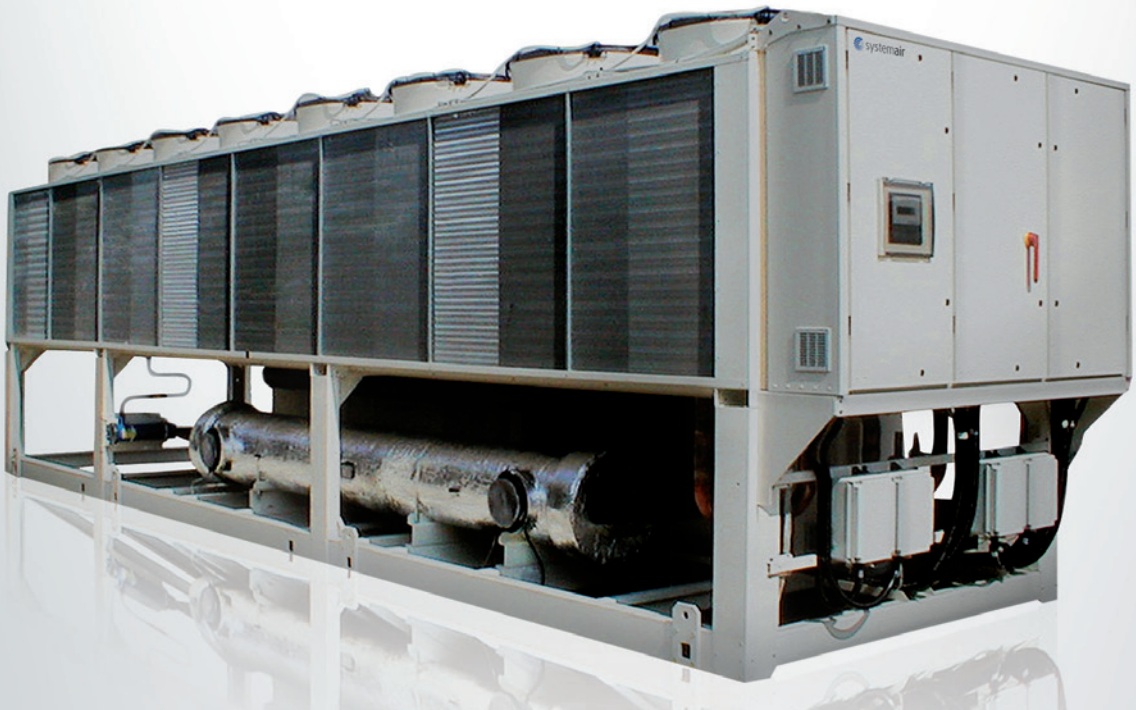
Chiller

AQSL 2612 to 4212

Air Cooled Chillers
With or without total heat recovery
Engineering Data Manual

R134a

602 to 908 kW



systemair

Features & Strength Points

- Sturdy structure, **vibration tests and FEM structural analysis**.
- **Rivets** as joints of the structural elements.
- **Optimization of overall dimensions** for container transport.
- Standard coils in Al/Cu, of monobloc type.
- High efficiency **shell and tube counter flow** evaporator.
- **Increasing the fin spacing** to reduce fouling problems and increase air flow.
- Units with EER (complete unit) values higher than 3.1 **(Energy efficiency class A)**.
- All the versions keep the **same configuration of the base units** (same structure, electrical board, compressors and coils).
- **Electronic expansion devices** on all units.
- **Compressors box is standard on all units** - internal soundproofing for ELN version.
- Special version (HSE) for high seasonal efficiency and special version (HT) for high operating limits. Both versions are equipped with axial fans of large diameter (electronic brushless type motor).
- Special version (HPF) for high available static pressure (max. 120 Pa) with axial fans of large diameter (electronic brushless type motor).
- **External electrical box** to improve internal aerodynamic (more air flow; which increases heat rejection by the coils).
- **Hydro kits** without buffer tank but with pump(s) only, fitted on board of the chiller to perform outstandingly the package solution and the plug & play concept.

  One or two water pumps are available : standard pressure (150 kPa) or high pressure (250 kPa). The water pump has a sound proof box for ELN version.
- Range available in **STD** (BLN, LN, ELN), **HSE** (BLN, LN, ELN), **HT** (BLN) and **HPF** (BLN) versions.

Specifications

General

The new **AQSL** units have been designed to operate with **R134a** refrigerant. All components have been optimized for this refrigerant.

Each unit consists of **two independent refrigerant circuits** complete with screw compressors and one double circuit pure counterflow shell and tube heat exchanger.

The condenser section is complete with standard Al/Cu finned coils, of monobloc type, and new optimized fan deck.

All the units are equipped with **electronic expansion valves**, one for each circuit, and are in high efficiency range **(class A)**.

The AQSL units are available in **7 sizes**, from size 2612 to 4212, with a nominal capacity range from **602 to 908 kW**.

The **STD (Standard) version of AQSL units** can be supplied with **3 acoustic options :**

- **Base Low Noise (BLN) :** The units are equipped with **delta connected fan motors**. The chillers are not supplied with fan speed controller, but fitted with **compressors box** to reduce the noise emissions.
- **Low Noise (LN) :** The units are equipped with **star connected fan motors**. The chillers are not supplied with fan speed controller, but fitted with **compressors box** to reduce the noise emissions.
- **Extra Low Noise (ELN) :** The units are equipped with **star connected fan motors**, fitted with a speed controller which allows the units to operate with a very low rpm. The chillers are supplied with **acoustically insulated compressors box and flexible pipes as well as mufflers on compressor discharge lines.**

In addition to the STD version, the AQSL ranges offer **3 more versions :**

- **HSE (High Seasonal Efficiency) version :** It has same equipment as that of the STD version, except that the units are equipped with **special inverter fans**, of large diameter, driven by **EC (electronic brushless type)** motors with **integrated electronic inverter**, to ensure low energy consumption. This version can be supplied with BLN, LN or ELN acoustic options.
- **HT (High Temperature) version :** It has same equipment as HSE units, but the **special inverter fans and motors** have a different regulation. The HT version can be supplied with BLN acoustic option only.
- **HPF (High Pressure Fan) version :** It has same equipment as STD units, except that the units are equipped with **special inverter fans** (same as those used on HSE version, but with a different regulation) driven by **EC motors** with **integrated electronic inverter**. The HPF version provides external static pressure up to **120 Pa.** This version can be supplied with BLN acoustic option only.

Also, **2 heat recovery options** are available :

- **Desuperheater :** All the versions can be supplied with plate type heat exchangers fitted, one on each refrigerant circuit, on the compressor discharge line to recover about **20 % of the total heat** rejected to the condensers.
- **AQSR units :** All the versions of the **cooling only** units can be supplied with a double circuit plate type heat exchanger to recover **100 % of heat rejection** by the condensers. 4-way valves and a field installed control sensor are also provided to ensure the cooling/heat recovery mode changeover.

Cabinet and structure

The unit cabinet and structure are made of heavy gauge galvanized steel. All the galvanized steel components are individually painted, with a polyester powder based painting **(RAL 9001)**, under a special painting process before the assembly of the unit. This painting system performs and stands a homogeneous protection of the corrosion.

All parts of the structure are totally fastened with stainless steel bolts and rivets.

Specifications (continued)

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, filter-drier with solid core, sight glass and **electronic expansion valve (EXV).**

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

Semi-hermetic screw compressors

The compressors installed in the AQSL units are of semi-hermetic screw type integrating a step type or stepless type (on request) cooling capacity control system.

All compressors are fitted with an electronic control system ensuring the following functions :

- ➜ Protection against high temperature and excessive load ;
- ➜ Correct direction of rotation ;
- ➜ Phase monitoring.

The main features of cooling capacity control of each compressor are stated below :

- ➜ Compressor capacity reduction by means of solenoid valves ;
- ➜ Capacity reduction steps relating to each compressor :
  - standard compressors : 25% (at start-up and pump down), 50%, 75% and 100%.
  - stepless compressors : infinity steps between 50% and 100%.
- ➜ Capacity steps on 2 refrigerant circuit units :
  - standard compressors : 6 steps (25%, 50%, 63%, 75%, 87% and 100%)
  - stepless compressors : 25 to 100%.

Furthermore, the screw compressors are provided with control devices to make the AQSL units more reliable :

- ➜ Electric motor temperature sensor ;
- ➜ Discharge temperature sensor.

The compressors are supplied with a Star-Delta starting system. Also soft starter is available on request (refer to section "Compressor electrical data").

Evaporator

Evaporator is of a new generation shell and tube, of pure counter flow type heat exchanger. It is insulated with a 19 mm thick closed cell polyethylene foam material and is fitted with an 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 of heat exchanger are of Victaulic type supplied with coupling stub pipe to be welded.

Condenser coils

The condenser coils are made of seamless copper tubes, arranged in staggered rows, mechanically expanded into corrugated aluminum fins.

Condenser fans

For each size, all versions keep the same number of fans.

Large diameter, direct drive axial type fans with asynchronous three-phase motors are used in all acoustic versions (BLN, LN & ELN) of AQSL/AQSR STD units.

Special inverter fans with electronic brushless type motors are used in AQSL/AQSR HSE, HPF and HT units.

On high pressure fans of HPF units, the external static pressure ($\leq$ 120 Pa) can be adjusted on site to match the customer demand directly from the electronic control panel of the unit.

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

Fan speed control

The airflow is controlled in order to operate at a low ambient temperature.

On standard unit equipped with axial fans, the air flow control is :

- step type for BLN and LN versions without fan speed controls, achieved by switching off some fans of each circuit in function of condensing pressure corrected by external temperature.
- stepless type for ELN version, achieved by an electronic fan speed control, supplied as standard, in function of condensing pressure.

The pressure actuated stepless type fan speed controller can be supplied as optional on BLN and LN versions. It allows the units to operate in cooling mode at ambient temperature down to -18 °C.

On HSE and HPF units with electronic axial fans, the pressure actuated stepless type fan speed control is supplied as standard, because these electronic fans are already equipped with an integrated fan speed control (fan speed range : 50 to 1200 rpm; ambient temperature limit : -18 °C).

Electrical board

The electrical board is located in a metal case arranged outside the unit. The metal case has an IP54 protection rating and is complete with grilles for natural air ventilation.

