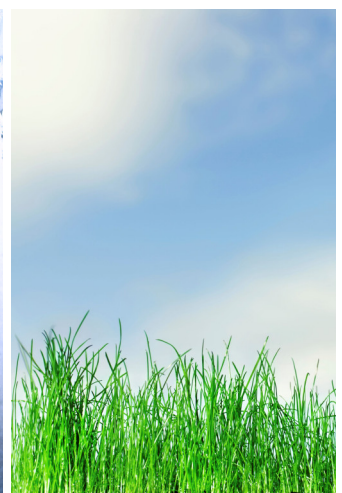
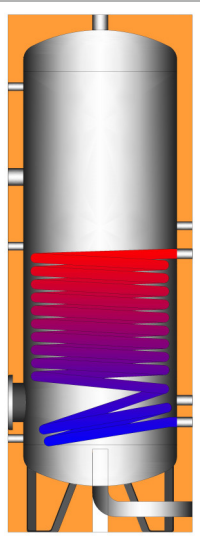


Product Guide

**DOMESTIC HOT WATER SOLUTIONS  
INDIRECT CYLINDERS**

*Inventive Engineering*



## Indirect Storage Cylinders



The Arbe AB series of indirect cylinders are used for the production of potable domestic hot water through a fixed coil type heat exchanger. There are 2 options for materials on the vessels and either single or twin coil versions available. All vessels supplied with insulation designed and selected to meet the ErP Directive & a high-strength PVC jacket with a grey finish. Sacrificial anodes are supplied with our enamelled steel storage cylinders as standard.

The standard range of indirect cylinders covers capacities from 150 to 2000 litres, available vertically for water primary medium. We can also supply our indirect cylinders with specially designed oversized lower coils for heat pump input.

**AB-SS** - Stainless steel shell, AISI 316L, with a fixed stainless steel coil(s), AISI 316L throughout  
**AB-GS** - Carbon steel shell, glass enamelled internally with the lining carried out in accordance with DIN4753, supplied with a fixed coil(s), and a vessel inspection opening for maintenance and inspection purposes.

Our storage cylinders can be supplied with accessories either loose or factory fitted such as primary control packages and de-stratification pump sets



## Energy Efficiency

All Arbe storage calorifiers are fully compliant with the latest Energy Efficiency Directive with improved energy efficiency classes, as shown on the table on the following page, compliant to Reg. 814/2013 (Dir. 2009/125/CE) with new legislation coming into force in September 2017

## Warranty

All Arbe storage calorifiers have a minimum 5 year warranty on the shell, covering against all manufacturing defects. If we supply controls & commissioning, this can be extended to 8 years!

ABX Design Details		
Model	Maximum Temperature	Maximum Pressure
Shell - Secondary	99°C	8 BarG
Coil - Primary	99°C	10 BarG

ABG Design Details		
Model	Maximum Temperature	Maximum Pressure
Shell - Secondary	95°C	10 BarG
Coil - Primary	95°C	10 BarG



## Output Table

Please refer to the tables below for outputs available, showing two primary medium inputs, 80/60°C and 82/71°C. Please contact our technical department should any other primary mediums be required. The table below is for capacities up to 2000 litre. Please contact our technical department for data on alternative temperatures and outputs.

For primary coil pressure drops, refer to page 4 for the graphs

Design Data (Single Coil)					
Primary Temperatures: 80/60°C					
Secondary Temperatures: 10/60°C					
Capacity (Litres)	Coil Surface Area m <sup>2</sup>	Max. Output (kW)	Continuous Flow (Litres/Hour)	Output First 10 Minutes (Litres)	Output First 60 Minutes (Litres)
200	1.2	32	546	291	746
300	1.5	40	683	414	983
500	2.2	58	1001	667	1501
600	3.0	79	1365	828	1965
800	3.0	79	1365	1028	2165
1000	3.5	93	1593	1265	2593
1200	5.0	132	2275	1579	3475
1500	5.0	132	2275	1879	3775
2000	6.0	188	2730	2455	4730

