



INSTALLATION AND MAINTENANCE MANUAL

AZIENDA CON
SISTEMA DI GESTIONE QUALITA'
CERTIFICATO DA DNV
ISO 9001

GLASSLINED DHW CYLINDERS WITH FIXED EXCHANGER FOR HEAT PUMPS

WITH FIXED EXCHANGER FOR HEAT PUMPS

INSTALLATION AND MAINTENANCE MANUAL

Sanitary water characteristics

Cylinders manufactured by Elbi S.p.A. are protected by a vitrification treatment in accordance with DIN 4753 and are suitable for holding water for sanitary use with the following characteristics:

Hardness	15÷30 °F	pH	6,5÷8
Chlorides	<70ppm	Cloro libero	<3ppm

This manual is intended for the installer and end user. It contains instructions on the correct installation, commissioning, operation, maintenance and disposal of the product. It must be handed over to the end user or the person responsible for the system after installation. Failure to observe the warnings and instructions contained in this manual will invalidate the warranty. Elbi S.p.A. cannot be held liable for damage to persons and/or property resulting from failure to comply with the instructions given below.

Product Description

Cylinders manufactured by Elbi S.p.A. are designed for the production of domestic hot water supplied by one or more heat sources (thermal generator, heat pump, solar panel) using water (or alternatively a mixture of water and ethylene glycol up to a 50:50 ratio) as the heat transfer fluid. If made of carbon steel, the domestic hot water storage tank undergoes an internal vitrification treatment that makes it suitable for containing hot water for sanitary use. The hot water storage tank is designed to operate within a sanitary water circuit using water only. The sanitary water characteristics for the proper operation of the storage tank are given in the *SANITARY WATER CHARACTERISTICS* table. For anything not expressly indicated, refer to the current drinking water regulations in the country of installation.

Where provided, the inertial storage tank is designed to act as a thermal flywheel and hydraulic separator within a thermal circuit using water (or alternatively a mixture of water and ethylene glycol up to a 50:50 ratio) as the heat transfer fluid.

General prescriptions

The tank is designed according to good construction practice in accordance with the requirements of Directive 2014/68/EU, para. 4.3. The operating limits (temperature and pressure) are shown on the technical data label affixed to the tank, and must never be exceeded. The tank is also designed in accordance with the requirements of Directive 2009/125/EC and has been tested according to the provisions of EN 12897 Annex 2.

Cylinders with a fixed coil must be used exclusively with water (domestic water storage tank side) and water or mixture of water and ethylene glycol up to a 50:50 ratio (heat exchanger side).

The removable coil can also be used, in addition to the above, with dry saturated steam as long as the ratio between the operating pressure and the volume of the exchanger itself does not exceed 50 bar liter.

It is recommended to consult the attached data sheets and consult the manufacturer if necessary.

General Warnings

Elbi S.p.A. is responsible only for the supply of the product, and not for the system and/or the correct installation of the product within it.

Elbi S.p.A. is not responsible for unauthorized modifications to the product or the use of non-original spare parts.

Always check the compatibility of the product with the liquids circulating in the system.

Cylinders manufactured by Elbi S.p.A. have a technical data label showing pressure and temperature limit values. Never exceed these values to avoid damage to the product and risks to people and property.

Always provide for proper grounding of the system and its parts.

Cylinders manufactured by Elbi S.p.A. are not designed for vacuum applications or with internal pressure lower than ambient pressure.

The connection schemes attached to these instructions are intended as purely indicative and not binding. Evaluation of the best system scheme for the use of the cylinder should be carried out by a licensed designer.

Installation

Installation must be carried out in accordance with the requirements of these instructions and according to the rule of art, by trained and qualified personnel acting on behalf of companies suitable to take responsibility for the whole installation, in accordance with the laws in force in the country of installation.

The product is designed to be installed indoors, sheltered from the weather. The product should not be used for non-fixed installations or transportation.

Before proceeding with installation, make sure that:

- the installation room has flooring of adequate strength (or, in the case of wall installation, that the installation wall is capable of bearing the weight of the tank);
- the installation room has suitable drains adequate for the volume of the tank;
- access to the room and internal spaces are such as to allow easy passage, installation and maintenance of the product;
- the other parts of the system (circulators, heat generators, etc.) are suitable for operation with the cylinder and comply with the legal requirements in force in the country of installation.

Before proceeding with the installation of the cylinder, proceed to remove it from its packaging and make sure of its condition. Do not proceed if damage to the same is found.

Always use suitable means for lifting and transporting the product. Carry out handling operations only with the tank empty.

