Scroll Compressor

Refrigerant R410A R410A

143.7 to 217.6kW

125.4 to 208.8kW

SysAqua

Air Cooled Water Chillers

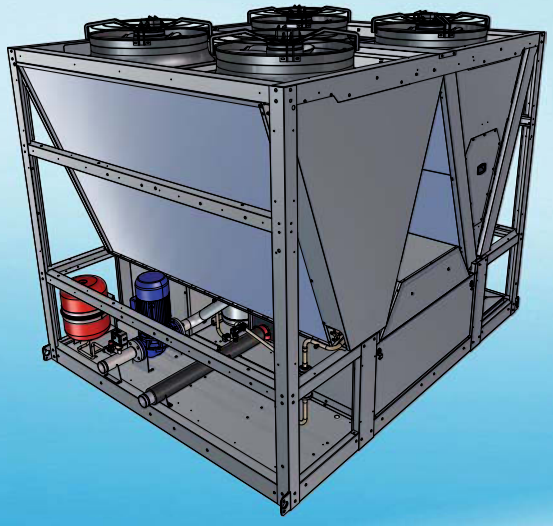
SysAquaL (Cooling Only) / SysAquaH (Heat Pump)
Models 140 to 210

systemair

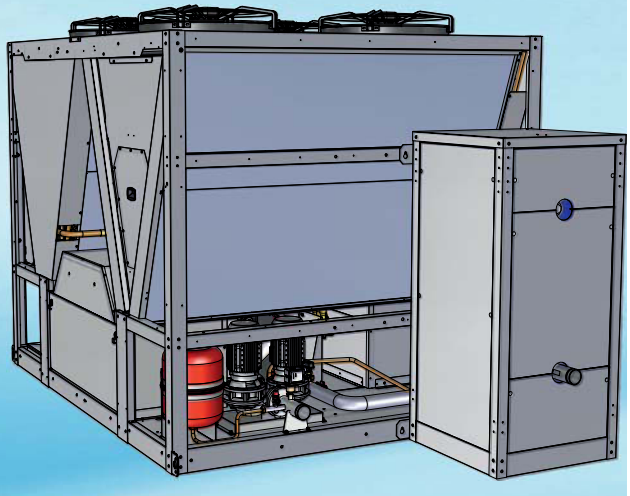
Key Points

- Energy class **SCOP A+**,
- **R410A** refrigerant,
- Units are optimized for partial load operation,
- High ESEER and SCOP,
- 2 refrigerant circuits each equipped with 2 compressors fitted in tandem. Up to eight capacity steps provides an immediate return on investment versus the inverter units,
- Leak detection according BREEAM standard
- **Low acoustic level as standard**, **SysAqua** unit are supplied with an acoustic box around compressors,
- "Night Mode" for energy savings and even more reduced noise level in night operation,
- Water law is standard for energy savings,
- Great accessibility to internal components for service operations,
- New display on external panel allowing the complete control of the unit,
- Wide operating limits,
- High temperature operation up to 50 °C,
- Operation in heat pump mode down to external temperature of -17 °C,
- Fan speed control for low ambient operation in cooling mode down to -10 °C,
- ModBus interface available (reading/writing),
- Phase sequence monitor supplied as standard,
- User-friendly controller that allows to reduce the need of an external water tank in most of comfort air conditioning installations,
- Control logic on return or leaving water temperature,
- In cooling mode, 3.5 litres of buffer volume per kW are recommended,
- In heating mode, 6.5 litres of buffer volume per kW are recommended,
- New technology "smart deice" standard for **SysAquaH** units to ensure a constant temperature out of water even at very low temperatures,
- Double water set point,
- Water filter (not fitted) and water flow switch (factory fitted) are supplied as standard,
- "Plug and play" hydraulic pack is optional,
- Automatic air vent,
- Victaulic connection on internal components ensuring a perfect sealing and facilitating service operations,
- Double 2" 1/2 valve on water pipes for pressure measurement,
- Small footprint, allowing shipping and handling costs to be saved, units find easily a place to be installed.

SysAqua



SysAquaL/SysAquaH WITHOUT BUFFER TANK



SysAquaL/SysAquaH WITH BUFFER TANK

Specifications

General

The new **SysAquaL/SysAquaH 140 to 210** have been designed and optimized to operate with R410A refrigerant fluid. They are of dual refrigerant circuit type.

They are available in **cooling only (SysAquaL)** and **heat pump (SysAquaH)** versions.

Each versions consists of **5 sizes (140, 150, 170 and 210)** and covers a nominal cooling capacity range from **127 to 208 kW** and a nominal heating capacity range from **140 to 213 kW**.

All units are equipped with **four scroll compressors fitted in tandem** for adapting to partial system loads.

The general operation status of the machine is continuously under the control of an **IHM controller**.

The **SysAquaL** and **SysAquaH units can operate without water tank**, thanks to the IHM controller that implements an **auto-adaptative control logic** ensuring a total protection of the compressors at different load or water volume conditions.

The minimum water volume requested in cooling mode is **3.5 litres** of buffer volume per kW.

In heating mode, **6.5 litres** of buffer volume per kW are recommended in order to guarantee homogeneous temperatures during the defrosting cycles (comfort and energy savings).

A **fan speed controller** can be also supplied as factory-fitted option to authorize the unit to operate in cooling mode at low ambient temperature.

Cabinet and structure

The cabinet and structure of the unit are of heavy duty galvanized steel. All galvanized steel components are **individually painted** by a special painting process before the assembly of the unit.

This painting system performs a homogeneous protection to the corrosion. The painting is a polyester powder based type, coloured in **RAL 7040**.

The units **SysAquaL/SysAquaH** are suitable for outdoor installation, directly on the building roof or at the ground level.

Compressors

Each unit is equipped with four scroll compressors assembled together to form 2 **tandem of compressors**.

The compressors are then mounted on rubber pads in order to eliminate noise and vibration transmissions.

The compressor motors have a direct start-up. Each motor is cooled by the refrigerant gas and is equipped with an overload protection.

A **phase sequence monitor** is supplied as standard.

Evaporator

The evaporator is consisting of a stainless steel plate heat exchanger insulated with closed cell synthetic foam. It is protected by an **antifreeze electric heater** to ensure a good protection against freezing at low ambient temperature (-10 °C min.) when the unit is switched off.

Maximum working pressure is 10 bar at water side and 45 at refrigerant side.

Condenser

The condenser is a finned coil constructed with seamless copper tubes mechanically expanded into aluminium fins. The fins of SysAquaH coils are made of aluminium with hydrophylic blue coating to facilitate water droplets drain.

The condenser is largely dimensioned in order to optimize performance and defrosting cycles.

New technology "smart device" standard for **SysAquaH** units to ensure a constant temperature out of water even at very low temperatures

- Antifreeze coil with increased fin pitch
  Proven technology for 8 years on high temperature heat pump for dividing by 2 the frequency of defrost
- Unique defrost logic prohibiting deicing two circuits simultaneously

Condenser fans and motors

Each unit has four axial fan, with 2 speeds.

The fan motor has IP54 grade and is equipped with a thermal overload protection.

A pressostatic type fan speed controller can be delivered as factory-fitted option. It allows the unit to operate in cooling mode at low ambient temperatures down to -10 °C minimum, because it regulates the fan speed in order to maintain the constant condensing temperature.

All fans are fitted with a protective grille on top.

Refrigerant circuit

All units have two refrigerants circuits consisting of : scroll tandem compressors, plate heat exchanger, electronic expansion valve, 4-way reverse cycle valve and liquid reservoir (heat pump version only), condenser coil, as well as safety and control devices such as high pressure switch, high/low pressure transducers and PED safety valve.

Inspection on refrigerant via a sight glass can be done during service operations, without disturbing the unit operating conditions.

All refrigerant components are shown in the functional diagrams illustrated in the next pages, section "Refrigerant flow diagrams".

Hydraulic circuit

Thanks to the design flexibility on the hydraulic circuit, all the units can be configured in several ways :

- **BASIC unit** : Unit without pump, the hydraulic circuit contains the following components : supplied loose water filter, mounted water flow switch, water safety valve, automatic air vent, optional field-installed in/out 2" 1/2 water valves.
  All water piping is covered with thermal insulation.
- **H1BP** : One pump unit having the same equipment as BASIC unit + a pump with 150 kPa external static pressure. An air vent is provided for this configuration.
- **H1HP** : One pump unit having the same equipment as BASIC unit + a pump with 300 kPa external static pressure. An air vent is provided for this configuration.
- **H2BP** : Two pump unit having the same equipment as BASIC unit + 1 dual pump monobloc with 150 kPa external static pressure. An air vent is provided for this configuration.
- **H2HP** : Two pump unit having the same equipment as BASIC unit + 1 dual pump monobloc with 300 kPa external static pressure. An air vent is provided for this configuration.

The different components of hydraulic kit are interconnected by Victaulic couplings in order to facilitate maintenance operations.

Specifications

Control panel

The units are fitted with an external control panel that displays the operating parameters and alarms.

The control panel is accessible from exterior without removing any parts, nor shutting down the unit, because it is placed on an external panel. A plexiglas cover protects the control from shocks and bad weather.

The **SysAquaL/SysAquaH** chillers are equipped with a microprocessor based control with a new **IHM** logic that implements an intelligent control **with anticipation of needs**, either on entering water temperature, or on leaving water temperature.

User interface

The main features of this control system are :

- User-friendly : with only 6 buttons and a tree logic, it is possible to control the unit easily,
- Reliable : all indications on the display are visible in every weather conditions,
- Internal test procedure,
- Alarm visualization with a logging of the last 10 alarms,
- Remote ON/OFF switching,
- Compressor and pump working hour counter,
- Pressure transducers to control discharge and suction temperatures,
- Maximum discharge temperature control,
- Part load operating mode,
- Remote Cooling/Heating mode switching,
- Compatibility with BMS (RS485 ModBus protocol),
- Compressor operating limits stored in a flash memory.

Control and safety devices

Each unit is complete with the following safety and control devices :

Safety :

- Fan motor overload protection.
- Compressor motor overload protection.
- Water flow switch.
- Water filter (supplied loose).
- High pressure switch.
- High and low pressure transducers.
- Evaporator antifreeze electric heater.
- Crankcase heater.
- Safety valve on 45 bar refrigerated side.
- Safety valve on 3 bar water side.

Control :

- Entering water temperature sensor.
- Leaving water temperature sensor.
- Coil temperature sensor.
- Discharge temperature sensor.
- Air temperature sensor.
- Suction and discharge pressure transducers.
- Dry contact available to the client:
  ON / OFF, SUMMER / WINTER, Day / Night.

Conformity with standards

All **SysAquaL/SysAquaH** units are in compliance with the following standards:

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

Factory-installed options

- Coil with epoxy treatment.
- Lack of water pressure switch.
- 1-pump hydraulic low pressure pack.
- 1-pump hydraulic hight pressure pack.
- 2-pump hydraulic low pressure pack.
- 2-pump hydraulic hight pressure pack.
- Fan speed control pack (for operation with low ambient temperature down to -10 °C).
- Nordic Pack including a protection of the external coils and a heating wire in condensate tray.

Field-installed accessories

- Anti-vibration rubber pads.
- In/Out valve pack.

