



AquaStore

Semi-instantaneous tap water system

Applications

AquaStore is a semi-instantaneous Tap Water System designed to provide Domestic Hot Water in large quantities – up to 1200kW – for applications such as apartment buildings, hospitals, hotels, retirement homes, nursing homes, schools, sports centres, prisons, ...

Different models of AquaStore are available to fit with any installation arrangement. For instance, AquaStore operated with a 3-Port or 4-Port valve can be connected to local boilers on site or primary tanks. AquaStore operated with a 2-Port valve would match requirements of district networks when the Tap Water System is directly connected to the city pipework.

When it comes to the selection of the heat exchanger, AquaStore offers a large choice of possibilities: Plates&Gaskets, Copper Brazed or AlfaNova®: exclusive to Alfa Laval (100% Stainless Steel, Fusion Bonded).

Dependable performance

Since 1923, Alfa Laval has been in the water heating business, and has become a leading manufacturer and supplier. AquaFlow incorporates a wealth of background experience for secure and reliable hot water production. The components have been carefully selected and tested to perform well in combination with one another.

Principle

On the primary side, AquaStore has to be fed by a heating source that can be provided by any source of energy: local boiler, district network, primary tank, solar system, ...

On the secondary side, AquaStore is connected to a storage vessel on site and to the water main (CW). The charging pump (PC) located on the Domestic Hot Water side of the heat exchanger is used to store the storage vessel with hot water. When there is no or limited tapping of Domestic Hot Water, the storage vessel is gradually heated up to the setpoint temperature. When tapping occurs, hot water is being drawn from the top of the storage vessel.

When the Domestic Hot Water demand corresponds to the energy supply, the heat exchanger compensates without affecting the quantity of stored hot water. The stored hot water is only used for peak period when the Domestic Hot Water demand is higher than the energy supply. In that case, the



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available flow rate of Domestic Hot Water corresponds to the flow rate provided by the heat exchanger combined with the volume of stored hot water in the storage vessel. In the event that the storage vessel is emptied out before the end of the peak period, AquaStore will always provide Domestic Hot Water at a nominal flow rate corresponding to the energy input.

A circulation pump (PR) is usually used to limit the time needed to deliver Domestic Hot Water to the tap at the right temperature. The circulation pump maintains a minimum flow rate through the heat exchanger and through the distribution pipework.

Energy is exchanged through the heat exchanger from the primary to the secondary side.

A temperature sensor (S) located at the secondary side outlet checks the temperature and adjusts the control valve (VA) accordingly in order to always maintain hot water at the right temperature. The piping arrangement of the control valve provides tight control of the energy entering the primary side.

AquaStore with the 3-Port or 4-Port valve follows the Variable Temperature and Constant Flow Rate principle. In which case, the temperature of the media entering the heat exchanger on the primary side is adapted to the demand detected on the domestic side. This eliminates thermal shock in the heat exchanger and reduces the build-up of limescale in the secondary side. The primary pump (PP) maintains a constant flow rate through the heat exchanger.

In the case of AquaStore with a 2-Port valve, the heating source enters the heat exchanger at the maximum available temperature and variable flow rate. The 2-Port valve connected to the control equipment will ensure that the right flow rate and thus the right amount of energy is fed into the heat exchanger to always ensure constant temperature on the secondary side.

AquaStore offers electronic control equipment that provides several user-definable functions to customize the system and ensure precise temperature control.

If the water is very hard in the area where the Tap Water System is used, temperature control should always be fitted in order to avoid limescale deposits and the temperature set point on the secondary side should also be limited on the basis of local experience or best practice.

AquaStore is available with a control box (AquaBox/AquaTronic) that can detect and warn the user that scaling is occurring into the heat exchanger. Through this early warning message, the development of limescale can be reduced as the user will be able to plan for the cleaning of the heat exchanger.

The Plates&Gaskets heat exchanger can easily be cleaned by opening the plate pack. The Copper Brazed or AlfaNova heat exchangers do not need to be opened because they provide additional connections to perform Cleaning In Place treatment on site.