Cylinder and inertial storage (where present) supply systems must be equipped with all safety devices necessary to ensure compliance with the operating limits of the cylinder, including (but not necessarily limited to):

- safety valves set at a pressure lower than the maximum pressures shown on the technical data label of the storage tank/inertial storage tank;
- if the system pressure is higher than the maximum pressure of the storage tank/inertial storage tank, install a pressure reducing valve as far as possible from it;
- shut-off and check valves;
- Appropriately sized expansion vessels;
- Thermostats set at a temperature lower than the maximum temperatures listed on the technical data label of the storage tank.

Safety devices must be provided for all circuits (domestic hot water, heat exchanger, inertial storage).

For proper installation:

- 1) Make sure the system is cold and empty.

- 2) If not already installed, install the magnesium anode(s) on the dedicated connection, using suitable gaskets and verifying electrical continuity with the tank;
- 3) The tank should always be electrically grounded;
- 4) Place the tank in a stable position on a flat, even surface, providing space around it for maintenance activities. The product is not designed to support external wind and/or earthquake loads.
- 5) Connect the cylinder to the system. The product is not designed to support vibration and/or loads through connections; therefore, the use of flexible fittings and/or vibration-damping joints is recommended. Use dielectric fittings and in any case pay attention to possible electrochemical reactions when choosing the material used (e.g., do not use iron fittings on stainless steel tanks);
- 6) Proceed to load the tank and perform a leak test to check that the connections are tightened correctly.
- 7) A circulator with sufficient flow rate and head to meet requirements should be installed on the exchanger side.
- 8) Where present, the inertial storage tank must be connected on one side to the heat generator and on the other side to the thermal system

Putting into service

Always flush the piping and equipment before commissioning. The heating side can be flushed using appropriate cleaning and corrosion-inhibiting solutions; the sanitary side can be flushed by simply flushing the circuit with a high flow rate for at least ten minutes. Before starting loading:

- verify that all installation requirements have been met;
- verify that all heat sources are turned off;
- verify that all unused connections are closed with tight plugs;

Proceed with the loading of the installation in a gradual manner, taking care to vent the air inside the system.

Once proper loading has been performed, it is possible to put the system into operation and check that all the connections and piping are tight, and that all the control and safety elements are properly functioning.

This manual should be given to the end user or plant manager.

Maintenance

Proper maintenance of the cylinder is the responsibility of the end user or plant manager. Schedule frequent checks of the magnesium anode so as to verify its state of consumption and plan to replace it accordingly. Plan in any case to replace it at least once a year. Check that the connections (and flanged connections, if any) are properly tightened after a few days of operation.

Tank maintenance should be done under stationary, cold plant conditions, disconnected from any electrical supplies and with the tank emptied.

Always check the temperature and pressure conditions of the system before proceeding.

Maintenance should be done by a trained technician at a frequency of at least once a year or otherwise according to the laws in force in the country of installation.

- Check the state of efficiency of all safety devices installed on the system.
- Replace the anode.
- Check the precharge pressure of the expansion vessels and, if necessary, restore them.
- On cylinders with removable heat exchanger, a periodic check of the exchanger is recommended: if it appears particularly dirty and with scale deposits, proceed with brushing or washing with descaling substances.

Disposal

Disposal of packaging is the responsibility of the company installing the product and/or end user.

At the end of the product life cycle, dispose of according to the regulations and laws in force in the country of installation. Components (metallic and non-metallic) should be given to operators authorized to recycle them.

The product should not be handled as household waste.



146 - 877 litres

TREATMENT:

The glasslining treatment makes the cylinder suitable to contain hot water for sanitary use and resistant to corrosive phenomena.

Installations

Heat pumps.

