Scroll Compressor

Refrigerant R410A R410A

143.7 to 217.6kW

125.4 to 208.8kW

SYSAQUA

Air Cooled Water Chillers

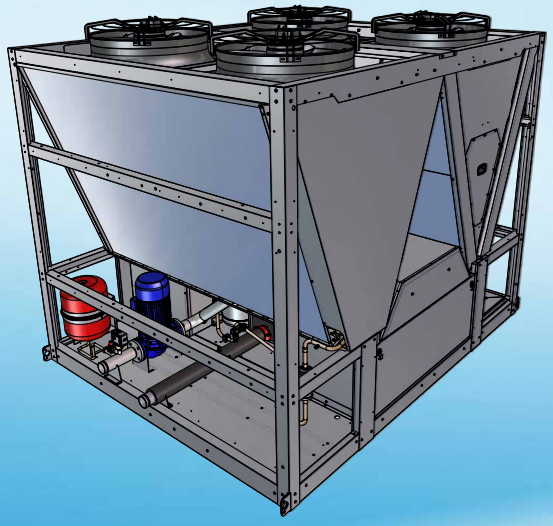
SYSAQUA.L (Cooling Only) / SYSAQUA.H (Heat Pump)
Models 140 to 210

systemair

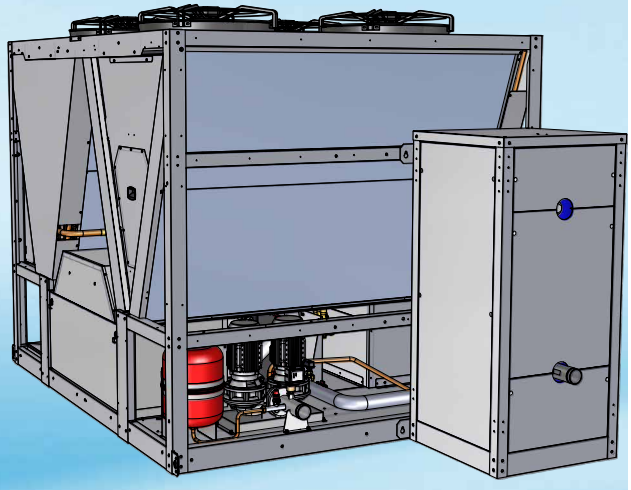
Key Points

- 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 **SYSAQUA.H** 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



SYSAQUA.L/SYSAQUA.H WITHOUT BUFFER TANK



SYSAQUA.L/SYSAQUA.H WITH BUFFER TANK

Specifications

General

The new **SYSAQUA.L/SYSAQUA.H 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 (SYSAQUA.L)** and **heat pump (SYSAQUA.H)** versions.

Each versions consists of **5 sizes (140, 150, 170, 190 and 210)** and covers a nominal cooling capacity range from **125 to 208 kW** and a nominal heating capacity range from **143 to 217 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 **SYSAQUA.L** and **SYSAQUA.H 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 **3.5L/kW** for application air conditioning and **10L/kW** for application process.

In heating mode, **6.5L/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 **SYSAQUA.L/SYSAQUA.H** 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 SYSAQUA.H 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 deice" standard for **SYSAQUA.H** 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.
- **1P-SP** : 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.
- **1P-HP** : 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.
- **2P-SP** : 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.
- **2P-HP** : 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.
- "**Variable Primary Flow**" is used to modulate the power of the hydraulic pump

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

Specifications

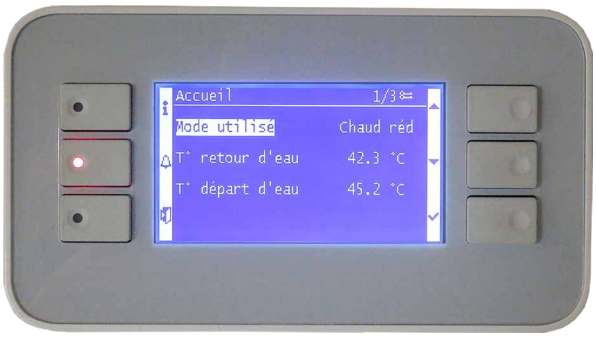
Control panel

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.

The **SYSAQUA.L/SYSAQUA.H** 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 **SYSAQUA.L/SYSAQUA.H** units are in compliance with the following standards:

- Machine Directive : 2006/42/EC
- Low Voltage Directive : 2014/35/UE
- Electromagnetic Compatibility Directive : 2014/30/UE
- Pressure Equipment Directive : 2014/68/UE
- RoHs directive : 2011/65/EU

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).
- Variable Primary Flow
  - ✔ double speed
  - ✔ capacity
  - ✔ constant outlet pressure
- 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 . 1P-SP . TTS . SYS . HPF . 7 . + . CG . T

(1) (2) (3) (4) (5) (6) (7) (8) (8)

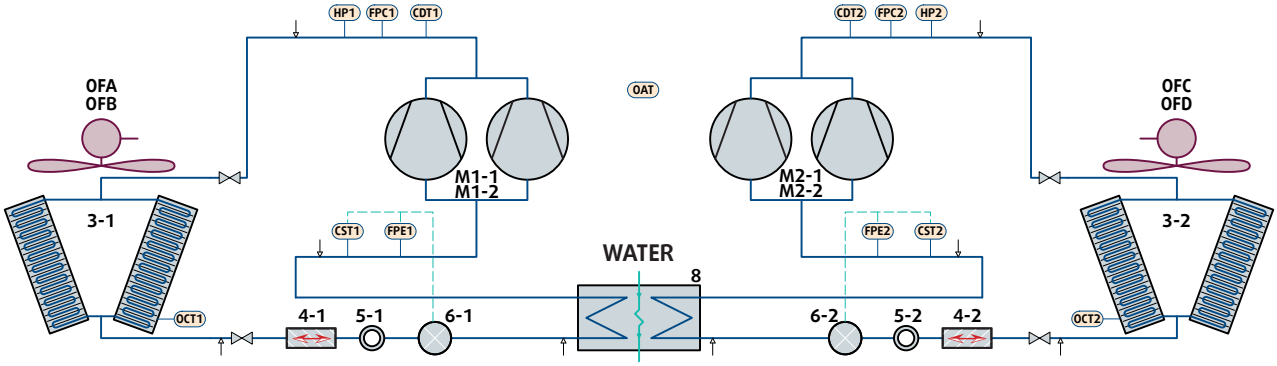
REP.		Description		
1	Size	**SYSAQUA140** : size 140 **SYSAQUA150** : size 150	**SYSAQUA170** : size 170 **SYSAQUA190** : size 190	**SYSAQUA210** : size 210
2	Version	**L** : Cooling only	**H** : Heat pump	
3	Hydraulic circuit	Empty: Without pump **1P-SP**: Pack Single pump LP **1P-HP**: Pack Single pump HP	**2P-SP**: Pack Double pump LP **2P-HP**: Pack Double pump HP	
4	Regulation	Empty: Standard	**FSC** : All seasons	
5	Brand	**SYS** : Systemair		
6	Fan type	Empty: Standard fan AC motor **HPF** : High pressure fan	**EPO** : Standard fan AC motor + Finned coil treatment - epoxy	
7	ERP	**NoErp**: not compatible Ecodesign		
8	Option	**CG** : Outdoor coil protection grid **EPO** : Finned coil treatment - epoxy **WPS** : Low water pressure sensor **AVS** : Spring damper **AVM** : rubber pads **VI** : Water isolation valves **KM** : Refrigerant gauge **MH** : Hydraulic gauges **T** : Buffer tank **SS** : Soft Starter **NORD** : Nordic pack	**V2** : Variable pump double speed **VC** : Variable pump capacity **VP** : Variable pump constant outlet pressure **3PH** : Without neutral **TCP** : Modbus TCP/IP **LON** : LON communication **BNIP** : Bacnet IP **3G** : 3G modem **CLD** : Cloud Siemens	

Product Codes

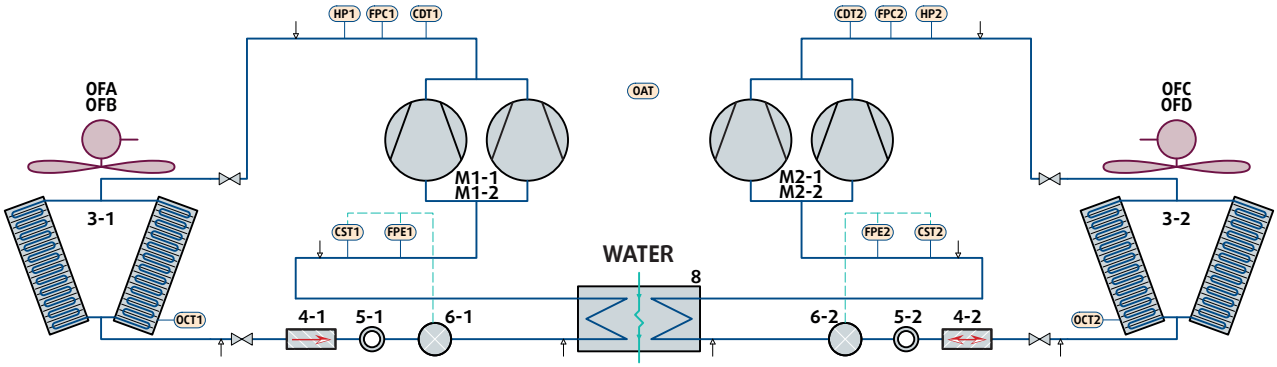
Product codes	description
370190	SYSAQUA140.H.1P-SP+WPS.AVM
370191	SYSAQUA140.H.1P-SP+WPS.AVM.T
370192	SYSAQUA150.H.1P-SP+WPS.AVM
370193	SYSAQUA150.H.1P-SP+WPS.AVM.T
370194	SYSAQUA170.H.1P-SP+WPS.AVM
370195	SYSAQUA170.H.1P-SP+WPS.AVM.T
370196	SYSAQUA190.H.1P-SP+WPS.AVM
370197	SYSAQUA190.H.1P-SP+WPS.AVM.T
370198	SYSAQUA210.H.1P-SP+WPS.AVM
370199	SYSAQUA210.H.1P-SP+WPS.AVM.T

Refrigerant Flow Diagram

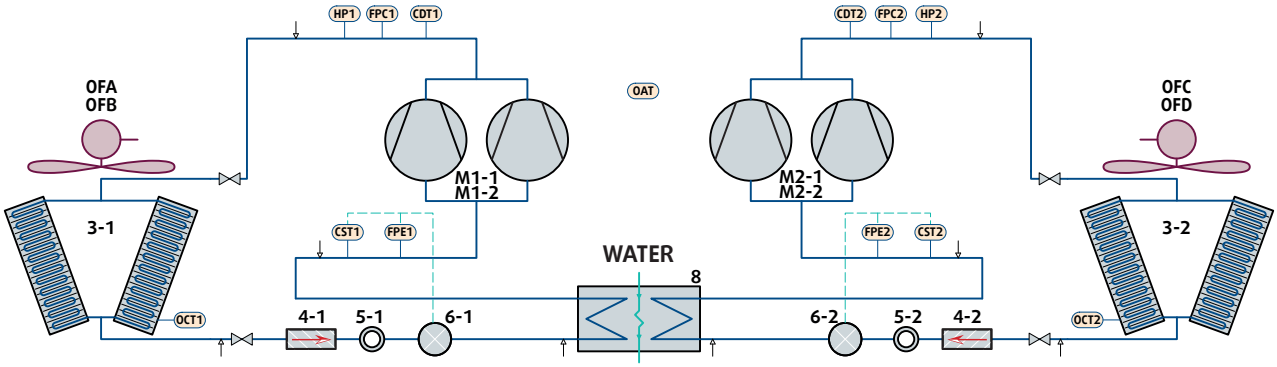
Cooling only version - SYSAQUA140.L to SYSAQUA150.L



Cooling only version - SYSAQUA170.L



Cooling only version - SYSAQUA190.L to SYSAQUA210.L

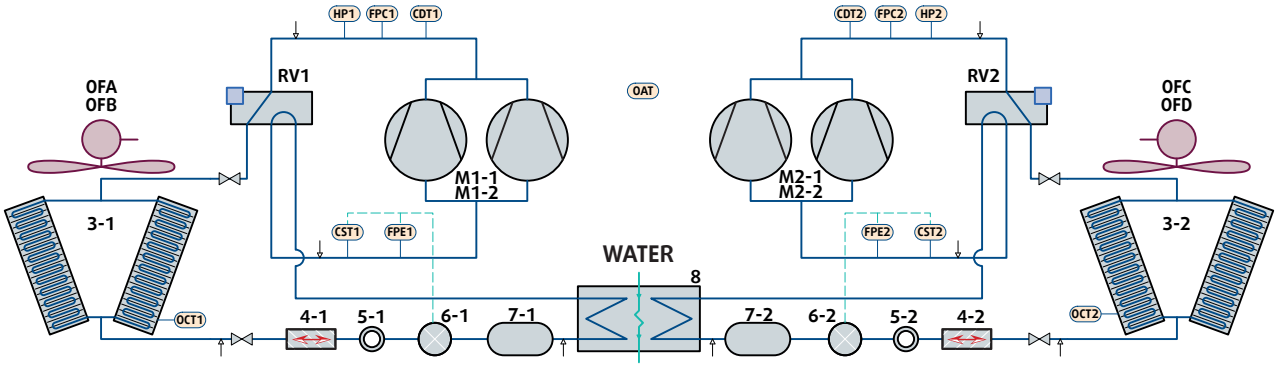


components	
M1-1/M1-2 M2-1/M2-2	Tandem scroll compressors
3	Air condenser
4	Filter drier
5	Sight glass
6	Electronic expansion valve
8	Plate heat exchanger

