

▶ Air Cooled Water Chillers

VLS 504 to 1204



127 to 313 kW



Technical Brochure

TM VLS-W.6GB

Date : July 2006

Supersedes : TM VLS-W.5GB/06.05

Wesper®

Technical Features

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 **VLS** air cooled water chillers have been designed to operate with **HFC 407C** refrigerant.

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

They are complete with **two independent 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 VLS range, composed of **9 sizes**, is available in **4 versions** : **STD (Standard)**, **LN (Low Noise)**, **ELN (Extra Low Noise)** and **HE (High Efficiency)**.

VLS 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 127 to 313 kW.

VLS 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 121 to 300 kW.

VLS ELN : These units are equipped with more fans (on sizes 504 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 9 sizes of the ELN units are covering a nominal cooling capacity range from 124 to 289 kW.

VLS HE : These units have the same equipment 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 at high ambient temperatures (up to +49 °C). The 7 sizes of the HE units are covering a nominal cooling capacity range from 137 to 267 kW (VLS 1104 HE and 1204 HE are not available).

Reference standards

The following applies to all the sizes and versions belonging to the VLS 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 VLS 704, 804 & 904 and for all compressors of VLS 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 is 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 steel protective 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.

Technical Features (continued)

Control and safety devices

Each VLS 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 1.7 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 VLS 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) Anticyclone management
 - c) Management of delays at start-up
 - d) Tandem unloading for high pressure ($P_c > 26$ bar)
- Temperature control of chilled water (temperature control option at the evaporator inlet or outlet).
- Evaporator antifreeze protection.
- Management of high and low pressure alarms.
- Management of external interlocks.
- Management of the 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 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

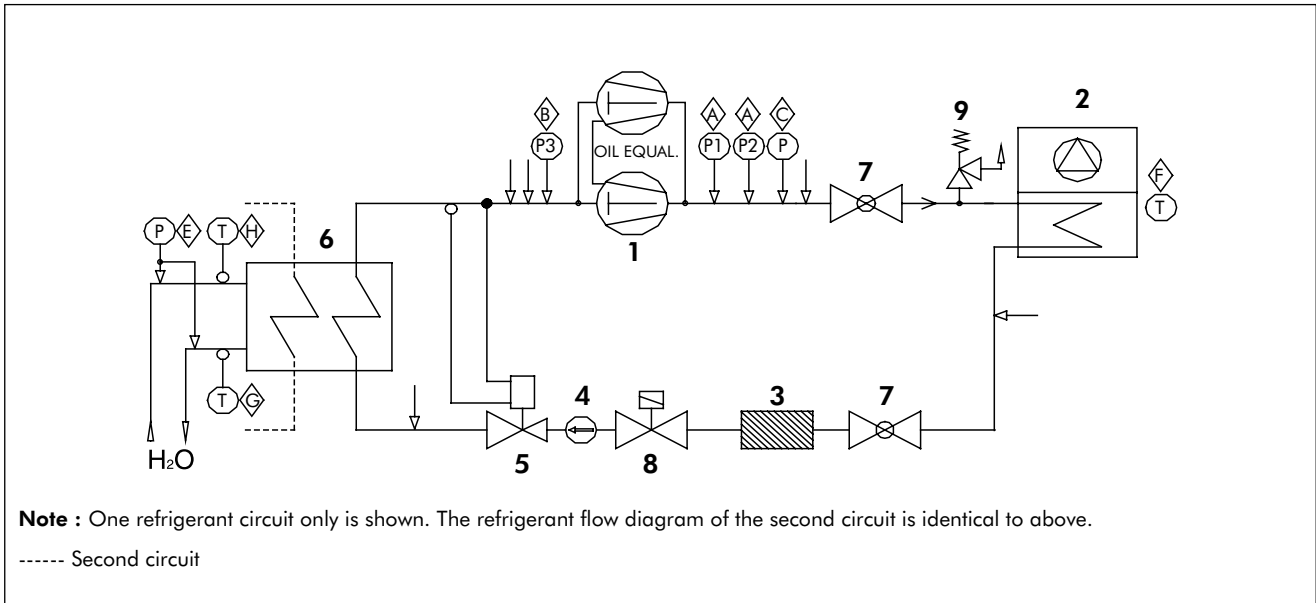
Factory installed options

- ✓ Coils with blue fins covered with a coating easing the flowing of water.
- ✓ Coils with "Silverguard" (polyurethane) coated fins.
- ✓ Coils with copper fins.
- ✓ Stepless fan speed controller (STD, LN & HE versions).
- ✓ LP & HP manometers.
- ✓ Chiller grilles.
- ✓ Special inverter fans (SIF) for 120 Pa external static pressure.
- ✓ Compressor thermal protection.
- ✓ Compressor soft starter.
- ✓ 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 : VLS 504, 554 & 604,
 - 750/1000 litres : VLS 704,
 - 750/1000/1500 litres : VLS 804 & 904,
 - 1000/1500 litres : VLS 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).
- ✓ Chiller-Net control.
- ✓ ModBus protocol kit for BMS.
- ✓ Bacnet protocol kit for BMS.
- ✓ Airconet protocol kit for BMS.

Refrigerant Flow Diagram



COMPONENTS		SAFETY / CONTROL DEVICES	
1	Tandem Scroll type compressor	Ⓐ	High pressure switch
2	Air cooled condenser	Ⓑ	Low pressure switch
3	Filter drier	Ⓒ	High pressure transducer
4	Sight glass	Ⓔ	Differential pressure switch
5	Expansion valve	Ⓕ	Air temperature sensor
6	Heat exchanger (Dual type)	Ⓖ	Outlet water temperature sensor (antifreeze and display)
7	Globe valve	Ⓖ	Inlet water temperature sensor (control & display)
8	Solenoid valve	↓	Pipe connection with Shrader valve
9	Safety valve		

Operating Limits and Correction Factors

Operating limits - VLS 504 to 804

VLS				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 +5									
		ΔT	K	3 to 8									
	Flow rate (1)	l/h	13631	36349	15029	40076	15889	42369	19425	51801	21898	58394	
	Pressure drop (1)	kPa	10.0	73.0	13.0	89.0	12.0	84.0	18.0	126.0	17.0	120.0	
	Max. operating pressure - Water side	bar	10										
Ambient air	Air entering temperature	Cooling - STD	°C	0 to +47 (3)		0 to +47 (3)		0 to +45 (3)		-5 to +46 (3)		-5 to +46 (3)	
		Cooling - LN	°C	0 to +44 (3)		0 to +43 (3)		-5 to +45 (3)		-5 to +45 (3)		0 to +44 (3)	
		Cooling - ELN	°C	-18 to +46 (3)		-18 to +47 (3)		-18 to +45 (3)		-18 to +45 (3)		-18 to +44 (3)	
		Cooling - HE	°C	-5 to +49 (3)		-5 to +49 (3)		-5 to +48 (3)		0 to +49 (3)		0 to +49 (3)	
	External static pressure	Standard fans	Pa	0									
		Special inverter fans	Pa	120									
Recommended system chilled water volume (2)			litres	380		420		450		550		620	
Power supply voltage (4)				400 V / 3 Ph / 50 Hz (nominal)									

(1) At nominal conditions for STD units.

Caution : Minimum flow rates may only be used with brine solutions after reprogramming the unit parameters.

(2) Minimum water/brine volume of system (about 3 litres/kW).

(3) High pressure switch at 28 bar.

(4) Voltage : 400 V ± 10 %

Operating limits - VLS 904 to 1204

VLS				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 +5									
		ΔT	K	3 to 8									
	Flow rate (1)	l/h	25230	67281	28283	75422	31175	83133	33648	89727			
	Pressure drop (1)	kPa	9.5	67.3	11.9	84.6	14.5	102.8	16.8	119.7			
	Max. operating pressure - Water side	bar	10										
Ambient air	Air entering temperature	Cooling - STD	°C	0 to +46 (3)		0 to +46 (3)		0 to +46 (3)		0 to +46 (3)			
		Cooling - LN	°C	0 to +45 (3)		0 to +45 (3)		0 to +43 (3)		0 to +43 (3)			
		Cooling - ELN	°C	-18 to +44 (3)		-18 to +44 (3)		-18 to +40 (3)		-18 to +40 (3)			
		Cooling - HE	°C	0 to +49 (3)		0 to +49 (3)		-		-			
	External static pressure	Standard fans	Pa	0									
		Special inverter fans	Pa	120									
Recommended system chilled water volume (2)			litres	700		790		870		940			
Power supply voltage (4)				400 V / 3 Ph / 50 Hz (nominal)									

(1) At nominal conditions for STD units.

Caution : Minimum flow rates may only be used with brine solutions after reprogramming the unit parameters.

(2) Minimum water/brine volume of system (about 3 litres/kW).

(3) High pressure switch at 28 bar.

(4) Voltage : 400 V ± 10 %

Operating Limits and Correction Factors (continued)

Fouling factors

EVAPORATOR			CONDENSER		
Fouling factor (m ² .°C/kW)	Cooling capacity factor	Power input factor	Fouling factor (m ² .°C/kW)	Cooling capacity factor	Power input factor
0.044	1.000	1.000	0.044	1.000	1.000
0.088	0.987	0.995	0.088	0.987	1.023
0.176	0.964	0.985	0.176	0.955	1.068
0.352	0.915	0.962	0.352	0.910	1.135

Altitude factors

Altitude (m)	Cooling capacity factor	Power input factor
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

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) :

$$V = \frac{P \times t}{(n \times 25 \times \Delta T)}$$

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

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

Physical Data - VLS STD

VLS STD models		504	554	604	704	804	904	1004	1104	1204
Nominal cooling capacity (1)	kW	126.8	139.8	147.8	180.7	203.7	234.7	263.1	290.0	313.0
Input cooling (2)	kW	46.0	51.9	57.5	68.8	77.6	88.4	97.7	100.2	113.5
EER		2.8	2.7	2.6	2.6	2.6	2.7	2.7	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
COMPRESSORS										
Number		4	4	4	4	4	4	4	4	4
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
EVAPORATOR										
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
AIR COOLED CONDENSERS										
Number		2	2	2	2	2	2	2	2	2
Total coil face area per coil	m ²	4.1	4.1	4.1	5.6	5.6	5.6	5.6	5.6	5.6
Number of rows		3	3	3	2	3	3	4	5	5
FANS										
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 ³ /h	40 000	40 000	40 000	72 000	69 000	86 800	81 700	82 500	82 500
Total power	kW	2.80	2.80	2.80	6.00	6.00	8.00	8.00	8.00	8.00
WEIGHT										
Shipping	kg	1204	1238	1258	1545	1670	1825	1995	2215	2240
Operating	kg	1214	1248	1270	1560	1685	1855	2025	2245	2270
Operating with pump	kg	1273	1307	1329	1640	1765	1935	2105	2325	2350
SOUND LEVELS										
Sound power levels (3)	dB(A)	89	90	90	94	94	95	96	96	96
Sound pressure levels at 10 m (3)	dB(A)	57	58	58	62	62	63	64	64	64
DIMENSIONS										
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) Compressors only.

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

Physical Data - VLS LN

VLS LN models		504	554	604	704	804	904	1004	1104	1204
Nominal cooling capacity (1)	kW	120.7	132.6	147.2	174.9	196.8	227.9	253.4	278.3	300.0
Input cooling (2)	kW	49.3	55.7	57.8	67.8	79.3	86.8	99.0	107.0	121.7
EER		2.4	2.4	2.5	2.6	2.5	2.6	2.6	2.6	2.5
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
COMPRESSORS										
Number		4	4	4	4	4	4	4	4	4
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
EVAPORATOR										
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
AIR COOLED CONDENSERS										
Number		2	2	2	2	2	2	2	2	2
Total coil face area per coil	m ²	4.1	4.1	4.1	5.6	5.6	5.6	5.6	5.6	5.6
Number of rows		3	3	3	2	3	3	4	5	5
FANS										
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 ³ /h	29 000	29 000	39 000	55 400	52 700	65 000	60 600	61 250	61 250
Total power	kW	1.90	1.90	2.80	3.90	3.90	5.20	5.20	5.20	5.20
WEIGHT										
Shipping	kg	1219	1253	1273	1585	1710	1865	2035	2230	2255
Operating	kg	1229	1263	1285	1600	1725	1895	2065	2260	2285
Operating with pump	kg	1288	1322	1344	1680	1805	1975	2145	2340	2365
SOUND LEVELS										
Sound power levels (3)	dB(A)	85	85	86	90	90	91	92	92	92
Sound pressure levels at 10 m (3)	dB(A)	53	53	54	58	58	59	60	60	60
DIMENSIONS										
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) Compressors only.