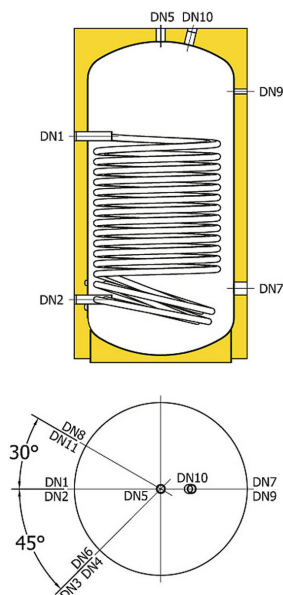
CHARACTERISTICS

MAX TEMPERATURE	95 °C	MAX PRESSURE	10 bar
EXCHANGER MAX TEMPERATURE	110 °C	EXCHANGER MAX PRESSURE	12 bar

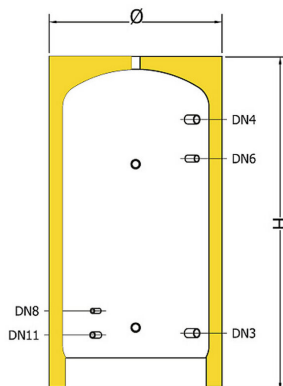
BSP - P PENSILI 150-200



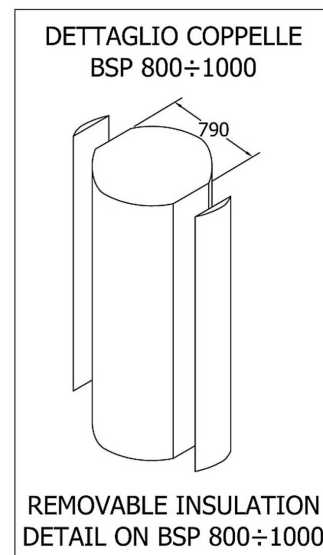
BSP 300-1000



BSP 300-1000



BSP 800 - 1000 CUPS



Keyword

DN	Description
DN1	Inlet from heat pump
DN2	Return to heat pump
DN3	Mains water supply
DN4	DHW draw-off
DN5	DHW draw-off
DN6	Recirculation
DN7	Predisposition for immersion heater
DN8	Thermostat
DN9	Thermometer
DN10	Magnesium anode
DN11	Drain
DN15	Probe
DN18	Auxiliary connection

Model	Code	Cl. Energ.	St. loss W	Capacity L	Tmax	P _{MAX}	EXCHANGER		H mm	Ø skirt mm	Ø mm	Pm mm	DB mm	P mm	BP mm
							m ²	l							
BSP-P 150 *	A3TSL43 PGP55	B	52	146	95°C	10	1.2	6	1010		610		300	290	630
BSP-P 200 *	A3TSL47 PGP55	B	56	182	95°C	10	2.1	10	1230		610		570	290	630
BSP-300	A3T0L51 PGP75	B	65	261	95°C	10	3.4	21	1670	460	650	1800			
BSP-500	A3T0L55 PGP55	C	89	453	95°C	10	5.5	41	1735	600	760	1900			
BSP-800	A3T0L60 PGP75	C	128	702	95°C	10	6.2	45	1815	760	940	2050			
BSP-1000	A3T0L62 PGP75	C	133	823	95°C	10	6.2	45	2065	760	940	2270			

Pm: pivot measurement | * Wall-hung models
* Wall-mounted models

Connection heights (mm)

MODEL	DN1	DN2	DN3	DN4	DN7	DN9	DN10	DN11	DN15
Vertical mounting									
BSP-P 150	675	355	265	-	295	725	755	-	365
BSP-P 200	905	345	265	-	295	945	985	-	355

MODEL	DN1	DN2	DN3	DN4	DN7	DN9	DN10	DN15	DN18
Horizontal mounting									
BSP-P 150	355	675	765	265	-	305	-	665	735
BSP-P 200	345	905	985	265	-	305	-	895	955

MODEL	DN1	DN2	DN3	DN4	DN5	DN6	DN7	DN8	DN9	DN10	DN11
BSP-300	1325	265	235	1385	-	1095	325	370	1385	-	220
BSP-500	1380	310	280	1430	-	1140	355	390	1430	-	265
BSP-800	1220	340	310	1460	-	1250	380	430	1460	-	300
BSP-1000	1220	340	310	1710	-	1430	380	430	1710	-	300

Connection sizes

MODEL	DN1	DN2	DN3	DN4	DN7	DN9	DN10	DN11	DN15
Vertical mounting									
BSP-P 150	G1"	G1"	G1.1/4"	G1.1/4"	G1.1/2"	G1/2"	G1.1/4"	G1.1/4"	G1/2"
BSP-P 200	G1"	G1"	G1.1/4"	G1.1/4"	G1.1/2"	G1/2"	G1.1/4"	G1.1/4"	G1/2"

MODEL	DN1	DN2	DN3	DN4	DN7	DN9	DN10	DN15	DN18
Horizontal mounting									
BSP-P 150	G1"	G1"	G1.1/4"	G1.1/4"	G1.1/4"	G1/2"	G1.1/4"	G1/2"	G1.1/2"
BSP-P 200	G1"	G1"	G1.1/4"	G1.1/4"	G1.1/4"	G1/2"	G1.1/4"	G1/2"	G1.1/2"

