24.3	17.3	29.2	175.0	0.8		
604	Circuit 1	13.7	24.3	17.3	29.2	175.0	0.8	160	70
		13.7	24.3	17.3	29.2	175.0	0.8		
	Circuit 2	13.7	24.3	17.3	29.2	175.0	0.8		
		13.7	24.3	17.3	29.2	175.0	0.8		
704	Circuit 1	13.7	24.3	17.3	29.2	175.0	0.8	200	3 x 95
		18.6	31.4	23.8	38.5	215.0	0.9		
	Circuit 2	13.7	24.3	17.3	29.2	175.0	0.8		
		18.6	31.4	23.8	38.5	215.0	0.9		
804	Circuit 1	13.7	24.3	17.3	29.2	175.0	0.8	200	3 x 95
		23.0	38.5	29.0	47.2	270.0	0.9		
	Circuit 2	13.7	24.3	17.3	29.2	175.0	0.8		
		23.0	38.5	29.0	47.2	270.0	0.9		
904	Circuit 1	13.7	24.3	17.3	29.2	175.0	0.8	250	3 x 120
		23.0	38.5	29.0	47.2	270.0	0.9		
	Circuit 2	23.0	38.5	29.0	47.2	270.0	0.9		
		23.0	38.5	29.0	47.2	270.0	0.9		
1004	Circuit 1	23.0	38.5	29.0	47.2	270.0	0.9	250	3 x 120
		23.0	38.5	29.0	47.2	270.0	0.9		
	Circuit 2	23.0	38.5	29.0	47.2	270.0	0.9		
		23.0	38.5	29.0	47.2	270.0	0.9		
1104	Circuit 1	25.3	44.2	35.2	62.0	320.0	0.8	250	3 x 185
		25.3	44.2	35.2	62.0	320.0	0.8		
	Circuit 2	20.3	34.3	28.1	47.5	272.0	0.8		
		20.3	34.3	28.1	47.5	272.0	0.8		
1204	Circuit 1	25.3	44.2	35.2	62.0	320.0	0.8	315	3 x 185
		25.3	44.2	35.2	62.0	320.0	0.8		
	Circuit 2	25.3	44.2	35.2	62.0	320.0	0.8		
		25.3	44.2	35.2	62.0	320.0	0.8		

## Fans @ 400 V / 3 Ph / 50 Hz

VLH STD models		504	554	604	704	804	904	1004	1104	1204
Number of fans		2	2	2	3	3	4	4	4	4
Nominal power per fan	kW	1.4	1.4	1.4	2.0	2.0	2.0	2.0	2.0	2.0
Max. running current per fan	A	2.7	2.7	2.7	4.0	4.0	4.0	4.0	4.0	4.0
Start up current per fan	A	9.8	9.8	9.8	14.0	14.0	14.0	14.0	14.0	14.0
Total fan power	kW	2.8	2.8	2.8	6.0	6.0	8.0	8.0	8.0	8.0
Total max. fan current	A	5.4	5.4	5.4	12.0	12.0	16.0	16.0	16.0	16.0

VLH LN models		504	554	604	704	804	904	1004	1104	1204
Number of fans		2	2	3	3	3	4	4	4	4
Nominal power per fan	kW	0.9	0.9	0.9	1.3	1.3	1.3	1.3	1.3	1.3
Max. running current per fan	A	1.7	1.7	1.7	2.3	2.3	2.3	2.3	2.3	2.3
Start up current per fan	A	3.3	3.3	3.3	4.7	4.7	4.7	4.7	4.7	4.7
Total fan power	kW	1.9	1.9	2.8	3.8	3.8	5.0	5.0	5.0	5.0
Total max. fan current	A	3.4	3.4	5.1	6.9	6.9	9.2	9.2	9.2	9.2

## Electrical Data (continued)

### Fans @ 400 V / 3 Ph / 50 Hz (continued)

VLH ELN models		604	704	804	904	1004	1104	1204
Number of fans		3	4	4	4	4	4	4
Nominal power per fan	kW	0.9	1.3	1.3	1.3	1.3	1.3	1.3
Max. running current per fan	A	1.7	2.3	2.3	2.3	2.3	2.3	2.3
Start up current per fan	A	3.3	4.7	4.7	4.7	4.7	4.7	4.7
Total fan power	kW	2.8	5.0	5.0	5.0	5.0	5.0	5.0
Total max. fan current	A	5.1	9.2	9.2	9.2	9.2	9.2	9.2

VLH HE models		504	554	604	704	804	904	1004
Number of fans		3	3	3	4	4	4	4
Nominal power per fan	kW	1.4	1.4	1.4	2.0	2.0	2.0	2.0
Max. running current per fan	A	2.7	2.7	2.7	4.0	4.0	4.0	4.0
Start up current per fan	A	9.8	9.8	9.8	14.0	14.0	14.0	14.0
Total fan power	kW	4.2	4.2	4.2	8.0	8.0	8.0	8.0
Total max. fan current	A	8.1	8.1	8.1	16.0	16.0	16.0	16.0

### Units @ 400 V / 3 Ph / 50 Hz

VLH STD models		504	554	604	704	804	904	1004	1104	1204
Maximum power input	kW	59.4	67.4	72.0	88.2	104.6	110.3	112.3	135.0	149.0
Maximum current input	A	101.8	111.8	122.2	147.4	164.8	186.8	204.8	235.0	264.0
Start-up current	A	248	258	268	324	388	392	428	493	522

VLH LN models		504	554	604	704	804	904	1004	1104	1204
Maximum power input	kW	58.5	66.5	72.0	86.0	96.4	109.3	121.0	132.0	146.0
Maximum current input	A	99.8	109.8	121.9	142.3	159.7	180.0	198.0	228.0	257.0
Start-up current	A	246	256	268	317	383	403	421	486	515

VLH ELN models		604	704	804	904	1004	1104	1204
Maximum power input	kW	72.0	87.2	97.6	109.3	121.0	132.0	146.0
Maximum current input	A	121.9	144.6	162.0	180.0	198.0	228.0	257.0
Start-up current	A	268	321	385	403	421	486	515

VLH HE models		504	554	604	704	804	904	1004
Maximum power input	kW	60.8	68.8	73.4	90.2	100.6	112.3	124.0
Maximum current input	A	104.5	114.5	124.9	151.4	168.8	186.8	204.8
Start-up current	A	246	260	271	328	392	410	428

# Sound Levels

## VLH 504 to 1204 - STD Version

VLH STD models	Frequency (Hz)							Lw global dB(A)	Lp global dB(A) (1)
	125	250	500	1000	2000	4000	8000		
<b>504</b>	81.3	77.6	80.9	83.1	81.6	77.8	68.1	<b>89</b>	<b>57</b>
<b>554</b>	82.3	78.6	81.9	84.1	82.6	78.8	69.1	<b>90</b>	<b>58</b>
<b>604</b>	82.3	78.6	81.9	84.1	82.6	78.8	69.1	<b>90</b>	<b>58</b>
<b>704</b>	89.8	88.0	90.5	88.8	86.8	85.0	74.8	<b>94</b>	<b>62</b>
<b>804</b>	89.8	88.0	90.5	88.8	86.8	85.0	74.8	<b>94</b>	<b>62</b>
<b>904</b>	90.8	89.0	91.5	89.8	87.8	86.0	75.8	<b>95</b>	<b>63</b>
<b>1004</b>	91.8	90.0	92.5	90.8	88.8	87.0	76.8	<b>96</b>	<b>64</b>
<b>1104</b>	91.8	90.0	92.5	90.8	88.8	87.0	76.8	<b>96</b>	<b>64</b>
<b>1204</b>	91.8	90.0	92.5	90.8	88.8	87.0	76.8	<b>96</b>	<b>64</b>

(1) Sound pressure levels given at 10 meters distance according to ISO standard 3744.

## VLH 504 to 1204 - LN Version

VLH LN models	Frequency (Hz)							Lw global dB(A)	Lp global dB(A) (1)
	125	250	500	1000	2000	4000	8000		
<b>504</b>	64.1	70.8	77.4	79.4	80.4	77.1	69.6	<b>85</b>	<b>53</b>
<b>554</b>	64.1	70.8	77.4	79.4	80.4	77.1	69.6	<b>85</b>	<b>53</b>
<b>604</b>	65.1	71.8	78.4	80.4	81.4	78.1	70.6	<b>86</b>	<b>54</b>
<b>704</b>	85.8	84.0	86.5	84.8	82.8	81.0	70.8	<b>90</b>	<b>58</b>
<b>804</b>	85.8	84.0	86.5	84.8	82.8	81.0	70.8	<b>90</b>	<b>58</b>
<b>904</b>	86.8	85.0	87.5	85.8	83.8	82.0	71.8	<b>91</b>	<b>59</b>
<b>1004</b>	87.8	86.0	88.5	86.8	84.8	83.0	72.8	<b>92</b>	<b>60</b>
<b>1104</b>	87.8	86.0	88.5	86.8	84.8	83.0	72.8	<b>92</b>	<b>60</b>
<b>1204</b>	87.8	86.0	88.5	86.8	84.8	83.0	72.8	<b>92</b>	<b>60</b>

(1) Sound pressure levels given at 10 meters distance according to ISO standard 3744.

## VLH 604 to 1204 - ELN Version

VLH ELN models	Frequency (Hz)							Lw global dB(A)	Lp global dB(A) (1)
	125	250	500	1000	2000	4000	8000		
<b>604</b>	62.1	68.8	75.4	77.4	78.4	75.1	67.6	<b>83</b>	<b>51</b>
<b>704</b>	79.9	78.1	80.6	78.9	76.9	75.1	64.9	<b>84</b>	<b>52</b>
<b>804</b>	79.9	78.1	80.6	78.9	76.9	75.1	64.9	<b>84</b>	<b>52</b>
<b>904</b>	80.9	79.1	81.6	79.9	77.9	76.1	65.9	<b>85 (2)</b>	<b>53 (2)</b>
<b>1004</b>	81.9	80.1	82.6	80.9	78.9	77.1	66.9	<b>86 (2)</b>	<b>54 (2)</b>
<b>1104</b>	81.9	80.1	82.6	80.9	78.9	77.1	66.9	<b>86 (2)</b>	<b>54 (2)</b>
<b>1204</b>	81.9	80.1	82.6	80.9	78.9	77.1	66.9	<b>86 (2)</b>	<b>54 (2)</b>

(1) Sound pressure levels given at 10 meters distance according to ISO standard 3744.

(2) Sound pressure and sound power levels based on air temperature of 32 °C.

## VLH 504 to 1004 - HE Version

VLH HE models	Frequency (Hz)							Lw global dB(A)	Lp global dB(A) (1)
	125	250	500	1000	2000	4000	8000		
<b>504</b>	83.3	79.6	82.9	85.1	83.6	79.8	70.1	<b>91</b>	<b>59</b>
<b>554</b>	84.3	80.6	83.9	86.1	84.6	80.8	71.1	<b>92</b>	<b>60</b>
<b>604</b>	84.3	80.6	83.9	86.1	84.6	80.8	71.1	<b>92</b>	<b>60</b>
<b>704</b>	91.3	89.5	92.0	90.3	88.3	86.5	76.3	<b>95</b>	<b>63</b>
<b>804</b>	91.3	89.5	92.0	90.3	88.3	86.5	76.3	<b>95</b>	<b>63</b>
<b>904</b>	90.8	89.0	91.5	89.8	87.8	86.0	75.8	<b>95</b>	<b>63</b>
<b>1004</b>	91.8	90.0	92.5	90.8	88.8	87.0	76.8	<b>96</b>	<b>64</b>

(1) Sound pressure levels given at 10 meters distance according to ISO standard 3744.

# Cooling Capacities - VLH STD

VLH models	LWT (°C)	Condenser entering air temperature (°C)													
		25		30		32		35		40		44		46	
		Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)
504 STD	5	133.0	37.1	125.8	41.0	122.7	42.6	118.1	45.2	110.1	49.7	103.5	53.7	100.1	55.8
	6	137.2	37.5	129.7	41.4	126.5	43.0	121.9	45.6	113.6	50.2	106.8	54.2	103.3	56.2
	7	141.3	37.9	133.7	41.8	130.4	43.5	<b>125.6</b>	<b>46.0</b>	117.2	50.6	110.1	54.6	106.5	56.8
	8	145.6	38.3	137.7	42.2	134.4	43.9	129.4	46.5	120.6	51.2	113.5	55.1	109.8	57.3
	9	149.8	38.7	141.8	42.6	138.4	44.3	133.1	47.0	124.3	51.6	116.9	55.7	113.1	57.8
	10	154.1	39.1	145.8	43.1	142.4	44.8	137.0	47.4	127.9	52.1	120.4	56.1		
	11	158.6	39.5	149.9	43.5	146.4	45.3	141.0	47.9	131.6	52.6	123.8	56.7		
	12	163.0	39.9	154.1	44.0	150.6	45.7	145.0	48.3	135.3	53.1	127.4	57.2		
554 STD	5	146.6	42.1	138.7	46.3	135.5	48.1	130.5	50.8	122.0	55.6	114.9	59.6	111.3	61.7
	6	151.0	42.6	142.9	46.8	139.5	48.6	134.4	51.4	125.9	56.0	118.4	60.2	114.8	62.3
	7	155.4	43.1	147.1	47.3	143.7	49.1	<b>138.4</b>	<b>51.9</b>	129.5	56.7	121.9	60.8	118.1	62.9
	8	159.9	43.6	151.3	47.9	147.8	49.7	142.5	52.4	133.2	57.3	125.5	61.4		
	9	164.5	44.2	155.7	48.5	152.0	50.3	146.6	53.0	137.0	57.9	129.2	62.0		
	10	169.1	44.7	160.0	49.1	156.3	50.8	150.7	53.6	140.9	58.5	132.8	62.6		
	11	173.7	45.2	164.4	49.6	160.7	51.4	154.9	54.2	144.8	59.1				
	12	178.4	45.8	168.8	50.2	165.0	52.0	159.0	54.8	148.7	59.7				
604 STD	5	155.6	46.6	147.0	51.2	143.5	53.1	138.1	56.2	128.8	61.5	121.2	66.1	117.2	68.6
	6	160.2	47.2	151.4	51.8	147.7	53.8	142.2	56.8	132.6	62.2	124.7	66.9		
	7	164.9	47.8	155.7	52.5	152.0	54.4	<b>146.4</b>	<b>57.5</b>	136.6	62.9	128.4	67.6		
	8	169.6	48.4	160.2	53.1	156.5	55.1	150.6	58.2	140.5	63.6				
	9	174.3	49.0	164.7	53.8	160.8	55.7	154.7	58.9	144.4	64.3				
	10	179.0	49.7	169.3	54.4	165.2	56.4	159.1	59.5	148.4	65.1				
	11	184.0	50.3	173.9	55.1	169.6	57.1	163.3	60.3	152.4	65.8				
	12	188.7	51.0	178.4	55.8	174.1	57.8	167.6	61.0	156.3	66.6				
704 STD	5	178.4	54.9	169.9	60.3	166.3	62.5	160.7	65.8	149.4	73.1	141.0	77.3	135.4	82.4
	6	183.8	55.5	174.8	60.9	171.2	63.1	165.4	66.6	153.9	73.8	145.1	78.2	139.4	83.3
	7	189.1	56.2	179.9	61.6	176.1	63.9	<b>170.3</b>	<b>67.2</b>	158.3	74.6	149.4	79.0	143.5	84.1
	8	193.9	56.9	184.5	62.3	180.6	64.6	174.6	68.0	162.3	75.3	153.8	79.7		
	9	198.7	57.5	189.0	63.1	185.0	65.3	179.0	68.7	166.4	76.1	158.1	80.7		
	10	203.4	58.3	193.6	63.7	189.5	66.1	183.3	69.5	170.2	76.8				
	11	208.2	59.0	198.3	64.5	194.0	66.8	187.6	70.2	174.4	77.7				
	12	213.1	59.7	202.8	65.3	198.6	67.6	192.0	71.0	178.4	78.5				
804 STD	5	206.7	58.6	196.8	64.4	192.6	66.7	186.2	70.3	173.1	78.1	163.3	82.6	156.9	88.0
	6	212.9	59.3	202.5	65.1	198.3	67.4	191.6	71.1	178.2	78.9	168.1	83.6	161.5	88.9
	7	219.1	60.0	208.4	65.8	204.0	68.2	<b>197.3</b>	<b>71.8</b>	183.3	79.7	173.1	84.4	166.3	89.8
	8	224.6	60.7	213.7	66.5	209.2	69.0	202.2	72.6	188.0	80.4	178.2	85.2	170.9	90.6
	9	230.2	61.5	219.0	67.3	214.3	69.8	207.4	73.3	192.8	81.3	183.1	86.2	175.6	91.3
	10	235.7	62.3	224.3	68.1	219.5	70.6	212.3	74.2	197.1	82.1	188.1	87.2		
	11	241.2	63.0	229.7	68.9	224.7	71.4	217.4	75.0	202.0	83.0	193.3	88.2		
	12	246.9	63.8	234.9	69.7	230.0	72.2	222.4	75.8	206.7	83.9				
	15	263.7	66.2	251.1	72.1	245.8	74.6	237.4	78.4	221.1	86.2				

Notes : - LWT : Leaving water temperature.  
 - Power input values are given for compressors only.