Design Data (Single Coil)					
Primary Temperatures: 82/71°C					
Secondary Temperatures: 10/60°C					
Capacity (Litres)	Coil Surface Area m <sup>2</sup>	Max. Output (kW)	Continuous Flow (Litres/Hour)	Output First 10 Minutes (Litres)	Output First 60 Minutes (Litres)
200	1.2	38	647	308	847
300	1.5	47	809	435	1109
500	2.2	69	1187	698	1687
600	3.0	94	1619	870	2219
800	3.0	94	1619	1070	2419
1000	3.5	110	1888	1315	2888
1200	5.0	157	2698	1650	3898
1500	5.0	157	2698	1980	4198
2000	6.0	188	3237	2540	5237

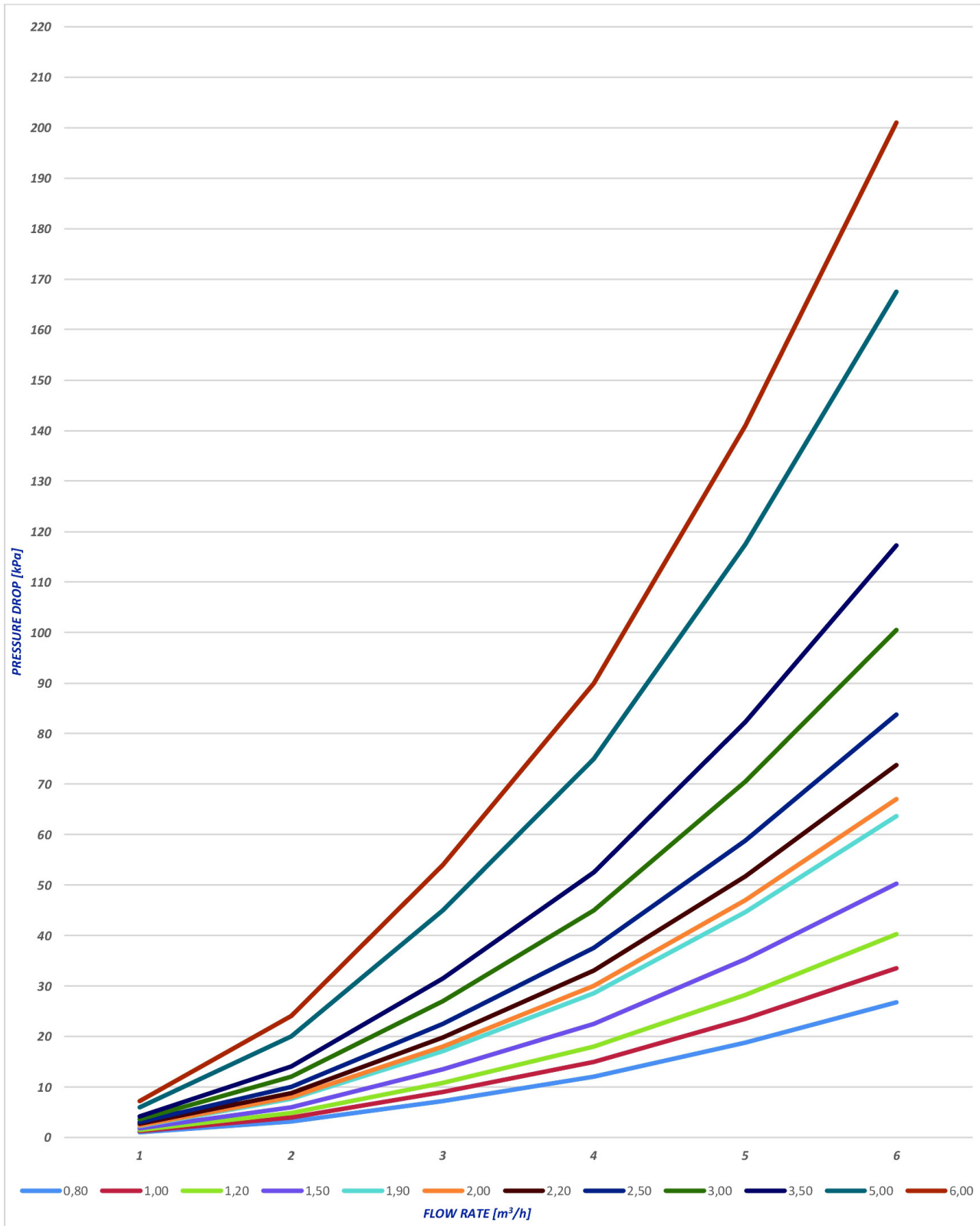
Design Data (Twin Coil Utilising Both Coils)					
Primary Temperatures: 80/60°C					
Secondary Temperatures: 10/60°C					
Capacity (Litres)	Coil Surface Area m <sup>2</sup>	Max. Output (kW)	Continuous Flow (Litres/Hour)	Output First 10 Minutes (Litres)	Output First 60 Minutes (Litres)
200	2.0	53	910	352	1110
300	2.5	66	1138	490	1438
500	3.0	79	1365	728	1865
600	5.0	132	2275	979	2875
800	5.0	132	2275	1179	3075
1000	5.5	145	2503	1417	3503
1200	7.0	185	3185	1731	4385
1500	7.0	185	3185	2031	4685
2000	8.0	212	3640	2607	5640