Models designation

SysAqua140	.	H	.	STD	.	H1BP	.	R410A	.	SYSTEMAIR	.	AC	.	+	.	PC	.	BT
①		②		③		④		⑤		⑥		⑦				⑧		⑧

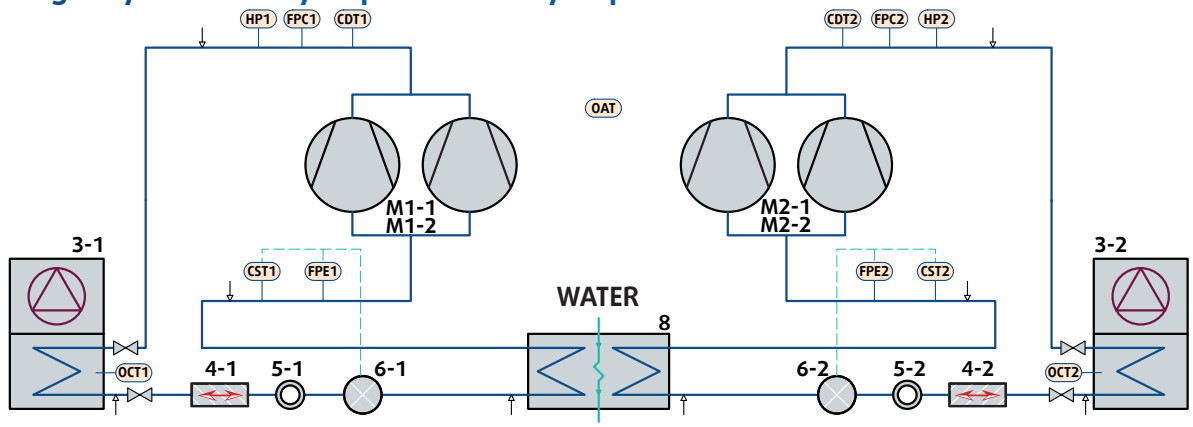
REP.		Description		
①	Size	**SysAqua140** : size 140 **SysAqua150** : size 150	**SysAqua170** : size 170 **SysAqua190** : size 190	**SysAqua210** : size 210
②	Version	**L** : Cooling only	**H** : Heat pump	
③	Regulation	**STD** : Standard	**TTS** : All seasons	
④	Hydraulic circuit	**HB** : Without pump **H1BP** : Pack Single pump LP **H1HP** : Pack Single pump HP	**H2BP** : Pack Double pump LP **H2HP** : Pack Double pump HP	
⑤	Gas type	**R140A** :		
⑥	Brand	**$** : NO BRAND **SYSTEMAIR** : Systemair	**AIRWELL** : Airwell	
⑦	Fan type	**AC** : Standard fan AC motor		
⑧	Option	**EPO** : Finned coil treatment - epoxy **PME** : Low water pressure sensor **PC** : rubber pads **VI** : Water isolation valves	**BT** : Buffer tank **TTS** : All season **SST** : Soft Starter **BNIP** : Bacnet IP	

Product Codes

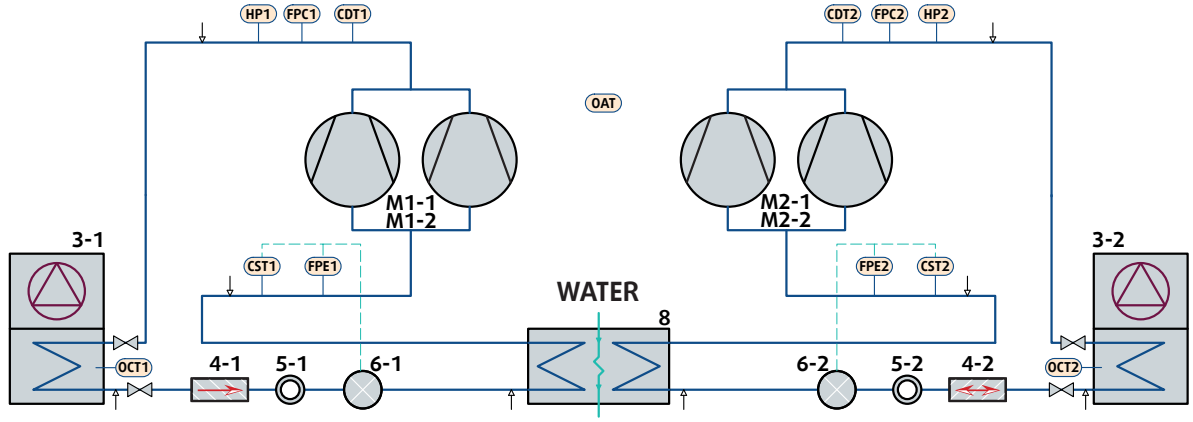
Product codes		description
ORACLE	M3	
70G170010	370190	SYSAQUA140.H.STD.H1BP.R410A.SYSTEMAIR.AC.+.PME.PC
70G170011	370191	SYSAQUA140.H.STD.H1BP.R410A.SYSTEMAIR.AC.+.PME.PC.BT
70G170012	370192	SYSAQUA150.H.STD.H1BP.R410A.SYSTEMAIR.AC.+.PME.PC
70G170013	370193	SYSAQUA150.H.STD.H1BP.R410A.SYSTEMAIR.AC.+.PME.PC.BT
70G170014	370194	SYSAQUA170.H.STD.H1BP.R410A.SYSTEMAIR.AC.+.PME.PC
70G170015	370195	SYSAQUA170.H.STD.H1BP.R410A.SYSTEMAIR.AC.+.PME.PC.BT
70G170016	370196	SYSAQUA190.H.STD.H1BP.R410A.SYSTEMAIR.AC.+.PME.PC
70G170017	370197	SYSAQUA190.H.STD.H1BP.R410A.SYSTEMAIR.AC.+.PME.PC.BT
70G170018	370198	SYSAQUA210.H.STD.H1BP.R410A.SYSTEMAIR.AC.+.PME.PC
70G170019	370199	SYSAQUA210.H.STD.H1BP.R410A.SYSTEMAIR.AC.+.PME.PC.BT

Refrigerant Flow Diagram

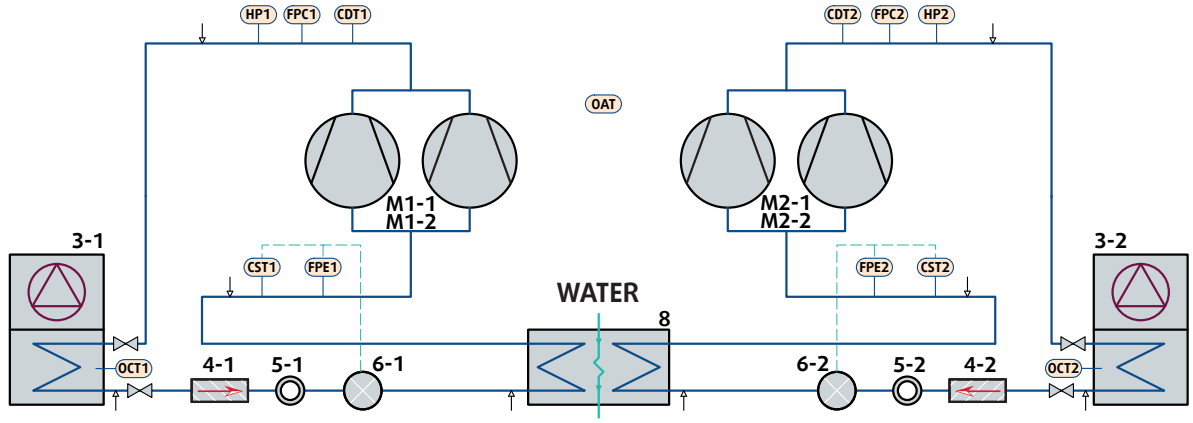
Cooling only version - SysAqua140.L to SysAqua150.L



Cooling only version - SysAqua170.L



Cooling only version - SysAqua190.L to SysAqua210.L

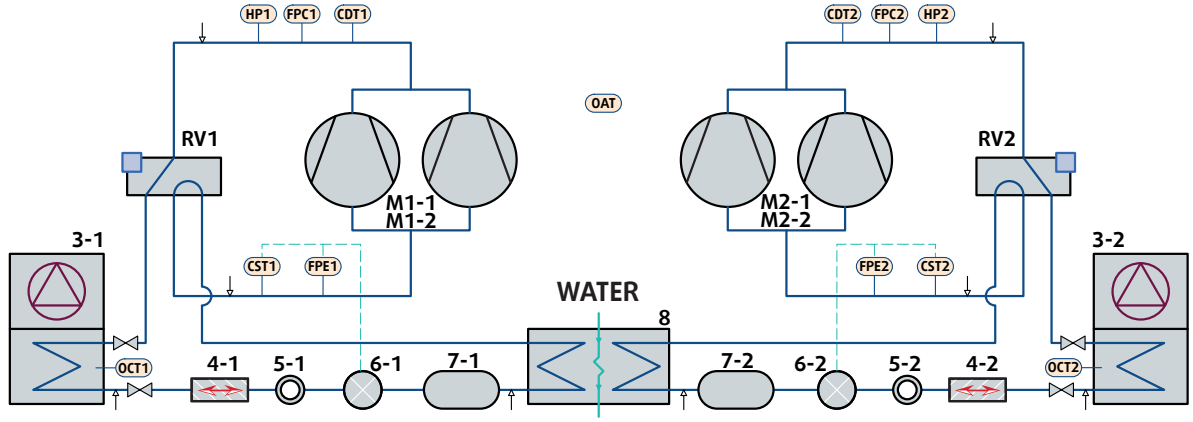


components	
M1-1/M1-2 M2-1/M2-2	Tandem scroll compressors
3	Air condenser
4	Filter drier
5	Sight glass
6	Electronic expansion valve
8	Plate heat exchanger

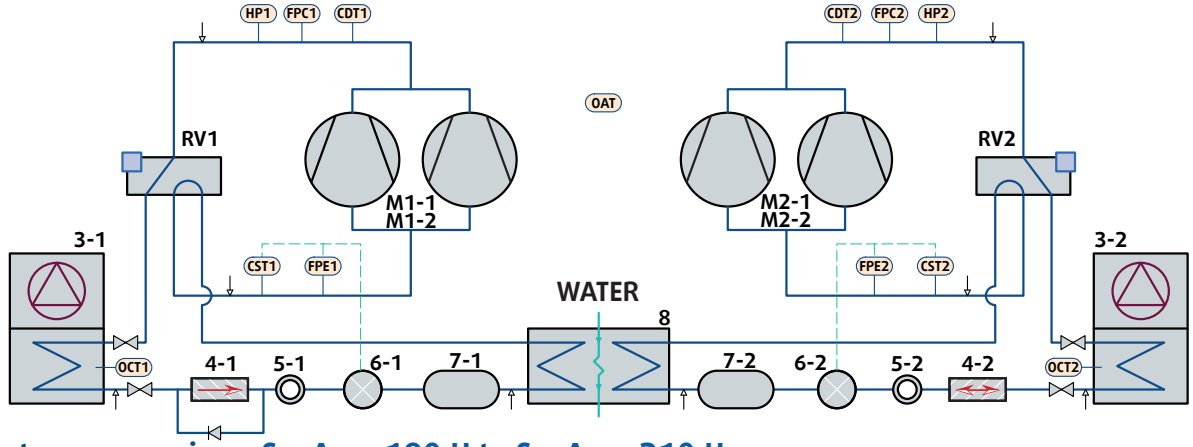
safety/control devices	
FPC1 / FPC2	High pressure transducer
HP1 / HP2	High pressure switch
CDT1 / CDT2	Discharge temperature sensor
FPE1 / FPE2	Low pressure transducer
CST1 / CST2	Suction temperature sensor
OAT	Outdoor air temperature sensor
OCT1 / OCT2	Condenser outdoor temperature sensor
⏚	Pressure tapping point 5/16"

Refrigerant Flow Diagram

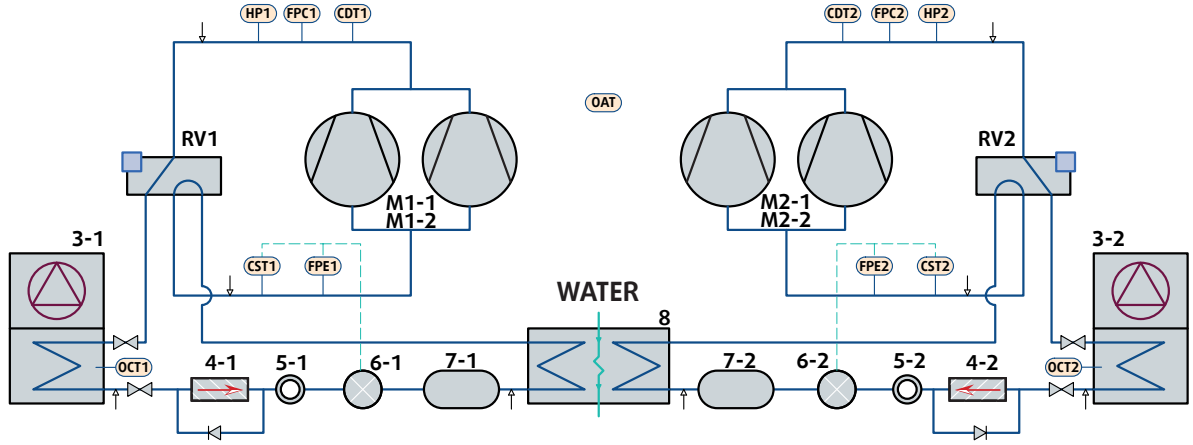
Heat pump version - SysAqua140.H to SysAqua150.H



CoHeat pump version - SysAqua170.H



Heat pump version - SysAqua190.H to SysAqua210.H

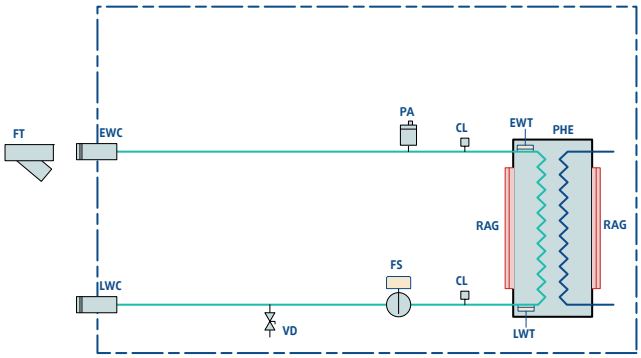


components	
M1-1/M1-2 M2-1/M2-2	Tandem scroll compressors
RV1 / RV2	Cycle reversal valve
3	Air condenser
4	Filter drier
5	Sight glass
6	Electronic expansion valve
7	liquid receiver
8	Plate heat exchanger