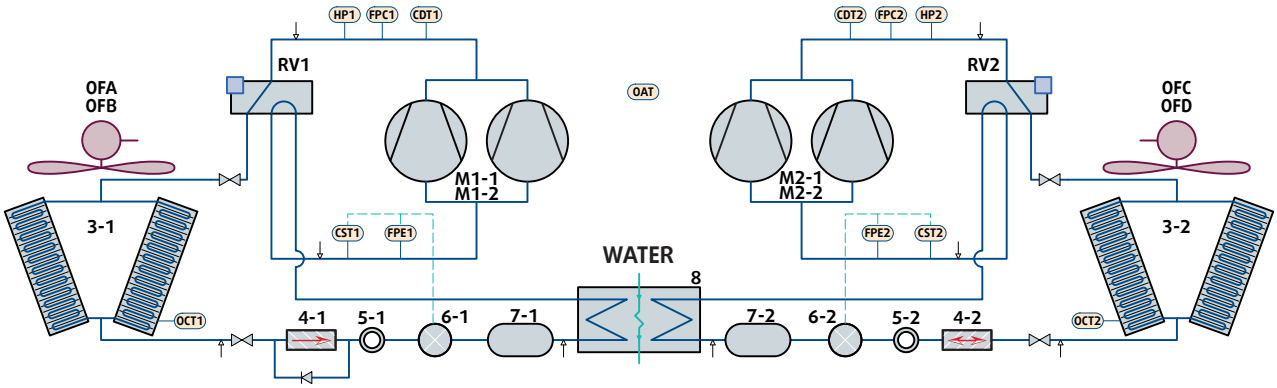
safety/control devices	
FPC1 / FPC2	High pressure transducer
HP1 / HP2	High pressure switch
CDT1 / CDT2	Discharge temperature sensor
FPE1 / FPE2	Low pressure transducer
CST1 / CST2	Suction temperature sensor
OAT	Outdoor air temperature sensor
OCT1 / OCT2	Condenser outdoor temperature sensor
	Pressure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

Refrigerant Flow Diagram

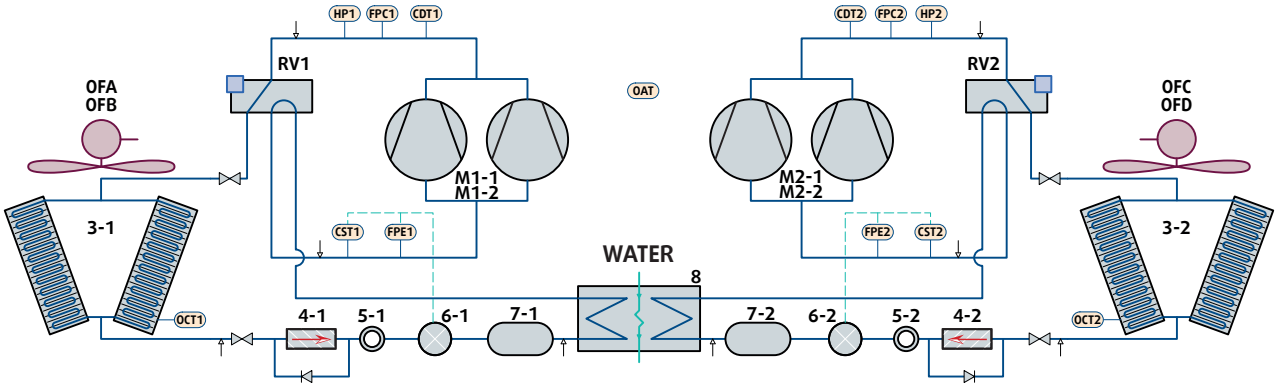
Heat pump version - SYSAQUA140.H to SYSAQUA150.H



CoHeat pump version - SYSAQUA170.H



Heat pump version - SYSAQUA190.H to SYSAQUA210.H

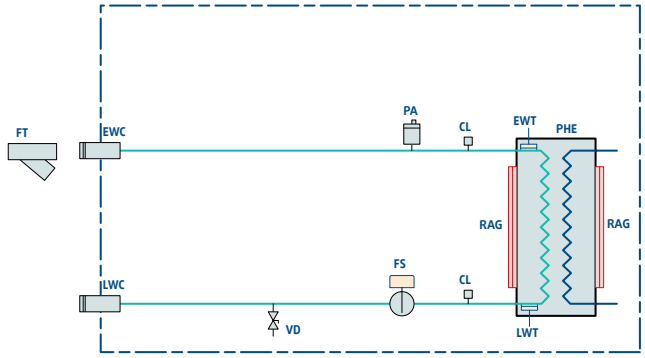


components	
M1-1/M1-2 M2-1/M2-2	Tandem scroll compressors
RV1 / RV2	Cycle reversal valve
3	Air condenser
4	Filter drier
5	Sight glass
6	Electronic expansion valve
7	liquid receiver
8	Plate heat exchanger

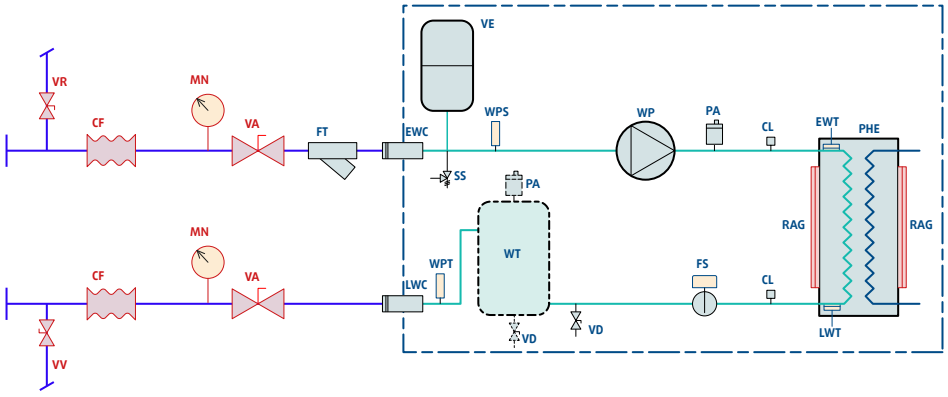
safety/control devices	
FPC1 / FPC2	High pressure transducer
HP1 / HP2	High pressure switch
CDT1 / CDT2	Discharge temperature sensor
FPE1 / FPE2	Low pressure transducer
CST1 / CST2	Suction temperature sensor
OAT	Outdoor air temperature sensor
OCT1 / OCT2	Condenser outdoor temperature sensor
	Pressure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

Hydraulic Circuit Diagram

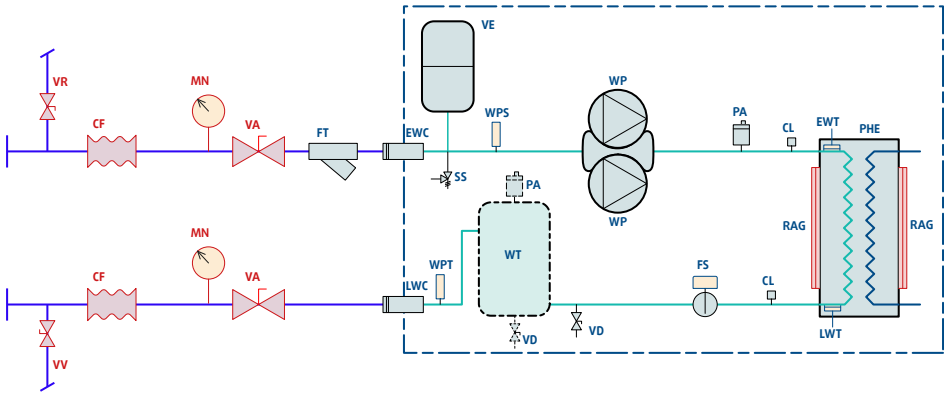
Without pump version



Recommended installation - Single pump version



Recommended installation - Double pump version

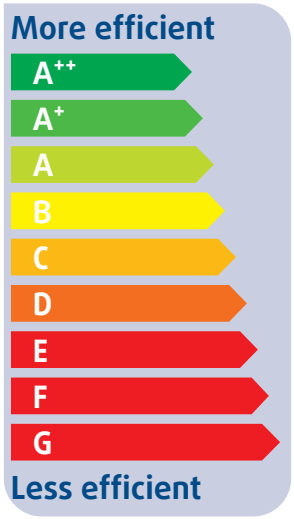


Installation recommandée	
VA	Globe valve (option)
VV	Drain valve
CF	Connexion flexible
VR	Water charging valve
MN	Manometer

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
RAG	Antifreeze heater
FS	Flow switch
VD	Drain valve
WT	Buffer tank
WPT	Pressure transducer (optional)

Energy performance

Energy class



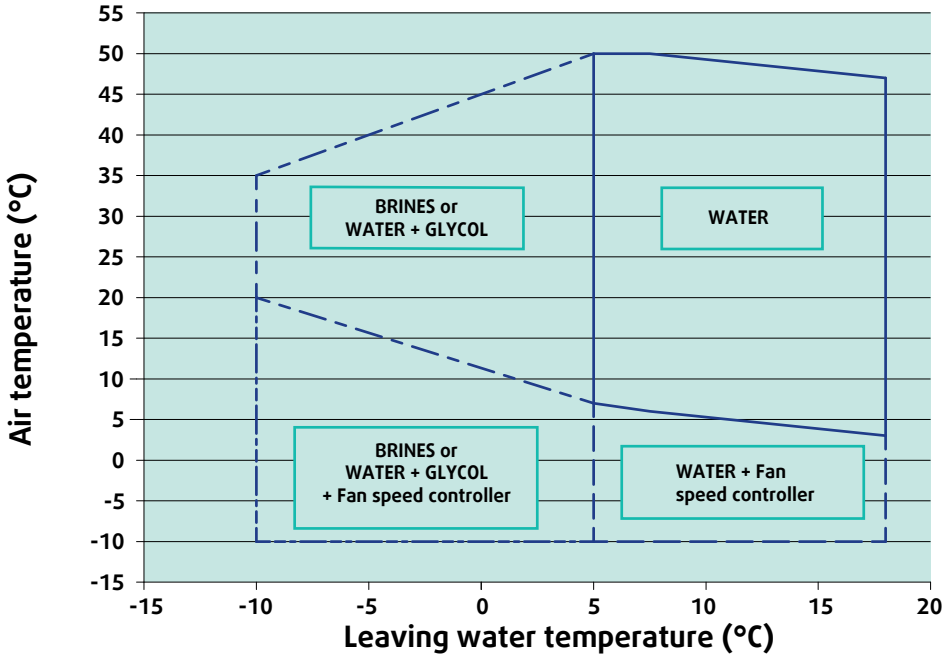
SYSAQUA	SYSAQUA140.H	SYSAQUA150.H	SYSAQUA170.H	SYSAQUA190.H	SYSAQUA210.H
SCOP	3.32	3.36	3.31	3.29	3.23
Class	A+	A+	A+	A+	A+

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

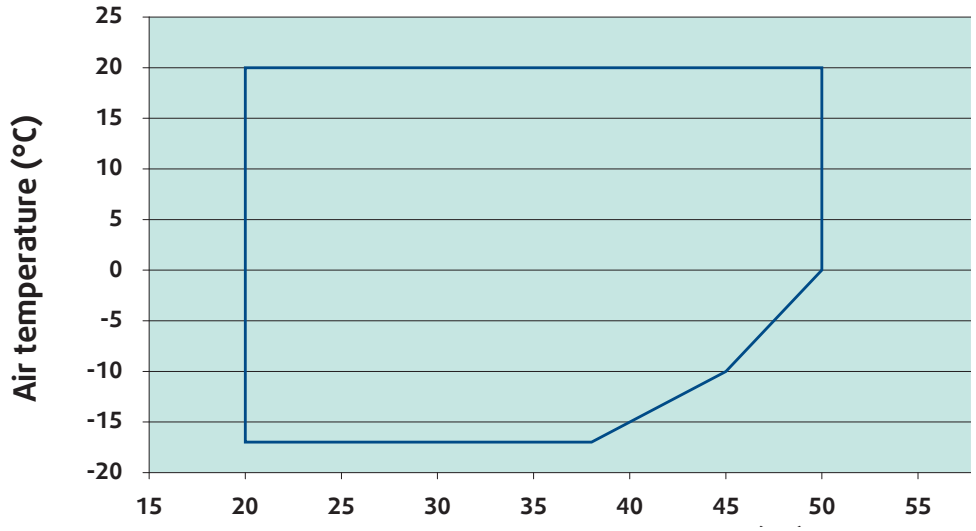
** considered at nominal unit capacity

Operating Limits

SYSAQUA.L/SYSAQUA.H in cooling mode



SYSAQUA.H in heating mode



Correction Factors

Fouling factors - Evaporator

Fouling factor (m².°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 (m².°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
1 200	0.973	1.020
1 800	0.958	1.030
2 400	0.943	1.040

Correction factors - Ethylene glycol

% glycol	Freezing point (°C)	Capacity	Power input	Water flow	Pressure drop
0	0	1.00	1.00	1.00	1.00
10	-4	0.995	0.998	1.015	1.070
20	-10	0.985	0.995	1.050	1.160
30	-17	0.970	0.985	1.085	1.235
45	-30	0.949	0.977	1.169	1.368

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)	Capacity	Power input	Water flow	Pressure drop
0	0	1.00	1.00	1.00	1.00
10	-3	0.991	0.994	1.005	1.112
20	-7	0.977	0.991	1.030	1.175
30	-13	0.945	0.975	1.067	1.290
45	-27	0.894	0.962	1.162	1.520