Design Data (Twin Coil Utilising Both Coils)					
Primary Temperatures: 82/71°C					
Secondary Temperatures: 10/60°C					
Capacity (Litres)	Coil Surface Area m <sup>2</sup>	Max. Output (kW)	Continuous Flow (Litres/Hour)	Output First 10 Minutes (Litres)	Output First 60 Minutes (Litres)
200	2.0	63	1079	380	1279
300	2.5	78	1349	525	1649
500	3.0	94	1619	770	2119
600	5.0	157	2698	1050	3298
800	5.0	157	2698	1250	3498
1000	5.5	173	2967	1495	3967
1200	7.0	220	3777	1829	4977
1500	7.0	220	3777	2129	5277
2000	8.0	251	4316	2719	6316

## Coil Primary Pressure Drops



Please refer to the graph below to calculate the pressure drop across the coil. When using twin coil cylinders as a single coil system add the 2 pressure drops for each coil together.  
For reference, to get m<sup>3</sup>/hour - multiply litres/second or kg/second by 3.6







## Materials & Protection

### AB-SS Stainless Steel Cylinders

All our stainless steel cylinders are manufactured from grade 316L stainless steel are pickled and passivated after manufacture, ensuring a long operating life. This process “cures” the welds throughout the vessel reducing any corrosion of the materials

### AB-GS Glass-Enamelled Steel Cylinders

Our range of glass-enamelled steel cylinders are manufactured from carbon steel. The internal of the tanks are coated with a modified resin, suitable for potable water. The tanks are then cured within an oven to complete the lining process. These tanks are manufactured and hydraulically tested (100% of tanks).

### Hard Water Areas:

In some areas of the UK and the world, the water is hard. Hard water is water that has a mineral content (in contrast to soft water). Hard water is formed when water percolates through deposits of limestone and chalk which are largely made up of calcium and magnesium carbonates. These minerals when exposed to heat can deposit on the shell wall and can form scale and in some cases, corrode the cylinder wall. Corrosion of a metal structure occurs mainly in areas where there is a passage of current (redox process) from the structure to the external medium (water or gas) causing a dissolution process of the structure itself. Considering the importance of protecting the metal from corrosion, the systematic control of the anode and the immediate replacement in case of consumption is highly recommended. We would recommend the use of cathodic protection within the cylinders by means of electronic anodes which are supplied as standard in all of our enamelled steel cylinders.