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

Physical Data - VLS ELN

VLS ELN models		504	554	604	704	804	904	1004	1104	1204
Nominal cooling capacity (1)	kW	123.8	139.0	146.8	174.7	193.9	232.4	250.5	268.7	289.2
Input cooling (2)	kW	47.6	52.2	57.9	68.5	78.0	85.1	97.2	112.6	128.5
EER		2.5	2.5	2.5	2.5	2.5	2.7	2.5	2.4	2.3
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
COMPRESSORS										
Number		4	4	4	4	4	4	4	4	4
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
EVAPORATOR										
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
AIR COOLED CONDENSERS										
Number		2	2	2	2	2	2	2	2	2
Total coil face area per coil	m ²	4.1	4.1	4.1	5.6	5.6	5.6	5.6	5.6	5.6
Number of rows		3	4	4	3	4	5	5	5	5
FANS										
Number		3	3	3	4	4	4	4	4	4
Nominal speed	rpm	550	550	550	550	550	650	650	600	600
Total air flow	m ³ /h	30 200	30 200	30 200	47 700	45 000	50 000	50 000	50 625	50 625
Total power	kW	2.80	2.80	2.80	5.20	5.20	5.20	5.20	5.20	5.20
WEIGHT										
Shipping	kg	1244	1370	1390	1728	1846	2024	2124	2269	2294
Operating	kg	1254	1380	1402	1740	1860	2050	2150	2295	2320
Operating with pump	kg	1313	1439	1461	1820	1940	2130	2230	2375	2400
SOUND LEVELS										
Sound power levels (3)	dB(A)	82	83	83	84	84	85 (4)	86 (4)	86	86
Sound pressure levels at 10 m (3)	dB(A)	50	51	51	51	51	52 (4)	54 (4)	54	54
DIMENSIONS										
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) Compressors only.

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

(4) Data refers to 32 °C ambient temperature.

Physical Data - VLS HE

VLS HE models		504	554	604	704	804	904	1004
Nominal cooling capacity (1)	kW	137.4	153.9	163.7	186.8	210.0	247.5	266.8
Input cooling (2)	kW	42.3	46.8	51.5	61.5	69.2	77.5	88.5
EER		3.2	3.3	3.2	3.0	3.0	3.2	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
COMPRESSORS								
Number		4	4	4	4	4	4	4
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
EVAPORATOR								
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
AIR COOLED CONDENSERS								
Number		2	2	2	2	2	2	2
Total coil face area per coil	m ²	4.1	4.1	4.1	5.6	5.6	5.6	5.6
Number of rows		3	4	4	3	4	5	5
FANS								
Number		3	3	3	4	4	4	4
Nominal speed	rpm	900	900	900	900	900	900	900
Total air flow	m ³ /h	57 500	54 000	54 000	86 800	81 700	77 800	77 800
Total power	kW	4.2	4.2	4.2	8.0	8.0	8.0	8.0
WEIGHT								
Shipping	kg	1214	1340	1360	1698	1816	1994	2094
Operating	kg	1224	1350	1372	1710	1830	2020	2120
Operating with pump	kg	1284	1410	1432	1790	1910	2100	2200
SOUND LEVELS								
Sound power levels (3)	dB(A)	91	92	92	95	95	95	96
Sound pressure levels at 10 m (3)	dB(A)	59	60	60	63	63	63	64
DIMENSIONS								
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) Compressors only.

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

Electrical Data

Compressors @ 400 V / 3 Ph / 50 Hz

VLS 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 ²)
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	20.3	34.3	28.1	47.5	272	0.84	250	3 x 120
		20.3	34.3	28.1	47.5	272	0.84		
	Circuit 2	20.3	34.3	28.1	47.5	272	0.84		
		20.3	34.3	28.1	47.5	272	0.84		
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

VLS 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
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

VLS 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	0.94	0.94	0.94	1.30	1.30	1.30	1.30	1.30	1.30
Max. running current per fan	A	1.7	1.7	1.7	2.3	2.3	2.3	2.3	2.3	2.3
Total fan power	kW	1.88	1.88	2.82	3.9	3.9	5.2	5.2	5.2	5.2
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)

VLS ELN models		504	554	604	704	804	904	1004	1104	1204
Number of fans		3	3	3	4	4	4	4	4	4
Nominal power per fan	kW	0.94	0.94	0.94	1.30	1.30	1.30	1.30	1.30	1.30
Max. running current per fan	A	1.7	1.7	1.7	2.3	2.3	2.3	2.3	2.3	2.3
Total fan power	kW	2.82	2.82	2.82	5.20	5.20	5.20	5.20	5.20	5.20
Total max. fan current	A	5.1	5.1	5.1	9.2	9.2	9.2	9.2	9.2	9.2

VLS 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
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

VLS STD models		504	554	604	704	804	904	1004	1104	1204
Maximum power input	kW	59.4	67.4	72.0	86.0	97.0	110.0	120.0	135.0	149.0
Maximum current input	A	101.8	111.8	122.2	144.0	161.0	182.0	206.0	235.0	264.0
Start-up current	A	248	258	268	320	384	404	431	493	522

VLS LN models		504	554	604	704	804	904	1004	1104	1204
Maximum power input	kW	58.5	66.5	72.0	86.0	96.0	109.0	117.0	132.0	146.0
Maximum current input	A	99.8	109.8	121.9	142.0	160.0	180.0	199.0	228.0	257.0
Start-up current	A	246	256	268	319	383	403	424	486	515

VLS ELN models		504	554	604	704	804	904	1004	1104	1204
Maximum power input	kW	59.4	67.4	72.0	87.0	98.0	108.0	117.0	132.0	146.0
Maximum current input	A	101.5	111.5	121.9	145.0	162.0	178.0	199.0	228.0	257.0
Start-up current	A	247	257	268	321	385	400	424	486	515

VLS HE models		504	554	604	704	804	904	1004
Maximum power input	kW	60.8	68.8	73.4	90.0	101.0	112.0	120.0
Maximum current input	A	104.5	114.5	124.9	151.0	169.0	187.0	206.0
Start-up current	A	250	260	271	328	392	410	431

Sound Levels

VLS 504 to 1204 - STD Version

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

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

VLS 504 to 1204 - LN Version

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

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

VLS 504 to 1204 - ELN Version

VLS ELN models	Frequency (Hz)							Lw global dB(A)	Lp global dB(A) (1)
	125	250	500	1000	2000	4000	8000		
504 ELN	61.1	67.8	74.4	76.4	77.4	74.1	66.6	82	50
554 ELN	62.1	68.8	75.4	77.4	78.4	75.1	67.6	83	51
604 ELN	62.1	68.8	75.4	77.4	78.4	75.1	67.6	83	51
704 ELN	79.9	78.1	80.6	78.9	76.9	75.1	64.9	84	52
804 ELN	79.9	78.1	80.6	78.9	76.9	75.1	64.9	84	52
904 ELN	80.9	79.1	81.6	79.9	77.9	76.1	65.9	85 (2)	53 (2)
1004 ELN	81.9	80.1	82.6	80.9	78.9	77.1	66.9	86 (2)	54 (2)
1104 ELN	81.9	80.1	82.6	80.9	78.9	77.1	66.9	86	54
1204 ELN	81.9	80.1	82.6	80.9	78.9	77.1	66.9	86	54

(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.

VLS 504 to 1004 - HE Version

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

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

Cooling Capacities - VLS STD

VLS MODELS	LWT (°C)	Condenser entering air temperature (°C)											
		25		30		32		35		40		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)
504 STD	5	134.4	37.1	127.0	41.0	124.0	42.6	119.3	45.2	111.2	49.7	101.1	55.8
	6	138.6	37.5	131.0	41.4	127.8	43.0	123.1	45.6	114.7	50.2	104.4	56.2
	7	142.7	37.9	135.0	41.8	131.7	43.5	126.8	46.0	118.4	50.6	107.5	56.8
	8	147.1	38.3	139.0	42.2	135.7	43.9	130.7	46.5	121.9	51.2	110.9	57.3
	9	151.3	38.7	143.2	42.6	139.8	44.3	134.5	47.0	125.6	51.6	114.2	57.8
	10	155.7	39.1	147.3	43.1	143.8	44.8	138.4	47.4	129.2	52.1		
	11	160.1	39.5	151.4	43.5	147.8	45.3	142.4	47.9	132.9	52.6		
	12	164.6	39.9	155.7	44.0	152.1	45.7	146.5	48.3	136.7	53.1		
	15	178.2	41.3	168.6	45.4	164.7	47.1	158.7	49.8	148.2	54.7		
554 STD	5	148.0	42.1	140.1	46.3	136.8	48.1	131.8	50.8	123.2	55.6	112.4	61.7
	6	152.5	42.6	144.3	46.8	140.9	48.6	135.7	51.4	127.2	56.0	115.9	62.3
	7	157.0	43.1	148.6	47.3	145.2	49.1	139.8	51.9	130.8	56.7	119.3	62.9
	8	161.5	43.6	152.8	47.9	149.3	49.7	143.9	52.4	134.6	57.3		
	9	166.2	44.2	157.3	48.5	153.6	50.3	148.0	53.0	138.4	57.9		
	10	170.7	44.7	161.6	49.1	157.9	50.8	152.2	53.6	142.3	58.5		
	11	175.4	45.2	166.1	49.6	162.3	51.4	156.4	54.2	146.2	59.1		
	12	180.2	45.8	170.5	50.2	166.6	52.0	160.6	54.8	150.2	59.7		
	15	194.6	47.5	184.2	51.9	180.1	53.8	173.5	56.6	162.3	61.6		
604 STD	5	157.2	46.6	148.5	51.2	145.0	53.1	139.5	56.2	130.1	61.5		
	6	161.8	47.2	152.9	51.8	149.2	53.8	143.6	56.8	133.9	62.2		
	7	166.5	47.8	157.3	52.5	153.6	54.4	147.8	57.5	138.0	62.9		
	8	171.3	48.4	161.8	53.1	158.0	55.1	152.1	58.2	141.9	63.6		
	9	176.0	49.0	166.4	53.8	162.4	55.7	156.2	58.9	145.8	64.3		
	10	180.8	49.7	171.0	54.4	166.8	56.4	160.7	59.5	149.8	65.1		
	11	185.8	50.3	175.6	55.1	171.3	57.1	164.9	60.3	153.9	65.8		
	12	190.6	51.0	180.2	55.8	175.8	57.8	169.3	61.0	157.9	66.6		
	15	205.6	53.0	194.3	57.9	189.6	60.0	182.5	63.3	170.4	68.9		
704 STD	5	189.3	56.2	180.2	61.7	176.4	63.9	170.5	67.3	158.5	74.8	143.7	84.3
	6	195.0	56.8	185.4	62.4	181.6	64.6	175.5	68.1	163.2	75.6	147.9	85.2
	7	200.6	57.5	190.9	63.1	186.8	65.4	180.7	68.8	167.9	76.3	152.3	86.0
	8	205.7	58.2	195.7	63.8	191.6	66.1	185.2	69.6	172.2	77.1		
	9	210.8	58.9	200.6	64.5	196.2	66.8	189.9	70.3	176.5	77.8		
	10	215.8	59.6	205.4	65.2	201.0	67.6	194.4	71.1	180.5	78.6		
	11	220.9	60.4	210.4	66.0	205.8	68.4	199.0	71.9	185.0	79.5		
	12	226.1	61.1	215.1	66.8	210.6	69.1	203.6	72.6	189.2	80.3		
	15	241.5	63.4	229.9	69.1	225.1	71.5	217.4	75.1				
804 STD	5	213.5	63.4	203.2	69.6	198.9	72.1	192.2	75.9	178.7	84.3	162.0	95.1
	6	219.8	64.1	209.1	70.3	204.8	72.9	197.9	76.8	184.0	85.2	166.8	96.1
	7	226.2	64.8	215.2	71.1	210.7	73.7	203.7	77.6	189.3	86.1	171.7	97.0
	8	231.9	65.6	220.7	71.9	216.1	74.5	208.8	78.5	194.1	86.9	176.0	97.9
	9	237.7	66.4	226.1	72.8	221.3	75.4	214.1	79.3	199.0	87.8	180.4	98.8
	10	243.4	67.3	231.6	73.6	226.7	76.3	219.2	80.2	203.5	88.7		
	11	249.1	68.1	237.2	74.4	232.0	77.1	224.4	81.1	208.6	89.7		
	12	255.0	68.9	242.6	75.4	237.5	78.0	229.6	81.9	213.4	90.6		
	15	272.3	71.6	259.3	77.9	253.8	80.6	245.2	84.8	228.0	93.4		

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

Cooling Capacities - VLS STD (continued)