## Cooling Capacities - VLH STD (continued)

VLH models	LWT (°C)	Condenser entering air temperature (°C)													
		25		30		32		35		40		44		46	
		Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)
904 STD	5	236.4	66.2	225.0	72.7	220.2	75.4	212.9	79.4	197.9	88.2	186.8	93.3	179.4	99.4
	6	243.5	67.0	231.6	73.5	226.8	76.2	219.2	80.3	203.8	89.1	192.3	94.4	184.7	100.5
	7	250.5	67.8	238.4	74.4	233.3	77.1	<b>225.6</b>	<b>81.1</b>	209.7	90.0	197.9	95.4	190.1	101.4
	8	256.8	68.6	244.4	75.2	239.3	77.9	231.2	82.0	215.0	90.9	203.8	96.2	195.5	102.3
	9	263.2	69.4	250.4	76.1	245.0	78.8	237.1	82.9	220.4	91.8	209.4	97.4	200.8	103.2
	10	269.5	70.3	256.5	76.9	251.0	79.7	242.8	83.9	225.4	92.7	215.1	98.5	206.2	104.1
	11	275.8	71.2	262.7	77.8	257.0	80.6	248.6	84.8	231.0	93.7	221.1	99.6	211.5	105.0
	12	282.4	72.0	268.6	78.8	263.0	81.5	254.3	85.7	236.3	94.8	226.9	100.6		
1004 STD	5	261.0	71.8	248.5	78.8	243.2	81.7	235.1	86.0	218.5	95.5	206.2	101.0	198.1	107.7
	6	268.8	72.6	255.7	79.7	250.4	82.5	242.0	87.0	225.1	96.5	212.3	102.3	204.0	108.8
	7	276.6	73.4	263.2	80.6	257.6	83.5	<b>249.1</b>	<b>87.9</b>	231.5	97.5	218.5	103.3	209.9	109.9
	8	283.6	74.3	269.9	81.4	264.2	84.4	255.3	88.9	237.4	98.4	225.0	104.3	215.8	110.8
	9	290.6	75.2	276.5	82.4	270.6	85.4	261.8	89.8	243.4	99.4	231.2	105.5	221.7	111.8
	10	297.6	76.2	283.2	83.3	277.2	86.4	268.0	90.8	248.9	100.5	237.5	106.7	227.6	112.8
	11	304.5	77.2	290.0	84.3	283.7	87.3	274.4	91.8	255.1	101.5	244.1	107.9	233.5	113.7
	12	311.8	78.0	296.6	85.4	290.4	88.3	280.8	92.8	260.9	102.6	250.5	109.0		
1104 STD	5	291.2	80.6	277.2	88.5	271.3	91.7	262.3	96.6	243.8	107.3	232.4	114.1		
	6	299.9	81.5	285.3	89.5	279.4	92.7	270.0	97.7	251.1	108.4	239.3	115.3	227.6	122.2
	7	308.6	82.5	293.6	90.5	287.4	93.8	<b>277.9</b>	<b>98.7</b>	258.3	109.5	246.2	116.5	234.2	123.4
	8	316.4	83.5	301.1	91.5	294.8	94.8	284.9	99.8	264.9	110.5	252.5	117.5	240.1	124.5
	9	324.3	84.5	308.5	92.6	301.8	95.9	292.1	100.8	271.5	111.7	258.8	118.7	246.1	125.7
	10	332.0	85.6	315.9	93.6	309.2	97.0	299.1	102.0	277.7	112.8	264.8	119.9	252.0	127.0
	11	339.8	86.6	323.6	94.6	316.5	98.1	306.2	103.1	284.6	114.0	271.3	121.1	258.0	128.2
	12	347.8	87.6	330.9	95.8	324.0	99.2	313.3	104.2	291.1	115.3	277.5	122.4	263.8	129.6
1204 STD	5	307.6	91.3	292.8	100.2	286.5	103.9	277.0	109.4	257.5	121.5	245.5	129.3		
	6	316.8	92.3	301.3	101.3	295.0	105.0	285.1	110.7	265.2	122.8	252.8	130.6	240.3	138.4
	7	325.9	93.4	310.1	102.5	303.5	106.2	<b>293.5</b>	<b>111.8</b>	272.8	124.1	260.1	131.9	247.3	139.8
	8	334.1	94.5	318.0	103.6	311.3	107.4	300.8	113.0	279.7	125.2	266.7	133.1	253.6	141.1
	9	342.5	95.7	325.8	104.8	318.8	108.6	308.5	114.2	286.8	126.5	273.4	134.4	259.9	142.4
	10	350.6	96.9	333.7	106.0	326.6	109.9	315.8	115.5	293.3	127.8	279.7	135.8	266.1	143.8
	11	358.8	98.1	341.7	107.2	334.3	111.1	323.4	116.8	300.6	129.2	286.5	137.2	272.4	145.2
	12	367.4	99.3	349.5	108.6	342.2	112.3	330.8	118.0	307.4	130.6	293.0	138.7	278.6	146.8
15	392.4	103.1	373.5	112.3	365.6	116.2	353.2	122.1	328.6	134.6	313.1	142.9	297.7	151.1	

Notes : - LWT : Leaving water temperature.  
- Power input values are given for compressors only.

# Heating Capacities - VLH STD

VLH models	LWT (°C)	Ambient coil entering air temperature (°C)													
		-5		-3		0		5		7		10		15	
		Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)
504 STD	30	101.3	30.9	106.8	31.0	115.7	31.1	131.3	31.5	138.1	31.7	149.1	32.1	169.4	32.6
	35	100.0	36.3	106.3	34.7	114.9	34.8	129.8	35.2	136.4	35.4	146.9	35.7	166.4	36.3
	40	98.8	40.7	104.9	38.9	114.3	39.0	128.5	39.4	134.7	39.6	144.8	40.0	163.2	40.5
	45	97.8	45.8	103.8	43.7	112.9	43.8	127.3	44.3	<b>133.2</b>	<b>44.5</b>	142.7	44.8	160.2	45.4
	50					111.8	49.6	126.3	49.8	131.9	50.0	140.8	50.3	157.2	50.9
554 STD	30	116.4	36.6	122.7	34.9	133.0	35.0	150.8	35.5	158.6	35.8	171.3	36.1	194.6	36.7
	35	116.1	40.9	122.2	39.0	132.0	39.2	149.1	39.7	156.7	39.9	168.7	40.3	191.1	40.9
	40	114.6	45.9	121.9	43.8	131.2	43.9	147.6	44.4	154.8	44.6	166.3	45.0	187.5	45.7
	45	113.3	51.6	120.6	49.2	130.8	49.4	146.2	49.8	<b>153.1</b>	<b>50.1</b>	164.0	50.4	184.0	51.1
	50					130.6	55.8	145.1	56.1	151.6	56.3	161.8	56.6	180.6	57.3
604 STD	30	122.9	39.1	129.6	37.3	140.4	37.4	159.2	38.0	167.5	38.2	180.8	38.6	205.4	39.2
	35	122.5	43.7	129.0	41.7	139.3	41.9	157.4	42.4	165.4	42.6	178.1	43.0	201.7	43.7
	40	121.0	49.1	127.4	46.8	138.6	46.9	155.8	47.5	163.4	47.7	175.6	48.1	198.0	48.8
	45	119.7	55.1	124.4	52.6	138.0	52.8	154.4	53.3	<b>161.6</b>	<b>53.5</b>	173.1	53.9	194.3	54.6
	50					137.4	59.7	153.2	60.0	160.0	60.2	170.8	60.5	190.7	61.2
704 STD	30	147.2	44.5	155.2	44.6	168.1	44.8	190.7	45.4	200.6	45.7	216.6	46.2	246.1	46.9
	35	145.3	52.3	154.5	49.9	166.9	50.0	188.6	50.7	198.1	51.0	213.4	51.5	241.7	52.3
	40	143.6	58.7	152.4	56.0	166.0	56.1	186.6	56.7	195.8	57.0	210.3	57.5	237.2	58.4
	45	142.0	65.9	150.8	62.9	164.0	63.1	184.9	63.7	<b>193.6</b>	<b>64.0</b>	207.3	64.5	232.7	65.3
	50					162.5	71.3	183.5	71.7	191.7	72.0	204.6	72.4	228.4	73.2
804 STD	30	169.3	49.9	178.6	50.0	193.5	50.2	219.4	50.9	230.9	51.2	249.2	51.7	283.2	52.6
	35	167.2	58.6	177.8	55.9	192.1	56.1	217.0	56.8	228.0	57.1	245.6	57.7	278.1	58.6
	40	165.2	65.7	175.4	62.7	191.0	62.9	214.8	63.6	225.3	63.9	242.0	64.5	272.9	65.4
	45	163.4	73.8	173.6	70.4	188.7	70.7	212.8	71.4	<b>222.7</b>	<b>71.7</b>	238.6	72.2	267.8	73.2
	50					186.9	79.9	211.2	80.4	220.5	80.7	235.4	81.1	262.8	82.0
904 STD	30	186.6	57.0	196.8	57.1	213.2	57.3	241.8	58.1	254.4	58.5	274.6	59.1	312.0	60.0
	35	184.3	66.9	195.9	63.9	211.6	64.0	239.1	64.9	251.2	65.3	270.6	65.8	306.4	66.9
	40	182.1	75.1	193.2	71.6	210.4	71.8	236.6	72.6	248.2	73.0	266.6	73.6	300.7	74.7
	45	180.1	84.3	191.2	80.4	208.0	80.7	234.5	81.5	<b>245.4</b>	<b>81.9</b>	262.9	82.5	295.1	83.6
	50					206.0	91.3	232.7	91.8	243.0	92.1	259.4	92.6	289.6	93.7
1004 STD	30	210.3	63.5	221.8	63.7	240.3	63.9	272.5	64.8	286.8	65.2	309.6	65.9	351.7	67.0
	35	207.7	74.6	220.8	71.2	238.6	71.4	269.5	72.3	283.2	72.8	305.0	73.4	345.4	74.6
	40	205.2	83.7	217.8	79.9	237.2	80.1	266.7	81.0	279.8	81.4	300.6	82.1	339.0	83.3
	45	203.0	94.1	215.6	89.7	234.4	90.0	264.3	90.9	<b>276.7</b>	<b>91.3</b>	296.4	92.0	332.6	93.2
	50					232.2	101.8	262.3	102.3	273.9	102.7	292.4	103.3	326.4	104.5
1104 STD	30	219.6	66.1	231.2	66.3	249.9	66.5	282.6	67.5	297.0	67.9	320.1	68.6	362.5	69.7
	35	216.9	77.7	230.4	74.2	248.4	74.4	279.7	75.3	293.6	75.8	315.6	76.5	356.2	77.7
	40	214.3	87.1	227.9	83.1	247.3	83.4	277.2	84.3	290.4	84.8	311.3	85.5	349.8	86.7
	45	211.9	98.0	225.5	93.4	244.3	93.8	275.0	94.7	<b>287.2</b>	<b>95.1</b>	307.2	95.8	343.5	97.1
	50					241.7	106.0	273.3	106.6	285.0	107.0	303.5	107.6	337.5	108.8
1204 STD	30	234.6	73.5	247.0	73.7	267.0	73.9	301.9	75.0	317.3	75.5	341.9	76.2	387.3	77.5
	35	231.8	86.3	246.2	82.4	265.3	82.7	298.8	83.7	313.6	84.2	337.2	85.0	380.5	86.3
	40	229.0	96.8	243.5	92.4	264.1	92.6	296.1	93.7	310.2	94.2	332.6	95.0	373.7	96.4
	45	226.4	108.9	240.9	103.8	261.0	104.2	293.7	105.2	<b>306.8</b>	<b>105.7</b>	328.2	106.5	367.0	107.9
	50					258.2	117.8	291.9	118.4	304.4	118.9	324.3	119.6	360.5	120.9

Notes : - LWT : Leaving water temperature.  
 - Power input values are given for compressors only.



# Cooling Capacities - VLH LN

VLH models	LWT (°C)	Condenser entering air temperature (°C)											
		25		30		32		35		40		44	
		Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)
504 LN	5	127.8	39.9	120.5	43.9	117.4	45.6	112.8	48.2	104.9	52.9	98.3	56.9
	6	131.7	40.3	124.0	44.4	121.0	46.1	116.1	48.8	107.9	53.5	101.2	57.5
	7	135.5	40.8	127.7	44.9	124.5	46.6	<b>119.5</b>	<b>49.3</b>	111.2	54.0		
	8	139.3	41.4	131.4	45.5	128.0	47.2	123.0	49.9	114.5	54.6		
	9	143.2	41.9	135.0	46.0	131.7	47.8	126.5	50.4	117.6	55.2		
	10	147.2	42.4	138.7	46.6	135.2	48.3	129.9	51.1	121.0	55.9		
	11	151.1	43.0	142.5	47.2	138.9	48.9	133.6	51.6	124.2	56.5		
	12	155.2	43.5	146.3	47.7	142.6	49.5	137.0	52.3	127.5	57.1		
	15	167.4	45.2	157.8	49.5	153.8	51.3	147.8	54.1				
554 LN	5	140.3	45.5	132.3	49.8	129.0	51.6	124.1	54.4	115.6	59.2		
	6	144.3	46.1	136.1	50.5	132.7	52.3	127.7	55.1	119.0	59.9		
	7	148.3	46.8	139.9	51.1	136.5	53.0	<b>131.3</b>	<b>55.7</b>	122.3	60.6		
	8	152.4	47.4	143.7	51.8	140.2	53.6	134.8	56.4	125.7	61.3		
	9	156.6	48.1	147.6	52.5	144.1	54.3	138.5	57.2	129.0	62.0		
	10	160.5	48.8	151.6	53.2	147.8	55.0	142.1	57.9	132.4	62.8		
	11	164.9	49.4	155.5	53.9	151.6	55.7	145.8	58.6				
	12	168.9	50.1	159.3	54.6	155.5	56.5	149.5	59.3				
	15	181.7	52.3	171.4	56.8	167.2	58.7	160.8	61.5				
604 LN	5	155.1	46.8	146.6	51.5	142.9	53.4	137.7	56.4	128.3	61.8	120.6	66.4
	6	159.7	47.4	150.8	52.1	147.2	54.1	141.6	57.1	132.1	62.5	124.2	67.1
	7	164.2	48.1	155.2	52.8	151.4	54.7	<b>145.7</b>	<b>57.8</b>	135.9	63.3	127.8	67.9
	8	168.9	48.7	159.6	53.4	155.7	55.4	149.9	58.5	139.9	63.9	131.6	68.6
	9	173.7	49.3	164.1	54.1	160.1	56.1	154.1	59.2	143.6	64.7		
	10	178.4	50.0	168.6	54.7	164.5	56.8	158.3	59.9	147.6	65.5		
	11	183.2	50.6	173.0	55.5	168.9	57.5	162.5	60.6	151.6	66.2		
	12	188.1	51.3	177.7	56.1	173.4	58.2	166.7	61.4	155.7	66.9		
	15	202.7	53.4	191.4	58.4	186.9	60.4	179.9	63.6				
704 LN	5	169.8	58.9	161.6	64.6	158.2	67.0	152.9	70.6	142.1	78.3	134.1	82.9
	6	174.9	59.5	166.3	65.3	162.9	67.7	157.4	71.4	146.4	79.2	138.1	83.9
	7	179.9	60.2	171.2	66.1	167.6	68.5	<b>162.0</b>	<b>72.1</b>	150.6	80.0	142.2	84.8
	8	184.5	61.0	175.6	66.8	171.9	69.2	166.1	72.9	154.4	80.7	146.3	85.5
	9	189.1	61.7	179.9	67.6	176.0	70.0	170.3	73.6	158.3	81.6	150.4	86.5
	10	193.6	62.5	184.2	68.3	180.3	70.8	174.4	74.5	161.9	82.4		
	11	198.1	63.3	188.7	69.1	184.6	71.6	178.5	75.3	165.9	83.3		
	12	202.8	64.0	192.9	70.0	188.9	72.4	182.6	76.1	169.7	84.2		
	15	216.6	66.5	206.2	72.4	201.9	74.9	195.0	78.7	181.6	86.5		
804 LN	5	196.7	62.9	187.3	69.0	183.3	71.5	177.1	75.4	164.7	83.7	155.4	88.5
	6	202.6	63.6	192.7	69.8	188.7	72.3	182.4	76.2	169.6	84.6	160.0	89.6
	7	208.5	64.3	198.3	70.6	194.1	73.2	<b>187.7</b>	<b>77.0</b>	174.4	85.4	164.7	90.5
	8	213.7	65.1	203.4	71.3	199.1	73.9	192.4	77.9	178.9	86.2		
	9	219.0	65.9	208.4	72.2	203.9	74.8	197.3	78.6	183.4	87.1		
	10	224.2	66.7	213.4	73.0	208.9	75.7	202.0	79.6	187.6	88.0		
	11	229.5	67.6	218.6	73.8	213.8	76.5	206.8	80.4	192.2	89.0		
	12	234.9	68.4	223.5	74.8	218.9	77.4	211.6	81.3	196.6	89.9		
	15	250.9	71.0	238.9	77.3	233.9	80.0	225.9	84.1	210.4	92.4		

Notes : - LWT : Leaving water temperature.  
 - Power input values are given for compressors only.