Electronic control

The units are supplied with the new 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) Unloading for high pressure or high compressor pressure ratio (integrated inside the curves of compressor operating limits).
- ➜ Chilled water temperature regulation (control option on inlet water temperature RWT (P+I type) or outlet water temperature LWT (neutral band type) of the evaporator.
- ➜ Control of superheating on suction line.
- ➜ Evaporator antifreeze protection.
- ➜ Management of high and low pressure alarms.
- ➜ Management of the compressors on the two circuits.
- ➜ Management of the electronic expansion valves by means of EXV controller.
- ➜ Management of external interlocks.
- ➜ Management of the remote control :
  d) Unit power on/off
  e) Summary alarm signals

Specifications (continued)

- Remote signalling, by free contacts :
  - f) Voltage presence
  - g) Compressors in operation
  - h) Circuit alarm unit
- Management of the hydro kit : start-up of pump.
- Management of the heat recovery mode by means of inlet water temperature sensor at the heat recovery condenser.

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

- Display of superheating value.
- 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 and suction pressure.
- Display of the set point.
- Display of opening steps of EEV.
- Display of speed control signal (voltage) of fans.
- Display of the various alarm and operation status :
  - i) Compressor start-up alarm (discharge pressure check)
  - j) Low / High pressure
  - k) Low / High super-heating
  - l) Evaporator antifreeze
  - m) Flow switch signal for lack of water
  - n) Control of the compressor operating hours
  - o) Compressors in operation
  - p) Pump in operation
  - q) Thermal protection of compressors
  - r) Thermal protection of fans
  - s) Faulty sensors

Control and safety devices

Each unit is fitted with the following devices :

Safety :

- Power disconnect switch with an emergency stop function.
- Safety valve on the discharge line (HP side) set to 21 bar.
- Safety valve on the suction line (LP side) set to 14.5 bar.
- HP switches (double on each circuit) set to 19 bar, manual reset to be reinitialized from control board.
- LP switches (one for each circuit) set to 0.5 bar, manual reset to be reinitialized from control board.
- Antifreeze temperature sensor (set to +4 °C) on the evaporator.
- Discharge gas temperature protection, on the discharge line of each compressor.

Control :

- HP and LP transducers.
- Evaporator water inlet temperature sensor.
- Evaporator water outlet temperature sensor (with an antifreeze function).
- Suction temperature sensor for EXV control.
- Ambient air temperature sensor.
- Heat recovery condenser temperature sensor (AQSR only).

Conformity with standards

The following applies to all the sizes and versions of AQSL/AQSR units :

- ✓ Machine Directive : 2006/42/EC
- ✓ Low Voltage Directive : 2006/95/EC
- ✓ Electromagnetic Compatibility Directive : 2004/108/EC
- ✓ Pressure Equipment Directive : 97/23/EC

Standard equipment

- ✓ Set point timer/clock card.
- ✓ Back light display.
- ✓ Digital pressure and temperature reading.
- ✓ High ambient pressure control.
- ✓ Double set point.
- ✓ Sequence phase control.
- ✓ Electronic expansion valves.
- ✓ Compressor Star/Delta starting.
- ✓ Control circuit transformer 400 V/230 V.
- ✓ Data logger.
- ✓ Power supply without neutral.
- ✓ Main switch.
- ✓ Refrigerant R134a.
- ✓ PED approval.
- ✓ Evaporator antifreeze electric heater.
- ✓ Shell and tube evaporator.
- ✓ Compressor box.
- ✓ Compressor acoustic box (ELN version only).
- ✓ Water pump acoustic box (ELN version only).
- ✓ Rubber anti-vibration pad.
- ✓ Left hand water connection.

Specifications (continued)

Optional hydro kits

On board hydro kits and **remote hydro kits** are available.

On board hydro kits can be supplied without buffer tank but with pump(s) only (in standard or high pressure version), while remote hydro kits are always supplied with internal tank and pump(s). The HPT models can be used as remote hydro kits for field installation.

The on board hydro kit, located inside the unit, with or without buffer tank, has the following components :

- ➜ Single or double pump with low static pressure (150 kPa) or high static pressure (250 kPa),
- ➜ Expansion tank,
- ➜ Water filter,
- ➜ Shut-off valves,
- ➜ Safety valve,
- ➜ Automatic air vent valve,
- ➜ Thermal insulation for pipes and water pump(s),
- ➜ Antifreeze electric heater for hydraulic pipes (available on request),
- ➜ The water pump(s) is supplied with sound proof box for AQSL units in ELN version.

This hydro kit is provided for AQSL only.

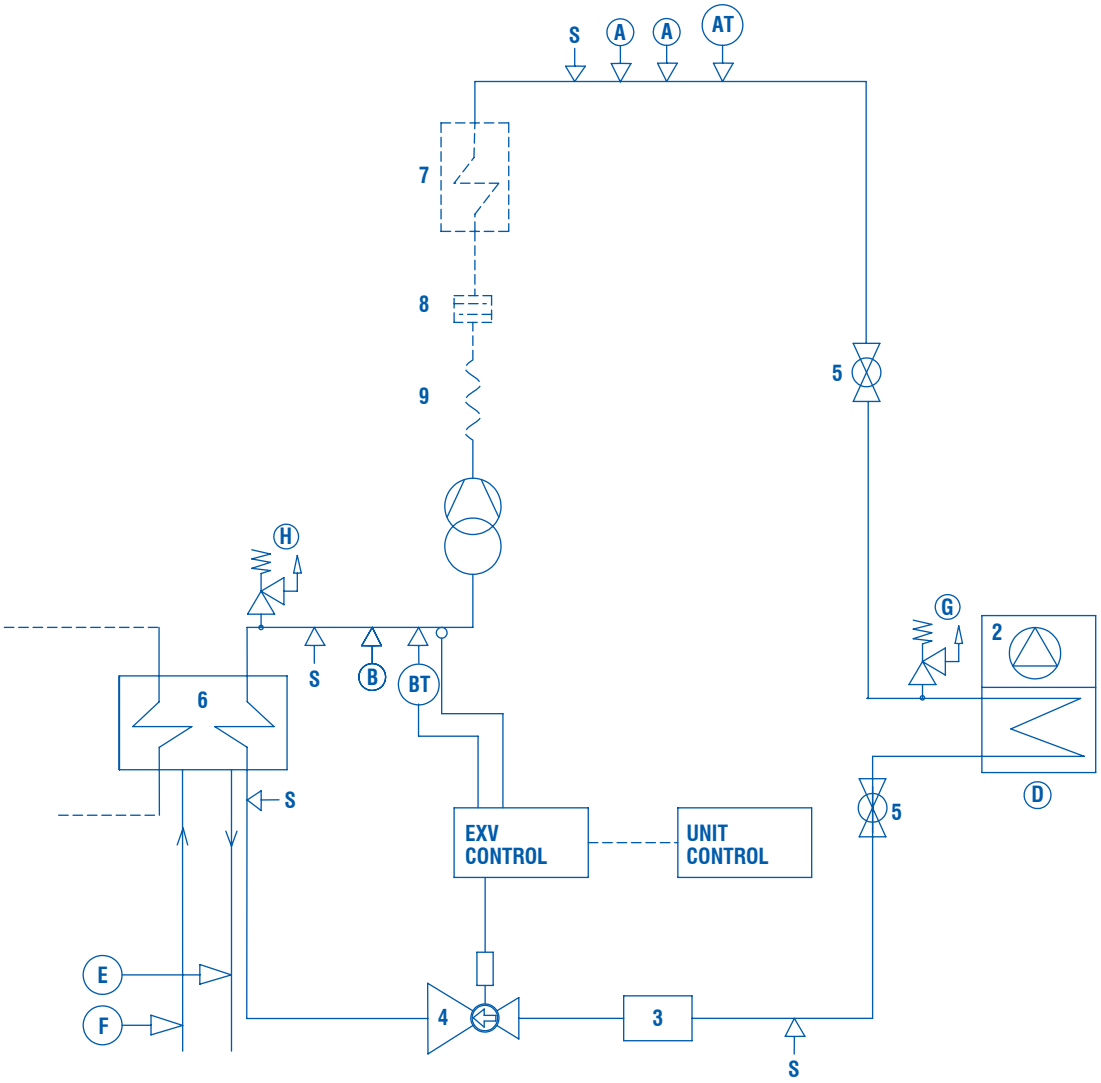
Factory-installed options

- ✓ Stepless capacity control.
- ✓ Compressors soft starter.
- ✓ Pressure actuated stepless fan speed controller for low ambient operation (-18 °C) (BLN & LN versions).
- ✓ Power factor correction capacitors.
- ✓ Automatic circuit breakers.
- ✓ HP & LP manometers.
- ✓ Compressor liquid injection.
- ✓ Compressor oil cooler.
- ✓ Compressoir oil switch (standard on stepless control option).
- ✓ Condenser coils with blue fins treatment.
- ✓ Condenser coils with "Fin Guard Silver" (polyurethane) treatment.
- ✓ Condenser coils with copper fins.
- ✓ Condenser coils with black epoxy treatment.
- ✓ High static pressure fans (ESP<120 Pa) for HPF version.
- ✓ Coil guards.
- ✓ Chiller grilles.
- ✓ Compressor acoustic box.
- ✓ Water pump acoustic box.
- ✓ Total heat recovery (AQSR).
- ✓ Desuperheater.
- ✓ On board hydro kits without buffer tank, with 1 or 2 low or high pressure pump(s) and relevant accessories.

Field-installed accessories

- ✓ Remote ON/OFF control.
- ✓ ModBus protocol kit for BMS.
- ✓ Lonwork protocol kit for BMS.
- ✓ Bacnet protocol kit for BMS.
- ✓ WEBctrl.
- ✓ Remote keyboard panel.
- ✓ Master and slaves control, up to 4 units max.
- ✓ GSM.
- ✓ Chiller grilles.
- ✓ Spring anti-vibration mounts for basic unit.
- ✓ Spring anti-vibration mounts for unit with copper fins.
- ✓ Spring anti-vibration mounts for internal hydro kit.
- ✓ Flow switch.
- ✓ Water filter.
- ✓ Remote hydro kits with buffer tank, 1 or 2 low or high pressure pump(s), relevant accessories and with or without tank antifreeze heater.

Refrigerant Flow Diagram - AQSL Units



COMPONENTS	
1	Compressor (Screw type)
2	Air cooled condenser
3	Filter drier
4	Electronic expansion valve
5	Globe valve
6	Heat exchanger (Shell and tube type)
7	Desuperheater (optional)
8	Muffler (optional)
9	Anti-vibration pipe (optional)

SAFETY / CONTROL DEVICES	
A	High pressure switch (19 bar)
B	Low pressure switch (0.5 bar)
AT	High pressure transducer
BT	Low pressure transducer
D	Air temperature sensor
E	Outlet water temperature sensor
F	Inlet water temperature sensor
G	PED pressure relief valve HP side (21 bar)
H	PED pressure relief valve LP side (14.5 bar)
S	Shrader connection (service only)
	Pipe connection with Shrader valve

Note : For reasons of readability, one circuit only is shown. The second circuit is identical.

