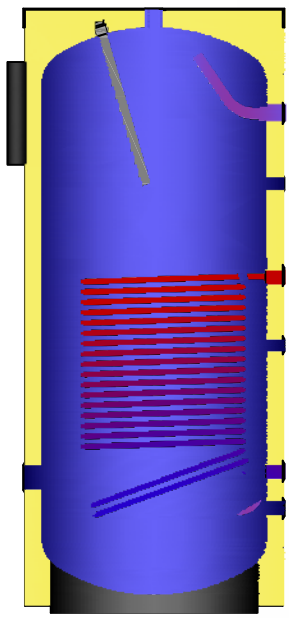
BSM Series

High Efficiency Hot Water glass lined cylinders

ELBI **BSM Hot water cylinders** are used for producing DHW in Domestic applications (e.g. houses, dwellings, residential estates).
The BSM cylinders are available in capacity ranging from 150 to 1000 litres. These cylinders are suitable for use in the vast majority of installations and they will satisfactorily cope with the demand of DHW in domestic, commercial and industrial applications.



The water in the cylinder is heated by the coiled pipe heat exchangers which have the heated water from the boiler passing through it. The heated water pressure and temperature limits are described herewith in the technical specifications paragraph. The coiled pipe has an elliptic cross section with axis dimensions mm. 40x20 (up to 500 litres) and a round cross section O.D. 42 mm (above 500 litres).

Elbi BSM calorifiers are vitreous enamel coated for use with DHW. The internal coating provides enhanced protection from the corrosion that take place in the cylinders during operations. These cylinders are supplied with removable sacrificial magnesium anode and tester to facilitate maintenance operations.

ELBI' s BSM cylinders are fitted with rigid polyurethane insulation CFC and HCFC free, grey RAL 9006. The outer case is available in soft open cells white polyurethane (BSV800 and BSV1000 with inspection flange).

Warranty: 5 years

Technical Features

Cylinder

- Models: **BSM150 / BSM200 / BSM300 / BSM400 / BSM500 BSM800 / BSM1000;**
- Maximum Working pressure: **10** bar;
- Maximum Working temperature: **95°**C;
- Fluid: Domestic Hot Water (DHW).

Heat Exchangers

- Surface: **1.10 / 1.50 / 1.90 / 2.10 / 2.60 / 3.50 / 4.50** Sq. Mt.;
- Maximum Working pressure: **12** bar;
- Maximum Working temperature: **110°**C;
- Fluid: Heated Water (from Boiler).

Insulation

- Material: **BSM150÷BSM1000**
- Injected Polyurethane c/w 95%;
- Thickness: **40** mm.
- Minimum Density 40 kg/m3
- Thermal Conductivity: 23,5 mW/m °K
- DIN 4102 Combustion Category: **B3**;
- Cover (External finish): RAL 9006 grey Polystyrene.
- **BSM800 Flø310÷ BSM1000 Flø310**
- Soft Polyurethane
- Thickness: **50** mm.
- Thermal Conductivity: 39 m mW/m °K
- DIN 4102 Combustion Category: **B3**;
- Cover (External finish): skay in white colour.

Elbi BSM calorifiers are in compliance with the European Directive No. PED 97/23/EC

Dimensional Data

MOD.	litre	Scamb m^2	Scamb litre	Ds mm	Dc mm	H mm	A mm	B mm	C mm	E mm	F mm	G mm	L mm	M mm	Ánode
BSM	**150**	1,10	4	500	580	1060	235	340	495	645	-	825	350	-	1.1/4"x350
	200	1,50	5	500	580	1260	235	340	-	765	900	1035	350	-	1.1/4"x350
	300	1,90	7	550	630	1400	255	360	-	905	1030	1155	370	-	1.1/4"x550
	400	2,10	8	650	730	1445	280	385	-	835	990	1180	370	-	1.1/4"x550
	500	2,60	9	650	730	1695	280	385	-	955	1225	1430	370	-	1.1/4"x700
	800	3,50	13	800	880	1785	340	450	610	995	1165	1460	440	1445	1.1/4"x700
	1000	4,50	15	800	880	2035	340	450	610	1295	1495	1710	440	1680	1.1/4"x700
	800+FI	3,50	13	800	900	1785	340	450	610	995	1165	1460	435	1445	1.1/4"x700
	1000+FI	4,50	15	800	900	2035	340	450	610	1295	1495	1710	435	1680	1.1/4"x700