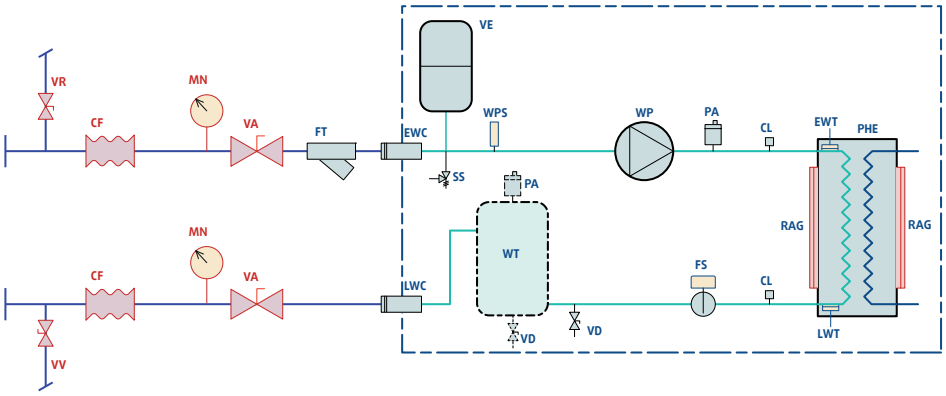
safety/control devices	
FPC1 / FPC2	High pressure transducer
HP1 / HP2	High pressure switch
CDT1 / CDT2	Discharge temperature sensor
FPE1 / FPE2	Low pressure transducer
CST1 / CST2	Suction temperature sensor
OAT	Outdoor air temperature sensor
OCT1 / OCT2	Condenser outdoor temperature sensor
	Pressure tapping point 5/16"

Hydraulic Circuit Diagram

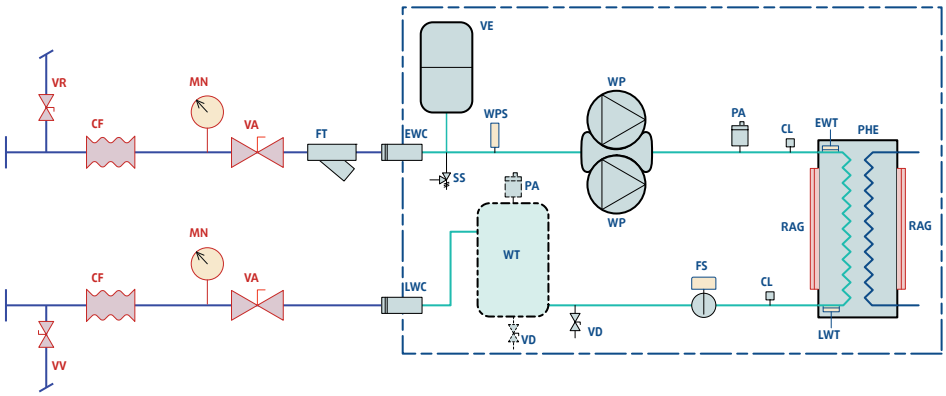
Without pump version



Recommended installation - Single pump version



Recommended installation - Double pump version

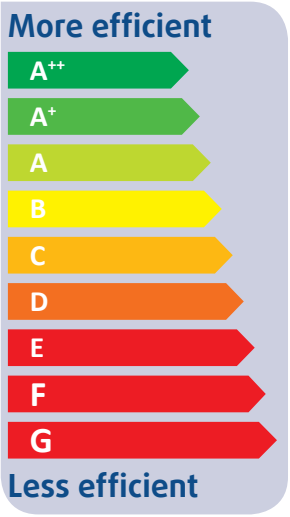


Installation recommandée	
VA	Globe valve (option)
VV	Drain valve
CF	Connexion flexible
VR	Water charging valve
MN	Manometer

circuit hydraulique	
FT	Filter (supplied loose)
EWC/LWC	Inlet/Outlet male connection - Victaulic 2"1/2'
VE	Pressure expansion tank
WPS	Lack of water pressure switch (optional)
SS	Safety valve
WP	Pump
PA	Automatic air vent
CL	Pressure tap 3/8"
EWT	Inlet water temperature sensor
LWT	Outlet water temperature sensor
PHE	Plate heat exchanger
RA	Antifreeze heater
FS	Flow switch
VD	Drain valve
WT	Buffer tank

Energy performance

Energy class



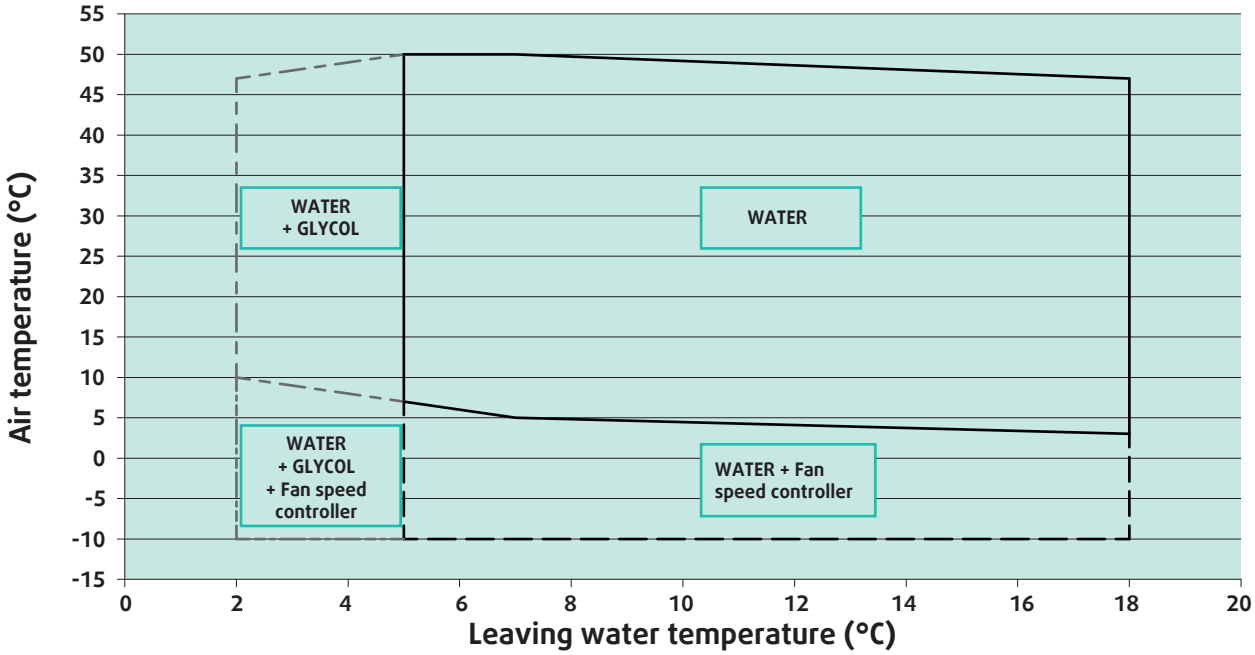
SysAqua	SysAqua140.H	SysAqua150.H	SysAqua170.H	SysAqua190.H	SysAqua210.H
SCOP	3.32	3.36	3.31	3.29	3.23
Class	A+	A+	A+	A+	A+

Seasonal space heating energy efficiency class according to the Delegated Regulation No. 811/2013 of the European Commission.

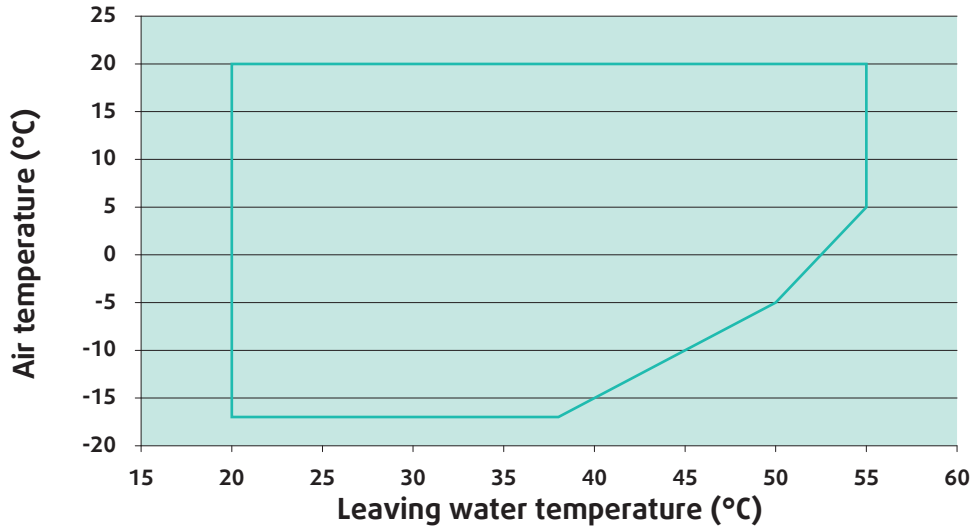
** considered at nominal unit capacity

Operating Limits

SysAquaL/SysAquaH in cooling mode



SysAquaH in heating mode



Correction Factors

Fouling factors - Evaporator

Fouling factor (m^2.°C/kW)	Capacity	Power input
0.044	1.000	1.000
0.088	0.987	0.995
0.176	0.964	0.985
0.352	0.915	0.962

Fouling factors - Condenser

Fouling factor (m^2.°C/kW)	Capacity	Power input
0.044	1.000	1.000
0.088	0.987	1.023
0.176	0.955	1.068
0.352	0.910	1.135

Altitude factors

Altitude (m)	Capacity	Power input
0	1.000	1.000
600	0.987	1.010
1200	0.973	1.020
1800	0.958	1.030
2400	0.943	1.040

Correction factors - Ethylene glycol

% glycol	Freezing point (°C)	Caoacity	Power input	Water flow	Pressure drop
0	0	1.00	1.00	1.00	1.00
10	-3	0.991	0.996	1.013	1.070
20	-8	0.982	0.992	1.040	1.129
30	-14	0.972	0.986	1.074	1.181

Warning !

Ethylene glycol is toxic to the environment. Moreover, it is not suitable for heating with domestic hot water production by simple exchange.

Correction factors - Propylene glycol

% glycol	Freezing point (°C)	Caoacity	Power input	Water flow	Pressure drop
0	0	1.00	1.00	1.00	1.00
10	-3	0.987	0.992	1.010	1.068
20	-7	0.975	0.985	1.028	1.147
30	-13	0.962	0.978	1.050	1.248

Physical Data - SysAquaL

SysAqua - Cooling only version			SysAqua140.L	SysAqua150.L	SysAqua170.L	SysAqua190.L	SysAqua210.L
Cooling capacity		kW	134.0	147.0	161.2	187.8	208.8
Power input		kW	44.2	49.1	53.5	65.7	73.0
Total EER 100% (1)			3.03	3.00	3.00	2.86	2.86
ESEER (2)			4.16	4.20	4.14	4.08	4.10
Energy class (2)			B	B	B	B	B
Power supply			400V / 3~ N / 50Hz				
Startup type			Direct				
Maximum operating current		A	117	127	143	158	174
Startup current		A	257	267	329	345	400
REFRIGERANT							
Type			R410A				
Number of refrigerant circuit			2	2	2	2	2
Charge (3)		kg	39.1	39.1	39.1	39.1	59.5
COMPRESSORS							
Number			4	4	4	4	4
Type			Scroll				
Part load steps		%	0/24/26/48/50 52/74/76/100	0/23/27/46/50 54/73/77/100	0/20/24/44/45 55/69/80/100	0/22/28/44/50 56/72/78/100	0/19/31/38/50 62/69/81/100
Crankcase heater		W	66 + 66 + 66 + 66	66 + 66 + 66 + 66	66 + 66 + 82 + 66	82 + 66 + 82 + 66	95 + 66 + 95 + 66
EVAPORATOR							
Number			1	1	1	1	1
Type			Plate				
Water flow		m^3/h	22.98	25.22	27.65	32.21	35.82
Water pressure drop		kPa	37	45	27	37	45
Water volume		l	8.49	8.49	12.21	12.21	12.21
Antifreeze heater		W	60	60	120	120	120
COIL							
Number			4	4	4	4	4
Frontal surface		m^2	11.88	11.88	11.88	11.88	11.88
Number of rows			2 + 2	2 + 2	2 + 3	3 + 3	3 + 3
FAN							
Number			4	4	4	4	4
STD	Air flow	m^3/h	56000	56000	71000	86000	83000
	Rotational speed	tr/mn	900	900	900	900	900
	Power input each fan	W	940	940	940 - 2100	2100	2100
WATER CONNECTIONS							
Type			Victaulic connection				
Inlet diameter		pouces	2"1/2	2"1/2	2"1/2	2"1/2	2"1/2
Outlet diameter		pouces	2"1/2	2"1/2	2"1/2	2"1/2	2"1/2
BUFFER TANK (OPTION)							
Volume		L	300	300	300	300	300
DIMENSIONS							
Without buffer tank	Length	mm	2 856	2 856	2 856	2 856	2 856
	Width	mm	2 210	2 210	2 210	2 210	2 210
	Height	mm	2 295	2 295	2 321	2 321	2 321
With buffer tank	Length	mm	3 666	3 666	3 666	3 666	3 666
	Width	mm	2 210	2 210	2 210	2 210	2 210
	Height	mm	2 295	2 295	2 321	2 321	2 321
WEIGHT							
Dry weight Without buffer tank		kg	1 422	1 425	1 515	1 584	1 847
ACOUSTICAL DATA							
Sound power level		dB(A)	85.4	85.4	87.0	88.1	88.1
Sound pressure level (*)		dB(A)	57.4	57.4	59.0	60.1	60.1

(*) Sound pressure levels calculated at 10 meters. Sound pressure levels refer to ISO standard 3744 with parallepiped shape.