### Cathodic protection using impressed current electronic anode

As an alternative to galvanic systems (combination of materials with different electrical potential) another protection method is available, consisting in imparting to the metal structure to be protected a direct current equal and opposite, obtaining this way the neutralization of voltages formed inside the cylinder. Thanks to modern techniques, an innovative cathodic protection electronic system is available, by impressing direct current.

The Main advantages are:

- Active protection by impressing direct current from an external source
- Excellent operational flexibility, for response to different types of internal lining and to variable mass of water
- Maintenance costs reduction due to the permanent protection of the system



## Insulation

The AB Range of vessels are insulated with 2 different types of insulation, depending on the capacity of the vessel. Vessels are finished in a PVC casing as standard, suitable for internal applications only or with Stucco aluminium cladding as an option, for applications where the vessel is to be installed externally or a stronger jacket is specified or required.

### High Density Polyester Fibre (PLFH)

The raw materials used in our standard cylinder insulation are produced with polyester fibres and thermo-binding co-polyester fibres. The insulation is considered to be environmentally friendly even though it is not of natural origin, due to the material being manufactured from recycled plastic bottles, and is fully recyclable at the end of its working life.

#### Benefits

- Rot proof
- Resistant to mould, bacteria or rodents
- Hypoallergenic
- Water-repellent
- 100% recyclable
- Environmentally friendly
- Light weight
- Self-supporting
- Fireproof



### Hard Foam Polyurethane (PU)

Insulation made of hard foam polyurethane with more than 93% of closed cells content, CFC-free and HCFC-free. The insulation is available in different thicknesses, that can be injected directly using a mould or composed of 2 removable shells.

Material Insulation	Thickness	Density kg/m <sup>3</sup>	Thermal Conductivity Coefficient at 45°C	Working Temperature	Fire-Resistance (Euroclass EN13501-1)
PLFH Polyester Fibre	100mm	25	$\lambda = 0.034 \text{ W/mK}$	Ambient / 99°C	B-s2,d0
Hard Foam Polyurethane	55-85mm	42	$\lambda = 0.019 \text{ W/mK}$	Ambient / 99°C	F

## Cylinder Weights

The weights below are for the standard range of cylinders

Dimensions		AB Cylinders Weights								
		150	200	300	400	500	800	1000	1500	2000
AB-SS - Stainless Steel - Single Coil	kg	-	65	74	-	100	154	176	238	296
AB-SS - Stainless Steel - Twin Coil	kg	-	71	86	-	114	169	190	271	339
AB-GS - Glass Enamelled - Single Coil	kg	70	90	115	135	150	225	250	320	390
AB-GS - Glass Enamelled - Twin Coil	kg	-	95	125	150	170	265	285	350	420

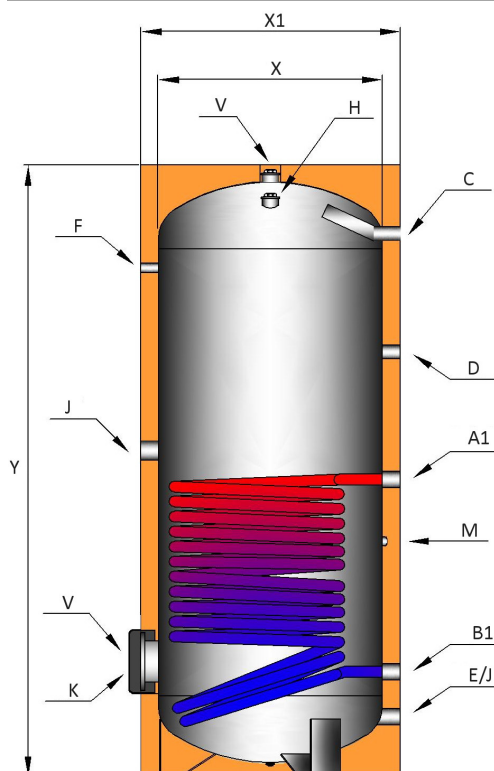
## AB-SS Indirect Stainless Steel Cylinders