## Cooling Capacities - VLH LN (continued)

VLH models	LWT (°C)	Condenser entering air temperature (°C)											
		25		30		32		35		40		44	
		Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)
904 LN	5	224.9	71.0	214.1	78.0	209.6	80.8	202.6	85.1	188.3	94.5	177.7	100.0
	6	231.7	71.8	220.3	78.9	215.8	81.7	208.5	86.1	193.9	95.5	182.9	101.2
	7	238.4	72.7	226.8	79.7	222.0	82.7	<b>214.7</b>	<b>87.0</b>	199.5	96.5	188.3	102.3
	8	244.4	73.6	232.6	80.6	227.7	83.5	220.0	88.0	204.6	97.4	193.9	103.2
	9	250.5	74.4	238.3	81.6	233.2	84.5	225.6	88.8	209.7	98.4	199.3	104.4
	10	256.4	75.4	244.0	82.5	238.9	85.5	231.0	89.9	214.5	99.4	204.6	105.6
	11	262.5	76.4	249.9	83.4	244.5	86.5	236.5	90.9	219.8	100.5	210.3	106.8
	12	268.7	77.2	255.6	84.5	250.3	87.4	242.0	91.8	224.9	101.6		
	15	287.0	80.2	273.2	87.4	267.4	90.4	258.4	95.0	240.6	104.4		
1004 LN	5	248.4	76.9	236.4	84.5	231.4	87.5	223.7	92.2	207.9	102.4	196.2	108.3
	6	255.8	77.8	243.3	85.4	238.2	88.5	230.2	93.3	214.1	103.5	202.0	109.6
	7	263.2	78.7	250.4	86.4	245.1	89.5	<b>237.0</b>	<b>94.2</b>	220.3	104.6	207.9	110.8
	8	269.8	79.7	256.8	87.3	251.4	90.5	242.9	95.3	225.9	105.5	214.1	111.8
	9	276.5	80.6	263.1	88.4	257.4	91.6	249.1	96.2	231.6	106.6	220.0	113.1
	10	283.1	81.7	269.5	89.3	263.7	92.6	255.0	97.4	236.8	107.7	226.0	114.4
	11	289.8	82.7	276.0	90.4	270.0	93.6	261.1	98.4	242.7	108.9	232.2	115.7
	12	296.6	83.7	282.2	91.5	276.3	94.7	267.2	99.5	248.3	110.0		
	15	316.8	86.9	301.6	94.7	295.3	97.9	285.3	102.9	265.6	113.1		
1104 LN	5	278.0	86.7	264.6	95.2	259.0	98.7	250.4	103.9	232.7	115.4		
	6	286.3	87.7	272.3	96.3	266.7	99.7	257.7	105.1	239.7	116.6		
	7	294.6	88.7	280.3	97.3	274.4	100.9	<b>265.3</b>	<b>106.2</b>	246.5	117.8		
	8	302.0	89.8	287.4	98.4	281.4	102.0	271.9	107.4	252.9	118.9		
	9	309.6	90.9	294.5	99.6	288.2	103.2	278.9	108.5	259.2	120.2		
	10	316.9	92.1	301.6	100.7	295.2	104.4	285.5	109.8	265.1	121.4		
	11	324.4	93.2	308.9	101.8	302.2	105.5	292.3	110.9	271.7	122.7		
	12	332.1	94.3	315.9	103.1	309.3	106.7	299.1	112.1	277.9	124.0		
	15	354.7	97.9	337.6	106.7	330.5	110.4	319.3	116.0	297.0	127.9		
1204 LN	5	293.4	98.6	279.3	108.3	273.4	112.2	264.2	118.2	245.6	131.3		
	6	302.2	99.7	287.4	109.5	281.5	113.4	272.0	119.6	253.0	132.7		
	7	311.0	100.9	295.9	110.7	289.6	114.8	<b>280.0</b>	<b>120.8</b>	260.2	134.0		
	8	318.8	102.2	303.4	111.9	297.0	116.0	287.0	122.1	266.9	135.3		
	9	326.7	103.4	310.8	113.3	304.1	117.4	294.3	123.4	273.6	136.7		
	10	334.5	104.7	318.3	114.5	311.6	118.7	301.3	124.8	279.8	138.1		
	11	342.3	106.0	326.0	115.8	318.9	120.0	308.5	126.2	286.7	139.6		
	12	350.5	107.3	333.4	117.3	326.5	121.4	315.6	127.5	293.3	141.1		
	15	374.3	111.4	356.4	121.3	348.8	125.5	337.0	131.9	313.4	145.5		

Notes : - LWT : Leaving water temperature.  
 - Power input values are given for compressors only.

# Heating Capacities - VLH LN

VLH models	LWT (°C)	Ambient coil entering air temperature (°C)													
		-5		-3		0		5		7		10		15	
		Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)
504 LN	30	99.3	30.9	104.7	31.0	113.5	31.1	128.7	31.5	135.4	31.7	146.2	32.1	166.1	32.6
	35	99.1	36.3	104.3	34.7	112.7	34.8	127.3	35.2	133.7	35.4	144.0	35.7	163.1	36.3
	40	98.0	40.7	104.0	38.9	112.0	39.0	126.0	39.4	132.1	39.6	141.9	40.0	160.1	40.5
	45	96.9	45.7	102.7	43.7	111.6	43.8	124.8	44.3	<b>130.6</b>	<b>44.5</b>	139.9	44.8	157.1	45.4
	50					111.5	49.6	123.9	49.8	129.4	50.0	138.1	50.3	154.2	50.9
554 LN	30	113.4	36.5	119.6	34.9	129.5	35.0	146.9	35.5	154.6	35.8	166.9	36.1	189.6	36.7
	35	113.1	40.8	119.0	39.0	128.6	39.2	145.3	39.7	152.7	39.9	164.4	40.3	186.2	40.9
	40	111.8	45.7	118.8	43.8	127.9	43.9	143.8	44.4	150.8	44.6	162.0	45.0	182.7	45.7
	45	110.5	51.4	117.3	49.2	127.4	49.4	142.5	49.8	<b>149.1</b>	<b>50.1</b>	159.8	50.4	179.3	51.1
	50					127.1	55.8	141.4	56.1	147.7	56.3	157.6	56.6	176.0	57.3
604 LN	30	122.0	39.1	128.6	37.3	139.4	37.4	158.2	38.0	166.4	38.2	179.9	38.6	204.8	39.2
	35	120.7	43.6	127.2	41.7	138.6	41.9	156.7	42.4	164.7	42.6	177.6	43.0	201.4	43.7
	40	119.3	48.7	125.8	46.8	137.9	46.9	155.3	47.5	162.9	47.7	175.2	48.1	197.9	48.8
	45	118.2	54.7	124.4	52.6	136.3	52.8	153.9	53.3	<b>161.3</b>	<b>53.5</b>	172.8	53.9	194.5	54.6
	50					135.0	59.7	152.9	60.0	159.7	60.2	170.7	60.5	191.0	61.2
704 LN	30	144.3	44.3	152.2	44.4	164.9	44.6	187.0	45.2	196.7	45.5	212.4	46.0	241.3	46.7
	35	142.5	52.1	151.5	49.7	163.7	49.8	184.9	50.5	194.3	50.8	209.2	51.2	237.0	52.0
	40	140.8	58.4	149.4	55.7	162.7	55.8	183.0	56.5	191.9	56.8	206.2	57.3	232.5	58.1
	45	139.3	65.6	147.9	62.6	160.8	62.8	181.3	63.4	<b>189.8</b>	<b>63.7</b>	203.3	64.2	228.2	65.0
	50					159.3	71.0	180.0	71.4	187.9	71.7	200.6	72.1	223.9	72.9
804 LN	30	166.1	49.6	175.1	49.8	189.7	49.9	215.1	50.6	226.4	51.0	244.4	51.5	277.7	52.3
	35	164.0	58.3	174.3	55.7	188.3	55.8	212.7	56.5	223.5	56.9	240.8	57.4	272.7	58.3
	40	162.0	65.4	172.0	62.4	187.3	62.6	210.6	63.3	220.9	63.6	237.3	64.2	267.6	65.1
	45	160.3	73.5	170.2	70.1	185.1	70.4	208.7	71.1	<b>218.4</b>	<b>71.4</b>	233.9	71.9	262.6	72.9
	50					183.3	79.6	207.1	80.0	216.2	80.3	230.8	80.8	257.7	81.7
904 LN	30	183.0	56.7	192.9	56.8	209.0	57.0	237.1	57.8	249.4	58.2	269.3	58.8	306.0	59.8
	35	180.7	66.6	192.1	63.6	207.5	63.7	234.4	64.6	246.3	65.0	265.3	65.5	300.5	66.6
	40	178.5	74.7	189.5	71.3	206.3	71.5	232.0	72.3	243.4	72.7	261.5	73.3	294.8	74.4
	45	176.6	84.0	187.5	80.1	203.9	80.4	229.9	81.2	<b>240.6</b>	<b>81.5</b>	257.8	82.1	289.3	83.2
	50					202.0	90.9	228.2	91.4	238.3	91.7	254.3	92.2	284.0	93.3
1004 LN	30	206.2	63.2	217.5	63.4	235.6	63.6	267.2	64.5	281.2	64.9	303.5	65.6	344.9	66.7
	35	203.7	74.3	216.5	70.9	233.9	71.1	264.2	72.0	277.7	72.5	299.1	73.1	338.7	74.3
	40	201.2	83.3	213.6	79.5	232.6	79.7	261.5	80.6	274.3	81.0	294.7	81.7	332.4	82.9
	45	199.0	93.6	211.4	89.3	229.9	89.6	259.2	90.5	<b>271.3</b>	<b>90.9</b>	290.6	91.6	326.1	92.8
	50					227.7	101.3	257.2	101.9	268.6	102.3	286.7	102.9	320.1	104.0
1104 LN	30	213.6	66.1	224.9	66.2	243.2	66.4	274.9	67.4	289.0	67.8	311.4	68.5	352.7	69.6
	35	211.1	77.6	224.2	74.1	241.6	74.3	272.1	75.2	285.6	75.7	307.1	76.4	346.5	77.6
	40	208.5	87.0	221.7	83.1	240.5	83.3	269.6	84.2	282.5	84.7	302.9	85.4	340.3	86.6
	45	206.2	97.9	219.4	93.3	237.7	93.7	267.5	94.6	<b>279.4</b>	<b>95.0</b>	298.9	95.7	334.2	96.9
	50					235.2	105.9	265.9	106.5	277.2	106.9	295.3	107.5	328.3	108.7
1204 LN	30	228.2	73.3	240.3	73.5	259.8	73.7	293.7	74.8	308.7	75.3	332.7	76.0	376.8	77.3
	35	225.5	86.1	239.5	82.2	258.1	82.4	290.7	83.5	305.1	84.0	328.1	84.7	370.2	86.1
	40	222.8	96.5	236.9	92.2	257.0	92.4	288.1	93.5	301.8	93.9	323.6	94.8	363.6	96.1
	45	220.3	108.6	234.4	103.5	253.9	103.9	285.8	104.9	<b>298.5</b>	<b>105.4</b>	319.3	106.2	357.0	107.6
	50					251.2	117.5	284.0	118.1	296.2	118.6	315.5	119.2	350.8	120.6

Notes : - LWT : Leaving water temperature.  
 - Power input values are given for compressors only.