(1) According to EN 14511-3:2011

(2) According to Eurovent

(3) Indicatives values - see nameplate

Physical Data - SysAquaH

SysAqua - Heat pump version			SysAqua140.H	SysAqua150.H	SysAqua170.H	SysAqua190.H	SysAqua210.H
Cooling capacity		kW	125.4	137.6	150.9	175.8	195.4
Power input		kW	43.6	48.4	52.7	64.8	72.5
Total EER 100% (1)			2.88	2.84	2.86	2.71	2.69
ESEER (2)			4.0	4.0	4.0	3.8	3.8
Energy class (2)			B	C	B	C	C
Heating capacity		kW	143.7	153.7	170.1	194.9	217.6
Power input		kW	45.7	50.3	55.5	67.3	78.3
Total COP 100% (1)			3.14	3.06	3.07	2.89	2.78
SCOP			3.32	3.36	3.31	3.29	3.23
Energy class (2)			A+	A+	A+	A+	A+
Power supply			400V / 3~ N / 50Hz				
Startup type			Direct				
Maximum operating current		A	117	127	143	158	174
Startup current		A	257	267	329	345	400
REFRIGERANT							
Type			R410A				
Number of refrigerant circuit			2	2	2	2	2
Charge (3)		kg	44.7	44.7	56.0	68.0	68.0
COMPRESSORSS							
Number			4	4	4	4	4
Type			Scroll				
Part load steps		%	0/24/26/48/50 52/74/76/100	0/23/27/46/50 54/73/77/100	0/20/24/44/45 55/69/80/100	0/22/28/44/50 56/72/78/100	0/19/31/38/50 62/69/81/100
Crankcase heater		W	66 + 66 + 66 + 66	66 + 66 + 66 + 66	66 + 66 + 82 + 66	82 + 66 + 82 + 66	95 + 66 + 95 + 66
EVAPORATOR							
Number			1	1	1	1	1
Type			Plate				
Water flow		m^3/h	24.99	26.73	29.58	33.90	37.83
Water pressure drop		kPa	44	50	31	41	50
Water volume		l	8.49	8.49	12.21	12.21	12.21
Antifreeze heater		W	60	60	120	120	120
COIL							
Number			4	4	4	4	4
Frontal surface		m2	11.88	11.88	11.88	11.88	11.88
Number of rows			2 + 2	2 + 2	2 + 3	3 + 3	3 + 3
FAN							
Number			4	4	4	4	4
STD	Air flow	m^3/h	56000	56000	71000	86000	83000
	Rotational speed	tr/mn	900	900	900	900	900
	Power input each fan	W	940	940	940 - 2100	2100	2100
WATER CONNECTIONS							
Type			Victaulic connection				
Inlet diameter		pouces	2"1/2	2"1/2	2"1/2	2"1/2	2"1/2
Outlet diameter		pouces	2"1/2	2"1/2	2"1/2	2"1/2	2"1/2
BUFFER TANK (OPTION)							
Volume		L	300	300	300	300	300
DIMENSIONS							
Without buffer tank	Length	mm	2 856	2 856	2 856	2 856	2 856
	Width	mm	2 210	2 210	2 210	2 210	2 210
	Height	mm	2 295	2 295	2 321	2 321	2 321
With buffer tank	Length	mm	3 666	3 666	3 666	3 666	3 666
	Width	mm	2 210	2 210	2 210	2 210	2 210
	Height	mm	2 295	2 295	2 321	2 321	2 321
weight							
Dry weight - Without buffer tank		kg	1 577	1 597	1 687	1 777	2 087
ACOUSTICAL DATA							
Sound power level		dB(A)	85.4	85.4	87.0	88.1	88.1
Sound pressure level (*)		dB(A)	57.4	57.4	59.0	60.1	60.1

(*) Sound pressure levels calculated at 10 meters. Sound pressure levels refer to ISO standard 3744 with parallepiped shape.

(1) According to EN 14511-3:2011

(2) According to Eurovent

(3) Indicatives values - see nameplate

Weight

Sizes		SysAqua140	SysAqua150	SysAqua170	SysAqua190	SysAqua210
SysAquaL - without pump	kg	1 422	1 425	1 515	1 584	1 847
SysAquaH - without pump		1 577	1 597	1 687	1 777	2 087
Simple pump LP	kg	90	90	90	93	93
Simple pump HP	kg	122	122	122	131	131
Double pump LP	kg	106	106	106	106	106
Double pump HP	kg	150	150	150	150	150
buffer tank (dry weight)	Kg	132	132	132	132	132

Electrical Data

Unit without pump with condenser fans standard

Sizes		SysAqua140	SysAqua150	SysAqua170	SysAqua190	SysAqua210
Power supply		400V / 3~ N / 50Hz				
Maximum current	A	117	127	143	158	174
Fuse rating aM	A	125	160	160	160	200
Total startup current	A	257	267	329	345	400

Unit with pump LP

Sizes		SysAqua140	SysAqua150	SysAqua170	SysAqua190	SysAqua210
Power supply		400V / 3~ N / 50Hz				
Maximum current	A	123	133	149	165	182
Fuse rating aM	A	125	160	160	200	200
Total startup current	A	264	274	335	351	408

Unit with pump HP

Sizes		SysAqua140	SysAqua150	SysAqua170	SysAqua190	SysAqua210
Power supply		400V / 3~ N / 50Hz				
Maximum current	A	127	137	153	168	184
Fuse rating aM	A	160	160	160	200	200
Total startup current	A	268	278	340	355	410

Simple pump LP (400V/3/50Hz)

Sizes	Nominal power (kW)	Max. current (A)
SysAqua140	3.0	6.35
SysAqua150	3.0	6.35
SysAqua170	3.0	6.35
SysAqua190	3.0	6.35
SysAqua210	3.0	6.35

Double pump HP (400V/3/50Hz)

Sizes	Nominal power (kW)	Max. current (A)
SysAqua140	5.5	10.40
SysAqua150	5.5	10.40
SysAqua170	5.5	10.40
SysAqua190	5.5	10.40
SysAqua210	5.5	10.40

Acoustical Data

Sound power level Lw-dB - Without pump

SysAquaL / SysAquaH models	Frequency in octave band (Hz)						Lw global dB(A)	Sound pressure level dB(A) *
	125	250	500	1000	2000	4000		
SysAqua140	77	79	82	81	79	74	85.4	57.4
SysAqua150	77	79	82	81	79	74	85.4	57.4
SysAqua170	79	81	83	82	81	76	87.0	59.0
SysAqua190	81	82	83	83	83	77	88.1	60.1
SysAqua210	81	82	83	83	83	77	88.1	60.1

Sound power level Lw-dB - With pump LP

SysAquaL / SysAquaH models	Frequency in octave band (Hz)						Lw global dB(A)	Sound pressure level dB(A) *
	125	250	500	1000	2000	4000		
SysAqua140	77	79	82	81	80	77	86.1	58.1
SysAqua150	77	79	82	81	80	77	86.1	58.1
SysAqua170	79	81	83	82	82	78	87.5	59.5
SysAqua190	81	82	83	83	83	79	88.5	60.5
SysAqua210	81	82	83	83	83	79	88.5	60.5

Sound power level Lw-dB - With pump HP

SysAquaL / SysAquaH models	Frequency in octave band (Hz)						Lw global dB(A)	Sound pressure level dB(A) *
	125	250	500	1000	2000	4000		
SysAqua140	77	79	82	81	80	77	86.1	58.1
SysAqua150	77	79	82	81	80	77	86.1	58.1
SysAqua170	79	81	83	82	82	78	87.5	59.5
SysAqua190	81	82	83	83	83	79	88.5	60.5
SysAqua210	81	82	83	83	83	79	88.5	60.5

(*) Sound pressure levels calculated at 10 meters. Sound pressure levels refer to ISO standard 3744 with parallepiped shape.

Performance Data - SysAquaL

Sizes SysAqua	LWT (°C)	Condenser entering air temperature (°C)													
		20		25		30		35		40		45		47	
		Cooling capacity (kW)	Power input (kW)	Cooling capacity (kW)	Power input (kW)	Cooling capacity (kW)	Power input (kW)	Cooling capacity (kW)	Power input (kW)	Cooling capacity (kW)	Power input (kW)	Cooling capacity (kW)	Power input (kW)	Cooling capacity (kW)	Power input (kW)
SysAqua140.L	5	147.6	35.9	141.1	38.2	133.9	42.0	125.9	44.1	116.4	47.3	106.4	50.7	102.6	52.5
	7	157.2	36.0	150.2	38.3	142.5	42.1	**134.0**	**44.2**	123.9	47.4	113.2	50.8	109.2	52.6
	10	181.1	36.2	173.1	38.5	164.3	42.3	154.4	44.4	142.8	47.6	130.5	51.0	125.8	52.9
	15	198.9	36.5	190.0	38.8	180.3	42.7	169.5	44.8	156.8	48.0	143.2	51.5	138.2	53.3
	18	208.6	36.7	199.4	39.0	189.2	42.9	177.8	45.0	164.5	48.2	150.3	51.7	144.9	53.6
SysAqua150.L	5	162.0	39.9	154.8	42.5	146.9	46.7	138.1	49.0	127.7	52.5	116.7	56.3	112.5	58.3
	7	172.5	40.0	164.8	42.6	156.4	46.8	**147.0**	**49.1**	136.0	52.6	124.2	56.4	119.8	58.5
	10	198.7	40.2	189.9	42.8	180.2	47.0	169.4	49.3	156.7	52.9	143.1	56.7	138.1	58.7
	15	218.2	40.6	208.5	43.2	197.9	47.4	186.0	49.7	172.0	53.4	157.2	57.2	151.6	59.3
	18	228.9	40.7	218.7	43.4	207.6	47.6	195.1	50.0	180.5	53.6	164.9	57.4	159.0	59.5
SysAqua170.L	5	177.6	43.5	169.8	46.3	161.1	50.9	151.4	53.3	140.1	57.2	128.0	61.3	123.4	63.6
	7	189.1	43.6	180.7	46.4	171.5	51.0	**161.2**	**53.5**	149.1	57.3	136.2	61.5	131.4	63.7
	10	217.9	43.8	208.3	46.6	197.6	51.2	185.8	53.7	171.8	57.6	157.0	61.7	151.4	64.0
	15	239.3	44.2	228.6	47.0	217.0	51.7	203.9	54.2	188.7	58.1	172.3	62.3	166.2	64.6
	18	251.0	44.4	239.9	47.2	227.6	51.9	214.0	54.4	197.9	58.4	180.8	62.6	174.4	64.9
SysAqua190.L	5	207.0	53.5	197.8	56.9	187.7	62.5	176.4	65.6	163.2	70.3	149.1	75.4	143.8	78.1
	7	220.3	53.6	210.5	57.0	199.8	62.7	**187.8**	**65.7**	173.7	70.5	158.7	75.6	153.1	78.3
	10	253.9	53.8	242.6	57.3	230.2	63.0	216.4	66.0	200.2	70.8	182.9	75.9	176.4	78.7
	15	278.7	54.3	266.4	57.8	252.8	63.5	237.6	66.6	219.8	71.5	200.8	76.6	193.6	79.4
	18	292.4	54.6	279.4	58.1	265.2	63.8	249.3	66.9	230.6	71.8	210.6	76.9	203.1	79.7
SysAqua210.L	5	230.1	59.3	219.9	63.2	208.7	69.3	196.1	72.9	181.4	78.2	165.7	83.7	159.9	86.9
	7	244.9	59.5	234.1	63.3	222.1	69.6	**208.8**	**73.0**	193.1	78.2	176.4	84.0	170.2	86.8
	10	282.3	59.8	269.7	63.6	256.0	69.9	240.6	73.4	222.6	78.6	203.3	84.4	196.1	87.2
	15	309.9	60.3	296.2	64.1	281.1	70.4	264.2	74.0	244.4	79.3	223.2	84.9	215.3	88.2
	18	325.1	60.5	310.7	64.5	294.8	70.9	277.1	74.3	256.3	79.6	234.2	85.5	225.9	88.6

Performance according to EN 14511-3:2011 (without pump).

LWT : Leaving water temperature.