VLS MODELS	LWT (°C)	Condenser entering air temperature (°C)											
		25		30		32		35		40		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)
904 STD	5	246.0	72.2	234.2	79.2	229.2	82.1	221.5	86.5	205.9	96.1	186.7	108.3
	6	253.3	73.0	240.9	80.1	236.0	83.0	228.0	87.5	212.1	97.1	192.2	109.5
	7	260.7	73.9	248.0	81.0	242.8	84.0	234.7	88.4	218.1	98.1	197.8	110.5
	8	267.2	74.8	254.3	81.9	249.0	84.9	240.6	89.4	223.7	99.0	202.8	111.5
	9	273.9	75.6	260.6	82.9	255.0	85.9	246.7	90.3	229.4	100.0	207.9	112.6
	10	280.4	76.6	266.9	83.8	261.2	86.9	252.6	91.4	234.6	101.0	212.8	113.7
	11	287.0	77.6	273.3	84.8	267.4	87.8	258.6	92.3	240.4	102.1	217.9	114.8
	12	293.8	78.5	279.5	85.8	273.7	88.8	264.6	93.3	245.9	103.2		
	15	313.8	81.5	298.8	88.8	292.4	91.9	282.5	96.6	262.8	106.4		
1004 STD	5	275.7	79.8	262.4	87.6	256.8	90.8	248.3	95.6	230.8	106.2	209.2	119.7
	6	283.9	80.7	270.0	88.6	264.4	91.8	255.6	96.7	237.7	107.3	215.4	121.0
	7	292.1	81.6	278.0	89.5	272.0	92.8	263.1	97.7	244.5	108.4	221.7	122.1
	8	299.5	82.6	285.0	90.5	279.0	93.8	269.6	98.8	250.7	109.4	227.3	123.3
	9	307.0	83.6	292.0	91.6	285.7	94.9	276.5	99.8	257.0	110.5	233.0	124.4
	10	314.3	84.7	299.1	92.6	292.7	96.0	283.1	101.0	262.9	111.7	238.5	125.7
	11	321.6	85.8	306.3	93.7	299.6	97.1	289.8	102.1	269.4	112.9	244.2	126.9
	12	329.3	86.8	313.2	94.9	306.7	98.2	296.5	103.1	275.6	114.1		
	15	351.7	90.1	334.8	98.1	327.7	101.5	316.6	106.7	294.5	117.6		
1104 STD	5	303.9	81.8	289.3	89.8	283.1	93.1	273.7	98.1	254.4	108.9	230.7	122.8
	6	313.0	82.7	297.7	90.8	291.5	94.1	281.7	99.2	262.0	110.0	237.5	124.1
	7	322.1	83.7	306.4	91.8	299.9	95.2	290.0	100.2	269.5	111.2	244.4	125.3
	8	330.1	84.7	314.2	92.8	307.6	96.2	297.3	101.3	276.4	112.2		
	9	338.4	85.7	321.9	94.0	315.0	97.3	304.8	102.3	283.4	113.4		
	10	346.4	86.9	329.7	95.0	322.7	98.5	312.1	103.6	289.8	114.5		
	11	354.6	88.0	337.7	96.1	330.3	99.6	319.5	104.7	297.0	115.8		
	12	363.0	89.0	345.3	97.3	338.1	100.7	326.9	105.8	303.8	117.0		
	15	387.7	92.4	369.1	100.6	361.3	104.1	349.0	109.4				
1204 STD	5	328.0	92.7	312.2	101.7	305.6	105.4	295.4	111.1	274.6	123.4	249.0	139.1
	6	337.8	93.7	321.3	102.9	314.6	106.6	304.1	112.3	282.8	124.6	256.3	140.6
	7	347.6	94.8	330.7	104.0	323.7	107.9	313.0	113.5	290.9	125.9	263.8	141.9
	8	356.3	96.0	339.1	105.2	332.0	109.0	320.8	114.8	298.3	127.1		
	9	365.2	97.1	347.5	106.4	340.0	110.3	329.0	115.9	305.8	128.4		
	10	373.9	98.4	355.9	107.6	348.3	111.5	336.8	117.3	312.8	129.7		
	11	382.7	99.6	364.4	108.8	356.5	112.8	344.9	118.6	320.5	131.1		
	12	391.8	100.8	372.7	110.2	364.9	114.1	352.8	119.8	327.9	132.5		
	15	418.4	104.7	398.4	114.0	389.9	118.0	376.7	124.0				

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

Cooling Capacities - VLS LN

VLS MODELS	LWT (°C)	Condenser entering air temperature (°C)											
		25		30		32		35		40		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)
504 LN	5	129.1	39.9	121.7	43.9	118.6	45.6	113.9	48.2	105.9	52.9		
	6	133.0	40.3	125.2	44.4	122.2	46.1	117.3	48.8	109.0	53.5		
	7	136.8	40.8	129.0	44.9	125.8	46.6	120.7	49.3	112.3	54.0		
	8	140.7	41.4	132.7	45.5	129.3	47.2	124.2	49.9	115.6	54.6		
	9	144.7	41.9	136.4	46.0	133.0	47.8	127.8	50.4	118.8	55.2		
	10	148.7	42.4	140.1	46.6	136.6	48.3	131.2	51.1	122.2	55.9		
	11	152.6	43.0	143.9	47.2	140.3	48.9	134.9	51.6	125.5	56.5		
	12	156.7	43.5	147.7	47.7	144.0	49.5	138.4	52.3	128.7	57.1		
	15	169.0	45.2	159.4	49.5	155.4	51.3	149.3	54.1				
554 LN	5	141.7	45.5	133.6	49.8	130.3	51.6	125.4	54.4	116.8	59.2		
	6	145.7	46.1	137.4	50.5	134.0	52.3	129.0	55.1	120.2	59.9		
	7	149.7	46.8	141.3	51.1	137.9	53.0	132.6	55.7	123.5	60.6		
	8	153.9	47.4	145.2	51.8	141.6	53.6	136.2	56.4	126.9	61.3		
	9	158.1	48.1	149.1	52.5	145.5	54.3	139.9	57.2	130.3	62.0		
	10	162.2	48.8	153.1	53.2	149.3	55.0	143.5	57.9	133.7	62.8		
	11	166.5	49.4	157.1	53.9	153.1	55.7	147.3	58.6	137.2	63.5		
	12	170.6	50.1	160.9	54.6	157.1	56.5	151.0	59.3				
	15	183.5	52.3	173.1	56.8	168.8	58.7	162.4	61.5				
604 LN	5	156.6	46.8	148.0	51.5	144.3	53.4	139.0	56.4	129.6	61.8		
	6	161.3	47.4	152.3	52.1	148.7	54.1	143.1	57.1	133.4	62.5		
	7	165.9	48.1	156.7	52.8	152.9	54.7	147.2	57.8	137.2	63.3		
	8	170.6	48.7	161.2	53.4	157.3	55.4	151.4	58.5	141.3	63.9		
	9	175.4	49.3	165.8	54.1	161.7	56.1	155.7	59.2	145.1	64.7		
	10	180.2	50.0	170.3	54.7	166.2	56.8	159.9	59.9	149.1	65.5		
	11	185.1	50.6	174.8	55.5	170.6	57.5	164.2	60.6	153.1	66.2		
	12	189.9	51.3	179.4	56.1	175.1	58.2	168.4	61.4	157.3	66.9		
	15	204.7	53.4	193.3	58.4	188.8	60.4	181.7	63.6				
704 LN	5	183.3	55.4	174.5	60.8	170.7	63.0	165.1	66.4	153.4	73.7		
	6	188.7	56.0	179.5	61.5	175.8	63.7	169.9	67.1	158.0	74.5		
	7	194.2	56.7	184.8	62.1	180.9	64.4	174.9	67.8	162.5	75.2		
	8	199.1	57.3	189.5	62.8	185.5	65.1	179.3	68.6	166.7	75.9		
	9	204.1	58.0	194.1	63.6	190.0	65.9	183.8	69.2	170.9	76.7		
	10	208.9	58.8	198.8	64.3	194.6	66.6	188.2	70.1	174.8	77.5		
	11	213.8	59.5	203.6	65.0	199.2	67.4	192.7	70.8	179.1	78.3		
	12	218.9	60.2	208.3	65.8	203.9	68.1	197.1	71.6	183.2	79.2		
	15	233.8	62.5	222.6	68.1	217.9	70.5	210.5	74.1	195.8	81.6		
804 LN	5	206.2	64.7	196.3	71.1	192.1	73.7	185.7	77.6	172.6	86.2		
	6	212.4	65.5	202.0	71.9	197.8	74.5	191.2	78.5	177.8	87.1		
	7	218.6	66.3	207.9	72.7	203.5	75.4	196.8	79.3	182.9	88.0		
	8	224.0	67.1	213.2	73.5	208.7	76.2	201.7	80.2	187.6	88.8		
	9	229.6	67.9	218.5	74.4	213.8	77.0	206.9	81.0	192.3	89.7		
	10	235.1	68.7	223.7	75.2	219.0	77.9	211.8	82.0	196.7	90.6		
	11	240.6	69.6	229.1	76.0	224.2	78.8	216.8	82.8	201.5	91.6		
	12	246.3	70.4	234.3	77.0	229.5	79.7	221.8	83.7	206.1	92.6		
	15	263.1	73.1	250.5	79.7	245.2	82.4	236.9	86.6	220.3	95.5		

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

Cooling Capacities - VLS LN (continued)

VLS MODELS	LWT (°C)	Condenser entering air temperature (°C)											
		25		30		32		35		40		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)
904 LN	5	238.9	70.9	227.4	77.8	222.5	80.6	215.1	85.0	200.0	94.3		
	6	246.0	71.7	234.0	78.7	229.1	81.5	221.4	85.9	205.9	95.3		
	7	253.1	72.5	240.8	79.6	235.7	82.5	227.9	86.8	211.8	96.3		
	8	259.5	73.4	247.0	80.4	241.8	83.4	233.6	87.8	217.2	97.2		
	9	266.0	74.3	253.0	81.4	247.6	84.3	239.6	88.6	222.7	98.2		
	10	272.3	75.2	259.1	82.3	253.6	85.3	245.3	89.7	227.8	99.2		
	11	278.7	76.2	265.4	83.2	259.6	86.3	251.1	90.7	233.4	100.3		
	12	285.3	77.1	271.4	84.3	265.8	87.2	256.9	91.6	238.8	101.4		
	15	304.7	80.0	290.1	87.2	284.0	90.2	274.3	94.8	255.2	104.5		
1004 LN	5	265.5	80.8	252.8	88.7	247.4	92.0	239.1	96.9	222.3	107.6		
	6	273.5	81.7	260.1	89.7	254.7	93.0	246.1	98.0	228.9	108.7		
	7	281.4	82.7	267.7	90.7	262.0	94.1	253.4	99.0	235.5	109.9		
	8	288.4	83.7	274.5	91.7	268.8	95.1	259.7	100.1	241.5	110.9		
	9	295.7	84.7	281.3	92.8	275.2	96.2	266.3	101.1	247.6	112.0		
	10	302.7	85.8	288.1	93.8	281.9	97.3	272.7	102.3	253.2	113.1		
	11	309.8	86.9	295.0	94.9	288.6	98.4	279.2	103.4	259.5	114.4		
	12	317.1	87.9	301.7	96.1	295.4	99.5	285.6	104.5	265.4	115.6		
	15	338.7	91.3	322.5	99.4	315.7	102.9	305.0	108.1	283.6	119.2		
1104 LN	5	291.6	87.4	277.6	95.9	271.7	99.4	262.6	104.7	244.1	116.3		
	6	300.3	88.3	285.7	97.0	279.8	100.5	270.4	105.9	251.4	117.5		
	7	309.1	89.4	294.1	98.1	287.8	101.7	278.3	107.0	258.6	118.7		
	8	316.8	90.5	301.5	99.1	295.2	102.8	285.3	108.2	265.2	119.8		
	9	324.7	91.6	308.9	100.3	302.3	103.9	292.5	109.3	271.9	121.1		
	10	332.5	92.7	316.4	101.4	309.7	105.1	299.5	110.6	278.1	122.3		
	11	340.3	93.9	324.0	102.6	317.0	106.3	306.6	111.8	285.0	123.6		
	12	348.3	95.0	331.4	103.9	324.5	107.5	313.7	113.0	291.5	125.0		
	15	372.0	98.7	354.2	107.5	346.7	111.2	335.0	116.9				
1204 LN	5	314.4	99.4	299.3	109.1	292.9	113.1	283.1	119.1	263.2	132.3		
	6	323.8	100.5	307.9	110.3	301.6	114.3	291.4	120.5	271.1	133.7		
	7	333.2	101.7	317.0	111.5	310.2	115.6	300.0	121.7	278.8	135.0		
	8	341.5	102.9	325.0	112.8	318.2	116.9	307.5	123.1	285.9	136.3		
	9	350.1	104.1	333.0	114.1	325.9	118.2	315.3	124.3	293.1	137.7		
	10	358.4	105.5	341.1	115.4	333.8	119.6	322.8	125.8	299.8	139.1		
	11	366.8	106.8	349.3	116.7	341.7	120.9	330.5	127.1	307.2	140.6		
	12	375.5	108.1	357.2	118.2	349.8	122.3	338.2	128.5	314.3	142.1		
	15	401.0	112.2	381.8	122.2	373.7	126.5	361.1	132.9				