Physical Data - SYSAQUA.L

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	49.0	53.7	65.8	72.3
Total EER 100% (1)			3.03	3.00	3.00	2.86	2.89
Energy class EER (2)			B	B	B	C	C
SEER (2)			4.35	4.31	4.40	4.23	4.22
ηsc (2)			171	169	173	166	166
Energy class SEER			A	A	A	A	A
Power supply			400V / 3~ N / 50Hz				
Startup type			Direct				
Maximum operating current		A	108	119	136	153	170
Startup current (WITHOUT Soft Starter)		A	251	262	324	341	397
Startup current (WITH Soft Starter)		A	130	141	160	175	199
REFRIGERANT							
Type			R410A				
Number of refrigerant circuit			2	2	2	2	2
Charge (3)		kg	19.55 / 19.55	19.55 / 19.55	19.55 / 19.55	19.55 / 19.55	29.60 / 29.60
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	23.1	25.3	27.8	32.3	36.0
Water pressure drop		kPa	37.0	44.7	27.4	37.0	45.0
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	56 000	56 000	71 000	86 000	83 000
	Rotational speed	tr/mn	900	900	900	900	900
	Power input each fan	W	940	940	940 - 1650	1 650	1 650
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)	53.4	53.4	55.0	56.1	56.1

(*) 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 - SYSAQUA.H

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	47.8	52.7	64.8	72.5
Total EER 100% (1)			2.88	2.88	2.86	2.71	2.69
Energy class EER (2)			C	C	C	C	D
SEER (2)			3.87	3.87	3.91	3.69	3.68
ηsc (2)			152	152	153	145	144
Energy class SEER			C	C	C	C	D
Heating capacity		kW	143.7	153.7	170.1	194.9	217.6
Power input		kW	45.8	50.2	55.4	67.5	78.3
Total COP 100% (1)			3.14	3.06	3.07	2.89	2.78
Energy class COP (2)			B	B	B	C	D
SCOP			3.32	3.36	3.31	3.29	3.23
ηsh (2)			138	145	165	185	195
Energy class SCOP (2)			A+	A+	A+	A+	A+
Power supply			400V / 3~ N / 50Hz				
Startup type			Direct				
Maximum operating current		A	108	119	136	153	170
Startup current (WITHOUT Soft Starter)		A	251	262	324	341	397
Startup current (WITH Soft Starter)		A	130	141	160	175	199
REFRIGERANT							
Type			R410A				
Number of refrigerant circuit			2	2	2	2	2
Charge (3)		kg	24.70 / 24.70	24.70 / 24.70	33.30 / 24.70	33.30 / 33.30	33.30 / 33.30
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				
Cooling mode	Water flow	m^3/h	21.6	23.7	25.9	30.2	33.7
	Water pressure drop	kPa	33.1	39.4	24.1	32.3	39.6
Heating mode	Water flow	m^3/h	24.8	26.5	29.6	33.9	37.9
	Water pressure drop	kPa	43.9	49.9	31.1	40.6	50.1
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	56 000	56 000	71 000	86 000	83 000
	Rotational speed	tr/mn	900	900	900	900	900
	Power input each fan	W	940	940	940 - 1 650	1 650	1 650
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)	53.4	53.4	55.0	56.1	56.1

(*) 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
SYSAQUA.L - without pump	kg	1 422	1 425	1 515	1 584	1 847
SYSAQUA.H - 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	108	119	136	153	170
Fuse rating aM	A	125	125	160	160	200
Total starting current (WITHOUT Soft starter)	A	251	262	324	341	397
Total starting current (WITH Soft starter)	A	130	141	160	175	199

Unit with pump LP

Sizes		SYSAQUA140	SYSAQUA150	SYSAQUA170	SYSAQUA190	SYSAQUA210
Power supply		400V / 3~ N / 50Hz				
Maximum current	A	115	125	142	159	176
Fuse rating aM	A	125	160	160	200	200
Total starting current (WITHOUT Soft starter)	A	257	268	330	347	403
Total starting current (WITH Soft starter)	A	136	147	167	184	208

Unit with pump HP

Sizes		SYSAQUA140	SYSAQUA150	SYSAQUA170	SYSAQUA190	SYSAQUA210
Power supply		400V / 3~ N / 50Hz				
Maximum current	A	119	130	146	163	180
Fuse rating aM	A	125	160	160	200	200
Total starting current (WITHOUT Soft starter)	A	262	272	335	351	407
Total starting current (WITH Soft starter)	A	141	151	172	188	212

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

SYSAQUA.L / SYSAQUA.H 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	53.4
SYSAQUA150	77	79	82	81	79	74	85.4	53.4
SYSAQUA170	79	81	83	82	81	76	87.0	55.0
SYSAQUA190	81	82	83	83	83	77	88.1	56.1
SYSAQUA210	81	82	83	83	83	77	88.1	56.1

Sound power level Lw-dB - With pump LP

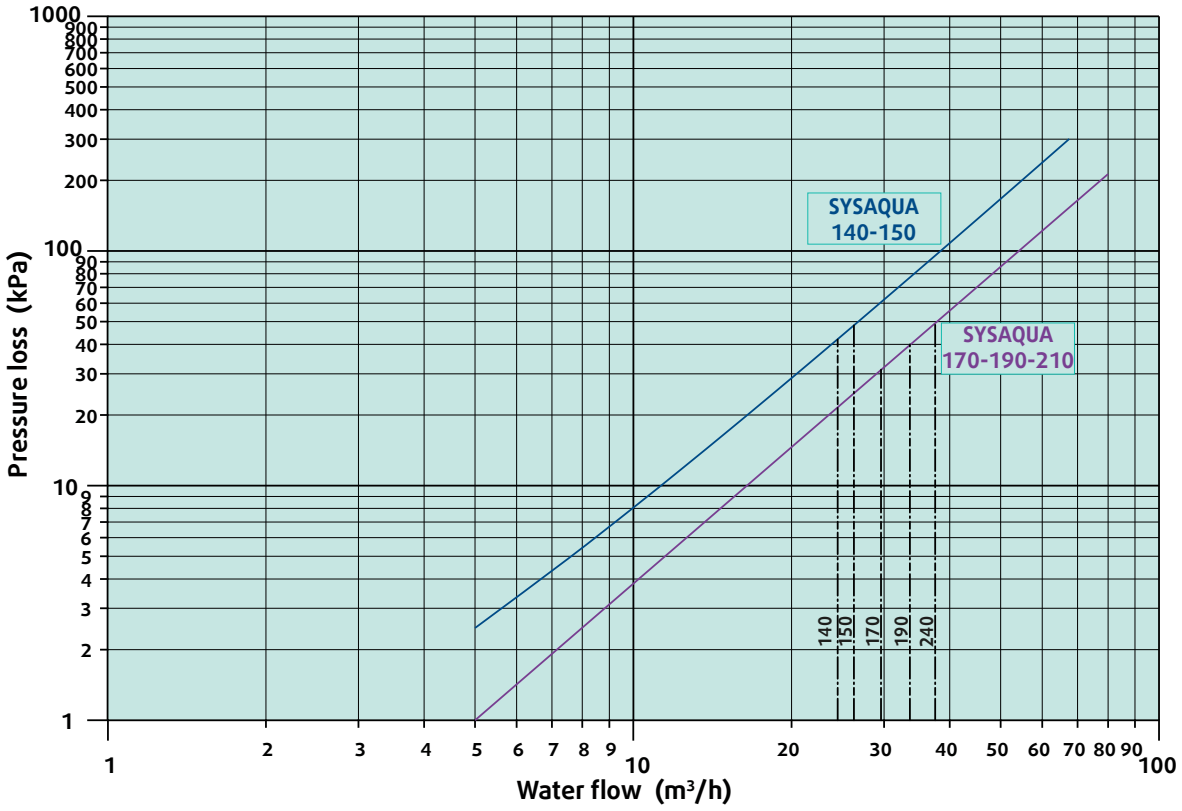
SYSAQUA.L / SYSAQUA.H models	Frequency in octave band (Hz)						Lw global dB(A)	Sound pressure level dB(A) *
	125	250	500	1000	2000	4000		
SYSAQUA140	77	79	82	81	80	77	86.1	54.1
SYSAQUA150	77	79	82	81	80	77	86.1	54.1
SYSAQUA170	79	81	83	82	82	78	87.5	55.5
SYSAQUA190	81	82	83	83	83	79	88.5	56.5
SYSAQUA210	81	82	83	83	83	79	88.5	56.5

Sound power level Lw-dB - With pump HP

SYSAQUA.L / SYSAQUA.H 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	54.1
SYSAQUA150	77	79	82	81	80	77	86.1	54.1
SYSAQUA170	79	81	83	82	82	78	87.5	55.5
SYSAQUA190	81	82	83	83	83	79	88.5	56.5
SYSAQUA210	81	82	83	83	83	79	88.5	56.5

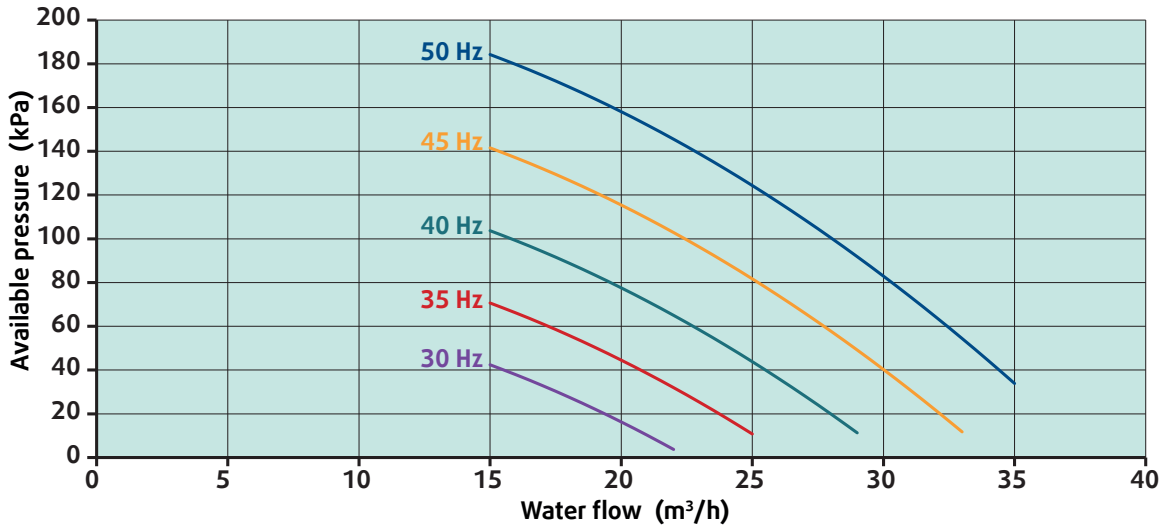
(*) Sound pressure levels calculated at 10 meters. Sound pressure levels refer to ISO standard 3744 with parallepiped shape.

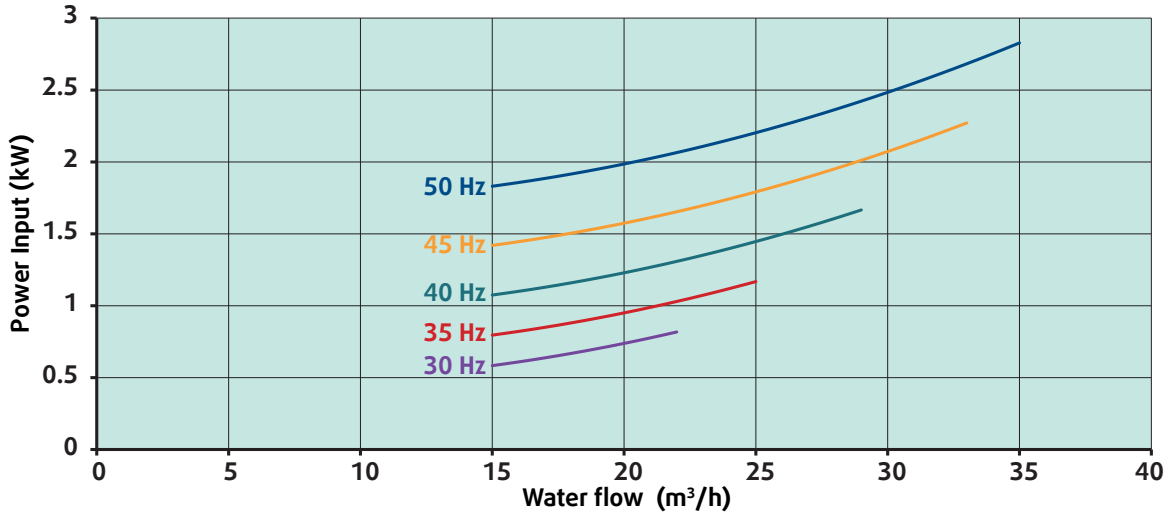
Water Pressure Drop of Indoor Heat Exchanger