MODEL	DN1	DN2	DN3	DN4	DN5	DN6	DN7	DN8	DN9	DN10	DN11
BSP-300	G1"	G1"	G1"	G1"	G1.1/4"	G3/4"	G2"	G1/2"	G1/2"	G1.1/4"	G1/2"
BSP-500	G1"	G1"	G1"	G1"	G1.1/4"	G3/4"	G2"	G1/2"	G1/2"	G1.1/4"	G1/2"
BSP-800	G1.1/4"	G1.1/4"	G1.1/4"	G1.1/4"	G1.1/4"	G1"	G2"	G1/2"	G1/2"	G1.1/4"	G3/4"
BSP-1000	G1.1/4"	G1.1/4"	G1.1/4"	G1.1/4"	G1.1/4"	G1"	G2"	G1/2"	G1/2"	G1.1/4"	G3/4"

Protective devices

Model	Code	Nr. installed magnesium anode	Diam.Ø	Conn.	Length (mm)	Reccomended sanitary expansion tank(*)
BSP-P 150	8560040 00002	1	32	G1.1/4"	320	DP-8
BSP-P 200	8560040 00002	1	32	G1.1/4"	320	DP-11
BSP-300	8560060 00002	1	32	G1.1/4"	520	DP-18
BSP-500	8560080 00002	1	32	G1.1/4"	700	DP-24
BSP-800	8560080 00002	1	32	G1.1/4"	700	DP-35
BSP-1000	8560080 00002	1	32	G1.1/4"	700	DPV-50

(*) The expansion tank must always be sized by an expert thermotechnical designer on the basis of the actual data

Insulation characteristics

Model	Insulation type	Insulation thickness (mm)	Finish
BSP-P 150	Rigid expanded polyurethane with 95% closed cells, CFC and HCFC free, fire resistance class B2 acc. to DIN 4102-1	55	Grey polystyrene RAL 9006
BSP-P 200	Rigid expanded polyurethane with 95% closed cells, CFC and HCFC free, fire resistance class B2 acc. to DIN 4102-1	55	Grey polystyrene RAL 9006
BSP-300	Rigid expanded polyurethane with 95% closed cells, CFC and HCFC free, fire resistance class B2 acc. to DIN 4102-1	75	Grey polystyrene RAL 9006
BSP-500	Rigid expanded polyurethane with 95% closed cells, CFC and HCFC free, fire resistance class B2 acc. to DIN 4102-1	55	Grey polystyrene RAL 9006
BSP-800	Rigid expanded polyurethane with 95% closed cells, CFC and HCFC free, fire resistance class B2 acc. to DIN 4102-1	75	Grey PVC RAL 9006
BSP-1000	Rigid expanded polyurethane with 95% closed cells, CFC and HCFC free, fire resistance class B2 acc. to DIN 4102-1	75	Grey PVC RAL 9006

Reference standards

Directive 2014/68/EU – ART. 4.3, with exemption from CE marking.

EN 12897:2020 standard.

Designed and built in accordance with the requirements of 2009/125/EC and Regulation 814/2013 (EU).

Labeling in accordance with the requirements of 2017/1369/EU and Delegated Regulation 812/2013 (EU).