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

Cooling Capacities - VLS ELN

VLS models	LWT (°C)	Condenser entering air temperature (°C)											
		25		30		32		35		40		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)
504 ELN	5	131.8	38.4	124.5	42.3	121.5	44.0	116.9	46.5	108.9	51.1	98.9	57.1
	6	135.7	38.9	128.2	42.8	125.0	44.5	120.4	47.1	112.2	51.7	101.9	57.7
	7	139.7	39.4	131.9	43.4	128.7	45.0	123.8	47.6	115.5	52.3		
	8	143.6	39.9	135.7	43.9	132.5	45.6	127.4	48.2	118.8	52.9		
	9	147.6	40.5	139.6	44.4	136.2	46.1	131.0	48.8	122.2	53.5		
	10	151.8	41.0	143.3	45.0	139.9	46.7	134.6	49.4	125.6	54.0		
	11	155.8	41.5	147.2	45.6	143.7	47.3	138.2	50.0	128.9	54.7		
	12	160.0	42.0	151.1	46.1	147.4	47.9	142.0	50.5	132.4	55.3		
	15	172.4	43.7	162.9	47.9	159.0	49.7	153.0	52.4	142.6	57.3		
554 ELN	5	147.5	42.4	139.6	46.6	136.4	48.3	131.4	51.0	122.8	55.8	112.2	61.9
	6	151.9	42.9	143.8	47.1	140.4	48.9	135.3	51.6	126.5	56.4	115.6	62.5
	7	156.3	43.5	147.9	47.7	144.5	49.5	139.0	52.2	130.2	57.0	119.0	63.1
	8	160.8	44.0	152.2	48.3	148.7	50.1	143.3	52.8	133.9	57.6		
	9	165.2	44.6	156.4	48.9	152.8	50.6	147.3	53.4	137.7	58.2		
	10	169.9	45.1	160.8	49.5	157.1	51.3	151.3	54.0	141.6	58.9		
	11	174.3	45.7	165.1	50.1	161.3	51.9	155.4	54.7	145.4	59.5		
	12	179.0	46.3	169.5	50.7	165.5	52.5	159.5	55.3	149.2	60.2		
	15	193.0	48.2	182.7	52.6	178.5	54.4	172.0	57.3	161.0	62.2		
604 ELN	5	156.5	46.9	147.8	51.5	144.3	53.5	138.9	56.5	129.6	61.8		
	6	161.1	47.6	152.2	52.2	148.6	54.2	143.0	57.2	133.4	62.5		
	7	165.7	48.2	156.5	52.9	152.8	54.8	146.8	57.9	137.2	63.3		
	8	170.3	48.9	160.9	53.6	157.1	55.5	151.1	58.6	141.0	64.0		
	9	175.0	49.5	165.3	54.3	161.3	56.3	155.3	59.4	145.0	64.8		
	10	179.6	50.2	169.8	55.0	165.7	57.0	159.5	60.1	148.9	65.6		
	11	184.4	50.9	174.2	55.7	170.1	57.7	163.8	60.8	152.8	66.4		
	12	189.3	51.6	178.8	56.5	174.5	58.5	168.0	61.6	156.7	67.2		
	15	203.7	53.8	192.4	58.8	187.8	60.8	180.8	64.0				
704 ELN	5	185.4	55.7	175.1	61.1	171.1	63.3	164.9	66.8	154.1	72.9		
	6	190.7	56.5	180.4	61.9	176.2	64.2	169.7	67.7	158.8	73.8		
	7	196.3	57.3	185.6	62.7	181.3	65.0	174.7	68.5	163.4	74.6		
	8	201.7	58.1	190.9	63.5	186.3	65.9	179.6	69.4	168.1	75.6		
	9	207.3	58.9	196.1	64.5	191.5	66.7	184.6	70.3	172.7	76.5		
	10	212.9	59.8	201.5	65.3	196.8	67.6	189.6	71.2	177.4	77.5		
	11	218.7	60.6	206.9	66.2	202.0	68.5	194.7	72.1	182.2	78.4		
	12	224.4	61.4	212.2	67.1	207.4	69.4	199.9	73.0	187.0	79.3		
	15	241.8	64.1	228.7	69.8	223.3	72.2	215.0	75.9	201.2	82.2		
804 ELN	5	205.6	63.5	194.7	69.6	190.2	72.2	183.2	76.1	171.4	82.8		
	6	211.6	64.3	200.3	70.5	195.6	73.1	188.6	77.0	176.3	83.7		
	7	217.7	65.3	206.0	71.5	201.3	74.1	193.9	78.0	181.3	84.7		
	8	223.8	66.2	211.9	72.4	207.0	75.0	199.4	79.0	186.5	85.7		
	9	230.0	67.2	217.8	73.4	212.6	76.0	204.9	80.0	191.7	86.7		
	10	236.1	68.2	223.7	74.4	218.4	77.0	210.5	80.9	196.9	87.7		
	11	242.6	69.1	229.6	75.4	224.2	78.0	216.1	82.0	202.0	88.8		
	12	248.9	70.1	235.5	76.4	230.1	79.0	221.7	83.0	207.3	89.8		
	15	268.3	73.1	253.7	79.5	247.8	82.2	238.7	86.2				

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

Cooling Capacities - VLS ELN (continued)

VLS MODELS	LWT (°C)	Condenser entering air temperature (°C)											
		25		30		32		35		40		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)
904 ELN	5	239.1	72.7	226.4	79.5	221.3	82.3	219.9	83.0	206.1	90.4		
	6	245.7	73.8	232.7	80.7	227.3	83.5	226.1	84.1	212.0	91.4		
	7	252.4	75.0	239.0	81.9	233.5	84.7	232.4	85.1	217.9	92.6		
	8	259.1	76.1	245.4	83.0	239.8	85.9	238.8	86.3	223.9	93.6		
	9	265.9	77.4	251.7	84.3	245.8	87.1	245.3	87.4	229.9	94.9		
	10	272.8	78.6	258.2	85.5	252.2	88.4	251.8	88.6	236.0	96.0		
	11	279.7	79.9	264.5	86.8	258.5	89.6	258.2	89.7	242.0	97.2		
	12	286.5	81.1	271.0	88.1	264.8	90.9	264.8	90.9	248.1	98.4		
	15	307.4	85.0	290.6	92.0	283.8	94.9	284.7	94.6				
1004 ELN	5	257.6	83.6	276.3	91.1	238.3	94.1	237.3	94.6	222.4	102.7		
	6	264.5	85.0	250.5	92.5	244.6	95.5	243.8	96.0	228.5	104.0		
	7	271.6	86.3	257.0	93.9	250.8	97.0	250.5	97.2	234.7	105.3		
	8	278.5	87.8	263.5	95.4	257.4	98.4	257.3	98.6	241.0	106.6		
	9	285.6	89.2	270.2	96.8	263.8	100.0	263.8	100.0	247.2	108.0		
	10	292.7	90.7	276.8	98.3	270.3	101.4	270.5	101.3	253.3	109.5		
	11	299.8	92.2	283.5	99.8	276.6	103.0	277.3	102.7	259.8	110.9		
	12	306.8	93.7	290.1	101.4	283.1	104.5	284.0	104.2	266.2	112.3		
	15	328.2	98.4	310.3	106.1	302.8	109.3	304.7	108.5				
1104 ELN	5	281.6	91.9	268.0	100.9	262.3	104.6	253.6	110.2	235.7	122.4		
	6	290.0	93.0	275.8	102.1	270.1	105.7	261.0	111.5	242.8	123.7		
	7	298.4	94.1	283.9	103.2	277.9	107.0	268.7	112.6	249.7	124.9		
	8	305.9	95.2	291.1	104.3	285.0	108.1	275.4	113.9				
	9	313.5	96.4	298.3	105.6	291.9	109.4	282.4	115.0				
	10	321.0	97.6	305.5	106.7	299.0	110.6	289.2	116.4				
	11	328.5	98.9	312.9	108.0	306.1	111.9	296.0	117.6				
	12	336.3	100.0	320.0	109.3	313.3	113.1	302.9	118.9				
	15	359.2	103.8	342.0	113.1	334.7	117.0	323.4	123.0				
1204 ELN	5	303.0	104.9	288.5	115.2	282.3	119.4	272.9	125.8	253.7	139.7		
	6	312.1	106.1	296.9	116.5	290.7	120.7	280.9	127.2	261.3	141.1		
	7	321.2	107.4	305.6	117.8	299.1	122.1	289.2	128.5	268.8	142.6		
	8	329.2	108.7	313.3	119.1	306.7	123.4	296.4	129.9				
	9	337.5	110.0	321.0	120.5	314.1	124.8	304.0	131.2				
	10	345.5	111.4	328.8	121.8	321.8	126.3	311.2	132.8				
	11	353.6	112.8	336.7	123.2	329.4	127.7	318.6	134.2				
	12	362.0	114.1	344.4	124.8	337.2	129.1	326.0	135.7				
	15	386.6	118.5	368.1	129.1	360.3	133.5	348.1	140.4				

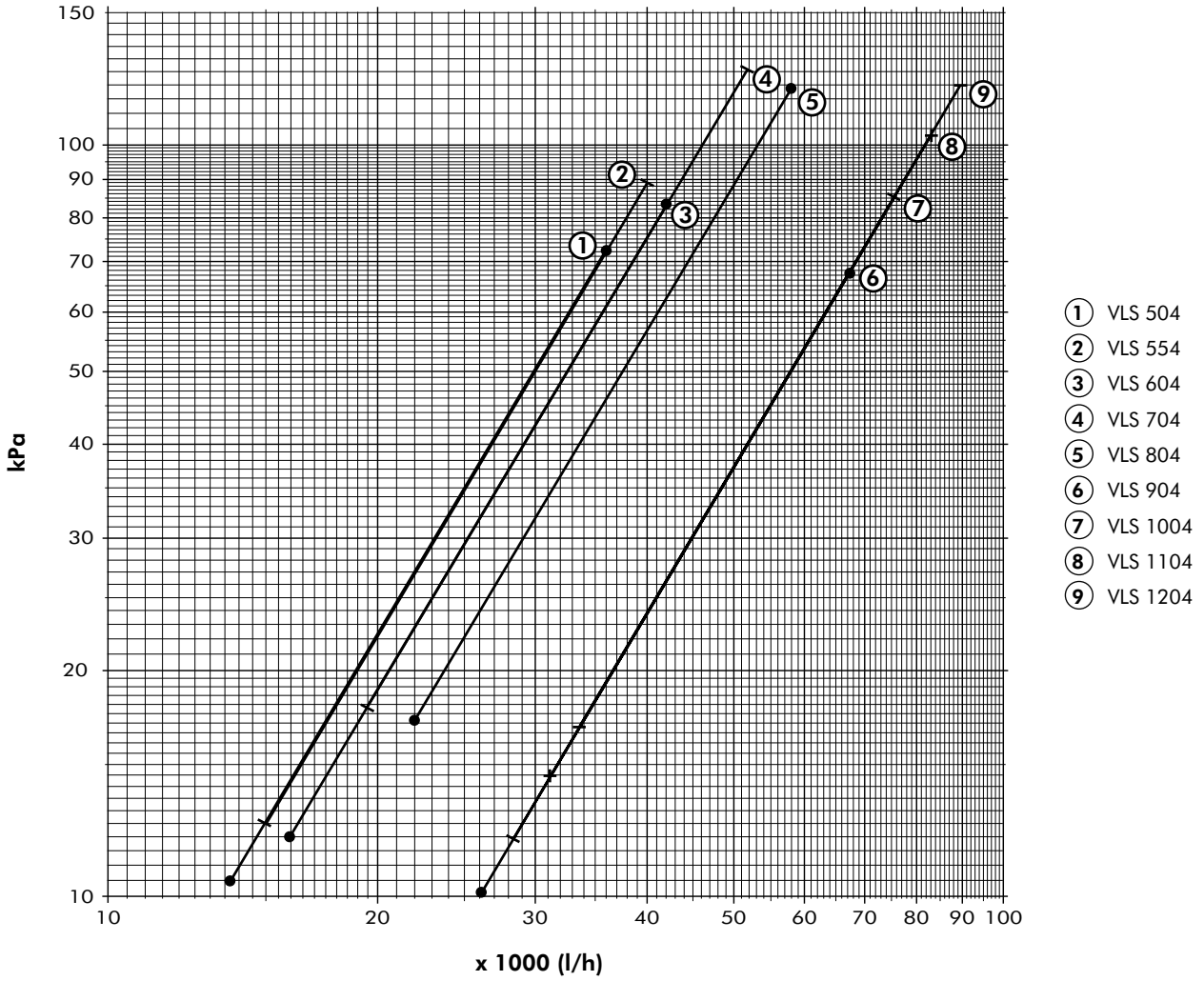
Notes : - LWT : Leaving water temperature.
 - Power input data are given for compressors only.