Performance Data - SysAquaH - Cooling Mode

Sizes SysAqua	LWT (°C)	Condenser entering air temperature (°C)													
		20		25		30		35		40		45		47	
		Cooling capacity (kW)	Power input (kW)	Cooling capacity (kW)	Power input (kW)	Cooling capacity (kW)	Power input (kW)	Cooling capacity (kW)	Power input (kW)	Cooling capacity (kW)	Power input (kW)	Cooling capacity (kW)	Power input (kW)	Cooling capacity (kW)	Power input (kW)
SysAqua140.H	5	138.2	34.1	132.1	38.3	125.3	41.9	117.8	43.5	109.0	45.3	94.6	45.2	86.4	44.0
	7	147.1	34.1	140.6	38.4	133.4	42.0	**125.4**	**43.6**	116.0	45.4	100.7	45.3	92.0	44.1
	10	169.5	34.3	162.0	38.6	153.7	42.1	144.5	43.8	133.7	45.6	116.0	45.5	106.0	44.3
	15	186.1	34.6	177.9	38.9	168.8	42.5	158.7	44.1	146.8	46.0	127.4	45.9	116.4	44.7
	18	195.3	34.7	186.6	39.1	177.1	42.7	166.4	44.3	154.0	46.2	133.6	46.1	122.1	44.9
SysAqua150.H	5	151.6	37.3	144.9	42.0	137.5	45.8	129.3	47.7	119.6	49.6	103.8	49.6	94.8	48.1
	7	161.4	37.4	154.3	42.1	146.4	46.0	**137.6**	**47.8**	127.3	49.7	110.5	49.8	100.9	48.3
	10	186.0	37.6	177.8	42.3	168.7	46.2	158.6	47.9	146.7	49.9	127.3	49.9	116.3	48.5
	15	204.2	37.9	195.2	42.7	185.2	46.7	174.1	48.4	161.0	50.3	139.7	50.3	127.7	48.9
	18	214.2	38.1	204.7	42.8	194.3	46.8	182.6	48.6	168.9	50.6	146.6	50.6	134.0	49.3
SysAqua170.H	5	166.3	41.2	158.9	46.4	150.8	50.7	141.7	52.6	131.1	54.8	113.8	54.7	104.0	53.2
	7	177.0	41.3	169.2	46.5	160.5	50.8	**150.9**	**52.7**	139.6	54.9	121.1	54.9	110.7	53.4
	10	204.0	41.5	194.9	46.7	185.0	51.0	173.9	53.0	160.8	55.2	139.6	55.1	127.5	53.6
	15	223.9	41.9	214.0	47.1	203.1	51.5	190.9	53.4	176.6	55.7	153.2	55.6	140.0	54.1
	18	234.9	42.1	224.5	47.4	213.1	51.7	200.3	53.7	185.2	55.9	160.8	55.8	146.9	54.3
SysAqua190.H	5	193.7	50.7	185.1	57.1	175.7	62.3	165.1	64.7	152.7	67.4	132.6	67.3	121.1	65.4
	7	206.2	50.8	197.1	57.2	187.0	62.4	**175.8**	**64.8**	162.6	67.5	141.1	67.4	128.9	65.6
	10	237.6	51.0	227.1	57.4	215.5	62.7	202.6	65.1	187.4	67.8	162.6	67.7	148.6	65.9
	15	260.9	51.5	249.3	58.0	236.6	63.3	222.4	65.7	205.7	68.4	178.5	68.3	163.1	66.5
	18	273.7	51.7	261.6	58.2	248.2	63.6	233.3	66.0	215.8	68.7	187.3	68.7	171.1	66.8
SysAqua210.H	5	215.4	56.7	205.8	63.8	195.3	69.7	183.6	72.4	169.8	75.4	147.4	75.3	134.7	73.2
	7	229.3	56.8	219.1	64.0	207.9	69.9	**195.4**	**72.5**	180.8	75.5	156.9	75.5	143.4	73.4
	10	264.2	57.1	252.5	64.3	239.6	70.2	225.2	72.9	208.3	75.9	180.8	75.8	165.2	73.7
	15	290.1	57.6	277.2	64.8	263.1	70.8	247.3	73.5	228.7	76.6	198.5	76.5	181.4	74.4
	18	304.3	57.9	290.8	65.1	276.0	71.1	259.4	73.9	239.9	76.9	208.2	76.8	190.3	74.7

Performance according to EN 14511-3:2011 (without pump).

LWT : Leaving water temperature.

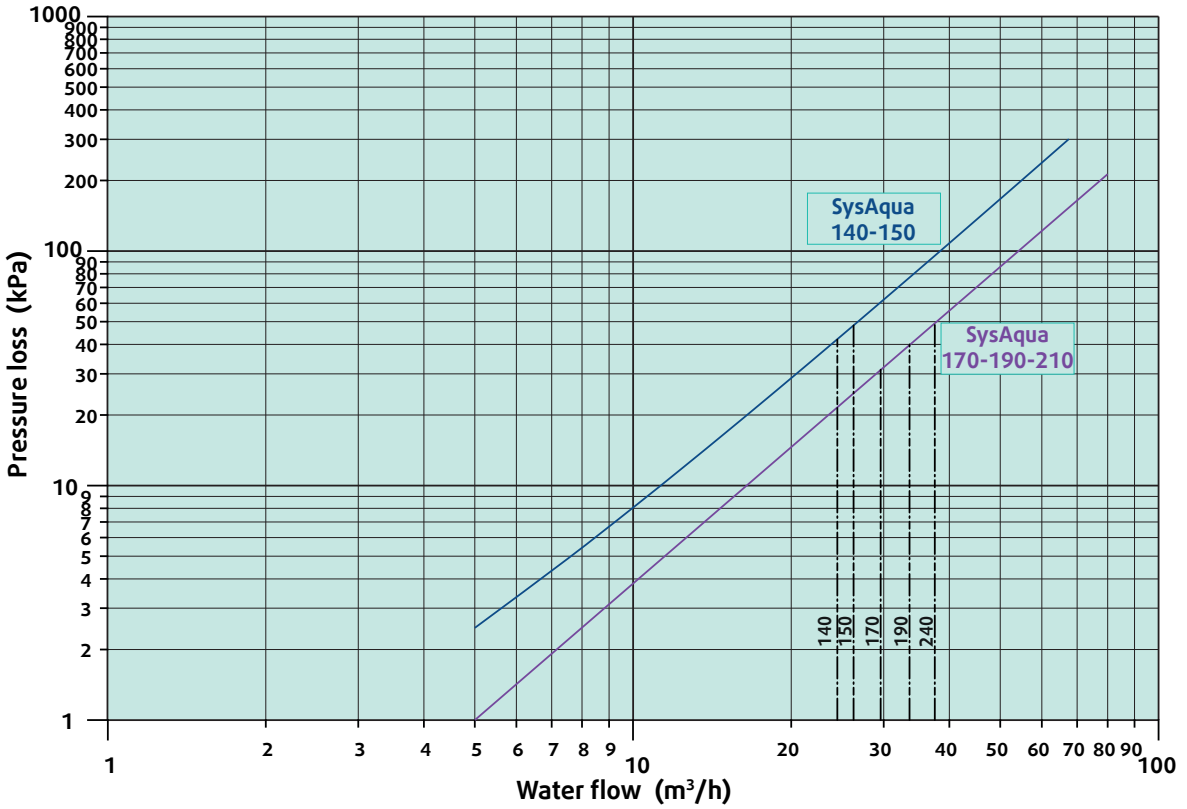
Performance Data - SysAquaH - Heating mode

Sizes SysAqua	LWT (°C)	Evaporator entering air dry temperature (wet bulb temperature) (°C)																	
		-15 (-16)			-10 (-11)			-7 (-8)			2 (1)			7 (6)			12 (11)		
		Heating capacity (kW)		Power input (kW)	Heating capacity (kW)		Power input (kW)	Heating capacity (kW)		Power input (kW)	Heating capacity (kW)		Power input (kW)	Heating capacity (kW)		Power input (kW)	Heating capacity (kW)		Power input (kW)
		with deicing	without deicing		with deicing	without deicing		with deicing	without deicing		with deicing	without deicing		with deicing	without deicing		with deicing	without deicing	
SysAqua140.H	30	80.5	82.1	31.3	89.4	93.5	33.2	98.5	103.4	33.8	129.5	136.7	35.7	155.7	155.7	37.2	180.5	180.5	37.4
	35	78.8	80.4	33.2	87.7	91.7	35.6	95.8	100.6	36.0	124.8	131.7	37.8	151.7	151.7	39.5	174.6	174.6	39.5
	40	76.7	78.3	35.7	86.4	90.3	38.8	93.6	98.3	39.3	120.0	126.6	40.9	147.7	147.7	42.3	169.7	169.7	42.2
	45				85.1	89.0	43.0	91.4	96.0	43.1	115.2	121.5	44.6	**143.7**	**143.7**	**45.7**	164.8	164.8	45.7
	50							88.9	93.3	47.2	113.5	119.7	50.5	139.7	139.7	50.0	159.2	159.2	49.5
SysAqua150.H	30	85.7	87.4	34.0	95.2	99.5	36.1	104.8	110.0	36.7	137.9	145.4	38.7	165.7	165.7	40.4	192.1	192.1	40.7
	35	84.0	85.7	36.1	93.5	97.7	38.8	102.1	107.2	39.3	133.1	140.4	41.2	161.7	161.7	43.1	186.2	186.2	43.1
	40	81.9	83.6	39.1	92.3	96.4	42.5	100.0	104.9	43.0	128.1	135.2	44.8	157.7	157.7	46.3	181.2	181.2	46.2
	45				91.1	95.2	47.2	97.8	102.7	47.4	123.2	130.0	49.0	**153.7**	**153.7**	**50.3**	176.3	176.3	50.2
	50							95.2	100.0	52.1	121.6	128.3	55.8	149.7	149.7	55.3	170.6	170.6	54.7
SysAqua170.H	30	94.1	96.0	37.2	104.6	109.3	39.6	115.2	120.9	40.3	151.5	159.8	42.5	182.1	182.1	44.3	211.1	211.1	44.6
	35	92.5	94.4	39.7	103.0	107.6	42.6	112.5	118.1	43.2	146.6	154.6	45.3	178.1	178.1	47.3	205.0	205.0	47.3
	40	90.5	92.3	43.0	101.9	106.5	46.8	110.3	115.9	47.3	141.5	149.2	49.3	174.1	174.1	51.0	200.1	200.1	50.8
	45				100.8	105.3	52.1	108.2	113.6	52.3	136.3	143.8	54.1	**170.1**	**170.1**	**55.5**	195.1	195.1	55.4
	50							105.7	111.0	57.6	134.9	142.3	61.7	166.1	166.1	61.1	189.3	189.3	60.5
SysAqua190.H	30	107.0	109.1	44.2	118.9	124.2	46.9	130.9	137.4	47.8	172.1	181.6	50.4	206.9	206.9	52.5	239.8	239.8	52.9
	35	105.4	107.5	47.4	117.3	122.6	50.9	128.1	134.5	51.5	167.0	176.2	54.1	202.9	202.9	56.5	233.6	233.6	56.5
	40	103.3	105.4	51.8	116.4	121.6	56.3	126.1	132.4	57.0	161.6	170.5	59.3	198.9	198.9	61.3	228.6	228.6	61.2
	45				115.5	120.7	63.3	124.0	130.2	63.5	156.2	164.8	65.7	**194.9**	**194.9**	**67.3**	223.5	223.5	67.3
	50							121.4	127.5	70.7	155.0	163.6	75.7	190.9	190.9	75.0	217.6	217.6	74.3
SysAqua210.H	30	118.6	121.0	50.5	131.9	137.8	53.6	145.2	152.4	54.6	191.0	201.5	57.6	229.6	229.6	60.0	266.1	266.1	60.5
	35	117.2	119.5	54.5	130.4	136.3	58.5	142.4	149.5	59.2	185.6	195.8	62.1	225.6	225.6	64.9	259.6	259.6	64.9
	40	115.1	117.4	59.8	129.6	135.5	65.1	140.4	147.4	65.8	180.0	189.9	68.5	221.6	221.6	70.9	254.6	254.6	70.7
	45				128.9	134.7	73.6	138.4	145.3	73.8	174.4	184.0	76.4	**217.6**	**217.6**	**78.3**	249.5	249.5	78.2
	50							135.8	142.6	82.9	173.4	183.0	88.7	213.6	213.6	87.9	243.4	243.4	87.1

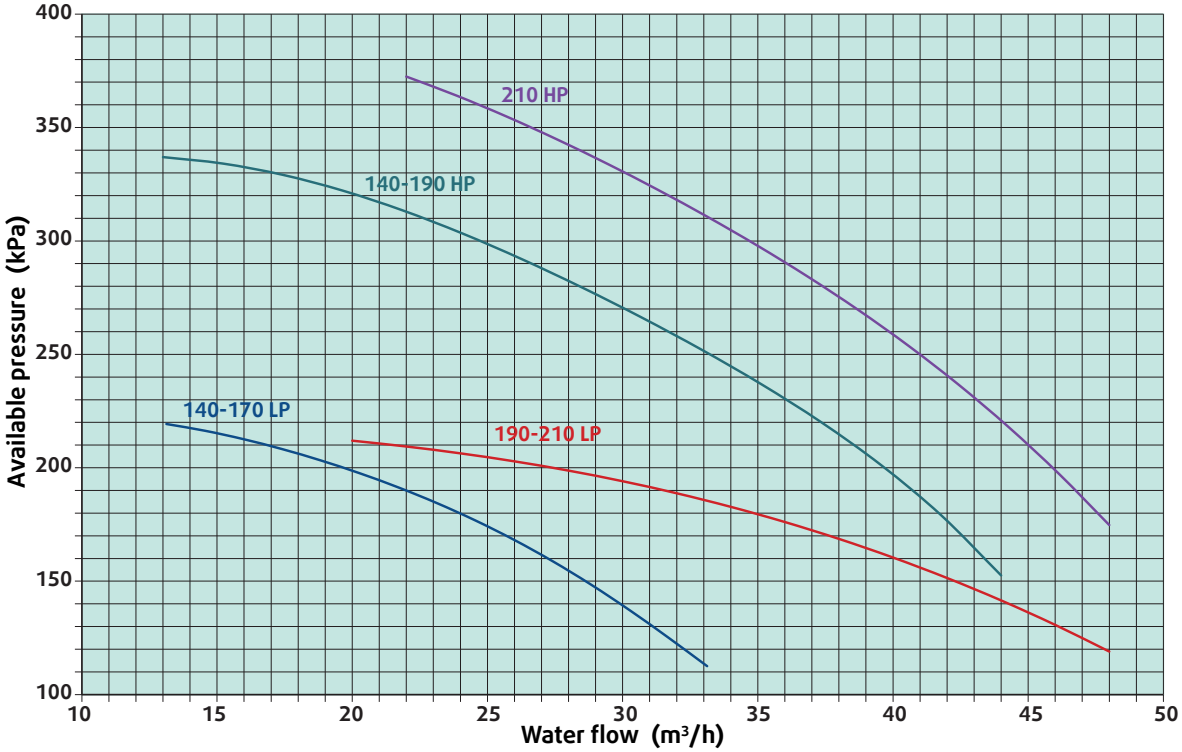
Performance according to EN 14511-3:2011 (without pump).