Operating Limits and Correction Factors

AQSL				2612		2812		3012		3212		3412		3612		4212	
				Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Chilled liquid	Liquid outlet	Water outlet	°C	+ 5 to + 15													
		Temperature spread	K	3 to 8													
	Pressure drop (1)		kPa	13.2	94.0	14.8	105.5	17.0	121.2	16.4	117.0	8.2	58.1	9.0	64.2	10.0	71.5
	Flow rate (1)		l/h	64715	172573	68585	182893	74498	198660	81915	218440	87183	232487	91698	244527	97610	260293
	Maximum operating pressure water side		bar	16													
Ambient air	Air entering	(BLN)	°C	-5 (2) to 49		-5 (2) to 47		-5 (2) to 47		-5 (2) to 49		-5 (2) to 48		-5 (2) to 48		-5 (2) to 49	
		(LN)	°C	-5 (2) to 46		-5 (2) to 45		-5 (2) to 45		-5 (2) to 47		-5 (2) to 47		-5 (2) to 47		-5 (2) to 48	
		(ELN)	°C	-18 to 43		-18 to 43		-18 to 43		-18 to 44		-18 to 43		-18 to 43		-18 to 46	
		(HT)	°C	-18 to 50		-18 to 49		-18 to 49		-18 to 50		-18 to 49		-18 to 49		-18 to 50	
	External static pressure Standard fans		Pa	0													
Recommended system chilled water volume (3)			l	4500		4800		5200		5700		6100		6400		6800	
Power supply voltage (4)			V	400 V. 3 Ø. 50 Hz (nominal)													

(1) At nominal conditions for AQSL BLN unit.
(2) Minimum ambient temperature : -18 °C with fan speed control.
(3) Table shows minimum water/brine volume of system (about 7.5 liters/kW).
(4) Voltage 400 V ±10%.

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

Physical Data - AQSL STD/HSE/HPF - BLN Version

AQSL BLN		2612	2812	3012	3212	3412	3612	4212
Nominal cooling capacity (1)	kW	602	638	693	762	811	853	908
Input Cooling (2)	kW	176	187	204	216	232	246	257
EER (Total unit)		3.11	3.11	3.10	3.12	3.11	3.10	3.14
Energy Efficiency Class		A	A	A	A	A	A	A
ESEER		4.15	4.17	4.08	3.95	4.02	4.07	4.05
EER (Total unit) (*)		3.13	3.13	3.13	3.15	3.14	3.13	3.17
Energy Efficiency Class		A	A	A	A	A	A	A
ESEER (*)		4.51	4.51	4.50	4.54	4.52	4.51	4.57
Number of refrigerant circuits		2	2	2	2	2	2	2
Total unit capacity steps		6 steps (Infinity if stepless)						
COMPRESSORS								
Number		2	2	2	2	2	2	2
Type		Screw						
Type of Startup		S/D (Star-delta)						
Oil type		POE (Polyester oil)						
No. of loading stages	%	50/75/100 (50 to 100 if stepless)						
EVAPORATOR								
Number		1	1	1	1	1	1	1
Type		Shell and tube						
Water connections	inch	8	8	8	8	8	8	8
Water volume per evaporator	l	237	237	229	286	381	381	370
AIR COOLED CONDENSERS								
Number		4	4	4	4	4	4	4
Total coil face area per coil	m^2	6	6	6	8	8	8	11
Number of rows		4	4	4	3	3	3	3
FANS								
Number of fans		10	10	11	16	16	16	18
Nominal speed	rpm	900	900	900	900	900	900	900
Total airflow	m^3/h	185000	179000	188000	308000	308000	308000	338000
Total power	kW	18	18	19.8	28.8	28.8	28.8	32.4
Total power (*)	kW	16.3	16.3	17.9	26.1	26.1	26.1	29.3
External static pressure	Pa	0						
WEIGHT								
Operating	kg	5149	5259	5568	6447	6938	6955	7538
Shipping	kg	4911	5022	5340	6161	6569	6586	7168
SOUND LEVELS								
Sound power level (3)	dB(A)	96	96	96	97	97	97	98
Sound pressure level at 10 m (4)	dB(A)	64	64	64	65	65	65	66
DIMENSIONS (5)								
Length	mm	6170	6170	6170	8110	8110	8110	10050
Width	mm	2172	2172	2172	2172	2172	2172	2172
Height	mm	2550	2550	2550	2550	2550	2550	2550

(1) Data based on 7 °C leaving chilled water temperature and 35 °C condenser air temperature.
(2) Compressors only.
(3&4) Sound power and sound pressure levels are at fully loaded conditions. Sound level values referred to ISO standard 3744. Only sound power level is assured with a tolerance ±2 dB.
(5) Indicative value. Always refer to the dimensions on the drawing.
(*) High efficiency units (HSE) with EC fans.

Physical Data - AQSL STD/HSE - LN Version

AQSL LN		2612	2812	3012	3212	3412	3612	4212
Nominal cooling capacity (1)	kW	549	580	627	706	750	794	859
Input Cooling (2)	kW	190	207	226	228	245	262	270
EER (Total unit)		2.72	2.66	2.63	2.87	2.85	2.83	2.96
EER (Total unit) (*)		2.77	2.70	2.67	2.93	2.90	2.89	3.02
Number of refrigerant circuits		2	2	2	2	2	2	2
Total unit capacity steps		6 steps (Infinity if stepless)						
COMPRESSORS								
Number		2	2	2	2	2	2	2
Type		Screw						
Type of Startup		S/D (Star-delta)						
Oil type		POE (Polyester oil)						
No. of loading stages	%	50/75/100 (50 to 100 if stepless)						
EVAPORATOR								
Number		1	1	1	1	1	1	1
Type		Shell and tube						
Water connections	inch	8	8	8	8	8	8	8
Water volume per evaporator	l	237	237	229	286	381	381	370
AIR COOLED CONDENSERS								
Number		4	4	4	4	4	4	4
Total coil face area per coil	m^2	6	6	6	8	8	8	11
Number of rows		4	4	4	3	3	3	3
FANS								
Number of fans		10	10	11	16	16	16	18
Nominal speed	rpm	700	700	700	700	700	700	700
Total airflow	m^3/h	142000	137000	143000	221000	221000	221000	262000
Total power	kW	11.5	11.5	12.7	18.4	18.4	18.4	20.7
Total power (*)	kW	8.2	8.2	9.0	13.1	13.1	13.1	14.8
External static pressure	Pa	0						
WEIGHT								
Operating	kg	5149	5259	5568	6447	6938	6955	7538
Shipping	kg	4911	5022	5340	6161	6569	6586	7168
SOUND LEVELS								
Sound power level (3)	dB(A)	94	94	94	95	95	95	96
Sound pressure level at 10 m (4)	dB(A)	62	62	62	63	63	63	64
DIMENSIONS (5)								
Length	mm	6170	6170	6170	8110	8110	8110	10050
Width	mm	2172	2172	2172	2172	2172	2172	2172
Height	mm	2550	2550	2550	2550	2550	2550	2550

(1) Data based on 7 °C leaving chilled water temperature and 35 °C condenser air temperature.
(2) Compressors only.
(3&4) Sound power and sound pressure levels are at fully loaded conditions. Sound level values referred to ISO standard 3744. Only sound power level is assured with a tolerance ±2 dB.
(5) Indicative value. Always refer to the dimensions on the drawing.
(*) High efficiency units (HSE) with EC fans.

Physical Data - AQSL STD/HSE - ELN Version

AQSL ELN		2612	2812	3012	3212	3412	3612	4212
Nominal cooling capacity (1)	kW	528	558	596	661	715	744	822
Input Cooling (2)	kW	200	216	239	240	262	284	286
EER (Total unit)		2.50	2.45	2.37	2.56	2.55	2.46	2.68
EER (Total unit) (*)		2.60	2.55	2.46	2.69	2.68	2.57	2.82
Number of refrigerant circuits		2	2	2	2	2	2	2
Total unit capacity steps		6 steps (Infinity if stepless)						
COMPRESSORS								
Number		2	2	2	2	2	2	2
Type		Screw						
Type of Startup		S/D (Star-delta)						
Oil type		POE (Polyester oil)						
No. of loading stages	%	50/75/100 (50 to 100 if stepless)						
EVAPORATOR								
Number		1	1	1	1	1	1	1
Type		Shell and tube						
Water connections	inch	8	8	8	8	8	8	8
Water volume per evaporator	l	237	237	229	286	381	381	370
AIR COOLED CONDENSERS								
Number		4	4	4	4	4	4	4
Total coil face area per coil	m^2	6	6	6	8	8	8	11
Number of rows		4	4	4	3	3	3	3
FANS								
Number of fans		10	10	11	16	16	16	18
Nominal speed	rpm	550	550	550	550	550	550	550
Total airflow	m^3/h	110000	106000	109000	170000	170000	170000	204000
Total power	kW	11.5	11.5	12.65	18.4	18.4	18.4	20.7
Total power (*)	kW	3.2	3.2	3.5	5.1	5.1	5.1	5.8
External static pressure	Pa	0						
WEIGHT								
Operating	kg	5264	5374	5683	6562	7053	7070	7653
Shipping	kg	5026	5137	5455	6276	6684	6701	7283
SOUND LEVELS								
Sound power level (3)	dB(A)	92	92	92	93	93	93	94
Sound pressure level at 10 m (4)	dB(A)	60	60	60	61	61	61	62
DIMENSIONS (5)								
Length	mm	6170	6170	6170	8110	8110	8110	10050
Width	mm	2172	2172	2172	2172	2172	2172	2172
Height	mm	2550	2550	2550	2550	2550	2550	2550

(1) Data based on 7 °C leaving chilled water temperature and 35 °C condenser air temperature.
(2) Compressors only.
(3&4) Sound power and sound pressure levels are at fully loaded conditions. Sound level values referred to ISO standard 3744. Only sound power level is assured with a tolerance ±2 dB.
(5) Indicative value. Always refer to the dimensions on the drawing.
(*) High efficiency units (HSE) with EC fans.

