



# DOMESTIC HOT WATER CYLINDERS



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ELBI S.p.A. - Sede Centrale di Limena (PD)



**AZIENDA CON SISTEMA QUALITÀ  
 CERTIFICATO DA DNV  
 =UNI EN ISO 9001/2000=**

# GENERAL INFORMATION

## DOMESTIC HOT WATER CYLINDERS AND STORAGE TANKS

ELBI's Hot Water Cylinders and storage tanks are renowned in the HVAC industry for being reliable and efficient. These products are suitable for use in Domestic, Commercial and Industrial applications for production and storage of the domestic hot water.

ELBI guarantees that its Hot Water Cylinders and storage tanks comply with the most stringent International specifications. Consistently, the most advanced engineering solutions for welding automation are implemented in manufacturing, and the procurement of the raw materials looks at only those materials that comply with the UNI EN Directives. ELBI's Quality standard is maintained with the ISO 9001 certification to ensure that only certified quality control procedures are effectively implemented throughout operations.

ELBI's Hot Water Cylinders and storage tanks have been designed to cope with the engineering contractors' most demanding requirements of thermal efficiency.

## WHY AN ELBI'S HOT WATER CYLINDER AND STORAGE TANK

### INTERNAL COATING

ELBI's Hot Water Cylinders and Storage Tanks are available in a range of corrosion proof solutions:

- The TOP-PRO Coating guarantees global protection of the interior of the cylinders by means of epoxy powders.
- The vitreous enamelling is in compliance with the DIN standard 4753;
- The Deep Hot galvanizing is in compliance with the Standard UNI EN ISO 1461

Any of the corrosion proof solutions adopted by ELBI is for use with domestic hot water;



### INSULATION

ELBI's Hot Water Cylinders and Storage tanks come with rigid polyurethane insulation CFC and HCFC free or with open cells expanded polyurethane insulation. The insulation is available with outer case coming in polystyrene or colored PVC. The insulation thickness varies with the cylinder size to obtain the lowest thermal loss from the cylinders.

### CATODIC PROTECTION

ELBI's Hot Water Cylinders and Storage tanks come with magnesium anode protection (galvanized cylinders excepted). ELBI's magnesium anodes are available in a range of 3 types:

- Magnesium Anode with SIMPLETEST. Periodical maintenance of the anode is performed by pressing the built-in valve. If water seeps through the valve the anode will have to be replaced. The anode is wired to the cylinder body;
- Magnesium Anode with TESTER. Periodical maintenance of the anode is performed by pressing a button on the TESTER. If the dial face on the tester displays a red the anode will have to be replaced. The anode is wired to the cylinder body.
- Magnesium Anode with threaded connection.

## How to select the correct volume of ELBI Domestic Hot Water Cylinders

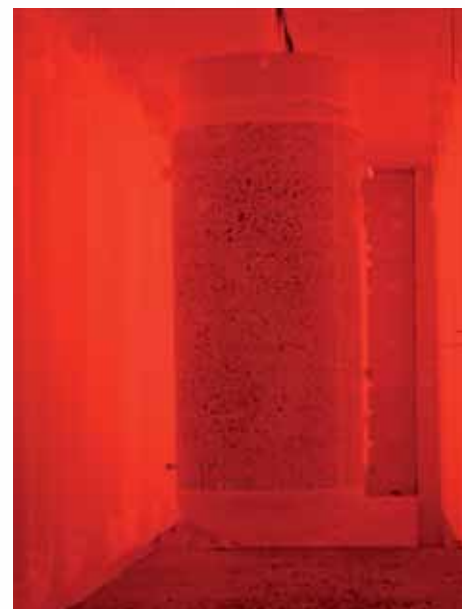
ELBI Domestic Hot Water Cylinders are selected in relation to the DHW requirements from the users. Guidelines for correct sizing are herewith attached.