# Cooling Capacities - VLH ELN

VLH models	LWT (°C)	Condenser entering air temperature (°C)											
		25		30		32		35		40		44	
		Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)
604 ELN	5	155.0	46.9	146.4	51.5	142.9	53.5	137.6	56.5	128.3	61.8	120.5	66.5
	6	159.5	47.6	150.7	52.2	147.1	54.2	141.5	57.2	132.1	62.5	124.1	67.2
	7	164.0	48.2	155.0	52.9	151.3	54.8	<b>145.3</b>	<b>57.9</b>	135.9	63.3	127.6	68.0
	8	168.6	48.9	159.3	53.6	155.5	55.5	149.6	58.6	139.7	64.0	131.3	68.7
	9	173.3	49.5	163.7	54.3	159.7	56.3	153.7	59.4	143.5	64.8		
	10	177.9	50.2	168.1	55.0	164.0	57.0	157.9	60.1	147.4	65.6		
	11	182.6	50.9	172.5	55.7	168.4	57.7	162.2	60.8	151.3	66.4		
12	187.4	51.6	177.0	56.5	172.7	58.5	166.3	61.6	155.2	67.2			
15	201.7	53.8	190.5	58.8	186.0	60.8	179.0	64.0					
704 ELN	5	183.3	53.6	173.2	58.8	169.2	60.9	163.1	64.3	152.4	70.1	144.4	74.3
	6	188.6	54.3	178.4	59.5	174.3	61.8	167.8	65.1	157.0	71.0	148.8	75.2
	7	194.2	55.1	183.6	60.3	179.3	62.5	<b>172.8</b>	<b>65.9</b>	161.6	71.8	153.1	76.0
	8	199.5	55.9	188.8	61.1	184.3	63.4	177.7	66.8	166.2	72.7	157.6	77.0
	9	205.1	56.7	193.9	62.0	189.4	64.2	182.6	67.6	170.8	73.6	161.9	77.9
	10	210.6	57.5	199.3	62.8	194.7	65.0	187.5	68.5	175.4	74.5		
	11	216.3	58.3	204.6	63.7	199.8	65.9	192.5	69.3	180.2	75.4		
12	222.0	59.1	209.9	64.5	205.2	66.8	197.7	70.2	185.0	76.3			
15	239.2	61.7	226.2	67.1	220.9	69.4	212.7	73.0	199.0	79.1			
804 ELN	5	205.3	60.1	193.9	66.0	189.5	68.3	182.6	72.1	170.7	78.7	161.7	83.4
	6	211.1	61.0	199.8	66.8	195.1	69.3	187.9	73.1	175.8	79.7	166.6	84.4
	7	217.4	61.9	205.5	67.7	200.7	70.2	<b>193.4</b>	<b>74.0</b>	181.0	80.5	171.4	85.3
	8	223.4	62.7	211.4	68.6	206.4	71.1	198.9	74.9	186.1	81.6		
	9	229.6	63.6	217.1	69.6	212.1	72.0	204.4	75.9	191.3	82.6		
	10	235.8	64.6	223.1	70.5	218.0	73.0	210.0	76.9	196.4	83.7		
	11	242.2	65.4	229.1	71.5	223.7	74.0	215.6	77.8	201.8	84.6		
12	248.5	66.3	235.0	72.4	229.7	74.9	221.3	78.8	207.1	85.6			
15	267.8	69.2	253.3	75.4	247.3	77.9	238.1	81.9	222.8	88.7			
904 ELN	5	237.0	66.0	223.9	72.4	218.7	75.0	210.9	79.1	197.0	86.4	186.7	91.5
	6	243.8	66.9	230.6	73.3	225.2	76.0	216.9	80.2	203.0	87.4	192.3	92.6
	7	251.0	67.9	237.3	74.3	231.7	77.0	<b>223.3</b>	<b>81.1</b>	208.9	88.4	197.9	93.6
	8	257.9	68.8	244.0	75.2	238.2	78.1	229.7	82.2	214.9	89.5		
	9	265.1	69.8	250.7	76.4	244.9	79.0	236.0	83.3	220.8	90.6		
	10	272.3	70.8	257.6	77.3	251.7	80.1	242.4	84.3	226.8	91.8		
	11	279.6	71.8	264.5	78.4	258.3	81.1	248.9	85.4	233.0	92.9		
12	286.9	72.7	271.3	79.5	265.2	82.2	255.5	86.5	239.1	93.9			
15	309.2	75.9	292.4	82.7	285.5	85.5	274.9	89.9	257.2	97.4			
1004 ELN	5	254.2	75.7	240.2	83.1	234.7	86.1	226.2	90.8	211.4	99.1	200.3	105.0
	6	261.5	76.8	247.4	84.2	241.6	87.3	232.7	92.0	217.8	100.3	206.3	106.3
	7	269.2	77.9	254.5	85.2	248.6	88.4	<b>239.6</b>	<b>93.1</b>	224.1	101.4	212.3	107.4
	8	276.6	79.0	261.8	86.3	255.6	89.6	246.4	94.3	230.5	102.8		
	9	284.4	80.1	268.9	87.7	262.7	90.7	253.2	95.6	236.9	104.0		
	10	292.1	81.3	276.3	88.8	270.0	91.9	260.0	96.8	243.3	105.4		
	11	299.9	82.4	283.8	90.0	277.1	93.1	267.0	98.0	249.9	106.6		
12	307.8	83.5	291.0	91.2	284.5	94.3	274.1	99.2	256.5	107.8			
15	331.7	87.1	313.7	94.9	306.3	98.2	294.9	103.2	275.9	111.8			
1104 ELN	5	271.8	89.6	258.8	98.4	253.2	102.0	244.8	107.5				
	6	279.9	90.6	266.3	99.5	260.8	103.1	252.0	108.7	234.4	120.6		
	7	288.1	91.7	274.1	100.6	268.3	104.3	<b>259.4</b>	<b>109.8</b>	241.1	121.8		
	8	295.3	92.9	281.0	101.7	275.1	105.4	265.9	111.0	247.2	123.0		
	9	302.7	94.0	288.0	103.0	281.8	106.7	272.7	112.1	253.5	124.2		
	10	309.9	95.2	294.9	104.1	288.6	107.9	279.1	113.5	259.2	125.5		
	11	317.2	96.4	302.0	105.3	295.5	109.1	285.8	114.7	265.6	126.9		
12	324.7	97.5	308.9	106.6	302.4	110.3	292.4	115.9	271.7	128.2			
15	346.8	101.3	330.1	110.3	323.2	114.1	312.2	119.9	290.4	132.2			
1204 ELN	5	286.6	102.2	272.8	112.2	267.0	116.3	258.1	122.5				
	6	295.2	103.4	280.7	113.5	274.9	117.6	265.7	123.9	247.1	137.5		
	7	303.7	104.6	289.0	114.7	282.8	119.0	<b>273.5</b>	<b>125.2</b>	254.2	138.9		
	8	311.4	105.9	296.3	116.0	290.1	120.2	280.3	126.6	260.7	140.2		
	9	319.1	107.1	303.6	117.4	297.1	121.6	287.5	127.9	267.2	141.7		
	10	326.7	108.5	310.9	118.7	304.3	123.0	294.3	129.4	273.3	143.1		
	11	334.4	109.9	318.4	120.1	311.5	124.4	301.3	130.8	280.1	144.6		
12	342.3	111.2	325.7	121.6	318.9	125.8	308.3	132.2	286.5	146.2			
15	365.6	115.5	348.1	125.8	340.7	130.1	329.2	136.8	306.2	150.8			

Notes : - LWT : Leaving water temperature.  
 - Power input values are given for compressors only.

# Heating Capacities - VLH ELN

VLH models	LWT (°C)	Ambient coil entering air temperature (°C)													
		-5		-3		0		5		7		10		15	
		Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)
604 ELN	30	119.6	39.0	125.9	37.3	136.1	37.4	153.8	38.0	161.7	38.2	174.3	38.6	197.4	39.2
	35	118.1	43.6	125.5	41.7	135.2	41.9	152.3	42.4	159.8	42.6	171.9	43.0	193.9	43.7
	40	116.7	48.9	124.0	46.8	134.6	46.9	150.9	47.5	158.1	47.7	169.5	48.1	190.4	48.8
	45	115.3	55.0	122.5	52.6	133.0	52.8	149.7	53.3	<b>156.5</b>	<b>53.5</b>	167.3	53.9	187.0	54.6
	50					131.5	59.7	148.8	60.0	155.1	60.2	165.3	60.5	183.8	61.2
704 ELN	30	148.7	44.5	156.6	44.7	169.3	44.8	191.4	45.4	201.2	45.7	216.8	46.2	245.5	47.0
	35	146.9	52.3	156.1	49.9	168.2	50.1	189.5	50.7	198.8	51.0	213.8	51.5	241.2	52.3
	40	145.2	58.7	154.4	56.0	167.5	56.1	187.7	56.8	196.7	57.1	210.9	57.6	236.9	58.4
	45	143.6	66.0	152.7	62.9	165.5	63.1	186.2	63.8	<b>194.5</b>	<b>64.1</b>	208.1	64.5	232.7	65.4
	50					163.7	71.4	185.1	71.8	193.0	72.1	205.6	72.5	228.6	73.3
804 ELN	30	165.2	49.6	173.9	49.7	188.0	49.9	212.6	50.6	223.5	50.9	240.8	51.4	272.7	52.3
	35	163.2	58.2	173.4	55.6	186.9	55.8	210.5	56.5	220.9	56.8	237.5	57.3	268.0	58.3
	40	161.2	65.3	171.5	62.4	186.0	62.5	208.5	63.2	218.4	63.6	234.2	64.1	263.2	65.0
	45	159.5	73.5	169.7	70.0	183.8	70.3	206.9	71.0	<b>216.1</b>	<b>71.3</b>	231.1	71.8	258.4	72.8
	50					181.9	79.5	205.6	79.9	214.4	80.2	228.4	80.7	253.9	81.6
904 ELN	30	183.9	56.8	193.6	56.9	209.3	57.1	236.7	57.9	248.8	58.3	268.1	58.9	303.6	59.9
	35	181.7	66.7	193.0	63.7	208.0	63.9	234.3	64.7	245.9	65.1	264.4	65.6	298.3	66.7
	40	179.5	74.8	190.9	71.4	207.1	71.6	232.1	72.4	243.2	72.8	260.7	73.4	293.0	74.5
	45	177.5	84.1	188.9	80.2	204.6	80.5	230.3	81.3	<b>240.5</b>	<b>81.7</b>	257.3	82.3	287.7	83.3
	50					202.4	91.0	228.9	91.5	238.7	91.9	254.2	92.4	282.7	93.4
1004 ELN	30	201.3	63.0	212.0	63.1	229.1	63.3	259.1	64.2	272.3	64.7	293.4	65.3	332.4	66.4
	35	198.9	73.9	211.2	70.6	227.7	70.8	256.5	71.7	269.1	72.2	289.4	72.8	326.5	74.0
	40	196.5	83.0	208.9	79.2	226.7	79.4	254.1	80.3	266.2	80.7	285.4	81.4	320.7	82.6
	45	194.3	93.3	206.7	88.9	224.0	89.3	252.1	90.1	<b>263.3</b>	<b>90.6</b>	281.7	91.2	314.9	92.4
	50					221.6	100.9	250.5	101.5	261.2	101.9	278.3	102.4	309.4	103.6
1104 ELN	30	210.9	65.9	222.1	66.0	240.1	66.2	271.5	67.2	285.3	67.6	307.5	68.3	348.3	69.4
	35	208.4	77.3	221.4	73.8	238.6	74.1	268.7	75.0	282.0	75.5	303.2	76.1	342.2	77.4
	40	205.9	86.7	218.9	82.8	237.5	83.0	266.3	84.0	278.9	84.4	299.1	85.1	336.0	86.4
	45	203.6	97.6	216.6	93.0	234.7	93.4	264.1	94.3	<b>275.9</b>	<b>94.7</b>	295.1	95.4	330.0	96.6
	50					232.2	105.6	262.5	106.1	273.7	106.5	291.6	107.1	324.2	108.3
1204 ELN	30	225.5	73.2	237.4	73.3	256.6	73.6	290.2	74.6	305.0	75.1	328.7	75.9	372.3	77.1
	35	222.8	85.9	236.6	82.0	255.0	82.3	287.2	83.3	301.5	83.8	324.1	84.6	365.7	85.9
	40	220.1	96.4	234.0	92.0	253.9	92.2	284.6	93.3	298.1	93.8	319.7	94.6	359.2	95.9
	45	217.6	108.4	231.6	103.3	250.9	103.7	282.3	104.7	<b>294.9</b>	<b>105.2</b>	315.5	106.0	352.7	107.4
	50					248.2	117.3	280.6	117.9	292.6	118.3	311.7	119.0	346.6	120.4

Notes : - LWT : Leaving water temperature.  
 - Power input values are given for compressors only.

# Cooling Capacities - VLH HE

VLH models	LWT (°C)	Condenser entering air temperature (°C)													
		25		30		32		35		40		46		49	
		Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)	Cool. cap. (kW)	Input power (kW)
504 HE	5	140.9	34.1	133.1	37.6	129.9	39.1	124.9	41.3	116.4	45.4	105.8	50.7	101.1	52.7
	6	145.1	34.6	137.1	38.0	133.7	39.5	128.7	41.9	119.9	45.9	108.9	51.3	104.2	53.3
	7	149.3	35.0	141.0	38.6	137.6	40.0	<b>132.3</b>	<b>42.3</b>	123.5	46.5	112.1	51.8	107.2	53.9
	8	153.5	35.5	145.1	39.0	141.6	40.5	136.2	42.8	127.0	47.0	115.4	52.3	110.4	54.4
	9	157.8	36.0	149.2	39.5	145.6	41.0	140.0	43.4	130.6	47.5	118.7	53.0		
	10	162.2	36.4	153.2	40.0	149.5	41.5	143.9	43.9	134.2	48.0	122.0	53.5		
	11	166.5	36.9	157.4	40.5	153.6	42.0	147.7	44.4	137.7	48.6	125.3	54.1		
	12	171.1	37.3	161.5	41.0	157.6	42.6	151.8	44.9	141.5	49.1	128.7	54.7		
554 HE	5	157.1	38.0	148.7	41.8	145.3	43.3	140.0	45.7	130.8	50.0	119.5	55.5	114.5	57.7
	6	161.8	38.5	153.2	42.2	149.6	43.8	144.1	46.3	134.8	50.6	123.1	56.0	118.0	58.2
	7	166.5	39.0	157.6	42.8	154.0	44.4	<b>148.1</b>	<b>46.8</b>	138.7	51.1	126.7	56.6		
	8	171.3	39.4	162.1	43.3	158.4	44.9	152.6	47.3	142.7	51.6	130.9	56.9		
	9	176.0	40.0	166.6	43.8	162.8	45.4	156.9	47.9	146.6	52.2	134.7	57.5		
	10	181.0	40.4	171.3	44.4	167.3	46.0	161.2	48.4	150.8	52.8	138.4	58.0		
	11	185.7	41.0	175.9	44.9	171.8	46.5	165.5	49.0	154.9	53.3	142.2	58.6		
	12	190.7	41.5	180.5	45.5	176.3	47.1	169.9	49.6	158.9	54.0				
604 HE	5	168.1	41.7	158.7	45.8	155.0	47.6	149.2	50.3	139.2	55.0	127.3	60.8		
	6	173.0	42.3	163.4	46.4	159.5	48.2	153.5	50.9	143.3	55.6	131.1	61.6		
	7	177.9	42.9	168.1	47.1	164.1	48.7	<b>157.6</b>	<b>51.5</b>	147.4	56.3	134.4	62.2		
	8	182.9	43.5	172.7	47.7	168.6	49.4	162.3	52.1	151.5	56.9	138.7	62.9		
	9	187.9	44.0	177.5	48.3	173.2	50.1	166.7	52.8	155.7	57.6	142.6	63.6		
	10	192.9	44.7	182.3	48.9	177.9	50.7	171.3	53.5	159.9	58.3				
	11	198.0	45.3	187.1	49.5	182.7	51.3	175.9	54.1	164.1	59.1				
	12	203.3	45.9	192.0	50.3	187.3	52.0	180.4	54.8	168.3	59.8				
704 HE	5	194.2	49.1	183.5	53.8	179.3	55.8	172.8	58.9	161.5	64.2	153.0	68.1	147.7	71.2
	6	199.8	49.8	189.0	54.5	184.6	56.6	177.8	59.6	166.4	65.0	157.6	68.9	152.2	71.9
	7	205.7	50.5	194.5	55.2	189.9	57.3	<b>183.0</b>	<b>60.4</b>	171.2	65.7	162.2	69.6	156.6	72.8
	8	211.3	51.2	200.0	55.9	195.2	58.1	188.2	61.1	176.1	66.6	166.9	70.5		
	9	217.2	51.9	205.4	56.8	200.7	58.8	193.4	61.9	181.0	67.4	171.5	71.4		
	10	223.1	52.7	211.1	57.5	206.2	59.6	198.6	62.7	185.8	68.3	176.1	72.2		
	11	229.1	53.4	216.8	58.3	211.7	60.4	204.0	63.5	190.9	69.1	180.9	73.1		
	12	235.1	54.1	222.3	59.1	217.3	61.1	209.4	64.3	195.9	69.9	185.7	73.9		
804 HE	5	217.5	55.1	205.4	60.4	200.7	62.6	193.5	66.1	180.8	72.1	171.3	76.4	165.3	79.9
	6	223.7	55.9	211.6	61.2	206.7	63.5	199.1	67.0	186.3	73.0	176.5	77.3	170.4	80.7
	7	230.3	56.7	217.7	62.0	212.6	64.3	<b>204.9</b>	<b>67.7</b>	191.7	73.8	181.6	78.1	175.3	81.7
	8	236.6	57.5	223.9	62.8	218.6	65.2	210.7	68.6	197.2	74.8	186.9	79.2	180.4	82.6
	9	243.2	58.2	230.0	63.8	224.7	66.0	216.6	69.5	202.6	75.7	192.0	80.1	185.4	83.6
	10	249.8	59.1	236.4	64.6	230.9	66.9	222.4	70.4	208.1	76.6	197.2	81.1		
	11	256.5	59.9	242.7	65.5	237.0	67.7	228.4	71.3	213.8	77.5	202.6	82.0		
	12	263.3	60.7	248.9	66.4	243.3	68.6	234.5	72.2	219.4	78.4	207.9	82.9		
904 HE	5	251.1	60.4	237.1	66.3	231.7	68.7	223.4	72.5	208.7	79.1	197.7	83.8	190.9	87.7
	6	258.2	61.3	244.3	67.2	238.6	69.7	229.8	73.5	215.0	80.1	203.8	84.9	196.7	88.5
	7	265.9	62.2	251.4	68.0	245.5	70.5	<b>236.6</b>	<b>74.3</b>	221.3	80.9	209.7	85.7	202.4	89.6
	8	273.2	63.0	258.5	68.9	252.4	71.5	243.3	75.3	227.6	82.0	215.8	86.9	208.3	90.6
	9	280.8	63.9	265.6	70.0	259.4	72.4	250.0	76.3	233.9	83.0	221.7	87.9	214.0	91.7
	10	288.4	64.9	272.9	70.9	266.6	73.3	256.8	77.3	240.2	84.1	227.7	88.9	219.9	92.7
	11	296.2	65.8	280.2	71.8	273.6	74.3	263.7	78.2	246.8	85.1	233.9	90.0		
	12	303.9	66.6	287.4	72.8	280.9	75.3	270.7	79.2	253.3	86.0	240.1	91.0		
1004 HE	5	327.5	69.5	309.8	75.7	302.5	78.3	291.2	82.4	272.4	89.2				
	6	269.3	69.4	254.4	76.1	248.6	78.8	239.6	83.2	223.9	90.8	212.1	96.2	204.8	100.6
	7	277.0	70.4	262.1	77.1	256.0	79.9	246.6	84.3	230.7	91.9	218.6	97.4	211.0	101.6
	8	285.2	71.4	269.6	78.1	263.4	80.9	<b>253.8</b>	<b>85.3</b>	237.4	92.9	224.9	98.4	217.2	102.9
	9	293.1	72.4	277.3	79.1	270.7	82.1	261.0	86.4	244.2	94.1	231.5	99.7	223.5	104.0
	10	301.2	73.3	284.9	80.3	278.3	83.1	268.2	87.5	251.0	95.3	237.8	100.9	229.6	105.2
	11	309.4	74.5	292.7	81.3	286.0	84.2	275.5	88.7	257.7	96.5	244.3	102.1	235.9	106.4
	12	317.7	75.5	300.6	82.4	293.5	85.3	282.8	89.8	264.8	97.6	250.9	103.3		
15	326.1	76.5	308.3	83.6	301.4	86.4	290.4	90.9	271.7	98.8	257.6	104.5			
15	351.4	79.8	332.3	86.9	324.5	89.9	312.4	94.5	292.3	102.4					