Cooling Capacities - VLS HE

VLS 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	146.4	34.1	138.3	37.6	135.0	39.1	129.8	41.3	121.0	45.4	109.9	50.7	105.1	52.7
	6	150.7	34.6	142.4	38.0	138.9	39.5	133.7	41.9	124.6	45.9	113.2	51.3	108.2	53.3
	7	155.1	35.0	146.5	38.6	143.0	40.0	137.4	42.3	128.3	46.5	116.5	51.8	111.4	53.9
	8	159.5	35.5	150.7	39.0	147.1	40.5	141.4	42.8	131.9	47.0	119.9	52.3	114.7	54.4
	9	163.9	36.0	155.0	39.5	151.2	41.0	145.4	43.4	135.7	47.5	123.3	53.0		
	10	168.5	36.4	159.1	40.0	155.3	41.5	149.5	43.9	139.4	48.0	126.7	53.5		
	11	173.0	36.9	163.5	40.5	159.6	42.0	153.5	44.4	143.1	48.6	130.1	54.1		
	12	177.7	37.3	167.8	41.0	163.7	42.6	157.7	44.9	147.0	49.1	133.7	54.7		
15	191.5	38.8	180.9	42.6	176.5	44.2	169.9	46.6	158.4	50.9					
554 HE	5	163.3	38.0	154.5	41.8	151.0	43.3	145.5	45.7	135.9	50.0	124.2	55.5	119.0	57.7
	6	168.1	38.5	159.2	42.2	155.4	43.8	149.8	46.3	140.1	50.6	128.0	56.0	122.6	58.2
	7	173.0	39.0	163.8	42.8	160.0	44.4	153.9	46.8	144.2	51.1	131.7	56.6		
	8	178.0	39.4	168.5	43.3	164.6	44.9	158.6	47.3	148.3	51.6	136.1	56.9		
	9	182.9	40.0	173.2	43.8	169.2	45.4	163.1	47.9	152.4	52.2	139.9	57.5		
	10	188.1	40.4	178.0	44.4	173.9	46.0	167.5	48.4	156.7	52.8	143.8	58.0		
	11	193.0	41.0	182.8	44.9	178.6	46.5	172.0	49.0	161.0	53.3	147.8	58.6		
	12	198.2	41.5	187.6	45.5	183.3	47.1	176.6	49.6	165.2	54.0				
15	213.7	43.2	202.3	47.2	197.6	48.8	190.4	51.4	178.2	55.8					
604 HE	5	174.6	41.7	164.9	45.8	161.0	47.6	155.0	50.3	144.6	55.0	132.3	60.8		
	6	179.7	42.3	169.8	46.4	165.7	48.2	159.5	50.9	148.8	55.6	136.2	61.6		
	7	184.8	42.9	174.6	47.1	170.5	48.7	163.7	51.5	153.1	56.3	139.6	62.2		
	8	190.0	43.5	179.5	47.7	175.2	49.4	168.6	52.1	157.3	56.9	144.1	62.9		
	9	195.2	44.0	184.4	48.3	179.9	50.1	173.2	52.8	161.7	57.6	148.1	63.6		
	10	200.4	44.7	189.4	48.9	184.8	50.7	177.9	53.5	166.1	58.3				
	11	205.7	45.3	194.4	49.5	189.8	51.3	182.8	54.1	170.5	59.1				
	12	211.2	45.9	199.5	50.3	194.6	52.0	187.4	54.8	174.8	59.8				
15	227.3	47.9	214.6	52.3	209.5	54.1	201.7	56.9	188.3	62.0					
704 HE	5	198.3	50.0	187.3	54.9	183.0	56.8	176.4	60.0	164.9	65.5	150.7	72.5	144.3	75.3
	6	204.0	50.7	193.0	55.6	188.5	57.6	181.5	60.8	169.8	66.3	155.4	73.3	148.8	76.1
	7	210.0	51.4	198.5	56.3	193.9	58.4	186.8	61.5	174.8	67.0	159.9	74.2	153.1	77.0
	8	215.8	52.2	204.2	57.0	199.3	59.2	192.2	62.3	179.8	67.9	164.5	75.0		
	9	221.8	52.9	209.7	57.9	204.9	59.9	197.5	63.1	184.8	68.7	169.0	75.9		
	10	227.8	53.7	215.5	58.6	210.6	60.7	202.8	63.9	189.7	69.6	173.7	76.7		
	11	233.9	54.4	221.3	59.4	216.1	61.5	208.2	64.7	194.9	70.4	178.3	77.6		
	12	240.1	55.1	227.0	60.2	221.9	62.3	213.8	65.5	200.0	71.2				
15	258.7	57.5	244.7	62.7	238.9	64.8	230.0	68.1	215.2	73.8					
804 HE	5	222.6	56.3	210.8	61.7	205.9	64.1	198.4	67.5	185.6	73.5	169.4	80.9	162.4	84.1
	6	229.1	57.0	216.9	62.5	211.8	64.9	204.2	68.3	190.9	74.3	175.1	81.4	167.7	84.7
	7	235.7	57.9	223.1	63.4	218.0	65.7	210.0	69.2	196.4	75.1	180.0	82.3	172.4	85.6
	8	242.3	58.7	229.4	64.2	224.1	66.5	215.9	70.1	201.9	76.0	185.3	83.2	177.5	86.6
	9	249.0	59.6	235.8	65.1	230.2	67.4	221.8	71.0	207.6	76.9	190.6	84.1	182.5	87.4
	10	255.7	60.5	242.2	66.0	236.5	68.3	228.0	71.8	213.2	77.8	195.7	85.0		
	11	262.6	61.3	248.7	66.9	242.7	69.2	234.0	72.7	218.8	78.8	200.9	85.9		
	12	269.5	62.2	255.0	67.8	249.1	70.1	240.0	73.6	224.4	79.7	206.2	86.9		
15	290.5	64.9	274.7	70.5	268.3	72.9	258.4	76.5	241.5	82.6					
904 HE	5	254.7	66.2	241.1	72.4	235.7	75.0	234.2	75.6	219.5	82.3	201.8	90.4	196.3	92.9
	6	261.7	67.2	247.9	73.5	242.1	76.0	240.9	76.6	225.8	83.2	207.6	91.3	202.0	93.8
	7	268.8	68.3	254.6	74.6	248.7	77.1	247.5	77.5	232.1	84.3	213.6	92.4	207.8	94.9
	8	276.0	69.3	261.4	75.6	255.4	78.2	254.3	78.6	238.4	85.2	219.3	93.4	213.5	95.9
	9	283.2	70.5	268.0	76.8	261.8	79.3	261.2	79.6	244.9	86.4	225.3	94.5	219.4	97.0
	10	290.5	71.6	275.0	77.9	268.6	80.5	268.2	80.7	251.3	87.4	231.3	95.6	225.3	98.0
	11	297.9	72.8	281.7	79.0	275.3	81.6	275.0	81.7	257.8	88.5	237.6	96.4		
	12	305.1	73.9	288.7	80.2	282.0	82.8	282.0	82.8	264.2	89.6	243.3	97.4		
15	327.4	77.4	309.5	83.8	302.2	86.4	303.2	86.2	284.2	93.0					
1004 HE	5	274.4	76.1	294.3	82.9	253.7	85.7	252.7	86.1	236.8	93.5	218.2	102.1	251.9	91.1
	6	281.7	77.4	266.8	84.2	260.5	87.0	259.6	87.4	243.4	94.7	224.3	103.3	254.0	92.3
	7	289.2	78.6	273.7	85.5	267.1	88.3	266.8	88.5	249.9	95.9	230.4	104.4	260.8	93.5
	8	296.6	79.9	280.6	86.9	274.1	89.6	274.0	89.8	256.6	97.1	236.5	105.7	267.6	94.8
	9	304.2	81.2	287.7	88.1	280.9	91.0	280.9	91.0	263.3	98.3	242.7	107.0	274.5	96.1
	10	311.7	82.6	294.7	89.5	287.8	92.3	288.1	92.2	269.8	99.7	248.8	108.3	281.3	97.4
	11	319.3	83.9	301.9	90.9	294.6	93.8	295.3	93.5	276.7	101.0	255.0	109.5		
	12	326.8	85.3	308.9	92.3	301.5	95.1	302.5	94.9	283.5	102.2	261.5	110.8		
15	349.6	89.6	330.5	96.6	322.5	99.5	324.5	98.8	303.8	106.3					

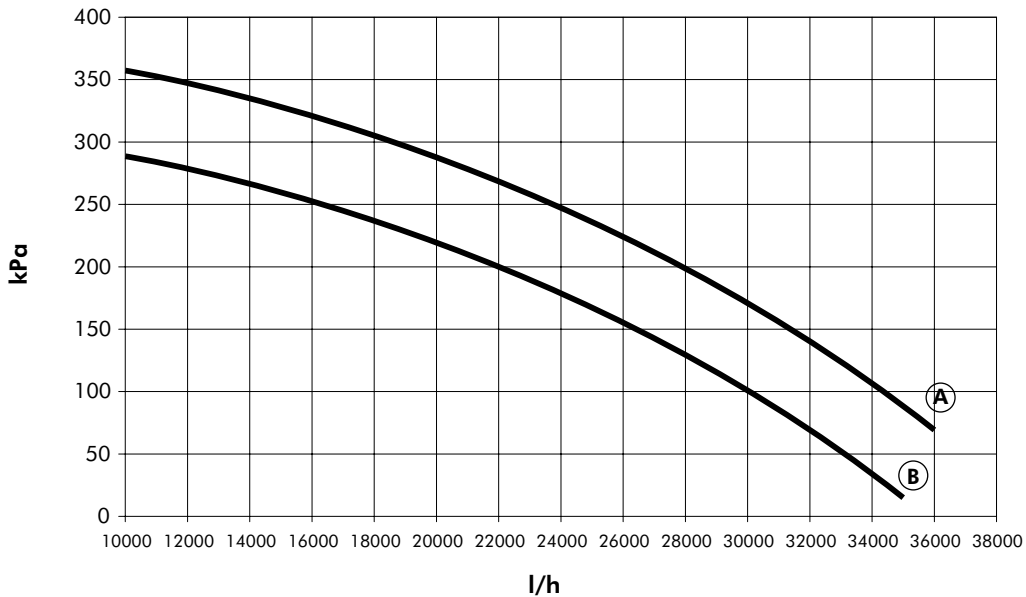
Notes : - LWT : Leaving water temperature.
 - Power input data are given for compressors only.

Water Pressure Drop Curves



Water Pump Curves

Models VLS 504 to 604

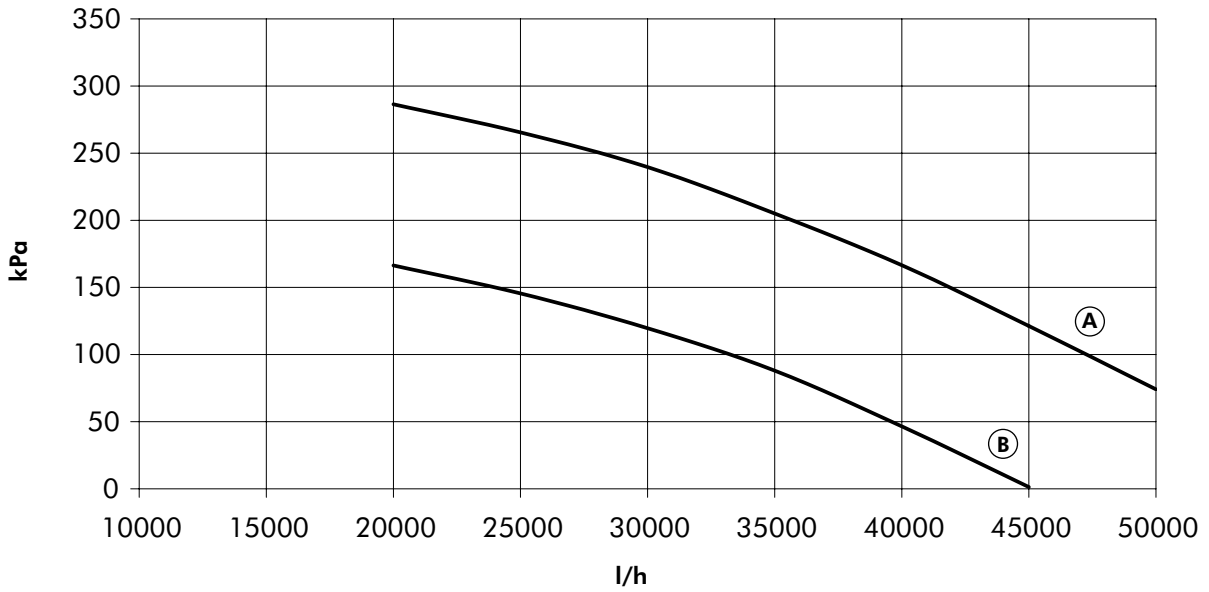


Curve A : High manometric head

Curve B : Low manometric head

Water Pump Curves (continued)

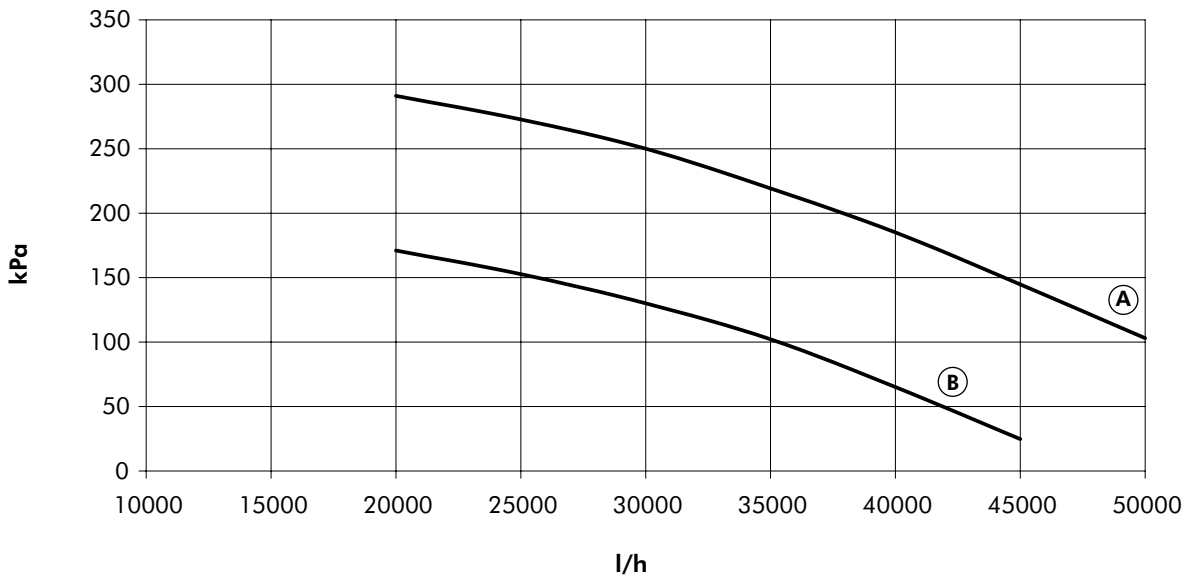
Model VLS 704



Curve A : High manometric head

Curve B : Low manometric head

Model VLS 804

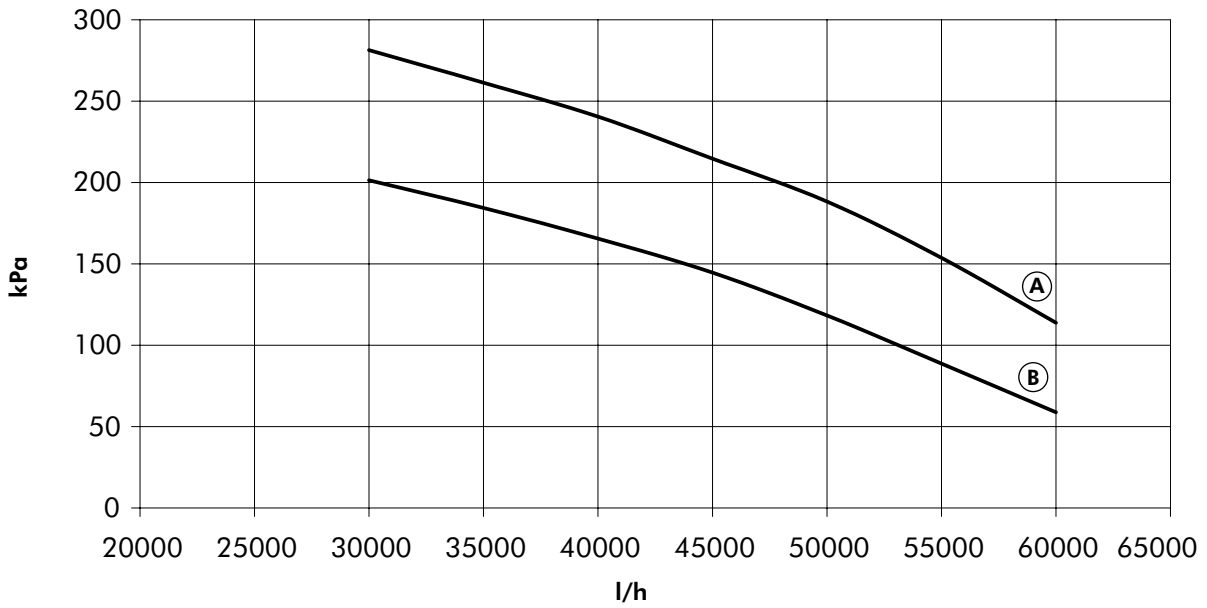


Curve A : High manometric head

Curve B : Low manometric head

Water Pump Curves (continued)