Water Pump Curves

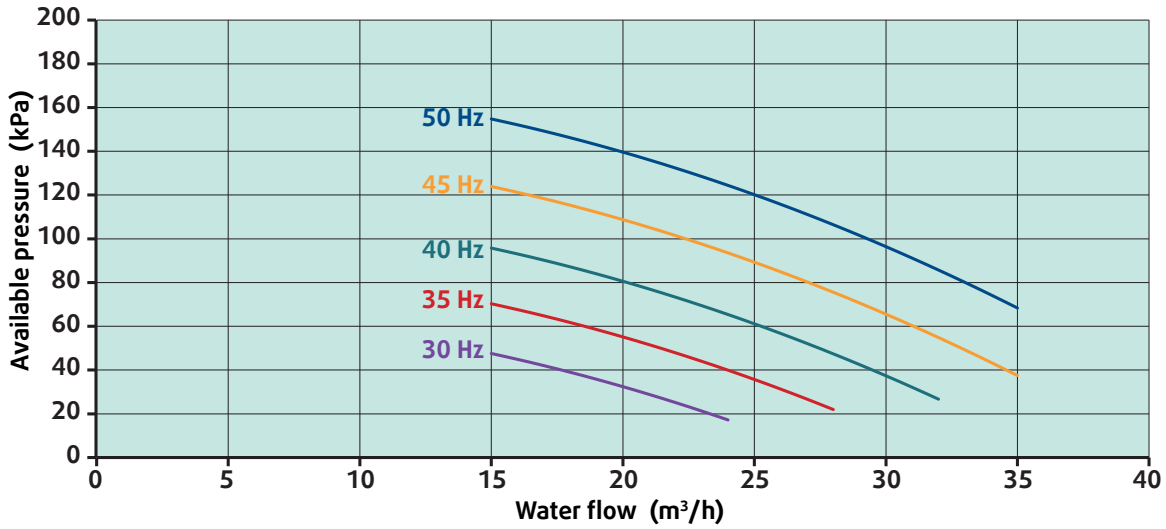
SYSAQUA 140 - 150 - 170 - Standard pump

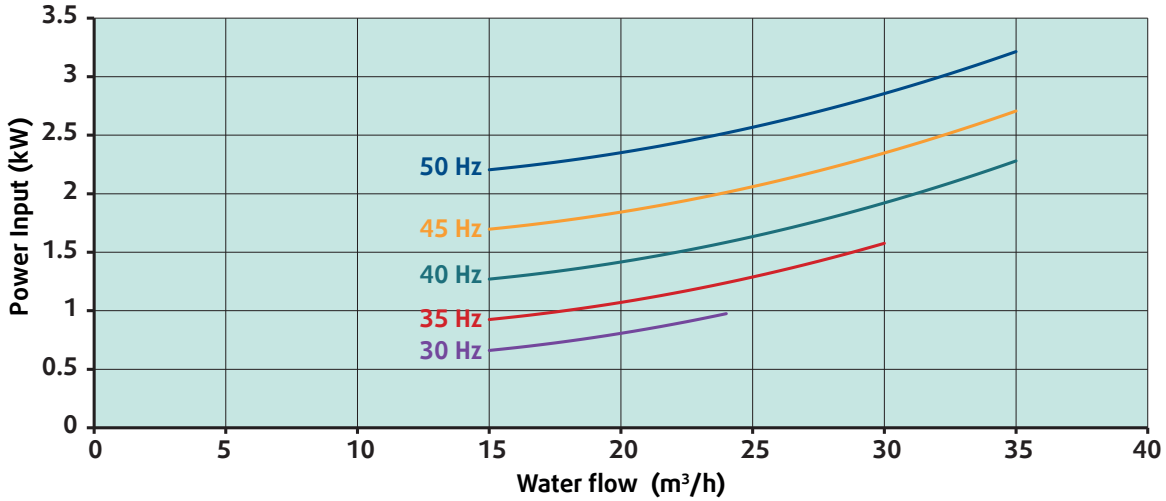




Water Pump Curves

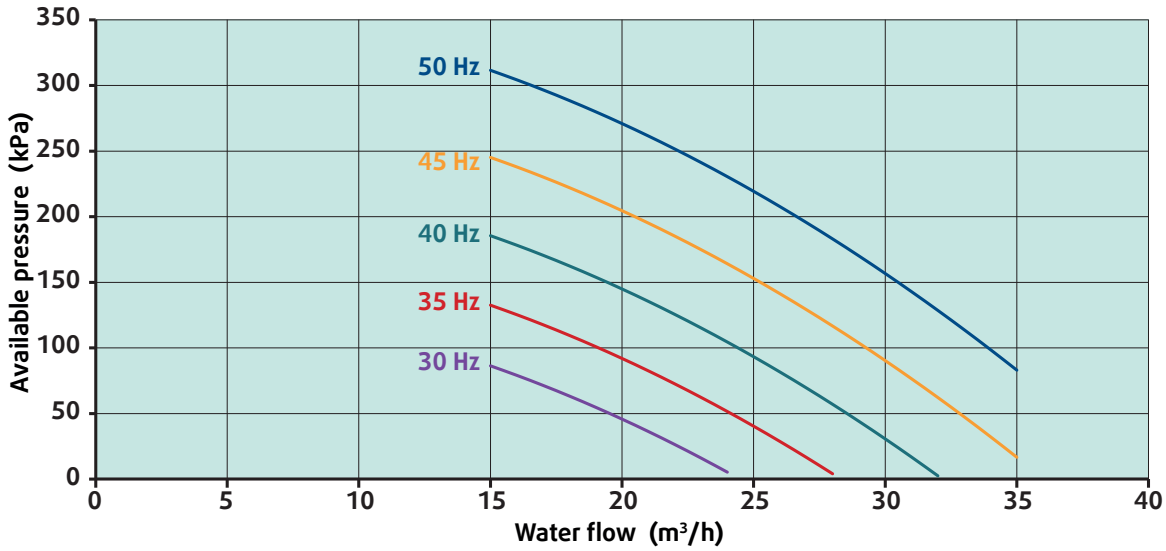
SYSAQUA 190 - 210 - Standard pump

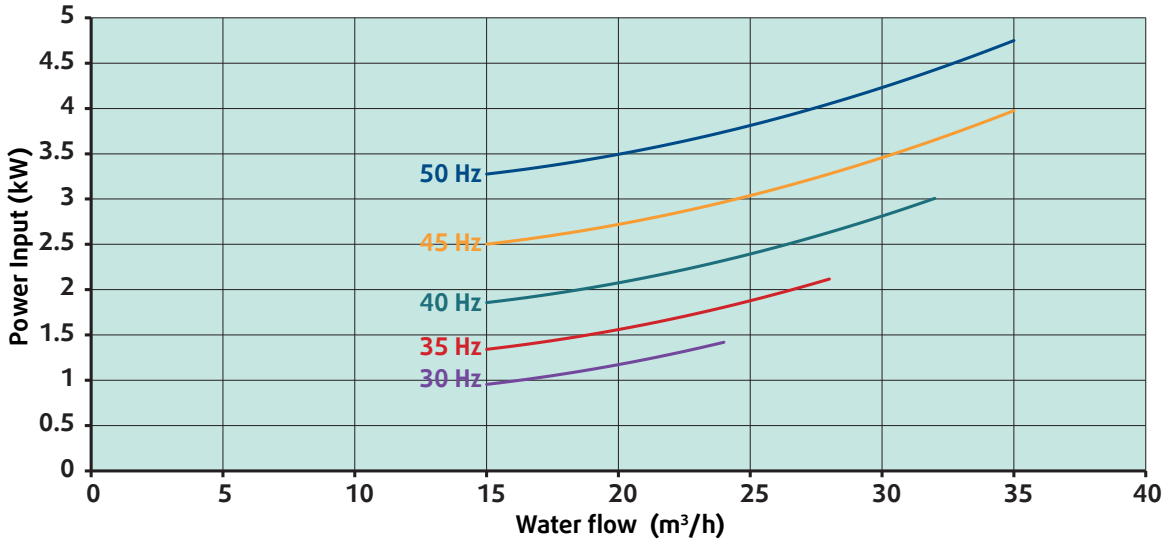




Water Pump Curves

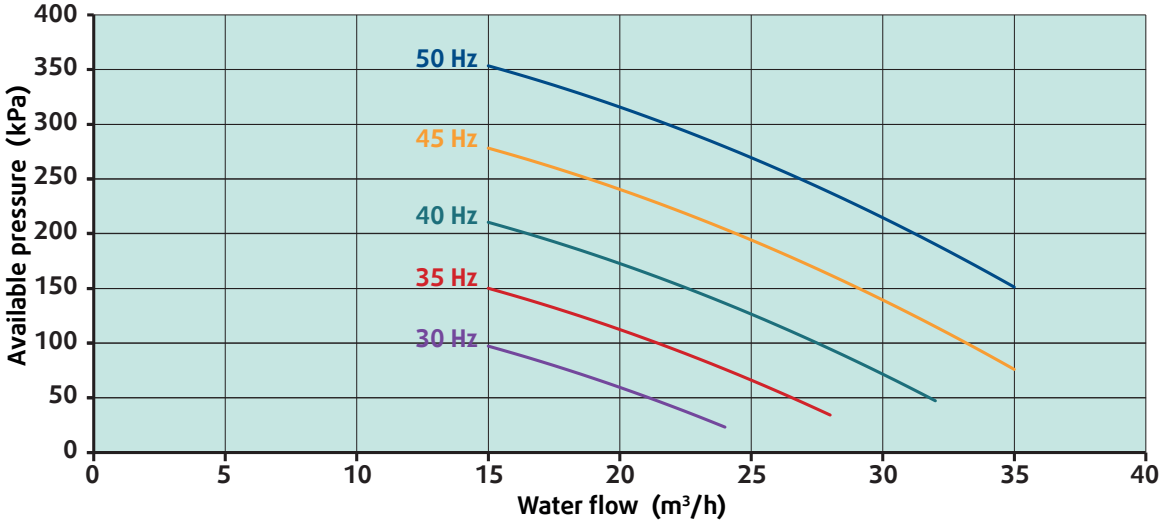
SYSAQUA 140 - 150 - 170 - 190 - High pressure pump

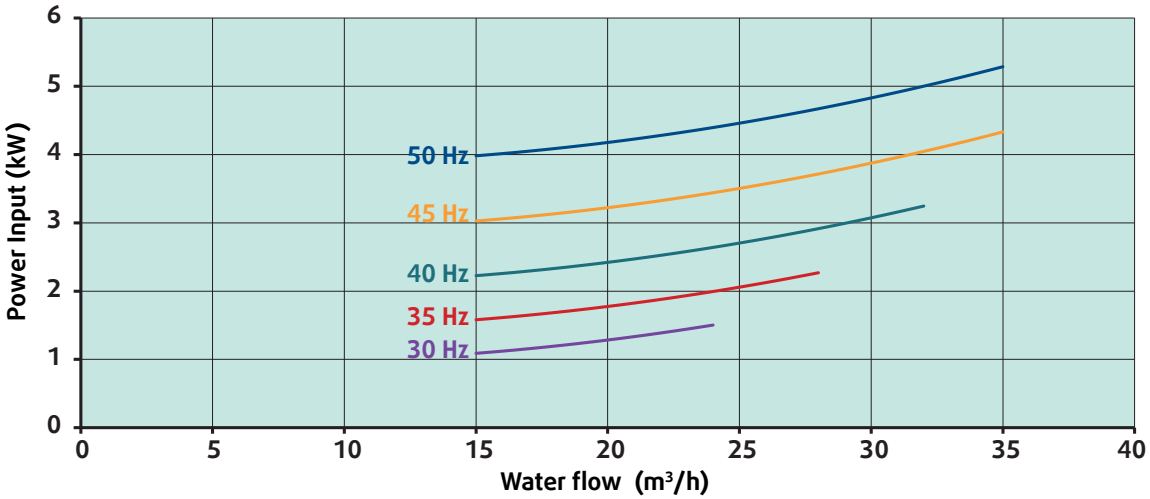




Water Pump Curves

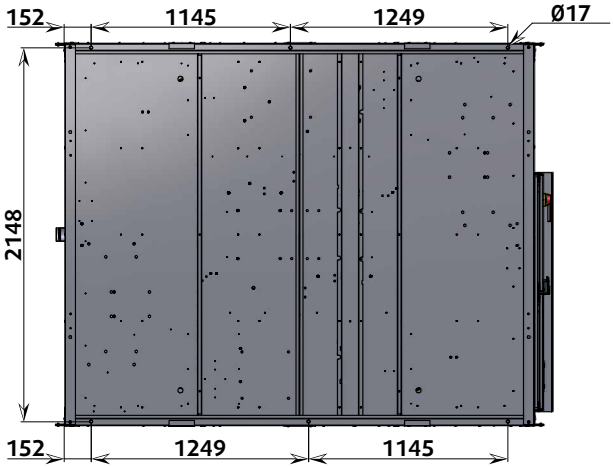
SYSAQUA 210 - High pressure pump

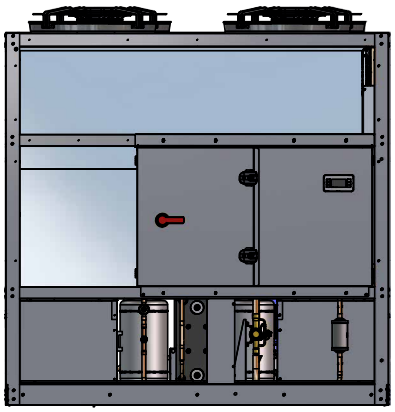


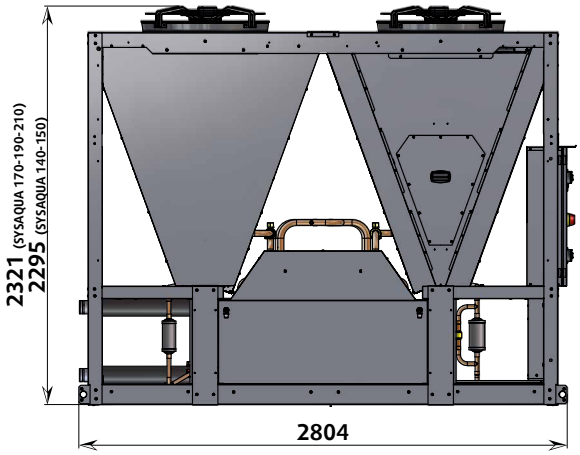


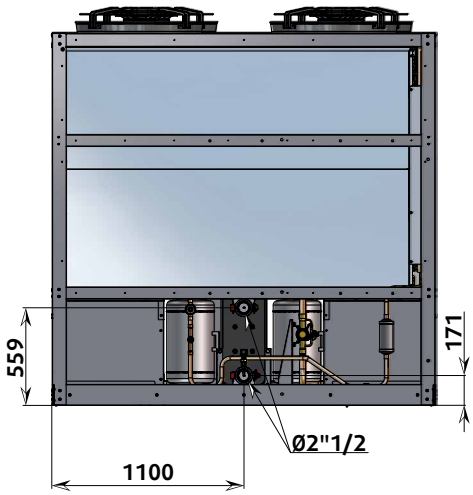
Dimensions (mm)

