Buffer, Accumulators and Thermal stores

Design and specifications



Buffers, accumulators and thermal stores explained

The biomass industry has several name conventions for process of storing heat energy in water. At Euroheat the following system descriptions are used to define the type of heat storage, buffer, accumulator or thermal store, and assist with the system design and project requirements.

A biomass boiler burning wood pellets, logs or wood chip needs time to operate. It needs time to introduce fuel and ignite it, time for the fire to establish before producing its full output and time to burn the remaining wood in the fuel chamber at the end of its cycle. This differs from fossil fuel boilers which can quickly achieve their full output and switch off, biomass boilers need time to react and respond.

Older generations of wood boilers do not have the ability to switch on, and off, because they were designed to be used in parts of the world where there are sustained periods of very cold weather. In such places having only full and partial load is possible because there is always a heat demand. In the UK where outside temperatures and weather conditions can change quickly boilers need to be able to adapt to different heating demands.

All automatic HDG boilers constantly monitor the amount of heat being stored in the buffer, ignite only when there is a need to produce heat and stop when the demand is met. This greatly increases the overall annual efficiency, reduces fuel consumption, reduces environmental emissions, servicing costs and extends the boilers life.

Manually fed log boilers require greatly increased human input because the fuel needs to be loaded by hand, even though the actual ignition can now be automatic. Poorly conceived installations can result in many trips to reload the boiler on colder days. A correctly sized log boiler and accumulator will allow the user, in most cases, to provide enough heat by lighting and loading the boiler once each day.

Accumulator

As the name suggests its main purpose is to accumulate energy. In this case the energy is heat energy from a log wood boiler.

The function of the log boiler is to convert the energy stored in wood log to heated water. To be able to do this cleanly and efficiently the combustion needs to be able to proceed in a controlled and steady fashion. A correctly sized accumulator will ensure that the boiler will be able to maintain a high temperature without needing to choke the fire causing smoke and tar, reducing the efficiency and life of the boiler.

The accumulated heat is then used on demand from the accumulator. In very cold weather the property may use this energy in a matter of hours, most of the winter over the course of 24 hours, and in the summer, because the accumulators are highly insulated, the heat will be available for heating domestic water for a number of days.

Accumulator designs come with stratification columns, and snorkels as standard for log boilers. Also available are additional stratification plates, solar coils and electric heating elements. Sizes range from 1500 litres to 10,000 litres and multiple accumulators can be connected in parallel.

Buffer

As the name suggests the vessel is used as a buffer of energy between the heat source and the heating system.

Because automatic biomass boilers take more time to respond to a heating demand than a fossil fuel boiler, a buffer is used between the boiler and the heating system, when there is a demand the heat being drawn from the buffer signals the biomass boiler to ignite and produce heat.

The buffer also ensures that when the automatic biomass boiler is started it runs for an optimum length of time irrespective of the amount of heat being used by the building. The boiler then stops when the buffer is fully charged and waits for the heating system to use the energy produced, when it then repeats the cycle. This is done by sensing the water temperature, and because the buffer is highly insulated, during periods of light load it may not be required to fire again for a day or more. As a method of preventing the boiler starting and stopping more often than necessary the buffer has a huge impact on the boiler efficiency, a reduction in wear and tear, reduced emissions and fuel consumption. Buffer sizing is based on the output of the biomass boiler, but may be over-sized when being connected to large district heating systems to accommodate the volume of water in the system. Buffers are generally much smaller than the accumulators used with log boilers, and are of a similar construction with stratification plates, domestic hot water coils, solar coils and electric heating elements. Sizes range from 1500 litres to 10,000 litres and multiple accumulators can be connected in parallel.

Probably the most poorly explained and confusing term is for a buffer/accumulator. These are generally best described as a small buffer undertaking many functions. These include some buffering and some accumulation, although their ability to do both is limited because they are generally small in size, normally 200 litres to 500 litres.

They are used on small heating demands and to produce domestic hot water with either an internal coil or external heat exchanger. They are also used to integrate multiple primary sources such as wood stoves, fossil fuel boilers, heatpumps, solar thermal, and electric heating.

Although smaller they are of a similar construction to buffers and accumulators with options of domestic hot water coils, solar coils and electric heating elements.

Hydraulic system design

Whether the biomass heating system is using a buffer, accumulator or thermal store, in order for the system to work it is imperative that the system side pumps and controls are designed and installed correctly. A correctly designed system can achieve temperature differences of up to 20°C and this can be maintained using flow management control.



Stratification

This term describes the natural tendency for water to settle with the hotter, less dense, water at the top of the vessel, and cooler, more dense, water at the bottom. This property is used in both accumulators and buffers to maintain high flow temperatures for longer while using the heat from the accumulator, and increasing the temperature rise across the boiler when loading the accumulator with energy. De-stratification, or stirring, can be seen when the movement of the water inside the vessel is too great for the strata, or layers of water at different temperatures to form. The most common reason for this is the velocity of the water entering and leaving the accumulator or buffer on either the boiler side or the system side.

There are a number of devices, and practices which can greatly reduce, and almost eliminate destratification leading to a much more efficient and economical heating system.

Connection size and snorkels

The velocity of the water entering and leaving the accumulator or buffer is dictated by the amount of water being pumped, and the diameter of the opening where the pumped water meets the water in the vessel. As a guide the velocity at this point should be around 0.5m/s, and should not exceed 0.7m/s, where often distribution pipework can be 2m/s. The size of the connections on the accumulator should be large enough to connect 1m pipe, which has a diameter that will reduce the velocity of the water to around 0.5m/s. Alternatively on accumulators and buffers over 500 litres snorkels can be used which protrude into the vessel and slow down the entering water in the same way. This enables the connection at the accumulator or buffer to be line size, saving space and money on fittings and tube. All standard automatic boiler buffers and log boiler accumulators are supplied with snorkels.



Stratification column

This a perforated column within the accumulator into which the system return flows, and from which the boiler return originates. The lower snorkels link the stratification column to the boiler and system return connections outside the accumulator or buffer.

Return water that has already slowed to approximately 0.5m/s in the snorkel enters the column, and slows down further. Quite often the temperature of the system return water is higher than the water at the base of the accumulator. Inside the column the return water will either float up to the level at which its temperature matches the surrounding water, or it will be drawn into the boiler return without entering the main body of the accumulator or buffer.

All standard automatic boiler buffers and log boiler accumulators are supplied with stratification columns.

Solar thermal

Most accumulators or buffers can include at least one solar thermal coil, some models can accommodate two coils. The HDG control will manage solar thermal system and loading the accumulator with solar energy. Where two coils are used the HDG control will prioritize the upper coil before diverting the solar heat to the lower coil to make the best use of the solar heat when available. The use of solar thermal coils can greatly reduce the amount of wood fuel used through the summer when there is only a domestic hot water demand, and including solar thermal coils for future development of the system is worth considering.

Domestic hot water coils (potable water)

Buffers and thermal stores can be used to produce instantaneous mains pressure hot water. A stainless steel coil running through the heating water inside the vessel carries mains cold water which increases in temperature before exiting the coil as hot water. It is essential that the mains cold water kit, expansion vessel, and hot water mixing kits are used to prevent scolding at the taps.

Instantaneous hot water is only recommended for use with automatic boilers and buffers, not for use with log boilers and accumulators.

Electric elements (immersion heaters)

There are two main reasons for using electric elements in buffers and accumulators:

1. Where hot water is produced from the accumulator and the main heating source is not in use. 2. Where photovoltaic solar is in use, and the excess electrical power is used to heat water.

The electric elements are available as 3kW single phase and 9kW three phase.

H₂O Store-Plus



H₂O Flow-Plus Accumulator with domestic hot water production

H₂O Accumulator & hot water accumulators Purpose built or bespoke accumulators

Euroheat range of accumulators explained

The aim of any accumulator or buffer is to remain stratified. This means hotter water at the top and cooler water at the bottom. Water returning to the accumulator from a heating system is cooler than the water at the top of the accumulator. If the return water enters the accumulator slowly it will sink to the bottom. If however it returns to the accumulator at high velocity it will stir the water in the accumulator and the temperature will become the almost the same top to bottom.

To prevent this occurring, either the speed at which the water enters the accumulator is reduced by increasing the connection size based on the system kW demand, or the return water is introduced into a neutral area, a stratification tube of the correct size to suit the flow rate. The Euroheat range of accumulators has been specially designed to suit UK heating system designs. We offer four different options to suit requirements.

H₂O Plus accumulator

The H₂O Store-Plus range of accumulators are produced as standard with stratification tubes and column to suit boiler and system size. Versions R1 have an internal coil for thermal solar or other applications. The H₂O Store-Plus range feature side top connection for boiler and system flow connections to reduce room height requirements.

The $\rm H_2O$ plus range come in two ranges. One for wood log boilers and one for automatic boilers.

H₂O Flow domestic hot water

The H_20 Flow are designed as accumulator/buffer or accumulator/buffer with domestic hot water production for smaller boilers.

The H₂0 Flow allows for the common connection of different input and output requirements. These include heat sources from wood burning stoves, fossil fuel boilers (oil & gas) automatic wood fuel boilers such as HDG K Series.

The domestic hot water is produced instantly through a copper finned tube heat exchanger. The large surface area of the heat exchanger 4.54m² ensure good hot water flow rates. In addition, the choice of the R1 model includes a coil which can be used for other heat input appliances or thermal solar.

H₂O Store-Plus accumulator insulation

Insulation is very important as an accumulator is generally heated 24 hours a day. Heat loss unless well insulated can be very large over a period of time.

Our standard insulation is 100mm on tanks up to 2000 litres and 125mm on tanks 2500 litres and above.

Insulation is Polyster fiber 9000 g/m². Reaction to fire class B1, external finish grey PVC.

H₂0 Store-Plus accumulator insulation

Insulation is very important as an accumulator is generally heated 24 hours a day. Heat loss unless well insulated can be very large over a period of time.

The H₂O flow is fitted with hard shell insulation and external cover. Thermal conductivity coefficient 0.025 W/mk.



The H_20 Flow-Maxi is a combined instantaneous domestic hot water cylinder combined with an accumulator/buffer for central heating. The hot water production coil is manufactured from stainless steel 32 x 16mm connected in parallel and mounted through the top on a flanged ring. This allows the possibility of its removal at any time in the future. The hot water production is mounted in the top of the cylinder and protects against legionella, due to its location. The design of the hot water temperatures. Standard insulation is 125mm.

Our standard insulation is 100mm on tanks up to 2000 litres and 125mm on tanks 2500 litres and above. Insulation is Polyster fiber 9000 g/m². Reaction to fire class B1, external finish grey PVC.

When installing the H_20 Flow-Maxi it is essential the mains cold water supply is connected via a check valve, pressure reducing valve (3bar), and an expansion vessel. There must also be a thermostatic mixing valve (TMV2) installed in the domestic hot water flow with the cold input also pressure reduced to 3 bar.

H₂O Store bespoke accumulator

The accumulators of series " H_20 Store bespoke" can be produced to almost any requirement. Produced from high quality steel, with versions R1 and R2 have internal coil/s for connecting to solar systems or other heating sources.

Options include

Multiple flow and return connections for multiple boiler and heating system connections.

Multiple flow and return connections for multiple boiler and heating system connections.