Equipments

	AquaStore 2-Port	AquaStore 3-Port	AquaStore 4-Port
Heat Exchanger	<p>AlfaNova AlfaNova is the world's first and only heat exchanger made of 100% stainless steel</p> <ul style="list-style-type: none"> • High heat transfer • Corrosion resistance • Maximum cleanliness • 100% copper free, suitable for all DHW pipeworks • Insulation <p>Copper Brazed</p> <ul style="list-style-type: none"> • Thermal efficiency for optimum comfort and reliability • Increased turbulence to increase heat transfer and reduce fouling • Temperature stability • Compact design (large heat transfer surface within a small footprint) • Insulation <p>Plates&Gaskets</p> <ul style="list-style-type: none"> • Cost effective tap water production • Compact design • AISI316 plates & EPDM Clip-On Gaskets • Insulation 		
Control Valve	<p>2-Port Electronic</p> <ul style="list-style-type: none"> • 24V 0-10V with safety • 230V 3 Pts with safety <p>2-Port Self-Actuating with safety</p>	<p>3-Port Electronic</p> <ul style="list-style-type: none"> • 24V 0-10V • 230V 3 Points • with or without safety 	<p>4-Port Electronic</p> <ul style="list-style-type: none"> • 24V 0-10V • 230V 3 Points
Controller	<p>AquaBox (Alfa Laval Micro2000) 7 languages: FR/EN/DE/NL/IT/SP/DK Temperature sensors: DHW, circulation/ tank, scaling control 8-Relay Card, Temperature Downloads</p> <p>AquaTronic (Samson 5433) Temperature sensors: DHW, circulation, storage vessel (2), primary inlet, primary outlet</p>	<p>AquaBox (Alfa Laval Micro2000) 7 languages: FR/EN/DE/NL/IT/SP/DK Temperature sensors: DHW, circulation/ tank, scaling control 8-Relay Card, Temperature Downloads</p> <p>AquaTronic (Samson 5433) Temperature sensors: DHW, circulation, storage vessel (2), primary inlet, primary outlet</p>	<p>AquaBox (Alfa Laval Micro2000) 7 languages: FR/EN/DE/NL/IT/SP/DK Temperature sensors: DHW, circulation/ tank, scaling control 8-Relay Card, Temperature Downloads</p> <p>AquaTronic (Samson 5433) Temperature sensors: DHW, circulation, storage vessel (2), primary inlet, primary outlet</p>
Primary Pump	–	Single or Double Head Flooded Rotor	Single or Double Head Flooded Rotor
Charging Pump	Single or Double Head Flooded or Dry Rotor Bronze or Cast Iron	Single or Double Head Flooded or Dry Rotor Bronze or Cast Iron	Single or Double Head Flooded or Dry Rotor Bronze or Cast Iron
Valves	Balancing Valve Drain valve (primary), Pressure relief valve (Secondary)		

Example of maximum capacities at different temperature program:

		AquaStore 2-Port			AquaStore 3-Port			AquaStore 4-Port		
		Capacity	Primary Flow Rate	Secondary Flow Rate	Capacity	Primary Flow Rate	Secondary Flow Rate	Capacity	Primary Flow Rate	Secondary Flow Rate
		kW	m³/h	L/min	kW	m³/h	L/min	kW	m³/h	L/min
Plates&Gaskets	90°C – 10/55°C	1100	17.5	352	1220	20.4	390	1370	24	437
	80/60°C – 5/70°C	340	15	75	400	17.7	77	500	22.2	110
	82°C – 10/60°C	750	15	216	945	20.5	272	1140	25.5	327
	65/45°C – 10/60°C	370	17	107	350	15.4	100	320	14.1	92
Copper Brazed or AlfaNova	M90°C 10/55°C	1000	13	320	950	12.1	304	On Request		
	80/60°C – 5/70°C	205	9	45	270	12	58			
	82/25°C – 10/60°C	800	12.4	231	800	12.1	230			
	75/25°C – 10/60°C	500	8.8	144						

Pressure Drop vary from one temperature to another
Other capacities available, please consult