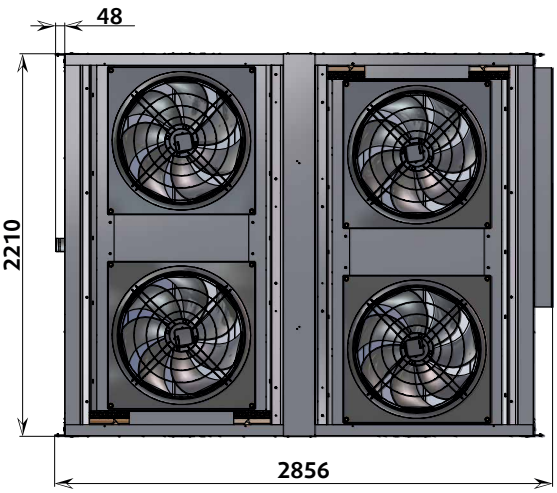
SYSAQUA WITHOUT PUMP

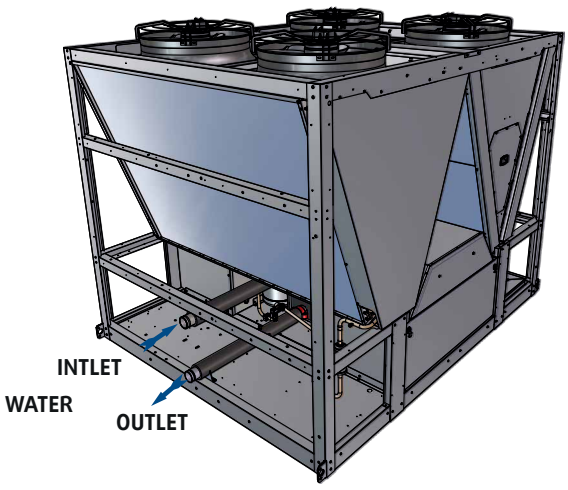






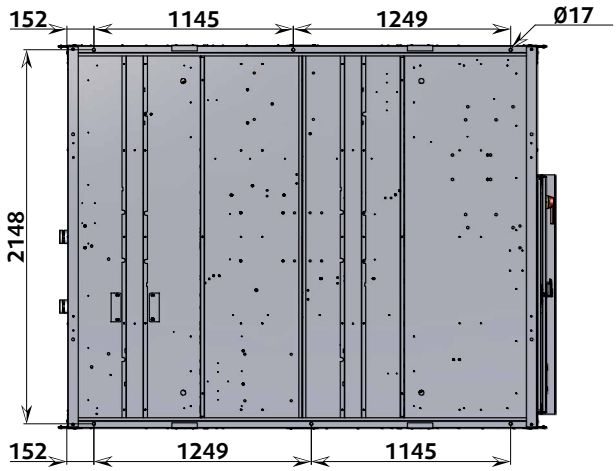


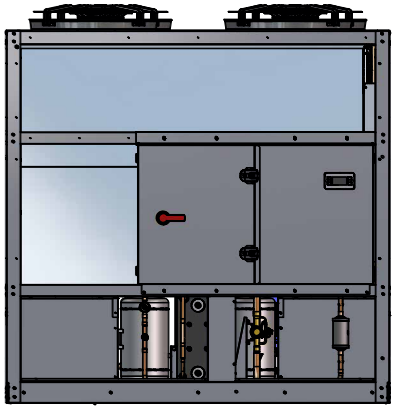


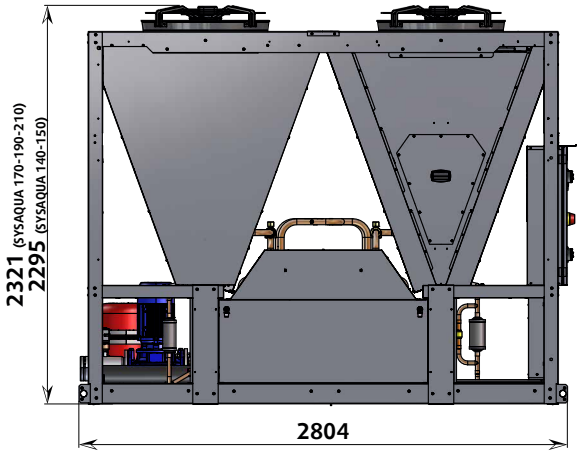


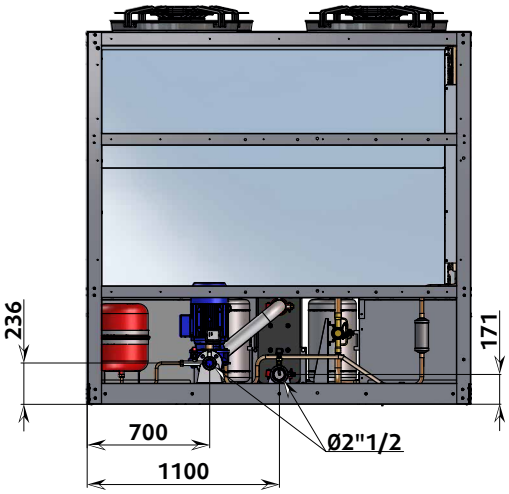
Dimensions (mm)

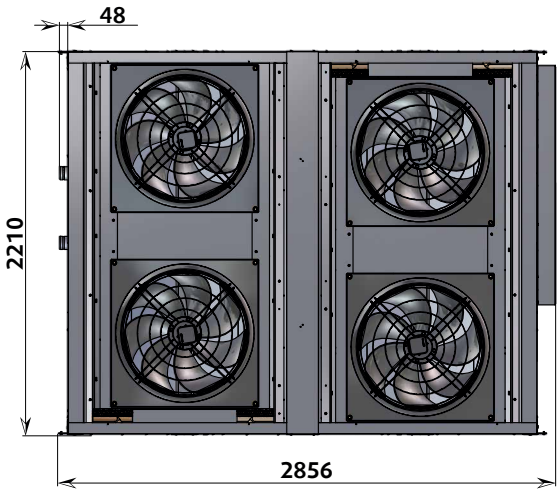
SYSAQUA WITH 1 PUMP

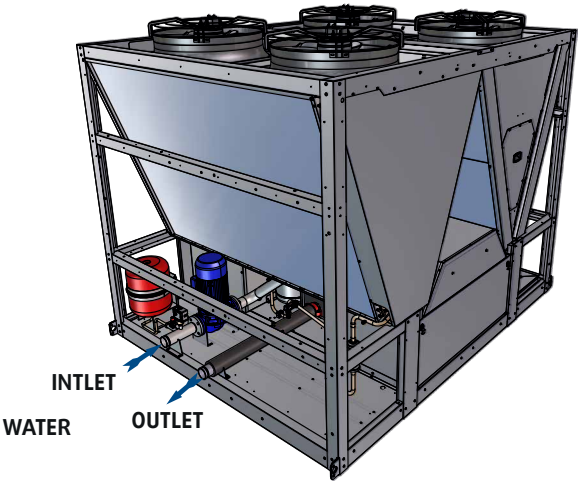






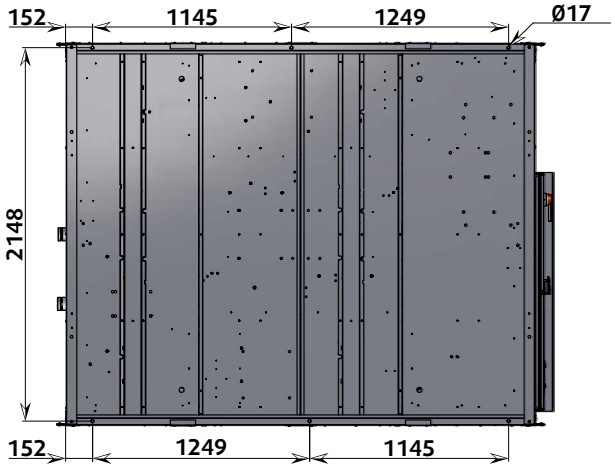


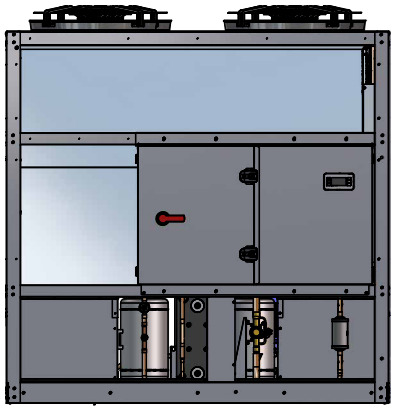


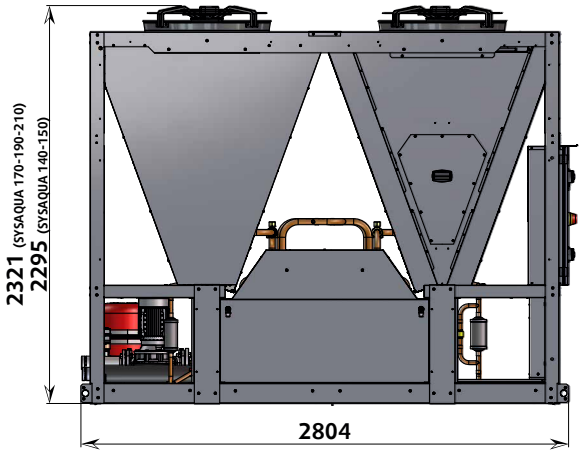


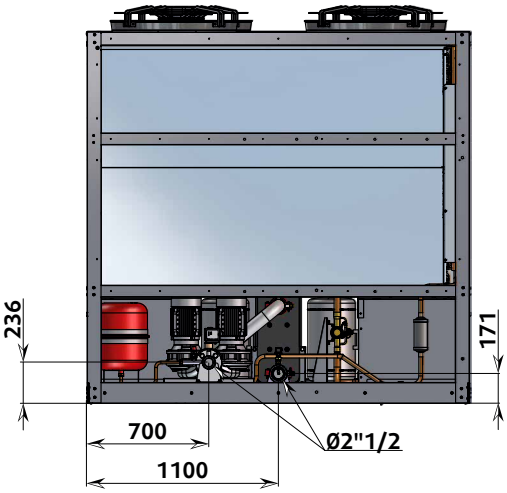
Dimensions (mm)

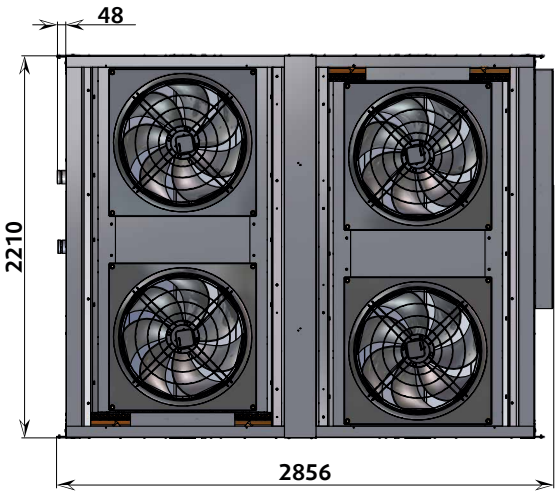
SYSAQUA WITH 2 PUMPS

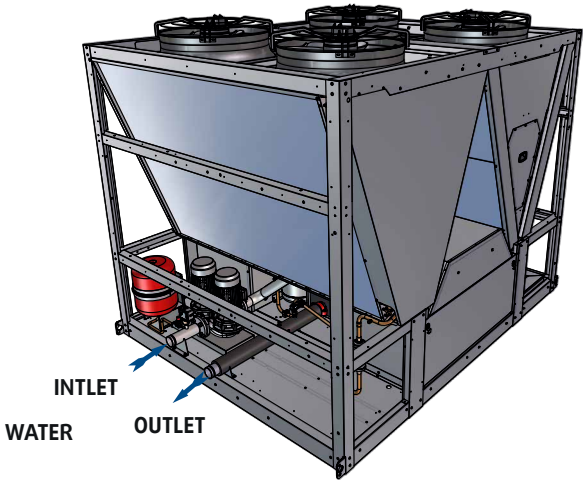






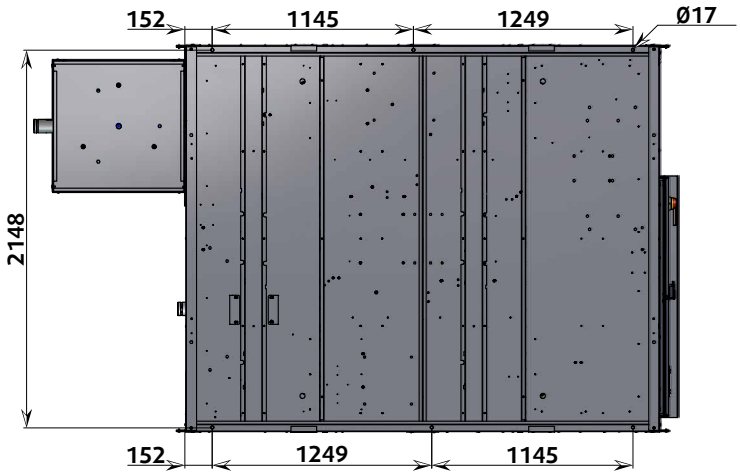


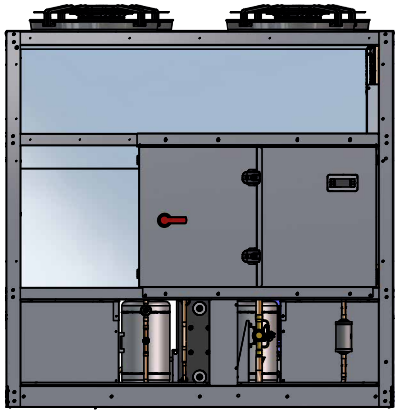


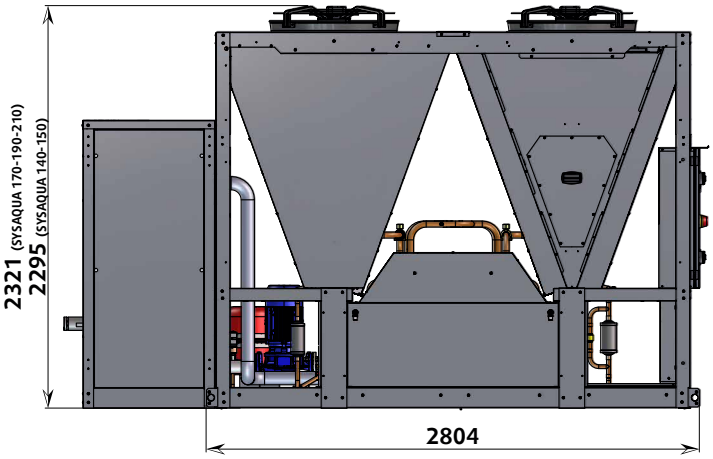


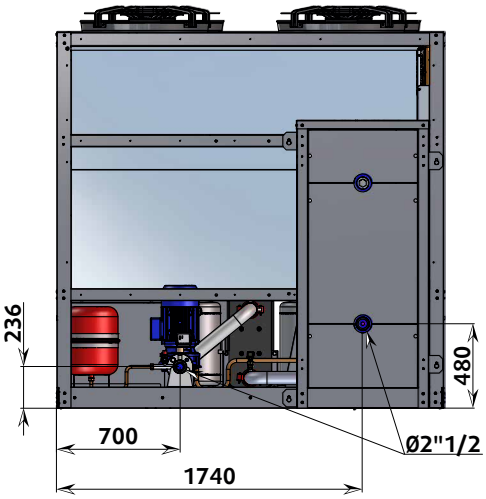
Dimensions (mm)