Internal stratification tubes in sizes 65mm-150mm. Stratification columns up to 400kW heating circuits. External connections from DN40-DN150. Hot water production up to 60 litres per minute. Insulation options 100mm or 150mm thermal conductivity coefficient 0.039 W/mk. Elastic efficiency 44%. Free from HCFC.









Accumulator and sizing

Depending on HDG boiler type and fuel, a minimum accumulator size will be required. The size of the accumulator should be adapted to the boiler type, the wood type, the heat requirements of the building, district heating circuit and/or any direct hot water production.

Log Boilers	Soft minimum acc	wood :umulator size	Hardwood minimum accumulator size			
HDG R 15kW	1,(000	1,2	50		
HDG R 20, 25, 30kW	1,	500	2,0	00		
HDG F Series 20, 25, 30kW	2,0	000	2,500			
HDG F Series 40kW	2,	500	3,000			
HDG F Series 45, 50kW	3,0	000	4,000			
HDG Euro 30, 40kW model	3,0	000	4,000			
HDG Euro 45, 50kW model	3,0	000	4,000			
HDG Turobotec 50	4,0	000	5,0	00		
HDG Turobotec 60	4,0	000	5,0	00		
SHT Thermodual HV 25	2,	500	3,0	00		
SHT Thermodual HV 30	2,	500	3,0	00		
SHT Thermodual HV 35	2,	500	3,0	00		
SHT Thermodual HV 40	2,	500	3,0	00		
Dual fuel boilers	Soft minimum acc	wood :umulator size	Hardwood minimum accumulator size			
SHT TDA Thermodual 15	2,0	000	2,5	00		
SHT TDA Thermodual 25	2,0	000	2,500			
SHT TDA Thermodual 30	2,	500	3,0	00		
SHT TDA Thermodual 40	2,	500	3,0	00		
Domestic / small commercial automatic boilers	Minimum	Minimum with hot water	Recommended	Recommended with hot water		
SHT Evo Aqua 9	400	500	500	600		
SHT Evo Aqua 15	500	600	600	700		
SHT PNA Thermocomfort 15	300	400	400	500		
SHT PNA Thermocomfort 20	300	400	400	500		
SHT PNA Thermocomfort 25	400	500	500	600		
SHT PNA Thermocomfort 30	400	500	500	600		
HDG K10	200	300	300	400		
HDG K15	300	400	400	500		
HDG K21	400	500	500	600		
HDG K26	500	600	600	800		
HDG Compact 25/35	1,000	1,250	1,250	1,500		
HDG Compact 45/50	1,250	1,500	1,500	2,000		
Commercial automatic boilers	Mini	mum	Recom	nended		
HDG Compact 65	1,	500	2,5	00		
HDG Compact 80	2,	000	2,5	00		
HDG Compact 99/100	2,	000	3,0	00		
HDG Compact 115	2,	500	3,0	000		
HDG Compact 150	3,	000	4,0	000		
HDG Compact 200	4,	000	5,0	000		
Industrial automatic boilers	Mini	mum	Recommended			
HDG M 300/350/400	6,000/7,	000/8,000	7,000/8,000/9,000			

H₂O Plus log boiler accumulator Accumulator details and prices

The H₂0 Plus range of accumulators are produced specially for our log boiler range They feature stratification tubes and a stratification column for optimum water stratification both in buffering and accumulation mode.

Accumulator insulation

Insulation is very important. The H₂O range have very high levels of insulation.

Standard insulation is 100mm on tanks up to 2000 litres,

and 125mm on tanks 2500 litres and above.

Soft polyurethane 18kg/m³ density. Thermal conductivity coefficient 0.039 W/mk.

Elastic efficiency 44%. Free from HCFC.



H ₂ O Plus for log boilers		Model Type	Profile	Insulation thickness	Туре	Order code	£ ex VAT	PG
P1 single solar soil		11.0.1000	4 - 11 /4h 1	100	Standard	TS4855	1,088.00	
fitted to standard		H ₂ 0 1000	tall/thin	IUUMM	R1	TS4855R1	1,253.00	
H ₂ 0 Plus		11 0 12500	tall/thin	100	Standard	TS4856	1,273.00	
		H ₂ 0 12500	tan/ thin	IUUmm	R1	TS4856R1	1,449.00	
		LI 0 1500	4 - 11 /4h :	100mm	Standard	TS4801	1,456.00	
		n ₂ 0 1500	ldii/liiii	TUUIIIII	R1	TS4801R1	1,658.00	
		LL 0 2000	tall/thin	100mm	Standard	TS4802	1,682.00	
		H ₂ 0 2000		IUUMM	R1	TS4802R1	1,915.00	41
		LL 0 2500	tall/thin	125mm	Standard	TS4803	2,234.00	
		H ₂ 0 2500	tan/thin	125000	R1	TS4803R1	2,512.00	
			short/wide	12Emm	Standard	TS4804	2,369.00	
		п ₂ 0 2000		12511111	R1	TS4804R1	2,647.00	
		11.0.2000	tall/thin	125	Standard	TS4805	2,639.00	
Standby boiler		Π ₂ 0 5000		IZSININ	R1	TS4805R1	2,872.00	
connection kit with Standard H ₋ O Plus			ala ant (autola	125	Standard	TS4806	2,821.00	
		n ₂ 0 3030	SHOLL/ WILLE	12311111	R1	TS4806R1	3,054.00	
		LI 0 4000	tall/thin	125mm	Standard	TS4807	3,162.00	
		n ₂ 0 4000	ldii/liiii	12311111	R1	TS4807R1	3,489.00	
		H 0 4050	short/wido	125mm	Standard	TS4808	3,397.00	
		n ₂ 0 4030	SHOLL/ WILLE	12311111	R1	TS4808R1	3,674.00	
		H 0 5000	tall/thin	125mm	Standard	TS4809	3,627.00	
		n ₂ 0 3000	tall/tilli	12311111	R1	TS4809R1	3,960.00	

1 x top mounted DN40	To order add B to	
1 x DN65 stratification tube	the end of H_20 Plus	82.00
1 x stratification plate	Order code	

H₂O Plus log boiler accumulator

Technical and dimensions



Connection options

1	Flow from log boiler or flow to heating or flow from backup boiler	DN40
2	Return to log boiler accumulator buffering or return to backup boiler	DN40
3	Return to log boiler in accumulating mode or return from heating	DN40
4	Flow from log boiler or flow to heating or flow from backup boiler	DN40
5	Return to log boiler accumulator buffering/ return to backup boiler	DN40
6	Return to log boiler in accumulating mode or return from heating	DN40
7	Auto vent or top exit	DN40
8	Temperature gauge or sensor pocket	DN15
9	Expansion vessel connection	DN40
10	Return stratification column	

Features of the H₂0 log boiler accumulator

These purpose designed accumulators feature special additions to improve the stratification of heated water. Stratification is extremely important. If returning water from the heating system is allowed to enter the accumulator at the incorrect speed or location, stirring of the accumulated water will occur. This stirring will mix the hot and colder water together resulting in a mean temperature from top to bottom of the accumulator. This contradicts the concept of having a high flow temperature and a lower return

temperature to the heating system reducing comfort and efficiency.

The H₂O accumulators are installed as standard with special stratification tubes and columns. These slow the speed of the returning water reducing the stirring effect. In addition the HDG

log boilers include a special accumulator loading system which first loads the upper third of the accumulator (buffering) and then accumulates heated water in the lower two thirds if the heated water is not required.

The specially designed stratification column also allows the returning system water to continue directly to the log boiler bypassing the accumulator if heat production is occurring. This greatly improves the speed at which the heated water passes to the heating system. Multiple sensor pockets allow the installation of HDG Lambda 1 Plus which can calculate the required amount of fuel needed for heating and if fitted ignite the log boiler (F Series & Euro models) when heating is required.

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D2

1 1/2*

H₂O Accumulator design and special features

- High level of insulation 0.039W/mk
- Insulation jacket can be fitted after placement to reduce access requirements
- Specially designed for HDG Log boilers
- Includes stratification tubes as standard
- Includes stratification columns as standard
- Includes buffering level connections
- Stratification column allows accumulator by pass with heavy heating demands
- Flow in and out stratification tubes are snorkelled to the top to reduce room height installation
- Connections allow installation on the left or right of the accumulator

Model type	Connections	Stratification tube	Stratification column	ØD1 Diameter without insulation	ØD2 Diameter with insulation	Tank height without insulation	Tilt height without insulation	Height with insulation	Weight (Kg) H ₂ 0 Store Plus/R1	Capacity litres	Maximum operating pressure	Maximum operating temperature	Solar coil R1 m ²	Solar maximum operating pressure
1000	DN40	DN65	<80kW	790	990	2041	2090	2109	114/156	915			3.0	
1250	DN40	DN65	<80kW	950	1150	2017	2090	2085	146/189	1284			3.0	
1500	DN40	DN65	<80kW	1000	1200	2152	2220	2212	162/210	1515			3.6	
2000	DN40	DN65	<80kW	1100	1300	2377	2450	2437	225/278	2055			4.2	
2500	DN40	DN65	<80kW	1200	1450	2443	2515	2528	252/308	2590			4.2	
2550	DN40	DN65	<80kW	1400	1650	2070	2220	2155	270/326	2660	3 bar	95 ⁰ C	4.2	
3000	DN40	DN65	<80kW	1250	1500	2644	2705	2729	280/343	2959			5.4	10 bar
3050	DN40	DN65	<80kW	1400	1850	2318	2490	2403	290/353	3050			5.4	
4000	DN40	DN65	<80kW	1400	1650	2818	2910	2883	431/498	3820			6.0	
4050	DN40	DN65	<80kW	1600	1850	2380	2575	2465	441/508	4050			6.0	
5000	DN40	DN65	<80kW	1600	1850	2917	3010	3002	504/585	5055			7.2	

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H₂O Plus automatic boiler accumulator

Accumulator details and prices

The H₂O Plus range of accumulators are produced specifically for automatic boiler range and feature stratification tubes and stratification column for water stratification.