Physical Data - AQSL HT

AQSL HT		2612	2812	3012	3212	3412	3612	4212
Nominal cooling capacity (1)	kW	605	642	696	771	816	855	924
Input Cooling (2)	kW	174	187	204	214	231	248	253
EER (Total unit)		3.01	3.00	2.98	3.01	2.98	2.94	3.07
Number of refrigerant circuits		2	2	2	2	2	2	2
Total unit capacity steps		6 steps (Infinity if stepless)						
COMPRESSORS								
Number		2	2	2	2	2	2	2
Type		Screw						
Type of Startup		S/D (Star-delta)						
Oil type		POE (Polyester oil)						
No. of loading stages	%	50/75/100 (50 to 100 if stepless)						
EVAPORATOR								
Number		1	1	1	1	1	1	1
Type		Shell and tube						
Water connections	inch	8	8	8	8	8	8	8
Water volume per evaporator	l	237	237	229	286	381	381	370
AIR COOLED CONDENSERS								
Number		4	4	4	4	4	4	4
Total coil face area per coil	m^2	6	6	6	8	8	8	11
Number of rows		4	4	4	3	3	3	3
FANS								
Number of fans		10	10	11	16	16	16	18
Nominal speed	rpm	1100	1100	1100	1100	1100	1100	1100
Total airflow	m^3/h	226000	219000	229000	376000	376000	376000	413000
Total power	kW	26.7	26.7	29.4	42.7	42.7	42.7	48.1
External static pressure	Pa	0						
WEIGHT								
Operating	kg	5149	5259	5568	6447	6938	6955	7538
Shipping	kg	4911	5022	5340	6161	6569	6586	7168
SOUND LEVELS								
Sound power level (3)	dB(A)	103	103	103	104	104	104	105
Sound pressure level at 10 m (4)	dB(A)	71	71	71	72	72	72	73
DIMENSIONS (5)								
Length	mm	6170	6170	6170	8110	8110	8110	10050
Width	mm	2172	2172	2172	2172	2172	2172	2172
Height	mm	2550	2550	2550	2550	2550	2550	2550

(1) Data based on 7 °C leaving chilled water temperature and 35 °C condenser air temperature.
(2) Compressors only.
(3&4) Sound power and sound pressure levels are at fully loaded conditions. Sound level values referred to ISO standard 3744. Only sound power level is assured with a tolerance ±2 dB.
(5) Indicative value. Always refer to the dimensions on the drawing.

Electrical Data - AQSL 2612 to 4212

Compressors 400 V / 3 Ph / 50 Hz

Sizes	System	Compressor start mode standard	Power input at nominal conditions per compressor (kW)	Nominal conditions current per compressor (A)	Power input at maximum conditions per compressor (kW)	Max. Conditions current per compressor FLA (A)	Starting current per compressor LRA (A)	Crankcase heater 230Vac W
2612	1	Star/Delta	80	136	124	202	361	200
	2	Star/Delta	91	152	141	228	361	200
2812	1	Star/Delta	91	152	141	228	361	200
	2	Star/Delta	91	152	141	228	361	200
3012	1	Star/Delta	91	152	141	228	361	200
	2	Star/Delta	113	175	167	260	374	275
3212	1	Star/Delta	113	175	167	260	374	275
	2	Star/Delta	113	175	167	260	374	275
3412	1	Star/Delta	113	175	167	260	374	275
	2	Star/Delta	126	202	187	295	453	275
3612	1	Star/Delta	126	202	187	295	453	275
	2	Star/Delta	126	202	187	295	453	275
4212	1	Star/Delta	133	212	198	310	543	275
	2	Star/Delta	133	212	198	310	543	275

Fans

Sizes	Standard Fans 6 poles						EC fans		
	BLN			LN and ELN			BLN, LN and ELN		
	Fans number	Nominal power (kW)	Max running current (A)	Number of fans	Nominal power (kW)	Max running current (A)	Number of fans	Nominal power (kW)	Max running current (A)
2612	10	1.8	3.8	10	1.15	2.2	10	2.67	4.1
2812	10	1.8	3.8	10	1.15	2.2	10	2.67	4.1
3012	11	1.8	3.8	11	1.15	2.2	11	2.67	4.1
3212	16	1.8	3.8	16	1.15	2.2	16	2.67	4.1
3412	16	1.8	3.8	16	1.15	2.2	16	2.67	4.1
3612	16	1.8	3.8	16	1.15	2.2	16	2.67	4.1
4212	18	1.8	3.8	18	1.15	2.2	18	2.67	4.1

Electrical Data - AQSL 2612 to 4212

Units - BLN version

AQSL BLN version		2612	2812	3012	3212	3412	3612	4212
Nominal current input	A	326	342	369	411	438	465	492
Maximum current input	A	468	494	530	581	616	651	688
Nominal power input	kW	189	200	224	255	268	281	298
Maximum power input	kW	283	300	328	362	382	402	428
Max. start-up current	A	601	627	644	695	774	809	921
Max. start-up current (soft starter)	A	565	591	606	657	729	764	867
Unit fuses aM	A	630	630	630	800	800	800	800
Phase wire section	mm^2	2 x 185	2 x 185	2 x 185	2 x 240	2 x 240	2 x 240	2 x 240

Units - LN version

AQSL LN version		2612	2812	3012	3212	3412	3612	4212
Nominal current input	A	310	326	351	385	412	439	464
Maximum current input	A	452	478	512	555	590	625	660
Nominal power input	kW	183	194	217	244	257	270	287
Maximum power input	kW	276	294	320	352	372	392	416
Max. start-up current	A	585	611	626	669	748	783	893
Max. start-up current (soft starter)	A	549	575	589	632	703	738	838
Unit fuses aM	A	630	630	630	800	800	800	800
Phase wire section	mm^2	2 x 185	2 x 185	2 x 185	2 x 240	2 x 240	2 x 240	2 x 240

Units - ELN version

AQSL ELN version		2612	2812	3012	3212	3412	3612	4212
Nominal current input	A	310	326	351	385	412	439	464
Maximum current input	A	452	478	512	555	590	625	660
Nominal power input	kW	183	194	217	244	257	270	287
Maximum power input	kW	276	294	320	352	372	392	416
Max. start-up current	A	585	611	626	669	748	783	893
Max. start-up current (soft starter)	A	549	575	589	632	703	738	838
Unit fuses aM	A	630	630	630	800	800	800	800
Phase wire section	mm^2	2 x 185	2 x 185	2 x 185	2 x 240	2 x 240	2 x 240	2 x 240

Units - HSE/HT/HPF version

AQSL HSE/HT/HPF version		2612	2812	3012	3212	3412	3612	4212
Nominal current input	A	329	345	372	416	443	470	498
Maximum current input	A	471	497	533	586	621	656	694
Nominal power input	kW	198	209	234	269	282	295	314
Maximum power input	kW	291	309	337	376	396	416	443
Max. start-up current	A	604	630	647	700	779	814	927
Max. start-up current (soft starter)	A	568	594	610	662	733	768	873
Unit fuses aM	A	630	630	630	800	800	800	800
Phase wire section	mm^2	2 x 185	2 x 185	2 x 185	2 x 240	2 x 240	2 x 240	2 x 240

Sound Data - AQSL

		FREQUENCY (Hz)							Sound Power dB(A)	Sound Pressure (*) dB(A)
		125	250	500	1000	2000	4000	8000		
AQSL BLN	2612	90.0	89.0	97.0	91.0	85.0	70.0	58.0	96	64
	2812	90.0	89.0	97.0	91.0	85.0	70.0	58.0	96	64
	3012	90.0	89.0	97.0	91.0	85.0	70.0	58.0	96	64
	3212	91.0	90.0	98.0	92.0	86.0	71.0	59.0	97	65
	3412	91.0	90.0	98.0	92.0	86.0	71.0	59.0	97	65
	3612	91.0	90.0	98.0	92.0	86.0	71.0	59.0	97	65
	4212	92.0	91.0	99.0	93.0	87.0	72.0	60.0	98	66
AQSL LN	2612	88.0	87.0	95.0	89.0	83.0	68.0	56.0	94	62
	2812	88.0	87.0	95.0	89.0	83.0	68.0	56.0	94	62
	3012	88.0	87.0	95.0	89.0	83.0	68.0	56.0	94	62
	3212	89.0	88.0	96.0	90.0	84.0	69.0	57.0	95	63
	3412	89.0	88.0	96.0	90.0	84.0	69.0	57.0	95	63
	3612	89.0	88.0	96.0	90.0	84.0	69.0	57.0	95	63
	4212	90.0	89.0	97.0	91.0	85.0	70.0	58.0	96	64
AQSL ELN	2612	86.0	85.0	93.0	87.0	81.0	66.0	54.0	92	60
	2812	86.0	85.0	93.0	87.0	81.0	66.0	54.0	92	60
	3012	86.0	85.0	93.0	87.0	81.0	66.0	54.0	92	60
	3212	87.0	86.0	94.0	88.0	82.0	67.0	55.0	93	61
	3412	87.0	86.0	94.0	88.0	82.0	67.0	55.0	93	61
	3612	87.0	86.0	94.0	88.0	82.0	67.0	55.0	93	61
	4212	88.0	87.0	95.0	89.0	83.0	68.0	56.0	94	62
AQSL HT (**)	2612	97.0	96.0	104.0	98.0	92.0	77.0	65.0	103	71
	2812	97.0	96.0	104.0	98.0	92.0	77.0	65.0	103	71
	3012	97.0	96.0	104.0	98.0	92.0	77.0	65.0	103	71
	3212	98.0	97.0	105.0	99.0	93.0	78.0	66.0	104	72
	3412	98.0	97.0	105.0	99.0	93.0	78.0	66.0	104	72
	3612	98.0	97.0	105.0	99.0	93.0	78.0	66.0	104	72
	4212	99.0	98.0	106.0	100.0	94.0	79.0	67.0	105	73

(*) Sound pressure levels are given at 10 meters distance according to ISO standard 3744 with parallepiped shape.
(**) Sound data is given at maximum air flow rate condition.

Fan Data - HPF Version

Sizes	Fan Static Pressure [Pa]	Fan rpm	Parameter in Service Level Max Speed (Vdc)
2612	0	900	7.6
	30	950	8.1
	55	**1000**	**8.5**
	85	1050	8.9
	120	1110	9.4
2812	0	900	7.6
	25	950	8.1
	55	**1000**	**8.5**
	85	1050	8.9
	120	1110	9.4
3012	0	900	7.6
	25	950	8.1
	50	**1000**	**8.5**
	80	1050	8.9
	120	1110	9.4
3212	0	900	7.6
	15	950	8.1
	45	**1000**	**8.5**
	80	1050	8.9
	120	1110	9.4
3412	0	900	7.6
	10	950	8.1
	40	**1000**	**8.5**
	75	1050	8.9
	120	1110	9.4
3612	0	900	7.6
	15	950	8.1
	45	**1000**	**8.5**
	80	1050	8.9
	120	1110	9.4
4212	0	900	7.6
	10	950	8.1
	40	**1000**	**8.5**
	75	1050	8.9
	120	1110	9.4

Note : Values in bold are standard factory settings.