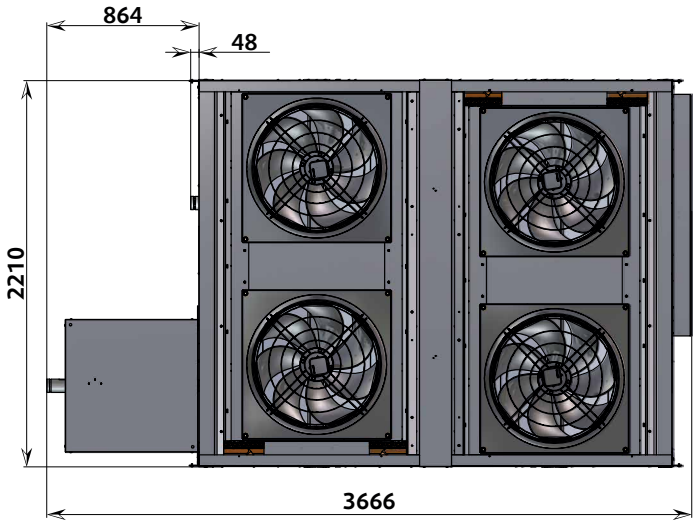
SYSAQUA WITH 1 PUMP AND BUFFER TANK

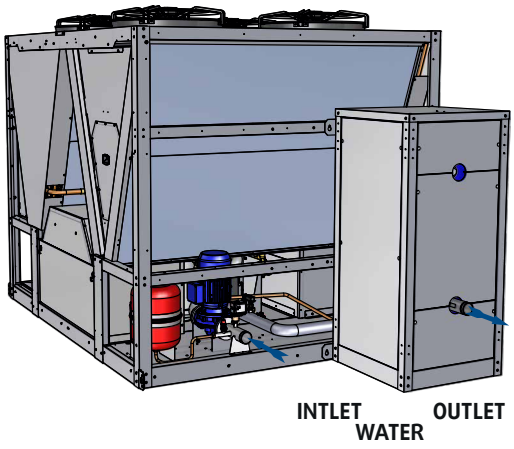






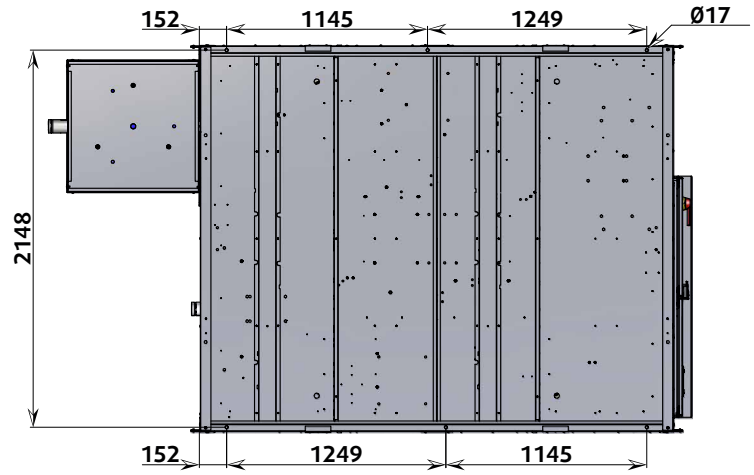


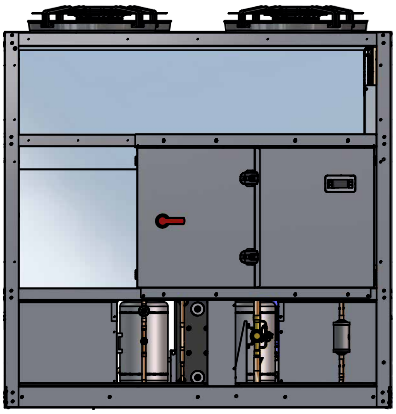


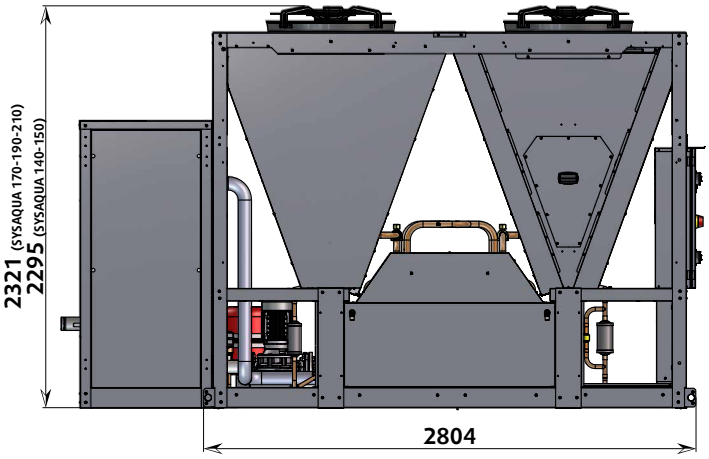


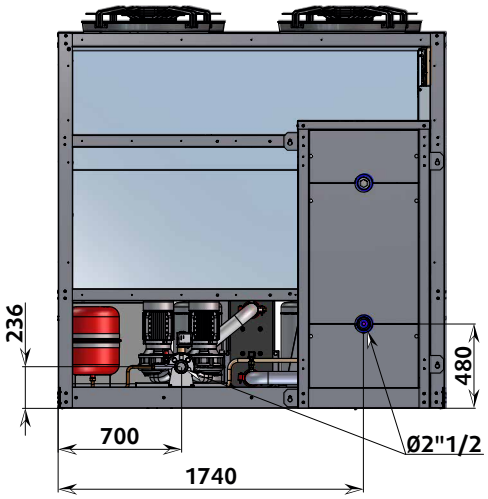
Dimensions (mm)

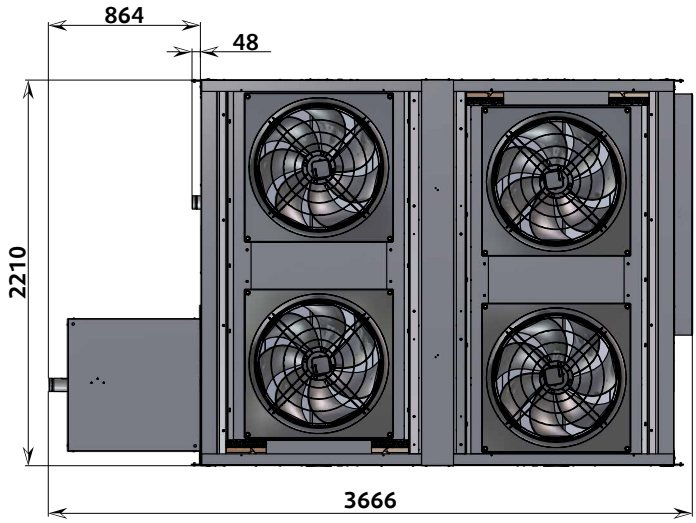
SYSAQUA WITH 2 PUMPS AND BUFFER TANK

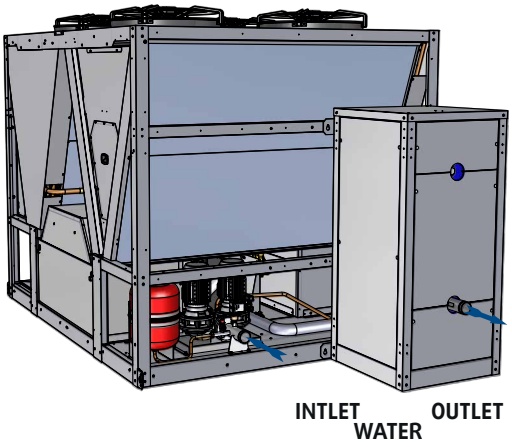






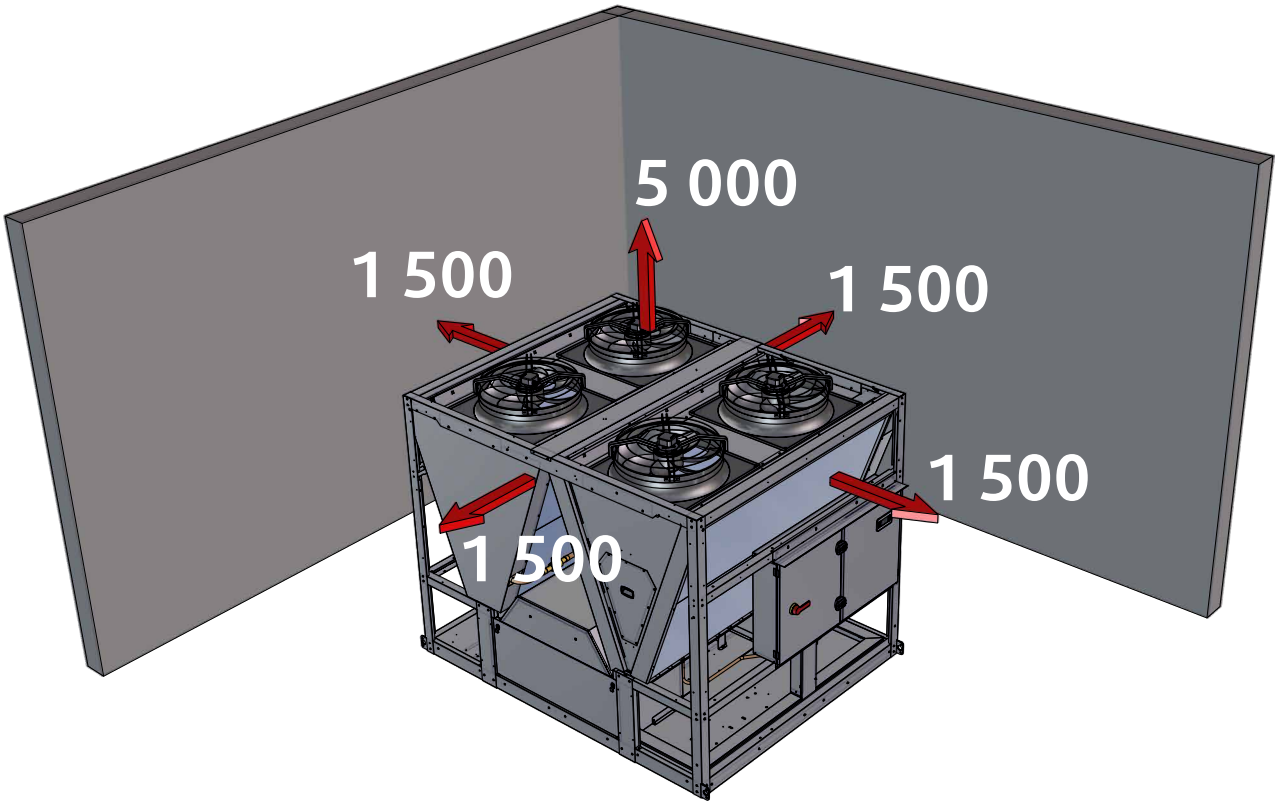




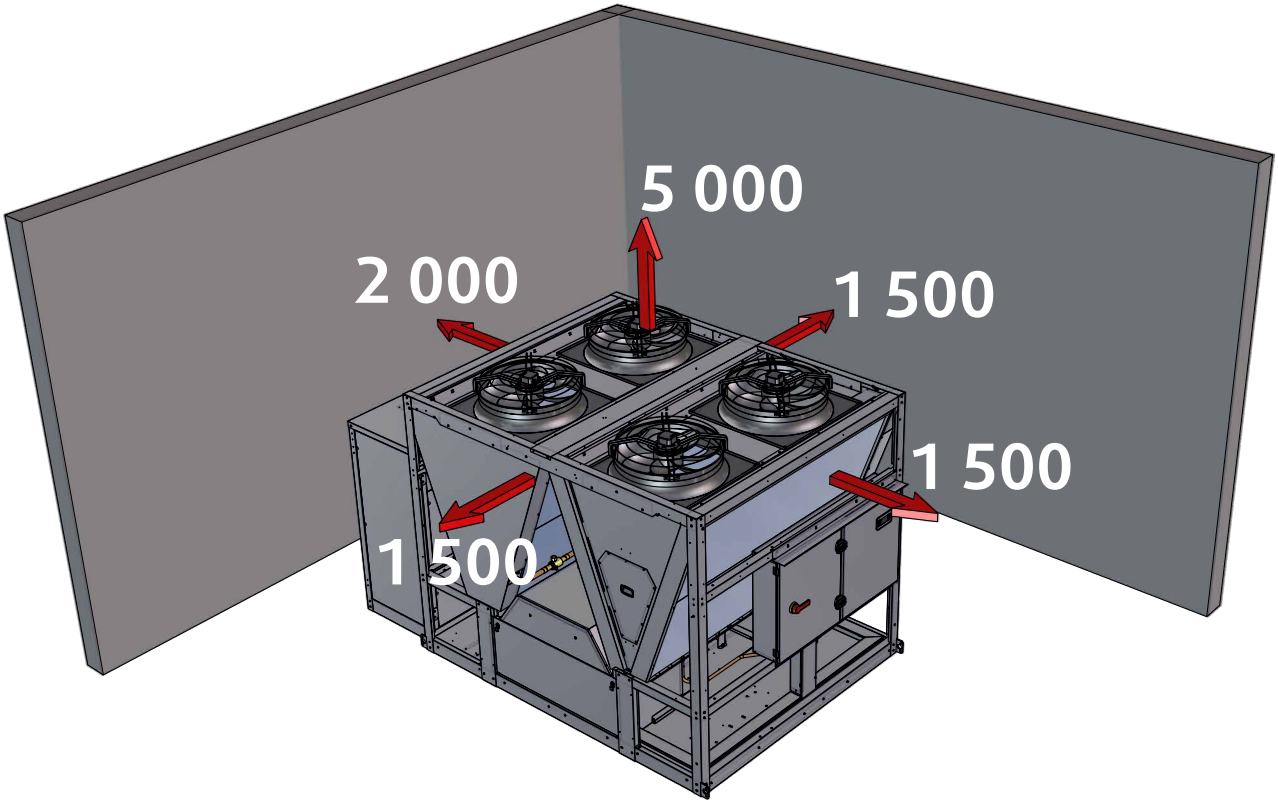


Space Requirements (mm)