H ₂ O Plus for Automatic boilers	Model Type	Profile	Insulation thickness	Туре	Order code	£ ex VAT	PG
	(00	4 - 11 /4h :	100	Standard	TS4847	895.00	
	600	taii/thin	IUUMM	R1	TS4847R1	1,016.00	
R1 single solar coil	000	4 - 11 /4h 1	100	Standard	TS4849	1,012.00	
H ₂ 0 Plus	800	tan/thin	TUOMM	R1	TS4849R1	1,159.00	
	1000	tall/thin	100mm	Standard	TS4810	1,243.00	
	1000	tdii/tiiii	TUUIIIII	R1	TS4810R1	1,426.00	
	1250	tall/thin	100	Standard	TS4811	1,311.00	
	1250	tan/thin	TUOMM	R1	TS4811R1	1,508.00	
	1500	tall/thin	100	Standard	TS4812	1,356.00	
	1500	tan/thin	TUOMM	R1	TS4812R1	1,580.00	
R2 single solar coil	2000	tall/thin	100	Standard	TS4813	1,786.00	41
fitted to standard	2000	tan/thin	roomm	R1	TS4813R1	2,045.00	
H ₂ 0 Plus	2500	tall/thin	12Emm	Standard	TS4822	2,291.00	
	2500	tdii/tiiii	125111111	R1	TS4822R1	2,600.00	
	2550	short/wide	12Emm	Standard	TS4823	2,426.00	
			12311111	R1	TS4823R1	2,685.00	
	2000	4 - 11 /4h :	125-00-00	Standard	TS4814	2,797.00	
	5000	tdii/tiiii	125111111	R1	TS4814R1	3,056.00	
Standby boiler	2050	chart/wida	12Emm	Standard	TS4815	2,978.00	
connection kit with	2020	SHOLL/ WIDE	12311111	R1	TS4815R1	3,286.00	
Standard H ₂ 0 Plus	4000	tall/thin	125	Standard	TS4816	3,319.00	
	4000	tan/thin	125000	R1	TS4816R1	3,627.00	
Standby boiler	4050	ah ant (wida	125	Standard	TS4817	3,554.00	
additional	4050	short/wide	125000	R1	TS4817R1	3,924.00	
Flow	5000	tall/thin	12Emm	Standard	TS4818	3,785.00	
Return 🔍 🗧 🗧 🖉		tdii/tiiii	125111111	R1	TS4818R1	4,155.00	
	6000	tall/thin	125mm	Standard	TS4819	4,881.00	
	0000	tan/ tinn	12311111	R1	TS4819R1	5,251.00	

Standby boile external, 2 in	er connection kit, 2 ternal stratification tubes	Order code	£ ex VAT
600-2,000	2 x DN40 threaded 2 x DN65 stratification tube	To order add B to the	164.00
2,500-5,000	2 x DN65 flange 2 x DN100 stratification tube	end of H ₂ O automatic order code	238.00

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H₂O Plus automatic boiler accumulator

Technical and dimensions



Conne	ction options	Size
1	Flow from automatic boiler or flow to heating	
3	Return to automatic boiler or return from heating	Dependant on
4	Flow from automatic boiler or flow to heating	size
6	Return to automatic boiler or return from heating	SIZC
7	Auto vent	DN40
8	Temperature or sensor	DN15
9	Expansion vessel connection	DN40
10	Return stratification column	

Accumulator insulation

Insulation is very important. The H_2O range have very high levels of insulation. Standard insulation is 100mm on tanks up to 2000 litres and 125mm on tanks 2500 litres and above. Soft polyurethane 18 kg/m³ density. Thermal conductivity coefficient 0.039 W/mk. Elastic efficiency 44%. Free from HCFC.

Features of the H₂O Automatic boiler accumulator

These purpose designed accumulators feature special additions to improve the stratification of heated water. Stratification is extremely important. If returning water from the heating system is allowed to enter the accumulator at the incorrect speed or location, stirring of the accumulated water will occur. This stirring will mix the hot and colder water together resulting in a mean temperature from top to bottom of the accumulator.

This contradicts the concept of having a high flow temperature and a lower return temperature to the heating system reducing comfort and efficiency.

The H₂O accumulators are installed as standard with special stratification tubes and columns. These slow the speed of the returning water reducing turbulence. The specially designed stratification column also allows the returning system water to continue directly to the automatic boiler bypassing the accumulator if heat production is occurring. This greatly improves the speed at which the heated water passes to the heating system.



H₂O Accumulator Design and Special Features

- High level of insulation 0.039W/mk
- Insulation jacket can be fitted after placement to reduce access requirements
- Specially designed for automatic boilers
- Includes stratification tubes as standard
- Includes stratification columns as standard

- Stratification column allows accumulator by pass with heavy heating demands
- Flow in and out stratification tubes are snorkelled to the top to reduce room height installation
- Connections allow installation on the left or right of the accumulator

Model type	Connections T=Threaded F=Flange	Stratification tube	Stratification column	ØD1 Diameter without insulation	ØD2 Diameter with insulation	Tank height	Height with insulation	Tilt height without insulation	Maximum operating temperature (° C)	Weight (Kg) H ₂ 0 Store Plus/R1	Capacity litres	Maximum operating pressure	Maximum operating temperature	Solar coil R1 m²	Solar maximum operating pressure
600	DN40 T	DN65	<80kW	700	900	1644	1704	1690		84/109 97/130 114/156	572			1.8	
800	DN40 T	DN65	<80kW	790	990	1686	1746	1740			792			2.4	
1000	DN40 T	DN65	<80kW	790	990	2041	2101	2090			915			3.0	
1250	DN40 T	DN65	<80kW	950	1150	2017	2077	2090		146/189	1285			3.0	10 bar
1500	DN40 T	DN65	<80kW	1000	1200	2152	2212	2220		162/210	1516			3.6	
2000	DN50 T	DN100	<200kW	1100	1300	2377	2437	2450		225/278	2055			4.2	
2500	DN65 F	DN100	<200kW	1200	1450	2443	2528	2515	0E	252/308	252/308 2590	2 har	05°C	4.2	
2550	DN65 F	DN100	<200kW	1400	1650	2070	2155	2220	95	252/308	2660	2 DOI	95 C	4.2	IU Ddi
3000	DN65 F	DN100	<200kW	1250	1500	2644	2729	2705		280/343	2959			5.0	
3050	DN65 F	DN100	<200kW	1400	1650	2318	2403	2490		290/353	3050			5.0	
4000	DN65 F	DN100	<200kW	1400	1650	2818	2903	2910		431/498	3820			6.0	
4050	DN65 F	DN100	<200kW	1600	1850	2380	2465	2575		441/508	4050			6.0	
5000	DN65 F	DN100	<200kW	1600	1850	2917	3002	3010		504/585	5056			7.2	
6000	DN80 F	DN150	<400kW	1600	1850	3367	3517	3500		605/TBC	6060			TBC	

H₂O Flow domestic hot water Accumulator/buffer/thermal store details and prices

The H₂O Flow is designed for accumulation or accumulation and domestic hot water storage. The H₂O Flow allows for the common connection of different input and output requirements. These include heat sources from wood burning stoves, fossil fuel boilers (oil and gas) automatic wood fuel boilers such as HDG K Series.

The domestic hot water is produced instantly through a copper finned tube heat exchanger. The large surface area of the heat exchanger 4.54m² ensures good hot water flow rates. In addition, the choice of the R1 model which includes a coil which can be used for other heat input appliances or thermal solar.

Four versions available

 H_20 Flow = this model is suitable only as accumulator/buffer.

H₂O Flow

H,0

-

 H_2O Flow M = this model provides domestic hot water and provision as accumulator/buffer.

 H_2O Flow R1 = this model includes an additional coil for energy input by an alternative source hydraulically separated, such as thermal solar or open vented equipment.

 H_2O Flow R1 M = all the above combined in one accumulator/buffer.

Small in size and weight, requires minimum space for installation. Big in functionality, myriad of heating sources can be connected.



H ₂ 0 Flow M, domestic hot water	Model type	Description	Order code	£ ex VAT	PG
	200	H ₂ 0 Flow	TS4701	544.00	
	200	H ₂ 0 Flow M, Hot water	TS4709	1,197.00	
	200	H ₂ 0 Flow	TS4702	579.00	
	300	H ₂ 0 Flow M, Hot water	TS4710	1,233.00	41
	400	H ₂ 0 Flow	TS4703	644.00	41
	400	H ₂ 0 Flow M, Hot water	TS4711	1,297.00	
	500	H ₂ 0 Flow	TS4704	684.00	
	500	H ₂ 0 Flow M, Hot water	TS4712	1,337.00	
	All H ₂ 0 Flow ta	nks require mains cold starte and 8 litre potable e	er kit (EV4718) and h expansion vessel (EV	ot water mixing kit (E 4716)	V4720),
H O Flow M P1 coil and bot water	Model type	Description	Order code	f ov VAT	DC

Flow R1	$\rm H_2O$ Flow M R1 coil and hot water	Model type	Description	Order code	£ ex VAT	PG
	11		H ₂ 0 Flow R1	TS4705	625.00	
		200	H ₂ 0 FlowM R1, Hot water	TS4713	1,278.00	
		300	H ₂ 0 FlowR1	TS4706	685.00	
			H ₂ O FlowMR1, Hot water	TS4714	1,338.00	41
		400	H ₂ 0 FlowR1	TS4707	773.00	
			H ₂ O FlowMR1, Hot water	TS4715	1,426.00	
			H ₂ 0 FlowR1	TS4708	836.00	
		500	H ₂ O FlowMR1, Hot water	TS4716	1,490.00	

All H₂O Flow tanks require mains cold starter kit (EV4718) and hot water mixing kit (EV4720), and 8 litre potable expansion vessel (EV4716)

H ₂ O options		Order code	£ ex VAT	PG
	Expansion vessel with fixed membrane 8 Litre	EV4716	27.00	
***	Mounting kit for expansion vessel	EV4717	12.00	
V°	Mains cold starter kit	EV4718	62.00	41
T	Hot water mixing kit	EV4723	74.00	
	Domestic hot water production coil for models H_2O Flow & H_2O Flow R1	TSH101	648.00	

H₂O Flow domestic hot water

Technical and dimensions



Connection options

1	Flow from wood boiler or alternative heat source or 8	DN40	9	Primary Fl hot water
2	Primary Flow to heating system for H ₂ 0 M hot water model or 9	DN40	10	Return to system
3	Electric immersion option	DN40	11	Return to system
4	Flow from solar or alternative heat source with hydraulic coil separation	DN40	12	Primary flo water. H ₂ C
5	Return to wood boiler with coil (solar) system	DN15	13	Auto vent H ₂ 0 M
б	Return to wood boiler with no coil (solar) system	DN40	14	Temperati
7	Return to solar or alternative heat source with hydraulic coil separation	DN15	AF	Mains colo
8	Flow from wood boiler or alternative heat source or 1. Alternative system flow to 12, when no hot water production. H_2O flow & H_2O flow R1	DN40	AC	Mains hot

N40	9	Primary Flow to heating system for H ₂ O M hot water model or 2	DN40
N40	10	Return to wood boiler with coil (solar) system	DN40
N40	11	Return to wood boiler with no coil (solar) system	DN40
N40	12	Primary flow to heating system with no hot water. H_2O flow & R1	DN40
N15	13	Auto vent location for hot water models H ₂ O M	DN15
N40	14	Temperature or sensor	DN15
N15	AF	Mains cold inlet	3/4"
N40	AC	Mains hot outlet	3/4″

H ₂ 0 Flow performance information - one off withdrawal							
Withdrawal of hot domestic water 10 -	45° C	Туре	200	300	400	500	
Withdrawal of hot domestic water	Store	Flow -I/m	15	15	15	15	
Duration of flow	temperature	Time - min	6.7	9.8	12.3	15.4	
Total withdrawal	70°C	Quantity - litres	100	147	184	231	
U.O.F							

H₂0 Flow performance information - Continuous withdrawal with boiler input

Boiler input	kW	10	15	20	25
Continuous withdrawal 10-45°C	0°C I/min	4.1	6.2	8.3	10.3



Pressure loss DHW exchanger & technical



I/1	mn
Material	Copper
Surface area	4.54m ²
Water capacity	4.2L
Connection (AS and FS)	3/4″
Maximum operating pressure	10 bar

H ₂ 0 Flow	, H_2 0 Flow	$M \& H_2 0 Flo$	ow M R1 In	formation									Solar coils		
Model Type	3 electric immersion	RS1 H ₂ 0 Flow M R1	AS1 H ₂ 0 Flow M R1	L = length of immersion heater	D2 diameter with insulation	Height	Minimum installation height	Tilt height	Maximum operating pressure (Bar)	Maximum operating temperature (° C)	Lower Coil m ²	Lower Coil capacity (L)	Maximum operating pressure (Bar)	Weight (Kg) H ₂ 0 Flow M	Weight (Kg) H ₂ 0 Flow M R1
200	595	205	543	350	600	1210	1410	1230	3	95	3.0	19.8	10	72	84
300	720	210	660	450	650	1342	1542	1385	3	95	3.0	19.8	10	80	96
400	707	211	656	550	750	1371	1571	1425	3	95	3.0	19.8	10	92	117
500	811	211	751	550	750	1621	1821	1670	3	95	3.6	23.7	10	102	126

H₂O Flow-Maxi commercial hot water

Hot water / accumulator details and prices

The H₂0 Flow-Maxi is a combined instantaneous domestic hot water cylinder combined with an accumulator/buffer for central heating. The hot water production coil is manufactured from stainless steel 32 x 16mm connected in parallel and mounted through the top on a flanged ring. This allows the possibility of its removal at any time in the future. The hot water production coil is mounted in the top of the cylinder and protects against legionella, due to its location. The design of the hot water heat exchanger allows for excellent flow rates even with lower than normal water temperatures.