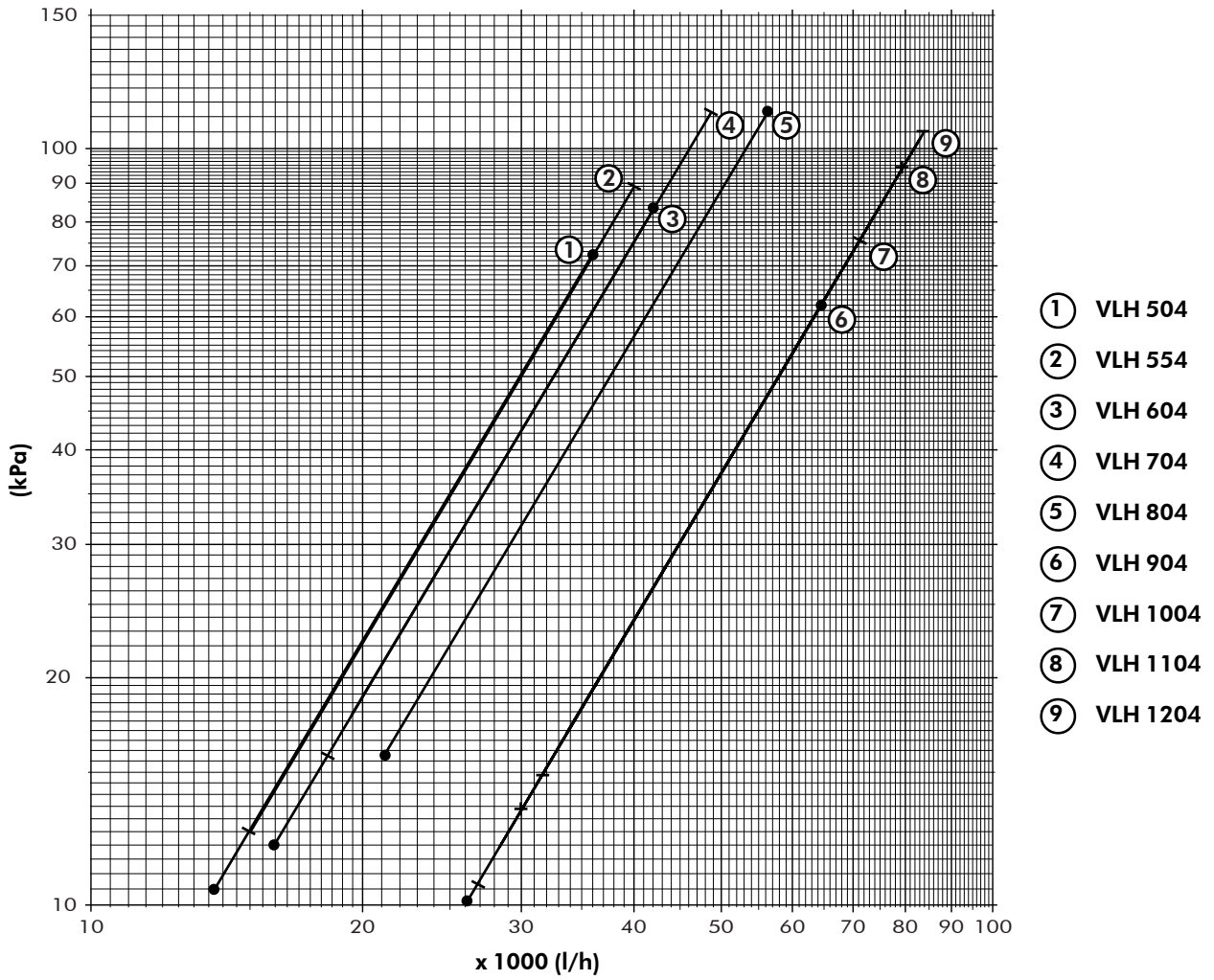
Notes : - LWT : Leaving water temperature.  
 - Power input values are given for compressors only.

# Heating Capacities - VLH HE

VLH models	LWT (°C)	Ambient coil entering air temperature (°C)													
		-5		-3		0		5		7		10		15	
		Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)	Heat. cap. (kW)	Input power (kW)
504 HE	30	102.1	32.4	107.5	31.1	116.3	31.2	131.4	31.6	138.2	31.8	148.9	32.2	168.6	32.7
	35	100.9	36.3	107.2	34.8	115.5	34.9	130.1	35.3	136.6	35.5	146.8	35.9	165.7	36.4
	40	99.8	40.7	107.1	39.0	115.0	39.1	128.9	39.5	135.1	39.8	144.8	40.1	162.7	40.7
	45	98.8	45.8	106.1	43.8	114.7	44.0	127.9	44.4	<b>133.7</b>	<b>44.6</b>	142.9	44.9	159.8	45.5
	50					113.5	49.7	127.1	50.0	132.5	50.2	141.2	50.4	157.0	51.0
554 HE	30	115.7	36.4	121.9	34.9	131.8	35.0	149.0	35.5	156.6	35.7	168.7	36.1	191.1	36.7
	35	114.4	40.7	121.5	39.0	130.9	39.1	147.5	39.6	154.8	39.8	166.4	40.2	187.8	40.8
	40	113.1	45.7	121.3	43.7	130.3	43.8	146.1	44.3	153.1	44.6	164.1	45.0	184.4	45.6
	45	111.9	51.4	120.2	49.1	130.0	49.3	144.9	49.8	<b>151.5</b>	<b>50.0</b>	162.0	50.4	181.1	51.0
	50					128.6	55.7	144.1	56.0	150.2	56.2	160.0	56.6	177.9	57.2
604 HE	30	122.6	38.9	129.1	37.3	139.5	37.4	157.8	38.0	165.8	38.2	178.7	38.6	202.4	39.2
	35	121.1	43.6	128.7	41.7	138.7	41.9	156.2	42.4	163.9	42.7	176.2	43.0	198.9	43.7
	40	119.8	48.9	128.5	46.8	138.0	46.9	154.7	47.5	162.1	47.7	173.8	48.1	195.3	48.8
	45	118.5	55.0	127.3	52.6	137.7	52.8	153.5	53.3	<b>160.5</b>	<b>53.5</b>	171.5	53.9	191.8	54.6
	50					136.2	59.7	152.6	60.0	159.1	60.2	169.5	60.6	188.4	61.2
704 HE	30	155.1	44.9	163.4	45.0	176.6	45.1	199.6	45.8	209.9	46.1	226.1	46.5	256.1	47.3
	35	153.3	52.7	162.8	50.3	175.5	50.5	197.6	51.1	207.4	51.4	223.0	51.9	251.6	52.7
	40	151.4	59.1	161.0	56.4	174.7	56.6	195.8	57.2	205.1	57.5	220.0	58.0	247.1	58.9
	45	149.7	66.5	159.3	63.4	172.6	63.6	194.3	64.2	<b>202.9</b>	<b>64.5</b>	217.1	65.0	242.7	65.9
	50					170.8	71.9	193.1	72.3	201.3	72.6	214.5	73.0	238.5	73.8
804 HE	30	172.3	50.0	181.5	50.1	196.2	50.3	221.8	51.0	233.1	51.3	251.2	51.8	284.5	52.7
	35	170.3	58.7	180.8	56.0	194.9	56.2	219.5	56.9	230.4	57.3	247.7	57.8	279.5	58.7
	40	168.2	65.8	178.9	62.8	194.0	63.0	217.5	63.7	227.9	64.0	244.3	64.6	274.5	65.5
	45	166.3	74.0	177.0	70.6	191.7	70.8	215.8	71.5	<b>225.4</b>	<b>71.9</b>	241.1	72.4	269.6	73.3
	50					189.7	80.1	214.5	80.5	223.6	80.8	238.2	81.3	264.9	82.2
904 HE	30	191.8	57.2	202.0	57.4	218.4	57.5	246.9	58.4	259.5	58.8	279.6	59.3	316.7	60.3
	35	189.5	67.2	201.3	64.2	217.0	64.3	244.4	65.2	256.5	65.6	275.8	66.1	311.2	67.2
	40	187.2	75.4	199.1	71.9	216.0	72.1	242.1	73.0	253.7	73.3	272.0	74.0	305.6	75.0
	45	185.2	84.8	197.0	80.8	213.5	81.1	240.2	81.9	<b>250.9</b>	<b>82.3</b>	268.4	82.9	300.1	84.0
	50					211.2	91.7	238.8	92.2	248.9	92.6	265.2	93.1	294.9	94.1
1004 HE	30	210.0	63.5	221.1	63.6	239.0	63.8	270.2	64.7	284.0	65.2	306.1	65.8	346.7	66.9
	35	207.5	74.5	220.4	71.1	237.5	71.3	267.5	72.3	280.7	72.7	301.8	73.4	340.6	74.5
	40	205.0	83.6	217.9	79.8	236.5	80.0	265.1	80.9	277.7	81.3	297.7	82.0	334.5	83.2
	45	202.7	94.0	215.7	89.6	233.7	89.9	262.9	90.8	<b>274.6</b>	<b>91.2</b>	293.8	91.9	328.5	93.1
	50					231.2	101.7	261.3	102.2	272.5	102.6	290.3	103.2	322.8	104.4

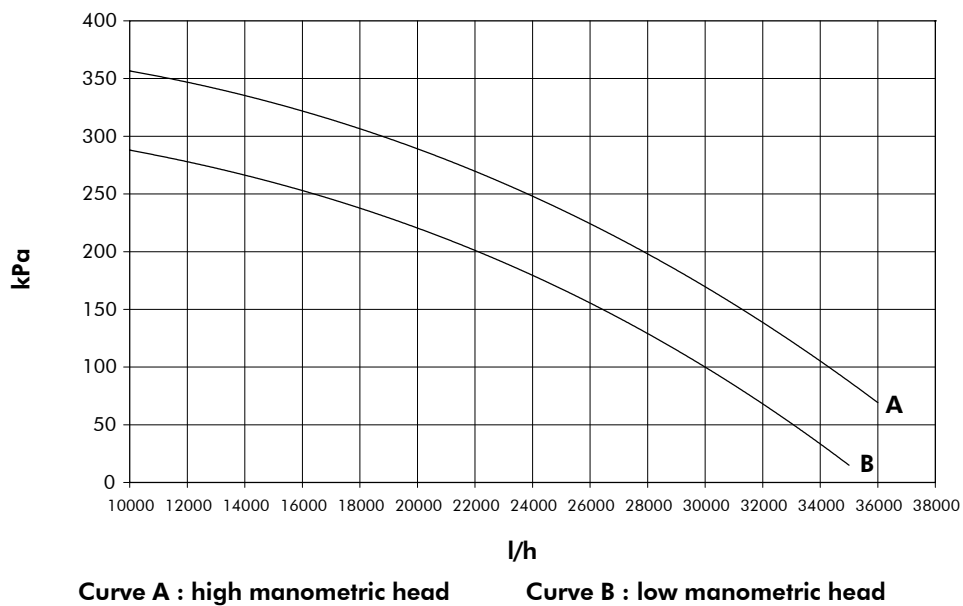
Notes : - LWT : Leaving water temperature.  
 - Power input values are given for compressors only.