LWT : Leaving water temperature.

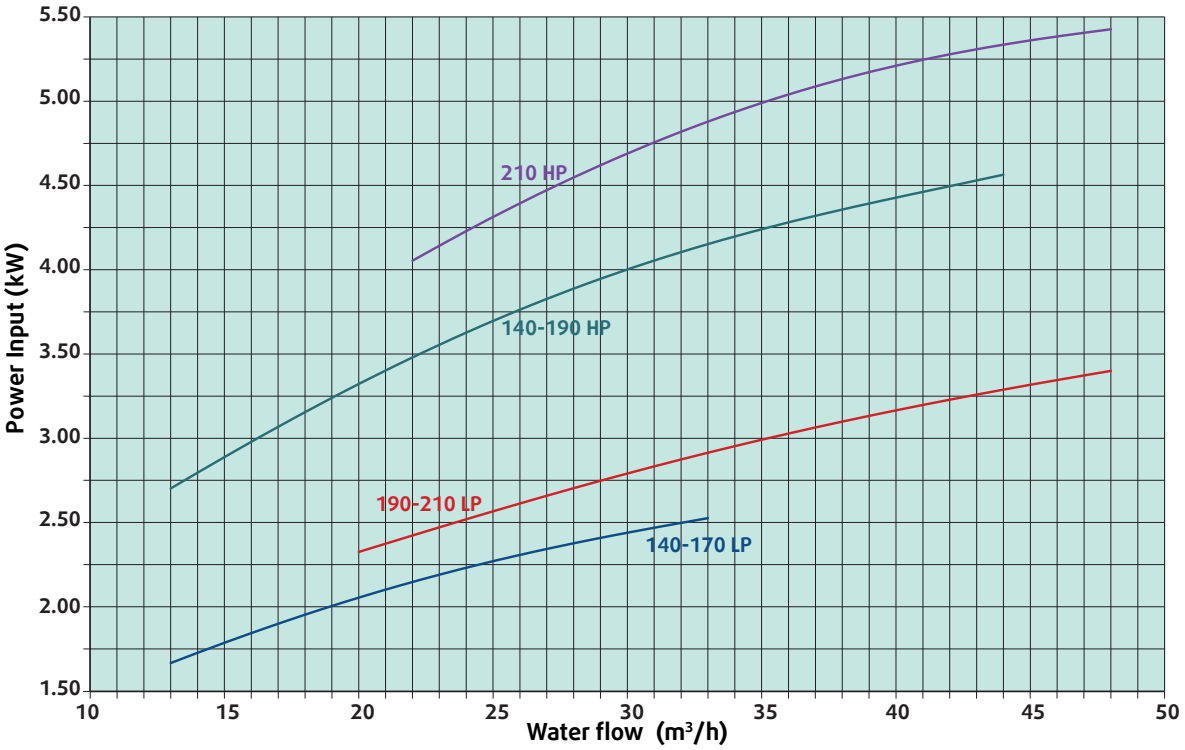
Water Pressure Drop of Indoor Heat Exchanger

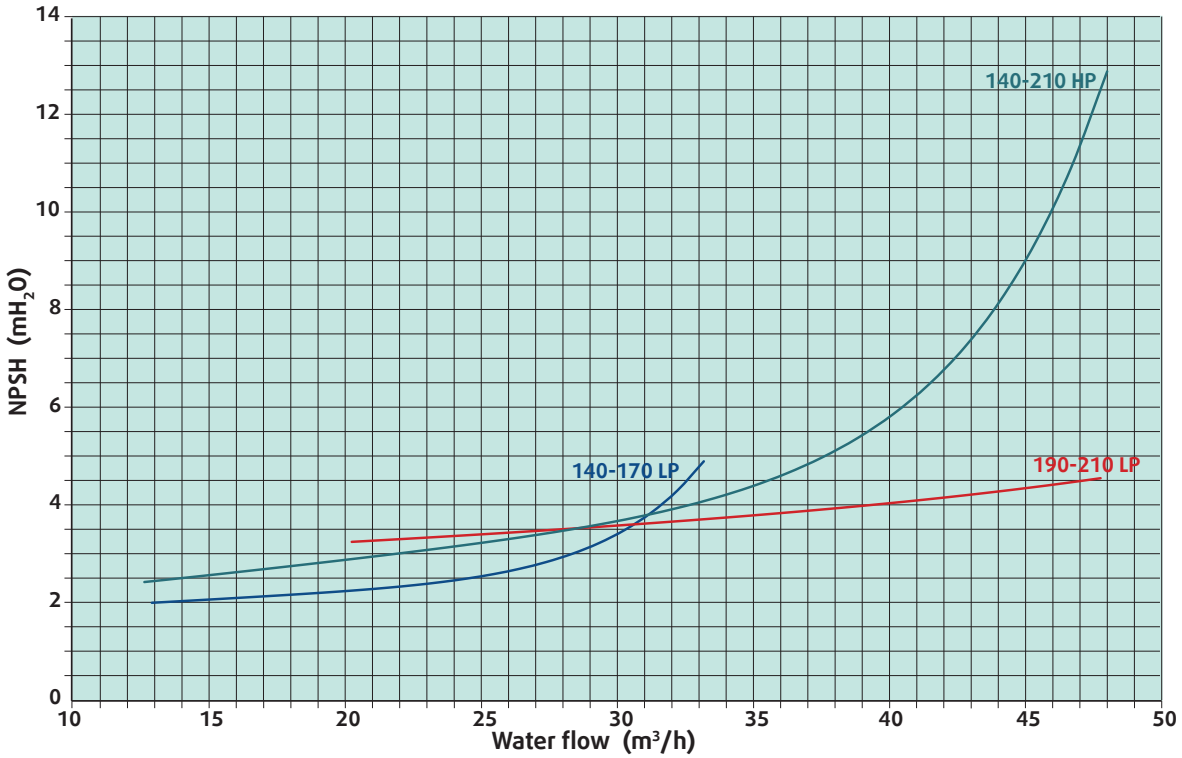


Water Pump Curves



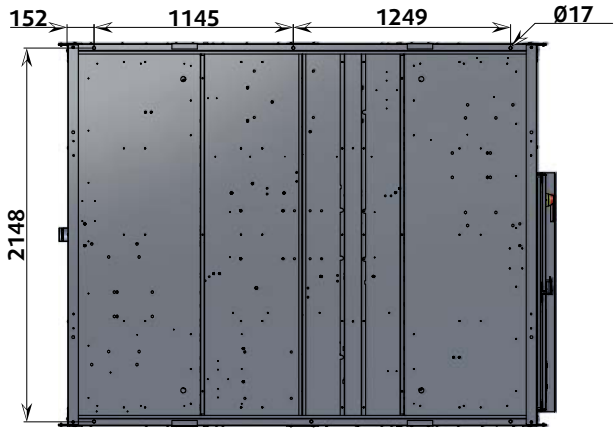
Water Pump Curves

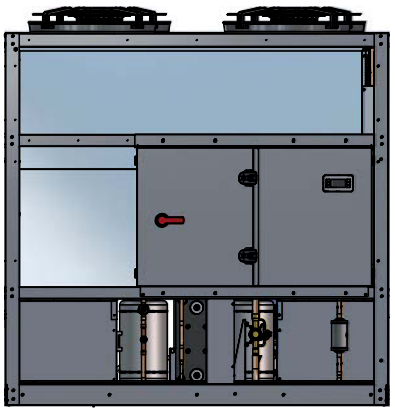


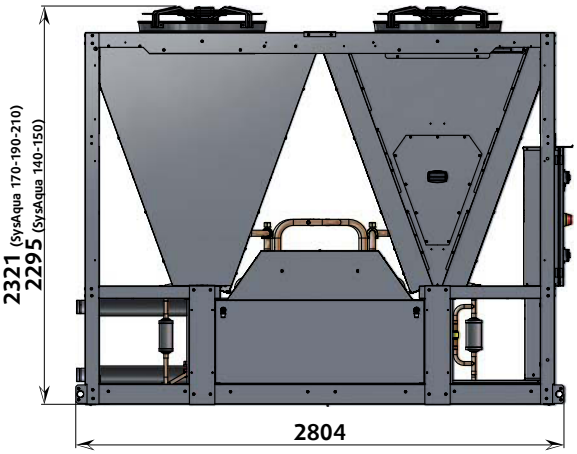


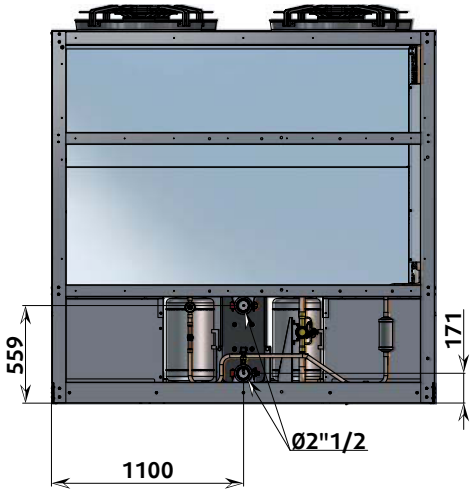
Dimensions (mm)