The insulation jacket is made from soft polyurethane and CFC. This is delivered separately and can be simply fitted on site. This greatly helps with access and location.

When installing the H₂0 Flow-Maxi it is essential the mains cold water supply is connected via a check valve, pressure reducing valve (3bar), and an expansion vessel.

There must also be a thermostatic mixing valve (TMV2) installed in the domestic hot water flow with the cold input also pressure reduced to 3 bar. See equipment options below.

Standard insulation is 125mm can be ordered as an option. Soft polyurethane 18kg/m³ density.

Thermal conductivity coefficient 0.039 W/mk. Elastic efficiency 44%. Free from HCFC.

Suitable for heating systems up to 45kW with the stratification tube. For systems above this level use $\rm H_2O$ bespoke version.



0 Flow-Maxi	Capacity litre	Insulation mm	Order code	£ ex VAT	PG
	600	125	TS4739	1,936.00	
	800	125	TS4740	2,013.00	
	1000	125	TS4741	2,230.00	41
	1250	125	TS4742	2,398.00	41
	1500	125	TS4743	2,606.00	
	2000	125	TS4744	3,123.00	

axi R1 with single coil	Capacity litre	Insulation mm	Order code	£ ex VAT	PG
	600	125	TS4745	2,057.00	
	800	125	TS4746	2,160.00	
	1000	125	TS4747	2,413.00	41
	1250	125	TS4748	2,595.00	41
	1500	125	TS4749	2,830.00	
	2000	125	TS4750	3,382.00	

H₂O Flow-Maxi R2 with dual coils



Hot water control equipment



Capacity litre	Insulation mm	Order code	£ ex VAT	PG
600	125	TS4751	2,113.00	
800	125	TS4752	2,231.00	
1000	125	TS4753	2,533.00	41
1250	125	TS4754	2,715.00	41
1500	125	TS4755	2,960.00	
2000	125	TS4756	3,522.00	

Capacity litre	Insulation mm	Order code	£ ex VAT	PG
Expansion vessel w 8 litre	vith fixed membrane	EV4716	27.00	
Mounting kit for ex	pansion vessel	EV4717	12.00	41
Mains cold starter kit		EV4718	62.00	
Hot water mixing	kit	EV4723	74.00	

H₂O Flow-Maxi commercial hot water Technical and dimensions





Conne	ction options				
1	Flow from wood boiler or alternative heating source	DN40	11	Sensor or temperature gauge	DN15
2	Flow from alternative heating source	DN40	12	Auto vent x 2	DN15
3	Electric immersion	DN40	AS	Flow from solar	DN40
4	Return to wood boiler or alternative heating source lower solar coil installed	DN40	RS	Return to solar or (RS1) DN15 sensor connection if no solar coil	DN40
5	Electric immersion secondary	DN40	D1	Diameter without insulation	
6	Primary return from heating system or return to boiler	DN40	D2	Diameter with insulation	
7	Flow from wood boiler or alternative heating source	DN40	SF	Upper solar coil temperature sensor position	DN15
8	Flow to heating system	DN40	SU	Lower solar coil temperature sensor position	DN15
9	Secondary return from heating system or alternative boiler return	DN40	AF	Potable (mains cold) water inlet	1 1/4″
10	Primary return from heating system or return	DN40	AC	Potable (hot) water outlet	1 1/4″



100°
H ₂ O Flow Plus performance information - one off withdrawal

Withdrawal of hot domestic water 10 - 45°C		Туре	600	800	1000	1250	1500	2000
Withdrawal of hot domestic water	Store	Flow -l/min	30	30	30	60	60	60
Duration of flow	temperature 70°C	Time - min	8.5	10.2	13.1	8.5	9.6	9.6
Total withdrawal	70 0	Quantity - litres	255	307	393	573	577	576
H ₂ 0 Flow Plus performance information - continue	ous withdrawal	with boiler input						
Boiler input	Boiler flow	kW	15	20	25	30	35	50
Continuous withdrawal 10-45°C	70°C	l/min	6.2	8.2	10.2	12.3	14.3	20.5

					H	l ₂ 0 Flov	v-Maxi	comm	ercial h	ot wat	er						Solar coils							
Model Type	1&7	2&8	3	4&9	5	6 & 10	RS1	AS1	RS2	A52	ØD1 Diameter without insulation	ØD2 Diameter with standard insulation	Tank height	Height standard insulation	Max pressure (Bar)	Max temperature (°C)	Lower Coil m ²	Lower Coil capacity (L)	Upper Coil m ²	Upper Coil capacity (L)	Maximum pressure (Bar)	Weight (Kg)	Weight (Kg) H ₂ 0 Flow-MaxiR1	Weight (Kg) H ₂ 0 Flow-MaxiR2
600	1394	994	804	594	490	224	224	724	994	1344	700	950	1661	1695	3	95	1.8	11.9	1.2	7.9	10	172	196	213
800	1426	1026	866	626	547	256	256	8001	1026	1386	790	1040	1708	1745	3	95	2.4	15.9	1.8	11.9	10	185	227	253
1000	1720	1249	1040	844	635	300	300	970	1180	1720	790	1040	2063	2095	3	95	3.0	19.8	2.4	15.9	10	228	271	309
1250	1700	1239	1085	784	632	300	300	970	1160	1700	950	1200	2048	2095	3	95	3.0	19.8	2.4	15.9	10	257	299	334
1500	1750	1285	1128	900	740	325	325	1000	1240	1750	1000	1250	2176	2205	3	95	3.6	19.8	2.4	15.9	10	270	320	360
2000	2025	1489	1214	959	730	325	325	1105	1475	2025	1100	1350	2413	2445	3	95	4.2	23.7	2.8	19.8	10	357	403	444

SYSTEM & HYDRAU

Cold in

Hot water out

H₂O Store bespoke accumulator H₂O Store bespoke accumulator details and prices

The accumulators of series $\rm H_2O$ Store bespoke can be manufactured to almost any requirement. Produced from high quality steel, R1 and R2 have internal coil/s for connecting to solar systems or other heating sources.

Options include:

- Multiple flow and return connections for multiple boiler and heating system connections
- Multiple flow and return connections for multiple heating system connections, i.e. act as a low loss header
- Internal stratification tubes in sizes 65mm-150mm up to 400kW
- Stratification columns up to 400kW heating circuits.
- External connections from DN40-DN150
- Hot water production up to 60 litres per minute
- Insulation options 100mm or 150mm thermal conductivity coefficient 0.039 W/mk. Elastic efficiency 44%. Free from HCFC



Step $\overline{1}$ - Select your basic accumulator

Store bespoke	Model Type	Order code 100mm insulation	£ ex VAT	Order code 125mm insulation	£ ex VAT	PG
	600	TS4901	896.00	TS4938	986.00	
	800	TS4902	958.00	TS4939	1,048.00	
П	1000	TS4903	1,076.00	TS4940	1,166.00	
	1250	TS4904	1,153.00	TS4941	1,273.00	
	1500	TS4905	1,202.00	TS4942	1,322.00	
	2000	TS4906	1,454.00	TS4943	1,574.00	
	2500	TS4907	2,066.00	TS4944	2,196.00	
	3000	TS4908	2,516.00	TS4945	2,656.00	41
	3050	TS4909	2,719.00	TS4946	2,859.00	
	4000	TS4910	3,099.00	TS4947	3,249.00	
	4050	TS4911	3,358.00	TS4948	3,508.00	
	5000	TS4912	3,614.00	TS4949	3,774.00	
	6000	TS4913	5,423.00	TS4950	5,593.00	
	8000	TS4914	7,398.00	TS4951	7,578.00	
	10000	TS4915	9,248.00	TS4952	9,438.00	
H ₂ O Store bespoke - R1 with single coil						
	600	TS4916	1,017.00	TS4953	1,107.00	
	800	TS4917	1,105.00	TS4954	1,195.00	
	1000	TS4918	1,259.00	TS4955	1,349.00	
	1250	TS4919	1,350.00	TS4956	1,470.00	
	1500	TS4920	1,426.00	TS4957	1,546.00	
	2000	TS4921	1,713.00	TS4958	1,833.00	41
	2500	TS4922	2,375.00	TS4959	2,505.00	41
	3000	TS4923	2,775.00	TS4960	2,915.00	
	3050	TS4924	2,978.00	TS4961	3,118.00	
	4000	TS4925	3,407.00	TS4962	3,557.00	
	4050	TS4926	3,666.00	TS4963	3,816.00	
	5000	TS4927	3,984.00	TS4964	4,144.00	
H ₂ O Store bespoke - R2 with dual coil						
	600	TS4928	1,073.00	TS4965	1,163.00	
	800	TS4929	1,176.00	TS4966	1,266.00	
	1000	TS4930	1,379.00	TS4967	1,469.00	
	1250	TS4931	1,470.00	TS4968	1,590.00	
	1500	TS4932	1,556.00	TS4969	1,676.00	/11
	2000	TS4933	1,853.00	TS4970	1,973.00	41
	2500	TS4934	2,555.00	TS4971	2,685.00	
	3000	TS4935	2,925.00	TS4972	3,065.00	
	4000	TS4936	3,597.00	TS4973	3,747.00	
	5000	TS4937	4,213.00	TS4974	4,373.00	

H₂O Store bespoke accumulator

Option prices, technical and dimensions

6.0 39.6

6.0 39.6

Larger models and additional technical data available on request

n/a

3.6

n/a

23.7

Flange or straight connection

Stratification tube

Step 2 - Select connections type, stratification column, stratification tube, plate or hot water production you require you require