Warranty: 5 years

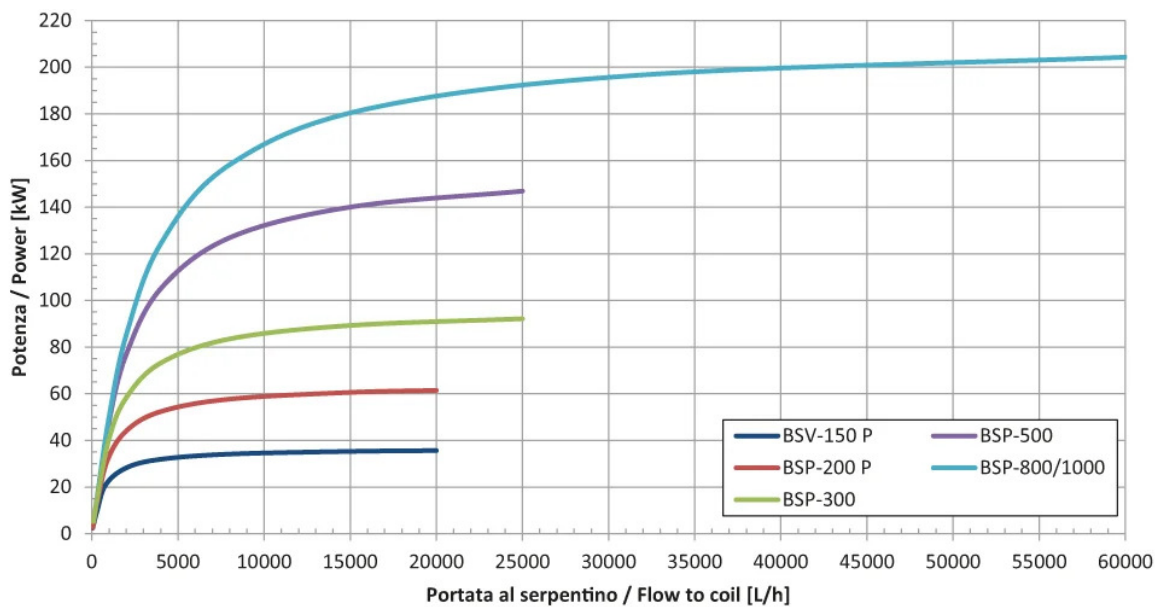
Immersion heaters

Codice	Potenza Kw	Alimentazione V	Attacco	Lunghezza mm	Applicabilità					
					150	200	300	500	800	1000
IMMERSION HEATERS WITHOUT THERMOSTAT										
8601000	1	230	G1.1/4"	295	345	✓	✓	✓	✓	✓
8601650	1.65	230	G1.1/4"	450	✗	✗	✗	✓	✓	✓
8602000	2	230	G1.1/4"	515	✗	✗	✗	✓	✓	✓
8602600	2.6	230	G1.1/4"	675	✗	✗	✗	✗	✗	✗
8602601	2.6	230	G1.1/4"	360	133	165	237	✓	✓	✓
8603300	3.3	230	G1.1/4"	825	✗	✗	✗	✗	✗	✗
8603301	3.3	230	G1.1/4"	435	✗	✗	✗	324	✓	✓
8604001	4	230	G1.1/4"	510	✗	✗	✗	267	✓	✓
8705000	5	400	G1.1/2"	445	✗	✗	✗	214	332	✓
8706000	6	400	G1.1/2"	510	✗	✗	✗	178	276	324
8708000	8	400	G1.1/2"	670	✗	✗	✗	✗	✗	✗
8710000	10	400	G1.1/2"	820	✗	✗	✗	✗	✗	✗
8712000	12	400	G1.1/2"	970	✗	✗	✗	✗	✗	✗
IMMERSION HEATERS WITH THERMOSTAT										
8T01500	1.5	230	G1.1/2"	320	230	287	✓	✓	✓	✓
8T02000	2	230	G1.1/2"	320	172	215	308	✓	✓	✓
8T02200	2.2	230	G1.1/2"	320	157	195	280	✓	✓	✓
8T02500	2.5	230	G1.1/2"	320	138	172	247	✓	✓	✓
8T03000	3	230	G1.1/2"	320	115	143	205	357	✓	✓
8T04000	4	400	G1.1/2"	400	86	107	154	267	✓	✓
8T05000	5	400	G1.1/2"	500	✗	✗	✗	214	332	✓
8T06000	6	400	G1.1/2"	600	✗	✗	✗	✗	276	324
8T09000	9	400	G1.1/2"	700	✗	✗	✗	✗	✗	✗
8T12000	12	400	G1.1/2"	850	✗	✗	✗	✗	✗	✗