### Average Domestic Hot water requirement at 40°C:

Installation	Requirement	Litre/per person per day
Domestic	low medium high	from 40 to 50 from 70 to 80 from 150 to 200
Sport centre, Gym, Pools	-	from 50 to 60
Hospitals/ Clinics	-	from 130 to 150
Offices	-	from 15 to 200
Changerooms	-	from 30 to 50
Hotels	Rooms with bath tub Rooms with shower	from 180 to 200 130

### Requirement at any one time:

Application	Litre
Bath tub cm. (170 x 70)	from 160 to 200
Bath tub cm. (105 x 70)	from 100 to 120
Shower	from 50 to 60
Basin	from 10 to 12
Kitchen Basin	from 15 to 20



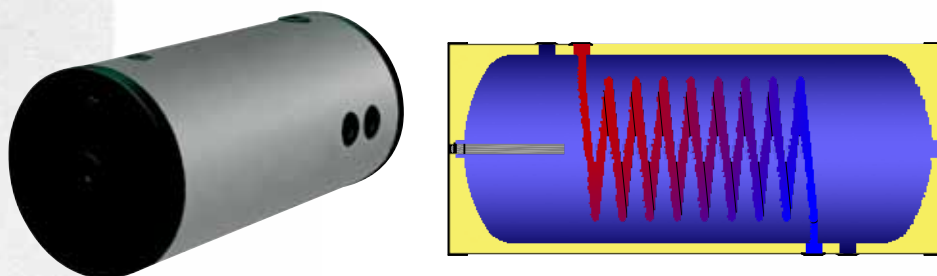
Oven for the glass lining treatment

## BSH SERIES

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### High efficiency horizontal cylinders

The ELBI **BSH series of high efficiency horizontal cylinders** are suitable for use in Domestic applications for the production of Domestic Hot Water ("DHW").



The BSH series of cylinders comes in capacity ranging from 100 to 300 litres.

These cylinders show remarkable performances in terms of production of DHW. Moreover, the simple installation procedure make it possible to adapt these cylinders to virtually all plant rooms.

ELBI BSH cylinders can be installed with:

- Wall hung or floor standing boilers;
- Condensing Heating;
- District Heating;
- Solar heating systems.

The **Heat Exchanger** is a coiled pipe with heated water passing through it. The working conditions in the primary heated water shall not exceed those indicated in the technical features paragraph.

The BSH cylinders are **vitreous enamel** coated for use with DHW. These cylinders are supplied with **Magnesium Anode**.

ELBI BSH cylinders come with CFC and HCFC-free insulation and colored PVC external finish (grey RAL 9006).

**Warranty: 5 years**

## Technical Features

### Cylinder

- Models: **BSH100 / BSH150 / BSH 200 / BSH 300**;
- Maximum Working Pressure: **10** bar;
- Maximum Working Temperature: **95° C**;
- Fluid: Domestic Hot Water (DHW).

### Heat Exchangers

- Heating Surface: **0.40 / 0.60 / 0.80 / 1.05** Sq. Mt.;
- Maximum Working Pressure: **12** bar;
- Maximum Working Temperature: **110° C**;
- Fluid: Heated Water (from Boiler).

### Insulation

- Material: Expanded Rigid Polyurethane with 95% closed cells ;
- Thickness: **30** mm
- Minimum density: 40 kg/Cu. Mt.;
- Thermal conductivity: 23.5 mW/mK;
- External finish: PVC grey colour RAL 9006.