Cooling Capacities - AQSL STD/HSE/HPF - BLN Version

AQSL models	LWT (°C)	Condenser air entering temperature (°C)													
		25		30		32		35		40		44		46	
		Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)
2612 BLN	5	631	144	601	158	588	163	568	172	528	191	504	203	479	216
	6	650	145	618	159	605	165	585	174	544	193	519	205	493	218
	7	669	147	636	161	623	167	**602**	**176**	560	195	534	207	508	220
	8	686	149	652	163	639	169	617	178	574	197	547	209	520	222
	9	703	150	669	165	654	171	633	180	588	199	561	211	533	224
	10	719	152	685	167	670	173	648	182	602	201	574	214	546	226
	12	754	156	717	171	702	177	679	186	631	205	601	218	572	231
	15	805	162	766	177	750	183	725	192	674	212	642	225	611	238
2812 BLN	5	668	153	636	168	622	174	602	183	559	203	533	216	507	229
	6	688	155	654	170	641	176	619	185	576	206	549	219	522	232
	7	708	156	674	172	659	178	**638**	**187**	592	208	565	221	537	234
	8	726	158	691	173	676	180	653	189	608	210	579	223	551	236
	9	744	160	708	176	692	182	670	191	623	212	594	225	565	238
	10	762	162	725	177	709	184	686	193	637	214	608	227	578	241
	12	798	166	759	182	743	188	719	198	668	219	637	232	605	246
	15	852	173	811	188	794	195	767	204	714	225	680	239	647	253
3012 BLN	5	726	166	691	183	677	189	654	200	608	222	580	236	551	250
	6	748	168	711	185	697	191	673	202	626	224	597	238	567	253
	7	770	170	732	187	717	194	**693**	**204**	644	226	614	241	584	255
	8	789	172	751	189	735	196	710	206	660	228	630	243	599	257
	9	809	174	769	191	753	198	728	208	677	231	645	245	614	260
	10	828	177	788	193	771	200	746	211	692	233	660	248	628	262
	12	867	181	825	198	808	205	781	215	726	238	692	253	658	268
	15	926	188	882	205	863	212	834	223	776	246	739	261	703	276
3212 BLN	5	799	176	760	193	744	200	719	211	669	234	637	249	606	264
	6	822	178	782	195	766	202	740	213	689	237	656	252	624	267
	7	846	180	805	198	788	205	**762**	**216**	708	239	675	254	642	270
	8	868	182	826	200	808	207	781	218	726	241	692	257	659	272
	9	889	184	846	202	828	209	801	220	745	244	710	259	675	275
	10	910	187	866	204	848	212	820	223	762	246	726	262	691	277
	12	954	191	907	209	889	217	859	228	798	252	761	267	723	283
	15	1019	199	970	217	949	224	917	236	853	260	813	275	773	291
3412 BLN	5	849	189	809	208	791	215	765	227	711	252	678	268	645	284
	6	875	191	832	210	815	218	788	230	732	255	698	271	664	287
	7	900	194	857	213	838	220	**811**	**232**	753	257	718	274	683	290
	8	923	196	878	215	860	223	831	235	773	260	737	276	700	293
	9	946	199	900	218	881	225	852	237	792	262	755	279	718	295
	10	968	201	922	220	902	228	872	240	810	265	773	282	735	298
	12	1015	206	965	225	945	233	914	245	849	271	809	288	770	305
	15	1084	214	1032	233	1010	241	976	253	907	279	865	296	822	313
3612 BLN	5	894	201	851	221	833	229	805	241	749	268	714	285	679	302
	6	921	204	876	224	858	232	829	244	771	271	735	288	699	305
	7	948	206	902	226	883	234	**853**	**246**	793	274	756	291	719	308
	8	972	209	925	229	905	237	875	249	813	276	775	294	737	311
	9	996	211	947	231	927	240	897	252	834	279	795	297	756	314
	10	1020	214	970	234	950	242	918	255	853	282	813	300	774	317
	12	1068	219	1016	240	995	248	962	260	894	288	852	306	810	324
	15	1141	227	1086	248	1063	256	1027	269	955	297	911	315	866	333
4212 BLN	5	952	210	906	230	887	238	857	251	797	279	759	297	722	315
	6	980	212	932	233	913	241	882	254	820	282	782	300	744	318
	7	1008	215	959	235	939	244	**908**	**257**	844	285	805	303	765	321
	8	1034	217	984	238	963	247	931	260	865	288	825	306	785	324
	9	1060	220	1008	241	986	249	954	262	887	290	846	309	804	327
	10	1085	223	1032	243	1010	252	977	265	907	293	865	312	823	330
	12	1137	228	1081	249	1059	258	1024	271	951	300	907	318	862	337
	15	1214	237	1156	258	1131	267	1093	280	1016	309	969	328	921	347

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

Cooling Capacities - AQSL STD/HSE - LN Version

AQSL models	LWT (°C)	Condenser air entering temperature (°C)													
		25		30		32		35		40		44		46	
		Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)
2612 LN	5	575	155	547	170	536	177	518	186	481	206	459	220	436	233
	6	592	157	563	172	551	178	533	188	496	209	472	222	449	235
	7	609	159	580	174	567	181	**549**	**190**	510	211	486	224	462	238
	8	625	161	594	176	582	182	562	192	523	213	498	226	474	240
	9	640	163	609	178	596	185	577	194	536	215	511	228	486	242
	10	655	165	624	180	610	187	590	196	548	217	523	231	497	244
	12	687	169	653	185	640	191	618	201	575	222	548	236	521	249
	15	733	175	698	191	683	197	660	208	614	229	585	243	556	257
2812 LN	5	608	168	579	185	566	191	547	202	509	224	485	238	461	252
	6	626	170	595	187	583	193	563	204	524	226	499	241	475	255
	7	644	172	613	189	600	196	**580**	**206**	539	229	514	243	489	258
	8	660	174	628	191	615	198	594	208	553	231	527	245	501	260
	9	677	176	644	193	630	200	610	210	567	233	540	248	514	262
	10	693	179	659	195	645	202	624	213	580	235	553	250	526	265
	12	726	183	691	200	676	207	654	217	608	241	579	256	551	270
	15	775	190	738	207	723	214	698	225	649	248	619	263	588	278
3012 LN	5	657	184	625	202	612	209	592	220	550	245	524	260	499	276
	6	677	186	644	204	630	211	609	223	566	247	540	263	513	279
	7	696	188	662	206	648	214	**627**	**225**	583	250	556	265	528	281
	8	714	190	679	208	665	216	643	228	598	252	570	268	542	284
	9	732	193	696	211	681	219	659	230	613	255	584	271	555	287
	10	749	195	713	213	698	221	675	233	627	257	597	273	568	289
	12	785	200	747	218	731	226	707	238	657	263	626	279	595	295
	15	838	207	798	226	781	234	755	246	702	271	669	287	636	304
3212 LN	5	740	186	704	204	689	212	666	223	619	248	590	264	561	279
	6	762	188	725	207	710	214	686	226	638	250	608	266	578	282
	7	784	191	746	209	730	217	**706**	**228**	656	253	625	269	595	285
	8	804	193	765	211	749	219	724	231	673	255	641	272	610	288
	9	824	195	784	214	767	221	742	233	690	258	657	274	625	290
	10	843	198	803	216	785	224	760	236	705	261	673	277	640	293
	12	884	202	841	221	823	229	796	241	739	266	705	283	670	299
	15	944	210	898	229	879	237	850	249	790	275	753	291	716	308
3412 LN	5	786	200	748	220	732	228	708	240	658	266	627	283	596	300
	6	809	202	770	222	754	230	728	243	677	269	646	286	614	303
	7	833	205	792	225	775	233	**750**	**245**	697	272	664	289	632	306
	8	853	207	812	227	795	235	768	248	715	274	681	292	648	309
	9	875	210	832	230	814	238	788	250	733	277	698	295	664	312
	10	896	212	852	232	834	241	807	253	749	280	714	298	680	315
	12	938	218	893	238	874	246	845	259	785	286	749	304	712	322
	15	1002	226	954	246	934	255	902	268	839	295	800	313	760	331
3612 LN	5	832	214	792	235	775	243	750	256	697	285	664	303	632	321
	6	857	216	815	237	798	246	772	259	718	288	684	306	650	324
	7	882	219	839	240	821	249	**794**	**262**	738	291	704	309	669	328
	8	904	222	860	243	842	252	814	265	757	293	722	312	686	331
	9	927	224	882	246	863	255	835	268	776	296	740	315	703	334
	10	949	227	903	248	884	257	855	271	794	299	757	318	720	337
	12	994	233	946	254	926	263	895	277	832	306	793	325	754	344
	15	1062	242	1011	263	989	272	956	286	889	315	847	335	805	354
4212 LN	5	901	220	857	242	839	251	811	264	754	293	719	312	684	331
	6	928	223	882	245	864	254	835	267	777	297	740	315	704	334
	7	954	226	908	247	889	257	**859**	**270**	799	300	762	319	724	338
	8	978	228	931	250	912	259	881	273	819	302	781	322	743	341
	9	1003	231	954	253	934	262	903	276	840	305	800	325	761	344
	10	1027	234	977	256	956	265	925	279	859	309	819	328	779	347
	12	1076	240	1023	262	1002	271	969	285	900	315	858	335	816	355
	15	1149	249	1094	271	1071	281	1034	295	962	325	917	345	872	365