Typical performances

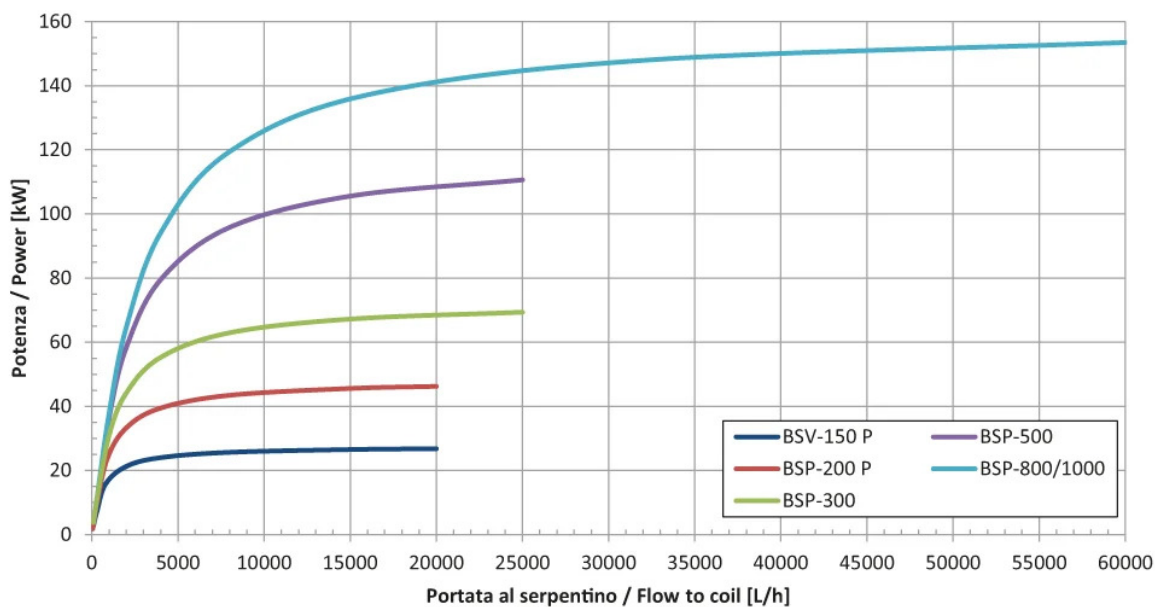
Exch. power

$T_{in,coil} = 80\text{ }^{\circ}\text{C}$; $T_{serb,in} = 10\text{ }^{\circ}\text{C}$, $T_{serb,out} = 45\text{ }^{\circ}\text{C}$



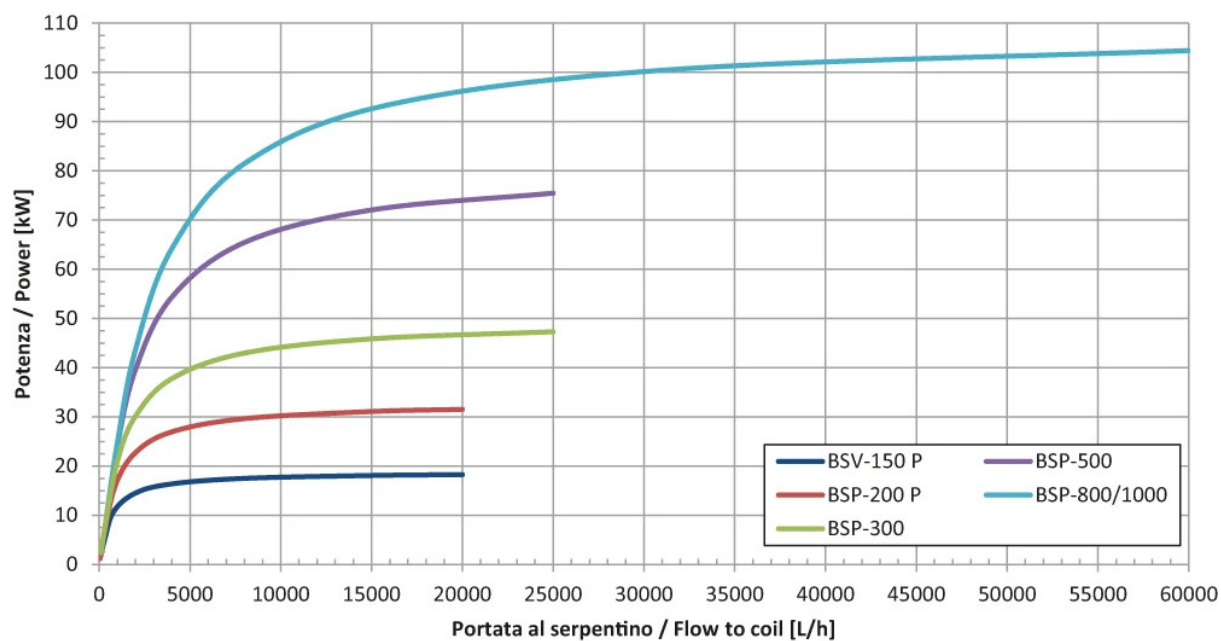
Exch. power

$T_{in,coil} = 70\text{ }^{\circ}\text{C}$; $T_{serb,in} = 10\text{ }^{\circ}\text{C}$, $T_{serb,out} = 45\text{ }^{\circ}\text{C}$