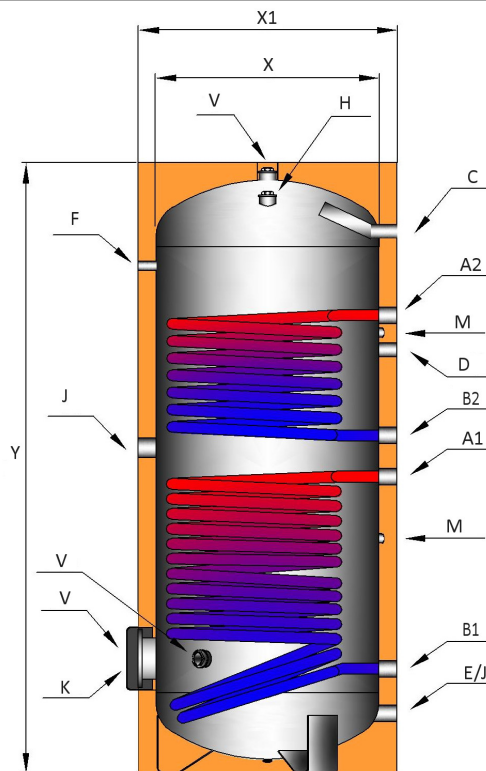
Please see information below for ABX stainless steel indirect cylinders

Dimensions		AB-SS Stainless Steel Capacity (Litres)						
		200	300	500	800	1000	1500	2000
X1	mm	610	610	760	970	970	1200	1400
X	mm	500	500	650	790	790	1000	1200
Y	mm	1280	1670	1750	1830	2080	2290	2250
A	BSP	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"
B	BSP	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"
C	BSP	1"	1"	1"	1¼"	1¼"	1½"	1½"
D	BSP	¾"	¾"	¾"	¾"	¾"	¾"	¾"
E/L	BSP	1"	1"	1"	1¼"	1¼"	1¼"	1¼"
J	BSP	2"	2"	2"	2"	2"	2"	2"
K	mm	130	130	130	130	130	130	130
M	BSP	½"	½"	½"	½"	½"	½"	½"
V	BSP	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"
Coil Area (ADX1)	m²	1.2	1.5	2.2	3.0	3.5	5.0	6.0
Lower Coil Area (ADX2)	m²	1.0	1.5	2.0	2.5	3.0	5.0	6.0
Upper Coil Area (ADX2)	m²	0.8	1.0	1.0	1.5	1.6	2.0	2.0
Energy Efficiency Class ErP Compliant	Rating	C	C	C	C	C	C	C
	W	67	81	102	113	121	143	169

AB-SS Stainless Steel Design Details		
Characteristics	Standard	Optional
Tank Capacity	200 - 2000 Litre	
Arrangement	Vertical	
Tank & Coil Material	Stainless Steel 316L	
Insulation	200-1000 Litre - PU Foam Insulation & PVC Cladding 1500-2000 Litre - PLFH Insulation & Cladding	
Accessories	Standard	Optional
	Thermometer	Unvented Kit & Safety Valve
	Drain Valve	Immersion Heater
		Anode
Design Code		
European Pressure Equipment Directive 2014/64/CE		



Single Coil



Twin Coil

### Connections

- A1 Lower Coil Primary Inlet
- B1 Lower Coil Primary Outlet
- A2 Upper Coil Primary Inlet
- B2 Upper Coil Primary Outlet
- C Secondary Flow
- D Secondary Return
- E/J Cold Feed / Drain
- F Gauge
- H Safety Valve
- J Immersion Heater
- K Inspection Opening
- M Sensor
- V Anode