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

Cooling Capacities - AQSL STD/HSE - ELN Version

AQSL models	LWT (°C)	Condenser air entering temperature (°C)													
		25		30		32		35		40		44		46	
		Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)
2612 ELN	5	553	163	526	179	515	186	498	196	463	217	441	231	420	245
	6	570	165	542	181	530	188	513	198	477	220	454	234	432	248
	7	586	167	558	183	546	190	**528**	**200**	490	222	468	236	445	250
	8	601	169	572	185	560	192	541	202	503	224	479	238	456	252
	9	616	171	586	188	573	194	555	204	516	226	492	241	467	255
	10	630	173	600	190	587	197	568	207	527	229	503	243	478	257
	12	661	178	628	194	615	201	595	211	553	234	527	248	501	263
	15	705	184	672	201	657	208	635	218	591	241	563	256	535	270
2812 ELN	5	585	176	557	194	545	201	527	211	490	235	467	250	444	265
	6	602	178	573	196	561	203	542	214	504	237	481	252	457	267
	7	620	180	590	198	577	205	**558**	**216**	519	240	494	255	470	270
	8	635	183	605	200	592	207	572	218	532	242	507	257	482	273
	9	651	185	619	203	606	210	587	221	545	244	520	260	494	275
	10	667	187	634	205	621	212	601	223	558	247	532	262	506	278
	12	698	192	664	210	651	217	629	228	585	252	557	268	530	284
	15	746	199	710	217	695	224	672	236	625	260	595	276	566	292
3012 ELN	5	624	195	594	214	582	222	562	234	523	260	498	276	474	293
	6	643	197	611	217	599	224	579	237	538	262	513	279	488	296
	7	662	200	629	219	616	227	**596**	**239**	554	265	528	282	502	299
	8	678	202	645	221	632	230	611	242	568	268	541	285	515	302
	9	695	205	661	224	647	232	626	244	582	270	555	287	528	304
	10	712	207	677	227	663	235	641	247	595	273	568	290	540	307
	12	746	212	709	232	694	240	671	252	624	279	595	296	565	314
	15	796	220	758	240	742	248	717	261	667	288	635	305	604	323
3212 ELN	5	692	196	659	215	645	223	623	235	580	261	552	277	525	294
	6	713	198	678	218	664	225	642	238	597	264	569	280	541	297
	7	734	201	698	220	683	228	**661**	**240**	614	266	585	283	557	300
	8	752	203	716	222	701	230	677	243	630	269	600	286	571	303
	9	771	205	733	225	718	233	694	245	645	272	615	289	585	306
	10	789	208	751	227	735	236	711	248	660	274	630	292	599	309
	12	827	213	787	233	770	241	745	253	692	280	660	298	627	315
	15	883	221	841	241	823	249	795	262	739	289	705	307	670	324
3412 ELN	5	749	214	713	235	698	243	675	256	627	285	598	303	569	321
	6	771	216	734	237	719	246	694	259	646	288	616	306	585	324
	7	794	219	755	240	739	249	**715**	**262**	664	291	633	309	602	328
	8	814	222	774	243	758	252	733	265	681	293	649	312	618	331
	9	834	224	793	246	776	255	751	268	698	296	666	315	633	334
	10	854	227	813	248	795	257	769	271	714	299	681	318	648	337
	12	895	233	851	254	833	263	806	277	749	306	714	325	679	344
	15	956	242	910	263	890	272	860	286	800	315	763	335	725	354
3612 ELN	5	780	232	742	255	726	264	702	278	653	309	622	328	592	348
	6	803	234	764	257	748	267	723	281	672	312	641	332	609	352
	7	826	237	786	260	769	270	**744**	**284**	691	315	659	335	627	355
	8	847	240	806	263	789	273	763	287	709	318	676	338	643	358
	9	868	243	826	266	808	276	782	290	727	321	693	342	659	362
	10	889	246	846	269	828	279	801	294	743	325	709	345	675	365
	12	931	252	886	276	868	285	839	300	779	332	743	352	706	373
	15	995	262	947	285	927	295	895	310	833	342	794	363	755	384
4212 ELN	5	862	234	820	256	803	266	776	280	721	311	688	331	654	351
	6	887	236	844	259	826	269	799	283	743	314	708	334	673	354
	7	913	239	869	262	850	272	**822**	**286**	764	317	728	337	693	358
	8	936	242	891	265	872	275	843	289	784	320	747	341	710	361
	9	959	245	913	268	893	278	864	292	803	324	766	344	728	364
	10	982	248	935	271	915	281	885	296	822	327	783	347	745	368
	12	1029	254	979	278	959	287	927	302	861	334	821	355	781	376
	15	1099	264	1046	287	1024	297	990	312	920	344	877	365	834	387

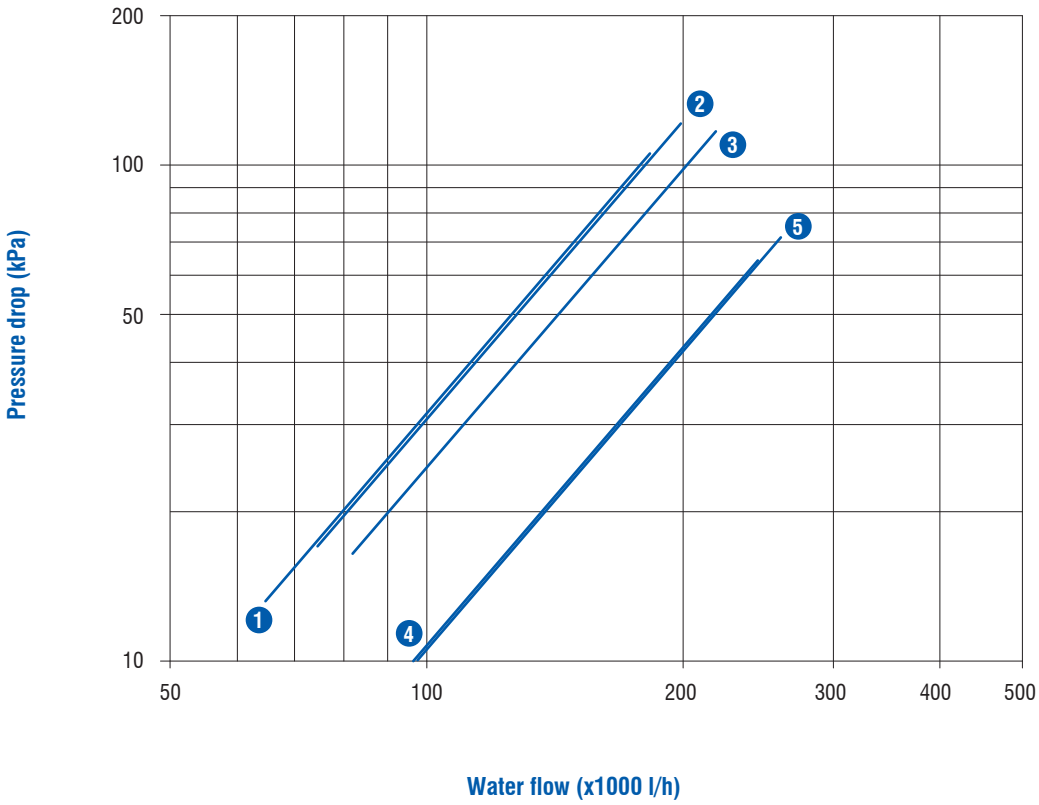
Notes :
- LWT : Leaving water temperature.
- Power input data are given for compressors only.

Cooling Capacities - AQSL HT

AQSL models	LWT (°C)	Condenser air entering temperature (°C)													
		25		30		32		35		40		44		46	
		Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)	Cooling cap. (kW)	Input power (kW)
2612 HT	5	634	142	603	156	590	162	571	170	531	189	506	201	481	213
	6	653	144	621	158	608	163	587	172	546	191	521	203	495	216
	7	672	145	639	160	625	165	**605**	**174**	562	193	536	205	510	218
	8	688	147	655	161	641	167	620	176	576	195	549	207	523	220
	9	706	149	671	163	657	169	636	178	591	197	563	209	536	222
	10	722	151	688	165	673	171	651	180	604	199	576	211	548	224
	12	757	155	720	169	705	175	682	184	633	203	604	216	574	229
	15	808	161	770	175	753	181	728	190	677	210	645	222	613	235
2812 HT	5	673	153	641	168	627	174	606	183	564	203	537	216	511	229
	6	693	155	659	170	646	176	624	185	580	206	553	219	526	232
	7	714	156	679	172	664	178	**642**	**187**	597	208	569	221	541	234
	8	731	158	696	173	681	180	659	189	612	210	584	223	555	236
	9	750	160	713	176	698	182	675	191	628	212	598	225	569	238
	10	768	162	730	177	715	184	691	193	642	214	612	227	583	241
	12	804	166	765	182	749	188	724	198	673	219	641	232	610	246
	15	859	173	818	188	800	195	773	204	719	225	685	239	652	253
3012 HT	5	729	167	694	183	679	190	657	200	610	222	582	236	553	250
	6	751	169	714	185	699	192	676	202	629	224	599	239	570	253
	7	773	171	735	187	720	194	**696**	**204**	647	227	617	241	586	255
	8	792	173	754	189	738	196	713	207	663	229	632	243	601	258
	9	812	175	772	192	756	199	731	209	680	231	648	246	616	260
	10	831	177	791	194	774	201	749	211	695	234	663	248	631	263
	12	871	181	829	198	811	205	784	216	729	239	695	253	661	268
	15	930	188	886	205	867	212	837	223	779	246	742	261	706	276
3212 HT	5	808	174	769	191	752	198	727	209	676	232	645	247	613	262
	6	832	176	791	194	775	201	749	211	696	235	664	250	631	265
	7	856	179	814	196	797	203	**771**	**214**	716	237	683	252	650	267
	8	877	181	835	198	818	205	790	216	735	239	700	254	666	270
	9	899	183	856	200	837	208	810	218	753	242	718	257	683	272
	10	921	185	876	202	858	210	829	221	770	244	734	259	699	275
	12	965	190	918	207	899	215	869	226	807	249	770	265	732	281
	15	1030	197	981	215	960	222	928	233	863	257	822	273	782	289
3412 HT	5	855	188	814	207	797	214	770	226	716	251	683	267	649	283
	6	881	191	838	209	821	217	793	228	738	253	703	270	669	286
	7	907	193	863	212	844	219	**816**	**231**	759	256	723	272	688	289
	8	929	195	885	214	866	222	837	233	778	258	742	275	705	291
	9	953	197	906	216	887	224	858	236	798	261	760	278	723	294
	10	975	200	928	219	908	227	879	239	816	264	778	280	740	297
	12	1022	205	972	224	952	232	920	244	855	270	815	286	775	303
	15	1091	213	1039	232	1017	240	983	252	914	278	871	295	828	312
3612 HT	5	896	202	853	222	835	230	807	243	750	269	715	287	680	304
	6	923	205	878	225	859	233	831	245	773	272	736	290	700	307
	7	950	207	903	227	884	236	**855**	**248**	795	275	758	293	721	310
	8	973	210	926	230	907	238	876	251	815	278	777	295	739	313
	9	998	212	949	232	929	241	899	253	835	281	796	298	757	316
	10	1021	215	972	235	951	244	920	256	854	283	815	301	775	319
	12	1070	220	1018	241	997	249	964	262	896	290	854	308	812	326
	15	1143	229	1088	249	1065	258	1029	271	957	299	912	317	867	335
4212 HT	5	968	206	922	227	902	235	872	247	811	275	773	292	735	310
	6	997	209	948	229	929	237	898	250	835	278	796	295	757	313
	7	1026	211	976	232	956	240	**924**	**253**	859	281	819	298	779	316
	8	1052	214	1001	234	980	243	947	256	881	283	840	301	798	319
	9	1078	216	1026	237	1004	246	971	258	903	286	861	304	818	322
	10	1104	219	1051	240	1028	248	994	261	923	289	881	307	838	325
	12	1157	225	1100	246	1077	254	1042	267	968	295	923	314	877	332
	15	1235	233	1176	254	1151	263	1112	276	1034	304	986	323	937	342