Access	sories H.	0 Store I	Bespoke	2												Order code	£ ex VAT	PG
	2		DN15	connecti	on for ten	nperature	e or Sen	isor loca	tion							TSS15	8.00	
			Flang	e connect	tion 50mr	n. Accum	ulator	supplied	l with Pl	V6 flange	e fitted					TSF50	35.00	
		`	Flang	e connect	tion 65mr	n. Accum	ulator	supplied	l with Pl	V6 flange	e fitted					TSF65	46.00	
	C	c	Flang	e connect	tion 80mr	n. Accum	ulator	supplied	l with Pl	v6 flange	e fitted					TSF80	64.00	
		c	Flang	e connect	tion 100m	nm. Accur	nulato	r supplie	d with F	PN6 flang	ge fitted					TSF100	116.00	
			Flang	e connect	tion 125m	nm. Accur	nulato	r supplie	ed with F	PN6 flang	ge fitted					TSF125	127.00	
			Flang	e connect	tion 150m	nm. Accur	nulato	r supplie	ed with F	PN6 flang	ge fitted					TSF150	141.00	
With			Straig	ght conne	ctor 40m	n										TSS40	26.00	
in side			Straig	ght conne	ctor 50m	n										TSS50	31.00	
uneau			Straig	ght conne	ctor 65mi	n										TSS65	41.00	
			Straig	ght conne	ctor 80m	n										TSS80	59.00	41
Can be			Straig	ght conne	ctor 100n	nm										TSS100	112.00	41
ordered			Flow	and retur	n stratific	ation tub	e 65mr	n, up to	80kW							TSN65	56.00	
straight o	or		Flow	and retur	n stratific	ation tub	e 100m	nm, up t	o 200kW	V						TSN100	88.00	
angled	0 0	0 0 0	Flow	and retur	n stratific	ation tub	e 150m	nm, up t	o 400kW	V						TSN150	129.00	
	0 0 0	0	Strati	fication o	olumn su	itable up	to 80k\	N								TSC340	193.00	
	0000	0	Strati	fication c	olumn su	itable up	to 2001	κW								TSC500	231.00	
	0 0	0	Strati	fication c	olumn su	itable up	to 400l	κW								TSC750	320.00	
			Strati	Stratification plate 600-2,500 litre, stratification split between top and bottom of accumulator						TSP500	64.00							
			Strati	Stratification plate 3,000-10,000 litre, stratification split between top and bottom of accumulator						TSP750	78.00							
			Hot w	/ater proc	luction co	il, flange	d top n	nounted	9.98m ²							TSW500	1,291.00	
			Hot w	/ater proc	luction co	il, flange	d top n	nounted	11.5m ²							TSW750	1,610.00	
			For h	ot water p	oroductio	n coil capa	acity in	formatio	on see H	,0 Flow I	Maxi accu	mulator					Ø D2	
Sta		Eour	ulacafo	laction	All stuatid	Scation t	uhocm	ust ho t	the com	- 	n to 1 stu	ti f anti a						
	- 4 -	tubes	can be f	itted at t	the top ar	nd/or bot	tom. N	lodels 4	050 and	above (can have	6 fitted	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
	HOR	snoke a	ccumula	ator info	rmation				٨dc	litional	coil info	rmation	,		-	40°		40°
	1120 DC	.spore a	ccumun		mation			_	Aut			mation	•					
	.io	vith tion		tion	ating	ating C)		city (L		city (L	ating) Store	-	-		150mm	15000	
Гуре	leter nsulat	insula	ᆂ	ith insula	n oper	n opera	ll m²	il capa	Ĩ	l capa	n oper	(g) H ₂ C	(g) H ₂ ((g) H ₂ C	Top conn	ection _{Hot}	water out Col	d in
odel .	l Diam hout i	2 Diam ndard	ık heig	ght wi ndard	ximun ssure	ximun nperat	ver Coi	ver Coi	per Coi	per Coi	ximun ssure	ight ()	ight () ore R1	ight () re R2	standard	DN40		
1000			L	2000	Max	Ten Ma	2.0	NO 10.0	id n	15 0	Ma) pre	114	101	154	with Hot DN15 for	water 2 autovent		
1000	050	1150	2041	2090		95	3.0	19.0	2.4	15.9		1/4	121	190	Stratifica	tion tube		
1200	1000	1200	2017	2000		95	2.0	19.0	2.4	15.9		140	160	210	Juanna			Ē
2000	1100	1200	2152	2200		05	3.0	19.0	2.4	10.9		225	222	210	Flange or	straight connection		
2000	1200	1/00	2377	2420		05	3.0	23.7	3.0	19.0		225	2/0	2/0	DN15 con	nnection —		2.6
2000	1200	1400	2445	2300		93 05	1.0	25.7	2.0	19.0		202	249 207	2/12	42			
2050	1400	1400	2035	2700	2 kar	95	4.2	27.7	5.0	19.8	10 -	200	26/	243	Stratification plate			@
3050	1400	1600	2318	23/8	3 Dar	95	5.0	33.0	n/a	n/a	10 bar	290	n/a	353	Stratifica	tion column		
4000	1400	1600	2818	2880		95	5.0	33.0	3.0	19.8		431	538	498				

SYSTEM & HYDRAULICS

Domestic hot water (potable) station Fristar 2 Energy efficient alternative to a Hot Water cylinder

The Fristar instantaneous water heater produces domestic hot water hygienically and more energy efficiently than a stored hot water system. The built in control system and variable speed pump match the primary heat input to the flow rate and demand to save energy, and respond quickly to changes in hot water requirements. With only four valved connections, all $\frac{34''}{4''}$ male which can be swapped from left to right, installation is easy and the space required minimal.

Features

- Easy operation with LED status indicators
- Stainless steel braised heat exchanger
- 4 Isolation valves and anti-gravity valve in the primary return
- Connection for a secondary return pump
- Air vent option for primary circuit
- High quality thermal insulation
- Performance 30L/min at 65°C primary flow 45°C secondary flow
- Secondary side resistance to flow kvs 2.6m³/hr
- Cascade up to 4 Fristars for up to 120L/min of domestic hot water

Technical data Fristar 2

70kW
2 l/min
30 l/min
40 l/min
4 bar
8 bar
65 / 20°C
45 / 10°C
90°C
2.60m³/h
3⁄4″
Brass CW617N
Stainless steel 1.4401, copper soldered
Copper 99.96%
PTFE, EPDM, Klingersil C-4324
WIL0 ST20/7-3C
Grundfos VFS 2-40
PT1000
FWR21-FRISTAR
95°C, short term 100°C
45°C - 65°C
45°C - 65°C 4.5m ³ /h

Energy efficient alternative to a hot water heater

Hot water is produced on demand by drawing heated primary water from an adjacent accumulator/buffer. The large flow rate of 30L/min can supply 3 showers at once. If a greater flow rate is required up to 4 Fristars can be cascaded to provide 120litres/min.





Fristar 2 is available in left or right hand versions. The handing relates to the location of the primary side supply pump.



VMS Valve Must be installed if supply temperature will exceed >70°C.

Pump mode	Buffer flow°C	Return °C	Cold water supply°C	Hot water supply°C	Power kW	Flow l/h
100%	59.3	25.0	10.3	45.0	68.7	1,700
100%	55.4	27.0	10.3	45.0	56.5	1,400
100%	50.3	33.2	10.3	45.4	34.7	850
100%	50.2	25.2	10.3	40.3	50.6	1,450

	Order code	£ ex VAT	PG
Fristar 2 left hand	PL2306	1,039.00	
Fristar 2 left hand with VMS valve	PL2307	1,196.00	
Fristar 2 right hand	PL2308	1,039.00	
Fristar 2 right hand with VMS valve	PL2309	1,196.00	
VMS valve stand alone	PL2310	168.00	
TMV thermal mixing valve	PL2311	123.00	

Expansion tanks Diaphragm pressure expansion chamber for closed systems



Configuration and features

Diaphragm pressure expandable container (red) conforming to Pressure Equipment Directive 97/23/EC and EN 13831

Maximum operating overpressure:	60-1000 litres: 6.0 bar
System temperature:	- 10° C/263 K up to +99°C
Maximum constant diaphragm temperature:	70°C
Standard primary pressure:	1.5 bar; for 80 litres and above: 2.5 bar

PG	£ ex VAT	Order code	Connection valve size	Weight kg	Connection	Height mm	Diameter mm	Operating pressure max	Type/capacity Litres
)	76.00	EV4701	DN20	8.5	DN20	392	380	6.0	35
)	91.00	EV4702	1	13.5	DN 25	550	380	6.0	60
)	138.00	EV4703	I DN25	19.0	DN 25	735	450	6.0	80
)	142.00	EV4704	DNZS	24.0	DN 25	790	450	6.0	100
)	197.00	EV4705		30.0	DN 40	800	550	6.0	150
)	237.00	EV4706		36.0	DN 40	1080	550	6.0	200
1	293.00	EV4707		47.0	DN 40	984	630	6.0	250
) 41	331.00	EV4708	2	56.0	DN 40	1177	630	6.0	300
)	475.00	EV4709	DN40	67.5	DN 40	1540	630	6.0	400
)	591.00	EV4710		85.0	DN 40	1283	780	6.0	500
)	856.00	EV4711		99.0	DN 40	1340	780	6.0	600
)	1,053.00	EV4712		110.0	DN 40	1685	780	6.0	700
1	2 262 00	EV/1715	3 DN50	170.0	DN 50	2250	750	6.0	1000

Expansion vessel is	solation valve with drain	Valve size	Order code	£ ex VAT	PG
<u>a</u>	Brass cap valve DN 25. 1″	1	PL2010	31.00	
N DEL	Nickel cap valve DN 40. (1 1/2")	2	PL2011	34.00	
and the second s	Nickel cap valve DN 50. (2")	3	PL2012	49.00	41
Potable water exp	ansion vessel	Connection valve size	Order code	£ ex VAT	PG
	Potable water expansion vessel 500 litres for quenching devices when supplied from bore hole	2 DN40	EV4721	754.00	
	Potable water expansion vessel 300 litres for quenching devices when supplied from bore hole	2 DN40	EV4722	603.00	41
and the second	Mains cold starter kit		EV4718	62.00	

High efficiency circulation pumps Delta HE circulation pump series

The Euroheat Delta circulating pump range offers the latest in high efficiency low energy consumption circulation pumps.

The pumps are designed to circulate heated water in central heating systems, however they can also be used to pump liquid media (depends on type) in industrial and commercial applications.

For solar applications the pumps are idea as they are suitable for glycol mix 1.1 and media temperatures up to 110°C. (See technical data).

Delta HE 35 & 55

One touch operation allows choice of seven different performance curves. Of which four are proportional and 3 fixed speed. In additional a night set back operation is included which reduces power consumption in low demand situations. These models supplied as part of pump station options only.

Delta UE35, 55, 75, 80

Euroheat high eff

One touch operation allows the choice of 3 different fixed speed performance curves and 3 proportional curves. These models supplied as part of pump station options only.

Delta Midi 40, 60, & maxi 80

One touch operation allows the choice 8 different fixed speed performance curves and 4 proportional 4 fixed. The range from Midi 40 with 4.0m lift, 2,800 l/h to the largest model Maxi 80 8.0 lift 7,200l/h.

Delta HE 75, 100, 120, flanged and non-flanged

Two button control offer 6 proportional curves and 5 fixed. Fitted with an LCD display, night setback function which shows power consumption and set points. The range from HE75 with 7.5m 9,450 l/h to the largest model HE75F 12.0 lift 9950l/h. AllI models can be supplied as flanged or non-flanged.

Midi 40 SB brass

Designed for domestic hot water circulation, includes all the same control as the standard Midi 40.

PWM Module 0-10 module

Many modern pump controls use Pulse wave modulation (PWM) or 0-10 volt to stop /start circulation pump and also to change the pumps speed. PWM module includes connection cable.