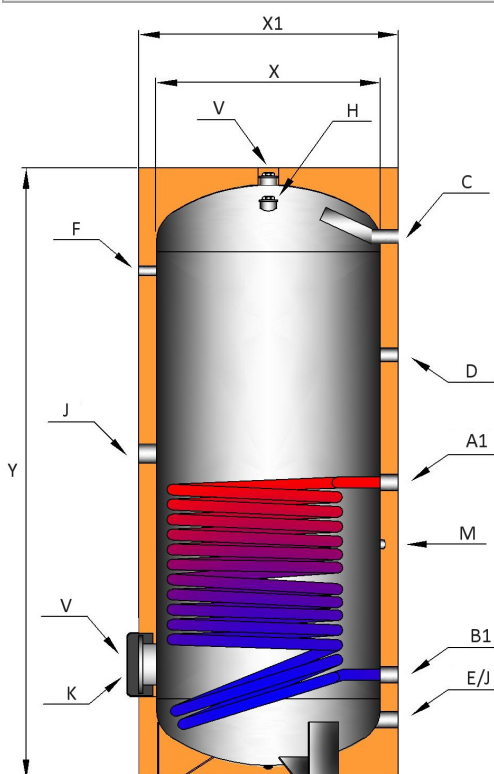
## AB-GS Indirect Enamelled Steel Cylinders



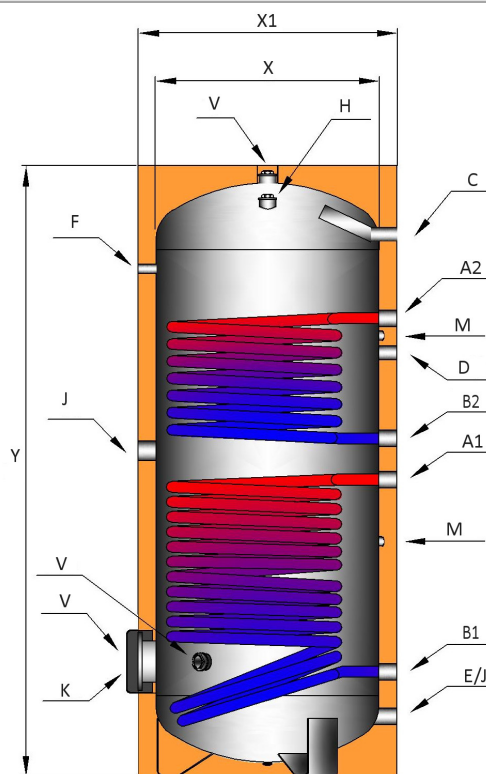
Please see information below for ABG enamelled carbon steel indirect cylinders

Dimensions		AB-GS Glass Enamelled Steel Capacity (Litres)								
		150	200	300	400	500	800	1000	1500	2000
X1	mm	610	610	610	710	760	970	970	1200	1400
X	mm	500	500	500	600	650	790	790	1000	1200
Y	mm	1010	1280	1670	1670	1750	1830	2080	2290	2250
A	BSP	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"
B	BSP	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"
C	BSP	1"	1"	1"	1"	1"	1¼"	1¼"	1½"	1½"
D	BSP	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"	¾"
E/L	BSP	1"	1"	1"	1"	1"	1¼"	1¼"	1¼"	1¼"
J	BSP	2"	2"	2"	2"	2"	2"	2"	2"	2"
K	mm	130	130	130	130	130	130	130	130	130
M	BSP	½"	½"	½"	½"	½"	½"	½"	½"	½"
V	BSP	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"	1¼"
Coil Area (ADX1)	m²	0.8	1.2	1.5	1.5	2.2	3.0	3.5	5.0	6.0
Lower Coil Area (ADX2)	m²	-	1.0	1.5	1.5	2.0	2.5	3.0	5.0	6.0
Upper Coil Area (ADX2)	m²	-	0.8	1.0	1.0	1.0	1.5	1.6	2.0	2.0
Energy Efficiency Class ErP Compliant	Rating	C	C	C	C	C	C	C	C	C
	W	58	67	81	96	102	113	121	143	169