SYSAQUA WITHOUT BUFFER TANK

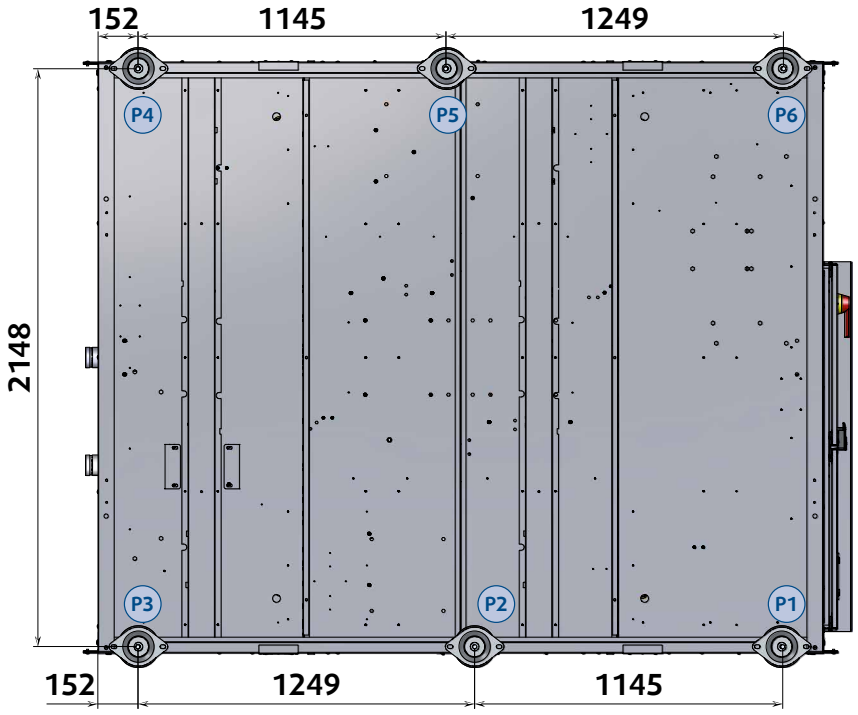


SYSAQUA WITH BUFFER TANK



Masses distributions

SYSAQUA.L

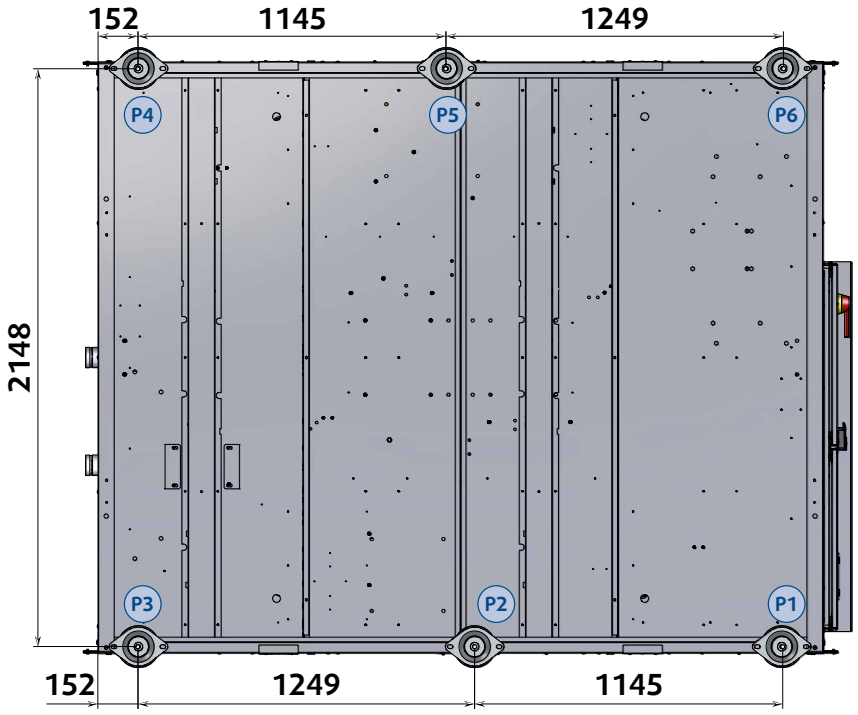


	Rubber pads						
	M	P1	P2	P3	P4	P5	P6
	kg	kg	kg	kg	kg	kg	kg
SYSAQUA140.L.HB	1 440	270	250	220	210	230	260
SYSAQUA140.L.1P-SP	1 530	280	270	260	230	240	250
SYSAQUA140.L.1P-HP	1 560	280	280	270	240	240	250
SYSAQUA140.L.2P-SP	1 550	280	270	270	240	240	250
SYSAQUA140.L.2P-HP	1 590	280	280	280	250	250	240
SYSAQUA150.L.HB	1 440	270	250	220	210	230	260
SYSAQUA150.L.1P-SP	1 530	280	270	260	230	240	250
SYSAQUA150.L.1P-HP	1 560	280	280	270	240	240	250
SYSAQUA150.L.2P-SP	1 550	280	270	270	240	240	250
SYSAQUA150.L.2P-HP	1 590	280	280	290	250	250	250
SYSAQUA170.L.HB	1 530	300	270	250	210	240	260
SYSAQUA170.L.1P-SP	1 630	300	300	290	240	250	250
SYSAQUA170.L.1P-HP	1 660	300	300	300	250	250	250
SYSAQUA170.L.2P-SP	1 640	300	300	300	240	250	250
SYSAQUA170.L.2P-HP	1 690	310	310	310	260	250	250
SYSAQUA190.L.HB	1 600	300	280	250	230	260	280
SYSAQUA190.L.1P-SP	1 700	310	300	290	260	270	280
SYSAQUA190.L.1P-HP	1 740	310	310	310	270	270	270
SYSAQUA190.L.2P-SP	1 710	310	300	300	260	270	270
SYSAQUA190.L.2P-HP	1 760	310	310	310	280	270	270
SYSAQUA210.L.HB	1 870	340	320	290	280	300	330
SYSAQUA210.L.1P-SP	1 960	400	340	280	250	310	370
SYSAQUA210.L.1P-HP	2 000	420	350	280	250	320	380
SYSAQUA210.L.2P-SP	1 970	350	340	340	310	310	320
SYSAQUA210.L.2P-HP	2 020	350	350	360	320	320	320

	Spring damper						
	M	P1	P2	P3	P4	P5	P6
	kg	kg	kg	kg	kg	kg	kg
SYSAQUA140.H.HB	1 440	270	250	230	210	230	250
SYSAQUA140.H.1P-SP	1 530	280	270	260	230	240	250
SYSAQUA140.H.1P-HP	1 560	280	280	280	240	240	240
SYSAQUA140.H.2P-SP	1 550	280	270	270	240	240	250
SYSAQUA140.H.2P-HP	1 590	280	280	280	250	250	250
SYSAQUA150.H.HB	1 440	270	250	230	210	230	250
SYSAQUA150.H.1P-SP	1 530	280	270	260	230	240	250
SYSAQUA150.H.1P-HP	1 560	280	280	280	240	240	240
SYSAQUA150.H.2P-SP	1 550	280	270	270	240	240	250
SYSAQUA150.H.2P-HP	1 590	280	280	280	250	250	250
SYSAQUA170.H.HB	1 530	290	270	240	220	250	270
SYSAQUA170.H.1P-SP	1 630	290	290	280	250	250	260
SYSAQUA170.H.1P-HP	1 660	290	290	290	260	260	260
SYSAQUA170.H.2P-SP	1 640	300	290	280	250	260	260
SYSAQUA170.H.2P-HP	1 690	300	300	300	260	260	260
SYSAQUA190.H.HB	1 600	300	280	250	230	260	280
SYSAQUA190.H.1P-SP	1 700	310	300	290	260	270	270
SYSAQUA190.H.1P-HP	1 740	310	310	310	270	270	270
SYSAQUA190.H.2P-SP	1 710	310	300	300	260	270	280
SYSAQUA190.H.2P-HP	1 760	310	310	310	270	270	270
SYSAQUA210.H.HB	1 870	350	320	290	270	300	330
SYSAQUA210.H.1P-SP	1 960	350	350	340	300	310	320
SYSAQUA210.H.1P-HP	2 000	360	360	360	310	310	310
SYSAQUA210.H.2P-SP	1 970	360	350	340	300	310	320
SYSAQUA210.H.2P-HP	2 020	360	360	360	310	310	310

Masses distributions

SYSAQUA.H

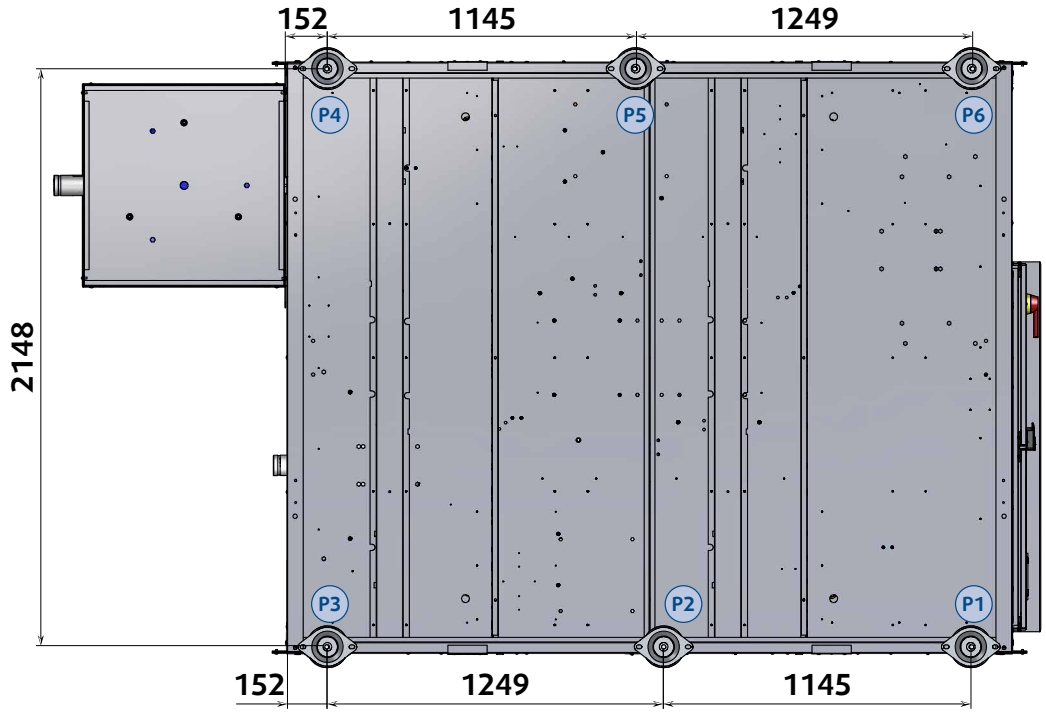


	Rubber pads						
	M	P1	P2	P3	P4	P5	P6
	kg	kg	kg	kg	kg	kg	kg
SYSAQUA140.L.HB	1 590	300	270	250	230	260	280
SYSAQUA140.L.1P-SP	1 680	310	300	290	260	270	280
SYSAQUA140.L.1P-HP	1 720	310	300	300	270	270	270
SYSAQUA140.L.2P-SP	1 700	310	300	290	260	270	270
SYSAQUA140.L.2P-HP	1 740	310	310	310	270	270	270
SYSAQUA150.L.HB	1 610	300	280	250	230	260	290
SYSAQUA150.L.1P-SP	1 700	310	300	290	260	270	280
SYSAQUA150.L.1P-HP	1 740	310	310	300	270	270	280
SYSAQUA150.L.2P-SP	1 720	310	300	300	260	270	280
SYSAQUA150.L.2P-HP	1 760	310	310	310	280	280	270
SYSAQUA170.L.HB	1 710	330	300	280	240	270	290
SYSAQUA170.L.1P-SP	1 800	330	320	320	270	270	280
SYSAQUA170.L.1P-HP	1 830	330	330	330	280	280	280
SYSAQUA170.L.2P-SP	1 810	330	330	320	270	280	280
SYSAQUA170.L.2P-HP	1 860	330	340	340	280	280	280
SYSAQUA190.L.HB	1 800	330	310	280	270	290	320
SYSAQUA190.L.1P-SP	1 890	340	330	320	290	300	310
SYSAQUA190.L.1P-HP	1 930	340	340	340	300	300	300
SYSAQUA190.L.2P-SP	1 900	340	330	330	300	300	310
SYSAQUA190.L.2P-HP	1 950	340	340	350	310	310	300
SYSAQUA210.L.HB	2 110	380	360	330	320	340	370
SYSAQUA210.L.1P-SP	2 200	440	380	320	290	350	410
SYSAQUA210.L.1P-HP	2 240	460	390	320	290	360	420
SYSAQUA210.L.2P-SP	2 210	390	390	380	350	350	360
SYSAQUA210.L.2P-HP	2 260	390	400	400	360	360	360