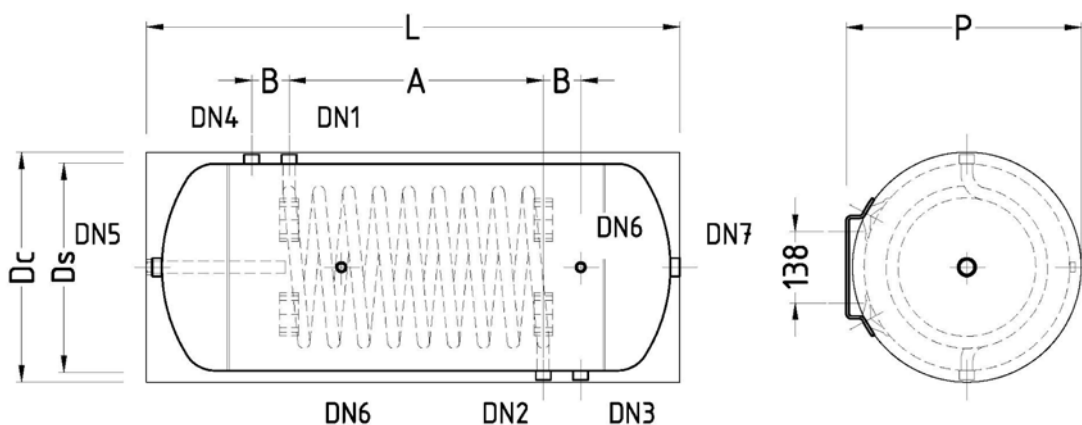
ELBI BSH cylinders are manufactured according to PED 97/23/EC

## Dimensional information

MOD.	Litre	S1 m <sup>2</sup>	S1 litre	Ds mm	Dc mm	L mm	DN1 DN2	DN3 DN4	DN5	DN6	DN7	A	B	P	Anode
<b>BSH</b>	<b>100</b>	0,40	3,0	400	460	920	<b>1"</b>	<b>1"</b>	<b>1.1/4"</b>	<b>1/2"</b>	<b>1.1/4"</b>	360	90	480	<b>1.1/4"x150</b>
	<b>150</b>	0,60	4,0	500	560	1090						420	90	580	<b>1.1/4"x200</b>
	<b>200</b>	0,80	5,0	500	560	1285						560	120	<b>1.1/4"x200</b>	
	<b>300</b>	1,05	7,0	550	610	1425						680	100	630	<b>1.1/4"x320</b>

**DN1-DN2:** Flow from / Return to Boiler; **DN3:** Mains Water Supply; **DN4:** Hot water draw-offs; **DN5:** Magnesium Anode; **DN6:** Controls (Thermometer, Thermostat); **DN7:** Supplemental connection.

## BSH 100 – 150 – 200 – 300



### Technical information

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

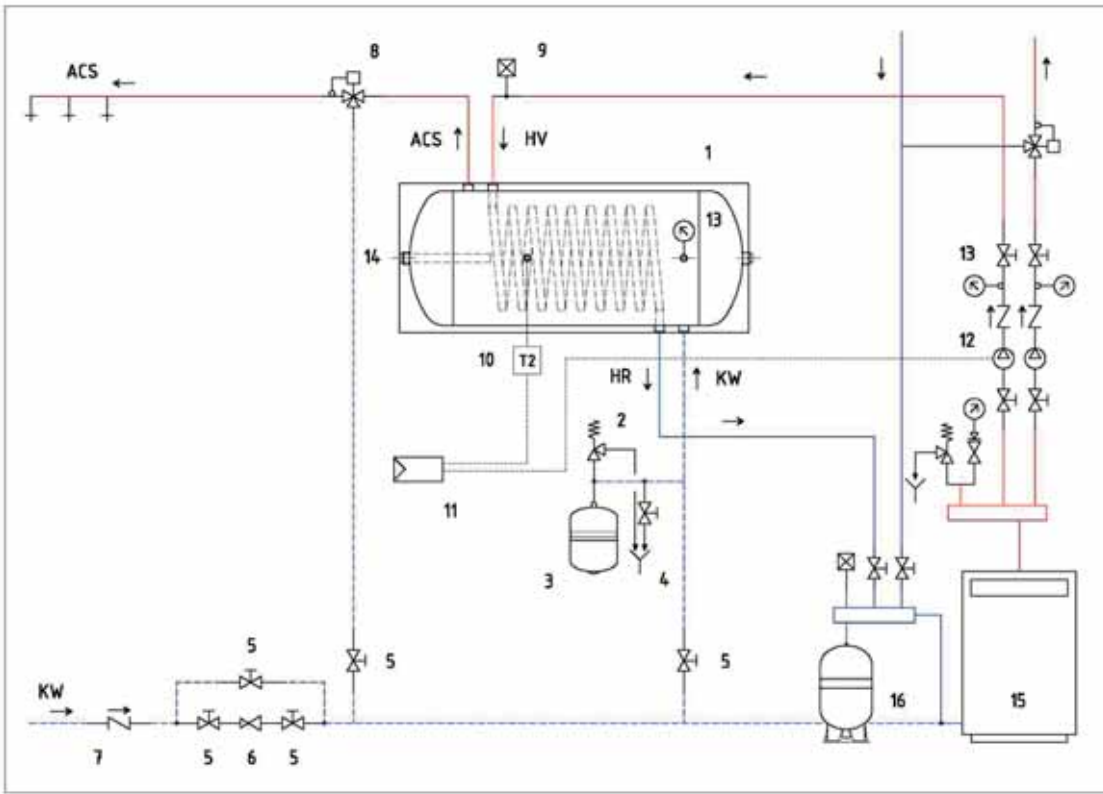
#### Safety devices :