£ ex VAT

132.00

160.00 160.00 188.00 134.00 206.00 234.00 325.00 353.00 397.00 425.00 477.00 505.00 PG

41

462.00 490.00 538.00 566.00 614.00 642.00 3.00

18.00

5.00

18.00

33.00

PL2221

PL2222

iciency circulation	pumps	Body length	Connection size	With PWM	Order code
r	Midi 40 S				PL2208
		130mm	DN25	PWM module	PL2208PWM
	Midi 40 SB Brass body		51125		PL2209
·· • • • • • • • • • • • • • • • • • •	for (DHW)			PWM module	PL2209PWM
	Midi 60 S	130mm	DNI30		PL2210
	Milui 00 5		DNJZ	PWM module	PL2210PWM
T	Mayi 90	190mm	DNDD		PL2211
	MidXI OU	TOUTIIT	DNSZ	PWM module	PL2211PWM
		100	DNDD		PL2212
π	Della HE 75	180mm	DIN32	PWM module	PL2212PWM
		100	DNI22		PL2213
	Della HE 100	180mm	DIN32	PWM module	PL2213PWM
.0		100	DNDD		PL2214
	Della HE 120	180mm	DIN32	PWM module	PL2214PWM
		240	Flange		PL2215
	Delta HE 75 flanged	240mm	DN50	PWM module	PL2215PWM
		240	Flange		PL2216
	Delta HE 100 flanged	240mm	DN50	PWM module	PL2216PWM
	Date UE 120 flammed	240.000	Flange		PL2217
-	Della HE 120 hanged	240mm	DN50	PWM module	PL2217PWM
	Pump unions cast iron for DN25 pum		PL2218		
	Pump unions brass for DN25 pumps,		PL2219		
	Pump unions for DN32 pumps, 2 x in	serts $1\frac{1}{4}$ and $2 \times n$		PI 2220	



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Unions including ball valve 1 ½(set of 1)

Unions including ball valve 2" (set of 1)

High efficiency circulation pumps Delta HE technical data

Return temperature control pre-con	nected kits with Insulation	Hand	Control	Order code	£ ex VAT	PG
			PL2024L	487.00		
	Return temperature pre-connected kit small Includes cast iron pre-connected assembly for fast	Left	PWM	PL2024LPWM	545.00	
	system isolation, DN 25. Pump with insulation,	Disht		PL2024R	487.00	
~	roomin punp length	RIGHT	PWM	PL2024RPWM	545.00	
Left handed version	Potura tomporaturo are connected kit medium	loft		PL2028L	545.00	
	Includes cast iron pre-connected assembly for fast	Leit	PWM	PL2028LPWM	605.00	
	system isolation, DN 32. Pump with insulation,	Pight		PL2028R	545.00	41
	roomin punp lengu	Ngitt	PWM	PL2028RPWM	605.00	
	.	l off		PL2035L	668.00	
	Return temperature pre-connected kit large Includes cast iron pre-connected assembly for fast	PWM	PL2035LPWM	726.00		
Right handed version	system isolation, DN 32. Pump with insulation,		PL2035R	668.00		
	roomin punp length	PWM	PL2035RPWM	726.00		
Return temperature control pump ar	Order code	£ ex VAT	PG			
T a	Potum tomporature control Lit for UDC Compact 00			PL2056	1,140.00	
🔲 D 🕐 😂	Three-way mixing valve DN 40. ID DN 40. SM 4 servo motor. I	Rotation time				
	rso seconos, 2309, circulation pump		PWM Module	-	-	
P	Return temperature control kit for HDG Compact 100 / Three-way mixing valve DN 40. ID DN 40. SM 4 servo motor 1 Rotation time 150 seconds, 230V, circulation pump, IF modul	115 0. e	Including 0-10V module	PL2071	1,140.00	41
.	Return temperature control for HDG Compact 150/200 Three-way mixing valve DN 65. 3 flange PN 6. DN 65 with sea 3-30. 230V, Circulation pump, IF module	ls, servo motor	Including 0-10V module	PL2072	1,897.00	1
	Return temperature control for M Series Three-way mixing valve DN 80. 3 flange PN 6. DN 80 with sea motor 230V, main circulation pump for heat exchanger, circula for combustion unit	PL2074	2,974.00			
Three-way mixing valves kits, includ	ing motor and valve			Order code	£ ex VAT	PG
	Three-way mixer DN 25. ID DN 25. OD DN 40. servo SM 4. 150	seconds, 230V		PL2046	131.00	
	Three-way mixer DN 32. ID DN 32. servo SM 4. 150 seconds, 2	30V		PL2047	138.00	
	Three-way mixer DN 40. ID DN 40. servo SM 4.10. 150 seconds, 230V				232.00	41
Three-way mixer DN 50. ID DN 50. servo SM 4.10. 150 seconds, 230V				PL2049	245.00	
	Three-way mixer DN 65. 3 flange PN 6. DN 65, servo motor 3-30. 230V				449.00	
	Three-way mixer DN 80. 3 flange PN 6. DN 80, servo motor 3-		PL2123	482.00		

High efficiency circulation pumps

Delta HE circulation pump series

Model		Delta HE 3	5	Delta	HE 55	Delta HE 75			Delta UE 80A	
Max Lift height		4.0m		6.0m 7.		.5m	8	.0m		
Max flow		2,600 l/h		3.200 l/h 7,8		50 l/h	7,3	7,340 l/h		
Power consumption (w)	3w-23w			3w-	38w	5w	-98w	4-	80w	
Control functions	3 constant,			proportional		5 constant,	6 proportional	3 constant o	r proportional	
Voltage					1 x 230	0V 50Hz				
Protection type					IP	42				
Ambient temp					0°-	40°C				
Media temperature					5°- 1	110°C				
Temperature class					TF110 according	y to CEN 335-2-51				
Max operating pressure					10	bar				
Weight approx		2.46kg		2.46kg 3.			3.2kg 2.9kg			
Material					Cataphoretic coated cast iron					
Model	Midi 40	Midi 60	Midi 80	Delta HE 75	Delta HE 100	Delta HE 120	Delta HE 75F	Delta HE 100F	Delta HE 120F	
Max pump head	4.0m	6.0m	8.0m	7.5m	10m	12m	7.5m	10m	12m	
Max flow	2,800l/h	3,600l/h	7,200l/h	7.850l/h	8,800l/h	8.800l/h	9,450l/h	9950l/h	9950l/h	
Power consumption	3w-23w	3w-42w	3w-75w	3w-98w	5-123w	5-127w	5-98w	5-123w	5-127w	
Control functions	4 co	nstant, 4 propor	tional			5 constant	, 6 proportional			
Voltage					1 x 230V	50Hz				
Protection type					IP 42	2				
Ambient temp					0°- 40)°C				
Media temperature					5°- 11	0°C				
Temperature class					TF110 according to	o CEN 335-2-51				
Max pressure					10 ba	ar				
Weight approx	2.4	6kg	2.9kg	3.2kg	3.2	kg		8.0kg		
Material/fitting	Brass or		Cataph	oretic coated cast in	ron/BSP thread		Catapho	oretic coated cast iror	n/flanged	



131 Delta HE 75,100,120



Delta Midi 40 S



Delta HE 75,100,120 Flanged





223

135

High efficiency circulation pumps Delta HE technical data





SYSTEM & HYDRAULICS

Pump stations & distributors

Under floor, radiator & hot water distribution





Starter distributor

Extension distributor

Euroheat pump station range

The Euroheat pump station range have internal water ways made of grey cast iron, combining a circulation pump and/or a 3-way mixing valve in a single housing. This results in small foot print with simple and easy installation.

The range consist of two model sizes T08 with 90mm connection centres and the T60 with 120mm connection centres.

Mixed pump stations

The Euroheat mixed pump stations T08, T60-R & T60-32 include a 3-way mixing valve in a single housing. The mixing device is made of brass and attached to an external 150 sec motorized valve head. For low temperature heating systems, an adjustable bypass-regulator valve is installed. The cast iron distributors are equipped with an energy efficient class A pump and high quality insulation made from expanded polystyrene.

Unmixed pump stations

The T08-R and T60-R are used for any requirement where mixing or blending is not required, such as domestic hot water or for unmixed heating circuits. The internal water ways are made of grey cast iron, combining the energy efficient class A circulation pump and high quality insulation made from expanded polystyrene.

Pump station distributors

Up to 4 heating circuits (mixture of mixed or unmixed) can be connected to each other with the modular pump station distributor.

If only one mixed or unmixed pump station is used, a station distributor is not required.

If more than one pump station is utilized a starter distributor module is used then up to 3 extension distributors are linked together so only one flow and return is required from the energy source.

The pump station distributors are designed for mixed and unmixed heating stations. There are two sizes 90mm for the T08 and T08-R pump stations and 120mm centres for the T60, T60-R and T60-32 models. The pump station distributors include high quality insulation made from expanded polystyrene (EPP).

Simple mounting

In the UK it is common practice to connect heating systems with copper piping or systems like "press fit". These concepts are not ideal to act as support for any type of pump station.

With every Euroheat pump station a unique wall mounting plate is included. This plate allows for easy permanent support through its large surface area. A single centre stud then supports the cast iron assembly away from the supporting wall allowing for the future separation of the insulated rear cover for access to pump connections etc.



Temperature controlled mixed







T08 or T60 pump station

The Euroheat pump station range is supplied in two distinctive sizes. The T08 has DN20 (20mm) internal water ways with 1" connections for small system applications. While the T60 and T60-R range has internal water ways of DN25 (25mm) and 1" F x $1\frac{1}{2}$ " M connections for larger applications. The T60-32 has $1\frac{1}{4}$ " F x 2" M connections for specialist applications such as district heating or very large zone applications.

Connection centres are different in the two ranges. The T08 range have 90mm centres while the T60 has 120mm centres.





Euroheat pump stations can be installed to suit many different applications. The example below uses two mixed and one unmixed pump stations. The unmixed heats a hot water cylinder. One of the mixed pump stations heats the under floor circuit and the other a radiator circuit. In this installation the pump stations draw heated water directly from an accumulator and are controlled by a system controller.