	Spring damper						
	M	P1	P2	P3	P4	P5	P6
	kg	kg	kg	kg	kg	kg	kg
SYSAQUA140.H.HB	1 590	300	280	250	230	260	280
SYSAQUA140.H.1P-SP	1 680	300	300	290	260	260	270
SYSAQUA140.H.1P-HP	1 720	300	310	310	270	270	270
SYSAQUA140.H.2P-SP	1 700	310	300	290	260	270	270
SYSAQUA140.H.2P-HP	1 740	310	310	310	270	270	270
SYSAQUA150.H.HB	1 610	300	280	250	230	260	280
SYSAQUA150.H.1P-SP	1 700	310	300	290	260	270	270
SYSAQUA150.H.1P-HP	1 740	310	310	310	270	270	270
SYSAQUA150.H.2P-SP	1 720	310	300	300	260	270	280
SYSAQUA150.H.2P-HP	1 760	310	310	310	270	270	270
SYSAQUA170.H.HB	1 710	320	300	270	250	270	300
SYSAQUA170.H.1P-SP	1 800	330	320	310	270	280	290
SYSAQUA170.H.1P-HP	1 830	330	330	330	280	280	280
SYSAQUA170.H.2P-SP	1 810	330	320	310	280	280	290
SYSAQUA170.H.2P-HP	1 860	330	330	330	290	290	290
SYSAQUA190.H.HB	1 800	340	310	280	260	290	320
SYSAQUA190.H.1P-SP	1 890	340	330	330	290	300	300
SYSAQUA190.H.1P-HP	1 930	340	340	340	300	300	300
SYSAQUA190.H.2P-SP	1 900	340	340	330	290	300	310
SYSAQUA190.H.2P-HP	1 950	350	350	350	300	300	300
SYSAQUA210.H.HB	2 110	400	360	330	310	340	370
SYSAQUA210.H.1P-SP	2 200	400	390	380	340	340	350
SYSAQUA210.H.1P-HP	2 240	400	400	400	350	350	350
SYSAQUA210.H.2P-SP	2 210	400	390	380	340	350	360
SYSAQUA210.H.2P-HP	2 260	400	400	400	350	350	350

Masses distributions

SYSAQUA.L with buffer tank

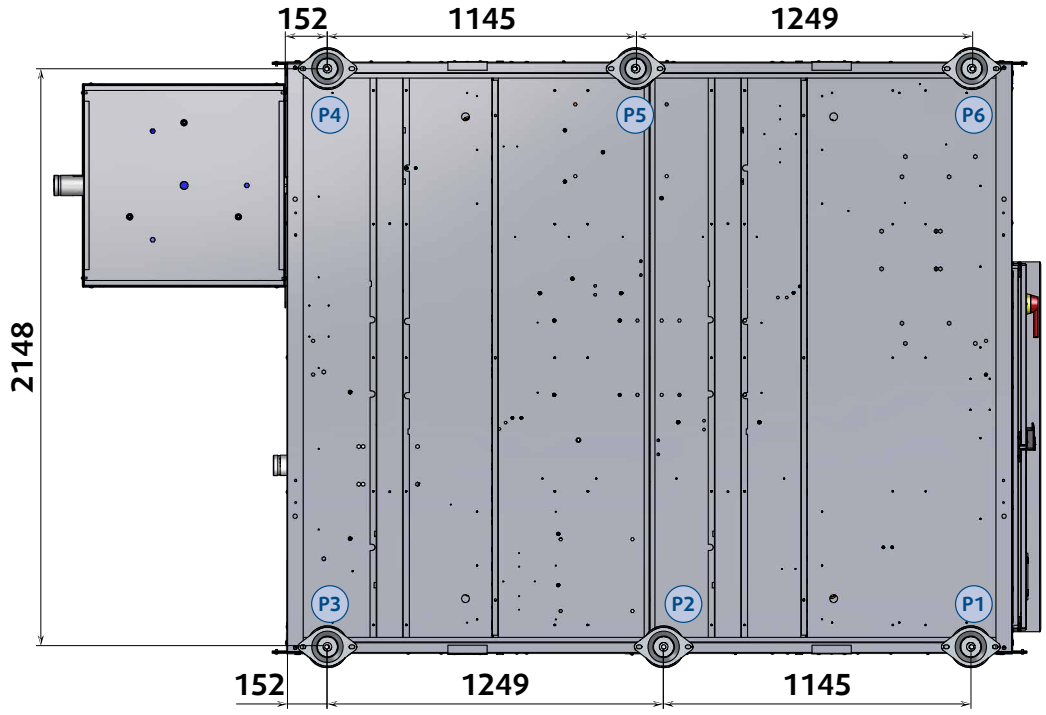


	Rubber pads						
	M	P1	P2	P3	P4	P5	P6
	kg	kg	kg	kg	kg	kg	kg
SYSAQUA140.L.HB	1 880	170	280	390	460	350	230
SYSAQUA140.L.1P-SP	1 970	170	300	430	480	360	230
SYSAQUA140.L.1P-HP	2 000	170	310	440	490	360	220
SYSAQUA140.L.2P-SP	1 980	170	300	440	490	360	230
SYSAQUA140.L.2P-HP	2 030	170	310	450	500	360	220
SYSAQUA150.L.HB	1 880	170	280	390	460	350	240
SYSAQUA150.L.1P-SP	1 970	170	300	430	480	360	230
SYSAQUA150.L.1P-HP	2 000	170	310	440	490	360	220
SYSAQUA150.L.2P-SP	1 990	170	300	440	490	360	230
SYSAQUA150.L.2P-HP	2 030	170	310	460	500	360	220
SYSAQUA170.L.HB	1 970	190	300	420	470	350	240
SYSAQUA170.L.1P-SP	2 060	200	330	460	490	360	230
SYSAQUA170.L.1P-HP	2 100	200	330	470	500	360	230
SYSAQUA170.L.2P-SP	2 080	200	330	460	490	360	230
SYSAQUA170.L.2P-HP	2 120	200	340	480	510	370	220
SYSAQUA190.L.HB	2 040	190	310	420	490	370	260
SYSAQUA190.L.1P-SP	2 140	200	330	460	510	380	250
SYSAQUA190.L.1P-HP	2 170	200	340	480	520	390	250
SYSAQUA190.L.2P-SP	2 150	200	330	460	520	380	250
SYSAQUA190.L.2P-HP	2 190	200	340	480	530	390	250
SYSAQUA210.L.HB	2 300	240	350	460	530	420	310
SYSAQUA210.L.1P-SP	2 400	290	370	450	510	430	350
SYSAQUA210.L.1P-HP	2 440	310	380	450	500	430	360
SYSAQUA210.L.2P-SP	2 410	240	380	510	560	430	300
SYSAQUA210.L.2P-HP	2 460	250	390	530	570	430	290

	Spring damper						
	M	P1	P2	P3	P4	P5	P6
	kg	kg	kg	kg	kg	kg	kg
SYSAQUA140.H.HB	1 880	220	220	410	490	270	270
SYSAQUA140.H.1P-SP	1 970	230	240	450	510	270	260
SYSAQUA140.H.1P-HP	2 000	230	240	470	520	270	260
SYSAQUA140.H.2P-SP	1 980	230	240	450	520	270	270
SYSAQUA140.H.2P-HP	2 030	230	250	470	530	280	270
SYSAQUA150.H.HB	1 880	220	220	410	490	270	270
SYSAQUA150.H.1P-SP	1 970	230	240	450	510	270	260
SYSAQUA150.H.1P-HP	2 000	230	240	470	520	270	260
SYSAQUA150.H.2P-SP	1 990	230	240	450	520	280	270
SYSAQUA150.H.2P-HP	2 030	230	250	470	530	280	270
SYSAQUA170.H.HB	1 970	230	230	430	510	280	280
SYSAQUA170.H.1P-SP	2 060	240	250	470	540	290	280
SYSAQUA170.H.1P-HP	2 100	240	250	490	550	290	270
SYSAQUA170.H.2P-SP	2 080	240	250	480	540	290	280
SYSAQUA170.H.2P-HP	2 120	250	260	500	560	290	280
SYSAQUA190.H.HB	2 040	240	240	440	530	290	290
SYSAQUA190.H.1P-SP	2 140	250	260	490	560	300	290
SYSAQUA190.H.1P-HP	2 170	250	260	510	570	300	290
SYSAQUA190.H.2P-SP	2 150	250	260	490	560	300	290
SYSAQUA190.H.2P-HP	2 190	250	270	510	570	300	290
SYSAQUA210.H.HB	2 300	270	270	500	600	330	330
SYSAQUA210.H.1P-SP	2 400	280	290	550	630	330	320
SYSAQUA210.H.1P-HP	2 440	280	300	570	640	330	320
SYSAQUA210.H.2P-SP	2 410	280	290	550	630	330	320
SYSAQUA210.H.2P-HP	2 460	280	300	570	640	340	320

Masses distributions

SYSAQUA.H with buffer tank



	Rubber pads						
	M	P1	P2	P3	P4	P5	P6
	kg	kg	kg	kg	kg	kg	kg
SYSAQUA140.L.HB	2 030	190	300	420	480	370	260
SYSAQUA140.L.1P-SP	2 120	200	330	460	510	380	250
SYSAQUA140.L.1P-HP	2 160	200	330	470	520	380	250
SYSAQUA140.L.2P-SP	2 140	200	330	460	510	380	250
SYSAQUA140.L.2P-HP	2 180	200	340	480	530	390	250
SYSAQUA150.L.HB	2 050	200	310	420	490	380	260
SYSAQUA150.L.1P-SP	2 140	200	330	460	510	380	260
SYSAQUA150.L.1P-HP	2 170	200	340	470	520	390	250
SYSAQUA150.L.2P-SP	2 160	200	330	460	520	390	250
SYSAQUA150.L.2P-HP	2 200	200	340	480	530	390	250
SYSAQUA170.L.HB	2 150	220	330	450	500	380	270
SYSAQUA170.L.1P-SP	2 240	230	360	490	520	390	260
SYSAQUA170.L.1P-HP	2 270	230	360	500	530	390	260
SYSAQUA170.L.2P-SP	2 250	230	360	490	520	390	260
SYSAQUA170.L.2P-HP	2 300	230	370	510	540	400	250
SYSAQUA190.L.HB	2 240	230	340	450	520	410	290
SYSAQUA190.L.1P-SP	2 330	230	360	490	540	420	290
SYSAQUA190.L.1P-HP	2 370	230	370	510	560	420	280
SYSAQUA190.L.2P-SP	2 340	230	360	500	550	420	280
SYSAQUA190.L.2P-HP	2 390	230	370	510	560	420	280
SYSAQUA210.L.HB	2 550	280	390	500	570	460	350
SYSAQUA210.L.1P-SP	2 640	330	410	490	550	470	390
SYSAQUA210.L.1P-HP	2 680	350	420	490	540	470	400
SYSAQUA210.L.2P-SP	2 650	280	420	550	600	470	340
SYSAQUA210.L.2P-HP	2 700	290	430	570	610	470	330

	Spring damper						
	M	P1	P2	P3	P4	P5	P6
	kg	kg	kg	kg	kg	kg	kg
SYSAQUA140.H.HB	2 030	240	240	440	530	290	290
SYSAQUA140.H.1P-SP	2 120	250	260	490	550	290	290
SYSAQUA140.H.1P-HP	2 160	250	260	500	560	300	280
SYSAQUA140.H.2P-SP	2 140	250	260	490	560	300	290
SYSAQUA140.H.2P-HP	2 180	250	270	510	570	300	290
SYSAQUA150.H.HB	2 050	240	240	450	530	290	290
SYSAQUA150.H.1P-SP	2 140	250	260	490	560	300	290
SYSAQUA150.H.1P-HP	2 170	250	260	510	570	300	290
SYSAQUA150.H.2P-SP	2 160	250	260	490	560	300	290
SYSAQUA150.H.2P-HP	2 200	250	270	510	580	300	290
SYSAQUA170.H.HB	2 150	260	250	470	560	310	310
SYSAQUA170.H.1P-SP	2 240	260	270	510	580	310	300
SYSAQUA170.H.1P-HP	2 270	260	280	530	590	310	300
SYSAQUA170.H.2P-SP	2 250	260	270	520	590	310	300
SYSAQUA170.H.2P-HP	2 300	270	280	540	600	310	300
SYSAQUA190.H.HB	2 240	270	270	480	580	320	320
SYSAQUA190.H.1P-SP	2 330	270	280	530	610	320	310
SYSAQUA190.H.1P-HP	2 370	270	290	550	620	320	310
SYSAQUA190.H.2P-SP	2 340	270	280	540	610	320	310
SYSAQUA190.H.2P-HP	2 390	280	290	560	620	330	310
SYSAQUA210.H.HB	2 550	300	300	550	660	360	360
SYSAQUA210.H.1P-SP	2 640	310	320	600	690	370	350
SYSAQUA210.H.1P-HP	2 680	310	330	620	700	370	350
SYSAQUA210.H.2P-SP	2 650	310	320	610	690	370	360
SYSAQUA210.H.2P-HP	2 700	310	330	630	710	370	350

Notes

Systemair AC SAS · route de Verneuil, 27570 Tillières-sur- Avre · Tél. 02 32 60 61 00 · Fax 02 32 32 55 13
www.systemair.fr

systemair

august 2020

Systemair : **EDM AQA2-S-7GB/08.20** - Supersedes : EDM AQA2-S-6GB/04.19