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

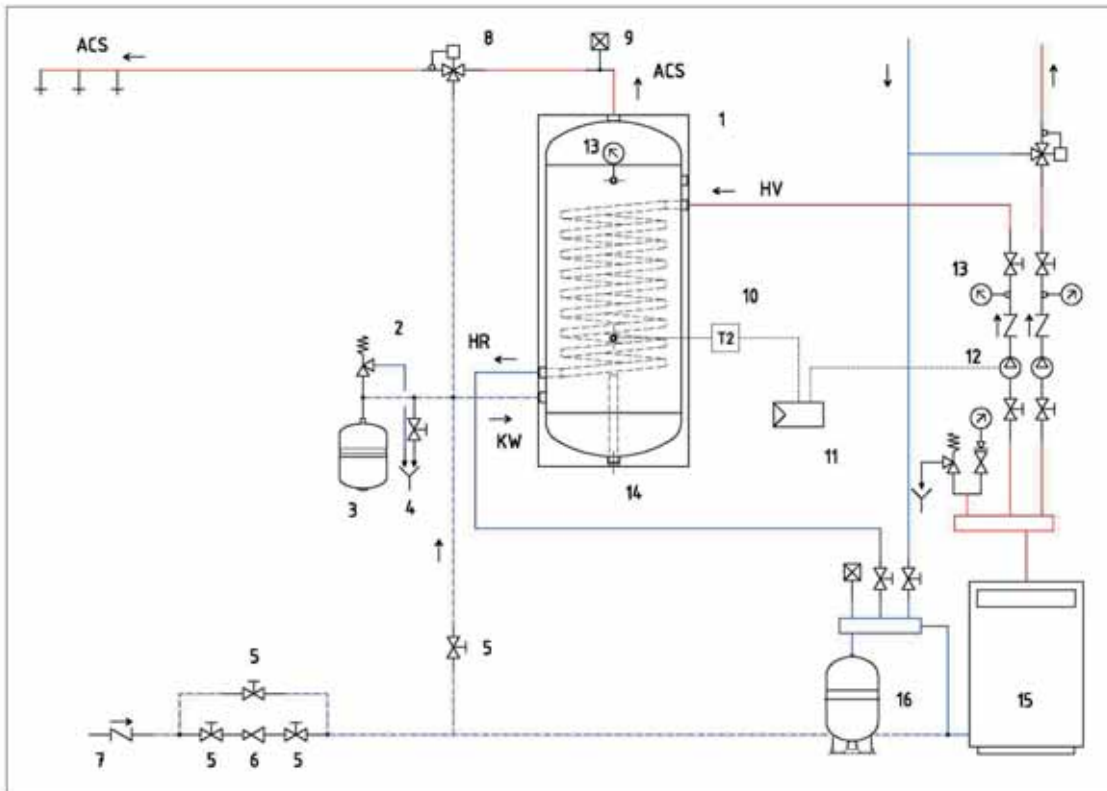
- DHW circuit:
  - Safety valve set at pressure below the cylinder maximum working pressure;
  - ELBI D-DV series expansion vessel. The sizing chart below is applicable under the following working conditions:  
Maximum hot water temp.: 85°C / Mains Water: 15°C /  
Vessel precharge pressure: 3 bar / Safety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