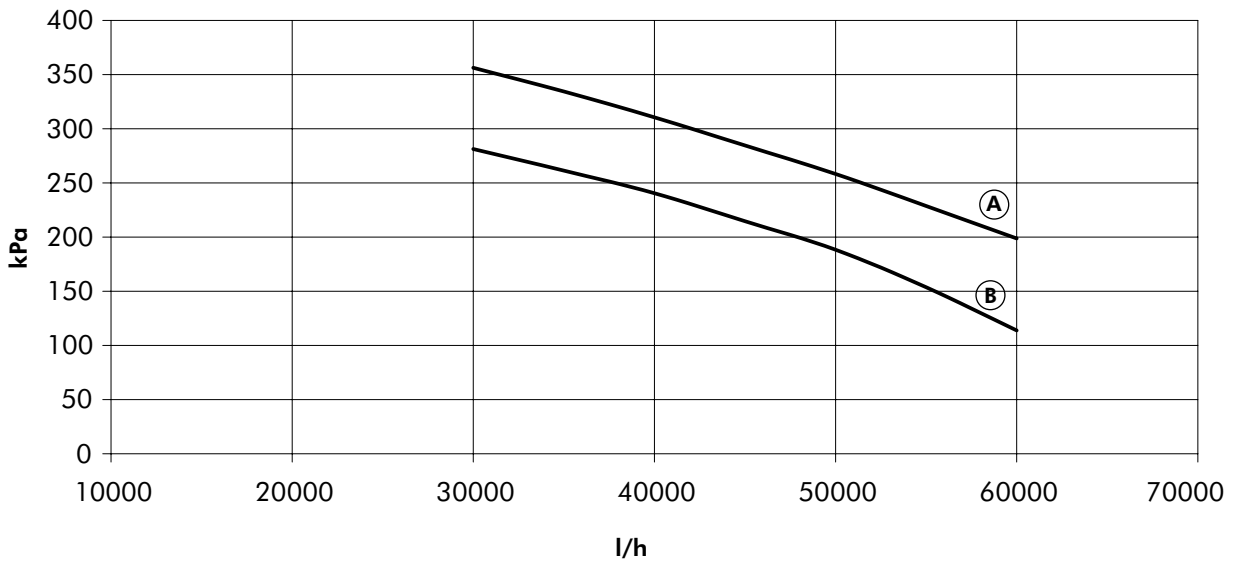
Models VLS 904 & 1004



Curve A : High manometric head

Curve B : Low manometric head

Models VLS 1104 & 1204

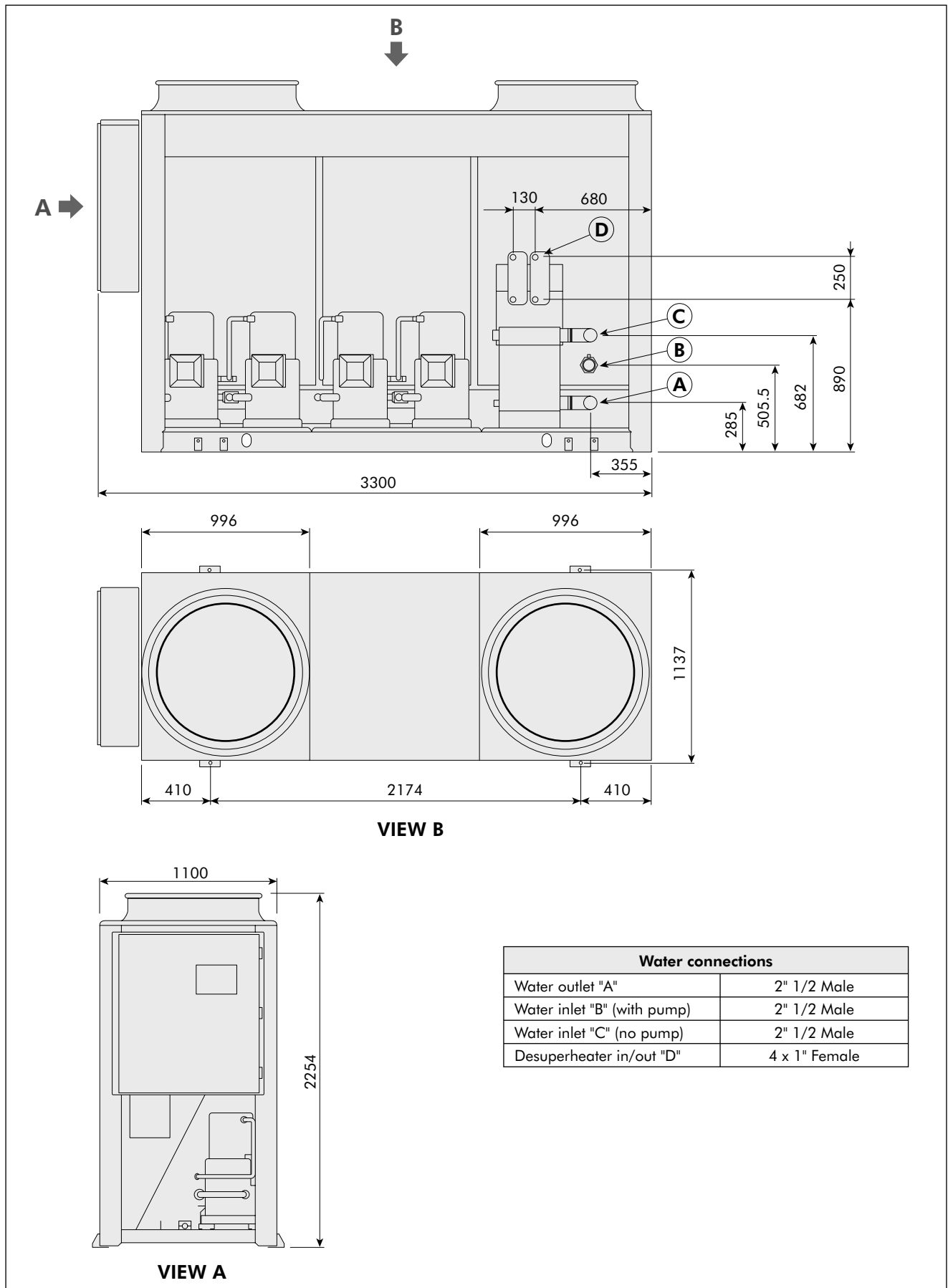


Curve A : High manometric head

Curve B : Low manometric head

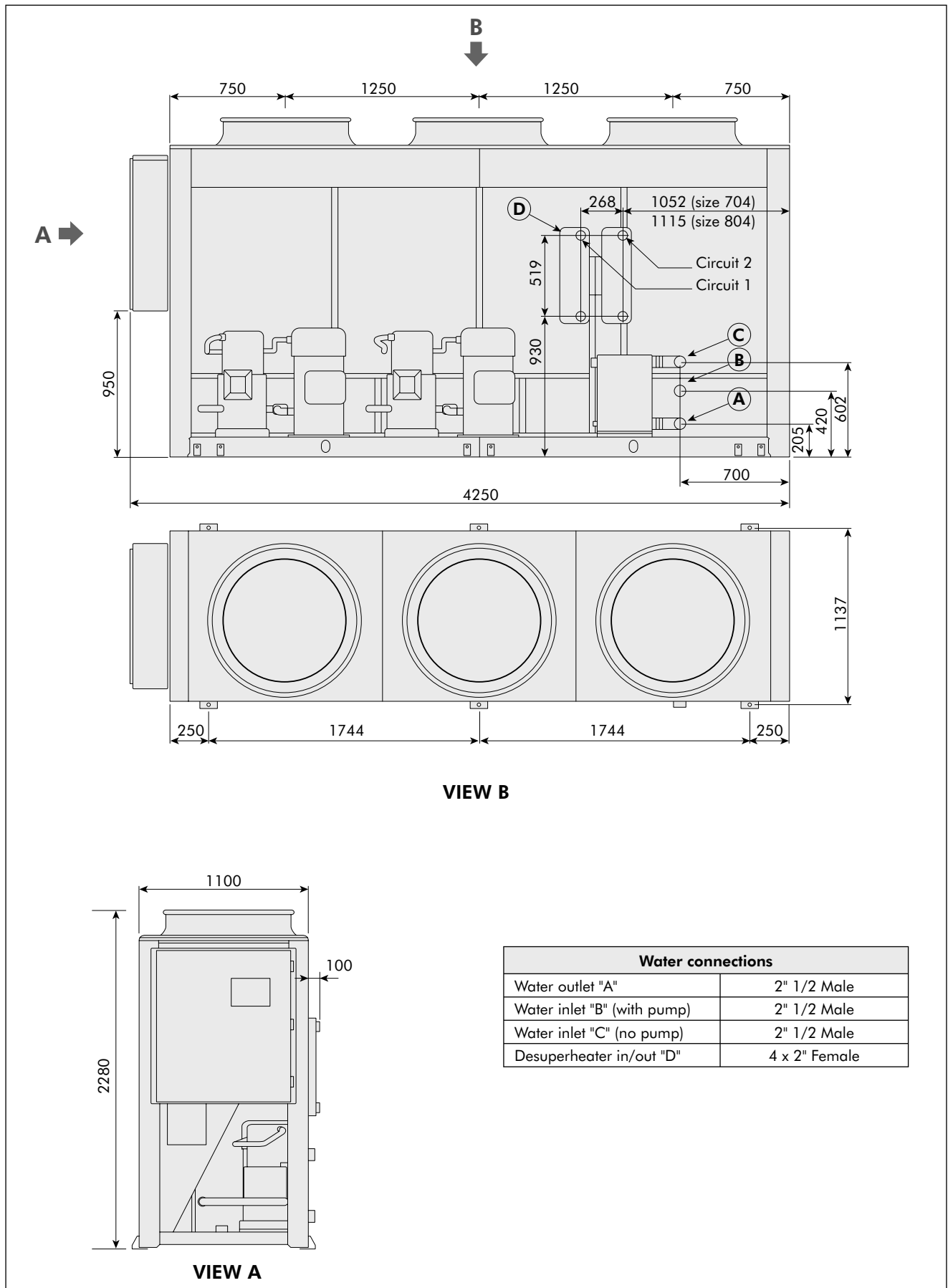
Dimensions

Models VLS 504 - 554 STD/LN and 604 STD



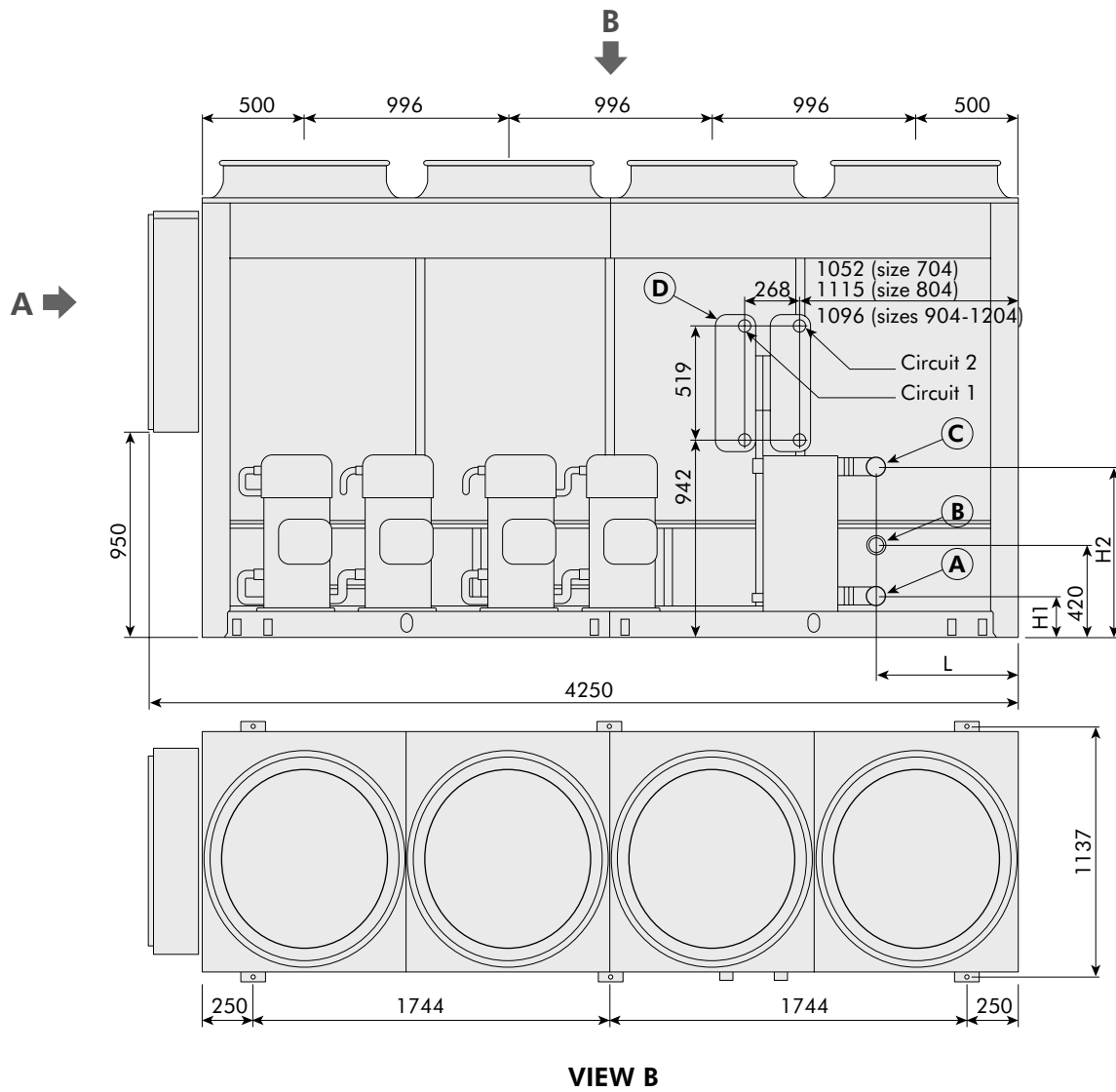
Dimensions (continued)

Models VLS 704 - 804 STD/LN

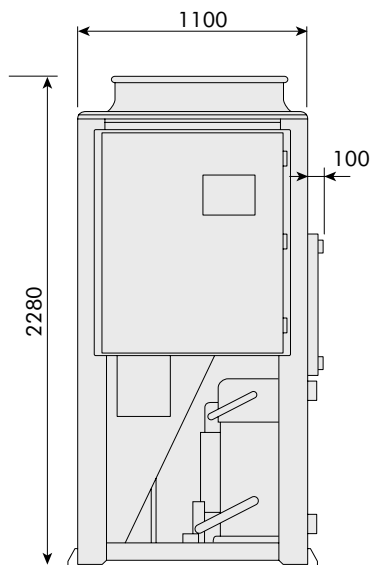