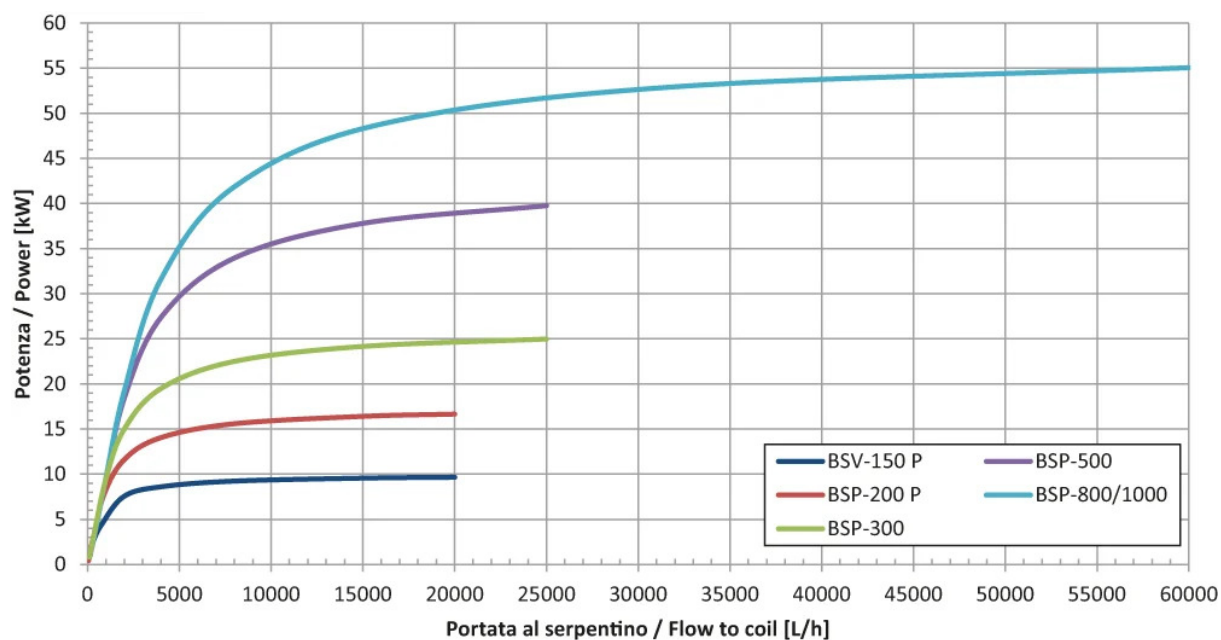
Exch. power

$T_{in,coil} = 60\text{ }^{\circ}\text{C}$; $T_{serb,in} = 10\text{ }^{\circ}\text{C}$, $T_{serb,out} = 45\text{ }^{\circ}\text{C}$