# Water Pressure Drop Curves



# Water Pump Curves

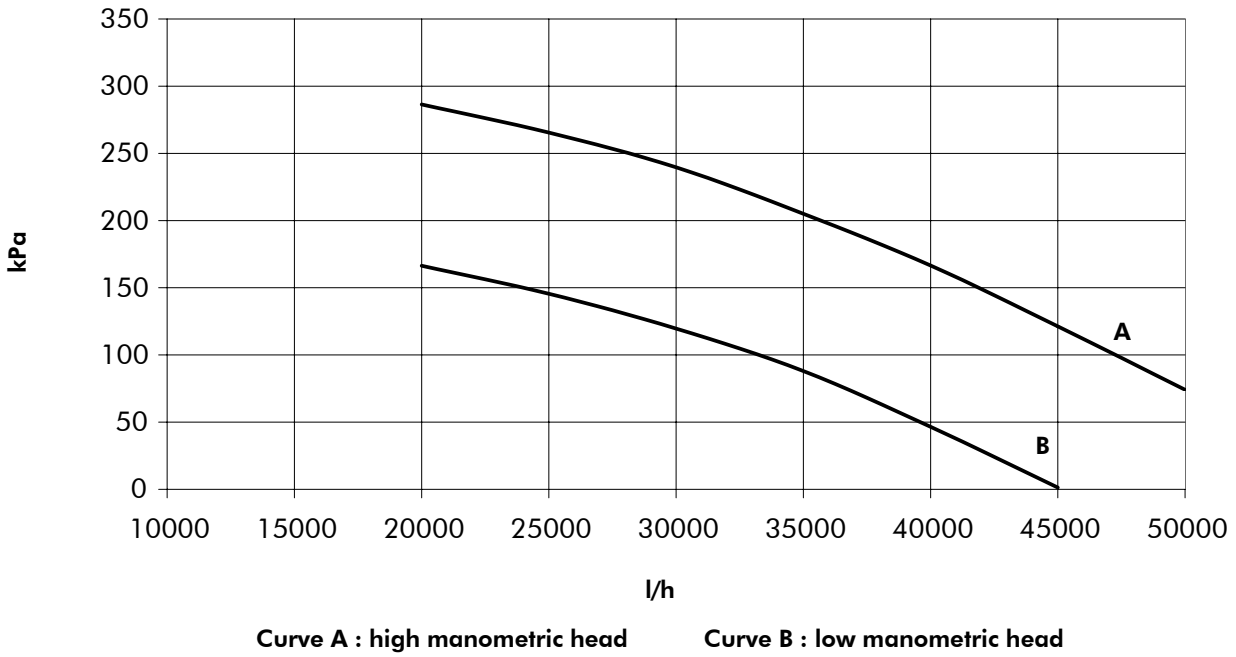
## Models VLH 504 to 604



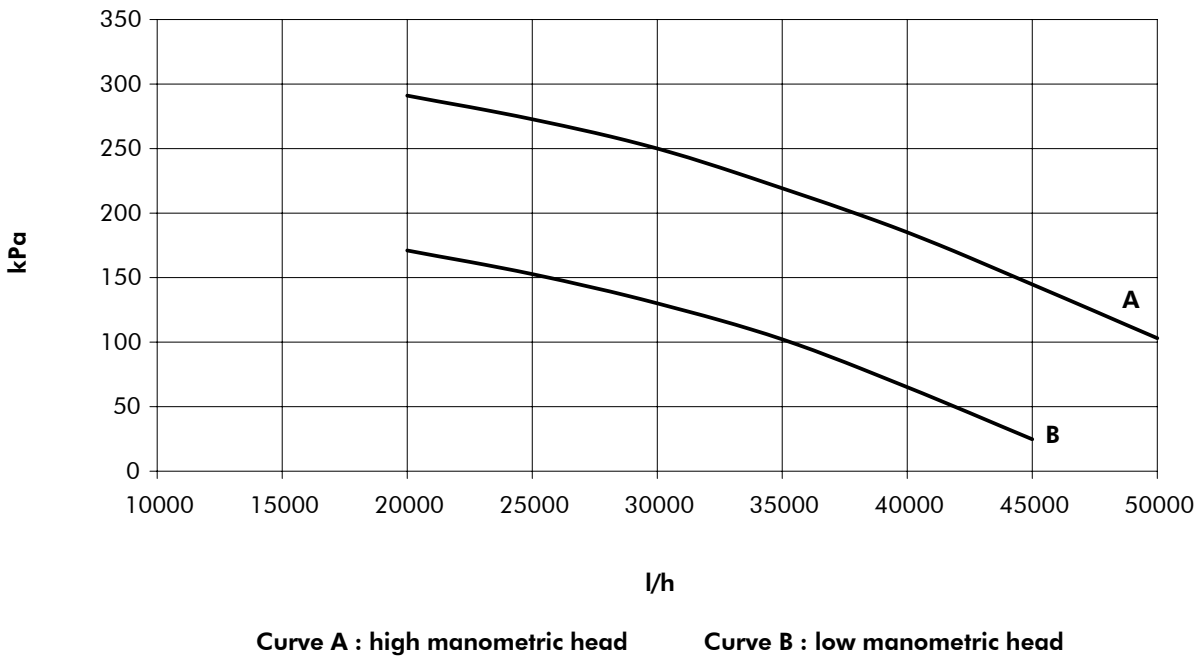


# Water Pump Curves (continued)

## Model VLH 704

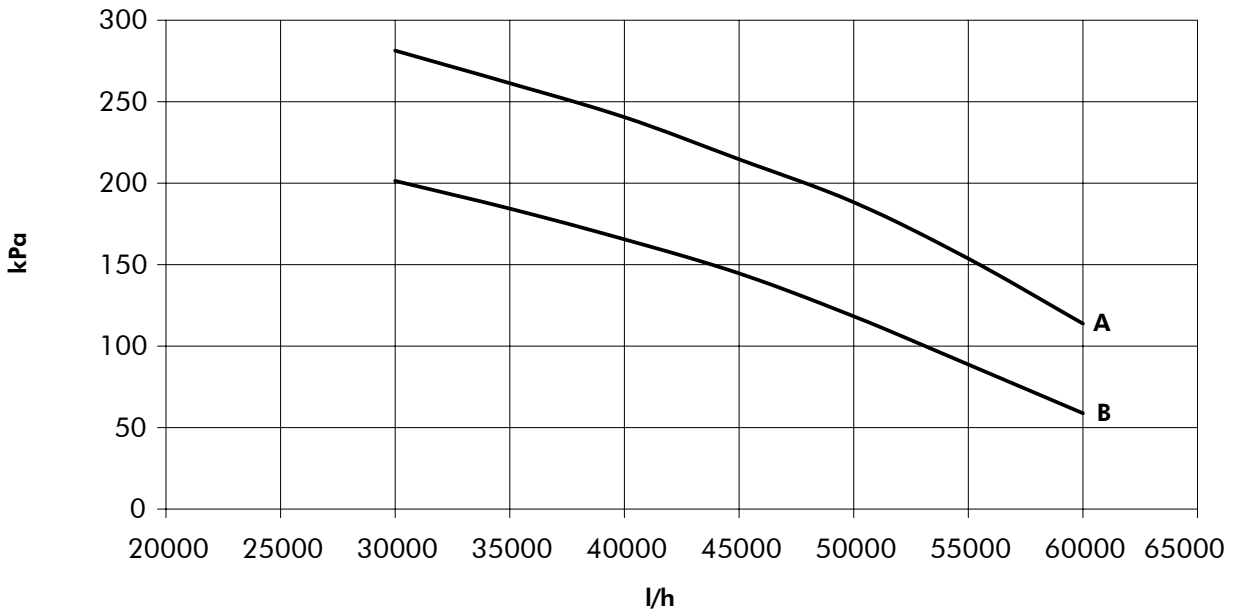


## Model VLH 804



# Water Pump Curves (continued)

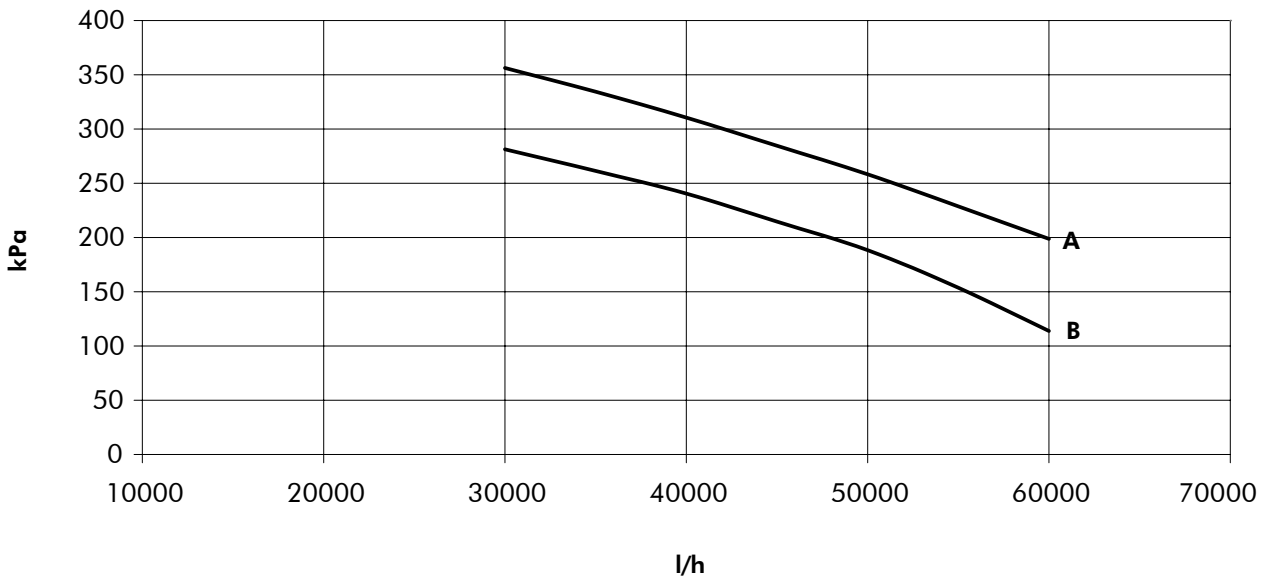
## Models VLH 904 & 1004



Curve A : high manometric head

Curve B : low manometric head

## Model VLH 1104 & 1204

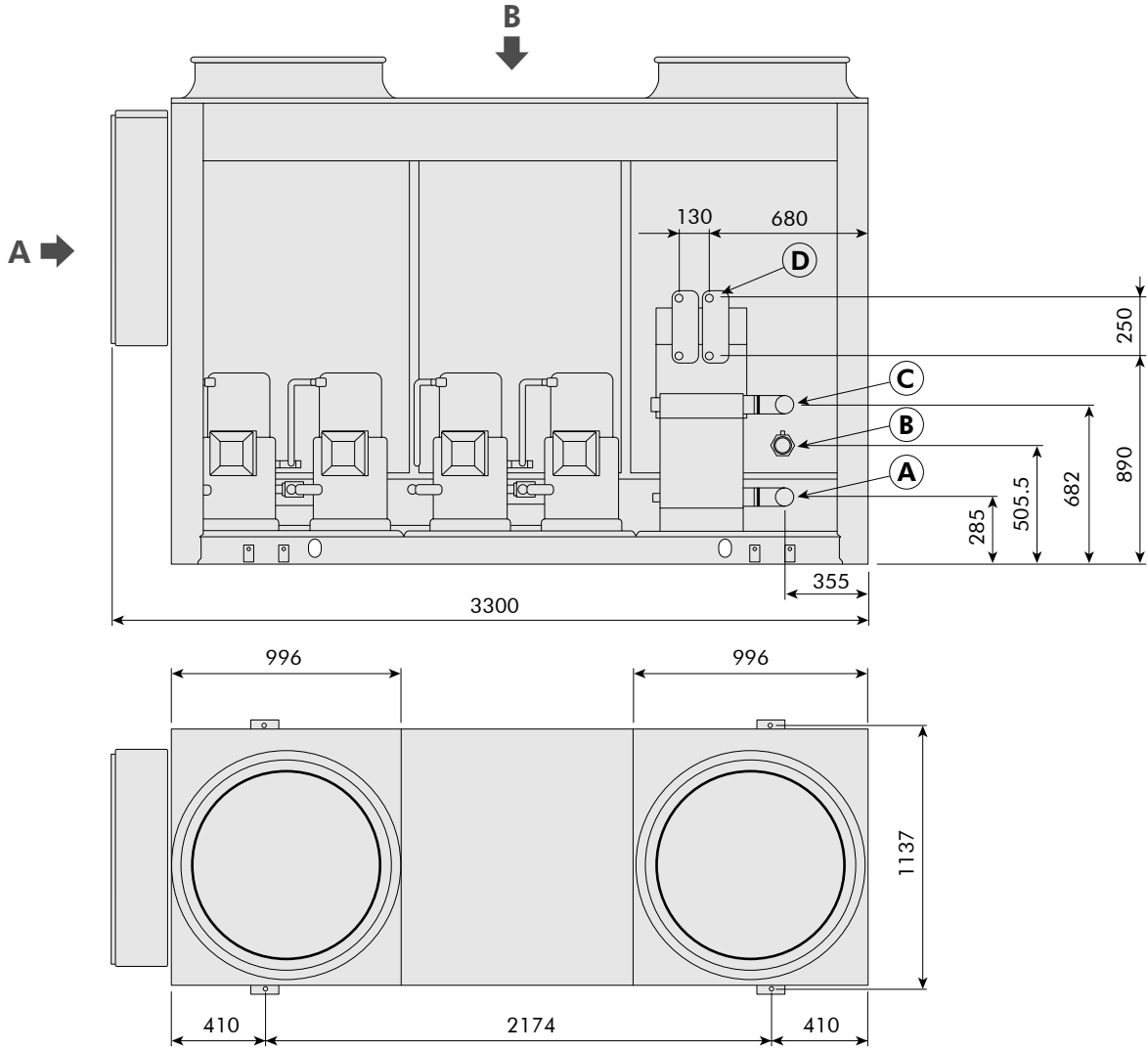


Curve A : high manometric head

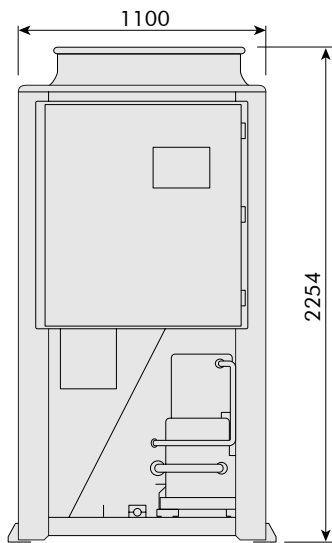
Curve B : low manometric head

# Dimensions

## Models VLH 504 - 554 STD/LN and 604 STD



**VIEW B**

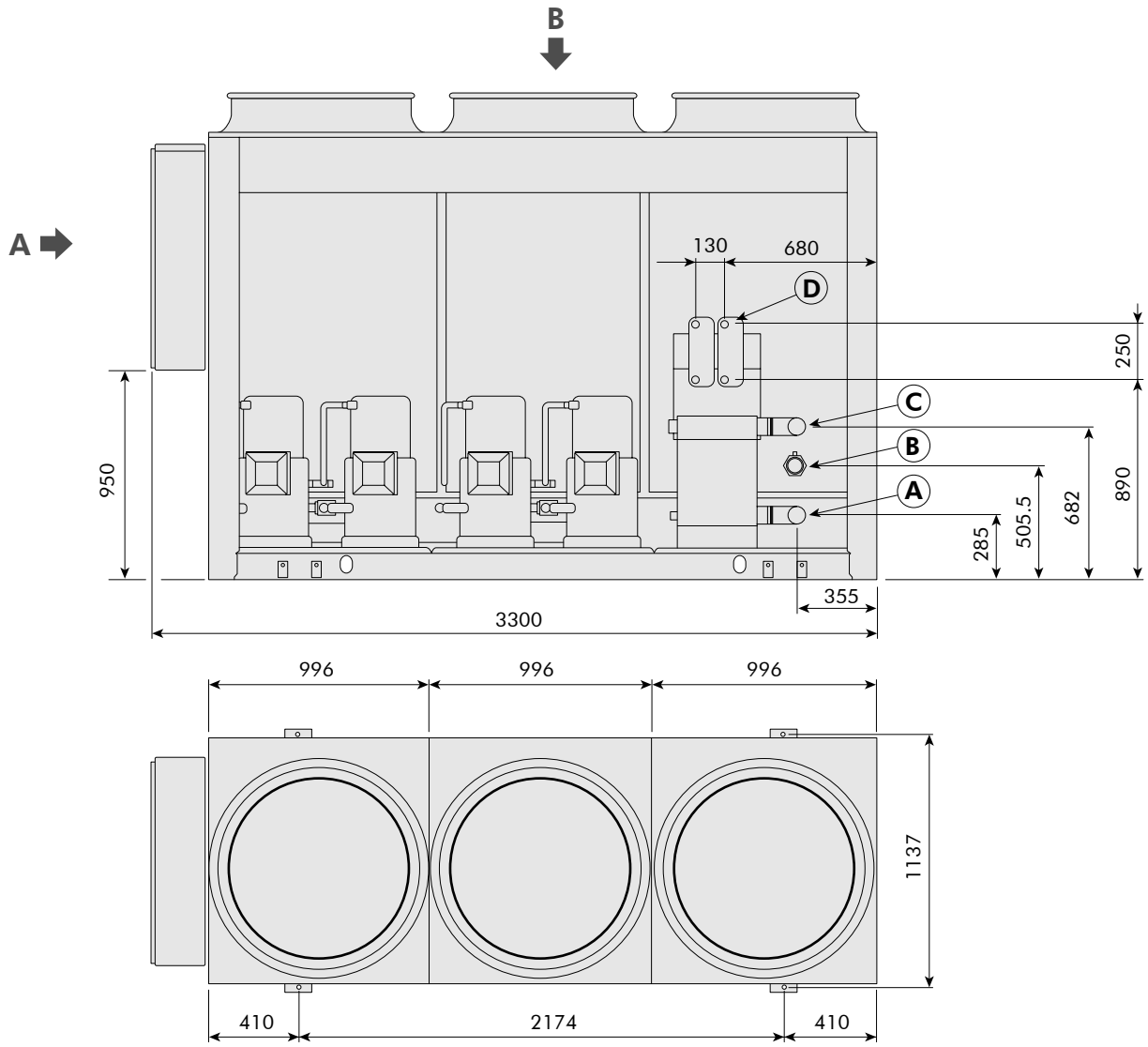


**VIEW A**

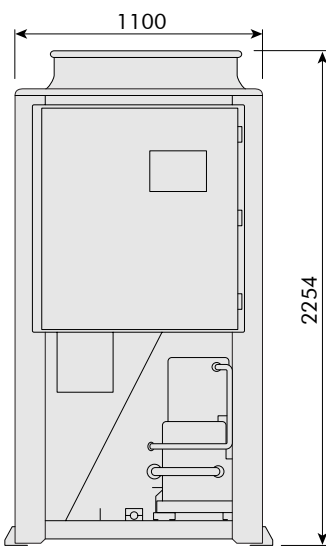
Water connections	
Water outlet "A"	2" 1/2 Male
Water inlet "B" (with pump)	2" 1/2 Male
Water inlet "C" (no pump)	2" 1/2 Male
Desuperheater in/out "D"	4 x 1" Female