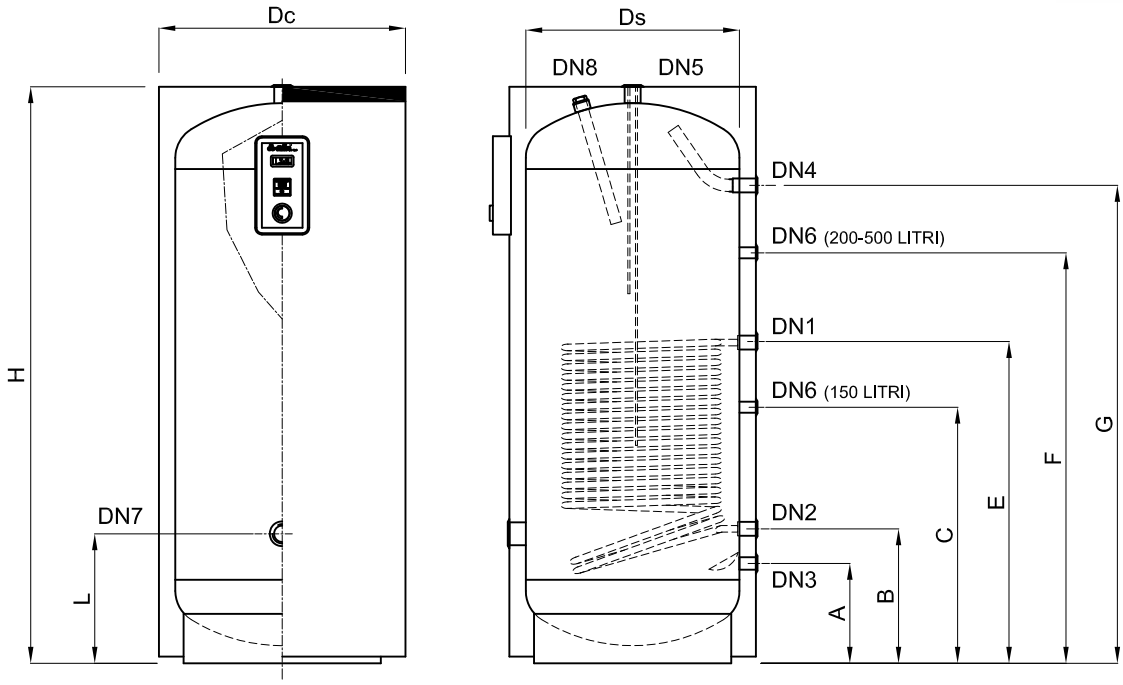
Models 150 ÷ 500 :

DN1-DN2 : 1" (Flow from / Return to Boiler); **DN3 : 1"** (Mains Water Supply); **DN4 : 1"** (Draw-off); **DN5 : 1.1/4"** (Controls); **DN6 : 3/4"** (Circulation); **DN7 : 2"** (Immersion heater / Opening); **DN8 : 1.1/4"** (Magnesium Anode);

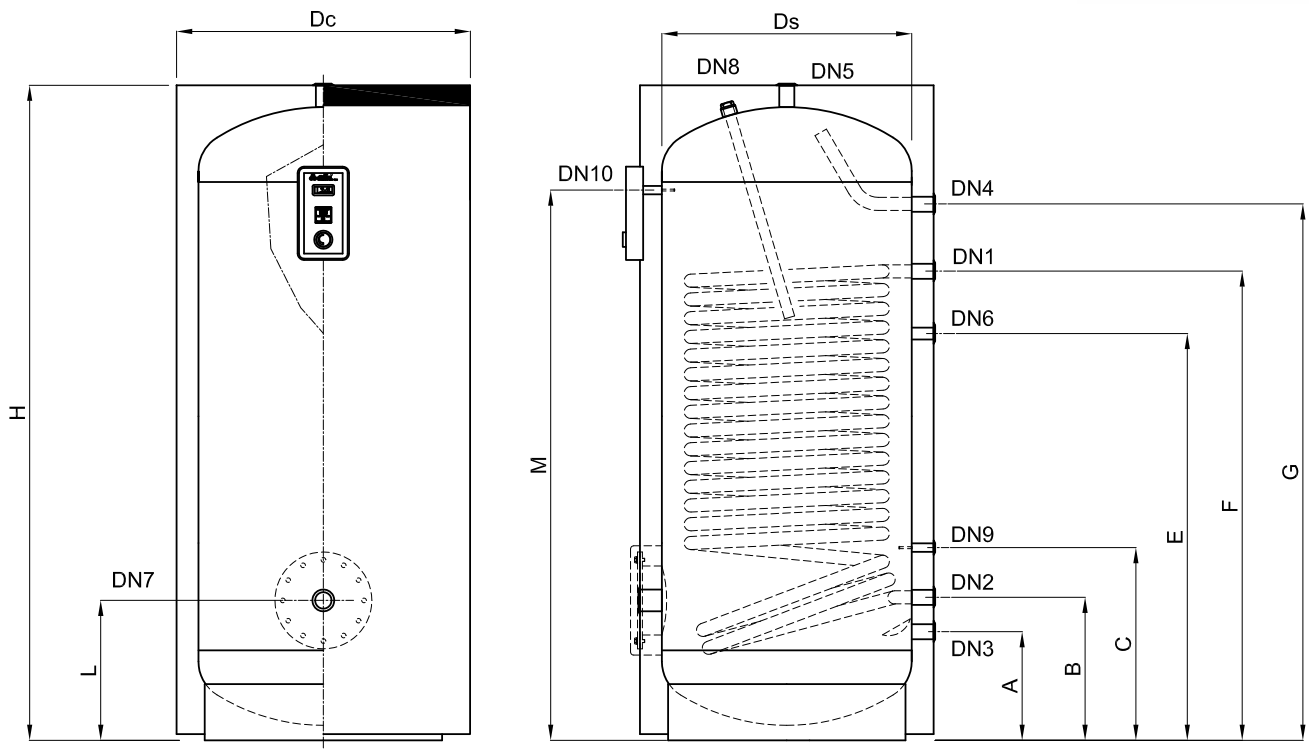
Models 800 - 1000 :