Dimensions (continued)

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



VIEW B



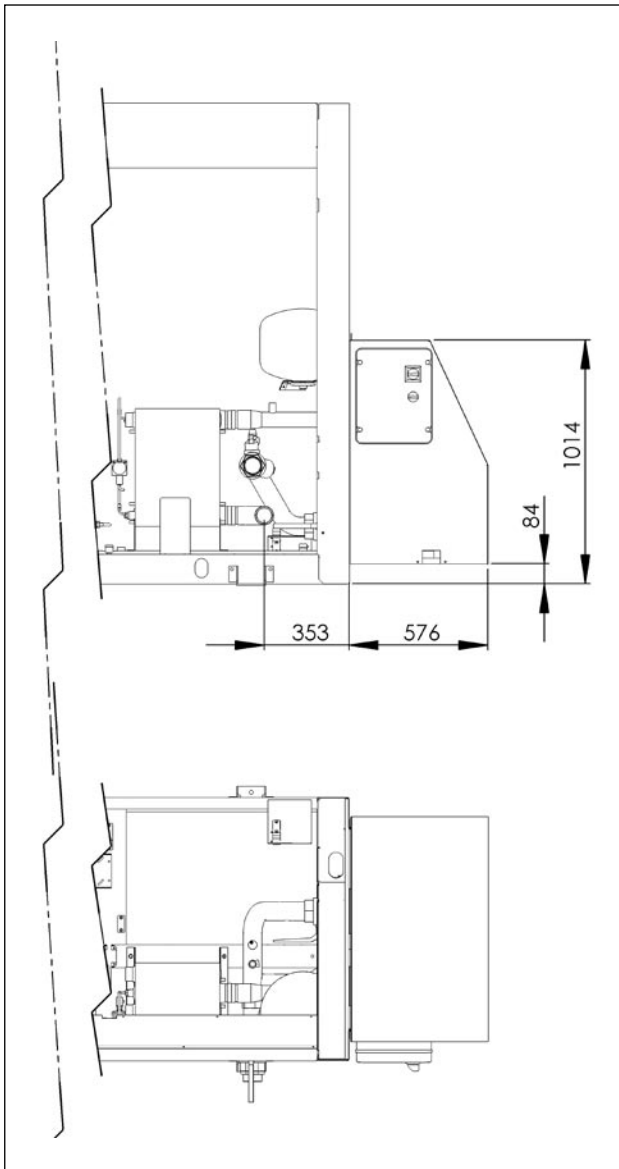
VIEW A

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

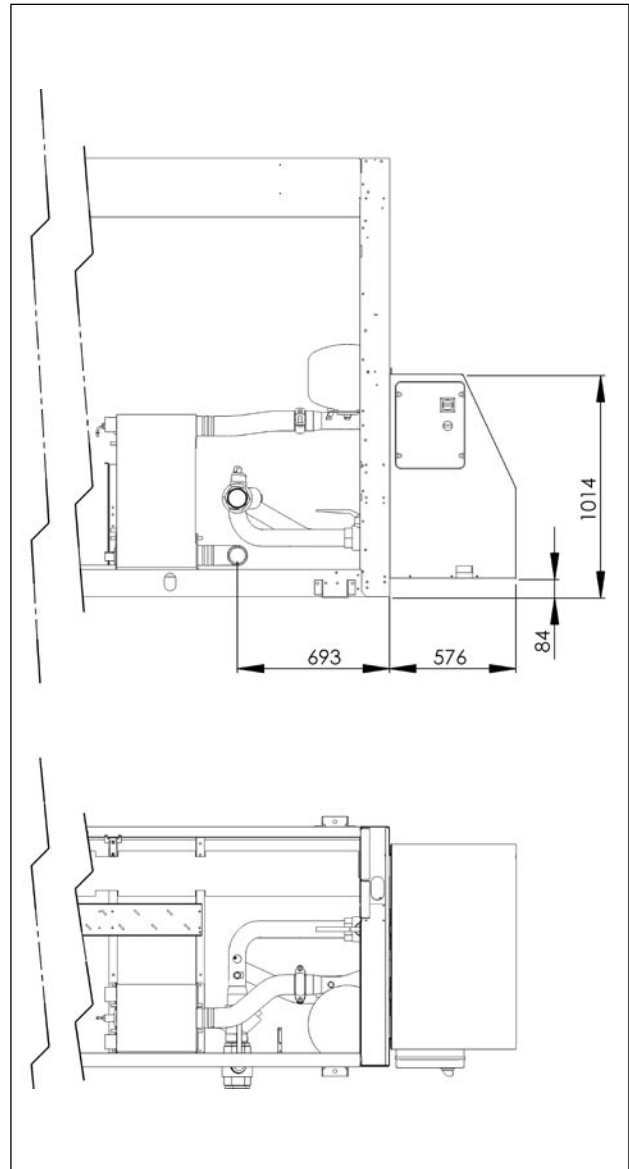
Water connections	704-804	904-1204
Water outlet "A"	2" 1/2 Male	3" Male
Water inlet "B" (with pump)	2" 1/2 Male	3" Male
Water inlet "C" (no pump)	2" 1/2 Male	3" Male
Desuperheater in/out "D"	4 x 2" Female	4 x 2" Female

Dimensions - Pump Kit (optional)