Pump stations & distributors Technical information

Model	Flow return centre	Mixing valve type	Connection	Nominal diameter	Mixing valve Kvs	Station Kvs	Max operating pressure	Max temperature	Max glycol percentage
T08 Mixed	90mm	3 way	1″ M	DN20	6 m³/h	7 m³/h			
T08 Unmixed	90mm	N/A	1″ M	DN20		7 m³/h			
T60 Mixed	120mm	3 way	1"F x 11/2"M	DN25	6 m³/h	7 m³/h	6 bar	110°C	50%
T60R Unmixed	120mm	N/A	1"F x 11/2"M	DN25		7 m³/h			
T60 32 Mixed	120mm	3 way	1″1/4″F x 2″ M	DN32	9 m³/h	10 m³/h			
T08	T08-R	T60)		T60-R			T60-32	
		m States and states an	ca. 45 mm	240 mm	(a. 45 mm	20 mm	240 mm		
flow [l/h]			9	0° Kvs	[m³/h]				
10.000 + + + + + + + + + + + + + + + + +	t = 5 C	7.5 C	40.0 2	25.0 16.0	10.0				
5.000 2.000 1.000 500 200 5 1	0 20 50 power [kW]	15 C 20 C 30 C 30 C	2 5 10 pressure drop	20 50 10 [kPa]	40 2.0 1.6	D E F			
		A	The second se	c		G	F		
Model (all measurement	smm)	A	B C	D	E	F	G	Н	I.
T08 Mixed nump station		260 1	85 215	180	125	25	70	90mm	_

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90mm

120mm

120mm

_

T08 Mixed pump station with distributor

T60 Mixed pump station with distributor

T60 Mixed pump station

Pump stations T08 controlled ((mixed) and uncontrolled, 90mm centres	Order code	£ ex VAT	PG		
	T08 Mixed pump station with pump UE35A With bypass for under floor heating, 2 ball valves, 3-way mixer with servo motor SM 4.6 Energy efficient pump type A HE 35, flow and return thermometer, parallel connections	PL2125	339.00			
	with 4 union nuts 1", nominal DN20 with EPP insulation and 2m connection cable. HE35 pump, Max head 4.0m. Max flow rate 26001/h	PL2125PWM	376.00	41		
Charling and Charles	T08 Mixed pump station with pump UE55A	PL2126	341.00			
6	As above but fitted with pump type A, HE6. Max head 6.0m. Max flow rate 32001/h	PL2126PWM	378.00			
THE PARTY	T08 Mixed pump station with pump UE75A	PL2127	366.00			
	As above but fitted with pump type A, HE6. Max head 6.0m. Max flow rate 32001/h	PL2127PWM	403.00			
	T08-R Unmixed pump station HE 35 2 ball valves, energy efficient pump type A, HE 35A. flow and return thermometer, parallel connections with 4 union nuts 1", nominal DN20, with EPP insulation and 2 m connecting cable. UE35A pump. Max head 4.0m. Max flow rate 2600I/h	PL2128	247.00			
VM90 distributors with insulat	ion for T08	Order code	£ ex VAT	PG		
	Starter distributor For connection of mixed or unmixed pump stations of type T08. Connection, 1", nominal DN20. Insulation, union nuts with terminal caps and two heating unit plugs without fasteners includes EPP insulation cover		79.00	41		
	Extension distributor As above but for 2nd, 3rd and 4th pump station connection without terminal caps	PL2130	79.00			
Pump stations T60 controlled ((mixed) and uncontrolled, 120mm centres	Order code	£ ex VAT	PG		
	T60 Mixed pump station with pump HE35 With bypass for under floor heating, 2 ball valves, 3-way mixer with servo motor SM 4. Energy efficient pump type A, HE 35-25. flow and return thermometer, parallel connections	PL2018	428.00			
9	with 4 union nuts 11/4F 2"M, with EPP insulation and 2m connection cable. HE35 pump, Max head 4.0m. Max flow rate 2600l/h	PL2018PWM	478.00			
120mm	T60 Mixed pump station with pump HE55	PL2019	429.00			
	As above but fitted with pump type A, HE 55-25. Max head 6.0m. Max flow rate 32001/h	PL2019PWM	479.00			
	T60-32 Mixed pump station with pump UE 75A With bypass for under floor heating, 2 ball valves, 3-way mixer with servo motor SM 4. Energy efficient pump type A, HE 35-32. flow and return thermometer, parallel connections	PL2131	453.00	41		
1979	with 4 union nuts 11/2", with EPP insulation and 2 m connection cable. HE35 pump, Max head 4.0m. Max flow rate 2600l/h	PL2131PWM	503.00			
	T60R Unmixed pump station	PL2020	272.00			
	2 ball valves, energy efficient pump flow and return thermometer, parallel connections with 4 union nuts 11/2", with EPP insulation and 2 m connecting cable. HE35 pump. Max head 4.0m. Max flow rate 2600 l/h or HE55 Max head 6.0m Max flow 3400l/hr	PL2020HE55	261.00			
Pump station distributors with	n insulation for T60 and T60 R	Order code	£ ex VAT	PG		
	Starter distributor For connection of mixed or unmixed pump stations of type T 60 or T 60R. Connection DN 32. Insulation, union nuts with terminal caps and two heating unit plugs without fasteners includes EPP insulation cover	PL2021	91.00	41		
	Extension distributor For connection of mixed or unmixed pump stations of type T 60 or T 60R. Connection DN 32. Insulation, with joint sleeves and union nuts, without caps, without fasteners, includes EPP insulation cover	PL2022	91.00	91.00		

Boiler integrated system electrical and pump station kits

T08 pump stations and boiler control equipment



What do the integrated kits include:

EM & HYDRAUL

The aim of the integrated kits is have a single order code for all the items needed depending on boiler models for complete heating control. This includes a suitable pump station for mixed or un-mixed heating requirements. Unmixed normally used for hot water cylinder requirements and the mixed for weather compensated heating control. The boiler controllers include the option to control weather compensated heating, district pump control, solar thermal and hot water production. The kits listed include all equipment required for the distribution and control the chosen heating circuit excluding the connection pipe work, electrical wiring, radiators and hot water cylinder.

Boiler integrated system electrical and pump station kits

T60 pump stations and boiler control equipment

T60 pump station and control kits	tion and control kits Kit for Kit includes Order code £ ex VAT		PG		
1 mixed weather compensated heating cir	cuit, hot water di	rect from accumulator			
	HDG K Series	T60 mixed station, 1 x surface PT1000 kit, 1 x advanced room thermostat, EM8 extension controller, external sensor	TP2012	962.00	
	HDG Compact 25-80	T60 mixed station, 1 x surface PT1000 kit, 1 x advanced room thermostat, external sensor	TP2013	452.00	
	TDA.HV, TDA, PNA	T60 mixed station, 1 x room thermostat	TP2014	439.00	
1 mixed weather compensated heating circ	uit and 1 hot wat	ter cylinder circuit			
	HDG K Series	1 x T60 mixed station, 1 x T08-R unmixed, 1 x starter & 1 x extension distributor, 1 x surface PT1000 kit, 1 x insertion PT1000 kit, 1 x advanced room thermostat, EM 8 extension controller, external sensor	TP2015	1,469.00	
	HDG Compact 25-80	1 x T60 mixed station, 1 x T08-R unmixed, 1 x starter & 1 x extension distributor, 1 x surface PT1000 kit, 1 x insertion PT1000 kit 1 x advanced room thermostat, external sensor	TP2016	959.00	
	TDA.HV, TDA, PNA	1 x T60 mixed station, 1 x T08-R unmixed, 1 x starter & 1 x extension distributor, 1 x Pocket 1 x room thermostat	TP2017	879.00	
2 mixed heating circuits and 1 hot water cy	linder circuit				
	HDG K Series	2 x T60 mixed station, 1 x T08-R unmixed, 1 x starter & 2 x extension distributor, 2 x surface PT1000 kits, 2 x insertion PT1000 kits, 1 x EM8 + 4 extension controller, 2 x advanced room thermostats, external sensor	TP2018	1,988.00	
	HDG Compact 25-80	2 x T60 mixed station, 1 x T08-R unmixed, 1 x starter & 2 x extension distributor, 2 x surface PT1000 kits, 2 x insertion PT1000 kits, 2 x advanced room thermostats, 1 x EM4 extension controller, external sensor	TP2019	1,728.00	
	TDA.HV, TDA, PNA	2 x T60 mixed station, 1 x T08-R unmixed, 1 x starter & 2 x extension distributor, 1 x KTY surface sensor, 1 x Pocket 2 x room thermostat	TP2020	1,385.00	
3 mixed heating circuits and 1 hot water cy	linder circuit				
	HDG K Series	3 x T60 mixed station, 1x T08-R unmixed, 1x starter & 3 x extension distributor, 3 x surface PT1000 kits, 2 x insertion PT1000 kits, 3 x advanced room thermostat, 2 x EM8 extension controllers, external sensor	TP2021	2,744.00	
	HDG Compact 25-80	3 x T60 mixed station, 1 x T08-R unmixed, 1 x starter & 3 x extension distributor, 3 x surface PT1000 kit, 2 x insertion PT1000 kit, 3 x advanced room thermostat, 1 x EM8 extension controller, external sensor	TP2022	2,494.00	
	TDA.HV, TDA, PNA	3x T60 mixed station, 1x T60 -R unmixed, 1 x starter 3 x extension distributor, 2 x KTY surface sensor, 1 x Pocket 3 x room thermostat	TP2023	2,240.00	

The above examples are a small selection of what can be achieved with the HDG or SHT control strategy. The HDG controller is capable of controlling up to 77 heating circuits including combinations of thermal solar, district heating, additional fossil fuel boilers and much more.

The SHT can control both solar, district heating and up to 6 separate heating circuits.

For help in designing your heating requirements contact the Euroheat design team.

Boiler independent system electrical and pump station kits

Pump stations and boiler required control gear

T08 pump station and control kits	Kit includes	Order code	£ ex VAT
1 mixed weather compensated heating cire	cuit, hot water direct from accumulator T08 pump stations		
	T08 mixed station, 1 x surface PT1000 kit, 1 x advanced room thermostat, EM8 sandalone touch screen controller, external sensor	TP2024	1,442.00
	Design notes In this example, heating water is supplied from the accumulator which also produces hot coil. The accumulator can be recharged directly by an attached boiler (fossil fuel) or from a immersion kits, district accumulator recharge can be controlled automatically	water from a direct l a district circuit. By a	neat exchanger dding 2 x PT1000
1 mixed weather compensated heating circ	uit and 1 hot water cylinder circuit T08 pump stations		
	1 x T08 mixed station, 1 x T60-R unmixed, 1 x starter & 1 x extension distributor, 1 x surface PT1000 kit, 2 x insertion PT1000 kit, 1 x advanced room thermostat, EM 8 standalone touch screen controller, external sensor	TP2025	1,911.00
	Design notes In this example, heating water is supplied from an energy source, IE direct from a remote ac exchanger etc. The heating circuit can be under floor or radiators weather compensated cor controlled via 2x PT1000 immersion sensors for on off operation	ccumulator, fossil fue htrol. The remote hot	el boiler, heat a water cylinder is
2 mixed heating circuits and 1 hot water cy	linder circuit with T60 pump stations		
	2 x T60 mixed station, 1x T60-R unmixed, 1 x starter & 2 x extension distributor, 2 x surface PT1000 kits, 2 x insertion PT1000 kits, 1 x EM8+4 Standalone touch controller, 2 x advanced room thermostats, external sensor	TP2026	2,670.00
	Design notes In this example, heating water is supplied from the accumulator. The accumulator can be boiler (fossil fuel) or from a district circuit, biomass. By adding 3 x PT1000 immersion kits, be controlled automatically. The two heating circuits can be either radiators or under floor control	recharged directly b district accumulator heating with weath	y an attached recharge can ner compensated
3 mixed heating circuits and 1 hot water cy	linder circuit		
	3 x T60 mixed station, 1x T60-R unmixed, 1 x starter & 2 x extension distributor, 3 x surface PT1000 kits, 2 x insertion PT1000 kits, 1 x EM8+4 Standalone touch controller, 2 x advanced room thermostats, external sensor, 3 port valve DN15	TP2027	3,143.00
	Design notes In this example, heating water is supplied from the accumulator. The accumulator can be boiler (fossil fuel) or from a district circuit, biomass. By adding 3 x PT1000 immersion kits, can be controlled automatically. The two heating circuits can be either radiators or under a compensated control. Solar thermal is controlled via 3 port valve, with choice of priority to or any combination required	recharged directly b district accumulator floor heating with w b hot water or accum	y an attached recharge eather nulator

The aim of the integrated kits is to have a single order code for all the items needed independent of boiler requirements. The standalone controller includes all processing power to run a small 1 circuit heating system to large 70 + system. The standalone kits include suitable pump stations for mixed or un-mixed heating requirements. The boiler controllers include the option to control weather compensated heating, district control, solar thermal

and hot water production. The kits listed include all equipment required for the distribution and control the chosen heating circuit excluding the connection pipe work, electrical wiring, radiators and hot water cylinder.