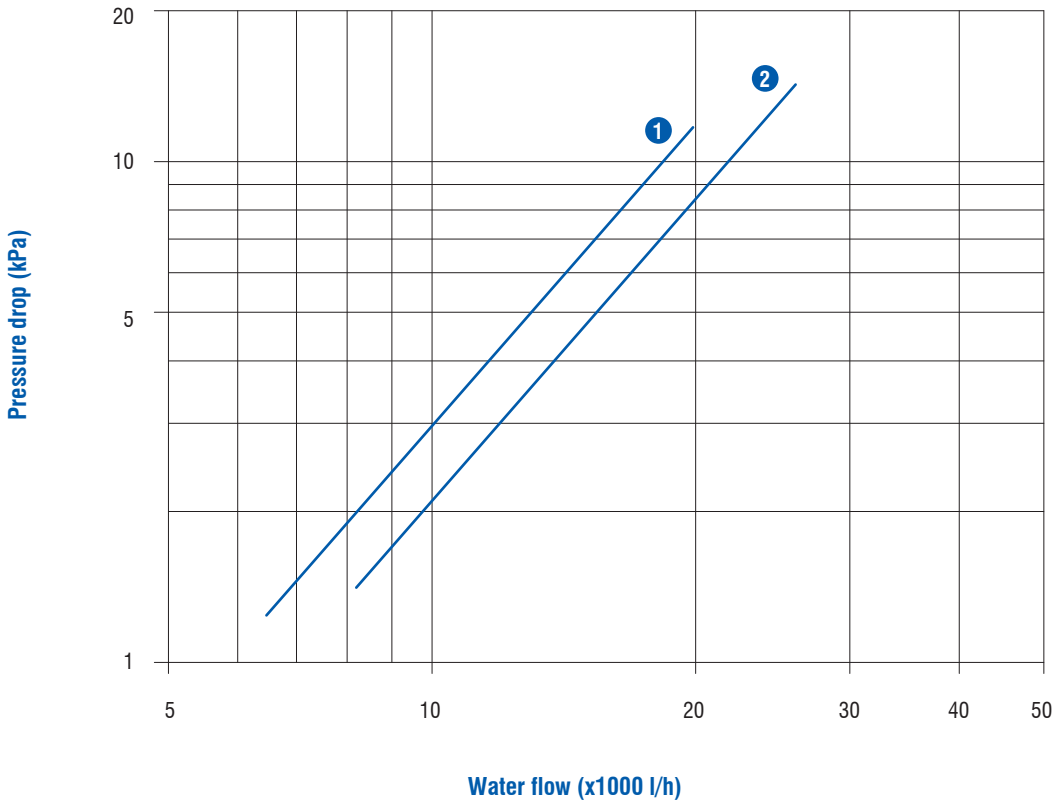
Notes :
- LWT : Leaving water temperature.
- Power input data are given for compressors only.

Evaporator Water Pressure Drop Curves - AQSL Units



Curve n°	Unit model	Qnom (l/h)	Qmax (l/h)	Qmin (l/h)	ΔPnom (kPa)	ΔPmax (kPa)	ΔPmin (kPa)
1	2612	103544	172573	64715	33.8	94.0	13.2
1	2812	109736	182893	68585	38.0	105.5	14.8
2	3012	119196	198660	74498	43.6	121.2	17.0
3	3212	131064	218440	81915	42.1	117.0	16.4
4	3412	139492	232487	87183	20.9	58.1	8.2
4	3612	146716	244527	91698	23.1	64.2	9.0
5	4212	156176	260293	97610	25.7	71.5	10.0

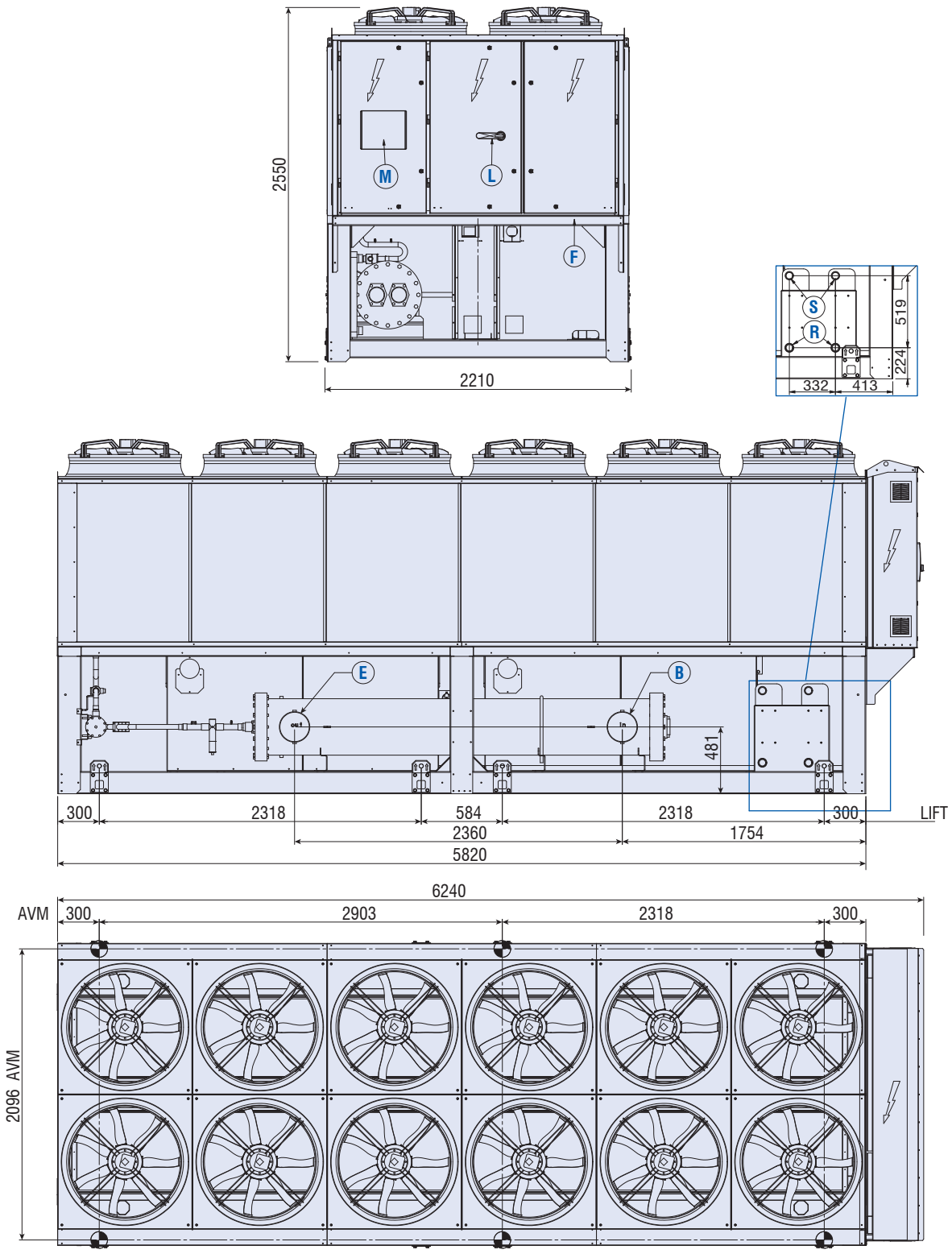
Desuperheater Water Pressure Drop Curves - AQSL Units



Curve n°	Unit model	Qnom (l/h)	Qmax (l/h)	Qmin (l/h)	ΔPnom (kPa)	ΔPmax (kPa)	ΔPmin (kPa)
1	2612	10354	17257	6472	3.2	8.8	1.2
1	2812	10974	18289	6859	3.6	9.9	1.4
1	3012	11920	19866	7450	4.2	11.7	1.6
2	3212	13106	21844	8192	3.6	10.0	1.4
2	3412	13949	23249	8718	4.1	11.4	1.6
2	3612	14672	24453	9170	4.5	12.6	1.8
2	4212	15618	26029	9761	5.1	14.2	2.0

Note : Flow rate refers to one condenser only.