AB-GS Glass Enamelled Steel Design Details		
Characteristics	Standard	Optional
Tank Capacity	150 - 2000 Litre	
Arrangement	Vertical	
Tank & Coil Material	Carbon Steel Glass Enamelled	
Insulation	200-1000 Litre - PU Foam Insulation & PVC Cladding 1500-2000 Litre - PLFH Insulation & Cladding	
Accessories	Standard	Optional
	Thermometer	Unvented Kit & Safety Valve
	Drain Valve	Immersion Heater
	Anode	
Design Code		
European Pressure Equipment Directive 2014/64/CE		



Single Coil



Twin Coil

### Connections

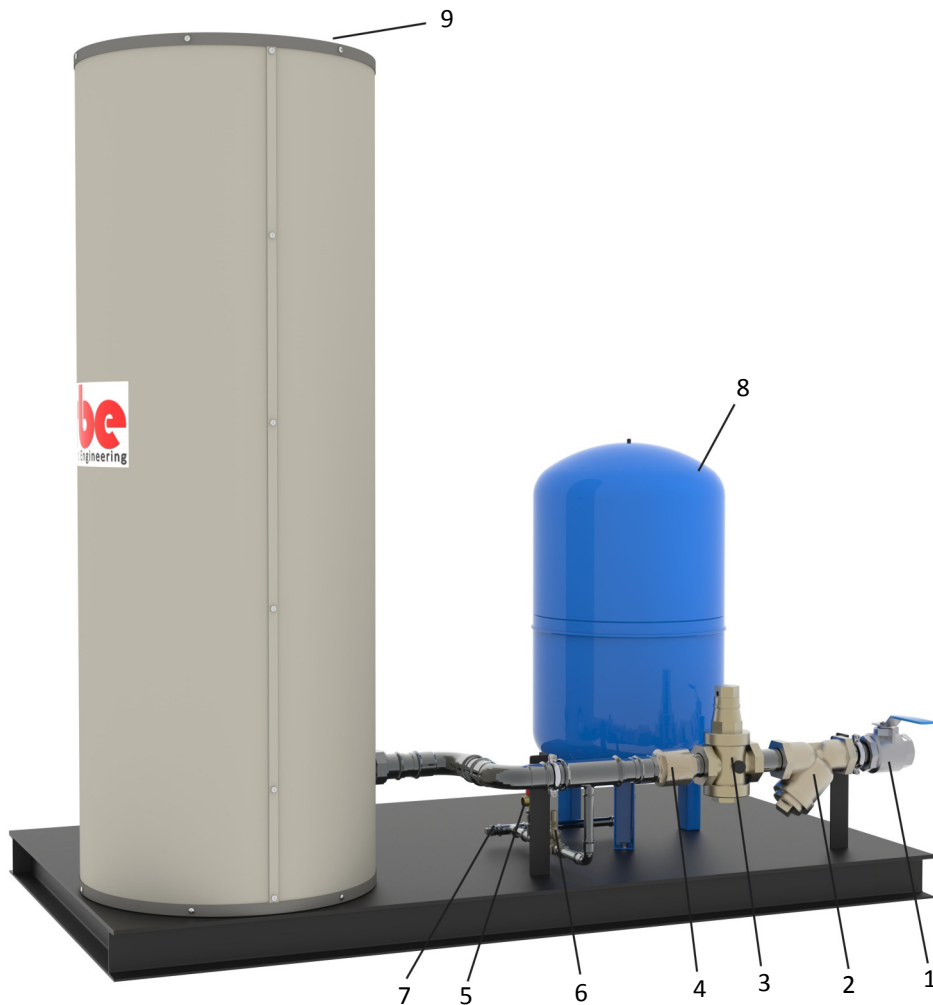
- A1 Lower Coil Primary Inlet
- B1 Lower Coil Primary Outlet
- A2 Upper Coil Primary Inlet
- B2 Upper Coil Primary Outlet
- C Secondary Flow
- D Secondary Return
- E/J Cold Feed / Drain
- F Gauge
- H Safety Valve
- J Immersion Heater
- K Inspection Opening
- M Sensor
- V Anode