Pressurisation Units Technical data and prices

Pressurisation units are available in four ranges to suit every installation. From open pack base mounted, comfort wall and floor mounted to twin systems able to control both heating and chilled systems. Each range has one or two pump models available to suit a range of static requirements.

System Fill

The open pack and comfort range, with exception of wall mount unit, can fill the system without the need for a quick fill loop. The comfort controller has a system fill command that will enable the pump to run for a maximum of 24 hours or until the CF pressure has been met without activating any alarms.

Comfort Controller

The comfort controller works on closed loop pressure control via an analogue pressure transducer and an electronic micro processor ensuring accurate measurement and feedback of system condition. The control philosophy allows the duty pump to run, ensuring that the cold fill pressure (CF) measured in bar is constantly met. 2 pump models will rotate the duty automatically between both pumps ensuring even wear; if the duty pump fails the standby pump will start automatically. To ensure efficient operation of the sealed system the comfort controller also monitors the number of pump starts and changes in pressure providing excess start or system leak alarms if operating outside of the standard parameters. The controller has a two tier security access with view mode allowing access to the hand / off / auto function and then to view all other parameters only. The user mode requires a password for access to parameters such as cold fill pressure, high pressure, low pressure and excess starts alarms.

Pressurisation Unit Specification



Open pack pressurisation units 1 and 2 pump systems Pressure switch controlled 8 litre expansion vessel Pressure regulated valve Optional pressure switches for high and low pressure bms contacts Fused spur AB air gap

Comfort wall mount pressurisation units

For installation in small systems only with expansion vessels up to 300 litre Wall mount only 1 and 2 pump systems Micro processor controlled Full BMS AB air gap



Comfort pressurisation unit

1 and 2 pump systems Micro processor controlled Full BMS AB air gap

AB air gap

Twin system comfort pressurisation unit 1 pump twin systems Controls 2 independent systems, heating and chilled Micro processor controlled Full BMS

Pressurisation Units



	Order code	£ ex VAT	PG
Open pack unit c/w 1 pump capable of 35m static head	PL3501	POA	
Open pack unit c/w 1 pump capable of 35m static head + LP&HP v/f contacts*	PL3502	POA	
Open pack unit c/w 2 pumps capable of 35m static head	PL3503	POA	
Open pack unit c/w 2 pumps capable of 35m static head + LP&HP v/f contatcs*	PL3504	POA	41
Wall mount comfort series c/w 1 pump capable of 30m head - small systems only	PL3505	POA	
Wall mount comfort series c.w 2 pump capable of 30m head - small systems only	PL3506	POA	
Comfort series c/w 2 pumps capable of 35m head	PL3507	POA	
Twin system comfort series c/w 1 pump per system capable of 35m head	PL3508	POA	

* LP&HP v/f contacts = Low pressure & High pressure volt free contacts For full technical data see www.euroheat.co.uk/documents

Plate Heat Exchangers (PHE) Description and dimensions

The Euroheat range of Plate Heat Exchangers (PHE) have been selected to provide the most common used in biomass heating systems. There are two ranges, brazed and gasket.

Brazed (single pass)

Brazed plate heat exchanger consists of a number of thin, precision stamped plates assembled as a unit, each alternate plate being rotated 180°.

The plate pack is assembled with two end plates and connections, is vacuum brazed at extremely high temperatures providing a permanently sealed heat exchanger. The final result is a strong and compact plate heat exchanger with extremely high heat transmissions. The high heat transmission comes from the main pattern which is designed to create a turbulence flow.

Advantages of brazed plate heat exchangers

- Lower purchase price than gasket models
- Compact size



Gasket plate heat exchangers (single pass)

Gasket heat transfer plates are two plates laser welded together as "cassettes" creating a hermetically sealed flow channel. This increases the surface area of the critical media and reduces the rubber gasket exposure. The media flowing inside the welded cassette is only in contact with a special designed ring gasket at the inlet and outlet of the cassette. This ring gasket can be supplied in other special materials than that of the traditional gasket on the outside of the cassette, where the opposite media is flowing.

Advantages of gasket plate heat exchangers

Can be dismantled for cleaning





Plate Heat Exchangers (PHE) Technical data and prices

Model	Brazed 9	Brazed 15	Brazed 25	Brazed 30	Brazed 40	Brazed 50	Gasket 25	Gasket 30	Gasket 40	Gasket 50	Gasket 115	Gasket 200
Kw	9	15	25	30	40	50	25	30	40	50	115	200
Inlet Temp°C Primary	Hot side 70											
Outlet Temp°C Primary	Hot side 50											
Inlet Temp°C Secondary	Cold side 45											
Outlet Temp°C Secondary	Cold side 65											
Pressure drop kPa	0.59	1.17	3.10	4.57	8.43	13.56	3.88	4.01	4.61	5.09	10.11	8.09
Fouling factor %	6.2	3.8	15.7	9.8	8.1	7	23.9	22.6	21.8	21.3	24.4	24.5
Connections Hot	³⁄₄″m	³⁄₄″m	1″m	1″m	1″m	1″m	1¼″m	1¼″m	1¼″m	1¼″m	2″m	DN65 F
Connections Cold	¾m	3⁄4m	1″m	1″m	1″m	1″m	1¼″m	1¼″m	1¼″m	1¼″m	2″m	DN65 F
Frame Length " L " mm	99	122	81	81	81	81	212	212	212	212	437	438
Weight kg	5	6	9	9	9	9	45	46	49	52	172	220

m = male spigot, F = flanged

Brazed plate

heat exchangers		Order code	£ ex VAT	PG
•	Brazed 9kW plate heat exchanger	PL2102	140.00	
	Brazed 15kW plate heat exchanger	PL2103	164.00	
ſ	Brazed 25kW plate heat exchanger	PL2104	181.00	
	Brazed 30kW plate heat exchanger	PL2104	181.00	
18	Brazed 40kW plate heat exchanger	PL2104	181.00	41
	Brazed 50kW plate heat exchanger	PL2104	181.00	
	Insulation jacket for brazed model 9	PL2111	24.00	
1 and a start of the start of t	Insulation jacket for brazed model 15	PL2112	26.00	
	Insulation jacket for brazed models 25, 30, 40, 50	PL2114	28.00	
12	Note: Models 9 to 50kW should be supported of a suitable shelf or floor.			

Only models 9 to 15kW can be supported from suitably clamped pipework.

Gasket plate heat exchangers



Gasket 25kW plate heat exchanger	PL2105	390.00	
Gasket 30kW plate heat exchanger	PL2106	415.00	
Gasket 40kW plate heat exchanger	PL2107	452.00	
Gasket 50kW plate heat exchanger	PL2108	489.00	
Gasket 115kW plate heat exchanger	PL2109	796.00	4
Gasket 200kW plate heat exchanger	PL2110	970.00	
Insulation jacket for gasket models 25, 30, 40, 50	PL2115	66.00	
Insulation jacket for gasket model 115	PL2116	90.00	
Insulation jacket for gasket model 200	PL2117	129.00	

Note: Models 25 to 50kW have a frame present that will sit on the floor to support PHE. Models 115 and 200kW have feet present on the frame.

Custom designed available on request

Boiler safety and hydraulic accessories

Safety modules, pressure switch, temperature gauges, immersion heaters

HDG boiler safety	group		Order code	£ ex VAT	PG	
		Boiler safety module DN 25, safety valve 3 bar DN 15. manometer, automated ventilation, insulation, up to 50 kW	PL2001	48.00		
		Boiler safety module DN 25, safety valve 3 bar DN 20. manometer, automated ventilation, insulation, up to 100 $\rm kW$	PL2002	78.00		
		Boiler safety module DN 25, safety valve 3 bar DN 25. manometer, automated ventilation, insulation, up to 200 $\rm kW$	PL2003	110.00		
	Boiler safety module DN 25, safety valve 3 bar DN 25. manometer, automated ventilation insulation, up to 350kW Pressure relief valve. 1 1/4" x 1 1/2" 3 Bar, up to 400 kW	Boiler safety module DN 25, safety valve 3 bar DN 25. manometer, automated ventilation, insulation, up to 350kW	PL2004	115.00	41	
FP				Pressure relief valve. 1 1/4" x 1 1/2" 3 Bar, up to 400 kW	PL2033	62.00
		Pressure gauge radial. 0-6 bar with 50mm face	PL2057	17.00		
50	ALL .	Thermal discharge unit, for boiler temperature reduction and water dosing on fuel feed systems	PL2000	68.00		
	Sec.	Water pressure valve. 0.5 bar activation 230V	PL2062	68.00		
		Immersion Thermostat	PL2006	35.00		
Low loss header						
- 1		Low loss header with DN50 connections and DN15 sensor pocket ports	MS91172	234.00	41	

I	Accumulator connections Length: 200 mm, DN 32, stainless steel corrugated pipe with insulation, 2 union nuts, brass double nipple with DN 40 (4 required for joining two accumulators)	, seals and	HDG4005	65.00	
	Accumulator connections Length: 450 mm, DN 32, stainless steel corrugated pipe with insulation, 2 union nuts, brass double nipple DN 40 (4 required for joining two accumulators)	HDG4046	75.00		
	Bi-metal indicator thermometer 0-120°C, Ø 100 mm, with DN 15 immersion pipe, 200 mm long	PL2016	24.00		
	Bi-metal indicator thermometer 0-120°C, Ø 65 mm, with DN 15 immersion pipe, 200 mm long		PL2017	19.00	
	Insulated cover for unused DN40 connections set of 4	TS4500	14.00	41	
	Electric immersion heater element 3 kW single phase 230V. DN40 connection	PL2005	168.00		
-	Electric immersion heater element 9 kW 3 phase 400V. DN40 connection		PL2014	259.00	
	Dosing pot For wall mounting. Two valve system inlet and outlet connections on the right	5 Litre	PL2060	225.50	
	hand side, a valved chemical inlet via tundish, check valve on the top and a valved bottom drain. A manual air vent on top of the pot	PL2061	242.00		

General accessories

BE

HE



Type/size	Number of inserts	Material	Overall length "A" mm	Insert length "B" mm	Strain relief type	Order code	£ ex VAT	PG
File Pocket 40	1 (single insert)	Brass	40	20	Gland	PL2082	7.70	41
File Pocket 60	1 (single insert)	Brass	60	40	Gland	PL2083	7.90	
File Pocket 60	1 (single insert)	Stainless steel	60	40	Gland	PL2088	19.60	
File Pocket 90	1 (single insert)	Brass	90	70	Gland	PL2084	8.20	
File Pocket 130	3 (triple)	Brass	130	105	Clip	HDG4077	23.50	
File Pocket 140	1 (single insert)	Brass	140	120	Gland	PL2085	8.85	
File Pocket 140	1 (single insert)	Stainless steel	140	120	Gland	PL2089	21.70	
File Pocket 155	3 (triple)	Brass	155	130	Clip	PL2101	24.70	
File Pocket 200	1 (single insert)	Brass	200	180	Gland	PL2086	10.50	
File Pocket 300	1 (single insert)	Brass	300	280	Gland	PL2087	11.20	