# Dimensions (continued)

Models VLH 504 - 554 HE and 604 LN/HE



**VIEW B**

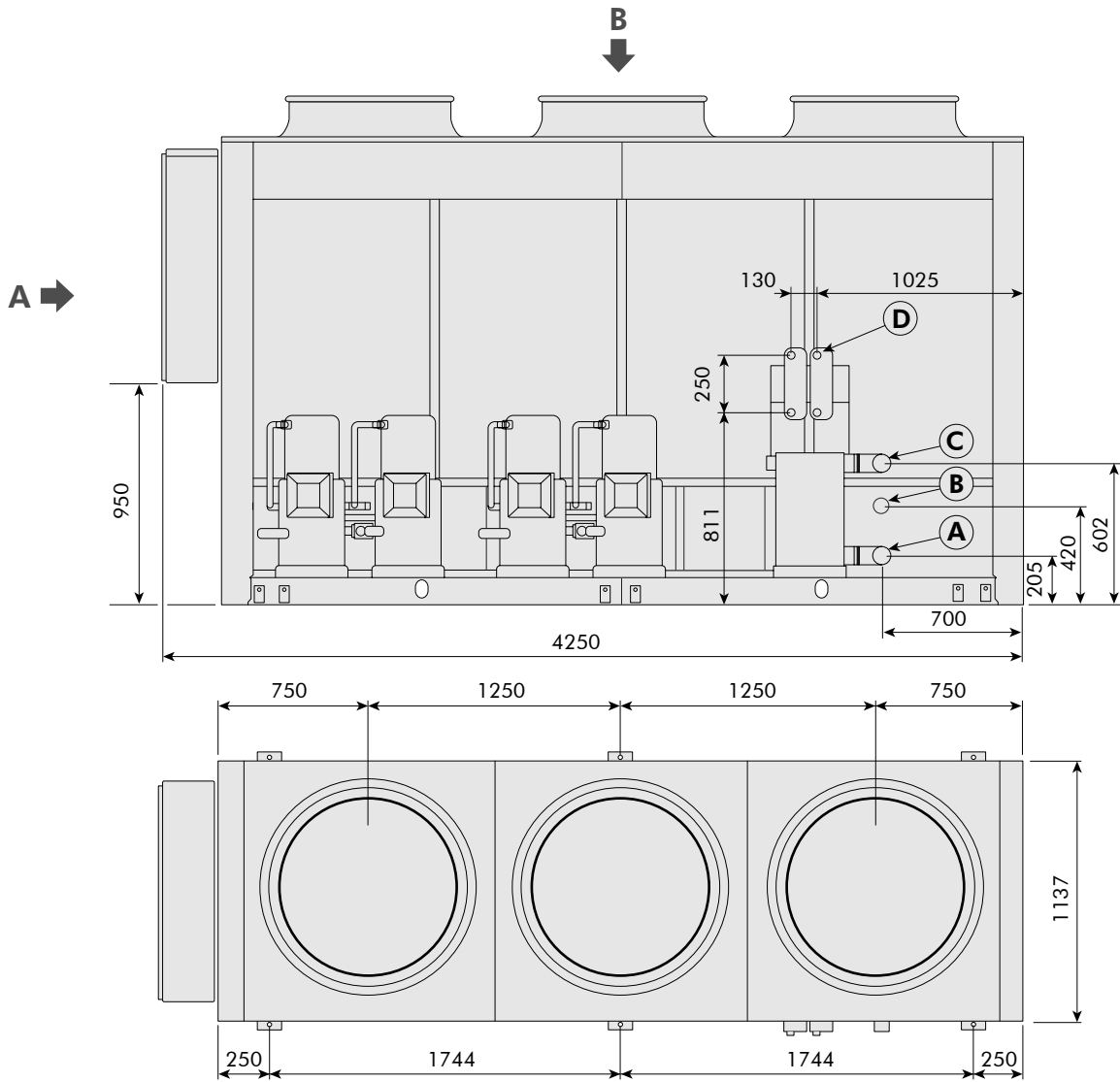


**VIEW A**

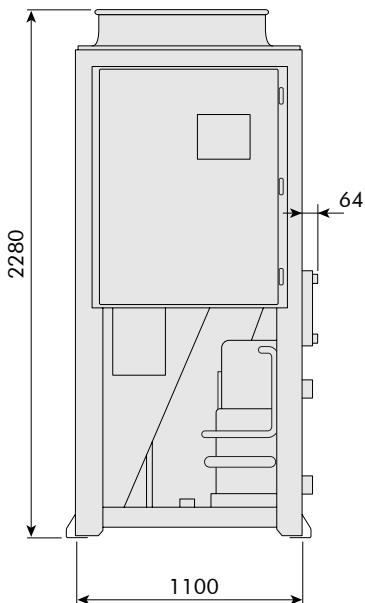
Water connections	
Water outlet "A"	2" 1/2 Male
Water inlet "B" (with pump)	2" 1/2 Male
Water inlet "C" (no pump)	2" 1/2 Male
Desuperheater in/out "D"	4 x 1" Female

# Dimensions (continued)

## Models VLH 604 ELN



**VIEW B**

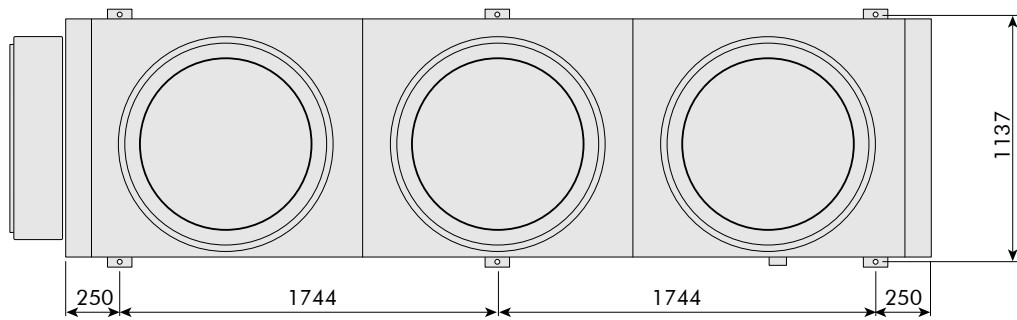
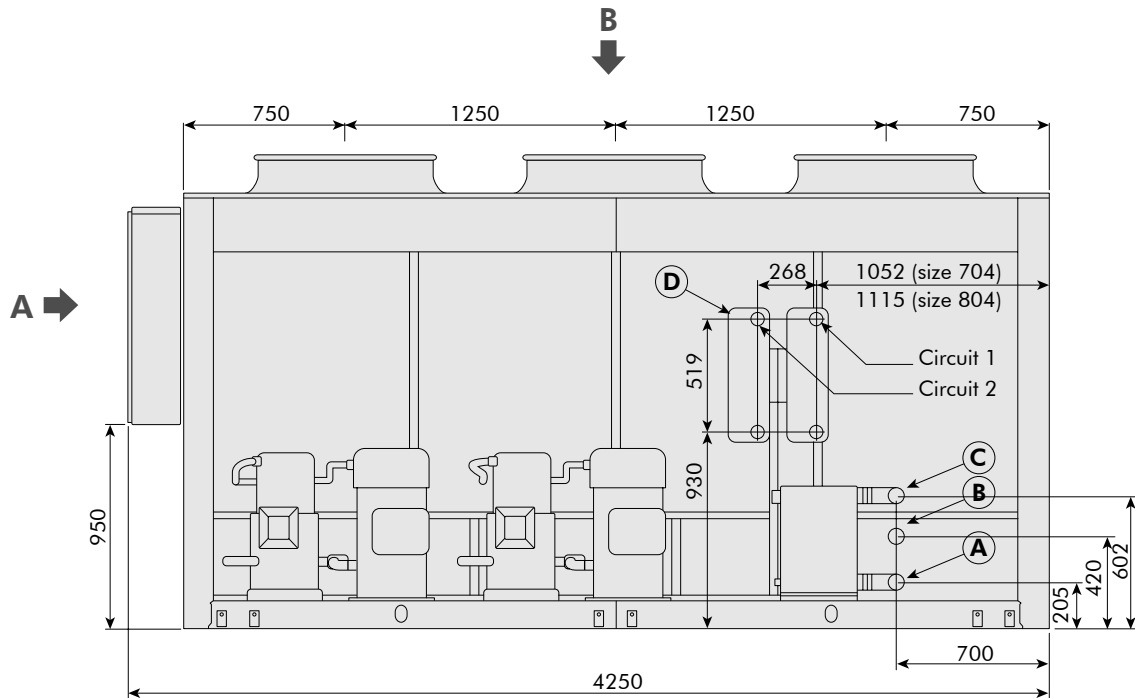


**VIEW A**

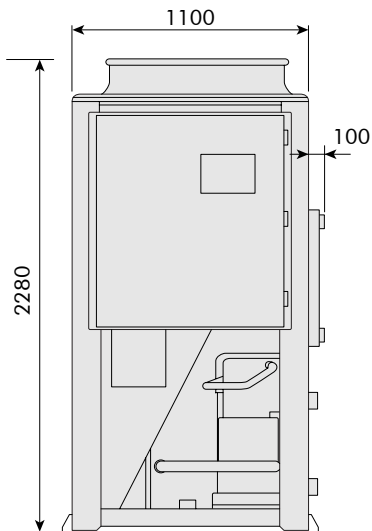
Water connections	
Water outlet "A"	2" 1/2 Male
Water inlet "B" (with pump)	2" 1/2 Male
Water inlet "C" (no pump)	2" 1/2 Male
Desuperheater in/out "D"	4 x 1" Female

# Dimensions (continued)

## Models VLH 704 - 804 STD/LN



VIEW B

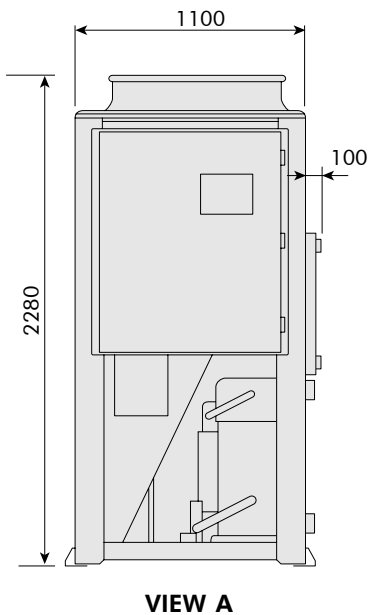
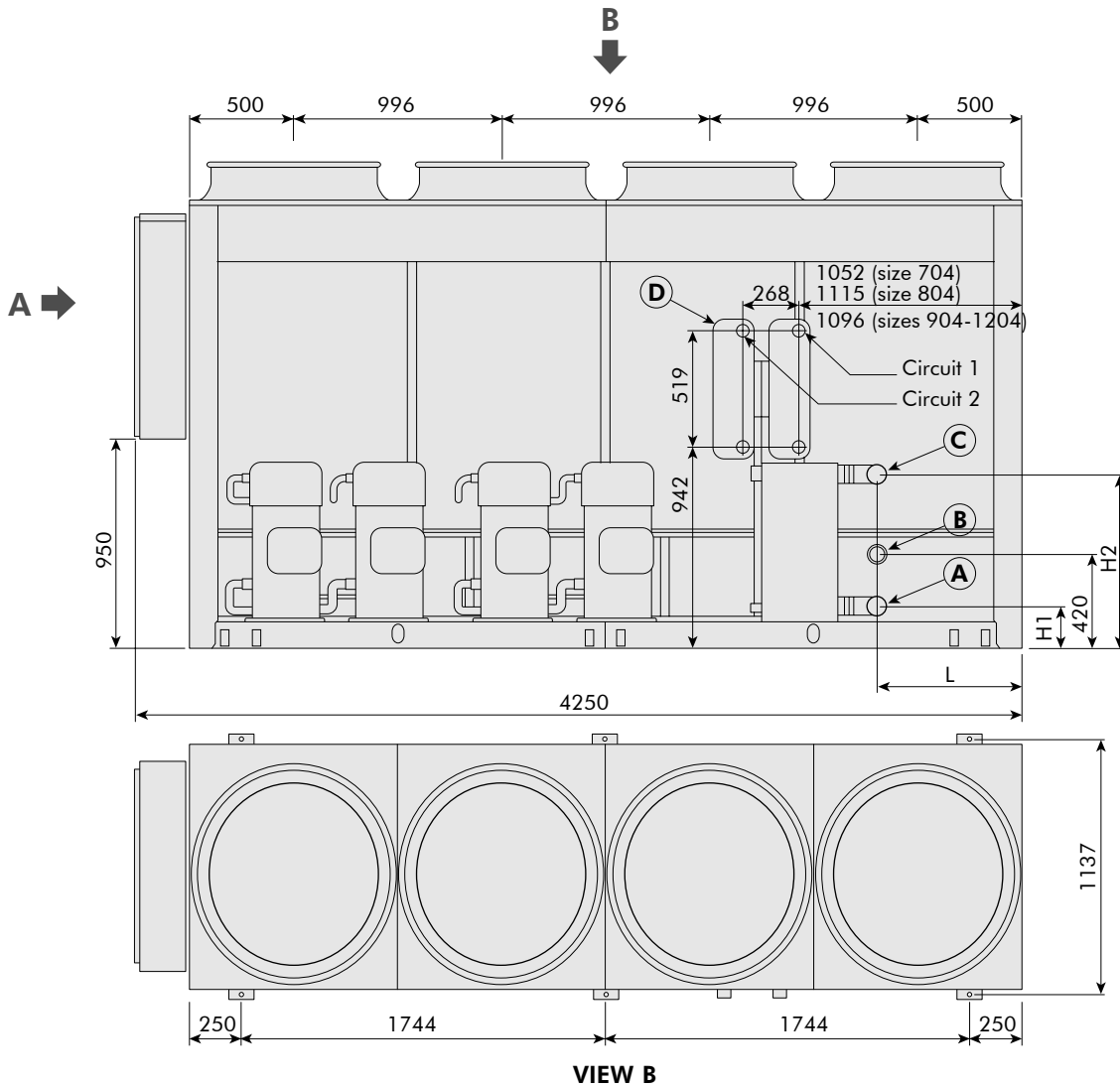


VIEW A

Water connections	
Water outlet "A"	2" 1/2 Male
Water inlet "B" (with pump)	2" 1/2 Male
Water inlet "C" (no pump)	2" 1/2 Male
Desuperheater in/out "D"	4 x 2" Female