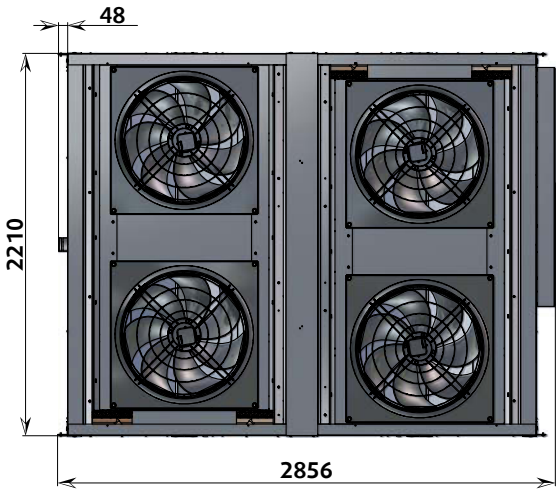
SysAqua WITHOUT PUMP

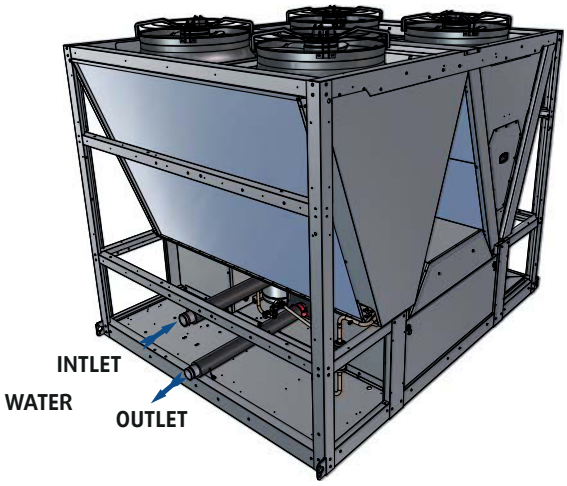






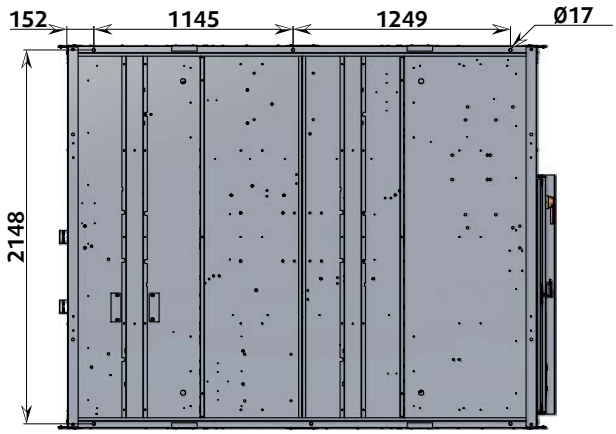


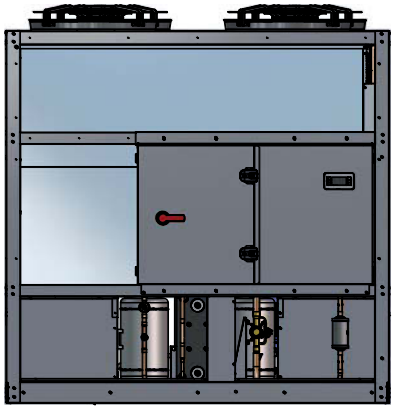


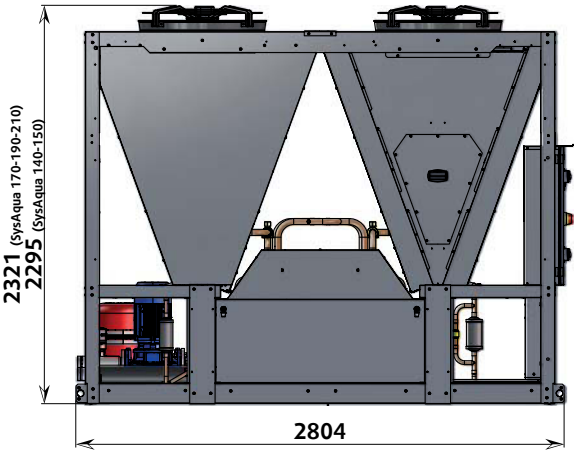


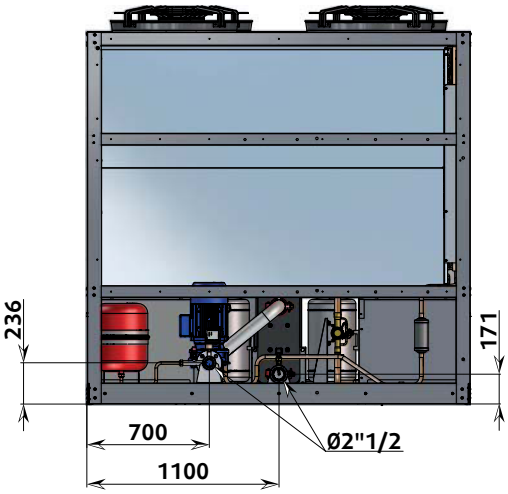
Dimensions (mm)

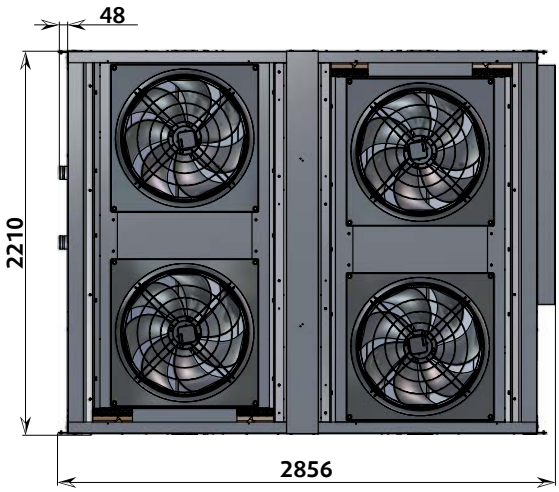
SysAqua WITH 1 PUMP

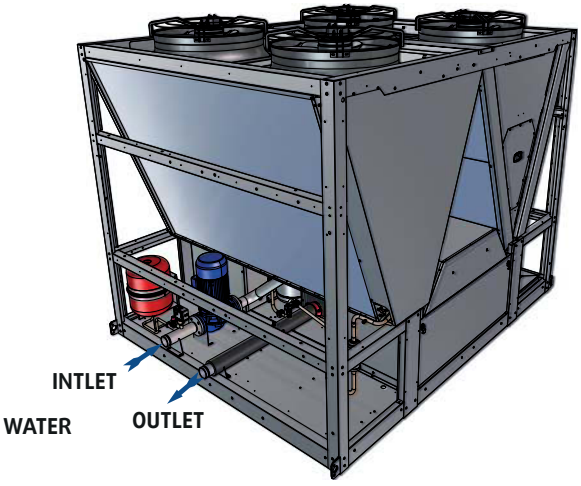






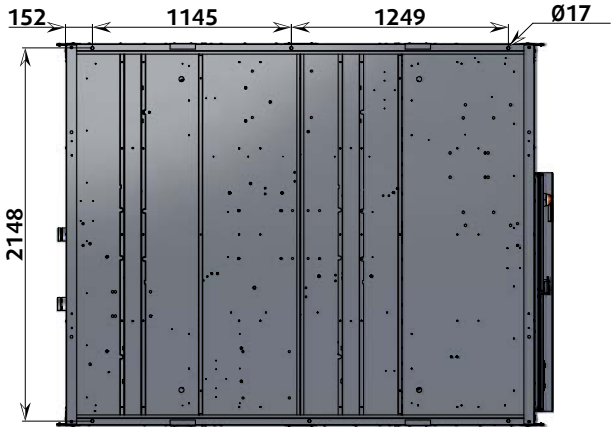


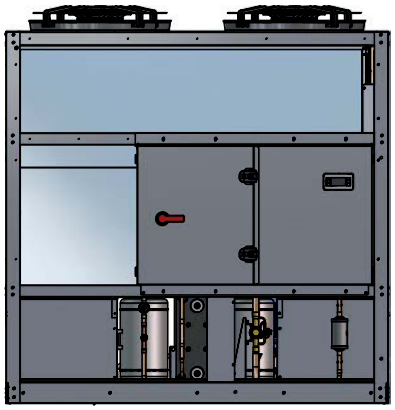


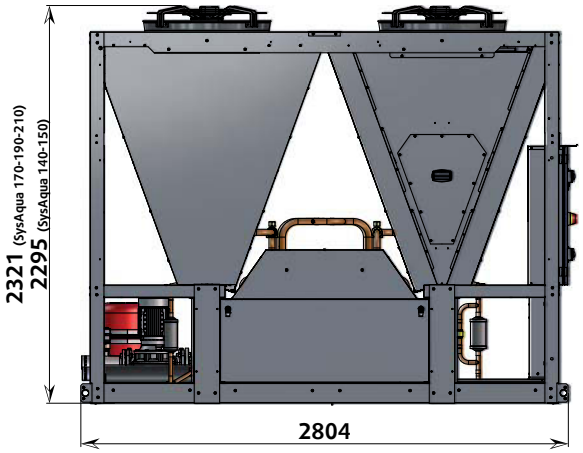


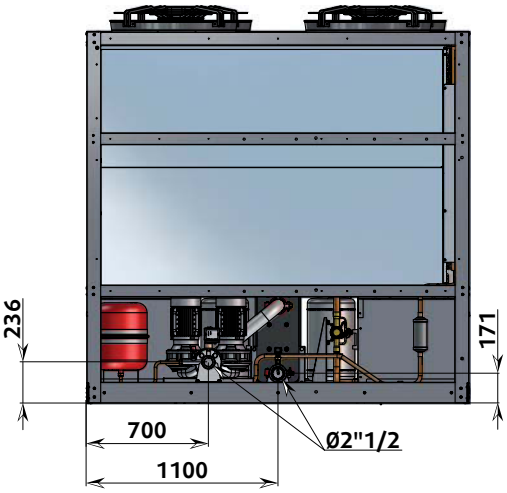
Dimensions (mm)

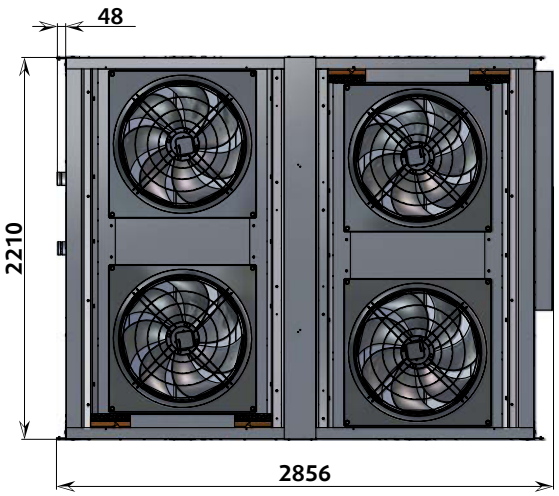
SysAqua WITH 2 PUMPS

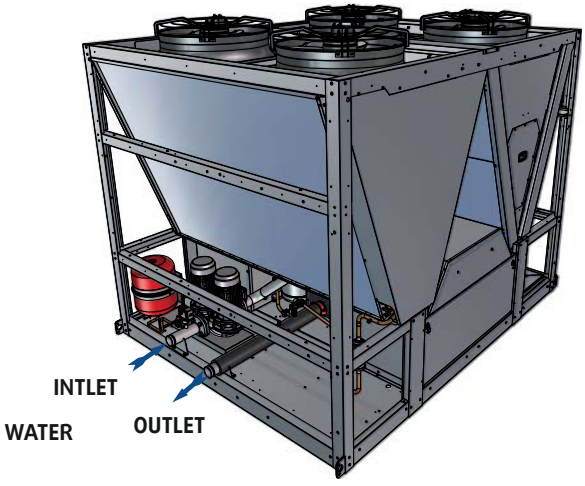






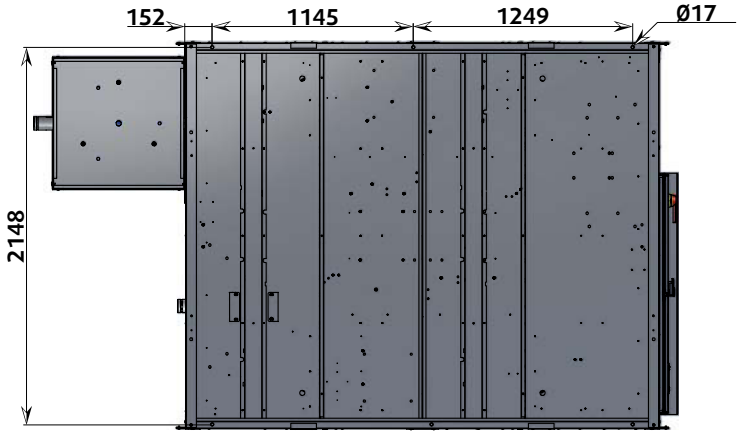


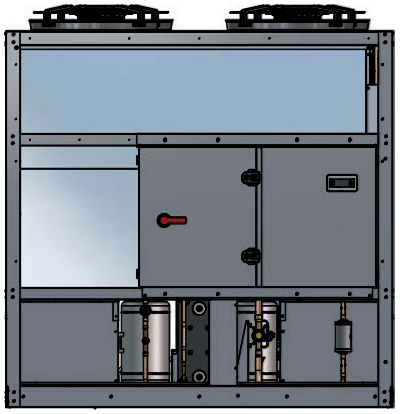


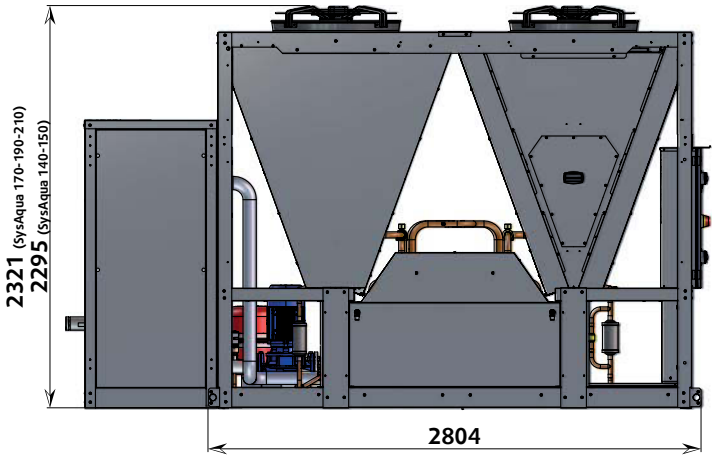


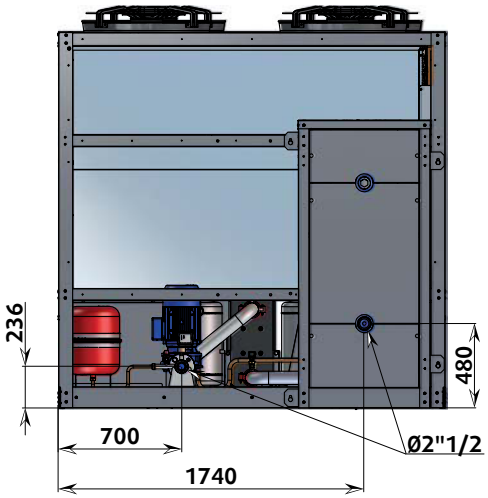
Dimensions (mm)