DN1-DN2 : 1 1/4" (Flow from / Return to Boiler); **DN3 : 1.1/4"** (Mains Water Supply); **DN4: 1.1/4"** (Draw-off); **DN5 : 1/2"** (Controls); **DN6: 1"** (Circulation); **DN7 : 2"** (Immersion / Opening); **DN8 : 1.1/4"** (Magnesium Anode);

BSM 150 – 200 – 300 – 400 – 500



BSM 800-1000



Technical information

ELBI BSM cylinders are selected in relation to the DHW requirements from the users. For correct sizing see on page 5.

Controls :

Elbi BSM cylinders are supplied with control panel including:

o Thermometer o Anode Tester o Thermostat	

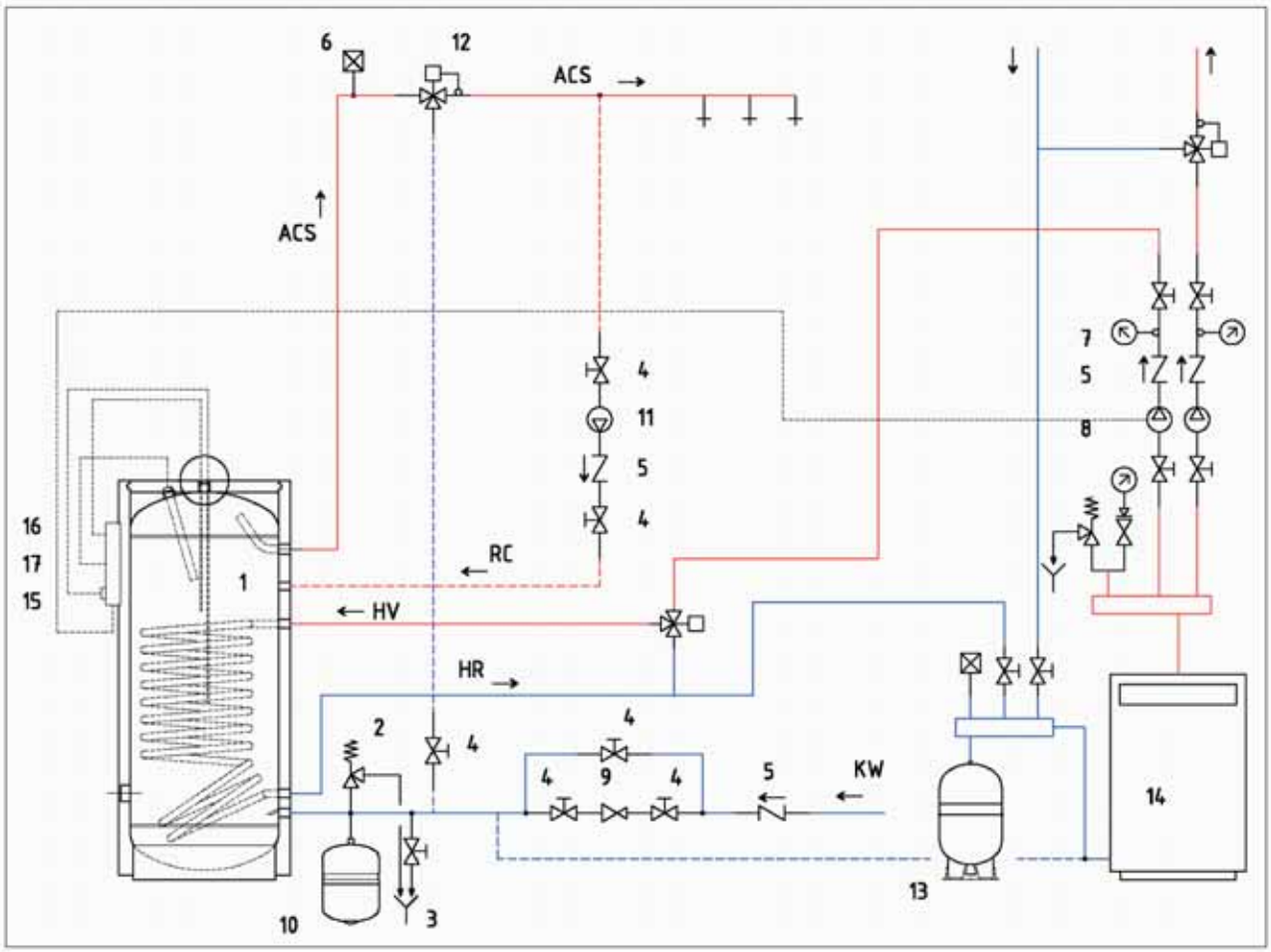
Safety devices :