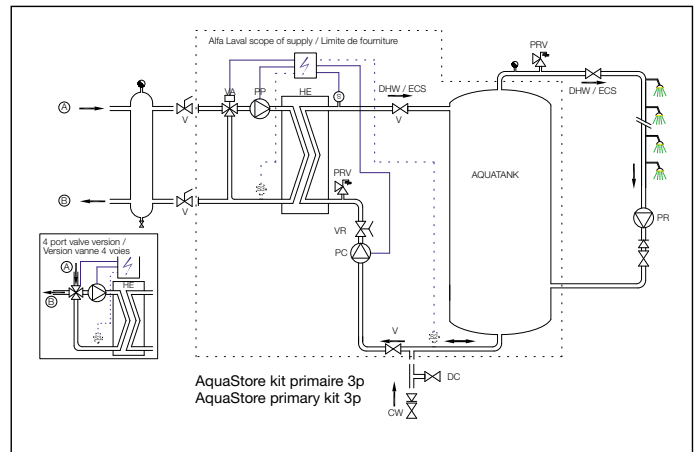
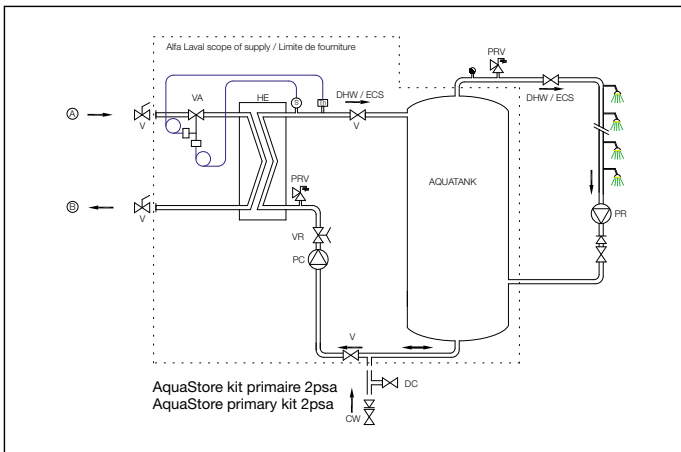
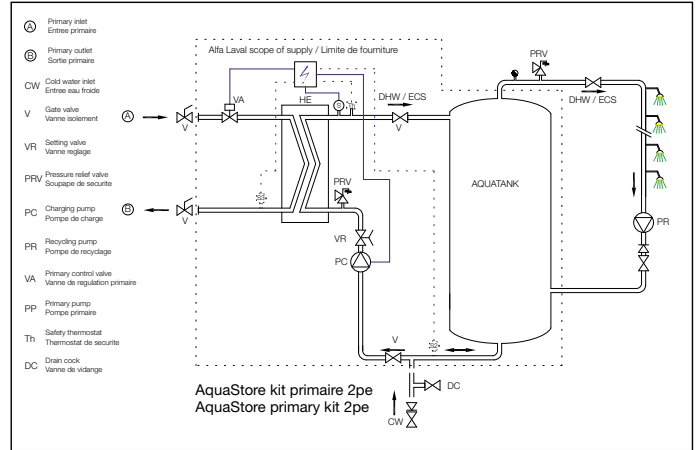
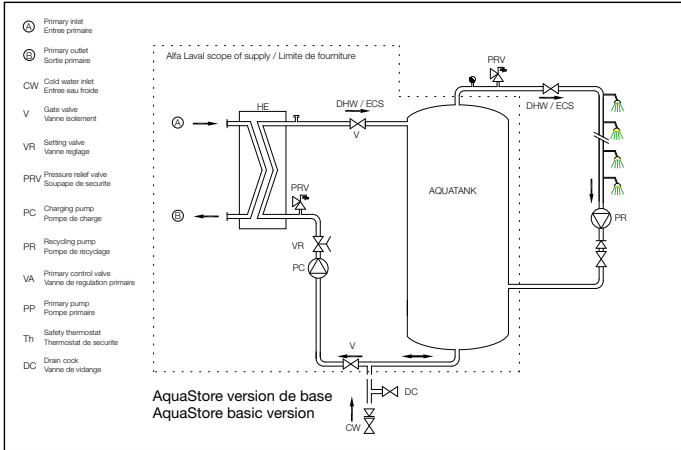
Operating Pressures and Temperatures

		AquaStore 2-Port		AquaStore 3-Port		AquaStore 4-Port	
		Primary	Secondary	Primary	Secondary	Primary	Secondary
Plates&Gaskets	Max Operating Pressure	10 Bar	10 Bar	10 Bar	10 Bar	6 Bar	10 Bar
	Max Operating Temperature	110°C	90°C	110°C	90°C	110°C	90°C
Copper Brazed	Max Operating Pressure	25 Bar*	10 Bar	10 Bar	10 Bar	On Request	
	Max Operating Temperature	130°C	90°C	110°C	90°C		
AlfaNova	Max Operating Pressure	25 Bar*	10 Bar	10 Bar	10 Bar		
	Max Operating Temperature	130°C	90°C	110°C	90°C		

* Large systems limited to PN16 and 130°C.

Different maximum operating pressure or temperature also available, please consult.

Hydraulic chart



AquaStore is built in compliance with PED CE 97/23 Art 3.3 or PED 1 and CE 73/23 electrical regulation.

AquaStore is assembled, wired and tested prior to shipment.

ECF00187EN 0907

Alfa Laval reserves the right to change specifications without prior notification.

How to contact Alfa Laval
 Up-to-date Alfa Laval contact details for all countries are always available on our website at www.alfalaval.com

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