Models VLS 504-604

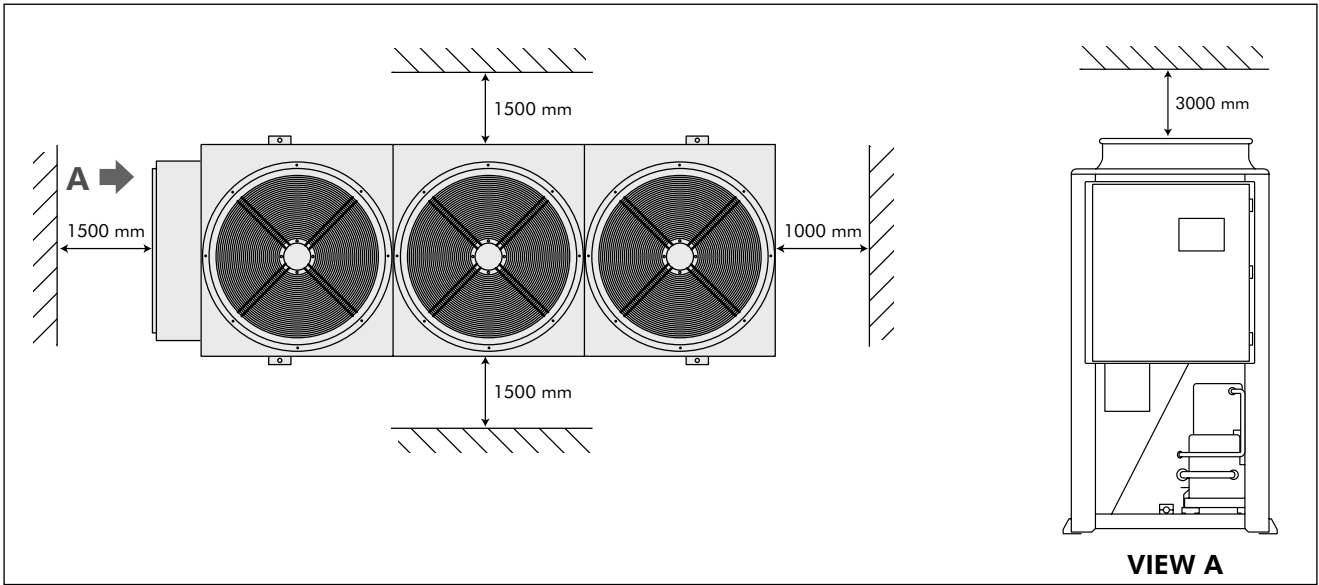


Models VLS 704 to 1204

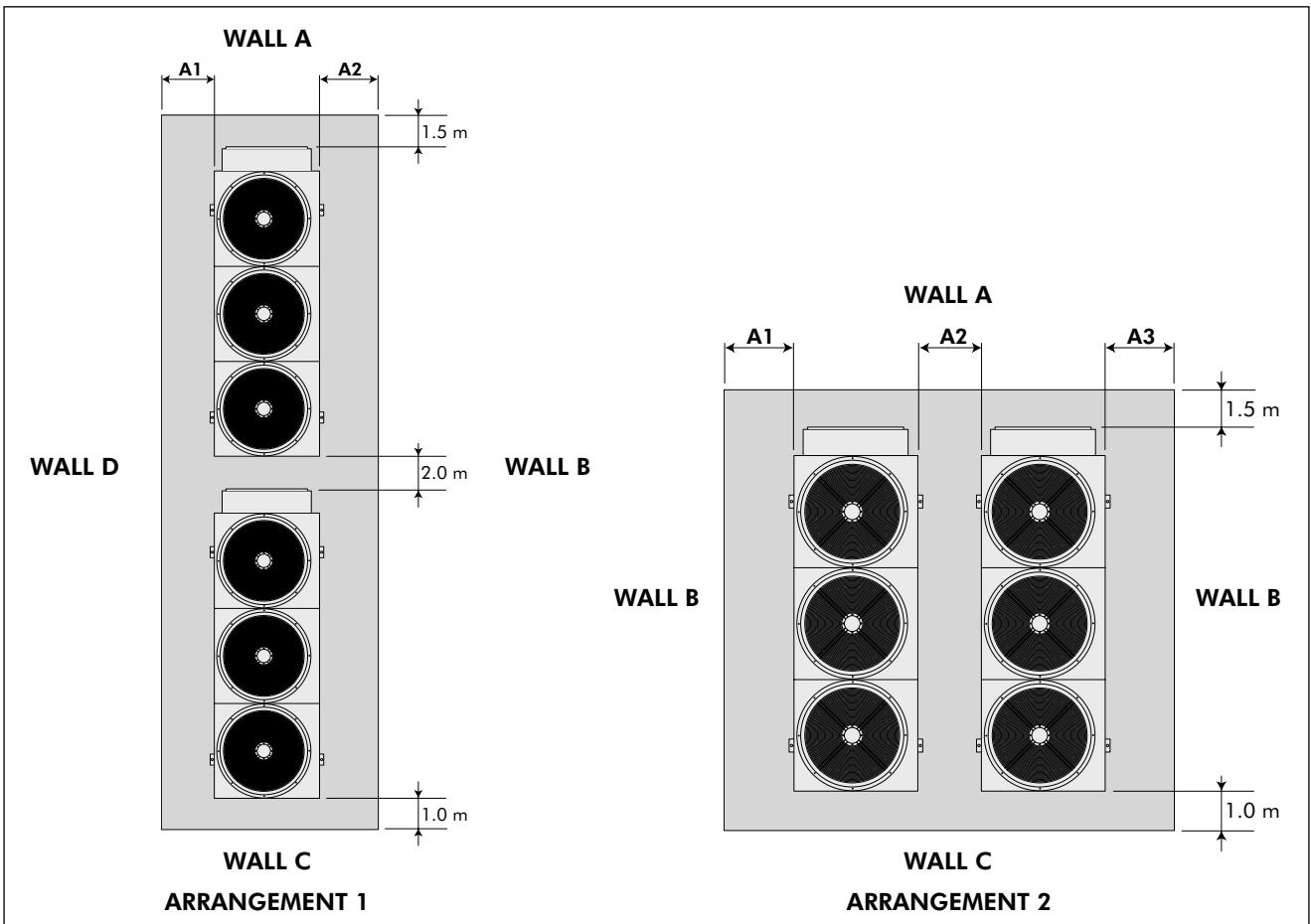


Space Requirements

Single unit applications



Multi units applications

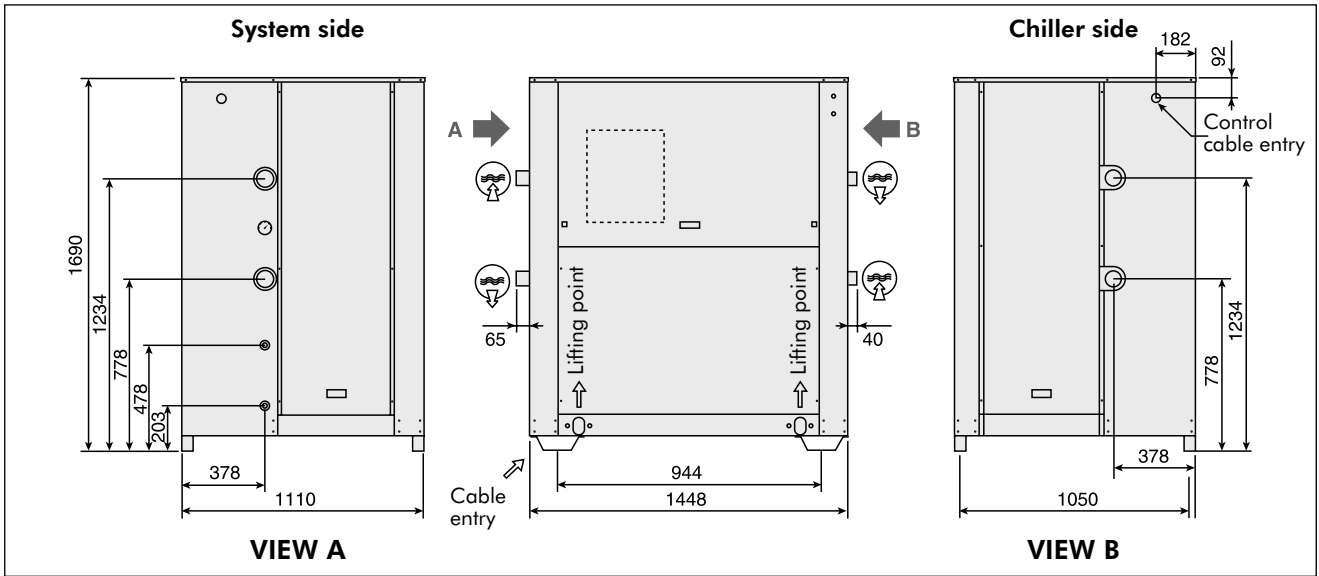


	LOUVRED A & C SOLID B & D			SOLID A & B SOLID C & D			SOLID A & C LOUVRED B & D			LOUVRED A & B SOLID C & D			LOUVRED A & D SOLID B & C		
	A1	A2	A3	A1	A2	A3	A1	A2	A3	A1	A2	A3	A1	A2	A3
ARRANGEMENT 1	1000	1000		1000	1000		800	800		1000	800		800	1000	
ARRANGEMENT 2	1000	1500	1000	1000	2000	1000	800	2000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

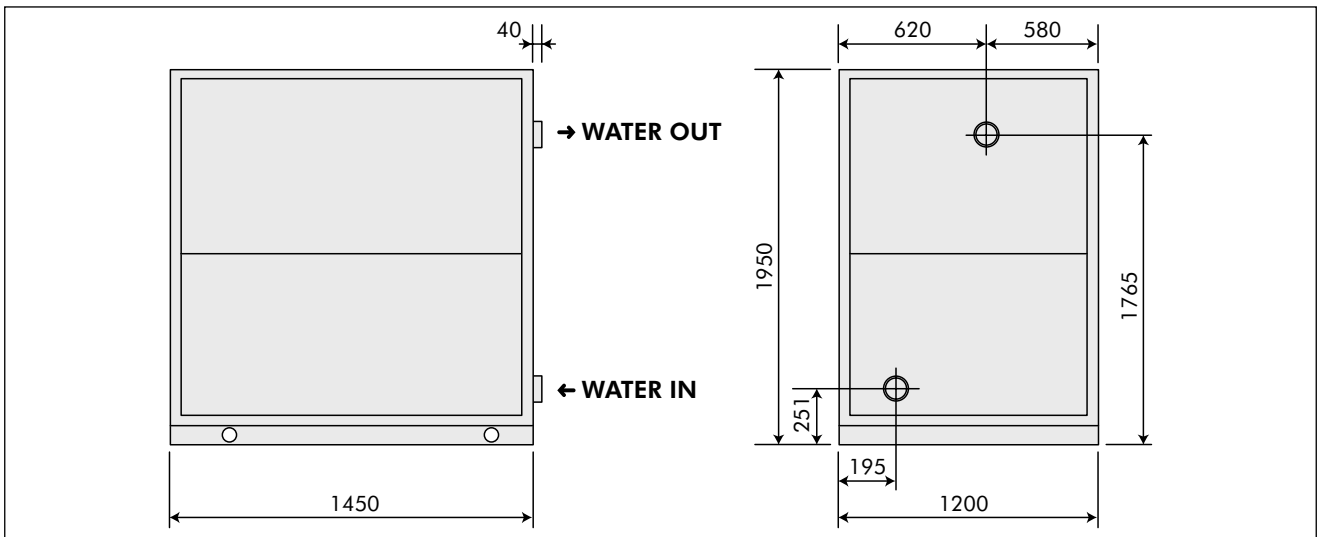
Note : No more than one wall can be higher than the unit.
The area enclosed by the wall must be kept clear of all obstructions that would impede air flow to the unit.
Dimensions in mm.

External Hydro Kits (optional) - Dimensions in mm

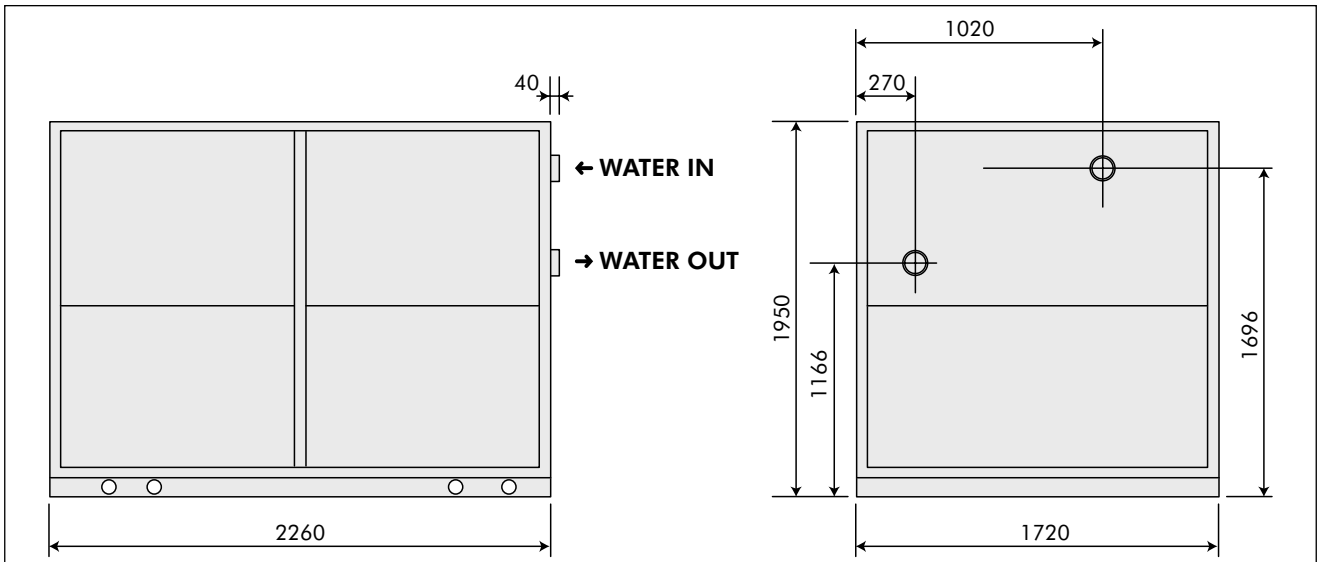
Model 500 litres



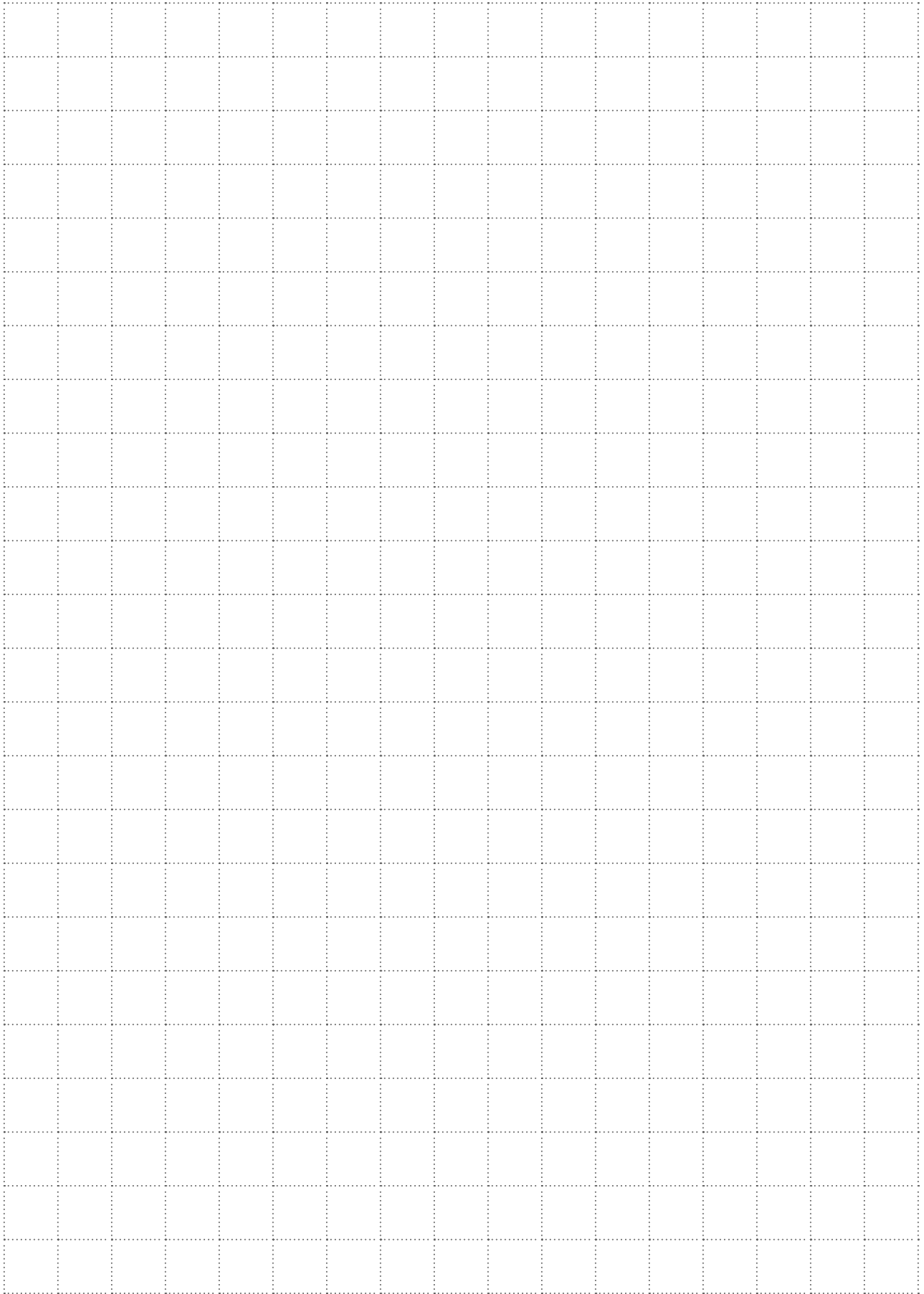
Models 750 & 1000 litres



Model 1500 litres



Notes



Wesper[®]

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



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