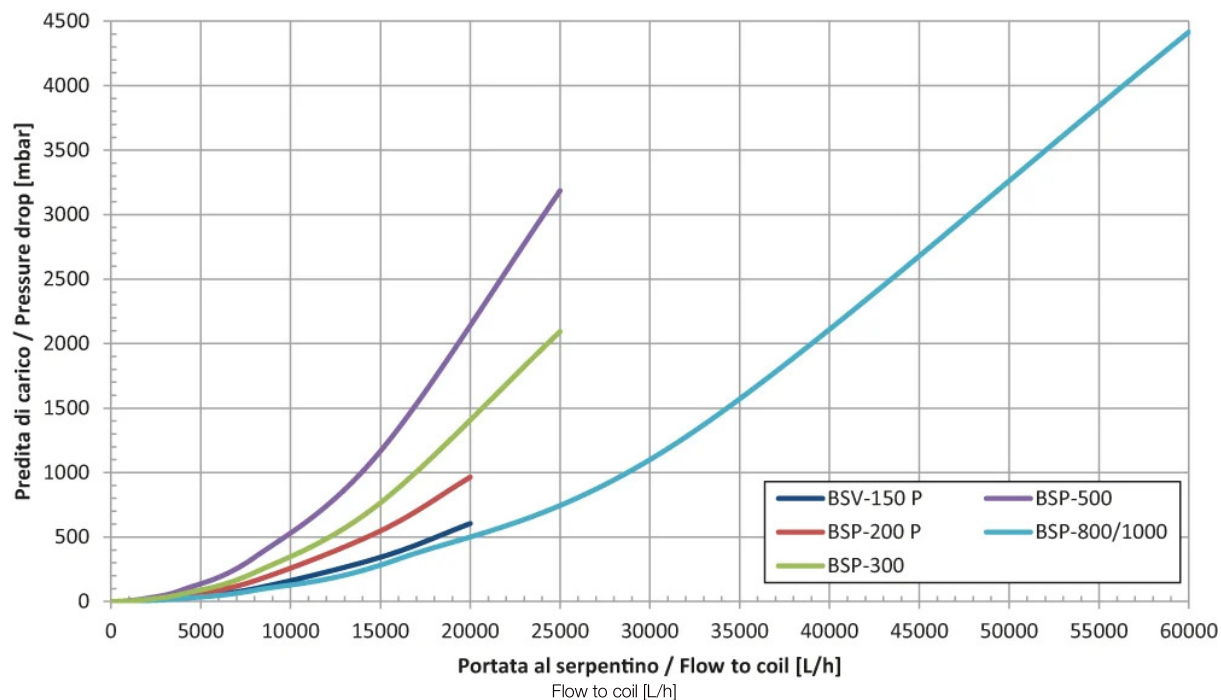


Exch. power

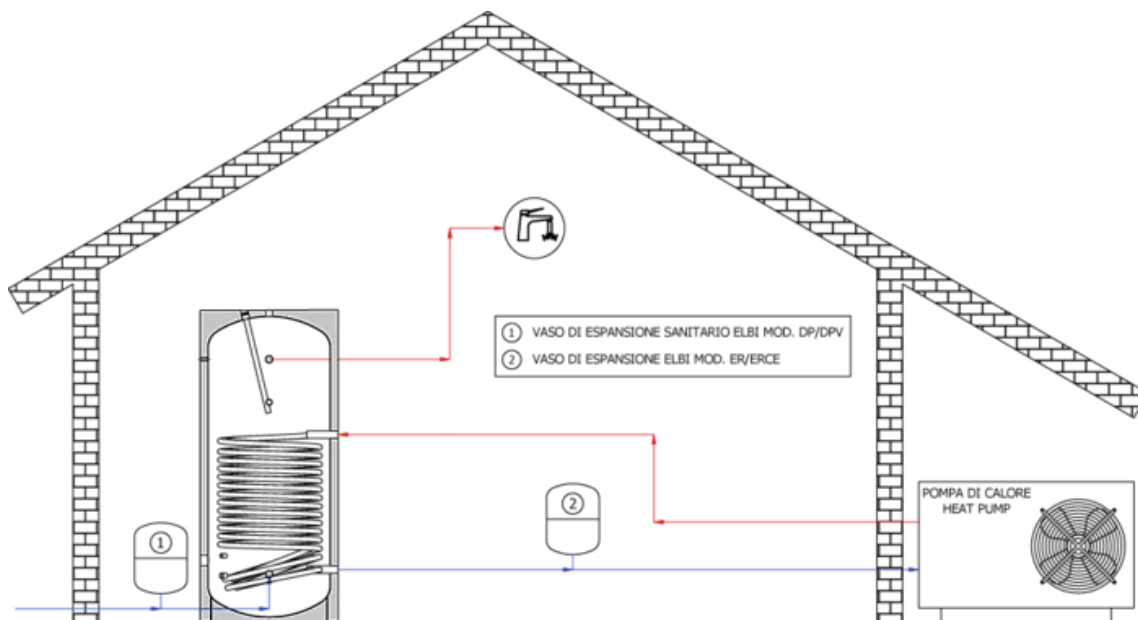
$T_{in,coil} = 50\text{ }^{\circ}\text{C}$; $T_{serb,in} = 10\text{ }^{\circ}\text{C}$, $T_{serb,out} = 45\text{ }^{\circ}\text{C}$



Coil pressure drop



Example of installation BSP



Illustrative diagram; always refer to a qualified technician for the realization of the systems.

DECLARATION OF CONFORMITY

Elbi S.p.A. – via Buccia 9, 35010 Limena (PD) – ITALY

Declares that the following tanks:

BSP-P 150	item code	A3TSL43 PGP55
BSP-P 200	item code	A3TSL47 PGP55
BSP-300	item code	A3T0L51 PGP75
BSP-500	item code	A3T0L55 PGP55
BSP-800	item code	A3T0L60 PGP75
BSP-1000	item code	A3T0L62 PGP75

- comply with the provisions of Directive 2009/125/EC and EU Regulations 812/201 and 814/2013, and and are marked accordingly;
- are in compliance with the provisions of Directive 2014/68/EU (Art. 4.3).

Standards applied for verification of compliance: EN 12897 latest applicable edition

Amministratore Delegato
ELBI S.p.A.


PRODUCT FICHE – UE 812/2013 Annex IV.2.1

(a) Manufacturer: Elbi S.p.A.

(b) Model	(c) Energy efficiency class	(d) Thermal dispersion	(e) Useful volume
BSP-P 150	B	52 W	146 L
BSP-P 200	B	56 W	182 L
BSP-300	B	65 W	261 L
BSP-500	C	89 W	453 L

PRODUCT FICHE – UE 814/2013 Annex V.7

(a) Manufacturer: Elbi S.p.A.

(b) Model	(c) Energy efficiency class	(d) Thermal dispersion	(e) Useful volume
BSP-P 150	B	52 W	146 L
BSP-P 200	B	56 W	182 L
BSP-300	B	65 W	261 L
BSP-500	C	89 W	453 L
BSP-800	C	128 W	702 L
BSP-1000	C	133 W	823 L