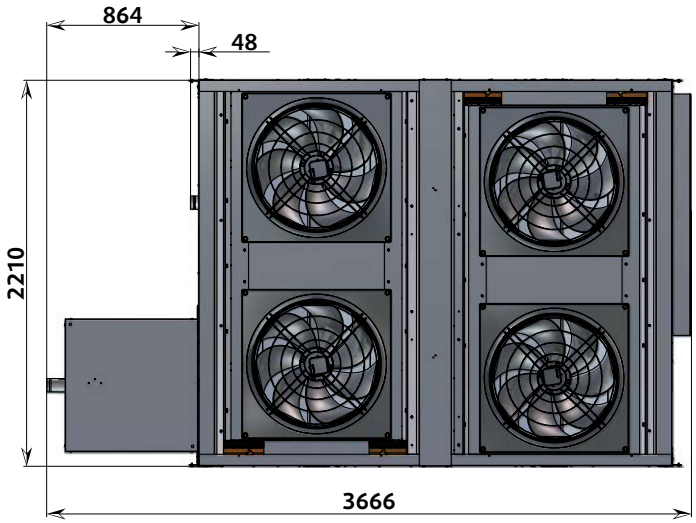
SysAqua WITH 1 PUMP AND BUFFER TANK

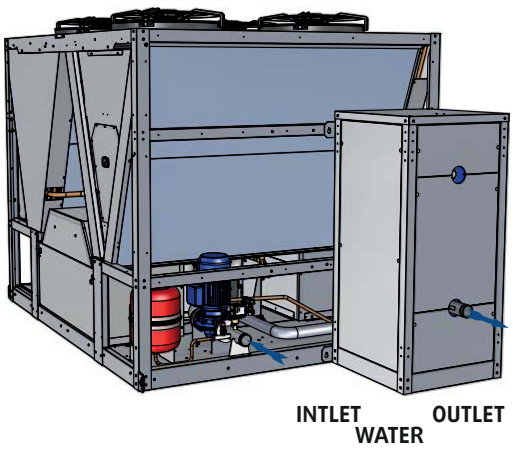






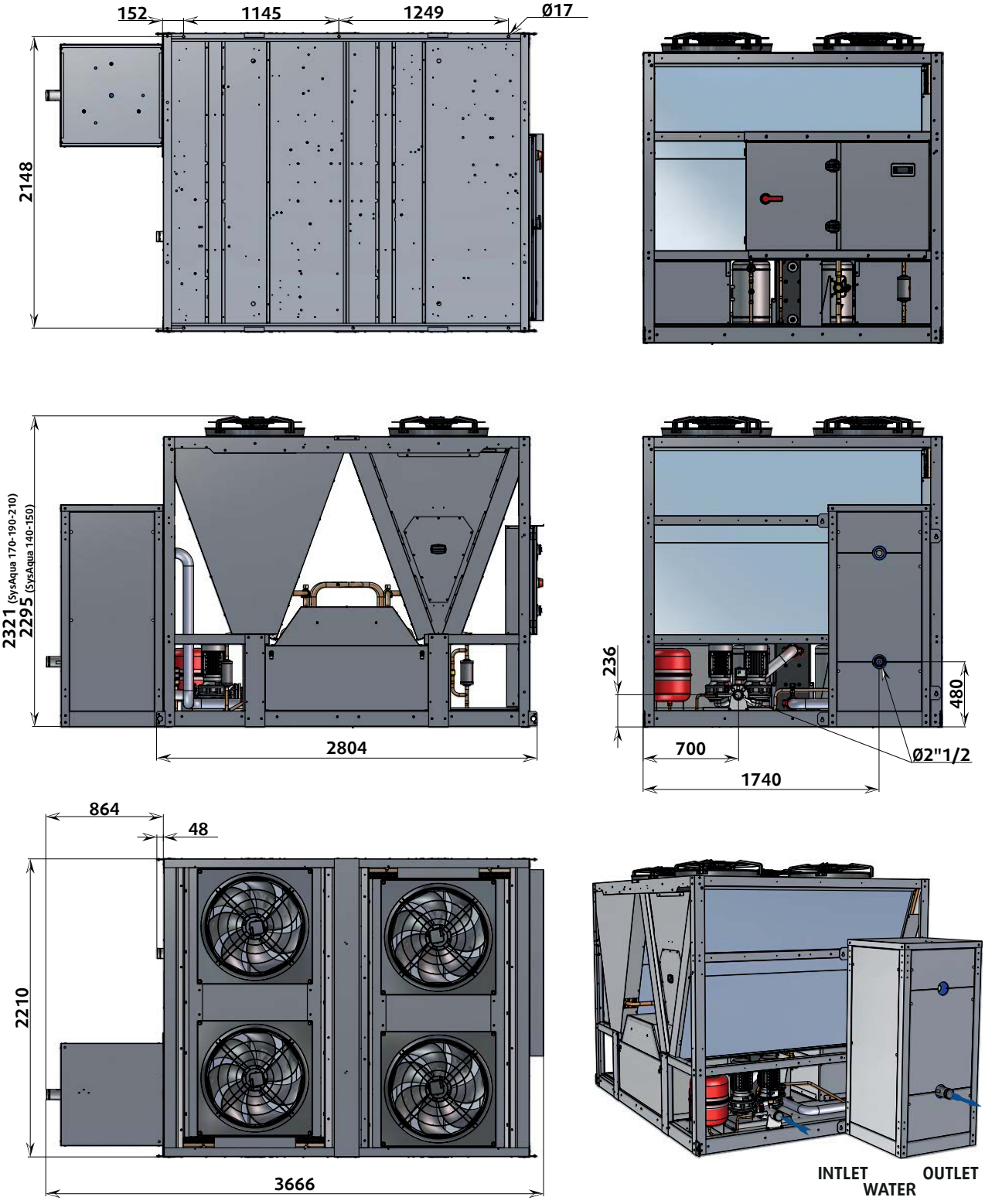






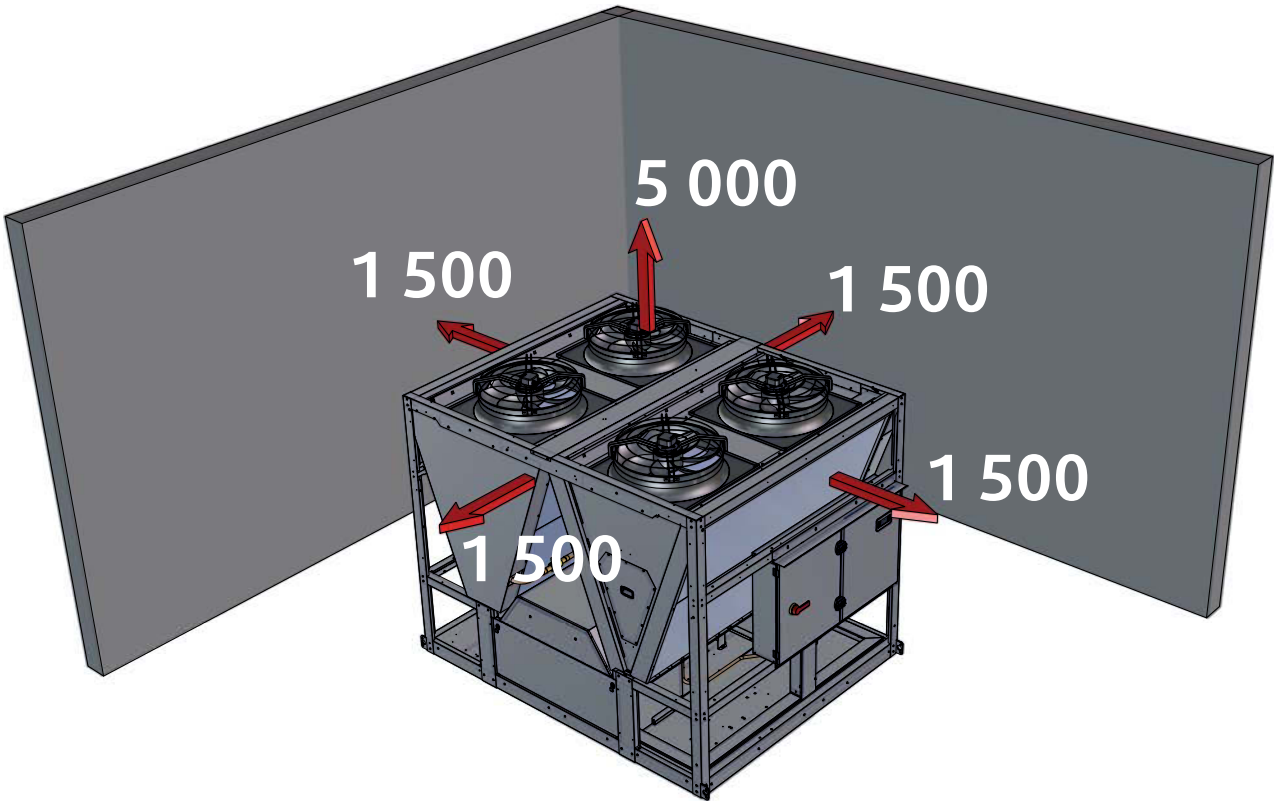
Dimensions (mm)

SysAqua WITH 2 PUMPS AND BUFFER TANK

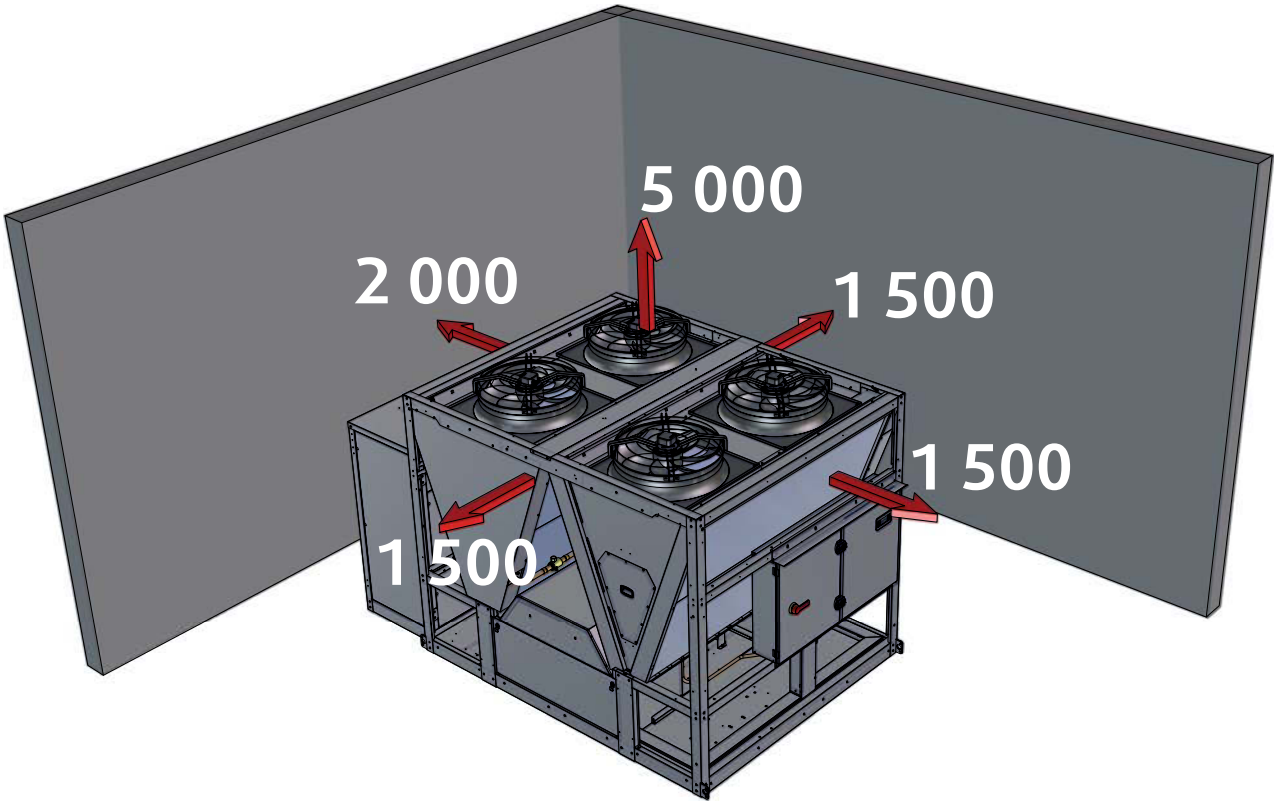


Space Requirements (mm)

SysAqua WITHOUT BUFFER TANK



SysAqua WITH BUFFER TANK



Notes

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systemair

Systemair - **EDM AQA2-S-1GB/02.2016** - Supersedes : None

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

february 2016