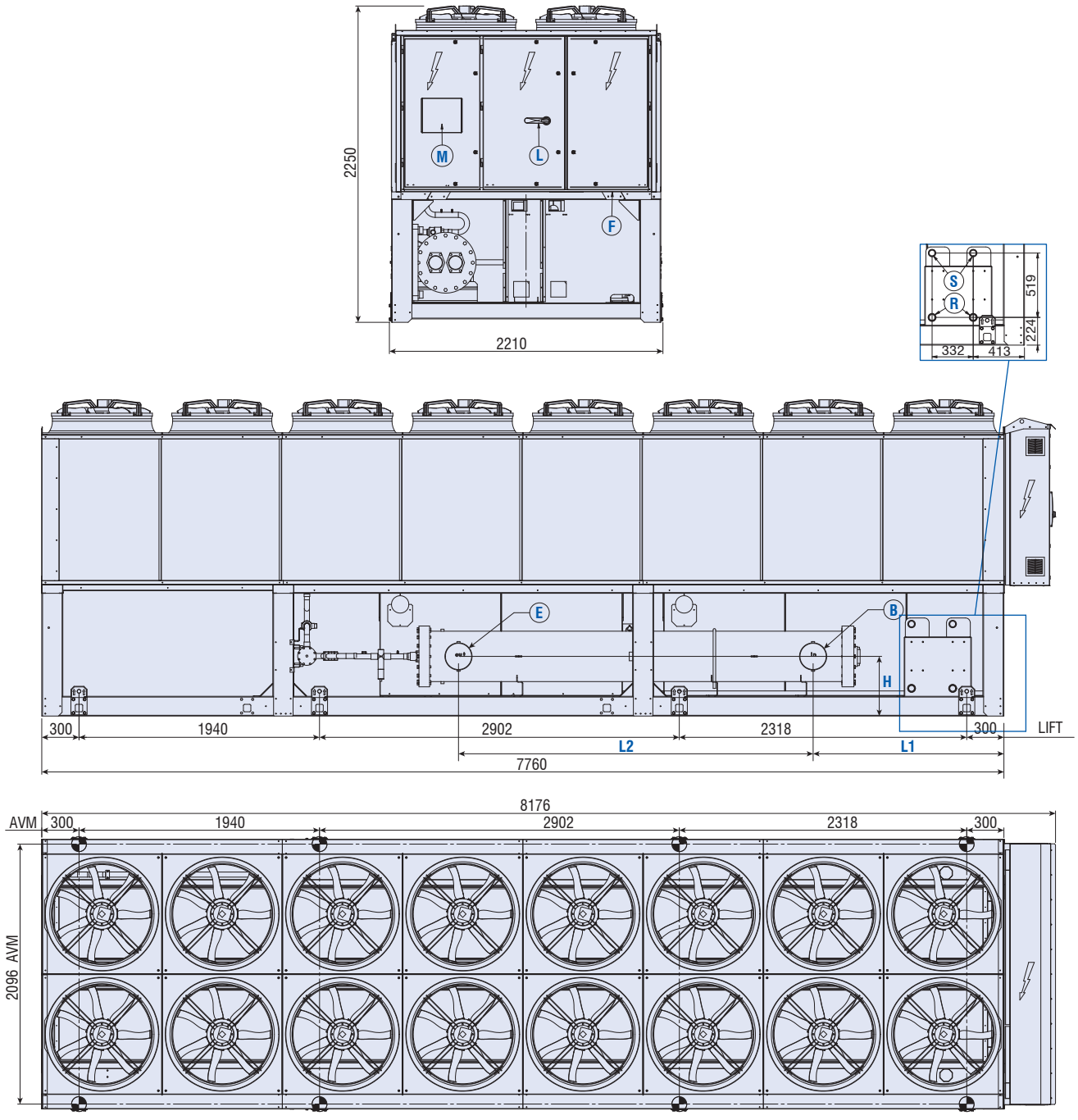
Dimensions (mm) - AQSL 2612 to 3012



A	Water connection 8" Victaulic Ø211 mm
B	Water connection 8" Victaulic Ø211 mm
E	Water connection 8" Victaulic Ø211 mm
F	Electrical power supply
L	Main switch
M	Control keypad / Display
R	Optional desuperheater water inlet Ø2" gas **
S	Optional desuperheater water outlet Ø2" gas **
⊕	Anti-vibration mounts

Hydraulic option	Water in	Water out
STD	B	E
1P/2P	TBD	TBD

Dimensions (mm) - AQSL 3212 to 3612

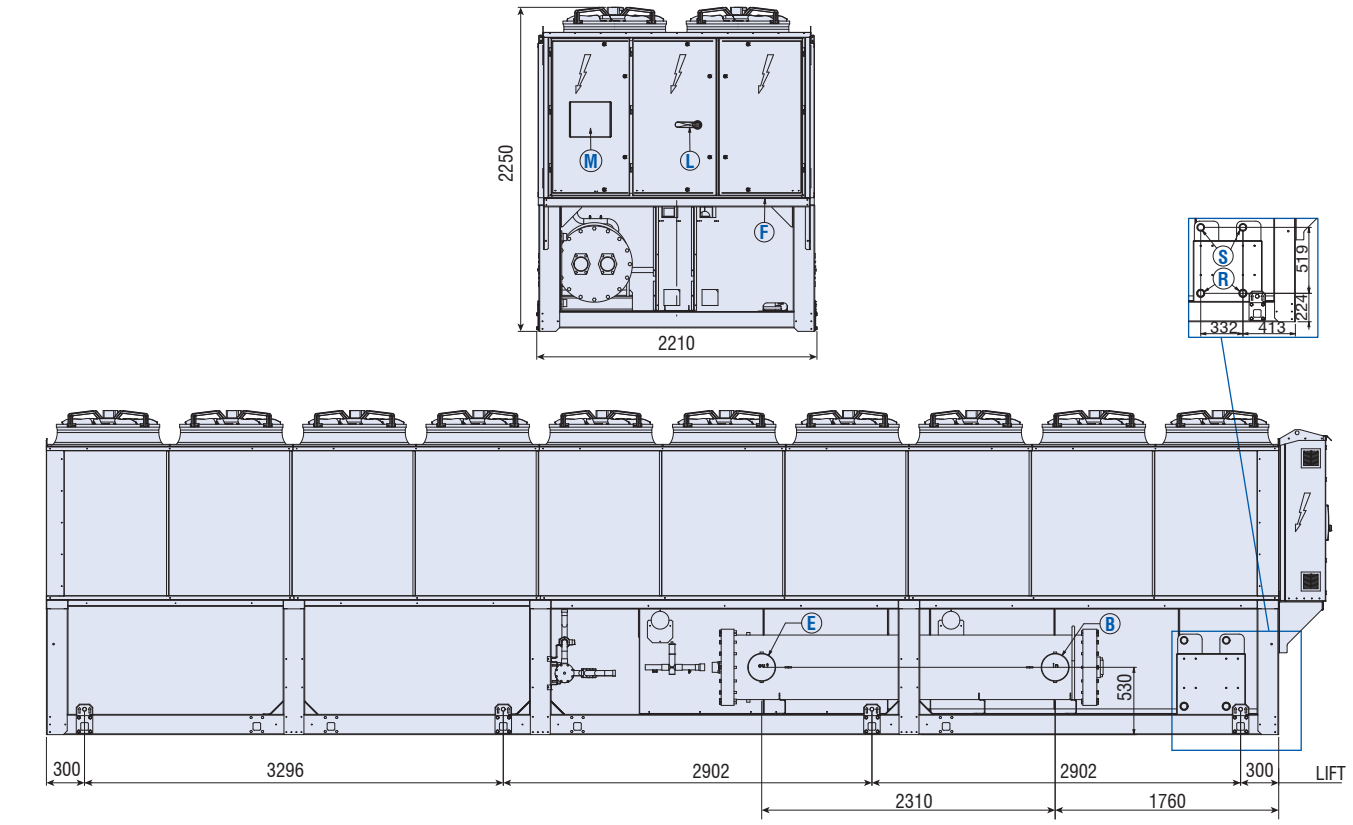


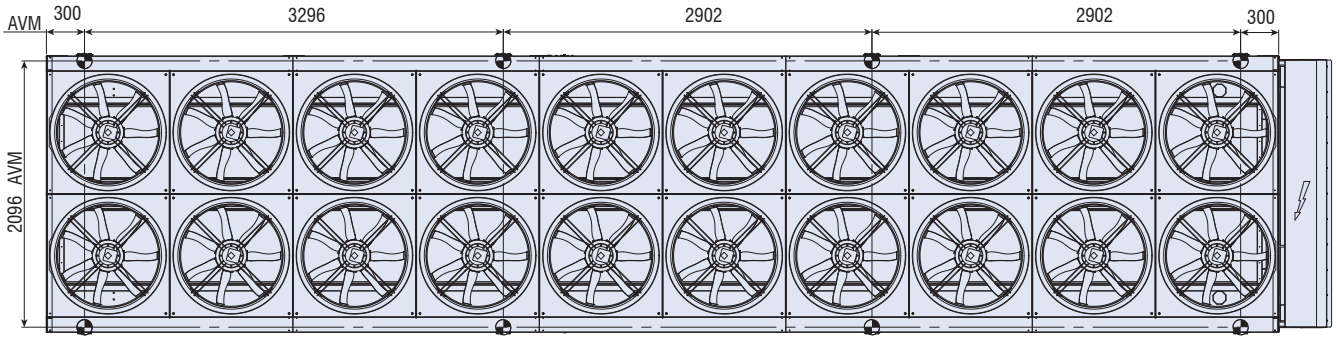
B	Water connection 8" Victaulic Ø211 mm
E	Water connection 8" Victaulic Ø211 mm
F	Electrical power supply
L	Main switch
M	Control keypad / Display
R	Optional desuperheater water inlet Ø2" gas **
S	Optional desuperheater water outlet Ø2" gas **
⊕	Anti-vibration mounts

Hydraulic option	Water in	Water out
STD	B	E
1P/2P	TBD	TBD

Sizes	L1	L2	H
3212	1540	2860	480
3412-3612	1758	2310	530

Dimensions (mm) - AQSL 4212

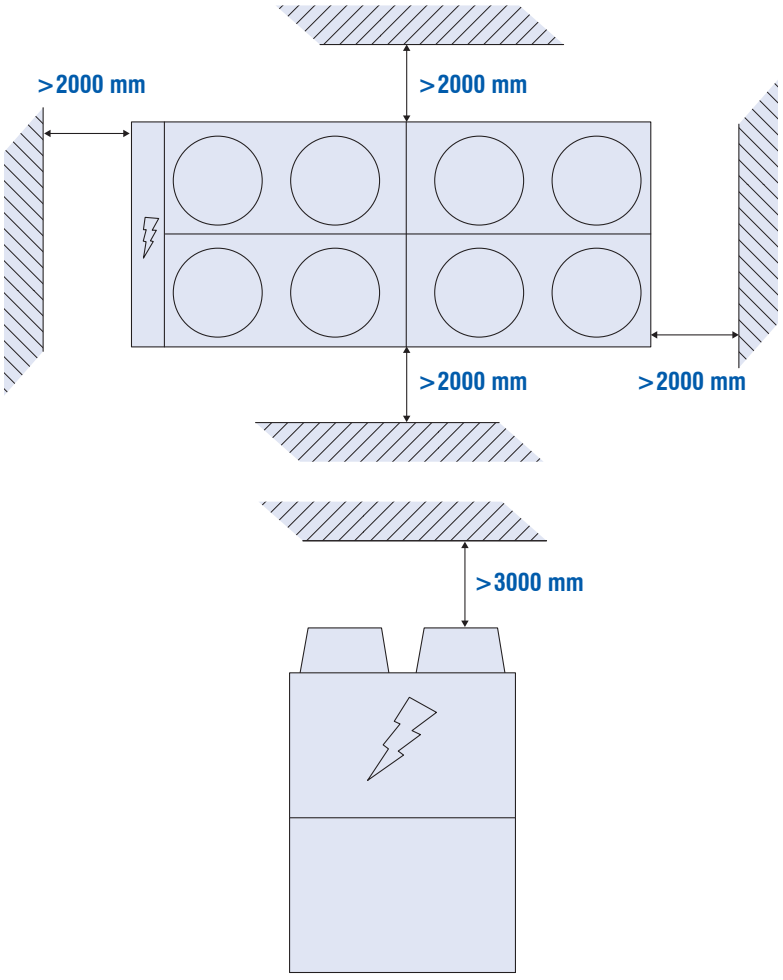




B	Water connection 8" Victaulic Ø211 mm
E	Water connection 8" Victaulic Ø211 mm
F	Electrical power supply
L	Main switch
M	Control keypad / Display
R	Optional desuperheater water inlet Ø2" gas **
S	Optional desuperheater water outlet Ø2" gas **
⊕	Anti-vibration mounts

Hydraulic option	Water in	Water out
STD	B	E
1P/2P	TBD	TBD

Space Requirements



Notes

Notes

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