In order to avoid overpressure in the calorifier the following control and safety devices shall be installed:

- DHW circuit:
  - o Safety valve set at pressure below the cylinder maximum working pressure
  - o ELBI D-DV series expansion vessel. The sizing chart below is applicable under the following working conditions: Maximum hot water temp.: 85°C / Mains Water 15°C / Vessel precharge pressure: 3 bar / Safety Valve: 6 bar

Model	ELBI D / DV series expansion vessel
BSM-150	**D - 18**
BSM-200	**D - 18**
BSM-300	**D - 24**
BSM-400	**D - 35**
BSM-500	**D - 35**
BSM-800	**DV - 80**
BSM-1000	**DV - 80**

Installation Example:



1 – BSM Cylinder
2 – Safety Valve
3 – Drain
4 – Isolating Valve
5 – Check Valve
6 – Purge Valve
7 – Thermometer
8 – Hot water pump
9 – Pressure reducing valve
10 – D/DV series Expansion Vessel
11 – Circulation Pump
12 – Mixing Valve

13 – ERCE series expansion vessel
14 – Boiler
15 – Thermostat
16 – Anode Tester
17 – Thermometer

DHW draw off
KW Mains Water Supply
RC Circulation
HV Flow from Boiler
HR Return to Boiler

Performances

Lower Heat Exchanger Primary Flow @ 80°C (ΔT=10°C), Domestic Hot Water @ 60°C and mains water @ 15°C

Model	Coil Power (1) (2) (kW)	Pump Capacity (litre/H.)	Heating Time (3) (min.)	Production of Hot Water @ 60°C (litre/H)	First 10 min. production of water @ 45°C (litre)
BSM 150	22.20	1980	25	425	220
BSM 200	31.90	2800	21	610	265
BSM 300	41.60	3600	21	790	350
BSM 400	44.70	3900	29	860	435
BSM 500	57.40	5000	27	1095	530
BSM 800	70.50	6200	35	1345	750
BSM 1000	93.00	8100	32	1775	940

(1) primary flow @ 80°C Primary return @ 70°C;

(2) Mains Water supply @ 15°C ;

(3) Heating time from 15 °C to 60 °C;

(4) Domestic Hot Water available @ 45°C in the first 10 minutes of water draw-off from stored water @ 60 °C

Lower Heat Exchanger Primary Flow @ 80°C (ΔT=10°C), Domestic Hot Water @ 45°C and mains water @ 15 °C

Model	Power (1) (2) (kW)	Pump Capacity (litre/H.)	Heating Time (3) (min.)	DHW @ 45°C (litre/H)
BSM 150	27.90	2450	14	798
BSM 200	34.00	2990	14	970
BSM 300	44.50	3910	14	1275
BSM 400	47.80	4200	19	1370
BSM 500	60.50	5320	18	1730
BSM 800	76.50	6700	22	2190
BSM 1000	100.00	8800	20	2860

(1) primary flow @ 80°C Primary return @ 70°C;

(2) Mains Water supply @ 15°C;

(3) Heating time from 15 °C to 45 °C;

Heat Exchanger Pressure Drop

MODEL	Pressure Drop (mbar)
BSM 150	80
BSM 200	110
BSM 300	200
BSM 400	220
BSM 500	270
BSM 800	350
BSM 1000	400

Insulation allowable heat loss:

MODEL	Q (kWh / 24h)
BSM 150	1.17
BSM 200	1.38
BSM 300	1.67
BSM 400	2.00
BSM 500	2.33
BSM 800	2.23
BSM 1000	2.53