## Indirect Storage Cylinders



The layout below is the standard recommended cold feed kit available with our AB indirect cylinders for unvented systems, complying with Building Regulations. The size of each cold feed and kit expansion vessel is project specific so please contact us with any queries on sizing or the kit that is required. The unit can be supplied factory packaged with the unvented kit on a fabricated skid base, reducing site installation time, which also removes the need for a concrete plinth to be made on site



### Key

1. Isolating Valve
2. Strainer
3. Pressure Reducing Valve
4. Check Valve
5. Expansion Relief Valve
6. Expansion Isolating Valve
7. Expansion Drain Valve
8. Expansion Vessel
9. Vessel P/T Safety Valve

## Welcome to Arbe Integrated Engineering

Arbe Integrated Engineering offer a range of products and services for the HVAC building services industry, ranging from bare heat exchangers and storage cylinders to fully packaged plantrooms and associated equipment. With over 20 years of design experience, our design and technical team can offer a complete solution for a wide range of project requirements.

### Seamless Integration:

With our next generation range of equipment, our products offer complete integration with renewable and future energies, ensuring all available energy is utilised, reducing fossil fuel usage. In addition, our HevaSys products offers a unique next generation range of equipment with integral BMS style controls that can be adapted to any installation and can provide a standalone management system for buildings where the heating and hot water generation is relatively small, such as a leisure centre or a school.

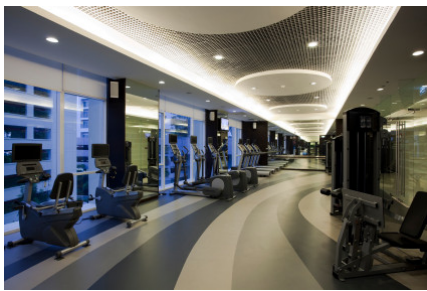
### Inventive Engineering:

In addition to our standard equipment, including heat exchangers, storage calorifiers and packaged solutions, we also design and manufacture bespoke equipment to end user or consultant specifications and we carry out extensive research and development to invent new products and enhance current designs.

### Application Solutions:

With our complete range of products, we have solutions to cover most applications. With our ability to carry out complete bespoke design, we have a solution for each and every project requirement. Our end users include:

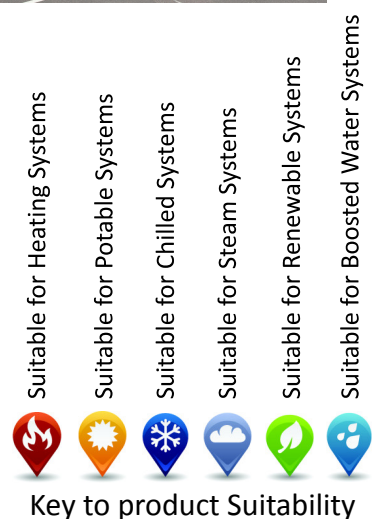
- Hotels
- Schools
- Universities
- Leisure Centres & Gyms
- Hospitals



### Products Include:

Calorifiers  
Indirect Cylinders  
Direct Cylinders  
Thermal Stores  
Pressure Vessels  
Plate Heat Exchangers  
Braze Heat Exchangers  
Shell & Tube Exchangers  
Heat Exchanger Packages

TwinHeat DHW/LTHW Systems  
Gas Fired Calorifiers  
Boilers & Associated Equipment  
Packaged Boiler Houses  
Packaged Plant Rooms  
Solar Energy Packages  
Heat Pumps  
Booster Sets & Pressurisation  
Bespoke Engineering Packages



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