Model	ELBI D series expansion vessel
BSH-100	D – 8
BSH-150	D – 18
BSH-200	D – 18
BSH-300	D – 24

Installation example (BSH is laid down horizontally):



Installation Example (BSH is in upright vertical position):





1. BSH cylinder
2. Safety Valve
3. ELBI D series expansion vessel
4. Drain
5. Isolating Valve
6. Pressure reducing valve
7. Check Valve
8. Mixing Valve
9. Purge
10. Controls
11. Control Panel

12. Circulator Pump
  13. Thermometer
  14. Magnesium Anode
  15. Boiler
  16. ELBI ERCE expansion tank
- DHW Domestic Hot Water  
 KW Mains Water supply  
 HV Flow from Boiler  
 HR Return to Boiler

## Performances

Heat exchanger with heated water passing through it at  $T_i = 80^\circ\text{C}$  ( $\Delta T=10^\circ\text{C}$ ).  
 Maximum hot water temperature  $60^\circ\text{C}$ ; Mains Water supply temperature  $15^\circ\text{C}$

Model	Power (1)(2) (kW)	Pump capacity (litre/H)	Heating time (3) (min.)	DHW at $60^\circ\text{C}$ (litre/H)	First 10 min. production of water @ $45^\circ\text{C}$ (litre)
BSH-100	9,15	807	33	175	105
BSH-150	15,00	1320	37	287	176
BSH-200	19,50	1720	34	373	224
BSH-300	25,90	2290	34	495	300

(1) primary flow @  $80^\circ\text{C}$  Primary return @  $70^\circ\text{C}$ ;  
 (2) Mains Water supply @  $15^\circ\text{C}$  ;  
 (3) Heating time from  $15^\circ\text{C}$  to  $60^\circ\text{C}$  ;  
 (4) Domestic Hot Water available @  $45^\circ\text{C}$  in the first 10 minutes of water draw-off  
 from stored water @  $60^\circ\text{C}$

Heat exchanger with heated water passing through it at  $T_i = 80^\circ\text{C}$  ( $\Delta T=10^\circ\text{C}$ ).  
 Maximum hot water temperature  $40^\circ\text{C}$ ; Mains Water supply temperature  $15^\circ\text{C}$

Model	Power (1)(2) (kW)	Pump capacity (litre/H)	Heating time (3) (min.)	DHW @ $45^\circ\text{C}$ (litre/H)
BSH-100	12,00	1060	17	344
BSH-150	18,70	1650	20	536
BSH-200	25,00	2200	18	715
BSH-300	33,00	2900	18	945

(1) primary flow @  $80^\circ\text{C}$  Primary return @  $70^\circ\text{C}$ ;  
 (2) Mains Water supply @  $15^\circ\text{C}$  ;  
 (3) Heating time from  $15^\circ\text{C}$  to  $45^\circ\text{C}$  ;

## Pressure drop (heat exchanger) and Insulation thermal loss

Model	Pressure Drop (mbar)
BSH-100	50
BSH-150	80
BSH-200	110
BSH-300	200

Model	Q kWh / 24h
BSH-100	1,18
BSH-150	1,60
BSH-200	2,05
BSH-300	2,49