# Dimensions (continued)

Models VLH 704-804 ELN/HE, 904-1004 STD/LN/ELN/HE and 1104-1204 STD/LN/ELN

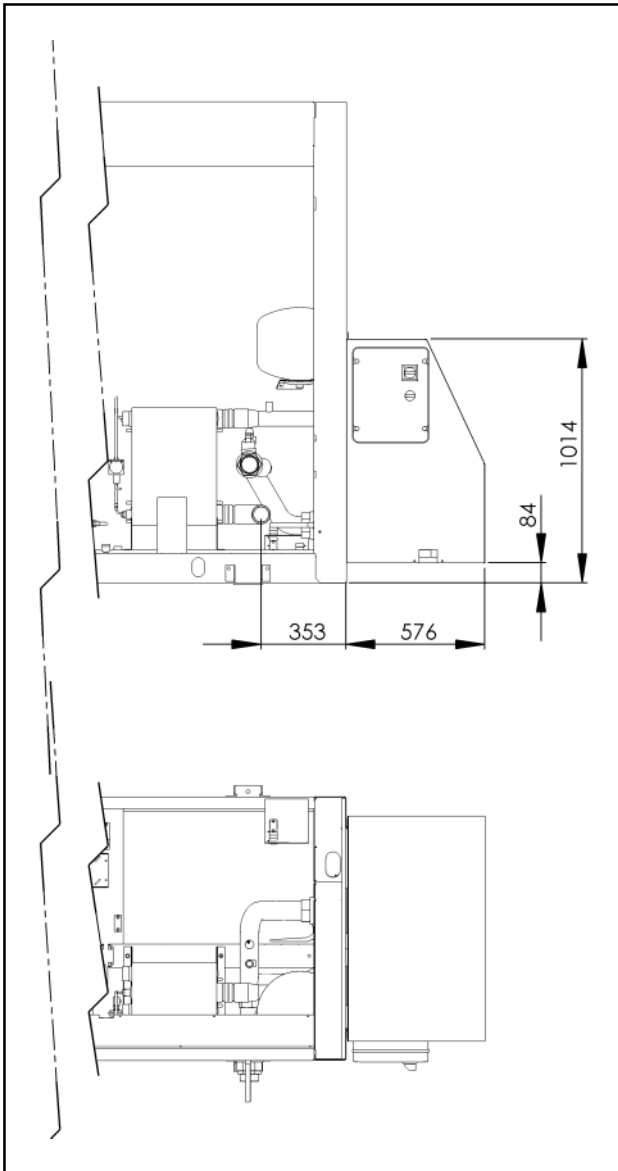


Dimensions (mm)	704-804	904-1204
H1	205	213
H2	602	840
L	700	720

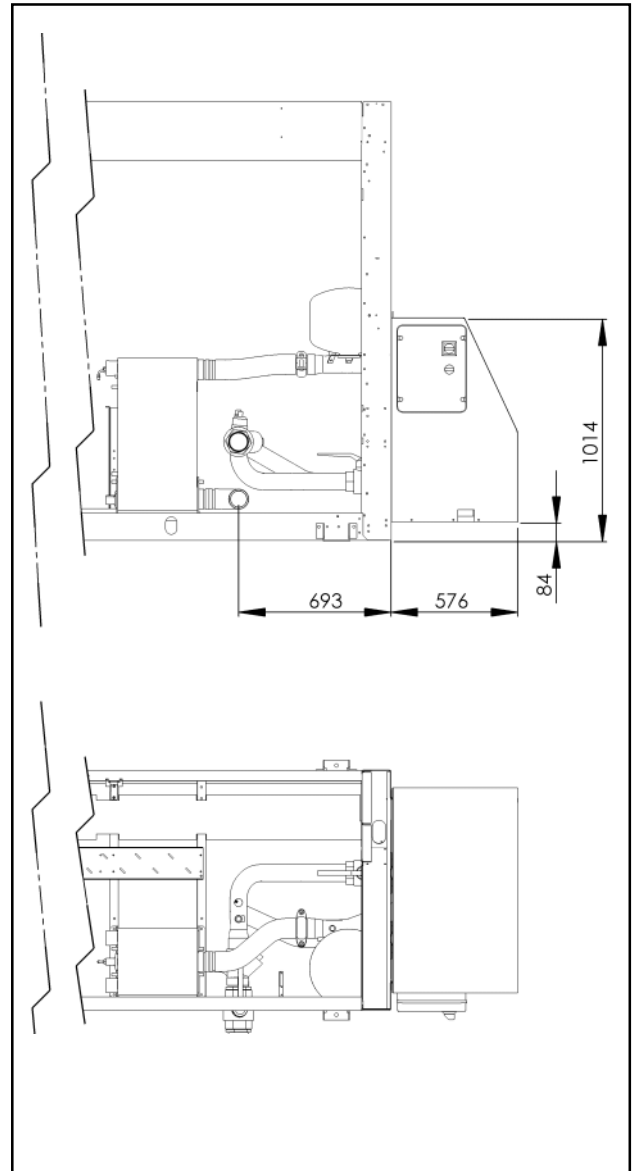
Water connections	704-804	904-1204
Water outlet "A"	2" /12 Male	3" Male
Water inlet "B" (with pump)	2" /12 Male	3" Male
Water inlet "C" (no pump)	2" /12 Male	3" Male
Desuperheater in/out "D"	4 x 2" Female	4 x 2" Female

# Dimensions - Pump Kit (optional)

Models VLH 504-604 STD/LN/HE



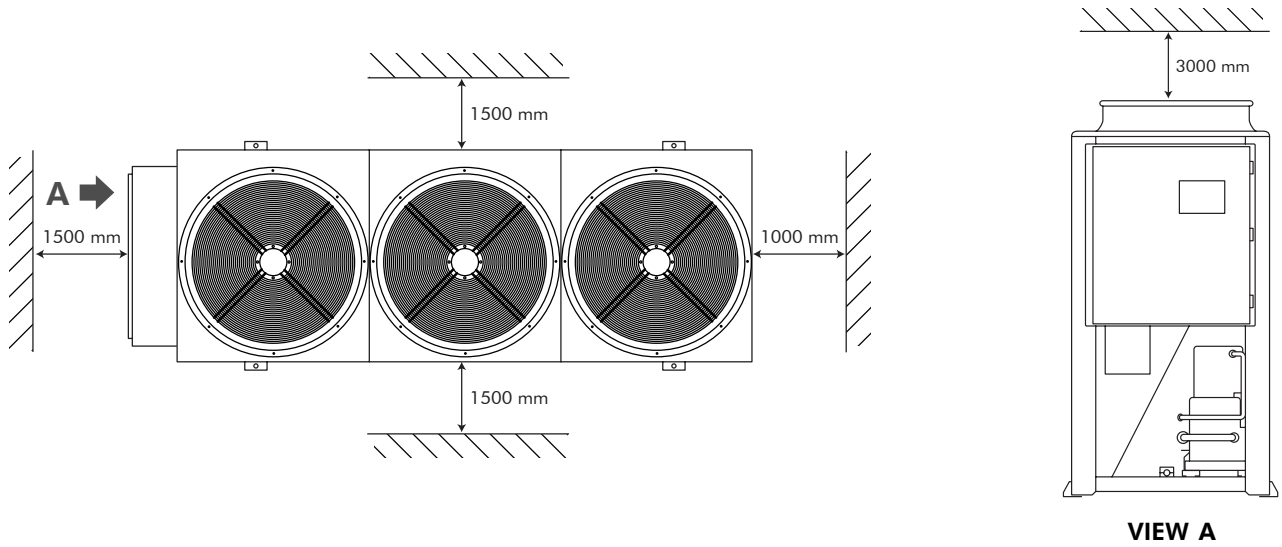
Models VLH 604-1204 ELN, 704-1004 STD/LN/HE and 1104-1204 STD/LN



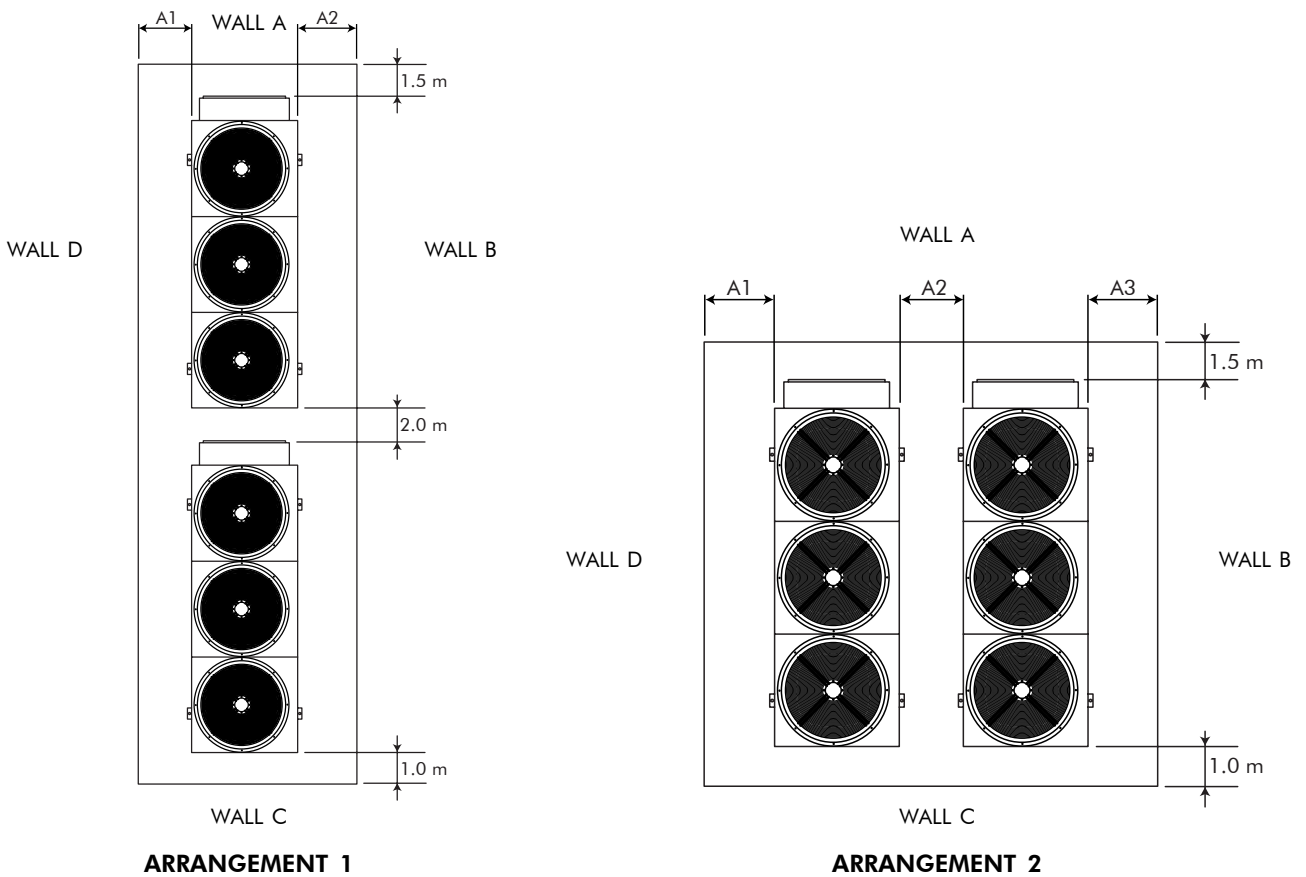


# Space Requirements

## Single unit applications



## Multi units applications



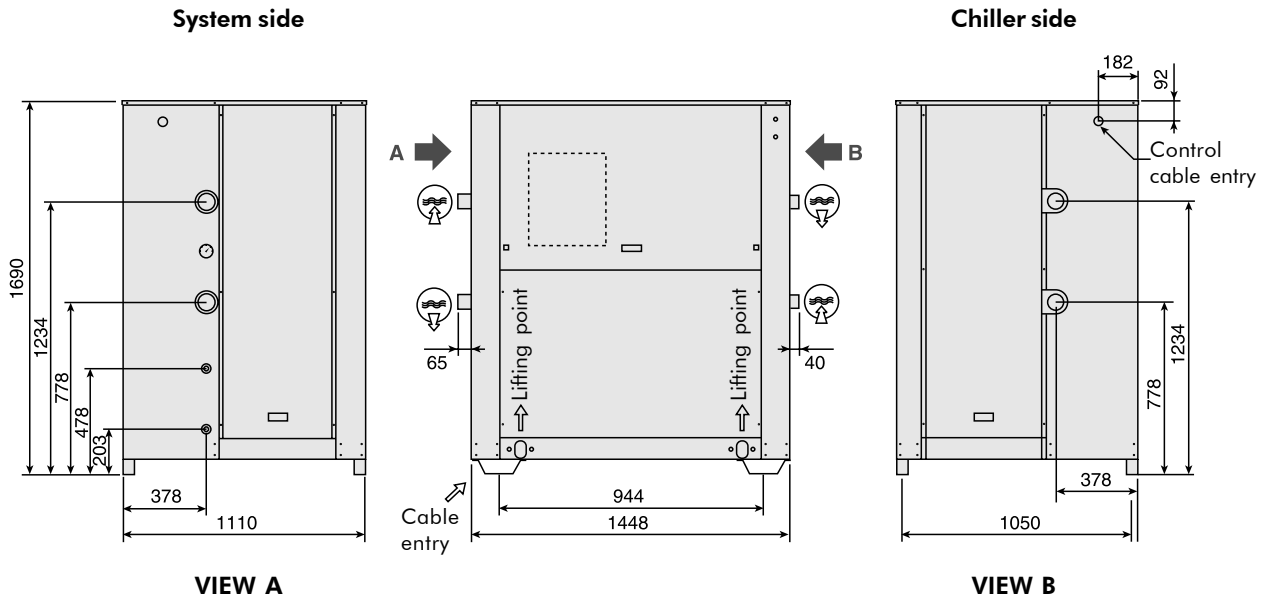
	LOUVRED A & C SOLID B & D			SOLID A & B SOLID C & D			SOLID A & C LOUVRED B & D			LOUVRED A & B SOLID C & D			LOUVRED A & D SOLID B & C		
	A1	A2	A3	A1	A2	A3	A1	A2	A3	A1	A2	A3	A1	A2	A3
<b>ARRANGEMENT 1</b>	1000	1000		1000	1000		800	800		1000	800		800	1000	
<b>ARRANGEMENT 2</b>	1000	1500	1000	1000	2000	1000	800	2000	800	1000	1500	800	800	1500	1000

**Note :** No more than one wall can be higher than the unit.  
The area enclosed by the wall must be kept clear of all obstructions that would impede air flow to the unit.

Dimensions in mm.

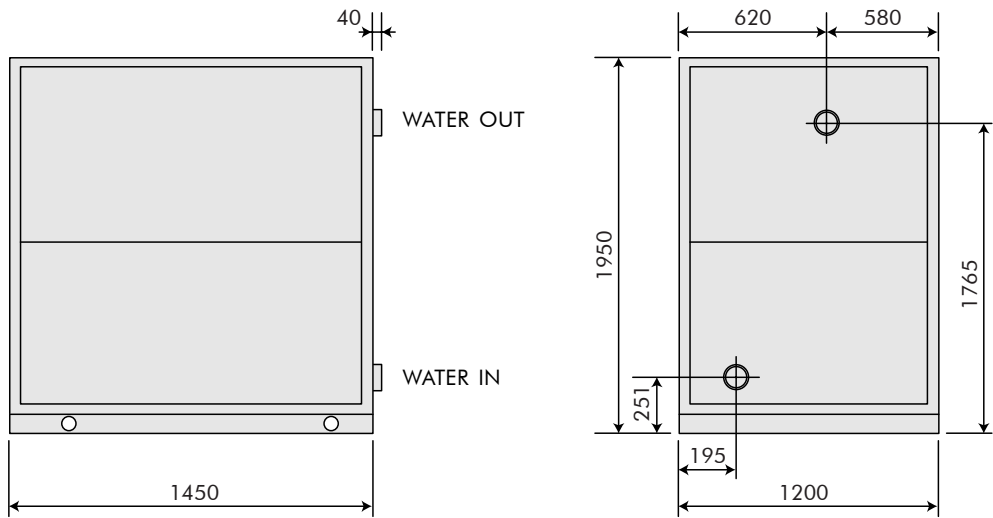
# External Hydro Kits (optional)

## Model 500 litres



Dimensions in mm.

## Models 750 & 1000 litres

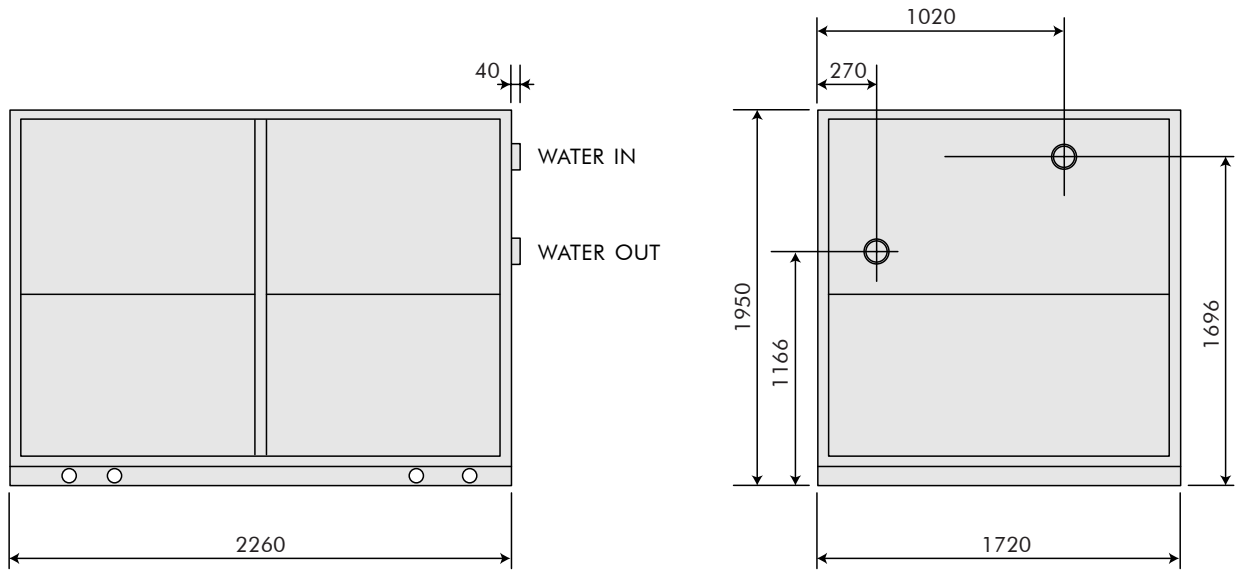


Dimensions in mm.

# External Hydro Kits (optional) (continued)

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## Model 1500 litres



Dimensions in mm.



*As part of our ongoing product improvement programme, our products are subject to change without prior notice. Non contractual photos.*

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